Installation - Operation

ProMix® V Package Meter Proportioner

3B0203F

EN

Meter based, electronic plural component paint proportioner for the application of two component paints and coatings. For professional use only.

Models PVMNM01-24 are not approved for use in explosive atmospheres or hazardous (classified) locations.

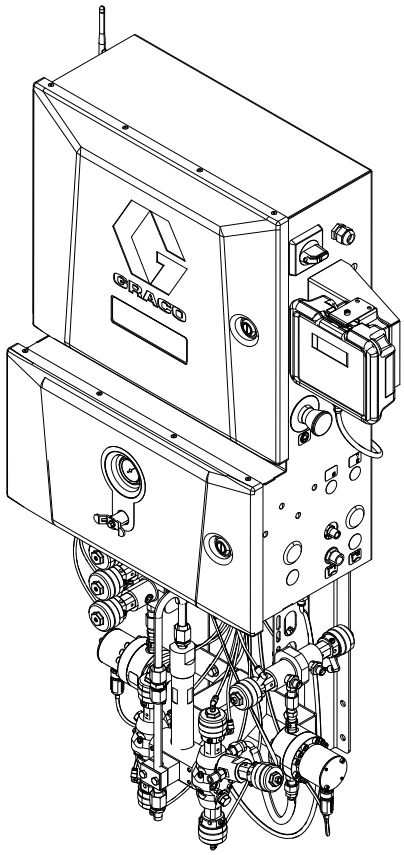
Only the booth control of models PVMBM01-24 is approved for use in explosive atmospheres or hazardous (classified) locations.

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



Important Safety Instructions

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



TI01777

PROVEN QUALITY. LEADING TECHNOLOGY.

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Related Manuals

The user can find English manuals and any available translations at www.graco.com.
For additional accessories and repair kits manuals see **Accessories and Repair Kits**, page 99.

Manual	Description
3B0361	ProMix V Package Meter Proportioner, Repair - Parts
3B0236	ProMix V Mix Manifold, Instruction - Parts
X050002	Booth Control Module, Instruction

Models

NOTE: Maximum air working pressure for all models is 100 psi (0.69 MPa, 6.89 bar)

Non Hazardous Location Models

Approvals for non hazardous location models
CE

Part	Series	Max Fluid Working Pressure	Number of Colors	Number of Catalysts	Number of Gun Flush Boxes	Acid Catalyst Compatible	Includes WiFi
PVMNM01	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	0	-	-
PVMNM02	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	1	-	-
PVMNM03	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	2	-	-
PVMNM04	A	3000 psi, 20.68 MPa, and 206.8 bar	1	1	0	✓*	-
PVMNM05	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	0	-	-
PVMNM06	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	1	-	-
PVMNM07	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	2	-	-
PVMNM08	A	3000 psi, 20.68 MPa, and 206.8 bar	3	1	0	✓*	-
PVMNM09	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	0	-	-
PVMNM10	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	1	-	-

Part	Series	Max Fluid Working Pressure	Number of Colors	Number of Catalysts	Number of Gun Flush Boxes	Acid Catalyst Compatible	Includes WiFi
PVMNM11	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	2	-	-
PVMNM12	A	3000 psi, 20.68 MPa, and 206.8 bar	5	1	0	✓*	-
PVMNM13	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	0	-	✓
PVMNM14	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	1	-	✓
PVMNM15	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	2	-	✓
PVMNM16	A	3000 psi, 20.68 MPa, and 206.8 bar	1	1	0	✓*	✓
PVMNM17	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	0	-	✓
PVMNM18	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	1	-	✓
PVMNM19	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	2	-	✓
PVMNM20	A	3000 psi, 20.68 MPa, and 206.8 bar	3	1	0	✓*	✓
PVMNM21	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	0	-	✓
PVMNM22	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	1	-	✓
PVMNM23	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	2	-	✓
PVMNM24	A	3000 psi, 20.68 MPa, and 206.8 bar	5	1	0	✓*	✓

***** Acid compatible units are equipped with a flush and dump valve on the catalyst B side. This is to prevent the catalyst from sitting in the flow meter when not in use.

Hazardous Location Models

Approvals for hazardous location models
II 2 G Ex ia IIB T3 Gb **CML 25ATEX2174X** **IECEx CML 25.0059x** **2575** **NOTE:** The amount of film formation and rate of crystallization varies depending on the blend of ISO Intrinsically Safe Apparatus.

Part	Series	Max Fluid Working Pressure	Number of Colors	Number of Catalysts	Number of Gun Flush Boxes	Acid Catalyst Compatible	Includes WiFi
PVMBM01	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	0	-	-
PVMBM02	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	1	-	-
PVMBM03	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	2	-	-
PVMBM04	A	3000 psi, 20.68 MPa, and 206.8 bar	1	1	0	✓*	-
PVMBM05	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	0	-	-
PVMBM06	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	1	-	-
PVMBM07	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	2	-	-
PVMBM08	A	3000 psi, 20.68 MPa, and 206.8 bar	3	1	0	✓*	-
PVMBM09	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	0	-	-
PVMBM10	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	1	-	-
PVMBM11	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	2	-	-
PVMBM12	A	3000 psi, 20.68 MPa, and 206.8 bar	5	1	0	✓*	-
PVMBM13	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	0	-	✓
PVMBM14	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	1	-	✓
PVMBM15	A	4000 psi, 27.58 MPa, and 275.8 bar	1	1	2	-	✓

Part	Series	Max Fluid Working Pressure	Number of Colors	Number of Catalysts	Number of Gun Flush Boxes	Acid Catalyst Compatible	Includes WiFi
PVMBM16	A	3000 psi, 20.68 MPa, and 206.8 bar	1	1	0	✓*	✓
PVMBM17	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	0	-	✓
PVMBM18	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	1	-	✓
PVMBM19	A	4000 psi, 27.58 MPa, and 275.8 bar	3	1	2	-	✓
PVMBM20	A	3000 psi, 20.68 MPa, and 206.8 bar	3	1	0	✓*	✓
PVMBM21	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	0	-	✓
PVMBM22	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	1	-	✓
PVMBM23	A	4000 psi, 27.58 MPa, and 275.8 bar	5	1	2	-	✓
PVMBM24	A	3000 psi, 20.68 MPa, and 206.8 bar	5	1	0	✓*	✓

***** Acid compatible units are equipped with a flush and dump valve on the catalyst B side. This is to prevent the catalyst from sitting in the flow meter when not in use.

Regulatory Compliance Information

ProMix V models listed with WiFi contain a module that is certified or approved for use in several countries. See **Models**, page 3 for models that have WiFi. The module has been integrated into the final product without modification to its radio parameters and in accordance with the terms of its original approvals. The final product has also undergone appropriate EMC testing.

United States - FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1.This device may not cause harmful interference, and

2.This device must accept any interference received, including interference that may cause undesired operation.

This product contains a radio module certified under:

- **FCC ID:** 2AET4RUT142

The module has been integrated in accordance with FCC rules. The host system has also been tested to

FCC Part 15 Subpart B (unintentional radiators).
NOTE: Any changes or modifications not expressly approved could void the user's authority to operate the equipment.

Canada - ISED

This Class A digital apparatus complies with **Canadian ICES-001**. Cet appareil numérique de la classe A est conforme à la norme **NMB-001** du Canada.
This product contains a certified radio module:

- **ISED Certification Number:** US0186.2024.00241.

The module has been integrated in accordance with ISED regulations and without alteration.

European Union

This product contains a WiFi module that is **CE-marked** and conforms to applicable requirements of the **Radio Equipment Directive (2014/53/EU)**.

- **EU Type Examination Certificate No.:** NB2906.2024.000352

The module has been integrated into this product without modification and in accordance with the manufacturer's EU Declaration of Conformity.

South Africa - ICASA

This product contains a radio module approved by the **Independent Communications Authority of South Africa (ICASA)**.

- **Equipment Type Approval Number:** TA-2024/3035

The module has been integrated according to its approval terms. The host product has not been separately certified and relies on the approved module for compliance.

Australia & New Zealand - RCM (Module Only)

This product contains a WiFi module that is **RCM-certified** for use in Australia and New Zealand.

- **RCM Certificate No.:** R24474
- Registered by: **ANZ Electrical Compliance**

The module complies with:

- **Radio communications (Low Interference Potential Devices) Class Licence 2015**
- **ACMA EMC Framework**

The module has been integrated into this product without modification and in accordance with the conditions of its RCM certification.

India - WPC ETA

This product includes a radio module approved by the **Government of India, Ministry of Communications, Department of Telecommunications, WPC Wing**

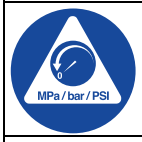
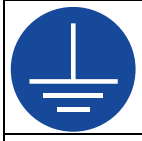
- **ETA Registration No.:** ETA-SD-202441110868
- **Approval Date:** 15-November-2024

The module has been approved through the **self-certification process** and integrated without modification. It operates in license-free spectrum under applicable Indian regulations (e.g., **G.S.R. 1048(E)**).
The full product is not separately certified under WPC. Compliance is based on the approved module.

Safety Symbols

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

Symbol	Meaning
	Chemical Hazard
	Electric Shock Hazard
	Equipment Misuse Hazard
	Fire and Explosion Hazard
	Skin Injection Hazard
	Skin Injection Hazard
	Splash Hazard
	Toxic Fluid or Fumes Hazard

Symbol	Meaning
	Do Not Wipe with a Dry Cloth
	Do Not Stop Leaks with Hand, Body, Glove or Rag
	Do Not Place Hands or Other Body Parts Near Fluid Outlet
	Eliminate Ignition Sources
	Follow Pressure Relief Procedure
	Ground Equipment
	Ventilate Work Area
	Wear Personal Protective Equipment



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

General Warnings

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

⚠WARNING



FIRE AND EXPLOSION HAZARD

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

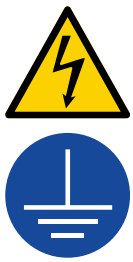
- Use equipment only in well-ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding,** instructions.
- Never spray or flush solvent at high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



FIRE AND EXPLOSION HAZARD

Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable vapors. To help prevent fire and explosion:

- Clean plastic parts only in well-ventilated area.
- Do not clean with a dry cloth.
- Do not operate electrostatic guns in equipment work area.



ELECTRIC SHOCK HAZARD

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

- Turn off and disconnect all power 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





INTRINSIC SAFETY

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.

- Be sure your installation complies with national, state and local codes for the installation of electrical apparatus in a class I, group D, Division 1Hazardous location, including all of the local safety fire codes, NFPA 33, NEC 500 and 516, and OSHA 1910.107.
- Equipment that comes in contact with the safety barrier's 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.
- The equipment is intrinsically safe when no external electrical components are connected to it. If a printer, computer or other electrical component is connected, it must be used in conjunction with a safety barrier.
- Without the safety barrier, the equipment is no longer intrinsically safe and must not be operated in hazardous locations, as defined in article 500 of the National Electrical Code (USA) or your local electrical code.
- Do not install the ProMix V, which is non-intrinsically safe, in a hazardous area, as defined in Article 500 of the national Electrical Code (USA) or your local electrical code.
- Ground the intrinsically safe power supply. A voltage limiting safety barrier must be properly grounded to be effective. For proper grounding, use the ground wire provided (or a 12 gauge minimum ground wire), and the barrier's ground must be within 1 ohm of true earth ground.
- Do not operate the safety barrier module with the enclosure door open.







SKIN INJECTION HAZARD

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

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

⚠WARNING





EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

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



TOXIC FLUID OR FUMES HAZARD

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

- Read Safety Data Sheets (SDSs) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See **Personal Protective Equipment** warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.



PERSONAL PROTECTIVE EQUIPMENT

Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:

- A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.
- Protective eyewear and hearing protection.

Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two component materials

Isocyanate Conditions



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

- Read and understand the fluid manufacturer's warnings and Safety Data Sheets (SDSs) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer's application instructions and SDSs.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors, and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer's SDSs.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.

Material Self-Ignition



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

Keep Components A and B Separate



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

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

Moisture Sensitivity of Isocyanates

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

NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

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

Changing Materials

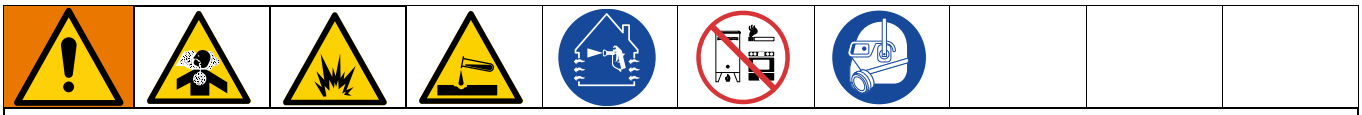
NOTICE

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

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- When manually overriding the system solenoids, an unknown amount of materials may flow. 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 fluids and change hoses. Epoxies often have amines on the component B (catalyst) side. Polyureas often have amines on the component A (color) side.

Important Acid Catalyst Information

Some models of the ProMix V plural component proportioner system are designed for acid catalysts (“acid”) used in two component wood finishing materials, See **Models**, page 3. More corrosion resistant-wetted materials of construction are required for use with acid. Acids with pH levels of 1 or lower are extremely corrosive and are not intended to be used with the ProMix V system.



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

- Read and understand the fluid manufacturer’s warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to acid.
- Use only genuine manufacturer recommended acid-compatible parts in the catalyst system (hoses, fittings, etc). A reaction may occur between any substituted parts and the acid.
- To prevent the 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 manufacture’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 fluid manufacturer recommendations, including those regarding handling of contaminated clothing. Wash hands and face before eating and drinking.
- Regularly inspect equipment for potential leaks and remove spills promptly and completely to avoid direct contact or inhalation of the acid or it’s 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 the acid manufacturers 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 catalyst build-up and premature seal damage and failure.

NOTICE

Acid catalyst 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 acid catalysts 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 catalyst and the atmosphere.
- Use only moisture-proof hoses compatible with acid catalysts.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

Glossary of Terms

Air Chop - the process of mixing air and solvent together during the purge cycle to help clean the lines and reduce solvent usage.

Analog - relating to, or being a device in which data are represented by continuously variable, measurable, physical quantities, such as length, width, voltage, or pressure.

BCCM - Booth Control Communication Module. Communication module for the Booth control located inside the enclosure.

Catalyst - the fluid that enables a chemical reaction in the mixture to cure the color or coating being applied.

Chop Interval-duration of each activation of the A or B purge valve during an air chop sequence.

Component A- the side of the unit that is used for color supply. It can include multiple color valves, a flush valve, and has its own flow meter, dose, and purge valve.

Component B - the side of the unit that is used for catalyst supply. It can include multiple catalyst valves, a flush valve, and has its own flow meter, dose, and purge valve.

Coriolis Meter - a non-intrusive flow meter often used in low flow applications or with light viscosity, shear sensitive, or acid catalyzed materials. This meter uses vibration to measure flow.

Digital Input and Output - a description of data which is transmitted as a sequence of discrete symbols, most commonly this means binary data represented using electronic or electromagnetic signals.

Dose Size - the amount of color and catalyst that is dispensed into an integrator.

Dose Time Alarm - the amount of time that is allowed for a dose to occur before an alarm occurs. One full dose must occur during the set time while the gun trigger is on to prevent the alarm.

Ethernet - a method for directly connecting a computer to a network or equipment in the same physical location.

Flush - the process of which the color and catalyst is cleaned out of the ProMix V from the valve stacks through to the mix manifold using an appropriate solvent.

Flush Volume Check - the ProMix V monitors flush volume. The alarm occurs if minimum volume is not achieved. Minimum flush volume is user settable.

Global - indicates that values on the screen apply to all recipes.

Grand Total - a non-resettable value that shows the total amount of material dispensed through the ProMix V.

Gun Trigger Input Signal - used to manage ratio assurance dose times and flow control processes.

HMI (Human Machine Interface) - a human-machine interface or HMI is a device that is used as an interface between an operator and a process or piece of machinery. This includes a graphic interface that allows complete control of a machine from one dashboard.

Intrinsically Safe (IS) - refers to a design or method used in electrical equipment to prevent ignition in hazardous environments.

Idle - the idle time is set by the user. If the gun is not triggered in the time set by the user, the ProMix V enters Idle mode. Trigger the gun to resume operation.

Job Total - a resettable value that shows the amount of material dispensed through the ProMix V for one job. A job is complete when a color change or complete ProMix V purge occurs.

K-factor - a value that refers to the amount of material that passes through a meter. The assigned value refers to an amount of material per pulse.

Manual Mode - when the ProMix V is controlling the inputs without any input from an outside control.

Minimum Material Fill Volume - ProMix V monitors material fill volume. The alarm occurs if minimum volume is not achieved. Minimum material fill volume is user settable.

Mix - the process by which blending of the color and catalyst occurs.

Mix Input Signal- refers to the ProMix V mode status where the ProMix V begins a dose sequence each time the mix signal is made.

Mixed Material Fill Time - the amount of time that is required to load mixed material from the dose valves to the applicator/gun.

Modbus/TCP - a type of communication protocol used to communicate digital I/O signals over an Ethernet connection.

Overdose (A, B, C) Alarm - when either the color or catalyst dispenses too much material for the selected integrator, and the ProMix V cannot compensate for the additional material.

Potlife Time - the amount of time before a material becomes unsprayable.

Potlife Volume - the amount of material that is required to move through the mix manifold, hose and applicator before the potlife timer is reset.

Pre-Fill - refers to the time required to fill the lines from the color or catalyst valve stack to the mix manifold.

Purge - when all mixed material is cleaned from the from the ProMix V mix manifold, hose, and applicator.

Purge Source- source of the media used in the first, second, or third purge cycle. User settable to purge valve A (air), purge valve B (solvent), A-B chop, or purge valve A2.

Purge Time- duration of the first, second, or third purge cycle required to clean mixed material from the ProMix V. User settable.

Purge Valve A, A2, and B- refers to the use of valves used to flush various types of materials. The valves are used to purge with air, water, and solvent.

Ratio Tolerance - the settable percent of acceptable variance that the ProMix V will allow before a ratio alarm occurs.

Sequential Dosing - component A and B dispense sequentially in the necessary volumes to attain the mix ratio.

Solvent- the fluid used to clean either the color, catalyst, or mixed material.

Solvent Push - This method uses solvent to push mixed material out the spray gun while in Mix/Spray mode. Creating an initial clean at the same time reducing mixed material waste.

Standby - Refers the state the ProMix V is in, waiting for next command from the operator to Spray/Purge or Recipe change.

System Idle - this warning occurs if the ProMix V is set to mix and enters the idle state after not receiving a flow meter pulse.

Overview

The ProMix V is an electronic two component paint proportioner. It can blend most two component paints. It is not for use with quick-setting paints (those with a pot life of less than 5 minutes).

PVMNM01-24 is not approved for use in explosive atmospheres or hazardous (classified) locations.

The booth control of PVMBM01-24 is approved for use in explosive atmospheres or hazardous (classified) location.

It has sequential dosing capabilities where it dispenses component B (catalyst), confirms the dose amount, and dispenses the proper amount of component A (color) through an integrator to ensure that the mixture is on ratio.

It can proportion at ratios from 1:1 to 50.0:1 and flow rates up to 3,800 cc/min. Note that maximum ratio and maximum flow rate can not be achieved at the same time.

All alarms are displayed on the booth control and detailed information such as date, time, error type, and description are stored in the HMI. Job logs with material usage info are stored there as well.

The ProMix V has the ability to be configured for use with up to two guns. Examples include electrostatic guns such as the Graco ProBell® or Pro Xp® series and conventional non-electrostatic guns such as the Perform AA® and Stellair® series spray guns. At this time electrostatic guns can only be used with solvent borne paint. Conventional non-electrostatic guns can use solvent borne or waterborne paint with the ProMix V.

Up to two gun flush boxes may be used with the proportioner. The hardware to control two gun flush boxes can be mounted to the main cabinet.

Pre-configured proportioners support 1, 3, or 5 colors. These can be upgraded to 7 colors with the room available where the color stack is mounted.

Pre-configured proportioners support 1 catalyst. Acid units come with catalyst flush and all units can be upgraded to support 2 catalysts.

Do not exceed the maximum rated working pressure shown on the ProMix V identification label or the lowest rated component in the system such as the spray gun, fluid hose, fluid pressure regulator, etc. The ProMix V meter based unit itself does not generate fluid pressure.

Component Identification

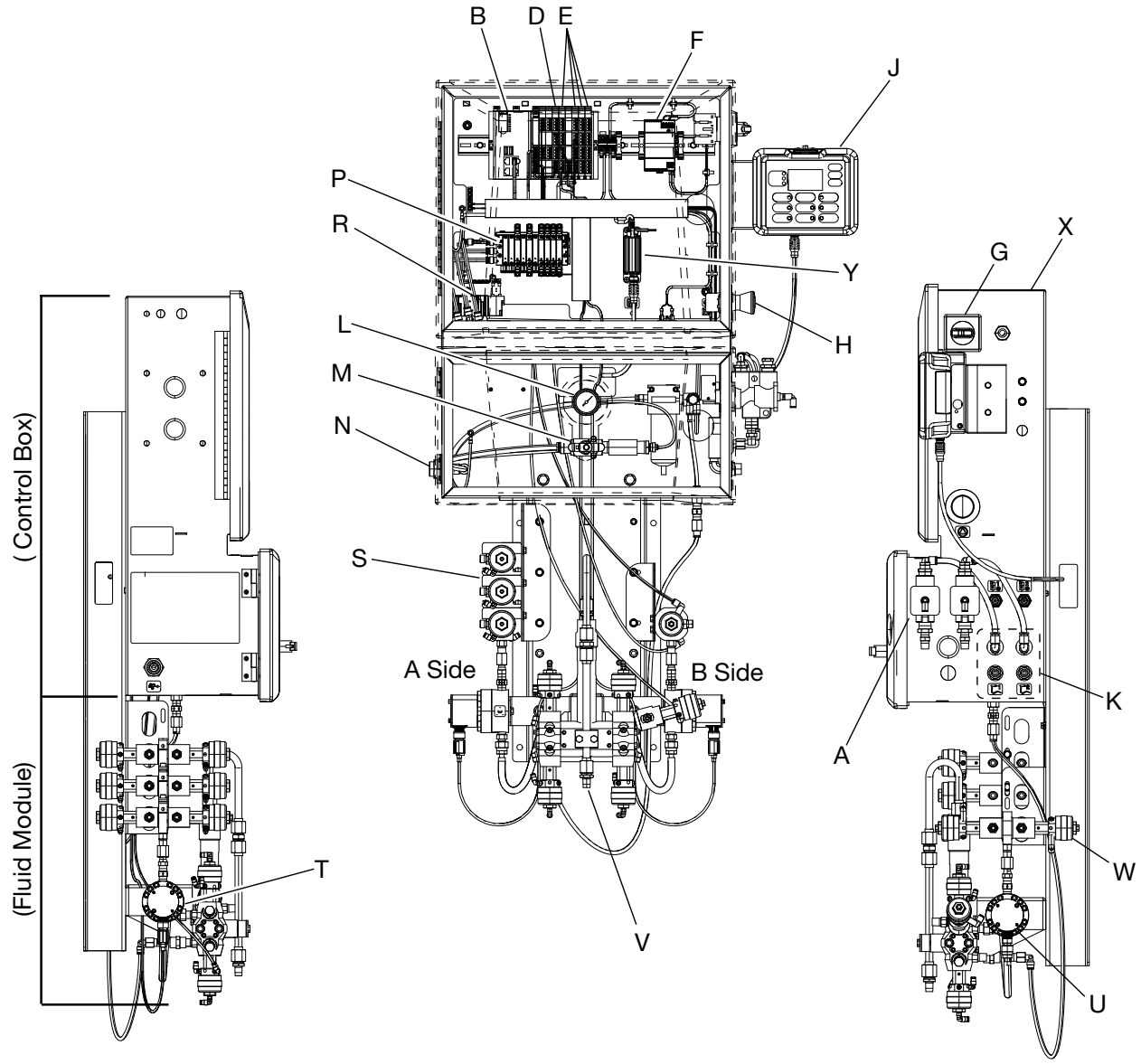


FIG. 1: ProMix V Package Meter Proportioner Identification

Key:

A Atomizing Air Shut Off valve (when using Gun Flush Box)
B Controller Module
C Wireless Module (Not Shown)
D Input Module
E Output Modules
F 24 Volt Power Supply
G Power Switch
H E-Stop Switch
J Booth Control
K Air Flow Switches
L Inlet Air pressure gauge
M Air Inlet Shutoff Valve
N Main Air Inlet
P Solenoid Module Single Acting
R Solenoid Module Double Acting
S Color Stack A
T Meter A
U Meter B
V Mix Manifold
W Catalyst Stack B
X Enclosure Assembly
Y Booth Control Communication Module (BCCM) or Intrinsically Safe Barrier.

Mix Manifold Identification

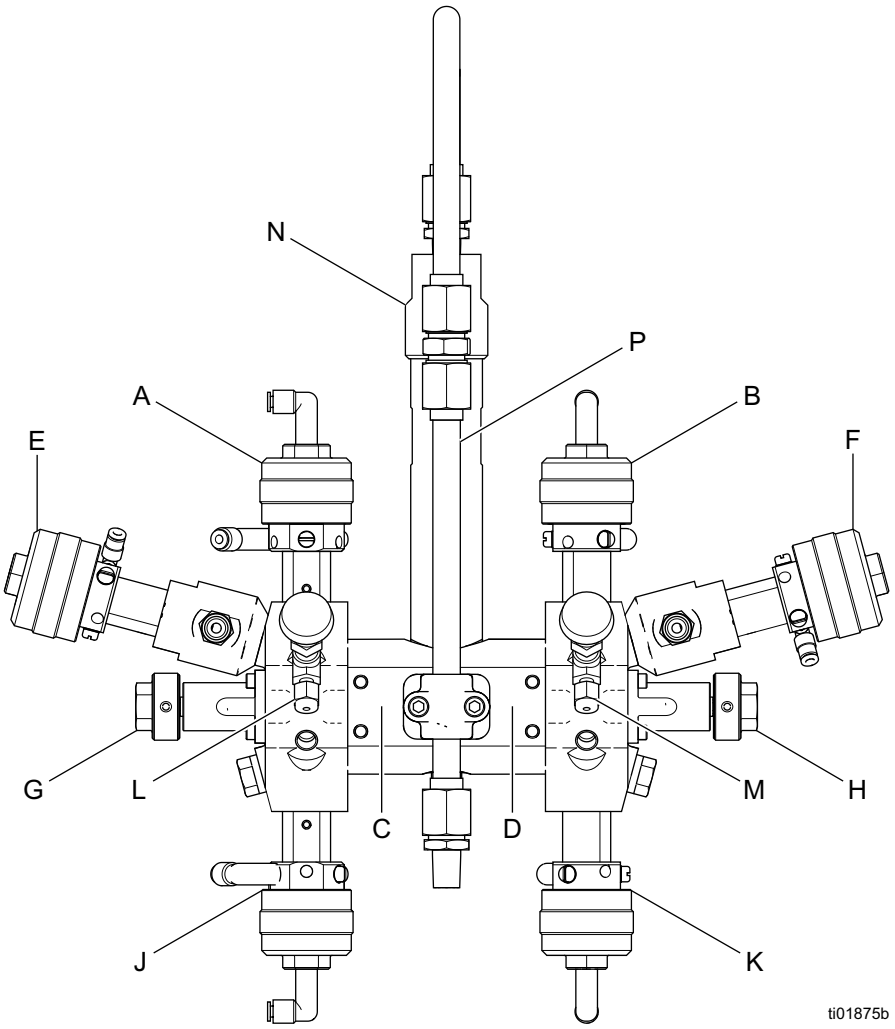


FIG. 2: ProMix V Mix Manifold Identification

Key:

A Dose Valve A
B Dose Valve B
C Check Valve A
D Check Valve B
E Dump Valve A (Optional)
F Dump Valve B (Optional)
G Isolation Valve A (Optional)
H Isolation Valve B (Optional)
J Purge Valve A
K Purge Valve B
L Sample Valve A (Optional)
M Sample Valve B (Optional)
N Integrator
P Mixer

Installation

Typical Non-Hazardous (NHZ) Installation, PVMNM

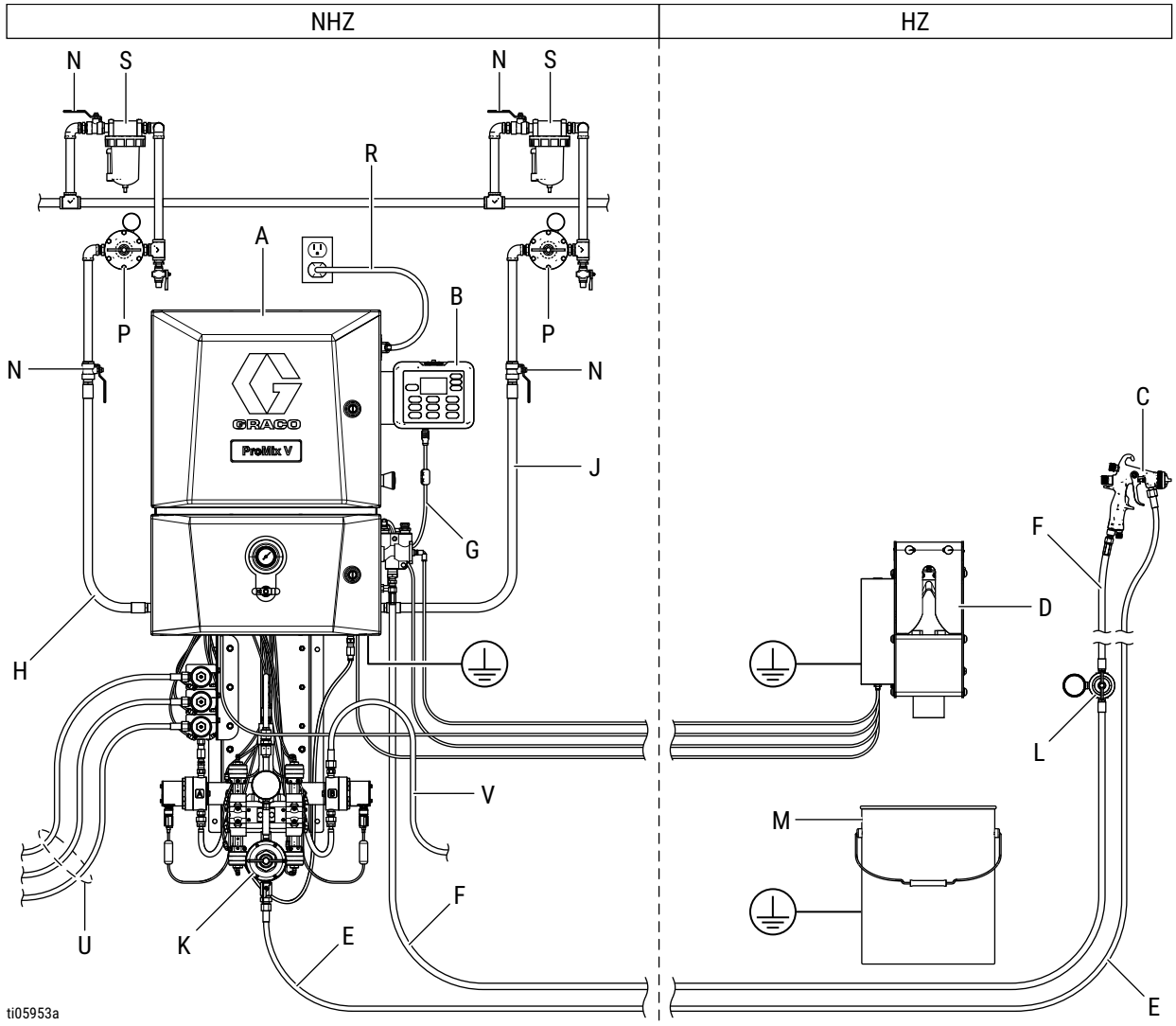


FIG. 3: Typical Non Hazardous (NHZ) Installation, PVMNM

Key:

A ProMix V
B Booth Control
C Spray Gun
D Gun Flush Box
E Fluid Hose
F Gun air outlet
G Booth Control Cable
H System Air Supply
J Gun Air Supply
K Fluid Regulator
L Gun Air Regulator
M Metal Waste Pail
N Air Shut-Off Valve
P Air Supply Regulator
R Power Cord
S Air Line Filter
NHZ Non Hazardous location
HZ Hazardous Location

Typical Hazardous (HZ) Installation, PVMBM

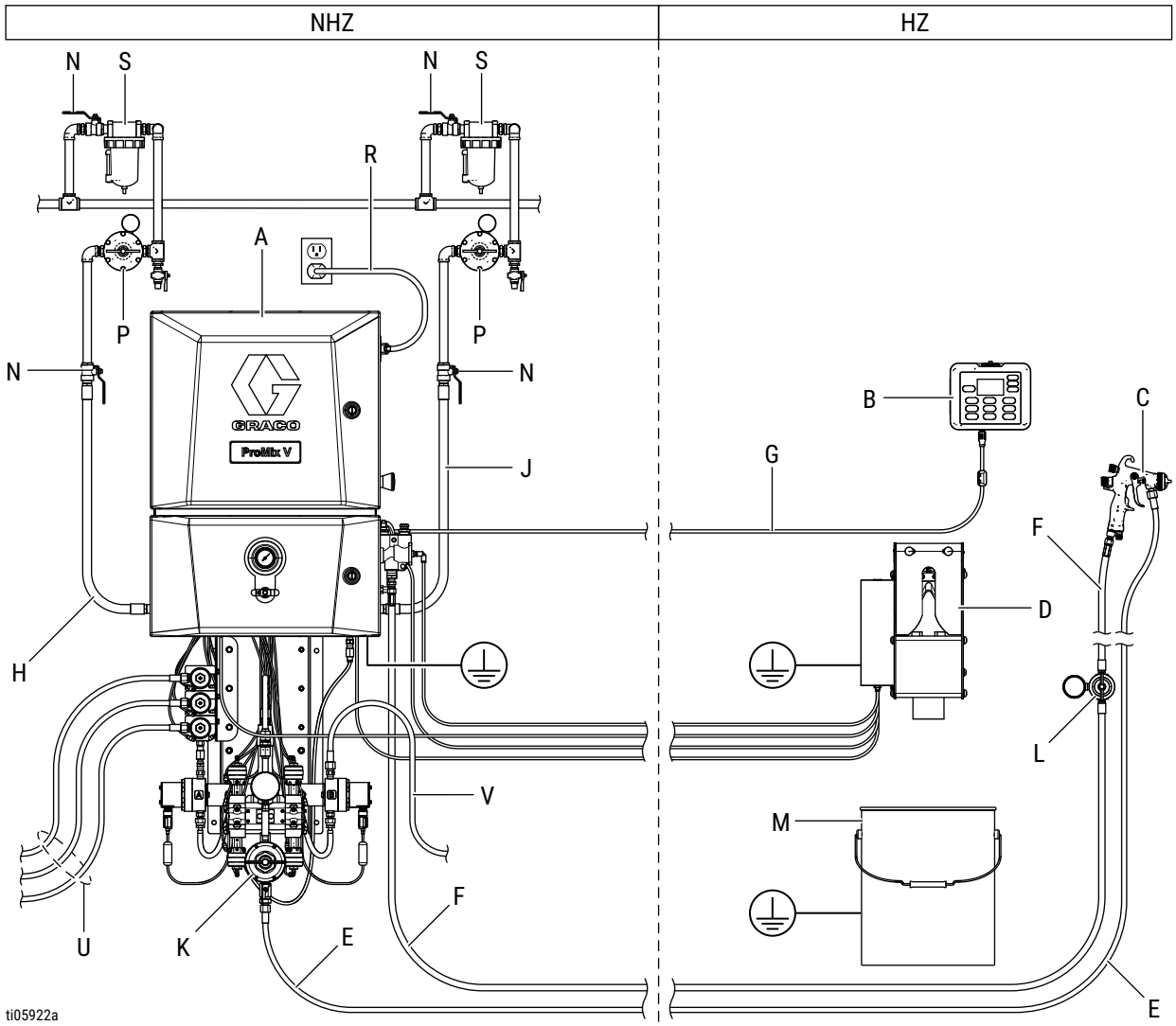


FIG. 4: Typical Hazardous (HZ) Installation, PVMBM

Key:

A ProMix V
B Booth Control
C Spray Gun
D Gun Flush Box
E Fluid Hose
F Gun air outlet
G Booth Control Cable
H System Air Supply
J Gun Air Supply
K Fluid Regulator
L Gun Air Regulator
M Metal Waste Pail
N Air Shut-Off Valve
P Air Supply Regulator
R Power Cord
S Air Line Filter
NHZ Non Hazardous location
HZ Hazardous Location

General Information

- Reference numbers and letters in parentheses in the text refer to numbers and letters in **Component Identification**, page 19 diagrams or in the illustrations.
- Be sure all accessories are adequately sized and pressure-rated to meet the ProMix V requirements.
- There must be a shutoff valve between each fluid and air supply line and the ProMix V.
- A fluid filter must be installed on color and catalyst fluid supply lines. A 100 mesh filter is recommended, but for some materials may be too fine. A 60 mesh may be needed for those materials.
- All items shown in the installation are customer supplied except the ProMix V and gun flush box if a model number was purchased that includes one.

Wall Mounting

1. See **Dimensions**, page 102.
2. Ensure that the wall and mounting hardware are strong enough to support the weight of the equipment, fluid, hoses, and stress caused during operation.
3. Using the equipment as a template, mark the mounting holes on the wall at a convenient height for the operator and so equipment is easily accessible for maintenance.
4. Drill mounting holes in the wall. Install anchors as needed.
5. Bolt equipment securely.

Booth Control Installation

The booth control can either be mounted directly to the cabinet on the supplied bracket or remotely.

Cabinet Mount Position

1. The bottom of the booth control (J) has two slots that fit into the bottom tabs of the mounting bracket (JB). The top of the booth control then snaps into the top tab of the mounting bracket.

2. Hand tighten the securing screw (JC) on the tab on the top of the mounting bracket (JB). Do not over tighten the screw or the case can be damaged.

3. Connect the M12 4-pin booth control cable (JD) from the bottom of the booth control (J), through the bottom of the lower pneumatic cabinet, the bottom of the upper cabinet, and into the booth control connection port (JF) on the booth control communication module.

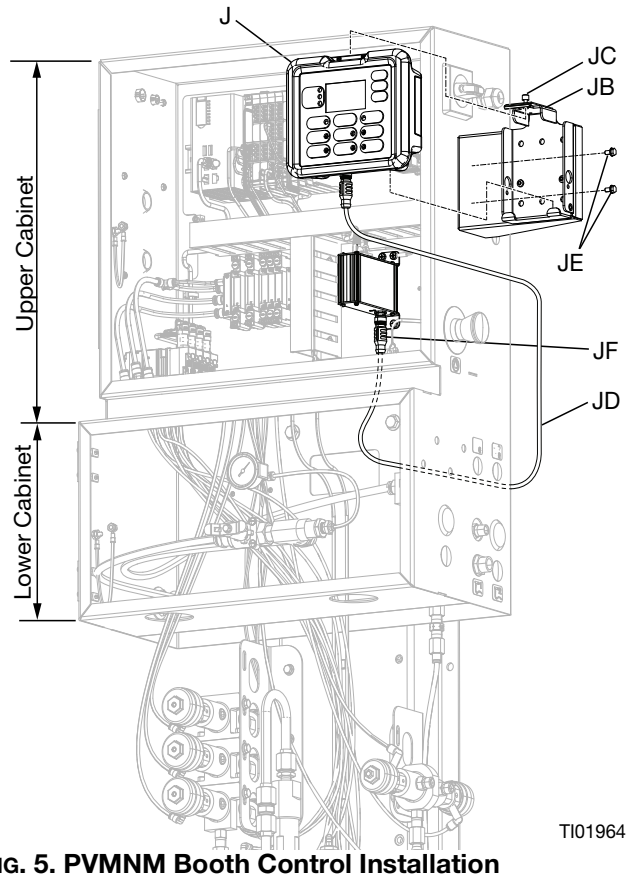


FIG. 5. PVMNM Booth Control Installation

Non Intrinsically Safe Remote Mount Position, PVMNM

1. The mounting bracket (JB) can be removed from the electrical upper cabinet by removing the mounting screws (JE).

2. The mounting bracket (JB) can be mounted to a remote non hazardous location and the booth control installed on the bracket.

3. A longer booth control cable can be purchased as found in the **Accessories and Repair Kits**, page 99 section of this manual. Connections are made the same as in the cabinet mount position.

NOTE: The total length of the booth control cable used in the ProMix V cannot exceed 105 ft. (32 m).

Intrinsically Safe Remote Mount Position, PVMBM



Do not substitute or modify system components as this may impair intrinsic safety. For installation, maintenance, or operation instructions read the instruction manuals. Do not install equipment approved only for non-hazardous locations in a hazardous location. See the identification label for the intrinsic safety rating for your model.

1. The mounting bracket (JB) and booth control (J) can be removed from the electrical upper cabinet by removing the mounting screws (JE).

2. For intrinsic safe models (PVMBM) the booth control (J) and mounting bracket (JB) is allowed to be mounted in the rated hazardous location spray booth

3. A longer intrinsically safe booth control cable (JD) can be purchased as found in **Accessories and Repair Kits**, page 99 of this manual. Connections are made the same as in the cabinet mount position.

4. There are eight input positions on the barrier (JG) for the booth control cable (JD). Use the bottom left position.

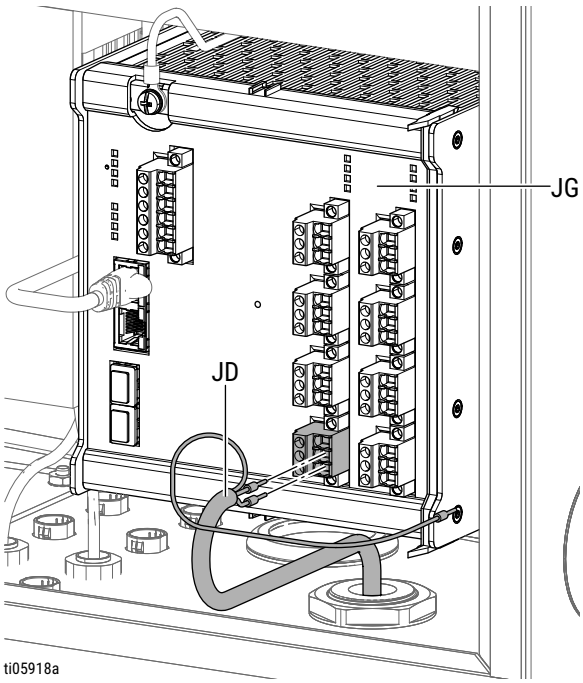


FIG. 6. Barrier Connection

NOTES: The total length of the booth control cable used in the ProMix V cannot exceed 105 ft. (32 m).

(NHZ) is non hazard location, HZ is hazardous location.

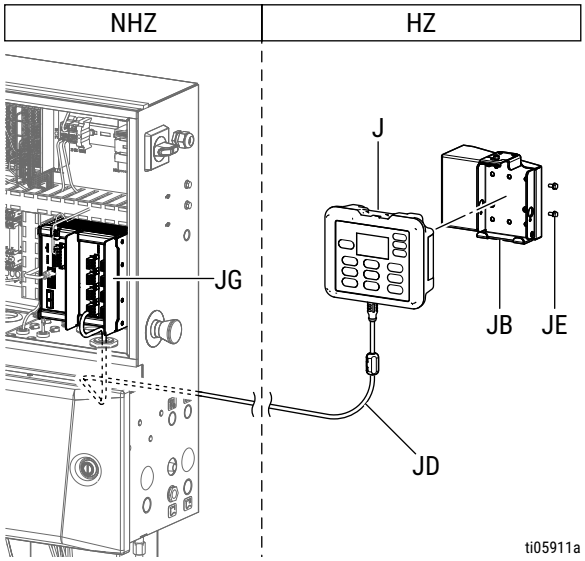
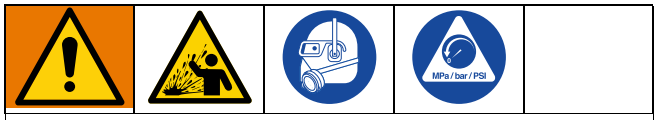


FIG. 7. PVMBM Booth Control Installation

Air Supply



Trapped air can result in serious injury from splashing fluid or moving parts. To help prevent injury, install a bleed-type shutoff valve.

Requirements

Compressed air supply pressure: 85-100 psi (0.586-0.689 MPa, 5.86-6.89 bar).

Air hoses: use grounded hoses that are correctly sized for your ProMix V.

Air regulator and bleed-type shutoff valve: include in each air line to fluid supply equipment. Install an additional shutoff valve upstream of all air line accessories to isolate them for servicing.



To reduce the risk of fire and explosion: If using an electrostatic gun, a shutoff valve must be installed in the gun air line to shutoff the atomizing and turbine air to the gun.

Air Connections

1. Tighten all the ProMix V air and fluid line connections as they may have loosened during shipment.

2. Connect the main air supply line to the 3/8 NPT main air inlet (N). This air line supplies the solenoids and all pneumatic control valves.

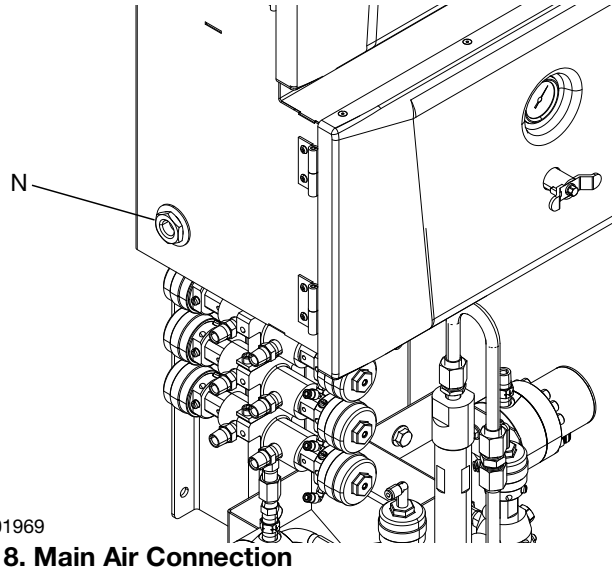


FIG. 8. Main Air Connection

3. For each gun used with the ProMix V, connect a separate clean air supply line to each air inlet of the air flow switches (KC and KD). This air line supplies gun atomizing air. The air flow switch detects air flow to the gun and signals the controller when the gun is being triggered.

4. The air line routed to gun 1 connects to outlet (KA), and gun 2 if used connects to air outlet (KB).

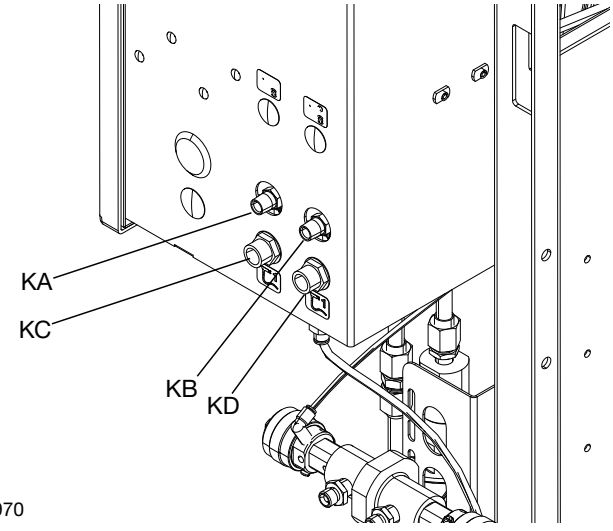


FIG. 9. Atomizing Air Connection

Fluid Supply



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

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns.

ProMix V models are rated to spray up to 4,000 psi fluid pressure with a capacity of 3,800 cc/min. Acid compatible units are only rated to a fluid pressure of 3,000 psi.

- Fluid supply pressure tanks, feed pumps, or circulating systems can be used.
- Materials can be transferred from their original containers or from a central paint recirculating line.
- It is recommended that a shutoff valve be installed in each fluid line going to the ProMix V.

NOTE: The fluid supply must be free of pressure spikes, which are commonly caused by pump stroke changeover. If necessary, install pressure regulators or a surge tank on the ProMix V fluid inlets to reduce pulsation. Contact your Graco distributor for additional information.

Fluid Connections

1. Connect a solvent supply line to the purge valve B Inlet (SPV). If using multiple colors connect another solvent supply line to flush valve A inlet (SSV). If using an acid compatible unit also connect a solvent supply line to flush valve B inlet (BS). See FIG. 10.

NOTICE

Solvent supplied by a single source can cause cross contamination and damage to the ProMix V. Install check valves or use separate solvent sources.

2. Connect the color supply line(s).

- **Single color system:** connect color supply line to the meter A inlet (MAI).

- **Multiple color system:** connect color supply lines to the color valve A1 inlet (AS1), as well as A2 - A5 color valve inlets (AS2, AS3, AS4, and AS5). The top back inlet is reserved for the flush valve A inlet (SSV) regardless of number of valves. See FIG. 10.
- **Paint recirculating system only:** If you are recirculating paint, use the standard inlet on the color valves. Remove the plug directly opposite it on the color valve for the recirculation outlet. The second port is on the back of the valve.
- Another option is to use a tee fitting to recirculate.

NOTE: Verify that all unused fluid ports on the color valve stack (AVS) are plugged before operation. An open port will leak fluid.

3. For non-acid compatible units, connect the catalyst supply line to the meter B inlet (MBI). See **Models**, page 3.
4. For acid compatible units, connect the catalyst supply line to the catalyst valve B inlet (BC). See **Models**, page 3.
5. For acid compatible units, connect the dump waste line to the dump valve B outlet (BD). See **Models**, page 3.

NOTE: The component A (color) and component B (catalyst) fluid meter inlets have fluid check valves to prevent backflow from fluid supply pressure fluctuations. Backflow can cause ratio inaccuracies.

6. Connect the gun fluid supply line between the static mixer outlet (SM) and the gun fluid inlet.

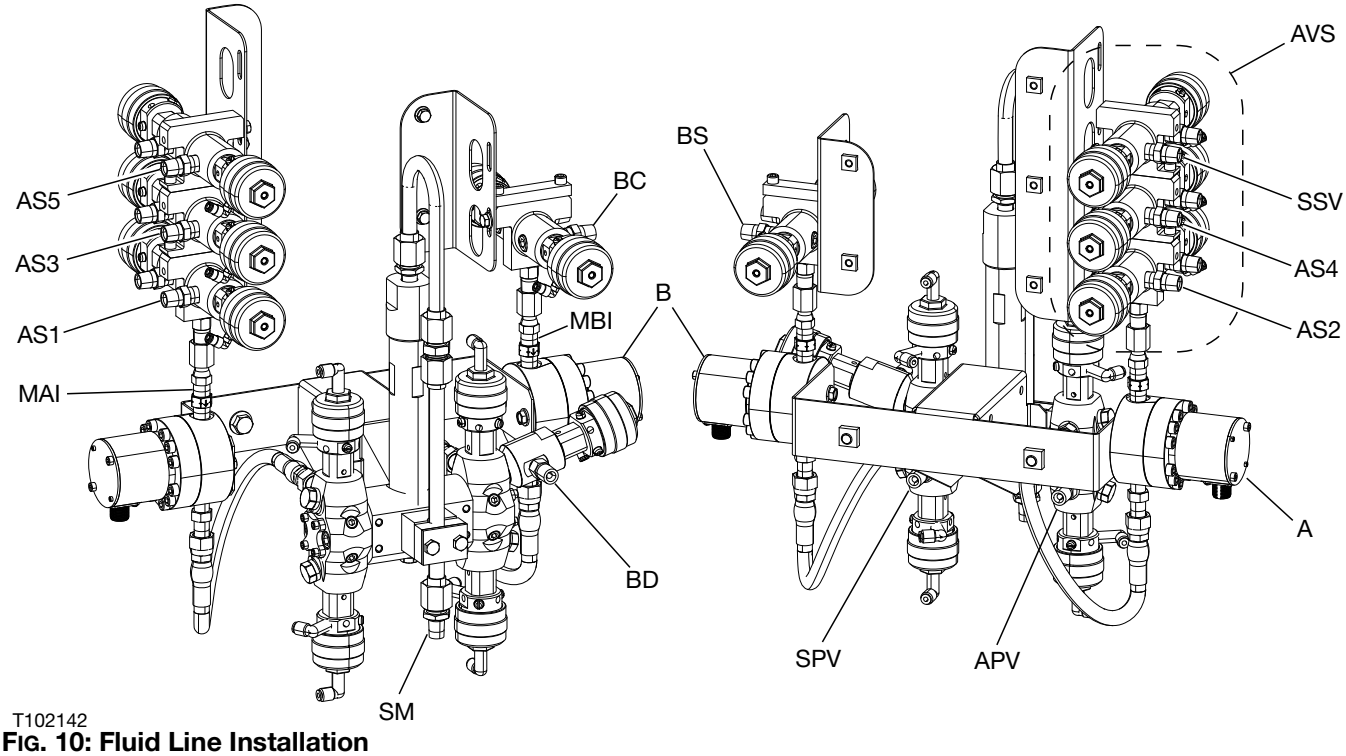
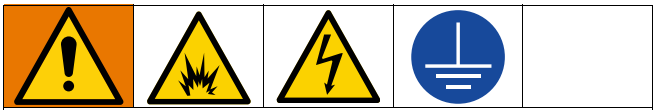


FIG. 10: Fluid Line Installation

Grounding



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

Confirm the ProMix V ground wire is connected to the ground screw on the back panel inside the upper enclosure. Pull the wire and clamp out of the bottom of the lower enclosure and connect the clamp to a true earth ground. If wall power is used to power controls ground the electrical connection according to local codes

.

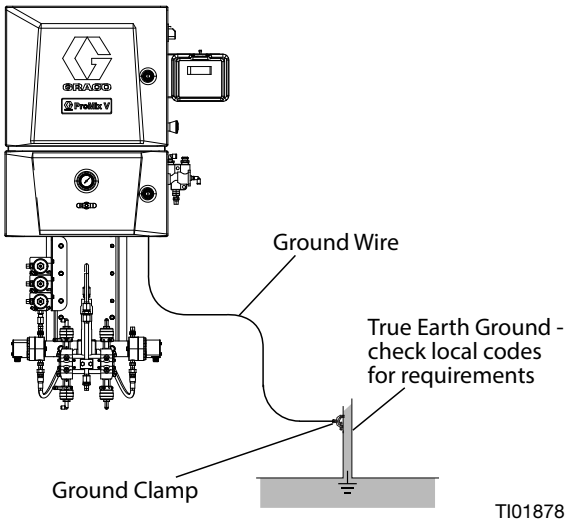


FIG. 11. Grounding

Gun flush box: connect a ground wire from the gun flush box ground lug to a true earth ground.

Flow meters: verify that the meter cables are connected. Failure to properly connect the shield may cause incorrect signals.

Air and fluid hoses: use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Spray gun:

- **Non-Electrostatic:** Ground the spray gun through connection to a grounded fluid supply hose.
- **Electrostatic:** Ground the spray gun through connection to a grounded air supply hose. Connect the air hose ground wire to a true earth ground.

Fluid supply container: follow local codes and regulations.

Object being sprayed: follow local codes and regulations.

Solvent pails used when flushing: follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

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

Electrical

Power Connection



All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.

Enclose all cables routed in the spray booth and high traffic areas in conduit to prevent damage from paint, solvent, and traffic.

The ProMix V operates with 100-240 VAC, 50/60 Hz input power, with a maximum of 1.34 amp current draw. The power supply circuit must be protected with a 15 amp maximum circuit breaker.

The input power cord access port has a cord strain relief bulkhead and can accept a cord diameter of .170 - .450 inches (4.3 - 11.4 mm).

1. Verify that the electrical power at the main panel is shut off. Open control box cover.
2. Connect electrical cord to the ground terminal block and disconnect switch as shown. Electrical connections must be installed by a qualified electrician.
3. Close the control box. Restore power from the main panel.
4. Follow **Grounding**, page 27

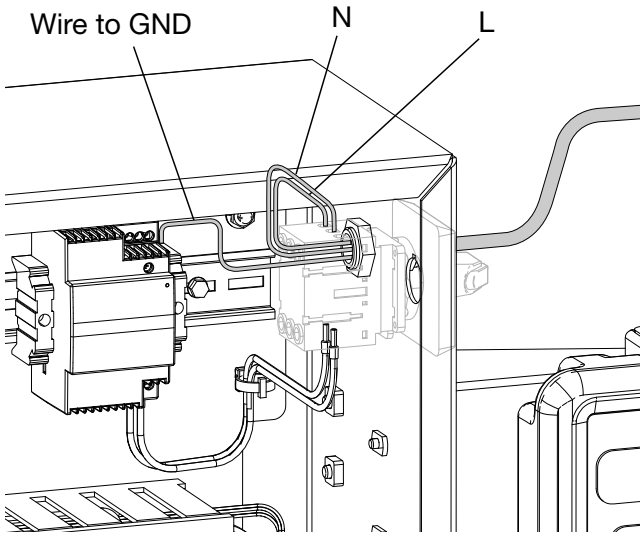


FIG. 12. Control Box Connection

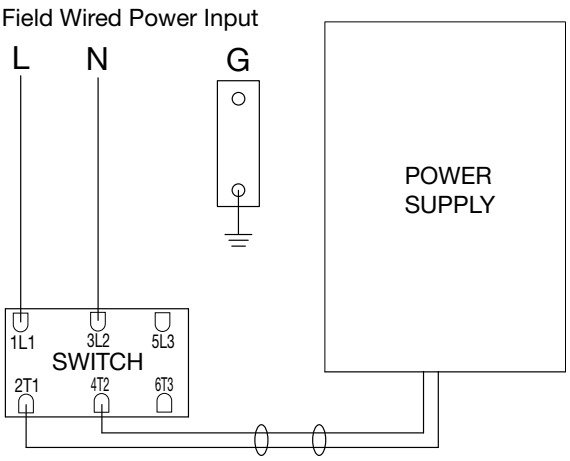


FIG. 13. Electrical Schematics

Emergency Stop (E-Stop) Function

Machine operation may be halted at any time by pushing in the E-Stop switch (H). When the switch is pushed in the unit is put into the standby state and electrical power is removed from the output modules (E). Solenoids are de-energized and the associated fluid valves are closed.

Alarm and light tower functions continue to operate. Pot life time continues to be monitored. The unit remains in the active recipe.

To resume operation rotate and pull out the E-Stop switch. The unit will remain in standby, but return to normal functionality. At this point the operator can continue painting, change recipes, or purge the unit.

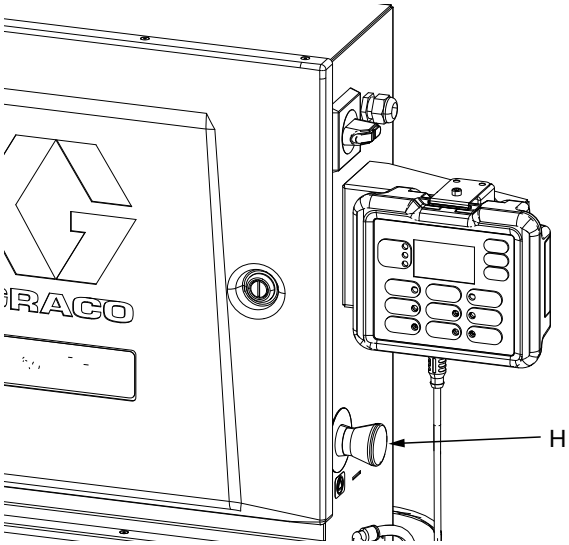


FIG. 14. E-Stop

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment.

Setup

Pre-Operation Tasks

Follow through with the Pre-Operation Checklist in the table.

✓	Checklist
	System Grounded Verify all connections are made. **All connections tight and correct** Verify all electrical, fluid, air, and ProMix V connections are tight and installed according to the manual instructions. **Fluid supply containers filled** Check all supply containers - A1 (A2- A5, if present), B and solvent. **Dose valves set** Check that the dose valves are set correctly. Start with the settings recommended in **Dose and Purge Valve Settings**, page 50 then adjust as needed. **Fluid supply valves open and pressure set** Color and catalyst fluid supply pressures should be equal unless one is more viscous and requires a higher pressure setting. **Solenoid pressure set** 85-100 psi Inlet air supply (0.586-0.689 MPa, 5.86-6.89 bar).

Booth Control

Used by the operator for daily painting functions including: changing recipes, signaling job complete, reading/clearing alarms, and placing the ProMix V in standby, mix, or purge mode.

Soft Key Message

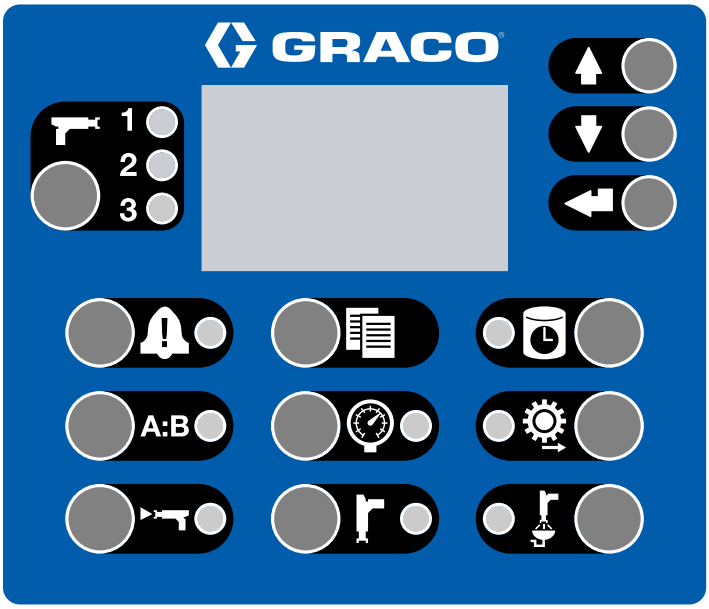
NOTICE

To prevent damage to soft key buttons, do not press the buttons with sharp objects such as pens, plastic cards, or fingernails.

Booth Control Basic Input for Non-Hazardous Location PVMNM01-24

The LED's give an indication of the ProMix V status as described in the **Button Function Table**, page 33.

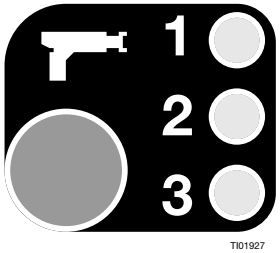
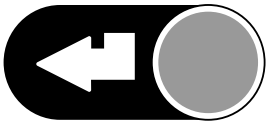
1. Select the desired recipe using the arrow up, or arrow down, buttons.
2. Press the enter button to start the recipe change.
3. Recipe change will cycle through the guns flush/purge sequence first, then the mix fill sequence of each gun in numerical order.

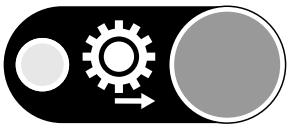
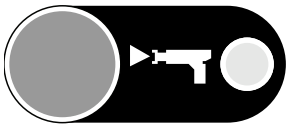


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FIG. 15: Non Hazardous Booth Control interface

Button Function Table

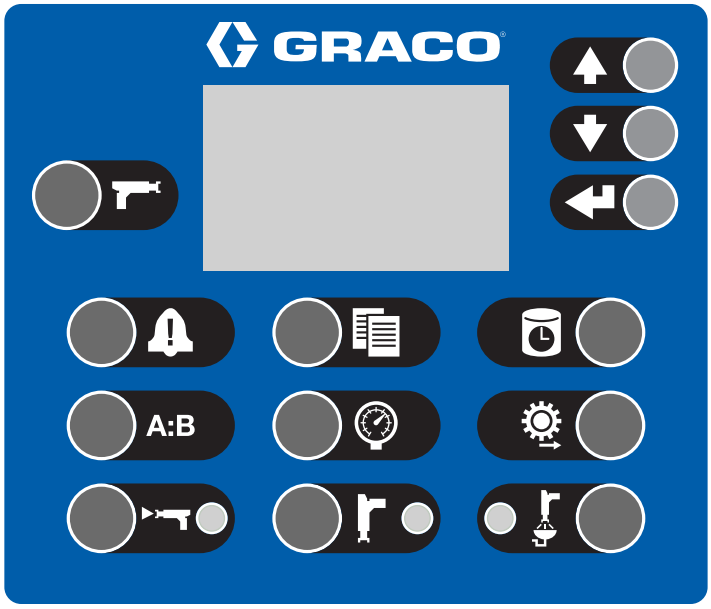
Button	Function
 TI01927	**Multi-Gun Select Status** • The multi-gun button toggles through the status of each gun based on LEDs below: • LED lit indicates that gun is configured in loaded recipe. • Each LED indicates that gun is selected. • LEDs are status indicators of recipe change process. The LED's help the operator with purging and mix filling the guns. - Blinking BLUE LED = Flush/Purge in progress. - Solid BLUE LED= Purged, while button is pressed. - Blinking GREEN = Mix fill in progress. - Solid GREEN = Filled (ready to spray). - Solid LIGHT PURPLE= Flush/Purge alarm. - Solid LIGHT PURPLE= Mix fill alarm. - Solid RED = Potlife.
 TI01937	**Up Button** • Scrolls recipe numbers up. • Scrolls gun selection up in multi-gun select mode. • Scrolls potlife for each gun.
 TI01938	**Down Button** • Scrolls recipe numbers down. • Scrolls gun selection down in multi-gun select mode. • Scrolls potlife for each gun.
 TI01939	**Enter Button** • Enters selected recipe and starts a color change sequence.
	**Alarm Clear Button** • ORANGE LED blinks if alarm_task.alarm_manager_client. alarm active. • ORANGE LED blinks when an event requiring user acknowledgment occurs at any level • Press key to acknowlege. LED shuts off after alarm is cleared
 TI01930	**Job Complete Button** • Signals that job is complete, and resets A, B, and solvent totals • Press to display the current job number on the booth control. Press a second time to log the current job and increment to the next job number. Times out after 5 seconds of inactivity

Button	Function
 TI01934	**Potlife Button** • Displays potlife. • Green LED remains lit while active and the display will show the remaining potlife in minutes. • With multiple guns, use the up and down arrows to view remaining potlives. The multi-gun LEDs will blink green when that gun's potlife is being displayed, the other mutli-gun LEDs will be off. • Screen returns after displaying the remaining potlife for 5 seconds. • If selected gun is purged, display will show PRGD.
 TI01936	**Ratio Button** • Displays ratio. • Green LED remains lit while displaying the current ratio. • To see the current ratio press the Ratio Button. It will display the ratio. • Turns off after 5 seconds.
 TI01933	**Pressure Button** • Not used at this time.
 TI01935	**Flow Rate Button** • Displays flow rate. • Green LED remains lit while displaying the flow rate. • To see the current flow rate press this flow rate button. It will display the flow rate until the button is pressed again. This will remain on the display to allow the operator to adjust pressure/flow on the gun. If this button is pressed again, this display will be turned off or if another button is pressed.
 TI01931	**Mix Button** • Starts mix mode. • Green LED remains lit while in mix mode. • Green LED blinks during a mix fill. • In Idle mode, the mix LED and the standby LED both blink.

Button	Function
 TI01929	**Standby Button** • Starts standby mode • Green LED Standby Button AND Green Mix Button LED both blink when in System Idle Mode.
 TI01932	**Purge Button** • Starts purge mode. • Green LED remains lit while in purge mode. • Multi-Gun Select indicator will blink BLUE showing the status of which gun is in Flush/Purge mode.

Booth Control Basic Input for Hazardous Location PVMBM01-24

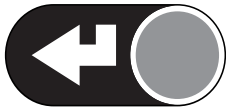
1. Select the desired recipe using the arrow up, or arrow down, buttons.
2. Press the enter button to start the recipe change.
3. Recipe change will cycle through the guns flush/purge sequence first, then the mix fill sequence of each gun in numerical order.



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:Hazardous Booth Control interface

Button Function Table

Button	Function
	**Multi Gun Select Status** • The multi-gun button toggles through the status of each gun. • It will flash each gun and that gun's status on the booth control screen. If only one gun is part of the recipe, pressing this button will only display the gun designated by the current recipe.
	**Up Button** • Scrolls recipe numbers up. • Scrolls gun selection up in multi-gun select mode. • Scrolls potlife for each gun. • Hold to scroll
	**Down Button** • Scrolls recipe numbers down. • Scrolls gun selection down in multi-gun select mode. • Scrolls potlife for each gun. • Hold to scroll
	**Enter Button** • Enters selected recipe and starts a color change sequence.
	**Clear Alarm Clear Button** • Press twice to clear alarm.
	**Job Complete Button** • Signals that job is complete, and resets A, B, and solvent totals • Press to display the current job number on the booth control. Press a second time to log the current job and increment to the next job number. Times out after 5 seconds of inactivity
	**Potlife Button** • Displays potlife. • The display will toggle through the gun number and the potlife in minutes. If other guns are not shown, those other guns do not have mix material.
	**Ratio Button** • Displays ratio. • To see the current ratio press the Ratio Button. It will display the ratio. • Turns off after 5 seconds.

Button	Function
	**Pressure Button** • Not used at this time.
	**Flow Rate Button** • Displays flow rate. • To see the current flow rate press this flow rate button. It will display the flow rate until the button is pressed again. This will remain on the display to allow the operator to adjust pressure/flow on the gun. If this button is pressed again, this display will be turned off or if another button is pressed.
	**Mix Button** • Starts mix mode. • The display will toggle between gun number and mode (MIX).
	**Standby Button** • Starts standby mode • The display will toggle between gun number and mode (STBY).
	**Purge Button** • Starts purge mode. • The display will toggle between gun number and mode (1ST, 2ND, 3RD) until complete (STBY).

Glossary of Booth Control Terms

Term	Description
1st	First purge
2nd	Second purge
3rd	Third purge
BOOT	App is booting
DONE	Purge is done
FILD	Filled
FILL	Fill
FLSH	Flush
GUN#	Gun number, one or two.
IDLE	Idle state
MIX	Mix mode (spray)
NONE	After all alarms have been cleared/no alarms
PLFE	Potlife
PRLF	Pre-fill
PRG	Purge
PRGD	Purged
R###	Recipe number. (copy or reference from p56, Dashboard Table, Recipe, Loaded, Description: Displays the currently . . .)
STBY	Standby

HMI Screen Basic Input

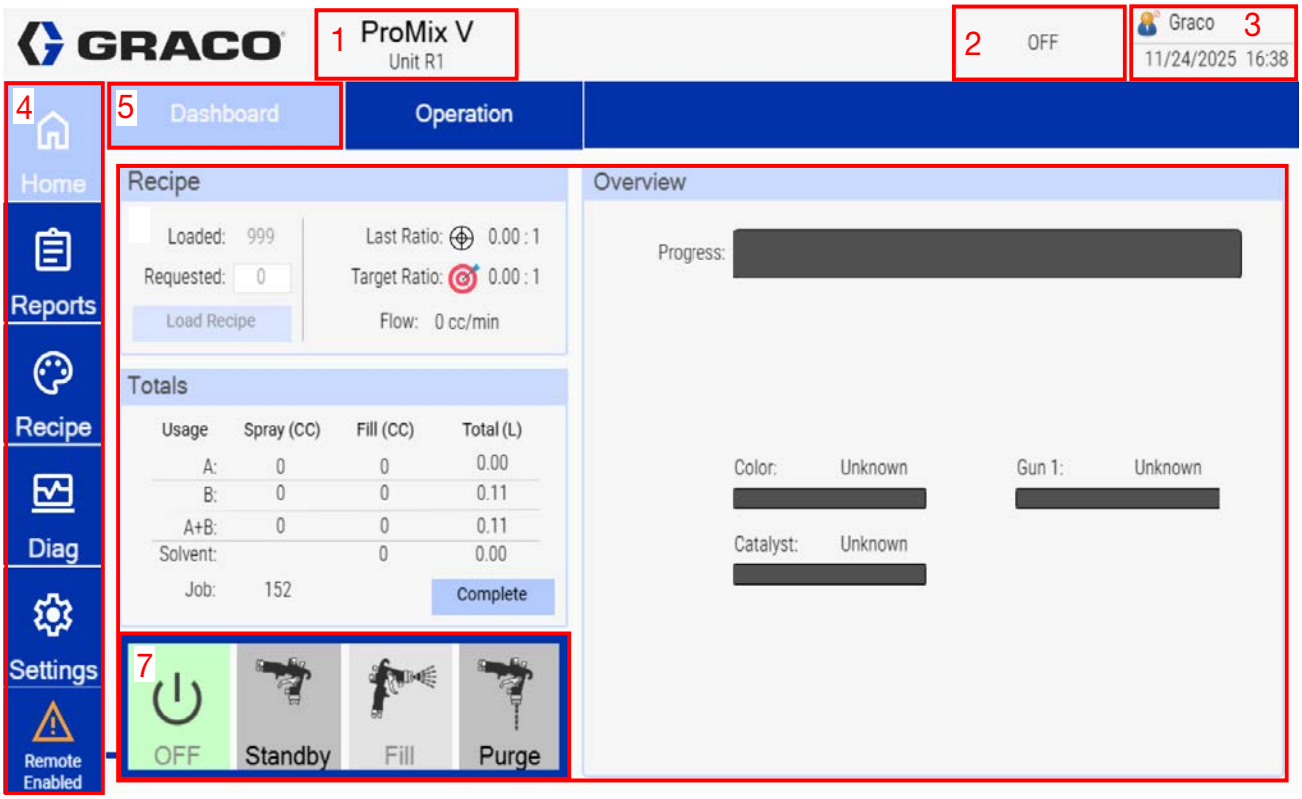


FIG. 16: HMI Screen interface

HMI Screen Input Function Table

Section	Function	Description
1	Unit Name	Displays the unique name given to the ProMix V. It can be changed under Settings - System.
2	Unit Status	Displays the current status of the unit such as Off, Standby, Mix, etc.
3	User Login, Date, and Time	Displays the date, time, and user login status. Click the person icon to log in or log out. See User Management in the Operation-Settings section for more information on user profiles and passwords. **NOTE:** Only one user can be logged in and controlling the unit at a time.
4	Screens Button Column	These are the available screens a user can access to operate and make changes to the unit. Click the button to navigate to the desired set of screens. The button for the active screens will change from dark blue to light blue.
5	Tab Row	These display different options within a set of screens for the user to interact with such as changing settings, viewing material usage, operating the unit, etc. The active tab will change from dark blue to light blue.
6	Operating Window	This is where the user interacts with what is displayed under the active tab. For instance under Home - Dashboard they can load or change recipes, check flow rate, or complete a job. If remote control is enabled in settings they can operate the unit and allow a painter to start spraying parts. The progress of the unit in its current state is also shown.
7	Remote Enabled Control	When remote control is enabled in the settings menu a user can log in with another HMI device such as a laptop or tablet and also control the unit. The booth control still remains functional.

HMI Remote Operation

A Human-Machine Interface (HMI) is a user interface that enables a person to interact with a machine.

The ProMix V proportioner can be accessed and controlled when logged in as an authorized user using a tablet, laptop, or other similar device via a wireless or direct Ethernet connection. The purpose of a remote HMI connection is to assist on-site operators with system configuration, operation, monitoring, and troubleshooting.

HMI Operating Mode Changes (Local and Remote Access)

When logged in as an authorized user - either locally at the machine or remotely via a connected device - you have the ability to change the system's operating mode. Available modes include:

- Off
- Standby
- Fill/Spray
- Purge



Initiating Fill/Spray or Purge mode will pressurize the system. To prevent injury to the painter caused by unexpected pressurization, do not change operating modes without the painter's knowledge.

For monitoring purposes only, the ProMix V can be accessed remotely without logging in, using either the wireless module or a direct Ethernet connection.

Initial ProMix V Setup

Power On

The electrical components in the ProMix V cabinet can be turned off or on by rotating the main power switch (A).

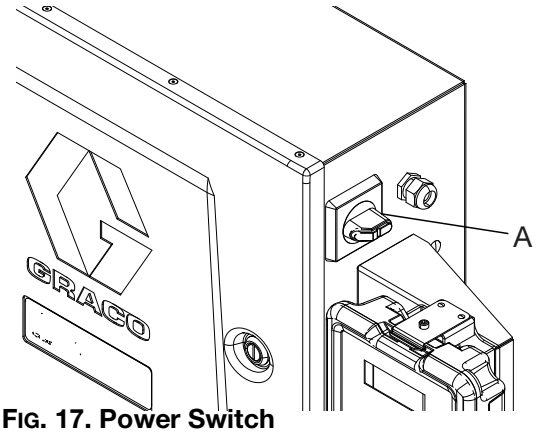


FIG. 17. Power Switch

The following setup is completed using the HMI device (tablet, laptop, etc.), not included with the ProMix V. See **Connect Customer Supplied HMI**, page 57 for further operation procedures.

Settings Configuration:

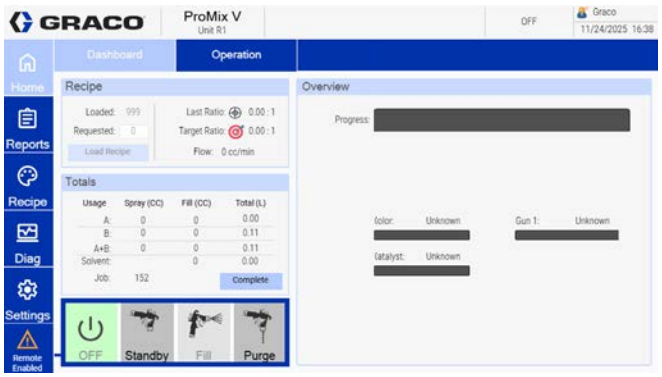
1. Before using the ProMix V additional setup is required using the HMI. Rotate the power switch to turn the ProMix V on. See FIG. 17.

2. After the ProMix V has started the user will need to connect to the unit either wirelessly, or with a direct Ethernet cable connection. See **Connecting to the User Interface**, page 57.

3. Once a HMI device is connected to the ProMix V, an authorized user must be logged in to change settings. Click on the person icon in the top right corner of the HMI screen. A pop up will appear to enter the username and password. The default username is Admin and the default password is Admin. These can be changed at any time. See User Management under Settings-System in the **Settings**, page 74 section for information on additional user profiles and passwords. Click the Login button to complete the process.

NOTE: Only one user can be logged in and controlling the unit at a time.

4. From the HMI home screen click the off button to put the ProMix V into the off state. The ProMix V must be turned off and inactive to make changes.



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FIG. 18. Off State

5. Navigate to the Settings screens and select the Hardware tab. Configure the ProMix V using the **Hardware Settings**, page 42 and description table.

Hardware Settings

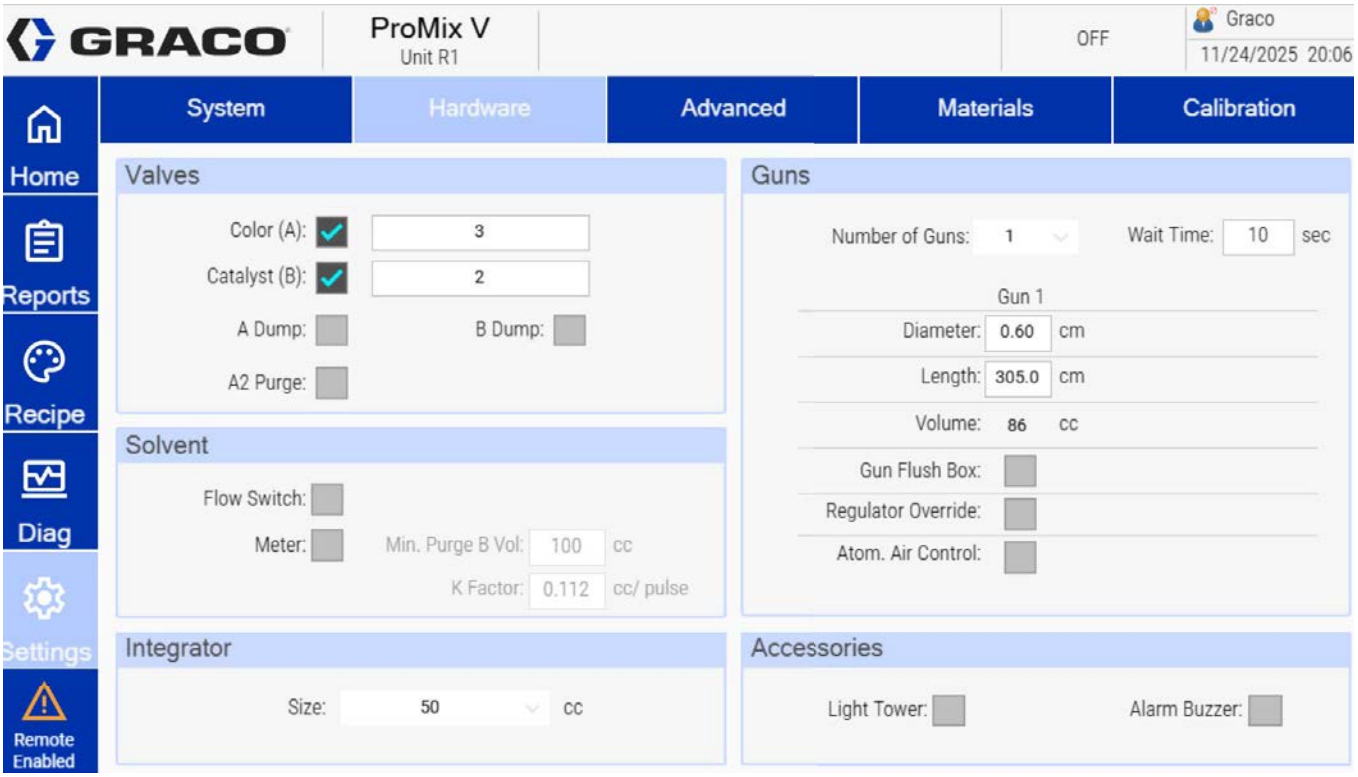


FIG. 19. Hardware Settings Screen

Hardware Settings Table

Selection	Function	Display Values	Description
Valves	Color (A)	Checkbox, 1-7	Used with multiple color units having a color valve stack installed. Can control up to 7 valves. Enable and select the number of colors.
	Catalyst (B)	Checkbox, 1-2	Used with multiple catalyst units having a catalyst valve stack installed. Can control up to 2 valves. Enable and select the number of catalysts. If using an acid unit this should be enabled and the number set to 1 or more.
	A Dump	Checkbox	Used when there is a dump valve installed on the component A side. Material before the dose A valve is sent to a waste container during a pre-fill and flush. This makes a color change more efficient as that material does not have to travel through the hose and gun. Enable if installed.
	B Dump	Checkbox	Used when there is a dump valve installed on the component B side. Material before the dose B valve is sent to a waste container during a pre-fill and flush. This makes a catalyst change more efficient as that material does not have to travel through the hose and gun. Enable if installed.
	A2 Purge	Checkbox	Used when there is an additional purge valve installed on the component A side. Often used to supply water or other blends of cleaning material compatible with the resin and mixed material Enable if installed.
Solvent	Switch	Checkbox	Used to confirm that solvent is flowing when purging. Enable if installed.
	Meter	Checkbox	Used to track the amount of solvent usage when purging. Enable if installed.
	Minimum Purge B Vol	cc's	Used only when a solvent meter is installed and activates an alarm if the minimum volume isn't met during a purge. This helps ensure sufficient purging has occurred. Enter the minimum required volume in cc's.
	K Factor	0.01-5	K Factor is the amount of material that passes through the meter per pulse described as cc/pulse. It is pre set at 0.112 and can be adjusted for each meter here. It will also update after a meter calibration.
Integrator	Size	10, 25, 50, or 100 cc	Size of the material integrator in cc's coming out of the mix manifold. Chose the size installed in the unit.

Selection	Function	Display Values	Description
Guns	Number of Guns	1 - 2	Number of guns used with the unit. Guns must be used in numerical order. For example, if 2 guns are enabled in settings, gun 2 can not be selected in a recipe without also enabling gun 1. Choose number of guns installed.
	Diameter	0.1 - 5.0	Used to calculate the volume in each hose going to each gun. Enter the diameter in cm for each hose for every gun installed.
	Length	1 - 10,000	Used to calculate the volume in each hose going to each gun. Enter the length in cm for each hose for every gun installed.
	Volume	# of cc's	Calculated based off the user entered hose diameter and length for each gun. This is critical to ensure accurate filling.
	Gun Flush Box	Checkbox	Allows a gun to be automatically filled and purged without requiring the user to hold the trigger. The unit requires a dedicated pressure switch, solenoid, and air valve for each gun flush box installed. Enable for each gun if a gun flush box is installed.
	Regulator Override	Checkbox	Atomizing air turned on ONLY when in spray mode. All other modes atomizing air is disabled. Enable for each gun if a regulator override kit is installed.
	Air Shut Off	Checkbox	Automatically disables air to the gun during standby, fill, flush, and purge to prevent atomizing solvent or creating a mess. The unit requires a dedicated solenoid and air valve for each gun. Enable for each gun if an air shut off kit is installed.
Accessories	Light Tower	Checkbox	Used to visually alert if the unit is in the alarm state. Enable if installed.
	Alarm Buzzer	Checkbox	Used to audibly alert if the unit is in the alarm state. Enable if installed.

6. If any other ProMix V settings changes are desired such as setting dosing alarms, enabling remote control from the HMI, renaming the unit, or setting a password, use the settings screens to update those parameters. See **HMI Screens**, page 61.

Recipe Setup

Recipe Configuration

1. Using the HMI select the recipe button on the side bar and then select the config tab.
2. Using the recipe configuration table, configure the recipe(s) as it corresponds to the application.

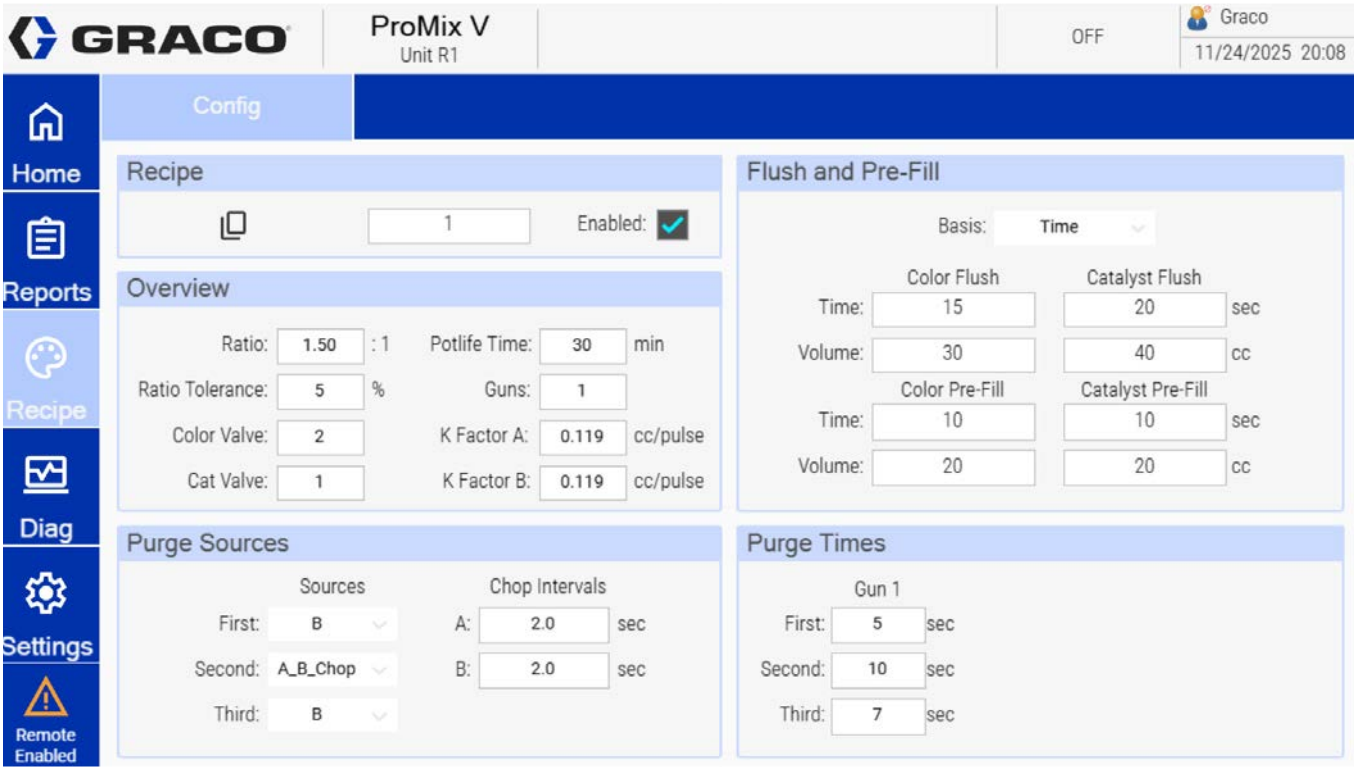


FIG. 20. Recipe Configuration Screen

Recipe Configuration Screen Table

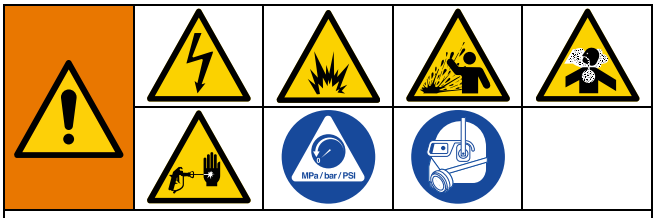
Selection	Function	Display Values	Description
Recipe	Copy	Select	Click on the paper copy icon to save the displayed recipe settings to other designated recipes. A pop up window will appear. Choose the start and end value for recipe numbers to copy the information to.
	Number	0 - 200	Number of the recipe to be configured. Enter a value. NOTE: Recipe 0 allows users to set up a full flush, with no material load following. Only the Flush section can be configured on this screen. Typically used in multiple color units to clean out material lines without loading a new color and also at the end of a shift to prevent hardening of catalyzed material.
	Enabled	Checkbox	Check this box to allow each recipe to be used during normal operation. If not enabled a recipe will not be allowed to be loaded from the HMI screen and will not show up when scrolling with the booth control.

Selection	Function	Display Values	Description
Overview	Ratio	0.0- 50.0	Mix ratio of component A (color) over component B (catalyst). Enter the mix ratio of component A over component B (0.0:1 to 50:1).NOTE: If ratio is set to 0 the unit will dispense component A only, acting as a 1k unit.
	Potlife Time	0 - 999	Related to how long it takes for the material to set up or start curing, the amount of time in minutes before an alarm is generated and the unit goes into standby. The operator then has to either purge or spray the material out before resuming normal operation. Time entered is typically half of the actual material cure time. Enter a time. NOTE: If potlife time is set to 0 then the potlife alarm is disabled.
	Ratio Tolerance	0 - 20	Percentage of acceptable variance that the unit will allow before a ratio alarm occurs. A recommended starting point is 5%. Enter a value.
	Guns	1 - 2	Number of guns active in this recipe. Choose the number of guns being used. Guns must be used in numerical order. For example, if 2 guns are enabled in settings, gun 2 can not be selected without also enabling gun 1.
	Color Valve	1 - 7	If present, the component A (color) valve to be used in this recipe. Choose a valve.
	Cat Valve	1 - 2	If present, the component B (catalyst) valve to be used in this recipe. Choose a valve.
	K Factors A, B	0.01 - 1	Amount of material that passes through the meter per pulse described as cc/pulse. It is pre set at 0.119 and can be adjusted for each meter here. It will also update after a meter calibration and can be different for each recipe.

Selection	Function	Display Values	Description
Purge Sources (A, A2, or B)	First Source	A, B, A-B Chop, or A2	Valve that is opened for the first part of the purge sequence. Typically air from purge valve A, but can also be set to air solvent chop with A-B Chop, solvent from purge valve B, or purge valve A2 if enabled. Choose a valve.
	Second Source	A, B, A-B Chop, or A2	Valve that is opened for the second part of the purge sequence. Typically air solvent chop with A-B Chop, but can also be set to air from purge valve A, solvent from purge valve B, or purge valve A2 if enabled. Choose a valve.
	Third Source	A, B, A-B Chop, or A2	Valve that is opened for the third and last part of the purge sequence. Typically solvent from purge valve B, but can also be set to air from purge valve A, air solvent chop with A-B Chop, or purge valve A2 if enabled. NOTE: It is recommended that the unit be left loaded with solvent when not in use to prevent any air or moisture from hardening any leftover contaminants. Choose a valve.
	A Chop Interval	0.1 - 10.0	Duration in seconds that purge A valve is open when A-B chop is selected as a purge source. Enter a time.
	B Chop Interval	0.1 - 10.0	Duration in seconds that purge B valve is open when A-B chop is selected as a purge source. Enter a time.
Flush and Pre-Fill	Basis	Time or Volume	Method in which the unit uses to determine if the passages from the color and catalyst stack to the inlet of the mix manifold are fully filled or flushed. If Time is selected the unit will run for the set time, but still confirm that the listed volume was also met at a minimum, otherwise an alarm will occur. If Volume is selected the unit will run until that volume limit is met, but it has to happen within the listed time, otherwise an alarm will occur. Choose time or volume. NOTE: to skip any flush or pre-fill step, set both the time and volume to 0. if both are not set to 0, an alarm will likely occur during that step in a recipe change process. NOTE: To skip any flush or pre-fill step set both the time and volume to 0. if both are not set to 0, an alarm will likely occur during that step in a recipe change process.
	Color Flush Time	0 - 30	Time in seconds required to flush the passages from the color stack to dose valve A. If a dump valve is being used it will open and flush for this amount of time, otherwise flush material has to exit out through the gun. Enter a time.
	Color Flush Volume	0 - 1000	Volume in cc's required to flush the passages from the color stack to dose valve A. If a dump valve is being used it will open and flush for this amount of time, otherwise flush material has to exit out through the gun. Enter a volume.
	Catalyst Flush Time	0 - 30	Time in seconds required to flush the passages from the catalyst stack to dose valve B. If a dump valve is being used it will open and flush for this amount of time, otherwise flush material has to exit out through the gun. Enter a time.

Selection	Function	Display Values	Description
Flush and Pre-Fill	Catalyst Flush Volume	0 - 1000	Volume in cc's required to flush the passages from the catalyst stack to dose valve B. If a dump valve is being used it will open and flush for this amount of time, otherwise flush material has to exit out through the gun. Enter a volume.
	Color Pre-Fill Time	0 - 30	Volume in cc's required to fill the passages from the color stack to dose valve A. If a dump valve is being used it will open and fill for this amount of time, otherwise fill material has to exit out through the gun. Enter a volume. There is approximately 20 cc's of volume between the inlet to the flow meter, to the beginning of the mix chamber. This does not include the volume of the color stack. For only one color or catalyst, the volume inside the mix manifold to pre-fill is approximately 9 cc's.
	Color Pre-Fill Volume	0 - 1000	Volume in cc's required to fill the passages from the color stack to dose valve A. If a dump valve is being used it will open and fill for this amount of time, otherwise fill material has to exit out through the gun. Enter a volume.
	Catalyst Pre-Fill Time	0 - 30	Time in seconds required to fill the passages from the catalyst stack to dose valve B. If a dump valve is being used it will open and fill for this amount of time, otherwise fill material has to exit out through the gun. Enter a time. There is approximately 20 cc's of volume between the inlet to the flow meter, to the beginning of the mix chamber. This does not include the volume of the color stack. For only one color or catalyst, the volume inside the mix manifold to pre-fill is approximately 9 cc's.
	Catalyst Pre-Fill Volume	0 - 1000	Volume in cc's required to fill the passages from the catalyst stack to dose valve B. If a dump valve is being used it will open and fill for this amount of time, otherwise fill material has to exit out through the gun. Enter a volume. There is approximately 20 cc's of volume between the inlet to the flow meter, to the beginning of the mix chamber. This does not include the volume of the color stack. For only one color or catalyst, the volume inside the mix manifold to pre-fill is approximately 9 cc's.
Purge	First Time	0 - 300	Duration in seconds that the purge first source is open during a purge sequence. Enter a time.
	Second Time	0 - 300	Duration in seconds that the purge second source is open during a purge sequence. Enter a time.
	Third Time	0 - 300	Duration in seconds that the purge third source is open during a purge sequence. Enter a time.

Prime the ProMix V



The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Follow the **Grounding** procedure page 27.

Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates. Wear proper protective clothing or gear to prevent injury from toxic fumes and splashing fluid.

The following steps must be done before the meters are calibrated.

1. Adjust the main air pressure. Do not use less than 85 psi (0.586 MPa, 5.86 bar) air pressure to operate properly.

2. If this is the first time starting up the ProMix V, or if lines may contain air, purge as instructed in **Purge the ProMix V**, page 54.

3. From the booth control, press standby . Make sure that the ProMix V is in standby mode.

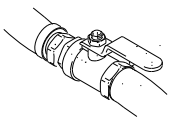
4. Adjust color and catalyst fluid supplies as needed for your application. Use lowest pressure possible.





To avoid serious injury from equipment rupture, do not exceed the maximum working pressure shown on the ProMix V identification label or the lowest rated system component, such as fluid pumps, spray gun, fluid hose, fluid pressure regulator, etc. See Technical Specifications in all equipment manuals.

5. Open the fluid supply valves to the ProMix V.



6. If using an electrostatic gun, shut off the electrostatics before spraying.

7. If using a gun flush box, place the gun in the box and close the lid.

8. Use to change to desired color recipe.

9. Press . The ProMix V will purge then load mixed material to the gun. If the gun flush box is not used, trigger the gun into a grounded metal pail until the ProMix V returns to standby.

Meter Calibration

The meters on the ProMix V have been pre-calibrated for a K factor of 0.119. Depending upon the specific material being mixed and dispensed the meters may need to be re-calibrated for those materials. Before using the ProMix V, see **Meter Calibration Procedure**, page 79 to confirm, or calibrate the meters to the specific material being used.

Dose and Purge Valve Settings

Dose and purge valves that are factory installed are factory set with the valve air cap hex nut (E) 1-1/4 turns out from fully closed. This setting optimizes fluid flow rates and valve response time for the majority of materials. To open dose or purge valves (for high viscosity materials), use a 3/4 in.(19 mm) wrench to turn valve air cap hex nut counterclockwise. To restrict fluid flow and close dose or purge valves (for example low viscosity materials), turn the valve air cap hex nut clockwise. See FIG. 21. Maximum restriction is 1/4 - 1/3 turn from closed. Closing the valve further will cause inconsistent restrictions and potential for the valve getting plugged.

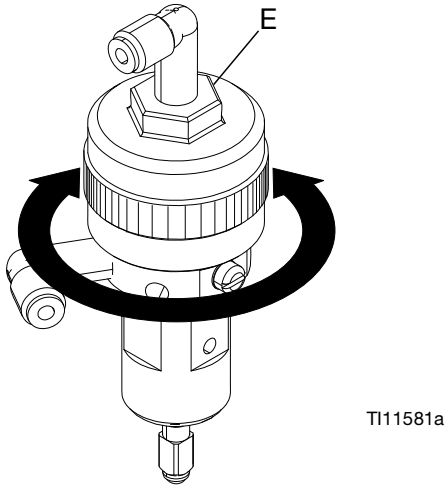


FIG. 21. Valve Adjustment

Operation

Pressure Relief Procedure

Follow the pressure relief procedure whenever maintenance or repair is required.

Further details regarding steps using the **Booth Control** can be found starting on page 31.

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, and splashing fluid, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Using the booth control, place the ProMix V in standby mode by pressing standby on the device.
2. Shut off fluid supply pumps for all colors, catalysts, and solvent by turning off the air supply valve (AS) and bleeding off the fluid supply drain valve (DV) from all of the supply pumps. FIG. 22 is shown as an example but your specific supply pump arrangement may vary.

   If the proportioner is being fed from a centralized supply or circulation system: close each supply line isolation fluid valve to the proportioner and any return line valves from the proportioner.

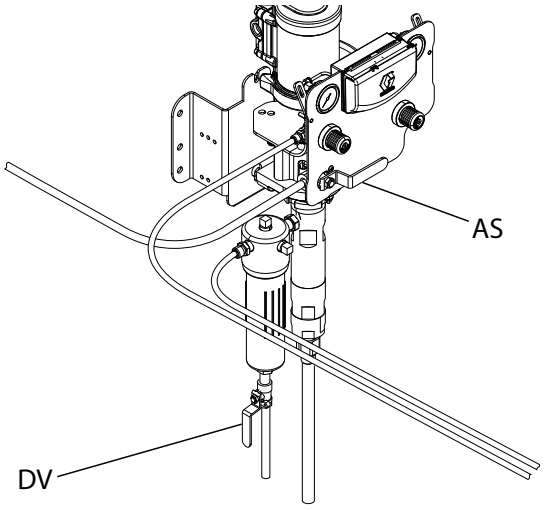


FIG. 22. Supply Pump Fluid and Air Shutoff Valves

3. Shut off the atomizing air supply that is connected to atomizing air inlet (KA) to remove air pressure going to the gun.

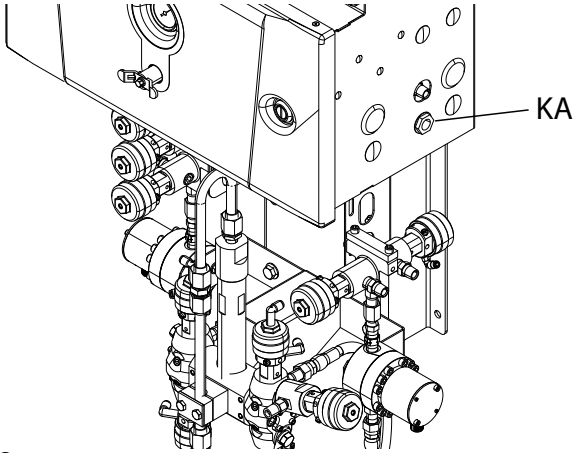


FIG. 23.

4. Trigger the gun to relieve the pressure in either of the following steps:
   a. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.
   b. Place the gun into the gun flush box and close the lid.

5. Purge the solvent in the supply line, mix manifold and mixed material hoses by pressing the purge  on the booth control.

6. Verify that the solvent pressure is reduced to 0.

7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:

   a. Very slowly loosen the tip guard retaining nut or the hose end coupling to relieve pressure gradually.

   b. Loosen the nut or the coupling completely.

8. Clear the obstruction in the hose or tip.

9. Shut off the main air inlet shutoff valve (M) to the ProMix V.

10. Slowly unscrew the chop air supply fitting (SF) going to the purge valve A (PA) at the inlet check valve to remove remaining air pressure.

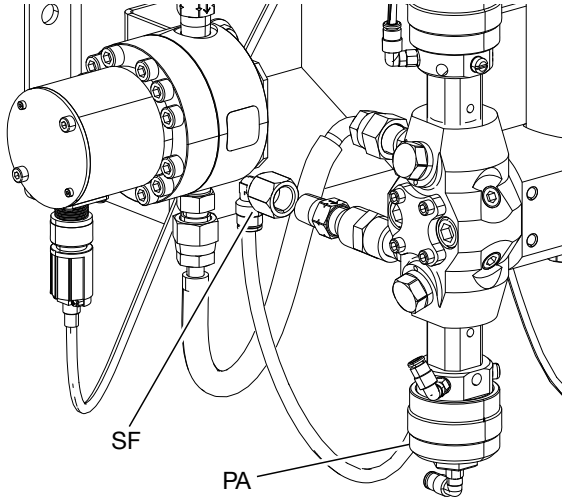


FIG. 24. Loosening the Chop Air Supply Fitting

11. Place an absorbent pad around the fluid fitting for each A side color valve to capture fluid as it relieved from the valve.

12. Slowly unscrew the fluid fitting by using a wrench on the line fitting and another wrench on the valve fitting. Relieve the pressure until there is no flow..

13. Repeat steps 12 and 13 for each A side color valve and the flush valve.

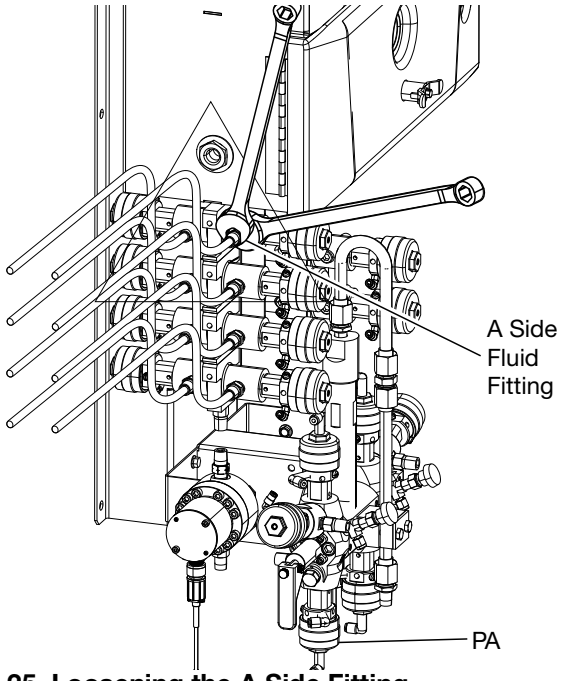


FIG. 25. Loosening the A Side Fitting

14. Slowly unscrew the chop solvent supply going to the purge valve B (PB).

15. Place an absorbent pad around the fluid fitting for each B side catalyst valve to capture fluid as it relieved from the valve.

16. Slowly unscrew the fluid fitting by using a wrench on the line fitting and another wrench on the valve fitting. Relieve the pressure until there is no flow.

17. Repeat steps 15 and 16 for each B side catalyst valve and the flush valve.

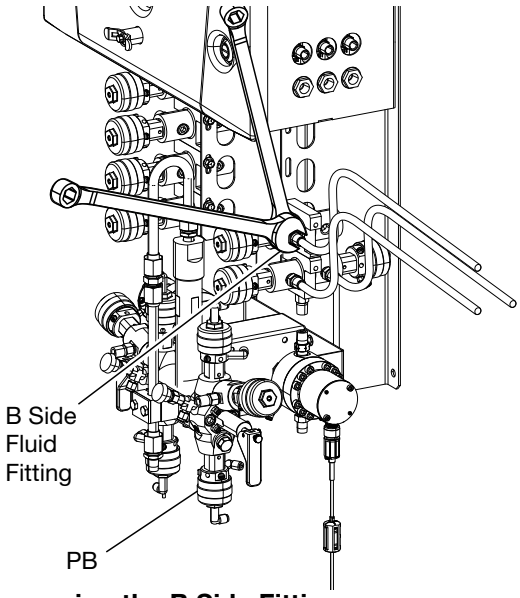


FIG. 26. Loosening the B Side Fitting

Spray

1. Before spraying make sure the system is properly loaded with material. See **Prime the ProMix V**, page 49.
2. If desired, calibrate the meters as described in **Meter Calibration Procedure**, page 79. Meter K-factors will update automatically based on calibration results.
3. Press mix on the booth control. The ProMix V will load the correct volume based on hose length and diameter for the recipe selected. Once material is loaded, the ProMix V returns to standby. Press mix again to spray the active recipe.
4. Press flow rate to view the current flow rate. The fluid flow rate shown on the booth control screen is for either color or catalyst, depending on which dose valve is open.
   - **If the fluid flow rate is too low:** increase air pressure to component A and B fluid supplies or increase the regulated fluid pressure of mixed material.
   - **If the fluid flow rate is too high:** reduce the air pressure to component A and B fluid supplies, close the dose valves further, or decrease the regulated fluid pressure of mixed material.
5. Turn on atomizing air to the gun. Check the spray pattern as instructed in your spray gun manual.

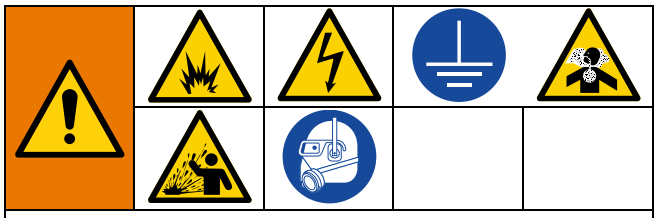
NOTES:

- Pressure adjustments of each component will vary with fluid viscosity. Start with the same fluid pressure for color and catalyst, then adjust as needed.
- Do not use the first 4-5 oz. (120-150 cc) of material as it may not be thoroughly mixed due to errors while priming the ProMix V.

NOTICE

Do not allow a fluid supply tank to run empty. It is possible for air flow in the supply line to turn gear meters in the same manner as fluid. This can damage the meters and lead to the proportioning of fluid and air that meets the ratio and tolerance settings of the equipment. This can further result in spraying uncatalyzed or poorly catalyzed material.

Purge the ProMix V



The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Follow the **Grounding**, page 27 procedure.

Purging fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates. Wear proper protective clothing or gear to prevent injury from toxic fumes and splashing fluid.

Purge the ProMix V:

- At the end of potlife
- Breaks in spraying that exceed the potlife
- Overnight shutdown or end of shift
- The first time material is loaded into equipment
- Servicing
- Shutting down equipment for an extended period of time

1. Press standby from any screen to put the ProMix V in standby.
2. Trigger the gun to relieve pressure.



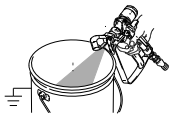
3. If you are using a high pressure gun, engage the trigger lock. Remove spray tip and clean tip separately.



To reduce the risk of fire and explosion when using an electrostatic gun, always shut off electrostatics before purging the gun

4. If using an electrostatic gun shut off the electrostatics before purging the gun.
5. Set the solvent supply pressure regulator at a pressure high enough to completely purge the ProMix V in a reasonable amount of time but low enough to avoid splashing or an injection injury. Generally, a setting of 100 psi (0.7 MPa, 7 bar) is sufficient.
6. If using a gun flush box, place the gun into the box and close the lid.
7. Press purge and the purge sequence automatically starts.

If the gun flush box is not used, trigger the gun into a grounded metal pail until the purge sequence is complete.



When done purging, the ProMix V automatically switches to standby mode.

8. If the ProMix V is not completely clean, repeat step 6.

NOTE: If necessary, adjust purge sequence times so only one cycle is required.

9. Trigger the gun to relieve pressure. Engage trigger lock.
10. If spray tip was removed, reinstall it.
11. Adjust the solvent supply regulator back to its normal operating pressure.

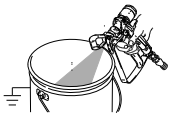
NOTE: The ProMix V remains full of solvent.

If your ProMix V uses 2 or more guns, you must trigger both guns simultaneously during a purge to purge both guns and lines. Verify that clean solvent flows from each gun. If not, repeat purge or clear clog/blockage.

Color Change Procedures

Multiple Color ProMix V Models

1. Shut off air to the gun.
2. If using a gun flush box, place the gun in the box and close the lid.
3. Switch to standby mode by pressing standby at the booth control.
4. Use the scroll buttons, up or down, to select the new recipe. Press enter to begin the color change sequence.
5. If a gun flush box is not used, trigger the gun into a grounded metal pail until the color change sequence is complete.



6. When the color change indicator light stops flashing on the booth control, the color change sequence is complete.

   NOTE: The color change timer does not start until the gun is triggered and fluid flow is detected. If no flow is detected within 2 minutes and if the fill is controlled by volume the color change operation aborts and the ProMix V enters the standby mode at the previous recipe.

7. When you are ready to spray, remove the gun from the gun flush box if used, and close its door.

   NOTE: The gun flush box door must be closed for the atomizing air valve to open.

8. Press Mix to start spraying.

Color Change Sequences

- The ProMix V uses old recipe data for the flush and purge cycle.
- The ProMix V uses the new recipe data for the fill cycle.
- For the one gun flush box (GFB) option, the spray gun must be inserted in the GFB during the entire color change cycle (flush, purge, and fill). The GFB trigger output will be on during the recipe change cycle.
- For the two gun flush box (GFB) option, both spray guns must be inserted in the GFB during the entire color change cycle (flush, purge ,and fill). The ProMix V will turn each GFB trigger output on and off based on the preset time for each gun.
- Dump Valve B is required for an acid catalyst change.

Color Flush

- This sequence flushes out the color with a compatible flush material (such as solvent or water), from the color stack to the dump valve A.
- The color stack flush valve and the dump valve A open during the flush cycle.
- The color stack flush valve closes when the flush time expires or flush volume is completed.

NOTE: If dump valve A is not being used, then the material is sent through dose valve A. The gun must be triggered or in a gun flush box to complete the flush cycle.

Color Fill

- This sequence fills the line with the new color all the way to the dump valve A.
- The new color valve and the dump valve A open during the fill cycle.
- The new color valve and the dump valve A close when the fill time or fill volume is completed.

NOTE: If Dump valve A is not being used then the material is sent through dose valve A and the gun must be triggered or in a gun flush box to complete the fill cycle.

Catalyst Flush

- This sequence flushes out the catalyst with a compatible flush material or solvent, from the catalyst stack to the dump valve B.

- The catalyst stack flush valve and the dump valve B open during the flush cycle.
- The catalyst stack flush valve closes when the flush time expires or flush volume is completed.

NOTE: If dump valve B is not being used then the material is sent through dose valve B and the gun must be triggered or in a gun flush box to complete the flush cycle.

Catalyst Fill

- This sequence fills the line with the new catalyst all the way to the dump valve B.
- The new catalyst valve and the dump valve B open during the fill cycle.
- The new catalyst valve and the dump valve B close when the fill time expires or the fill volume is completed.

NOTE: If dump valve B is not being used then the material is sent through dose valve B and the gun must be triggered or in a gun flush box to complete the flush cycle.

First Purge

NOTE: Purge valve A is usually plumbed with air and purge valve B is usually plumbed with solvent.

Select the first purge source (A, B, or A2 valve) and first purge time. For most applications, air (purge valve A is selected.

The ProMix V purges the old material from the dose valves to the gun, using only the selected purge media (usually air). The selected purge valve opens during the First Purge Time and closes when the time expires.

Second Purge

Select the second purge source. For most applications A-B (air, solvent) chop is usually selected.

The air purge valve opens only during the air chop interval, and the flush valve opens only during the solvent chop interval. The number of chop cycles is determined by dividing the second purge time by the sum of the A and B chop intervals.

Third Purge

Select the third purge source (A, B, or A2 valve) and third purge time. For most applications, solvent (purge valve B) is selected.

A2 (water) or B (solvent) are last to be pushed through the hose. This is recommended as the next process in a recipe change is to load mixed material. It is recommended to mix fill against liquid versus an air column. Also selecting A (air) as last purge can be troublesome for most materials, specially if the system was left in that state for overnight, etc.

Pre-Fill

This sequence fills a material to the mix manifold and then B material to the mix manifold. This pushes solvent out of the mix manifold before mix fill.

The amount of pre-fill is set in each recipe under the pre-fill options.

There is approximately 20 cc’s of volume between the inlet to the flow meter to the beginning of the mix chamber, and this does not include a color valve stack. For only one color or catalyst, the volume inside the mix manifold to pre-fill is approximately 9 cc’s.

Fill

This sequence fills the line from the dose valves to the gun, and is also referred to as the mixed material fill. The ProMix V begins mixing color and catalyst until the until the hose and gun are fully loaded to the volume configured for the gun in settings.

Shut Down

If the ProMix V is requiring maintenance or a period of extended inactivity, the following procedure is to be used.

1. Follow **Purge the ProMix V**, page 54.
2. Close main air shutoff valve on air supply line and on ProMix V air control panel.
3. If maintenance is required perform the **Pressure Relief Procedure**, page 51.

NOTE: The ProMix V will restart in unknown recipe 999 and require a flush and purge before resuming normal operation.

Connect Customer Supplied HMI

The ProMix V requires a customer supplied device with a web browser and WiFi or Ethernet to support the ProMix V HMI.

Connecting to the User Interface

The user interface (HMI) is embedded into the Controller as an internal web page. A standard Internet browser application such as Microsoft Edge, Google Chrome, or Apple Safari, plus a wired or wireless connection, is all that is required to monitor and control the equipment.

Interface Connection Wireless

Please ensure you have the a WiFi enabled unit or have purchased and installed the WiFi kit available from Graco before attempting to establish a wireless connection with the Controller Module. A wireless module is required to establish a connection using the instructions outlined here. Verify there is a wi-fi antenna connected to the wireless module.

NOTE: Connecting wirelessly to the Controller Module terminates the HMI device's internet access. If using a mobile device with cellular data it is recommended to disable cellular data to avoid connection issues. Devices may try to prioritize Internet access and in doing so would disconnect from the ProMix V WiFi connection.

1. Establish a Wireless Connection. Navigate to Wi-Fi settings on your iPad, Android tablet, or Windows PC device. Under networks (iPad) or available networks (Android/PC) choose the SSID as indicated on the sticker attached to the side of the wireless module. The password is also shown here. Additionally, this information may also be posted on the inside of the enclosure door.

2. Once properly configured and connected, open an Internet Browser and enter "192.168.1.101/promix" in the address bar. The user interface should appear if you have properly configured and connected to the Controller Module.

Interface Connection Ethernet Wired

Use of a standard Ethernet patch cable is recommended as the most reliable and permanent connection. The patch cable must be Cat 5E or better, and not exceed 90 meters or 295 feet.

Network Connection

Consult your local IT or OT network professional *before* connecting the device into any network or switch with other devices for detailed instructions.

Direct Connection

When directly connecting a PC or tablet to the equipment, reference the following settings.

NOTE: Some PCs or tablets may require the use of an Ethernet adapter accessory if the device not have an Ethernet port.

PC or Tablet Settings

- Manual IP address: 192.168.0.xxx
- Subnet Mask: 255.255.255.0
- **Windows 11 PC**, page 58.
- **Windows 10 PC**, page 59.
- **Apple iPad**, page 59.
- **Android Tablet**, page 60.

Controller Module – Port X4

- Factory IP Address: 192.168.0.101
- Subnet Mask: 255.255.255.0

Controller Module

The Controller Module is preconfigured for connection to port X4. The Controller Module has a static, or fixed, IP address of 192.168.0.101.

1. Rotate the power switch to turn the ProMix V on. See FIG. 17.

2. Once the HMI device is properly configured and connected to the Controller Module through the X4 port, open an Internet Browser and enter (192.168.0.101/promix) in the address bar. The user interface should appear if you have properly configured and connected to the Controller Module.

Windows 11 PC

The computer's Ethernet adapter must be configured properly to connect to the Controller Module. Some settings may require administrator privileges; contact your IT professional for additional assistance as required.

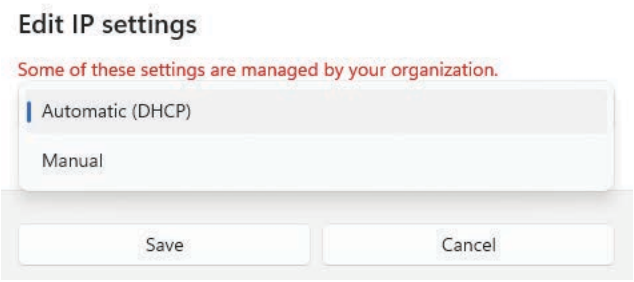
1. From the start menu, click open settings, network & Internet then Ethernet.
2. Select the appropriate Ethernet connection you are using.
3. Locate IP assignment and select edit.



TI03161

FIG. 27.

4. Select manual.

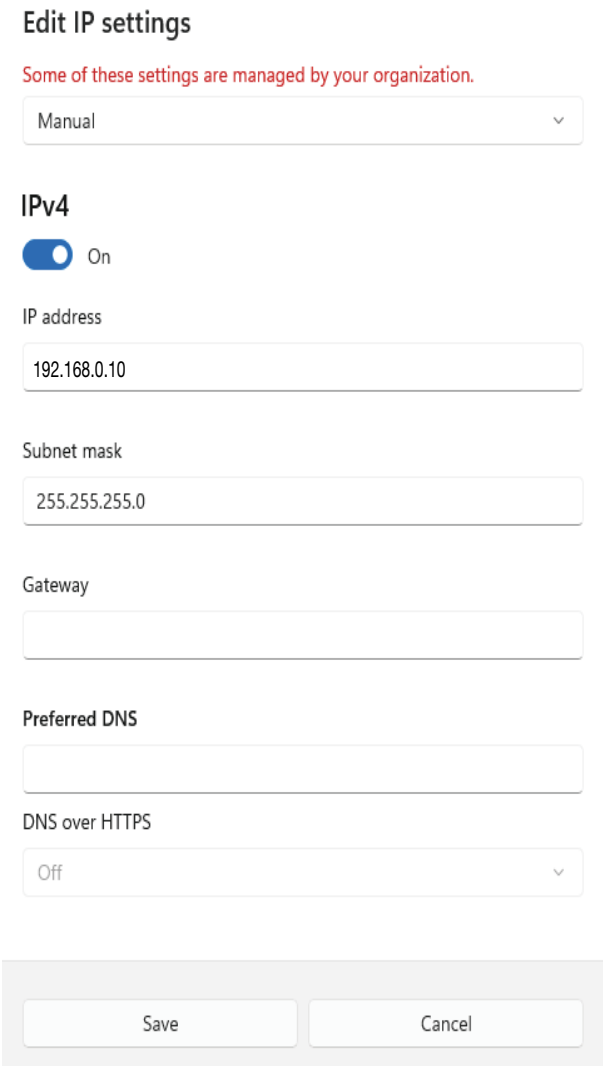


TI03162

FIG. 28.

5. The next screen requires the user to enter the following for **IPv4**. Leave all other fields empty.

- IP Address: 192.168.0.10
- Subnet Mask: 255.255.255.0



TI03163

FIG. 29.

6. Select save.

Windows 10 PC

The computer's Ethernet adapter must be configured properly to connect to the Controller Module. Some settings may require administrator privileges; contact your IT professional for additional assistance as required.

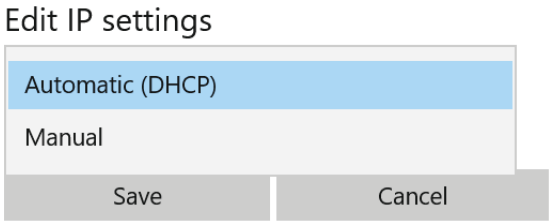
1. From the start menu, open the settings network & internet, then go to Ethernet.
2. Select the appropriate Ethernet connection you are using.
3. Locate IP assignment and select edit.



TI03164

FIG. 30.

4. Select manual.

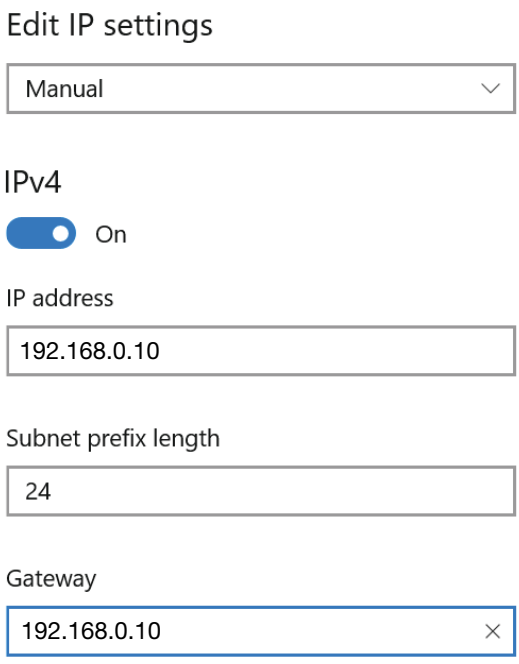


TI03165

FIG. 31.

5. The next screen requires the user to enter the following for IPv4. Leave all other fields empty.

- IP Address: 192.168.0.10
- Subnet Prefix: 24
- Gateway: 192.168.0.1



TI03166

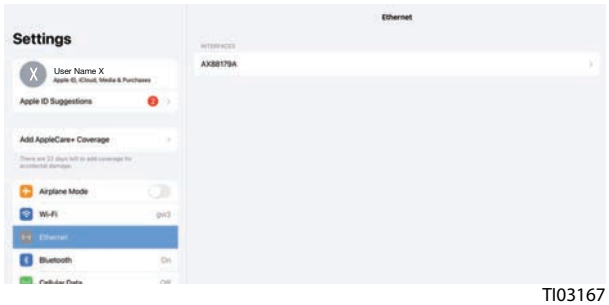
FIG. 32.

6. Select save.

Apple iPad

The tablet requires an accessory Ethernet adapter that must be configured properly to connect to the Controller Module. Each iPad may differ slightly from the example shown. Contact your IT professional for additional assistance.

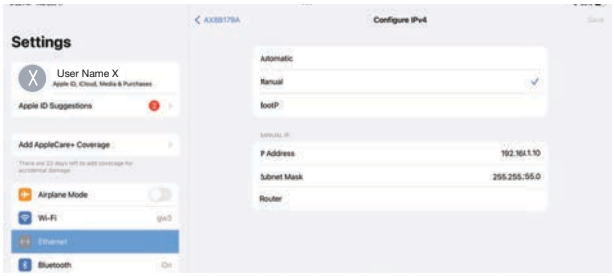
1. Insert an Apple iPad compatible Ethernet adapter.
2. Open settings, Ethernet, then select the appropriate interface.



TI03167

FIG. 33.

3. Select configure IP, select manual and enter the following information:



TI03168

FIG. 34.

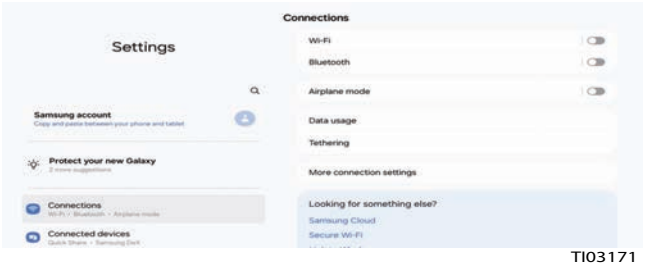
- IP Address: 192.168.0.10
- Subnet Mask: 255.255.255.0

4. Select save.

Android Tablet

The tablet requires an accessory Ethernet adapter that must be configured properly to connect to the Controller Module. Each tablet may differ slightly from the example shown. Contact your IT professional for additional assistance.

1. Insert an Android compatible Ethernet adapter.
2. Open settings, select connections, select more connection settings, then select Ethernet.



TI03171

FIG. 35.

3. If Ethernet is on, toggle off, then select configure Ethernet device.

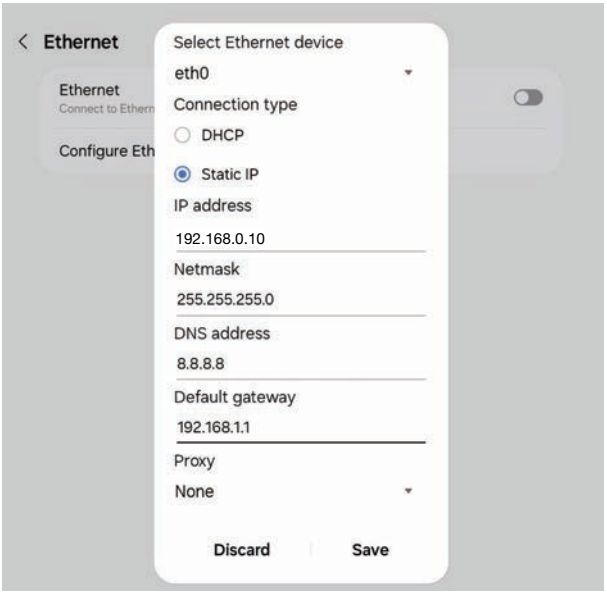


TI03173

FIG. 36.

4. Select static IP.
5. Enter the following information:

- IP Address: 192.168.0.10
- Netmask 255.255.255.0
- DNS Address: 8.8.8.8
- Default Gateway: 192.168.0.1



TI03174

FIG. 37.

6. Select save.
7. Toggle on Ethernet.

HMI Screens

Use the following screens and their associated tables to further customize and operate the ProMix V from the HMI. The tables describe every field seen on each screen and provide additional information on their function.

Home

Dashboard

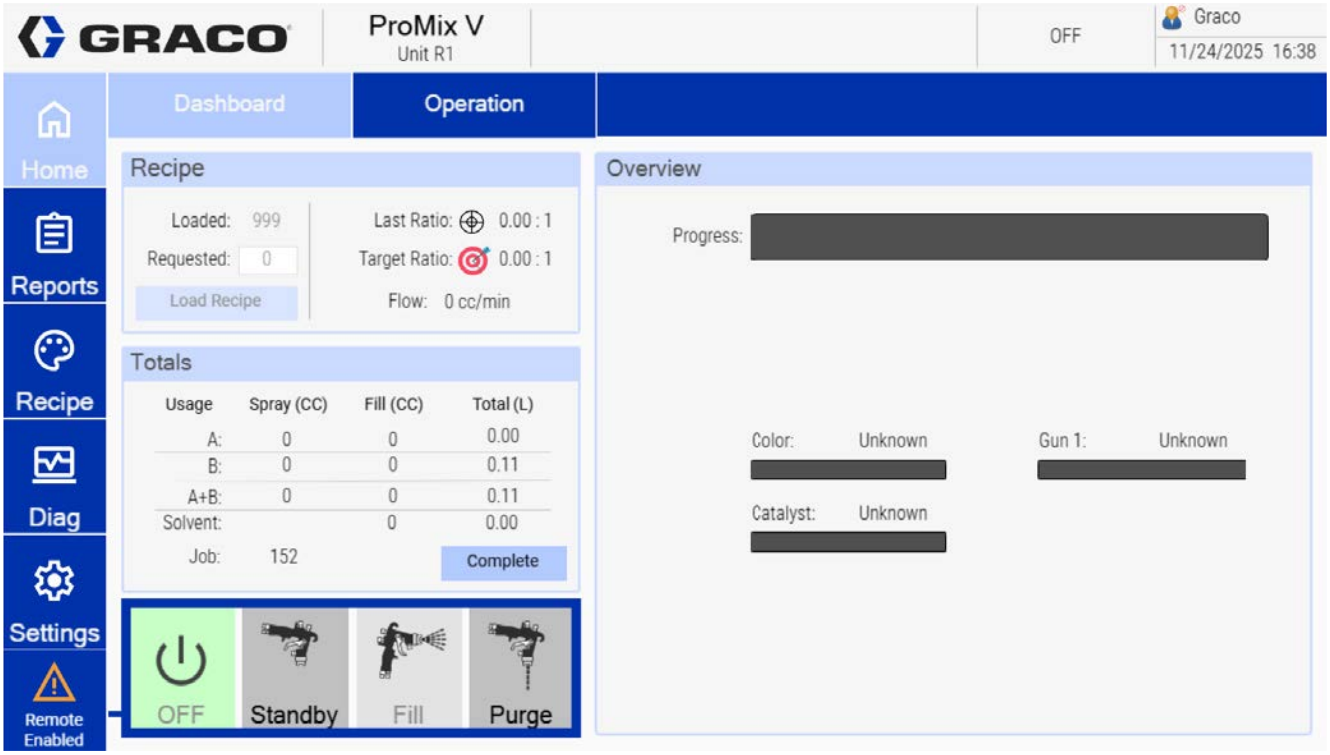


FIG. 38. Dashboard Screen

Dashboard Table

Section	Function	Values	Description
Recipe	Loaded	0-200	Displays the currently loaded recipe. If 999 is shown it means the unit does not know what the status of the material is, for instance when the machine is suddenly turned off. A flush and purge will be required before the next recipe can be loaded. This will happen automatically if the next requested recipe is 1-200. Otherwise to only flush and purge the unit recipe 0 can be chosen.
	Requested	0-200	Displays the recipe that will be loaded next. For painting operations choose from 1-200. To flush and purge the unit choose 0.
	Load Recipe	Button	Loads the recipe that is being requested. To operate first put the unit in Standby, then click the Load Recipe button.
	Last Ratio	1.0 - 50:1	Shows the actual ratio of the last dose.
	Target Ratio	1.0 - 50:1	Shows the desired ratio of the current recipe.
	Flow	cc/min	Shows the live flow when the unit is running.

Section	Function	Values	Description
Total	Usage	Fluid Components	Indicates the different components for which material usage is being tracked.
	Spray (cc)	cc's	Displays the amount of material dispensed for each component when the unit is in spray mode.
	Fill (cc)	cc's	Displays the amount of material dispensed for each component during the fill process.
	Total (L)	Liters	Displays the total amount of material dispensed for each component during the current job.
	Complete	Button	A way to manually complete the current job and store the data in the reports section. Click this button to end the current job and start a new one. **NOTE**: A recipe change will also finish the current job and start a new one automatically.
Control Buttons	Off	Button	Puts the unit in the off state. The current recipe will become unknown and revert to 999. A recipe will need to be loaded to resume operation which requires a flush and purge. Use this button to quickly turn the unit off if there is an issue or a hardware setting that needs to be changed, but operation will resume shortly as mixed material could be left in the unit. If the unit will stay off, perform a purge first. Click this button to turn the unit off.
	Standby	Button	Puts the unit in the standby state. Use this button to take a break from spraying or to change settings other than for the loaded recipe. Spraying may resume as long as the pot life time has not been exceeded, in which case an alarm will result and require a purge. Click this button to put the unit in standby.
	Fill	Button	Used to load material from the mix manifold to the gun after a purge. This keeps the recipe active and allows spraying to resume without needing to reload the entire recipe. If material is already loaded this button is not available as the spray button takes its place. Fill is also available when the loaded recipe is an unknown 999. Pushing it will load recipe 0. Click this button to fill material up to the gun.
	Spray	Button	Used to dispense mixed material for painting parts. This button is available after a recipe is loaded. Once pushed it will dispense mixed material and look for a gun trigger via the air flow switch. Click this button to begin spraying.
	Purge	Button	Used to clean mixed material out from the mix manifold through the gun. The loaded recipe will stay active, but the mix manifold, hose, and gun will be cleaned with solvent. To resume spraying the fill button will need to be pressed first or a recipe change will need to occur. Click this button to perform a purge.
	Remote Enabled	Notification Icon	Alerts the user that the unit is currently capable of being operated by both the booth control and the HMI which can be located remotely. It is denoted by a border around the HMI control buttons that is linked to the Remote Enabled icon. If remote control via the HMI is not enabled then the icon, border, and control buttons are no longer displayed. **NOTE**: Remote operation via the HMI is disabled by default and needs to be enabled under the Settings, Advanced screen.
Overview			Displays the progress of the current function, such as fill.

Operation

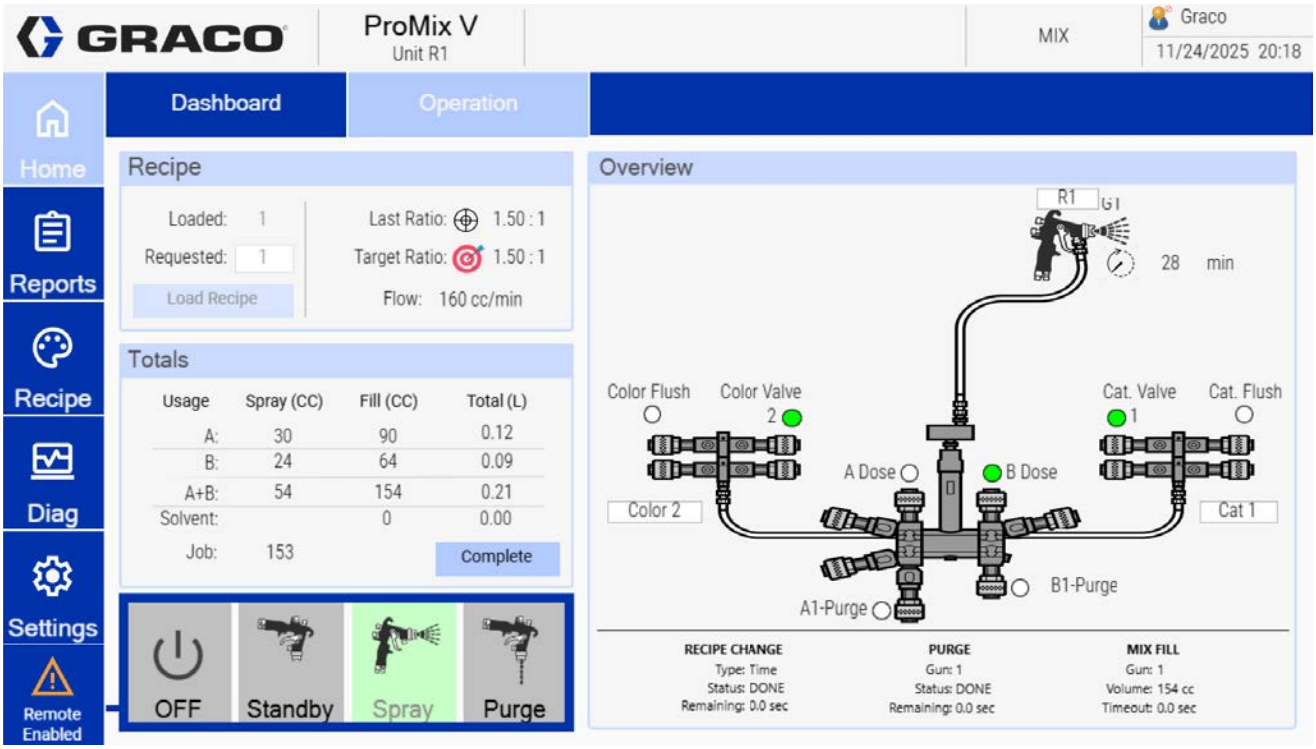


FIG. 39. Operation Screen

Operation Table

Section	Function	Values	Description
Recipe	Loaded	0-200	Displays the currently loaded recipe. If 999 is shown it means the unit does not know what the status of the material is, for instance when the machine is suddenly turned off. A flush and purge will be required before the next recipe can be loaded. This will happen automatically if the next requested recipe is 1-200. Otherwise to only flush and purge the unit recipe 0 can be chosen.
	Requested	0-200	Displays the recipe that will be loaded next. For painting operations choose from 1-200. To flush and purge the unit choose 0.
	Load Recipe	Button	Loads the recipe that is being requested. To operate first put the unit in Standby, then click the Load Recipe button.
	Last Ratio	1.0 - 50:1	Shows the actual ratio of the last dose.
	Target Ratio	1.0 - 50:1	Shows the desired ratio of the current recipe.
	Flow	cc/min	Shows the live flow when the unit is running.

Section	Function	Values	Description
Total	Usage	Fluid Components	Indicates the different components for which material usage is being tracked.
	Spray (cc)	cc's	Displays the amount of material dispensed for each component when the unit is in spray mode.
	Fill (cc)	cc's	Displays the amount of material dispensed for each component during the fill process.
	Total (L)	Liters	Displays the total amount of material dispensed for each component during the current job.
	Complete	Button	A way to manually complete the current job and store the data in the reports section. Click this button to end the current job and start a new one. **NOTE**: A recipe change will also finish the current job and start a new one automatically.
Control Buttons	Off	Button	Puts the unit in the off state. The current recipe will become unknown and revert to 999. A recipe will need to be loaded to resume operation which requires a flush and purge. Use this button to quickly turn the unit off if there is an issue or a hardware setting that needs to be changed, but operation will resume shortly as mixed material could be left in the unit. If the unit will stay off, perform a purge first. Click this button to turn the unit off.
	Standby	Button	Puts the unit in the standby state. Use this button to take a break from spraying or to change settings other than for the loaded recipe. Spraying may resume as long as the pot life time has not been exceeded, in which case an alarm will result and require a purge. Click this button to put the unit in standby.
	Fill	Button	Used to load material from the mix manifold to the gun after a purge. This keeps the recipe active and allows spraying to resume without needing to reload the entire recipe. If material is already loaded this button is not available as the spray button takes its place. Fill is also available when the loaded recipe is an unknown 999. Pushing it will load recipe 0. Click this button to fill material up to the gun.
	Spray	Button	Used to dispense mixed material for painting parts. This button is available after a recipe is loaded. Once pushed it will dispense mixed material and look for a gun trigger via the air flow switch. Click this button to begin spraying.
	Purge	Button	Used to clean mixed material out from the mix manifold through the gun. The loaded recipe will stay active, but the mix manifold, hose, and gun will be cleaned with solvent. To resume spraying the fill button will need to be pressed first or a recipe change will need to occur. Click this button to perform a purge.
	Remote Enabled	Notification Icon	Alerts the user that the unit is currently capable of being operated by both the booth control and the HMI which can be located remotely. It is denoted by a border around the HMI control buttons that is linked to the Remote Enabled icon. If remote control via the HMI is not enabled then the icon, border, and control buttons are no longer displayed. **NOTE**: Remote operation via the HMI is disabled by default and needs to be enabled under the Settings, Advanced screen.

Section	Function	Values	Description
Overview	Graphic I/O Indicator	Valves	Each valve has a circle indicator next to it that will turn green when that valve is active to visually show what the unit is doing. In the case of multiple color or catalyst valves there will also be a number displayed next to it identifying which specific valve is active.
		Gun Number	Each gun is identified with a G1-2 number and other related icons such as gun trigger and gun flush box will be displayed next to it. The loaded recipe for that gun also shows next to it.
		Gun Trigger	Spray pattern animation comes out of the front of the gun icon when a gun trigger is detected by the unit's air flow switch. This animation should only be seen when in spray mode and there should be no flow during flushing or purging.
		Gun Flush Box	GFB icon appears if a gun flush box is enabled. When the gun is out of the box it is gray and the lid is open. It turns green if there is a gun in the box and the lid is closed. The circle indicator next to it turns green when the unit applies the gun trigger signal which is normally seen during a purge or recipe change.
		Air Shutoff	Wind icon appears if the air shut off accessory is enabled. The letter X covers the icon when air flow to the gun is being blocked. Air flow to the gun should only be allowed in Spray mode.
		Regulator Override	Pressure gauge icon appears if the regulator override accessory is enabled. The letter X covers the icon when override is not active. Override is active during a flush, purge, and fill.
		Potlife Timer	Clock icon appears when a recipe is loaded. There is a minute countdown next to it to allow the user to track the time. If the potlife time reaches 0 an alarm will occur 60 seconds later and the unit will enter Standby. A purge and fill or recipe change will need to occur to resume spraying.

Reports

Alarms

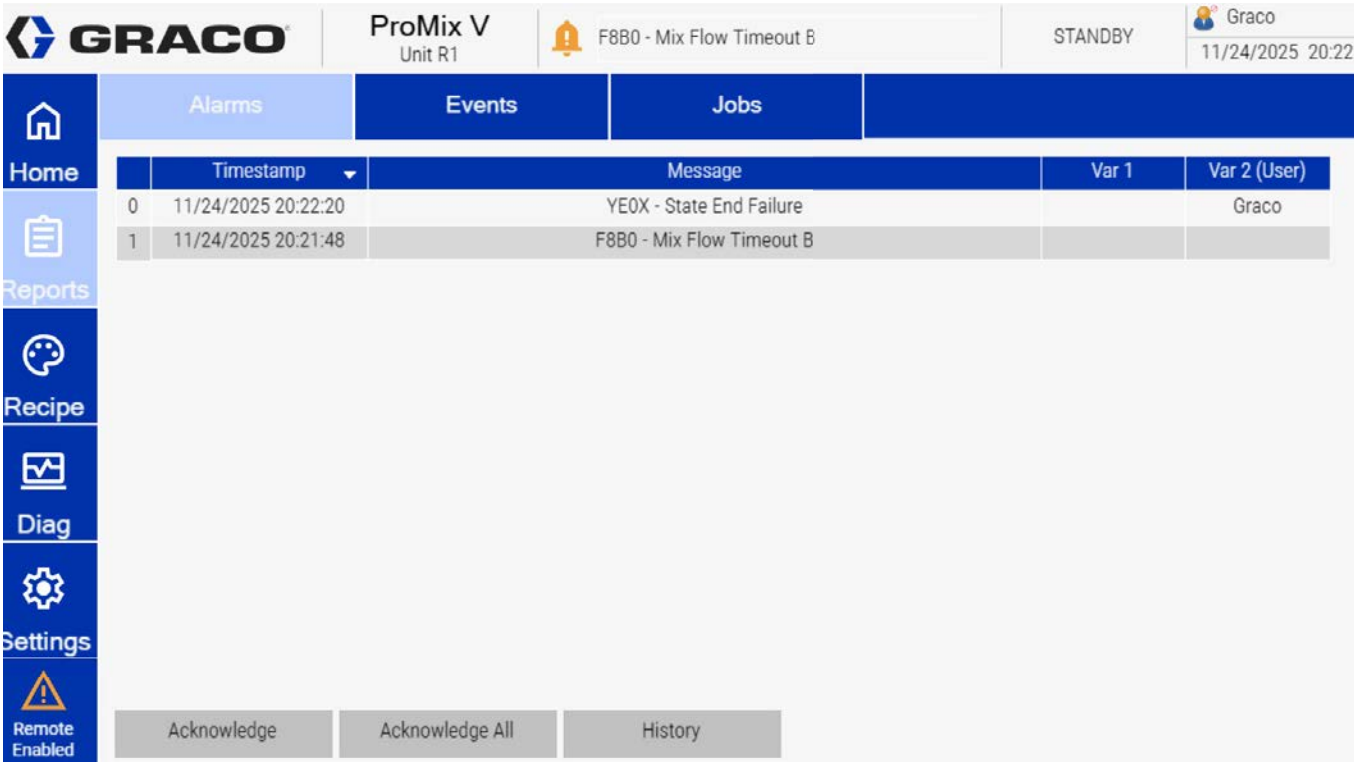


FIG. 40. Alarms Screen

Alarms Table

Section	Function	Values	Description
Info Table	Timestamp	Date, Time	Displays the date and time that the alarm occurred.
	Message	Code, Description	Gives a 4 digit code and a short description of the alarm to aid in troubleshooting. This is also displayed at the top of all of the HMI screens for active alarms next to an alarm bell icon. The 4 digit code is also displayed on the booth control. If there are multiple active alarms they will scroll on the top of the HMI screens along with the booth control.
	VAR 1	Number	Used to give more detail on the alarm that occurred such as the state the unit was in or a value that was exceeded. For example if the ratio tolerance was exceeded it will show the faulty value.
	VAR 2 (USER)	Name	Documents the user that is logged in to the HMI.

Section	Function	Values	Description
Buttons	Acknowledge	Button	Used to clear a single alarm after the issue has been corrected. Active alarms need to be cleared to resume operation. Select the alarm first to highlight it and then select acknowledge.
	Acknowledge All	Button	Used to clear all alarms after the issues have been corrected. Active alarms need to be cleared to resume operation. Click the button to clear all alarms.
	History	Button	Use to show all previous alarms. This can be useful to determine if there is an ongoing issue with the unit or settings that aren't correct. Click the button to toggle between current and past alarms.

Events

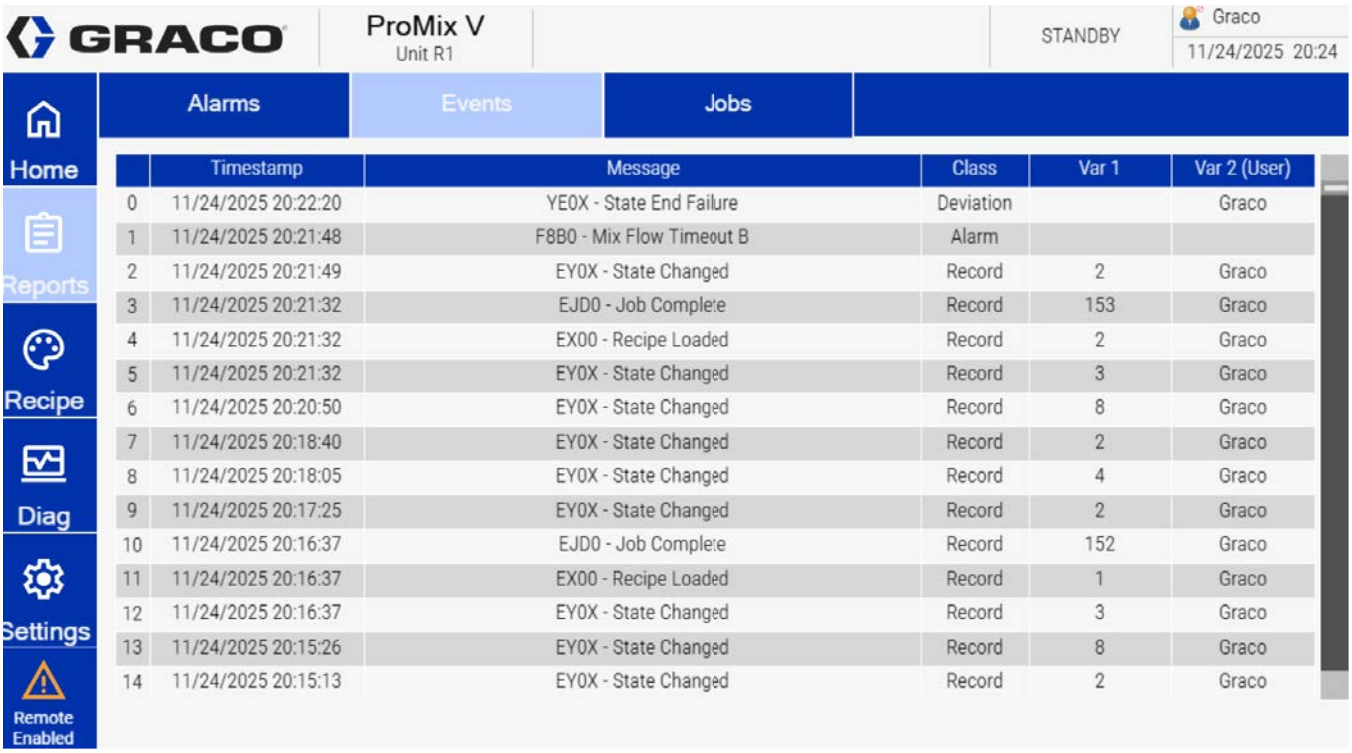


FIG. 41. Events Screen

Events Table

Section	Function	Values	Description
Info Table	Timestamp	Date, Time	Displays the date and time that the event occurred.
	Message	Code, Description	Gives a 4 digit code and a short description of the event.
	Class	Record, Deviation, Alarm	Event classes are Records, Deviations, and Alarms. Examples of records are recipe changes and jobs completed. They are just recorded and no extra action is required. Deviations occur when something falls out of the normal operating range, but once corrected normal operation will resume. An example of this is if the gun flush box lid is opened during a purge. Once the lid is closed the purge process will resume. Alarms occur when there is an error and something needs to be corrected. The unit will go into standby and will not resume normal operation until the error condition is corrected and the alarm is acknowledged.
	VAR 1	Number	Used to give more detail on the event that occurred such as the state the unit was in or a value that was exceeded. For example if the ratio tolerance was exceeded it will show the faulty value. If a recipe is changed or a job is completed it will show the corresponding number.
	VAR 2 (User)	Name	Documents the user that is logged in to the HMI.

Jobs

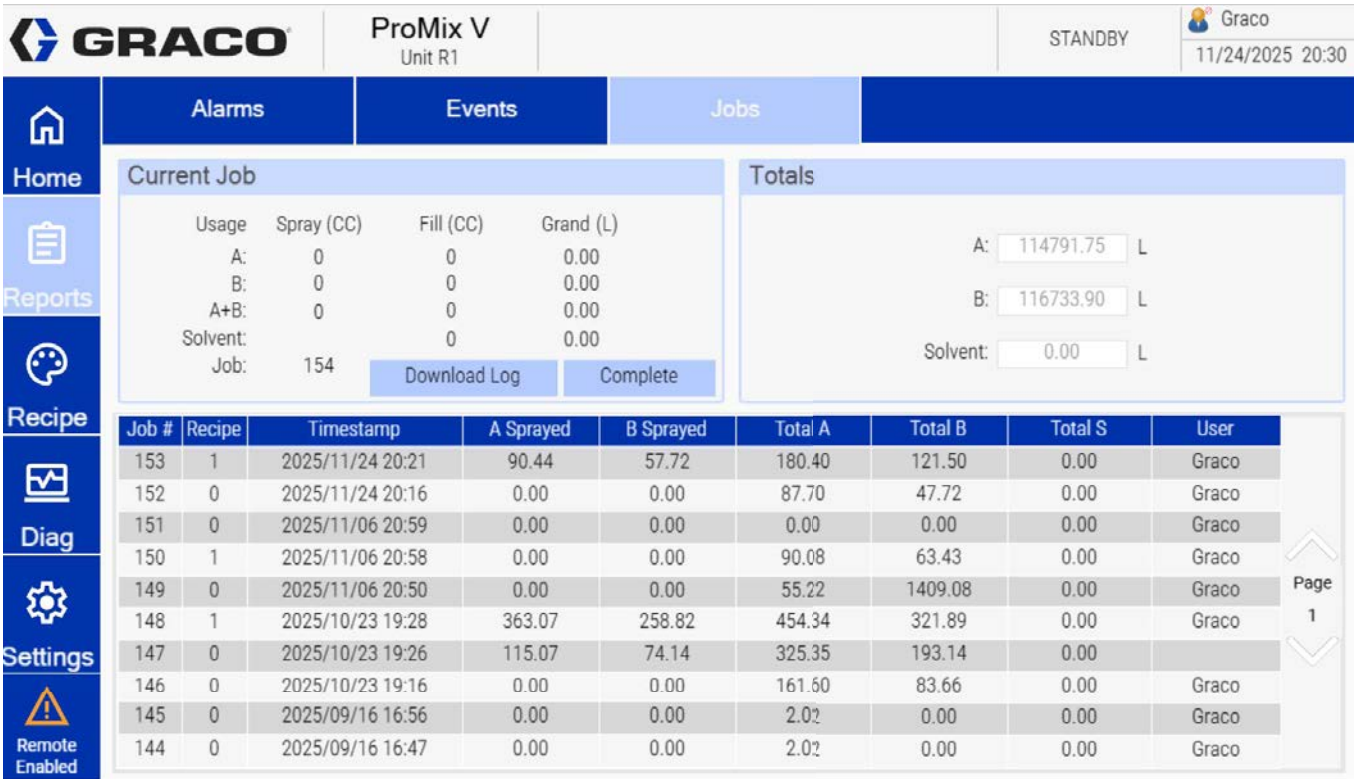
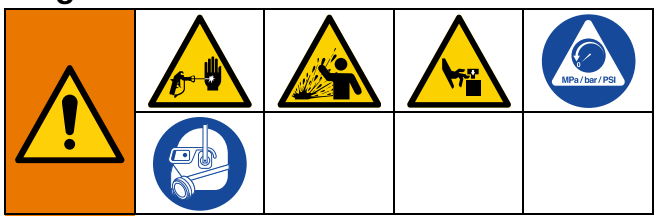


FIG. 42. Jobs Screen

Jobs Table

Section	Function	Values	Description
Current Job	Usage	Fluid Components	Indicates the different components for which material usage is being tracked.
	Spray (cc)	cc's	Displays the amount of material dispensed for each component when the unit is in spray mode.
	Fill (cc)	cc's	Displays the amount of material dispensed for each component during the fill process.
	Grand (L)	Liters	Displays the total amount of material dispensed for each component during the current job.
	Download Log	Button	Used to save the job data to the HMI device. The data can then be imported into spreadsheet program of the user's choice.
	Complete	Button	A way to manually complete the current job and store the data in the reports table. Click this button to end the current job and start a new one. **NOTE**: A recipe change will also finish the current job and start a new one automatically.
Totals	A	Liters	Displays the total amount of material that has gone through the component A meter. Not user resettable.
	B	Liters	Displays the total amount of material that has gone through the component B meter. Not user resettable.
	Solvent	Liters	Displays the total amount of solvent that has gone through the component B solvent meter if the accessory kit is installed. The meter is connected to purge valve B and only records that solvent usage. Not user resettable.
Info Table	Component Values	cc's, Liters	For each job, displays the job number, recipe used, and component A and B fluid used in one row of the table. Fluid used is listed as sprayed, filled, and total as seen in the current job section.

Diagnostics



While in Maintenance Mode, follow **Pressure Relief Procedure**, page 51 before doing any maintenance on the equipment.

NOTE: Using maintenance mode to manually actuate valves and solenoids will pressurize the fluid and air lines after those components. Manually actuating components may cause an unwanted mixing of color and catalyst and it is therefore recommended to load recipe 0 after exiting maintenance mode to perform a full flush and purge of the unit. Check all possible problems and causes listed in **Troubleshooting**, page 85 before disassembling equipment. Follow **Pressure Relief Procedure**, page 51 before checking or repairing the equipment.

I/O

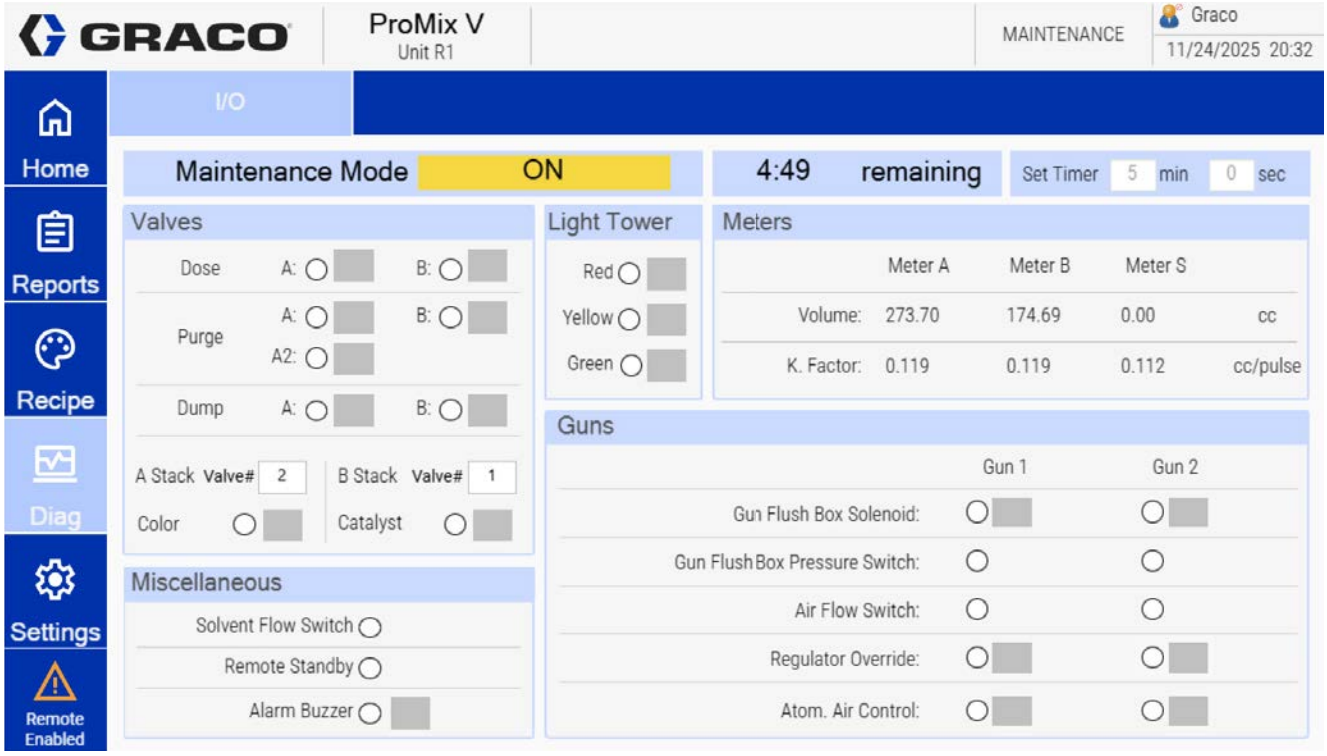


FIG. 43. I/O Screen

I/O Table

Section	Function	Values	Description
Maintenance Mode	On/Off	Button	Enables maintenance mode which helps with troubleshooting the unit. The unit must be in standby before entering this mode. In this mode the user can independently operate valves and outputs which helps in looking for leaks, verifying proper fluid flow, or verifying the correct color valve is open. **NOTE**: It is the user's responsibility to ensure they activate the proper outputs and avoid improper mixing of materials. After exiting maintenance mode it is recommended to run recipe 0 to perform a full flush and purge.
	Time Remaining	Countdown	Number of minutes and seconds before maintenance mode automatically turns off. This protects the unit from continually flowing fluid should a valve be accidentally left enabled.
	Set Timer	Minutes, Seconds	Sets the time remaining countdown when maintenance mode is enabled. Enter the number of minutes and seconds that maintenance mode is allowed to be on before it automatically turns off. When it turns off the unit reverts back to standby. The minimum value is 0 which disables the mode and the maximum value is 30 minutes, 59 seconds.

Section	Function	Values	Description
Valves	Dose A, B	Indicator, Button	Allows the dose valves to be enabled. The indicator circle is white when the valves are off and green when they are on. Click the gray button next to the indicator to toggle the dose valves on and off.
	Purge A, B, A2	Indicator, Button	Allows the purge valves to be enabled. The indicator circle is white when the valves are off and green when they are on. Click the gray button next to the indicator to toggle the purge valves on and off.
	Dump A, B	Indicator, Button	Allows the dump valves to be enabled if the unit is equipped with them. The indicator circle is white when the valves are off and green when they are on. Click the gray button next to the indicator to toggle the dump valves on and off.
	A Stack	Valve #	Selects the valve on the color stack that will be enabled when the button next to the color valve indicator is clicked. This only applies if the unit is equipped with multiple colors. Enter the number of the color valve to enable. **NOTE**: Enter 0 to select the flush valve.
	Color	Indicator, Button	Allows the color valves to be enabled. The indicator circle is white when the valves are off and green when they are on. Click the gray button next to the indicator to toggle the color valves on and off.
	B Stack	Valve #	Selects the valve on the catalyst stack that will be enabled when the button next to the catalyst valve indicator is clicked. This only applies to acid compatible units or if the unit is equipped with multiple catalysts. Enter the number of the catalyst valve to enable. **NOTE**: Enter 0 to select the flush valve.
	Catalyst	Indicator, Button	Allows the catalyst valves to be enabled. The indicator circle is white when the valves are off and green when they are on. Click the gray button next to the indicator to toggle the color catalyst on and off.
Miscellaneous	Solvent Switch	Indicator	Indicates if the solvent flow switch is on signaling that there is solvent flow. The indicator circle is white if the switch in off and green if it is on. This requires that the solvent flow accessory kit be installed and enabled in the settings.
	Remote Standby	Indicator	Indicates if the stop button on the side of the unit has been pushed which forces the unit into standby regardless of the state unit was in. To continue operation the button must be pulled out and the mode be changed via the HMI screen or the booth control. The indicator circle is white if the button is out and green if the button has been pushed and the unit is in standby.
	Alarm Buzzer	Indicator, Button	Used to audibly alert if the unit is in the alarm state. The indicator is white if the alarm is off and green if it is on and producing noise. Check the gray button next to the indicator to test the alarm. It toggles on/off.

Section	Function	Values	Description
Light Tower	Red	Indicator, Button	Use to test the light tower functionality if a light tower accessory kit is installed and enabled in the settings. The indicator is white if the light is off and green if it is on. Check the gray button next to the indicator to test the light. It toggles on/off.
	Yellow	Indicator, Button	
	Green	Indicator, Button	
Meters	Volume: Meters A, B, S	cc's	Displays the total volume that has gone through the component A and B meters since the unit was last turned on along with the solvent meter if the solvent meter accessory kit is installed and enabled in the settings.
	K Factor: Meters A, B, S	cc/pulse	Displays the set K factors the component A and B meters for the active recipe along with the solvent meter if the solvent meter accessory kit is installed and enabled in the settings.

Section	Function	Values	Description
Guns	Gun Flush Box Solenoid	Indicator, Button, 1-2	Activates the solenoid that sends air to the gun flush box to pull the gun trigger. The indicator is white if the solenoid is off and green if it is on. **NOTE**: If the signal air line is connected to the gun flush box when the solenoid is activated the gun trigger mechanism in the gun flush box will actuate. Ensure that the gun is in the box and the lid is closed before testing. Check the gray button next to the indicator to test the solenoid. It toggles on/off. This option has to be enabled in settings/hardware to be activated.
	Gun Flush Box Pressure Switch	Indicator, Button, 1-2	Indicates if the pressure switch is reading the air signal from the gun flush box when there is a gun in the box and the lid is closed. This signal is what tells the ProMix V that it is okay to activate the gun flus box solenoid to pull the gun trigger during a flush, purge, or fill. The indicator is white if the switch is off and green if it is on. This option has to be enabled in settings/hardware to be activated.
	Air Flow Switch	Indicator, Button, 1-2	Indicates if the unit is seeing air flow going to the gun. This is necessary in spray mode for each gun so that the unit knows fluid should be flowing. If no air flow is observed while the fluid is flowing an alarm condition will eventually occur. The indicator is white if the switch is off and green if it is on. This option has to be enabled in settings/hardware to be activated.
	Regulator Override	Indicator, Button, 1-2	Indicates if the pressure override signal for each gun is being sent to an air piloted fluid pressure regulator if the regulator override accessory kit is installed and enabled in the settings. This is used to speed up the flush, purge, and fill process. The indicator is white if the signal is off and green if it is on. To manually apply the override pressure signal click the gray button next to the indicator. It toggles on/off. This option has to be enabled in settings/hardware to be activated.
	Air Shut-Off	Indicator, Button, 1-2	Indicates if the air pressure signal to allow air flow to the gun is enabled or disabled if a gun air shut off accessory kit is installed and enabled in the settings. This is used when an operator wants the ProMix V to control when air flow is allowed to the gun. The indicator is white when air flow is not being allowed and green when air flow is being allowed. Click the gray button next to the indicator to allow air flow to the gun. It toggles on/off. This option has to be enabled in settings/hardware to be activated.

Settings

System

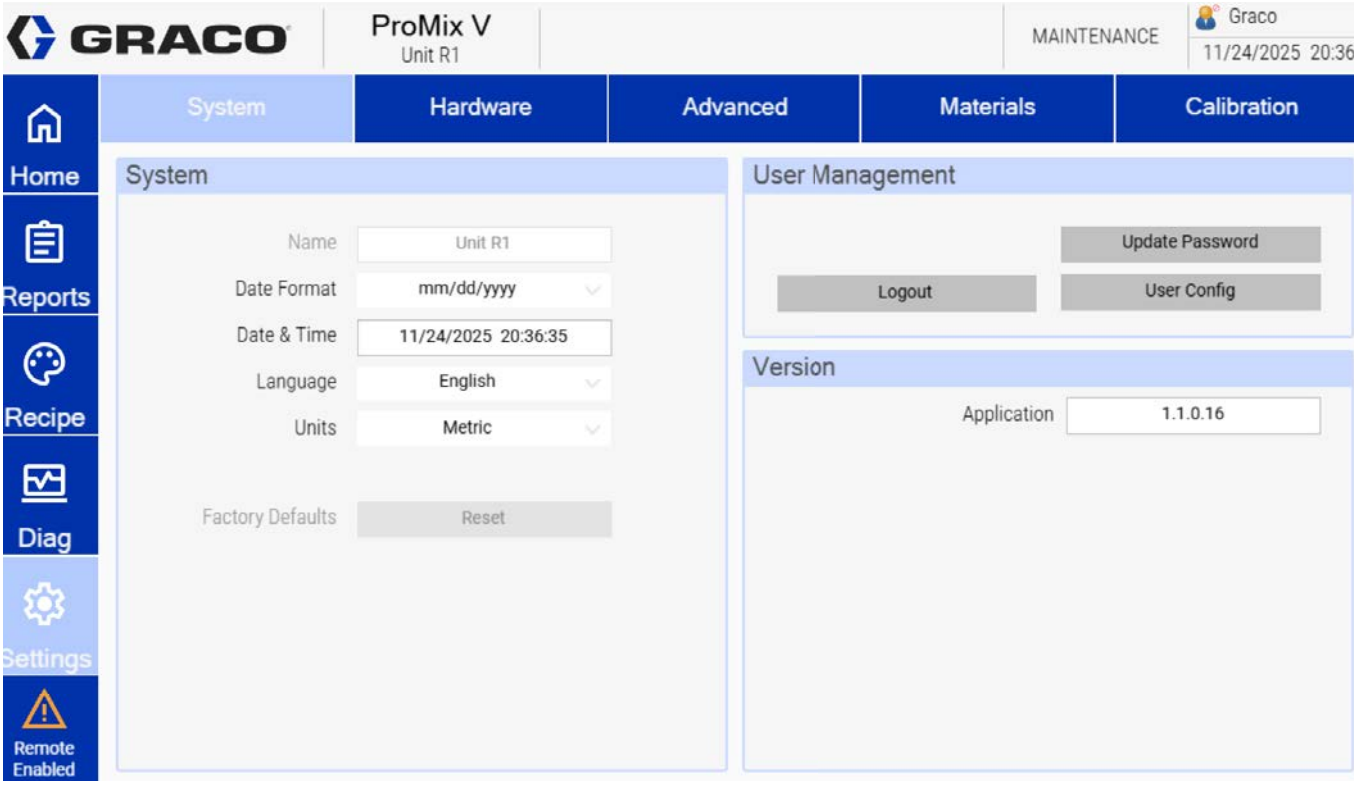


FIG. 44. System Screen

System Table

Selection	Function	Display Values	Description
System	Name	Text	Name of the unit to be displayed at the top of the screen under ProMix V. Enter name.
	Date Format	mm/dd/yyyy, dd/mm/yyyy, yyyy/mm/dd	How the date is displayed throughout the software. Choose a format.
	Date and Time	---	Displays and sets the current date and time. Click to open a pop up window to enter the day, month, year, hour, minute, and second.
	Language	Dropdown	Language that will be used throughout the software. Choose a language.
	Units	Metric and Imperial	Both Metric and imperial values are used in the software.
	Factory Defaults	Reset	Select this to return the unit to the original factory settings as when it was shipped.

Selection	Function	Display Values	Description
User Management	Login	---	Allows a user access to the unit to operate and make settings changes. Enter username and password.
	Logout	---	Click this button to log out and remove user privileges.
	Update Password	---	Allows a user to update their password. Enter old password, new password, and confirm new password.
	User Config	---	Allows the creation of multiple users with different access. Click on user config to open up a pop up window to create a username, password, and grant access as an administrator, maintenance personnel, or operator. An administrator can control and edit all applicable fields such as changing hardware settings and creating recipes. They can also create, delete, and deactivate users. Maintenance has the same rights as administrators with the exception of being able to edit user profiles and access. Operators can use the unit but can not modify any settings, recipes, or user access. The defaults for username/password are Admin/Admin, Maintenance/Maintenance, and Operator/Operator.
Version	Software	Numbers	Displays versions of software being used to operate the unit.

Hardware

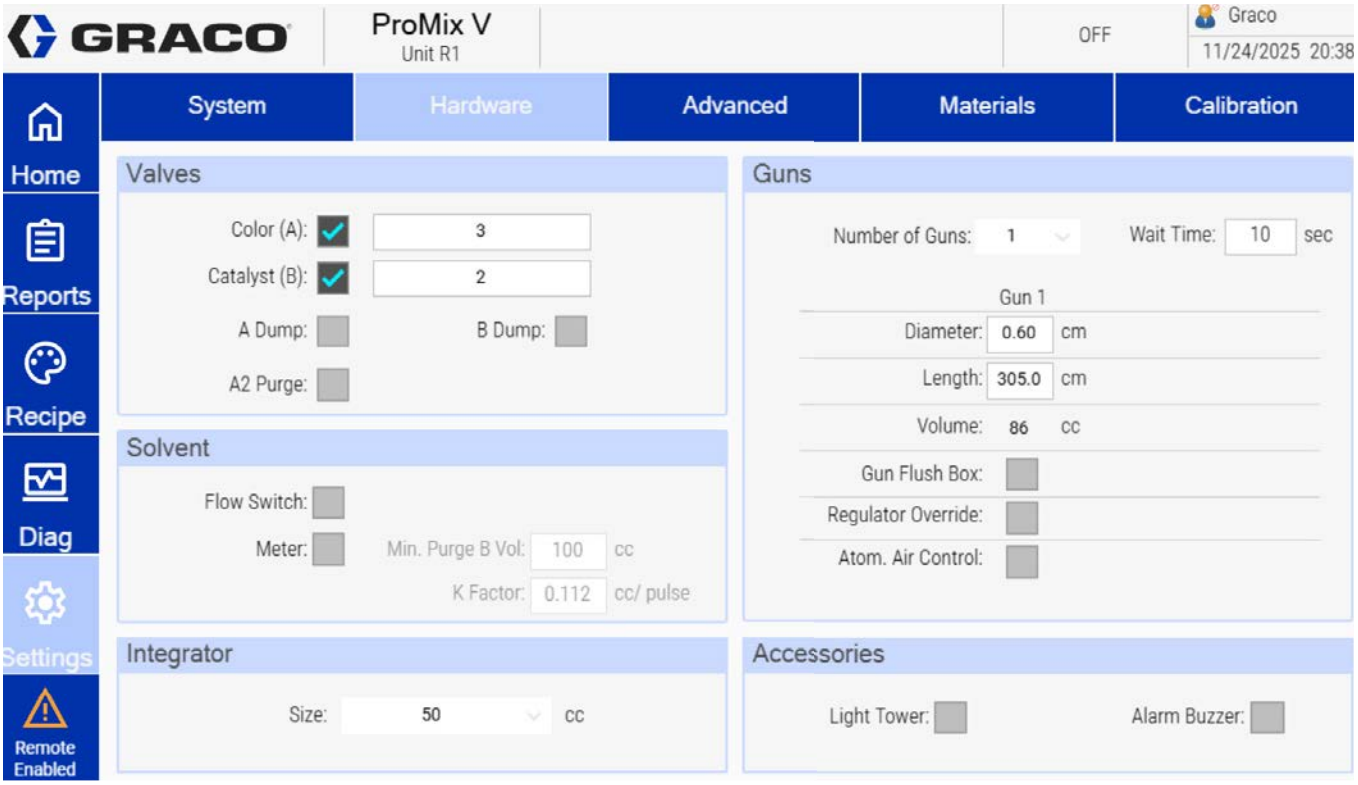


FIG. 45. Hardware Screen

Hardware Table

Selection	Function	Display Values	Description
Valves	Color (A)	Checkbox, 1-7	Used with multiple color units having a color valve stack installed. Can control up to 7 valves. Enable and select the number of colors.
	Catalyst (B)	Checkbox, 1-2	Used with multiple catalyst units having a catalyst valve stack installed. Can control up to 2 valves. Enable and select the number of catalysts. If using an acid unit this should be enabled and the number set to 1 or more.
	A Dump	Checkbox	Used when there is a dump valve installed on the component A side. Material before the dose A valve is sent to a waste container during a pre-fill and flush. This makes a color change more efficient as that material does not have to travel through the hose and gun. Enable if installed.
	B Dump	Checkbox	Used when there is a dump valve installed on the component B side. Material before the dose B valve is sent to a waste container during a pre-fill and flush. This makes a catalyst change more efficient as that material does not have to travel through the hose and gun. Enable if installed.
	A2 Purge	Checkbox	Used when there is an additional purge valve installed on the component A side. Often used to supply water or other blends of cleaning material compatible with the resin and mixed material Enable if installed.
Solvent	Switch	Checkbox	Used to confirm that solvent is flowing when purging. Enable if installed.
	Meter	Checkbox	Used to track the amount of solvent usage when purging. Enable if installed.
	Minimum Purge B Vol	0-1000 cc's	Used only when a solvent meter is installed and activates an alarm if the minimum volume isn't met during a purge. This helps ensure sufficient purging has occurred. Enter the minimum required volume in cc's.
	K Factor	0.01-5	K Factor is the amount of material that passes through the meter per pulse described as cc/pulse. It is pre set at 0.112 and can be adjusted for each meter here. It will also update after a meter calibration.
Integrator	Size	10, 25, 50, or 100 cc	Size of the material integrator in cc's coming out of the mix manifold. Chose the size installed in the unit.

Selection	Function	Display Values	Description
Guns	Number of Guns	1 - 2	Number of guns used with the unit. Guns must be used in numerical order. For example, if 2 guns are enabled in settings, gun 2 can not be selected in a recipe without also enabling gun 1. Choose number of guns installed.
	Diameter	0.1 - 5.0	Used to calculate the volume in each hose going to each gun. Enter the diameter in cm for each hose for every gun installed.
	Length	1 - 10,000	Used to calculate the volume in each hose going to each gun. Enter the length in cm for each hose for every gun installed.
	Volume	# of cc's	Calculated based off the user entered hose diameter and length for each gun. This is critical to ensure accurate filling.
	Gun Flush Box	Checkbox	Allows a gun to be automatically filled and purged without requiring the user to hold the trigger. The unit requires a dedicated pressure switch, solenoid, and air valve for each gun flush box installed. Enable for each gun if a gun flush box is installed.
	Regulator Override	Checkbox	Atomizing air turned on ONLY when in spray mode. All other modes atomizing air is disabled. Enable for each gun if a regulator override kit is installed.
	Air Shut Off	Checkbox	Automatically disables air to the gun during standby, fill, flush, and purge to prevent atomizing solvent or creating a mess. The unit requires a dedicated solenoid and air valve for each gun. Enable for each gun if an air shut off kit is installed.
Accessories	Light Tower	Checkbox	Used to visually alert if the unit is in the alarm state. Enable if installed.
	Alarm Buzzer	Checkbox	Used to audibly alert if the unit is in the alarm state. Enable if installed.

Advanced

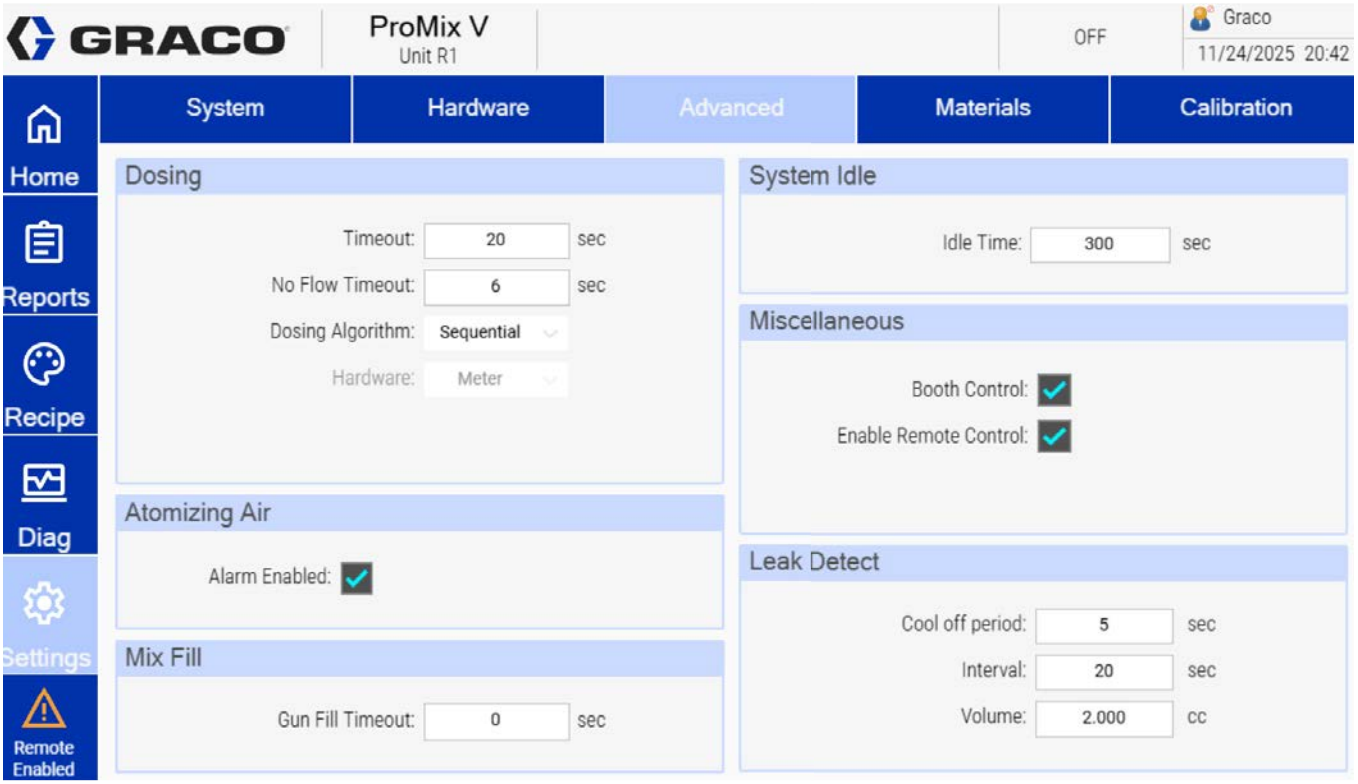


FIG. 46. Advanced Screen

Advanced Table

Selection	Function	Display Values	Description
Dosing	Timeout	sec	Amount of time a dose needs to be completed in before an alarm occurs. Be sure the time is set long enough based on the fluid flow rate or nuisance alarms will occur. Enter a time.
	No Flow Timeout	sec	Amount of time that is allowed to pass between detecting a gun trigger from the air flow switch and detecting fluid flow from the flow meters before an alarm occurs. If the operator tends to partially hold the trigger allowing air flow it is recommended to increase this time to avoid nuisance alarms. Enter a time.
	Dosing Algorithm	Sequential and Dynamic	Method in which the unit proportions material. Meter units are set to sequential dosing. Dynamic dosing is an option.
	Hardware	Meter	Unit is set to be flow meter based for component A and B.
Atomizing Air	Alarm Enabled	Checkbox	Triggers an alarm if atomizing air is detected when it shouldn't be, such as during a purge. Generally this feature needs to be enabled, especially when using electrostatic guns. It may be useful to disable briefly during trouble shooting. See air flow switch function in **Theory of Operation**, page 82 for more information.
Mix Fill	Gun Fill Timeout	sec	Amount of time that is allowed to pass to complete the mix fill process before an alarm occurs. Enter a time.
System Idle	Idle Time	sec	Amount of time that is allowed to pass in the spray state without seeing a gun trigger and fluid flow before an alarm occurs. Enter a time.

Miscellaneous	Booth Control	Checkbox	Un-check this box to disable the booth control and run the machine only with the HMI screens. NOTE: You will have to enable remote control to do this.
	Enable Remote Control	Checkbox	Check this box to allow the unit to be run via the HMI screens. This is disabled by default. NOTE: When this is enabled any HMI that is logged in to the unit can run it if the user has the proper access.
Leak Detect	Cool off period	sec	Amount of time after spraying before the unit begins to monitor for leaks. Some time is needed for the fluid flow and pressure to stabilize. Enter a time. Minimum value of 1 second and maximum value of 60 seconds. it is recommended to start with high values and work smaller to avoid nuisance alarms.
	Interval	sec	Amount of time the unit looks for a specific volume to determine if there is a leak before an alarm occurs. Enter a time. Minimum value of 1 second and maximum value of 60 seconds. it is recommended to start with high values and work smaller to avoid nuisance alarms.
	Volume	cc	Amount of fluid the unit looks for to determine if there is a leak before an alarm occurs. Enter a volume. Minimum value of 0cc and maximum of 20cc. it is recommended to start with high values and work to smaller values to avoid nuisance alarms. Setting to 0 turns this feature off.

Meter Calibration Procedure

Use this procedure and screen set to either confirm calibration settings or recalibrate the meters for your specific materials. Use a graduated container to capture the dispensed material.

1. Before calibration be sure that the ProMix V is primed and free of any air in the fluid. See **Prime the ProMix V**, page 49.

2. Choose and load the desired recipe.

NOTE: The ProMix V meter calibration is tied to a specific recipe and It is not a global setting.

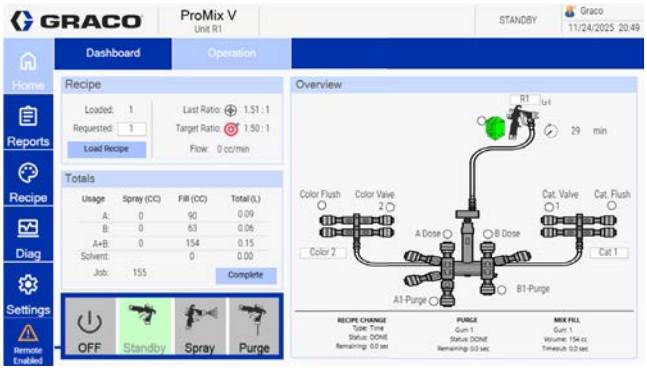


FIG. 47. Screen 1

3. Navigate to the settings calibration tab and choose the method from the drop down menu that will be used for calibration. If the ProMix V is equipped with sample and isolation valves, select the through manifold option. Engage the isolation valve if equipped.

..

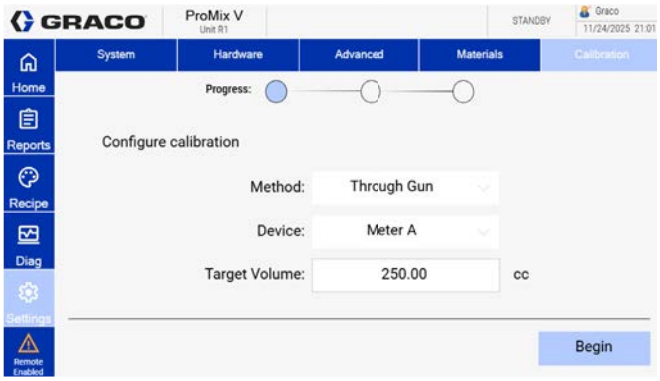


FIG. 48. Screen 2

4. Choose if the A side, B side, or solvent is being calibrated from the device drop down menu

5. Click the target volume box and enter the desired amount of fluid to be dispensed.

6. Click begin to progress to the next step.

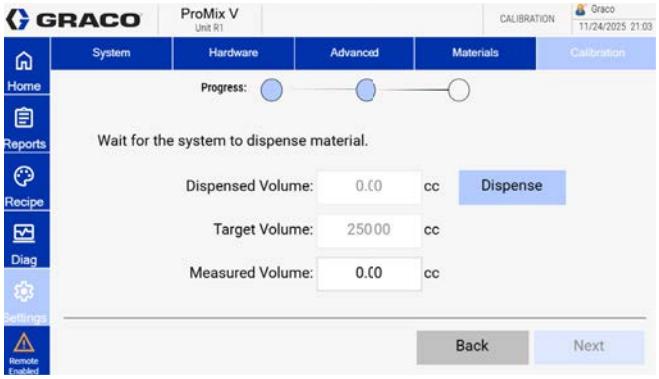


FIG. 49. Screen 3

NOTE: Dispense the selected material into a appropriate size graduated beaker.



7. Click Dispense and open the sample valve or pull the gun trigger.

   a. To avoid splashing, slowly open sampling valves.

   b. For more accurate calibration, adjust the sample valve to dispense at a flow rate similar to the production spray flow rate.

   c. Dispense a minimum of 250 cc. Make sure enough material is dispensed to accurately read the volume with your beaker. The A and B volumes do not have to be equal or at any specific ratio.

8. When the ProMix V has finished dispensing material release the gun trigger or close the sample valve tightly and disengage the isolation valve.

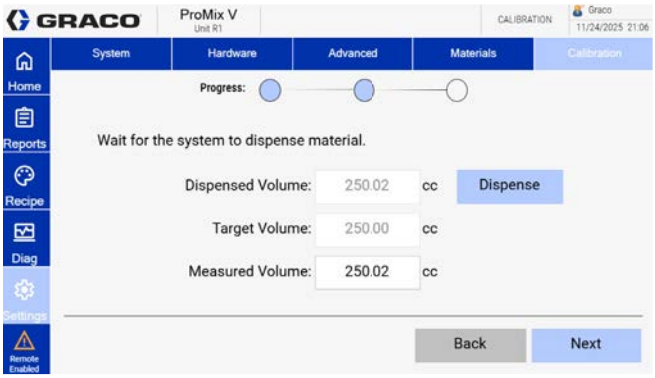


FIG. 50. Screen 4

9. Enter the measured volume of material dispensed and click next.

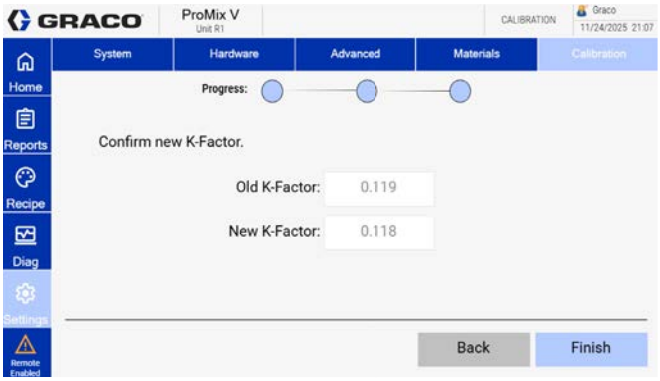


FIG. 51. Screen 5

10. Confirm the new K factor and click finish.

11. The updated K factor can be seen on the recipe tab under the **Recipe Configuration**, page 45.

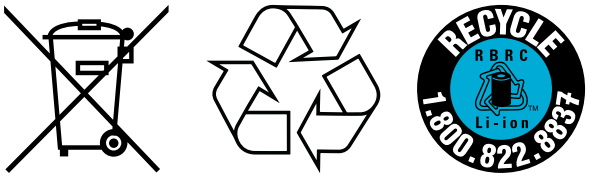
NOTE: K Factors can also be manually changed by clicking the box while in the config page, entering a new value, and clicking save.

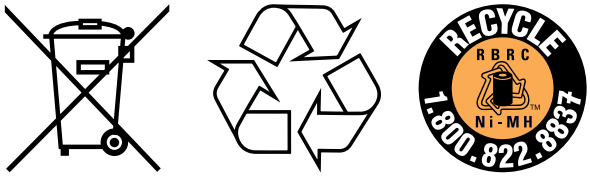
Recycling and Disposal

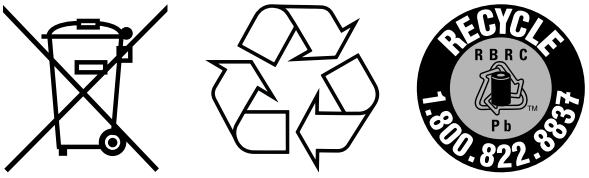
This section includes information on how to properly recycle and dispose of a product at the end of its useful life.

Rechargeable Battery Disposal

Do not place batteries in the trash. Recycle batteries according to local regulations. In the USA and Canada, call 1-800-822-8837 to find recycling locations or go to www.call2recycle.org.







End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**, page 51.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove motors, batteries, circuit boards, LCDs (liquid crystal displays), and other electronic s. Recycle according to applicable regulations.
- Do not dispose of batteries or electronics with household or commercial waste. 
- Deliver remaining product to a recycling facility.

Theory of Operation

Sequential Dosing

Component A (color) and component B (catalyst) dispense sequentially in the necessary volumes to attain the mix ratio.

- The ProMix V Controller Module sends signals to activate the solenoid valves. The solenoid valves activate dose valves A and B. Fluid flow begins when the gun is triggered.
- Color and catalyst are introduced into the fluid integrator (IN) one at a time as follows:
  - The B side dose valve opens, and fluid flows into the integrator.
  - Flow Meter B (MB) monitors the fluid volume dispensed and sends electrical pulses to the ProMix V Controller Module. The Controller Module monitors these pulses and signals.
  - When the target volume dispenses, dose valve B closes.

  NOTE: The dispense volume of color and catalyst are based on the mix ratio and dose size set by the user and calculated by the ProMix V Controller Module.
  - Dose valve A (AA) opens, and fluid flows into the integrator and is aligned proportionately with the catalyst that was dispensed.
  - Flow meter A (MA) monitors the fluid volume dispensed and sends electrical pulses to the ProMix V Controller.
  - When the target volume is dispensed, dose valve A closes.
- The components are pre-mixed in the integrator, then uniformly blended in the static mixer (MI).

  NOTE: To control output from the static mixer to the gun, install an optional fluid pressure regulator.
- Color and catalyst are alternately fed into the integrator as long as the gun is triggered.
- If the gun is not triggered for two minutes, the ProMix V switches to Idle mode, which closes off the mix manifold dose valves.
- When the gun is triggered again, the ProMix V continues the process where it left off.

Table 1: Sequential Dosing Operation

Ratio = 2.0:1	Dose 1		Dose 2		Dose 3	
A = 2						
B = 1						

Dynamic Dosing

Dynamic dosing is when one component, usually B, turns on and off to match the flow of the other component A, which is always on and flowing. The system biases towards B being dynamic, and it will switch to A if needed.

- For example, a 'dose size' target is 10cc's. To reach a mix of 10:1, the B valve will open to allow .91cc's and then close. Meanwhile, A will always stay open, and ProMix-V will wait for 9.1 cc's of A to flow. The PrioMix-V prioritizes accuracy over dose size. At that point, the process will repeat with B opening again.
- All mixing is handled by the mixer and by the length of gun hose. You may need to add more mixers depending on the chemistry and viscosity of A and B.
- B pressure must be higher than A. There is a built-in B-side restrictor located at the top of the dynamic mix manifold. Use an Allen wrench, 6/32 or 4mm. Screw this in to increase restriction. A combination of pressure and restriction controls flow.
- Dialing in the system is done by ear and by looking at the actual mix ratio compared to desired (accuracy). The HMI home screen will show the actual mix ratio and it will show the A or B valve opening.
- If possible, It is better to have B perform dynamic dosing. The system will always start with B dosing. It will switch to A dosing if required. If A is dosing and there is not enough flow in B, Increase B pressure or reduce restriction. If it is not possible to increase the B pressure, or if your setup runs better with A dosing, continue with A dosing.
- The system is balanced when the B valve opens and closes approximately equal times. This is done by ear. For large ratios (e.g. 30:1), this may not be possible and B may be open for short durations. For small ratios (e.g. 2:1), the system may be more stable (more accurate mix ratios) with B open longer than closed.
- B flow can be controlled with either restriction or pressure. If flow is consistent, it does not matter if this is achieved through pressure or flow. However, if there are two guns, and color change is done with regulator override or if color change is done with the gun needle removed, a careful balance of restriction and pressure is needed. Start by dialing in performance with one gun.
- If higher flow (two guns or color change) has too much B (B dose is on for a very short time), lower pressure of B. Go back to one gun and dial in the system again with the restrictor. This is especially critical for two guns.
- If higher flow (two guns or color change) has not enough B (B dose is almost always on or A dose takes over), increase pressure of B. Go back to one gun and dial in the system again with the restrictor. This is especially critical for two guns
- Once the system is dialed in with all colors, mark and record the location of gage pressures and restrictor position. If small changes are needed during normal production, it is suggested to leave the restrictor alone and adjust B pressure
- Repeat the adjustments for all colors to achieve the best compromise.

Table 2: Dynamic Dosing Operation

Ratio = 2.0:1	Dose 1		Dose 2		Dose 3	
A = 2						
B = 1						

Air Flow Switch (AFS) Function

Air or Air-assisted Guns

The air flow switch (AFS) detects air flow to the gun and signals the ProMix V Controller Module when the gun is triggered. The AFS functions with the flow meters to ensure that ProMix V components are functioning correctly.

For example, if a flow meter fails or clogs, pure color or catalyst could spray indefinitely if the ProMix V does not detect the condition and intervene, which is why the AFS is so important.

If the ProMix V detects through the AFS signal that the gun is triggered, yet there is no fluid flow through the meter, a Dose Time Alarm (QT00) occurs after the amount of time set for dose time, and the ProMix V shuts down.

Operating Without Air Flow Switch

It is not recommended to run without an air flow switch. If a switch fails, replace it as soon as possible.

Airless Gun

It is **not recommended** to use an airless gun with the ProMix V. Two issues can arise from operating without an air flow switch:

- Without a gun trigger/air flow switch input the ProMix V does not know it is spraying and will not generate a Dose Time Alarm. This means there is no way to detect a failed meter. You could spray pure color or catalyst for 2 minutes without knowing.
- Since the ProMix V does not know it is spraying because there is no gun trigger/air flow switch input, it will go into system Idle every 2 minutes when in Mix mode.

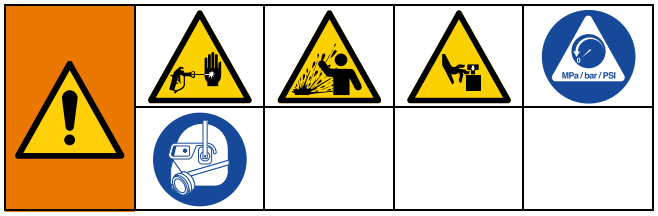
System Idle Notice (IDLE)

This warning occurs if the ProMix V is set to Mix  and 2 minutes have elapsed since the ProMix V last received the air flow switch signal (gun trigger).

In applications using the AFS, triggering the gun clears the warning and you can start spraying again.

Without the AFS, triggering the gun does not clear the alarm. To start spraying again, you must press , then , then trigger the gun.

Troubleshooting



Follow **Pressure Relief Procedure**, page 51 before checking or repairing the equipment.

NOTE: Check all possible problems and causes before disassembling the equipment.

Disconnect Ethernet Cables

Disconnect Ethernet cables connected to the Controller Module to prevent remote operation when trouble shooting and performing maintenance and repair.



Risk of Injury from Unexpected Machine Operation.

Initiating Fill/Spray or Purge mode will pressurize the system. To prevent injury caused by unexpected pressurization due to a mode change from a remote controller, disconnect the Ethernet wireless/wired communication connection(s) before performing any maintenance or troubleshooting.

1. Follow **Grounding**, page 27.
2. Disconnect the main power coming from the main shutoff outside the machine. Shut off the machine power switch.
3. Remove the Ethernet cables from Controller Module ports X4 and X5 to disable the possibility of remote operation.
4. Perform any service required and reconnect the Ethernet cables when finished. Port X4 is for a direct PC connection and port X5 connects to the WiFi module, if equipped.

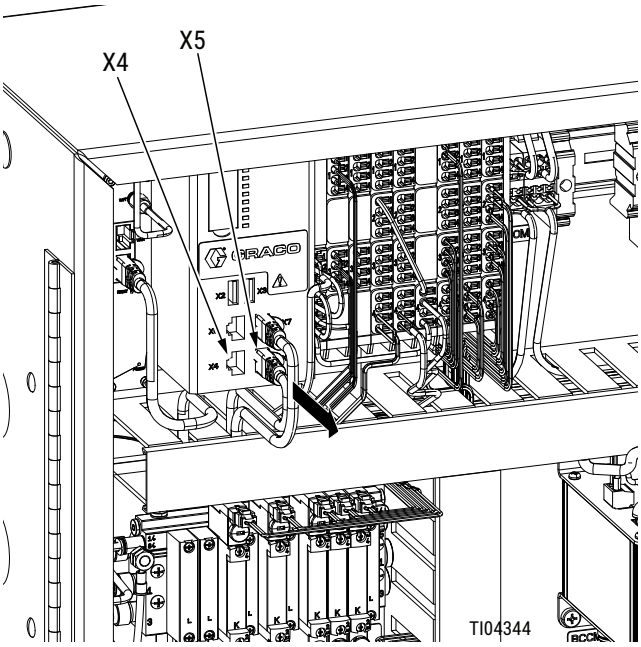


FIG. 52

Single Acting Solenoid Manual Activation.

Procedure for manually activating the single acting solenoids.

NOTICE

Manual actuation of solenoids bypasses all controls and safety features of the ProMix-V. This must only be performed during a repair and by a qualified technician.

1. Refer to the diagram on the inside of the door to choose the correct solenoid.

2. To activate the solenoid (P), push a small straight blade screwdriver (FS) into the slot as shown.

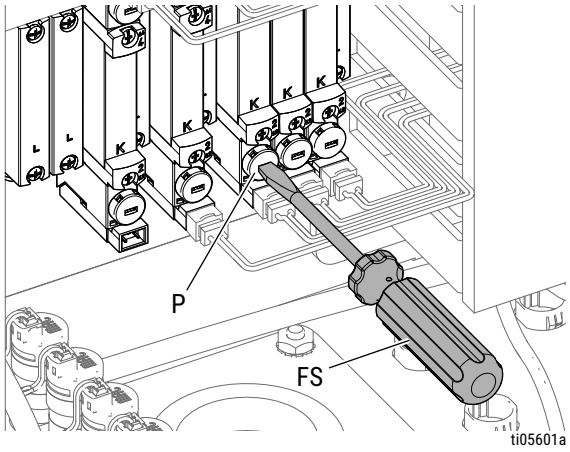
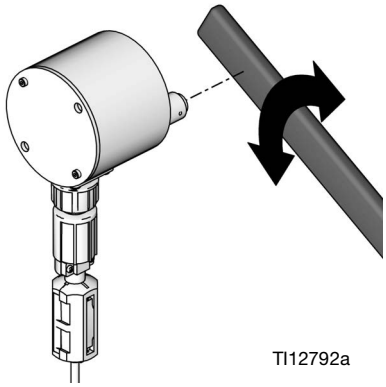


FIG. 53

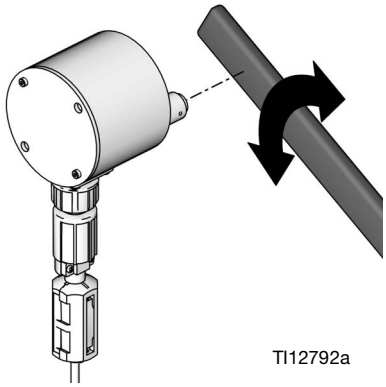
3. It is recommended to **Purge the ProMix V**, page 54 after repair.

Alarm Troubleshooting

Alarm

Description	Cause	Solution
F6S0 **Purge Flow Error (when solvent flow switch installed)** Solvent flow not detected during purge	Solvent line, valve, or switch is plugged or stuck. Solvent pump is not working.	Check components and clean, repair, or replace as necessary. Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
F8A0 or F8B0 **Mix Flow Timeou**t Gun is triggered, but no fluid is flowing on the A side (F8A0) or the B side (F8B0) and the settable No Flow Timeout expires.	ProMix V is in mix mode and gun is only partially triggered, allowing air but no fluid to pass through gun.	Fully trigger the gun.
	Fluid flow rate is too low.	Increase flow rate.
	Flow meter or cable failed or flow meter clogged.	To check meter sensor operation, remove meter cap to expose sensor. Pass a ferrous metal tool in front of the sensor.  TI12792a If there is a meter or cable failure, you will see a large difference between the amount of fluid dispensed and the flow meter volume displayed by the Display Module. Clean or repair meter as necessary.
	Slow actuation of the color and catalyst valves.	See **Ratio Low Error**, page 90**,** and **Ratio High Error**, page 91**.**
	The supply pump is not turned on.	Turn on the supply pump.
	There is an air leak downstream from the air flow switch.	Check the air lines for leaks and repair.
	The air flow switch is stuck open.	Clean or replace air flow switch.
	ProMix V is in mix mode and gun is only partially triggered, allowing air but no fluid to pass through gun.	Fully trigger the gun. If using the gun air to dust parts increase the No Flow Timeout time in Settings - Advanced
N5N0 **Dispense Timeout** Insufficient volume flow at end of calibration	Gun is not triggered. Sampling valve is not open (kit only). Line or gun is plugged or restricted. flow rate is too low. Calibration volume is too large.	Verify trigger is being pulled. Open sampling valve (kit only). Clean line, tip, or filter. Increase fluid pressure or decrease restriction. Decrease calibration volume.

Description	Cause	Solution
QDE0 **Overdose A** The A dose has overshot and, when combined with B, is too large for the mix manifold capacity. **Overdose B** The B dose has overshot, forcing an A dose that, when combined with B, is too large for the mix manifold capacity.	Valve seal or needle/seat are leaking.	Repair the valve.
	Flow meter fluctuations caused by pressure pulsations.	Check for pressure pulsations: 1. Close all the manifold valves. 2. Turn on the circulating pumps and all the booth equipment (such as fans and conveyors). 3. Check if the ProMix V is reading any fluid flow. 4. If the ProMix V shows there is fluid flow and there are no leaks from the gun or any other seals or fittings, the flow meters are probably being affected by pressure pulsations. 5. Close the fluid shutoff valve between the fluid supply system and the flow meter. The flow indication should stop. 6. If necessary, install pressure regulators or a surge tank on the fluid inlets to the ProMix V to reduce the fluid supply pressure. Contact your Graco distributor for information.
	Slow actuation of color and catalyst valves.	See **Ratio Low Error**, page 90**,** and **Ratio High Error**, page 91**.**
	Running a high mix ratio and a high flow rate.	It may be necessary to restrict the flow rate through the dose valve B by adjusting its hex nut.
QLA0, QLB0, QLS0 **Leak Error** Meter A (QLA0), Meter B (QLB0), or Meter S (if installed, QLS0) measures fluid flow with all valves closed.	Pressure on circulation system is fluctuating and generating meter pulses.	Replace check valve in front of meter.
	Valve is leaking.	Replace valve seat, valve, or valve seal.
	Gun, manifold, or line is leaking.	Repair leak downstream of meters.
QPD1-QPD2 **Potlife Error** Potlife has been exceeded for the mixed material for Gun 1 or 2.	Have not sprayed enough volume to keep fresh mixed fluid in the mix manifold, hose, and gun.	Purge the mixed material line. See page **Purge the ProMix V**, page 54. Check that hose length and diameter have been entered correctly. Spray the required volume to restart the potlife timer.

Description	Cause	Solution
QT00 **Dose Time Error** The gun trigger is active, but there is not enough fluid flow to complete a full dose during the dose time selected.	ProMix V is in mix mode and gun is only partially triggered, allowing air but no fluid to pass through gun.	Fully trigger the gun.
	Fluid flow rate is too low.	Increase flow rate.
	Flow meter or cable failed or flow meter clogged.	To check meter sensor operation, remove meter cap to expose sensor. Pass a ferrous metal tool in front of the sensor.  TI12792a If there is a meter or cable failure, you will see a large difference between the amount of fluid dispensed and the flow meter volume displayed by the Display Module. Clean or repair meter as necessary.
	Slow actuation of the color and catalyst valves.	See **Ratio Low Error**, page 90**,** and **Ratio High Error**, page 91**.**
	The supply pump is not turned on.	Turn on the supply pump.
	There is an air leak downstream from the air flow switch.	Check the air lines for leaks and repair.
	The air flow switch is stuck open.	Clean or replace air flow switch.
	ProMix V is in mix mode and gun is only partially triggered, allowing air but no fluid to pass through gun.	Fully trigger the gun. If using the gun air to dust parts increase the No Flow Timeout time in Settings - Advanced

Description	Cause	Solution
R1E0 **Ratio Low Error** The mix ratio is lower than the set tolerance for a color and catalyst volume comparison.	There is too much restriction in the system.	Check that the system is fully loaded with material. Check that the supply pump's cycle rate is set properly. Check that the spray tip/nozzle is properly sized for the flow and application, and that it is not clogged. Check that the fluid regulator is set properly.
	If the alarm occurs during start up, after purging, the flow rate was probably too high.	Restrict gun needle travel to slow down the initial fluid delivery rate until fluid hoses are loaded with material.
	If the alarm occurred after you were spraying for some time, the pressures from the fluid supplies could be unbalanced. Slow actuation of the color and catalyst valves. This can be caused by:	*A*djust color and catalyst fluid supply regulator pressures until they are about equal. *If the pressures are already about equal,* verify that color and catalyst dose valves are operating properly. Manually operate the Dose Valve A and B solenoid valves by pressing and releasing solenoid valve override buttons. Valves should snap open and shut quickly.
	Slow actuation of the color and catalyst valves. This can be caused by: • Air pressure to the valve actuators is too low. • Something is restricting the solenoid or tubing and interrupting valve actuation air. • Dose Valve A is turned in too far. Dose Valve B is open too far • Fluid pressure is high and air pressure is low. • Fluid Seal in valve has failed.	 • Increase air pressure. Air pressure must be 85-100 psi (0.58-0.689 MPa, 5.86-6.89 bar). Adjusting MPa and bar to match 100 psi is recommended • There may be dirt or moisture in the air supply. Filter appropriately. • Refer to **Dose and Purge Valve Settings**, page 50, for adjustment guidelines. • Adjust air and fluid pressure. See recommended air pressure above. • See corresponding valve manual for repair instructions.

Description	Cause	Solution
R4E0 **Ratio High Error** The mix ratio is higher than the set tolerance for a color and catalyst volume comparison.	There is too little restriction in the system.	Check that the system is fully loaded with material. Check that the supply pump's cycle rate is set properly. Check that the spray tip/nozzle is properly sized for the flow and application, and that it is not worn. Check that the fluid regulator is set properly.
	If the alarm occurs during start up, after purging, the flow rate was probably too high.	Restrict gun needle travel to slow down the initial fluid delivery rate until fluid hoses are loaded with material.
	If the alarm occurred after you were spraying for some time, the pressures from the fluid supplies could be unbalanced.	Adjust color and catalyst fluid supply regulator pressures until they are about equal. *If the pressures are already about equal,* verify that color and catalyst dose valves are operating properly. Manually operate the Dose Valve A and B solenoid valves to check operation
	Slow actuation of the color and catalyst valves. This can be caused by: • Air pressure to the valve actuators is too low. • Something is restricting the solenoid or tubing and interrupting valve actuation air. • Dose Valve B is turned in too far. Dose Valve A is open too far. • Fluid pressure is high and air pressure is low.	• Increase air pressure. Air pressure must be 85-100 psi (0.58-0.689 MPa, 5.86-6.89 bar). Adjusting MPa and bar to match 100 psi is recommended. • There may be dirt or moisture in the air supply. Filter appropriately. • Refer to **Dose and Purge Valve Settings**, page 50, for adjustment guidelines. • Adjust air and fluid pressure. See recommended air pressure above.
SAF1 **Atomizing Air During Prefill** Atomizing Air During Prefill	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries valve.
SAH1 **Atomizing Air During Flush** Atomizing Air During Flush	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries valve.
SAR1 **Atomizing Air gun 1 With GFB Shut** The system is detecting air flow through the gun during flush with the GFB	The shuttle valve for that gun is stuck. The solenoid operating it has failed. The pneumatic switch inside the GFB has failed. The Air Flow Switch is stuck on.	Replace any defective parts.

Description	Cause	Solution
SAR2 **Atomizing Air gun 2 With GFB Shut** The system is detecting air flow through the gun during flush with the GFB	The shuttle valve for that gun is stuck. The solenoid operating it has failed. The pneumatic switch inside the GFB has failed. The Air Flow Switch is stuck on.	Replace any defective parts.
SAS1 **Atomizing Air Gun 1 During Purge** The system is detecting air flow through Gun 1 during Mix Fill.	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries
SAS2 **Atomizing Air Gun 2 During Purge** The system is detecting air flow through Gun 2 during Mix Fill.	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries
SGF1 **Gun Flush Box Open During PreFill** Gun Flush Box Open During PreFill	The GFB is open.	Close the GFB.
	No signal to the pressure switch.	With GFB closed and gun in, ensure pressure switch is getting pressurized air.
	The pressure switch or wiring that detects GFB closed is inoperable.	Troubleshoot the pressure switch.
SGH1 **Gun Flush Box Open During Flush** Gun Flush Box Open During Flush	The GFB is open.	Close the GFB.
	No signal to the pressure switch.	With GFB closed and gun in, ensure pressure switch is getting pressurized air.
	The pressure switch or wiring that detects GFB closed is inoperable.	Troubleshoot the pressure switch.
SGS1 **Gun Flush Box 1 Open During Mix Fill** Gun Flush Box 1 Open During Mix Fill	The GFB is open.	Close the GFB. With GFB closed and gun in, ensure pressure switch is getting pressurized air.
	The pressure switch or wiring that detects GFB closed is inoperable.	Troubleshoot the pressure switch.
SGS2 **Gun Flush Box 1 Open During Mix Fill** Gun Flush Box 2 Open During Mix Fill	The GFB is open.	Close the GFB. With GFB closed and gun in, ensure pressure switch is getting pressurized air.
	The pressure switch or wiring that detects GFB closed is inoperable.	Troubleshoot the pressure switch.
SHA0 **Cannot Enter Mix Fill Because A Side Was Not Pre-filled** Pre-Fill failed on A side	If loading a recipe was canceled and then another recipe started.	Flush the system and load the recipe again.
	Failure of solenoid or valve.	Troubleshoot components as necessary
	The pressure switch or wiring that detects GFB closed is inoperable.	

Description	Cause	Solution
SHB0 **Cannot Enter Mix Fill Because B Side Was Not Pre-filled** Pre-Fill failed on B side	If loading a recipe was canceled and then another recipe started.	Flush the system and load the recipe again.
	Failure of solenoid or valve.	Troubleshoot components as necessary
	The pressure switch or wiring that detects GFB closed is inoperable.	
SNA0 or SNB0 **Pre-Fill Volume Error** PreFill volume limit not met on the A or B side within the set time limit.	Gun, line, valve, or meter is plugged or stuck.	Check components and clean, repair, or replace as necessary.
	Feeder pump is not turned on or is not working.	Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
	Air lines or solenoids are plumbed incorrectly or solenoids are not working.	Check air line path.
	Flow rate is too low.	Increase fluid pressure.
	Pre-Fill is set to volume basis, but the volume is not reached within the set time limit. Time may be set too low.	Increase the flow rate or Pre-Fill time so the desired volume can be completed
	Pre-Fill is set to time basis, but the minimum volume is not reached during the set time. Volume may be set too high.	Increase the flow rate or decrease the minimum Pre-Fill volume so the process can be completed within the set time.
SND1 **Minimum Mif Fill Volume Not Met Gun 1** PreFill volume limit not met on the A or B side within the set time limit.	Gun Flush Box is not triggering gun.	Verify trigger is being pulled. Adjust as needed.
	Line or gun is plugged or restricted.	Clean line, tip, or filter.
	Flow rate is too low.	Increase fluid pressure or decrease restriction.
	Valve is stuck.	Clean valve or verify that solenoid is triggering valve properly.
SND2 **Minimum Mif Fill Volume Not Met Gun 2** PreFill volume limit not met on the A or B side within the set time limit.	Gun Flush Box is not triggering gun.	Verify trigger is being pulled. Adjust as needed.
	Line or gun is plugged or restricted.	Clean line, tip, or filter.
	Flow rate is too low.	Increase fluid pressure or decrease restriction.
	Valve is stuck.	Clean valve or verify that solenoid is triggering valve properly.
SPA0 or SPB0 **Flush Volume Error** Flush volume limit not reached on the A or B side within the set time limit.	Solvent line, valve, or meter is plugged or stuck.	Check components and clean, repair, or replace as necessary.
	Solvent pump not working.	Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
	Flush is set to volume basis, but the volume is not reached within the set time limit. Flow rate is too low or time may be set too low.	Increase the flow rate or flush time so the desired volume can be completed.
	Flush is set to time basis, but the minimum volume is not reached during the set time. Flow rate is too low or volume may be set too high.	Increase the flow rate or decrease the minimum flush volume so the process can be completed within the set time.

Description	Cause	Solution
SPS0 **Purge Volume Error (when solvent meter is installed)** Minimum set volume of solvent not detected during the purge sequence.	Solvent line, valve, or meter is plugged or stuck.	Check components and clean, repair, or replace as necessary.
	Solvent pump not working.	Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
	Flow rate too low to complete set volume within purge time	Increase solvent flow rate or increase purge set time.
SRA0 or SRB0 **Pre-Fill Timeout Error** Minimum PreFill volume not reached on the A or B side within the set time limit.	Gun, line, valve, or meter is plugged or stuck.	Check components and clean, repair, or replace as necessary.
	Feeder pump is not turned on or is not working.	Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
	Air lines or solenoids are plumbed incorrectly or solenoids are not working.	Check air line path.
	Flow rate is too low.	Increase fluid pressure.
	Pre-Fill is set to volume basis, but the volume is not reached within the set time limit. Time may be set too low.	Increase the flow rate or Pre-Fill time so the desired volume can be completed
	Pre-Fill is set to time basis, but the minimum volume is not reached during the set time. Volume may be set too high.	Increase the flow rate or decrease the minimum Pre-Fill volume so the process can be completed within the set time.
STA0 or STB0 **Flush Timeout Error** Minimum flush volume not reached on the A or B side within the set time limit.	Solvent line, valve, or meter is plugged or stuck.	Check components and clean, repair, or replace as necessary.
	Solvent pump not working.	Check and repair pump. Refer to the pump manufacturer manual for repair procedures and replacement parts.
	Flush is set to volume basis, but the volume is not reached within the set time limit. Flow rate is too low or time may be set too low.	Increase the flow rate or flush time so the desired volume can be completed.
	Flush is set to time basis, but the minimum volume is not reached during the set time. Flow rate is too low or volume may be set too high.	Increase the flow rate or decrease the minimum flush volume so the process can be completed within the set time.
WJAO **Color Solenoid Activation Timeout** No current draw from solenoid	Cracked or disconnected solenoid wire.	Verify wiring from controller to solenoid.
	Failed solenoid.	Verify solenoid actuation using manual actuation, then 24VDC power supply.
	Failed controller module.	Verify voltage when solenoid commanded on.
WJBO **Cat Solenoid Activation Timeout** No current draw from solenoid	Cracked or disconnected solenoid wire.	Verify wiring from controller to solenoid.
	Failed solenoid.	Verify solenoid actuation using manual actuation, then 24VDC power supply.
	Failed controller module.	Verify voltage when solenoid commanded on.

Description	Cause	Solution
WJNO Calibration Valve Timeout No current draw from solenoid	Cracked or disconnected solenoid wire.	Verify wiring from controller to solenoid.
	Failed solenoid.	Verify solenoid actuation using manual actuation, then 24VDC power supply.
	Failed controller module.	Verify voltage when solenoid commanded on.

Deviation

Description	Cause	Solution
CBCR RX Communication Error Failure to receive communication from the booth control	Booth control cable loose or damaged.	Re-secure all wires. Cycle the power.
	Failure of booth control.	Replace barrier or booth control.
CBCT TX Communication Error Failure to transmit communication from the booth control	Booth control cable loose or damaged.	Re-secure all wires. Cycle the power.
	Failure of booth control.	Replace barrier or booth control.
EWFX TX Remote Standby On Emergency standby button	Emergency stop button has been pushed.	Pull the emergency stop button.
	Wiring to button has failed.	Verify wiring.
SAD1 Atomizing Air Gun 1 During Purge The system is detecting air flow through Gun 1 during Purge.	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries valve. Ensure pneumatic switch inside GFB. Troubleshoot solenoid and wiring.
SAD2 Atomizing Air Gun 1 During Purge The system is detecting air flow through Gun 2 during Purge.	(With no GFB) Operator did not disconnect gun air.	Re-train operator.
	Humphries valve not operating properly.	Ensure signal to Humphries valve. Ensure pneumatic switch inside GFB. Troubleshoot solenoid and wiring.

Description	Cause	Solution
SGD1-SGD2 **Gun Flush Box 1 or 2 Open During purge** A gun flush box is enabled, but the ProMix V does not detect a gun in the gun flush box during purge or mix fill.	The cover of the gun flush box is not closed.	Close the cover and clear the alarm.
	For ProMix V models with a gun flush box, the gun is not in the box when purge is active. ***NOTICE*** To prevent mixed material from curing in the equipment, do not shut off power. Follow one of the solutions at right.	Purge the ProMix V with solvent or fresh mixed material: • **Solvent Purge -** See **Purge the ProMix V**, page 54. The ProMix V purges until the preset purge time is complete. • **New Mixed Material Purge -** Go to Mix mode and spray the required volume to restart the potlife timer.
SSD1-SSD2 **Fill Timeout Gun 1 or 2** Insufficient volume of mixed material is detected during the user settable mix fill time.	Gun Flush Box is not triggering gun.	Verify trigger is being pulled. Adjust as needed.
	Line or gun is plugged or restricted.	Clean line, tip, or filter.
	Flow rate is too low.	Increase fluid pressure or decrease restriction.
	Valve is stuck.	Clean valve or verify that solenoid is triggering valve properly.
	Gun fill timeout is set too low and the fill process can't complete in the allotted time.	Increase the gun fill Timeout.
WJOO **Valve Timeout** Solenoid Timeout. No current draw from solenoid	Bad wiring, solenoid, or controller.	Verify wiring. Verify voltage going to solenoid. Cycle the power unit. If the problem persists, contact Graco for technical help.
XRCX **Error Reading Recipe data** Controller issue.	Internal error of the controller	Cycle the power unit. If the problem persists, contact Graco for technical help.
XSOO **Invalid Request** Invalid request.	Within a recipe or setting, a value was entered that was outside the allowed range.	Re-enter a value within allowed limits.
XWCX **Error Writing recipie data** Invalid request.	Internal error of the controller.	Cycle the power unit. If the problem persists, contact Graco for technical help.

Description	Cause	Solution
YEOX **State End Failure** Failed to complete last step	Internal error of the controller.	Cycle the power unit. If the problem persists, contact Graco for technical help.
YVOX **State Validate Failure** The requested change of state was not allowed	The operator requested a change of state that is not allowed, such as going to mix without a recipe loaded, or trying to load a recipe that is not enabled.	

Record

Description
EC0X **Configuration changed**
ED00 **System power on**
EJD0 **Job complete**
EN0X **Calibration complete**
ESCX **Factory defaults**
EWFX **Remote standby on**
EX00 **Recipe loaded**
EY0X **State change**

Event Code Table

Alarms

Code	Description
F6S0	Solvent flow switch not active during purge
F8A0	Mix flow timeout A
F8B0	Mix flow timeout B
N5N0	Dispense timeout
QDE0	Mix overdose
QLA0	Leak alarm A
QLB0	Leak alarm B
QLS0	Leak alarm S
QPD1	Potlife expired on gun 1
QPD2	Potlife expired on gun 2
QT00	Mix dose timeout
R1E0	Mix ratio low error
R4E0	Mix ratio high error
SAF1	Atomizing air during pre-fill
SAH1	Atomizing air during flush
SAR1	Atomizing air gun 1 with GFB shut
SAR2	Atomizing air gun 2 with GFB shut
SAR3	Atomizing air gun 3 with GFB shut
SAR4	Atomizing air gun 4 with GFB shut
SAS1	Atomizing air gun 1 during mix fill
SAS2	Atomizing air gun 2 during mix fill
SGF1	Gun flush box open during pre-fill
SGH1	Gun flush box open during flush
SGS1	Gun flush box 1 open during mix fill
SGS2	Gun flush box 1 open during mix fill
SHA0	Cannot enter mix fill because side A was not pre-filled
SHB0	Cannot enter mix fill because side B was not pre-filled
SNA0	Pre-fill volume not met A
SNB0	Pre-fill volume not met B
SND1	Minimum mix fill not met gun 1
SND2	Minimum mix fill not met gun 2
SPA0	Flush volume not met A
SPB0	Flush volume not met B
SPS0	Purge b volume incomplete
SRA0	Pre-fill timeout A
SRB0	Pre-fill timeout B
STA0	Flush timeout A
STB0	Flush timeout B
WJ00	Valve timeout
WJA0	Color solenoid activation timeout
WJB0	Cat solenoid activation timeout
WJN0	Calibration valve timeout

Deviation

Code	Description
CBCR	RX communication error
CBCT	TX communication error
EWFX	Remote standby on
SAD1	Atomizing air gun 1 during flush, purge, , mix fill or pre-fill
SAD2	Atomizing air gun 2 during flush, purge, or mix fill
SGD1	Gun flush box 1 open during purge
SGD2	Gun flush box 2 open during purge
SSD1	Fill timeout gun 1
SSD2	Fill timeout gun 2
SSD3	Fill timeout gun 3
SSD4	Fill timeout gun 4
STA0	Flush timeout A
STB0	Flush timeout B
WJ00	Valve timeout
XRCX	Error reading recipe data
XS00	Invalid request
XWCX	Error writing recipe data
YE0X	State end failure
YV0X	State validate failure

Accessories and Repair Kits

The following kits are available as accessories or repair kits for the ProMix V.

Accessories and Repair Kit Manuals

Part	Manual	Description
2008037	3B0203	Solenoids
2013036	3B0203	Solenoid Manifold
2008712	3B0203	Solenoid Wiring
2007852	X004840	Air Flow Switch
2008195	X030341	Purge A2
2007871	X004860	Alarm tower
2008668	X020291	Atomizing Air Off, No GFB And Reg Override
2008667	X020035	Atomizing Air Off, With GFB And Reg Override
2011370	X028817	B Side Restrictor
2009386	X004863	Color/Cat Valve Stack 2
2007859	X004863	Color/Cat Valve Stack 3
2007860	X004863	Color/Cat Valve Stack 4
2007861	X004863	Color/Cat Valve Stack 5
2007862	X004863	Color/Cat Valve Stack 6
2009387	X004863	Color/Cat Valve Stack Top 2
2007426	X004863	Color/Cat Add (Pair)
2013593	313599	Coriolis Meter
2011578	X004484	Dump Valve (Single)
2013035	3B0236	Dynamic Dosing
2010874	X030346	Flush Without Power
2007685	312784	GFB (gun adapter below)
2013897	312784	Re-Use Existing GFB
2012164	X030358	HMI Screen
2012584	3B0236	Integrator Size 100 cc
2012574	3B0236	Integrator Size 25 cc
2013034	3B0236	Integrator Size 10 cc
2008668	X020291	Atomizing Air Off, No GFB and Reg Override
2008667	X020035	Atomizing Air Off, With GFB and Reg Override
2008196	X004485	Sampling Valve (Both Sides)
2007853	X004841	Solvent Flow Switch
2008029	X004499	Solvent Meter
2006299	X004838	Stand
2011822	---	Labels For Kits (Pneumatic, Electric)
2010869	X028822	WIFI

Cables

Part	Description
Intrinsically Safe for PVMBM01-24 Series A	
2015483	CABLE, 16 M
2015484	CABLE, 32 M
Non-Hazardous Booth Control Cables	
2008435	CABLE, 8 M
2008436	CABLE, 16 M
2008437	CABLE, 32 M
2008434	CABLE, 3.5 M

Repair Kits

Part	Description
2008367	KIT, repair, power supply
2008368	KIT, repair, on/off switch
2008369	KIT, repair, E-stop switch
2008370	KIT, repair, antenna
2008394	KIT, repair, shuttle valve
2008447	KIT, repair, double acting solenoid
2008449	KIT, repair, pressure gage
2008450	KIT, repair, air supply valve
2008471	KIT, repair, high pressure lines
2008472	KIT, repair, brackets
2008501	KIT, repair, mix cleaning
2008502	KIT, repair, j-pipe
2008503	KIT, repair, mix manifold rebuild
2008504	KIT, repair, mix manifold rebuild, acid
2008505	KIT, repair, dose and purge valve
2008506	KIT, repair, dose and purge valve, acid
2008507	KIT, repair, cured mix manifold
2008710	KIT, repair, pressure switch
2008711	KIT, repair, flow meter cable
2008712	KIT, repair, solenoid wiring
2009134	KIT, repair, fluid stack valve and seat
2009135	KIT, repair, fluid stack valve O-ring and fitting
2009136	KIT, repair, fluid stack valve and seat, acid
2009137	KIT, repair, fluid stack valve O-ring and fitting, acid
2011837	KIT, repair, valve, acid double acting
2011836	KIT, repair, valve, metal, acid double acting
2011838	KIT, repair, valve acid single cat
2011839	KIT, repair, valve, metal, acid single cat
2011840	KIT, repair, valve non double acting
2011841	KIT, repair, valve, metal, non double acting
2011844	KIT, repair, valve non single/cat/color
2011842	KIT, repair, valve, metal, non single/cat/color
2006610	KIT, repair, booth control PVMNM non-hazardous location only
2016042	KIT, repair, booth control PVMBM hazardous location only
15X888	KIT, repair, valve, ratio check, breakers with wall mount

Solenoid Actuator 2013727

This is a magnetic manual actuator for use on the (blue) double acting mix manifold solenoids only. Air pressure is required to activate the solenoid.

1. Refer to the diagram on the inside of the door to choose the correct solenoid.
2. Touch the Solenoid Actuator (SA) to solenoid (R) as shown. The magnetic Solenoid Actuator will cause the solenoid to actuate. If the Solenoid Actuator is between solenoids, it will not work.

NOTICE

Flush after use. The ProMix-V cannot track pot life when the solenoids are overridden. The operator, may introduce quantities of color, catalyst, solvent and air into the mix manifold without ratio control. Excessive catalyst mixed with color may cause faster cure times.

3. It is recommended to **Purge the ProMix V**, page 54 after repair.

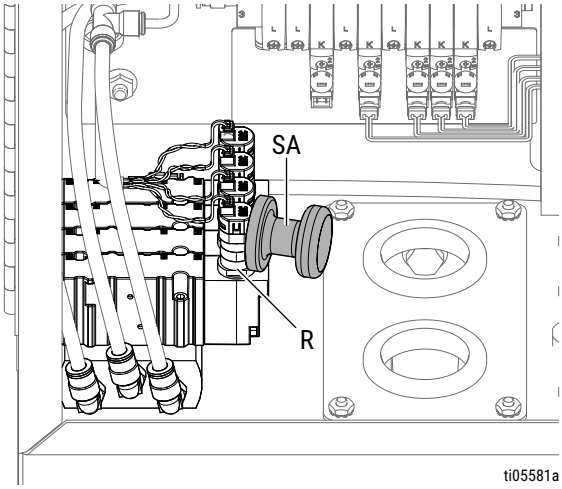
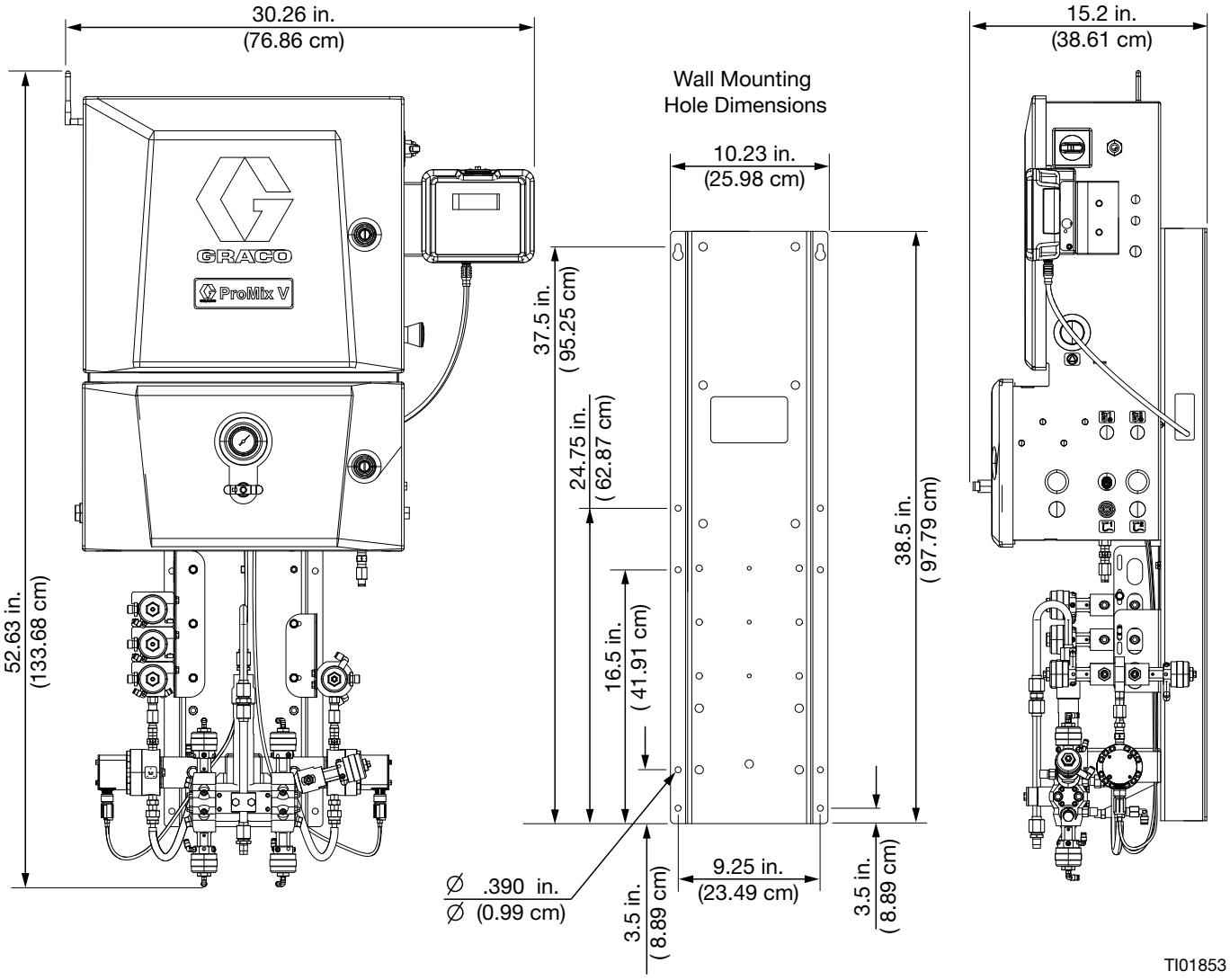
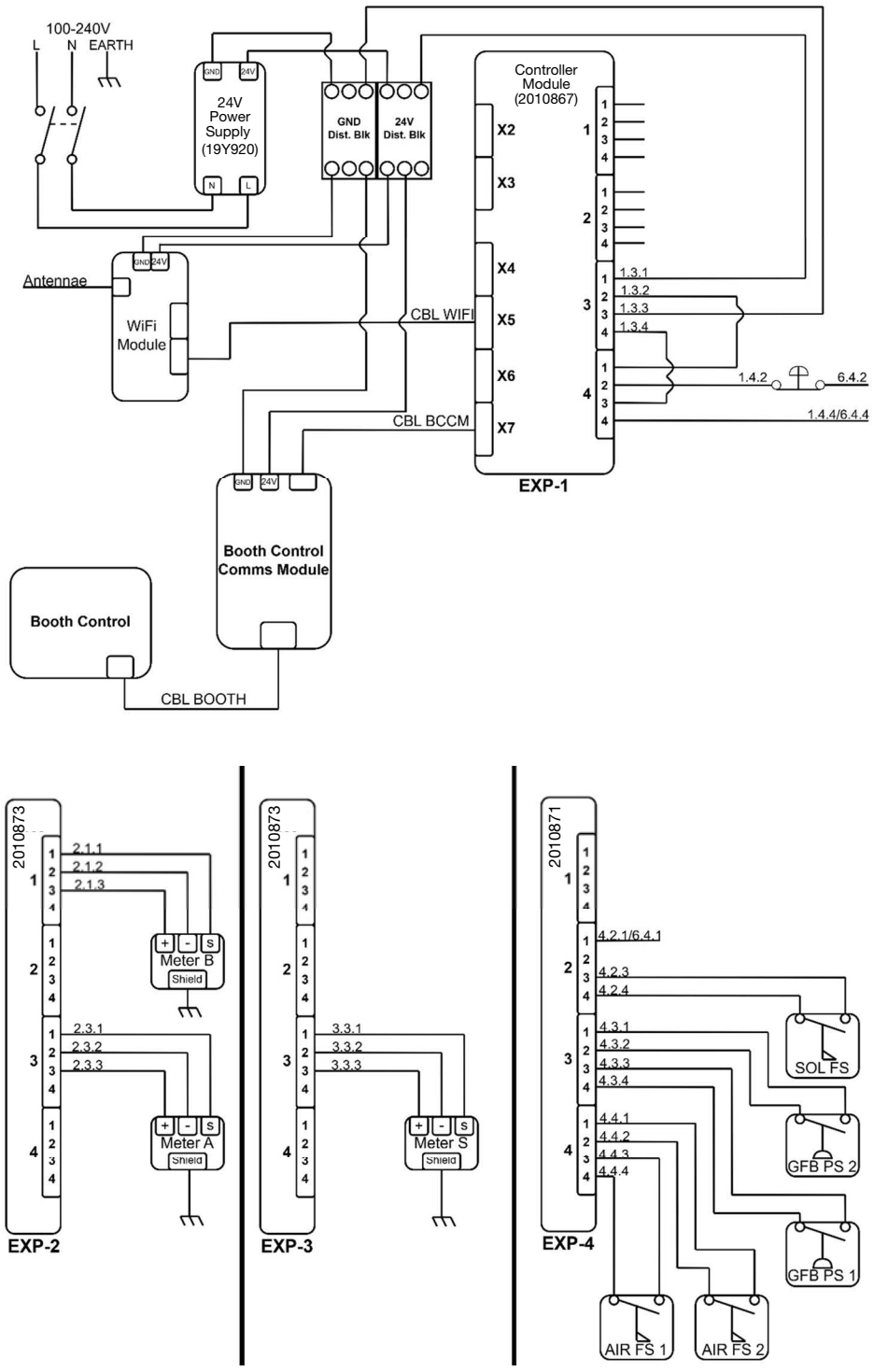


FIG. 54.

Dimensions


30.26 in.
(76.86 cm)
52.63 in.
(133.68 cm)
GRACO
ProMix V
Wall Mounting
Hole Dimensions
10.23 in.
(25.98 cm)
37.5 in.
(95.25 cm)
24.75 in.
(62.87 cm)
16.5 in.
(41.91 cm)
38.5 in.
(97.79 cm)
Ø .390 in.
Ø (0.99 cm)
3.5 in.
(8.89 cm)
9.25 in.
(23.49 cm)
3.5 in.
(8.89 cm)
15.2 in.
(38.61 cm)
TI01853

Electrical Schematics



TI04207

FIG. 55 ProMix V Non Hazardous Electrical Schematic for all PVMNM

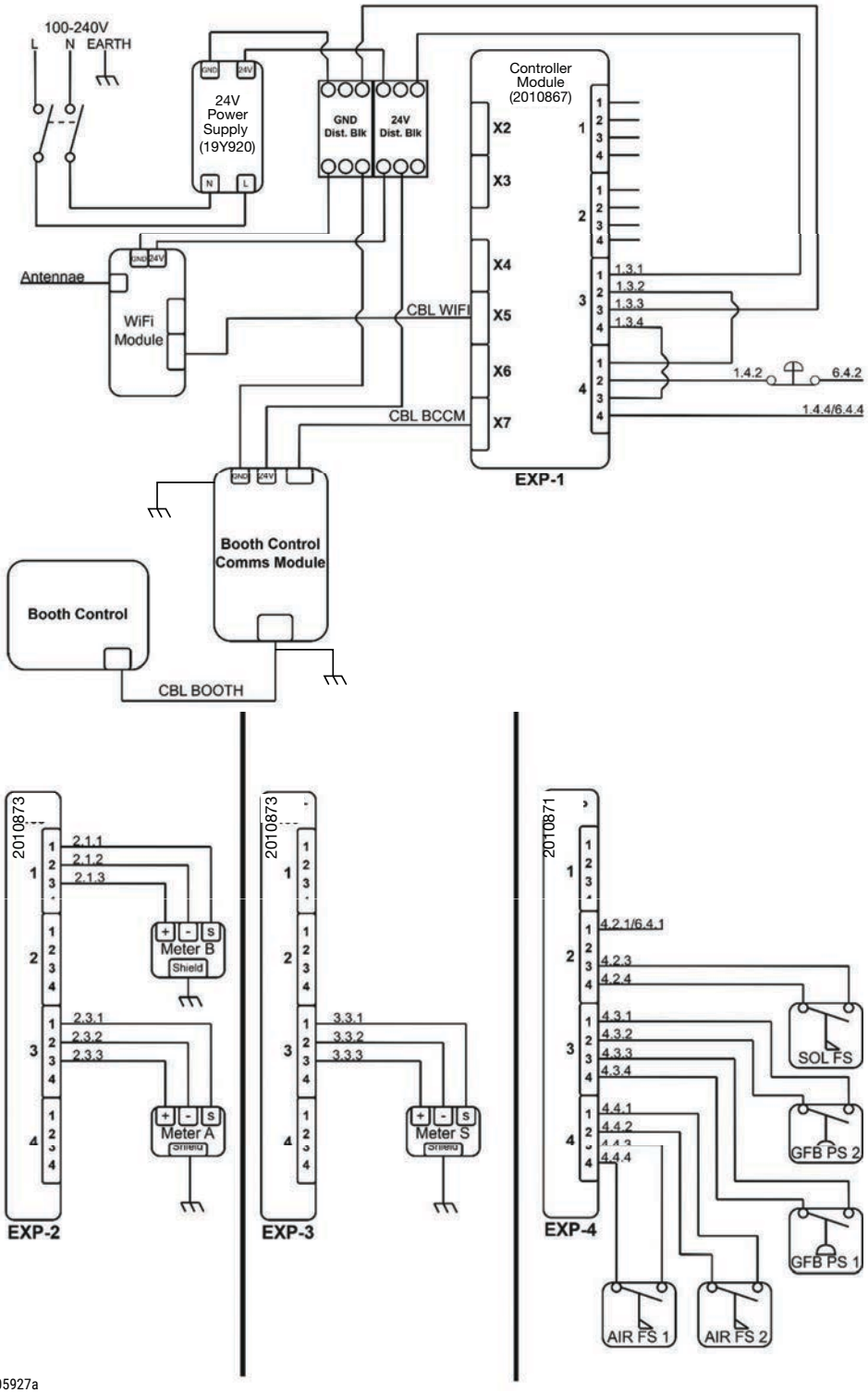
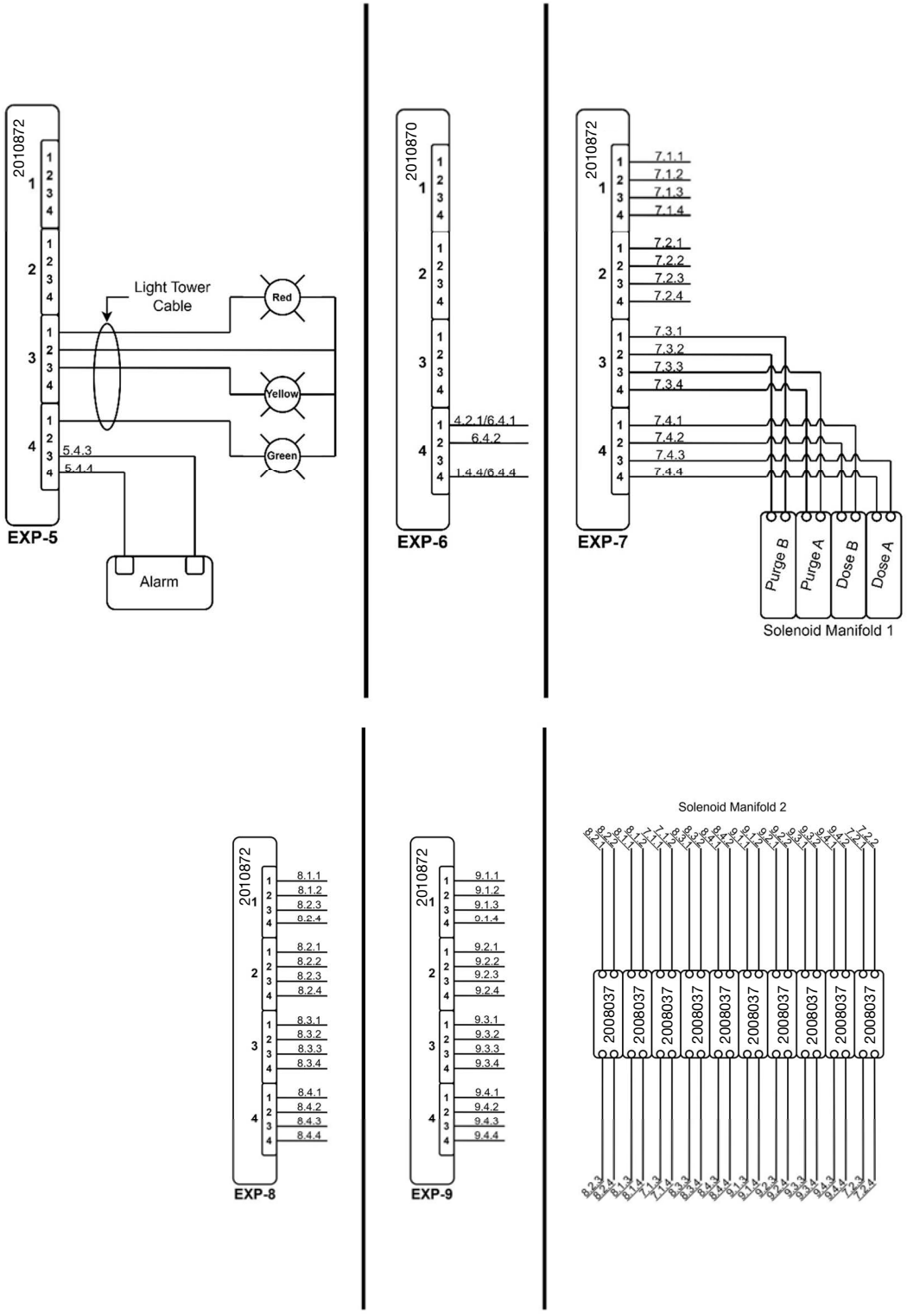


FIG. 56 ProMix V Hazardous Location Electrical Schematic for all PVMBM



TI04225

FIG. 57 ProMix V Electrical Schematic

Pneumatic Schematic

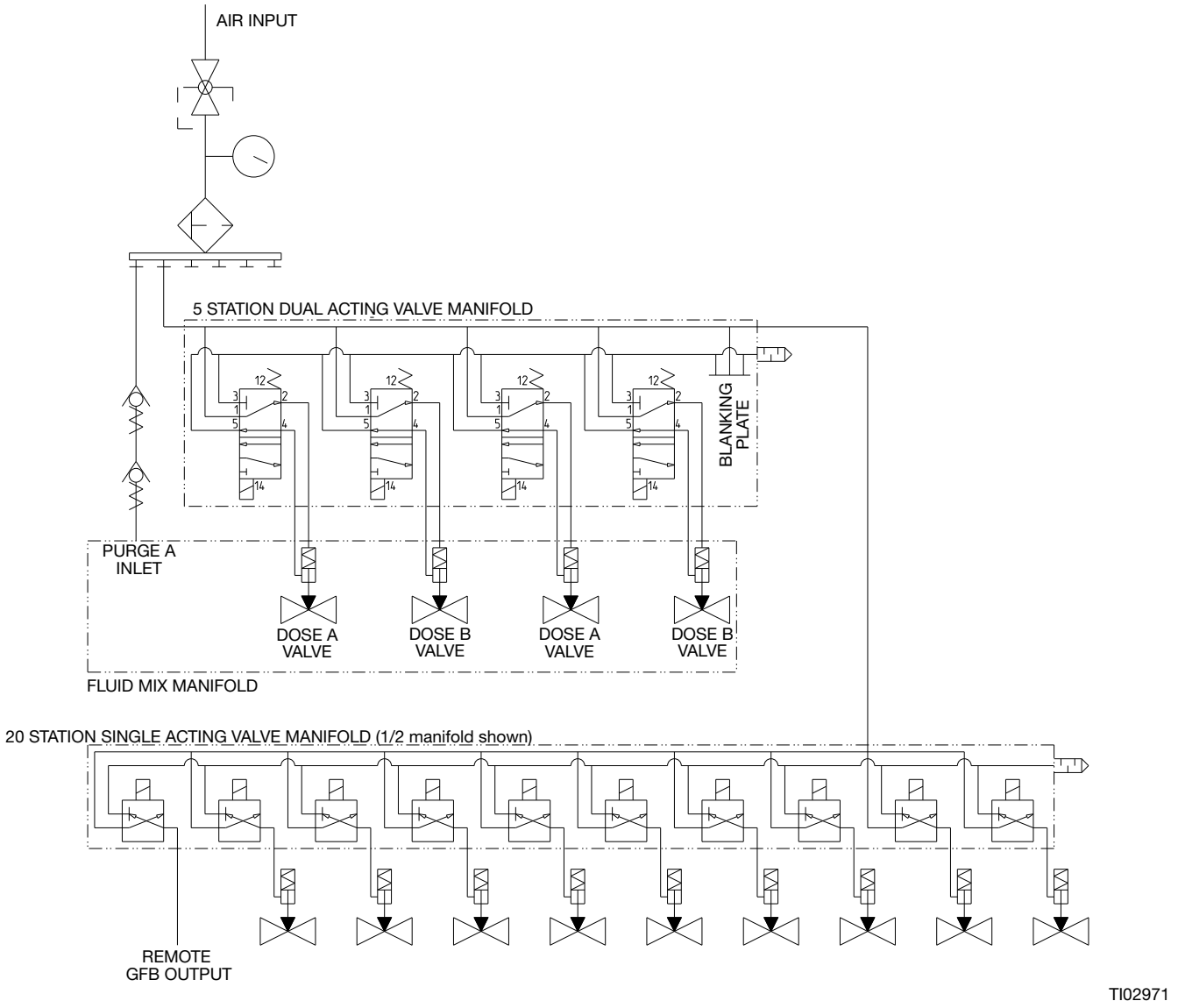


FIG. 58 Pneumatic Schematic

Module Connections

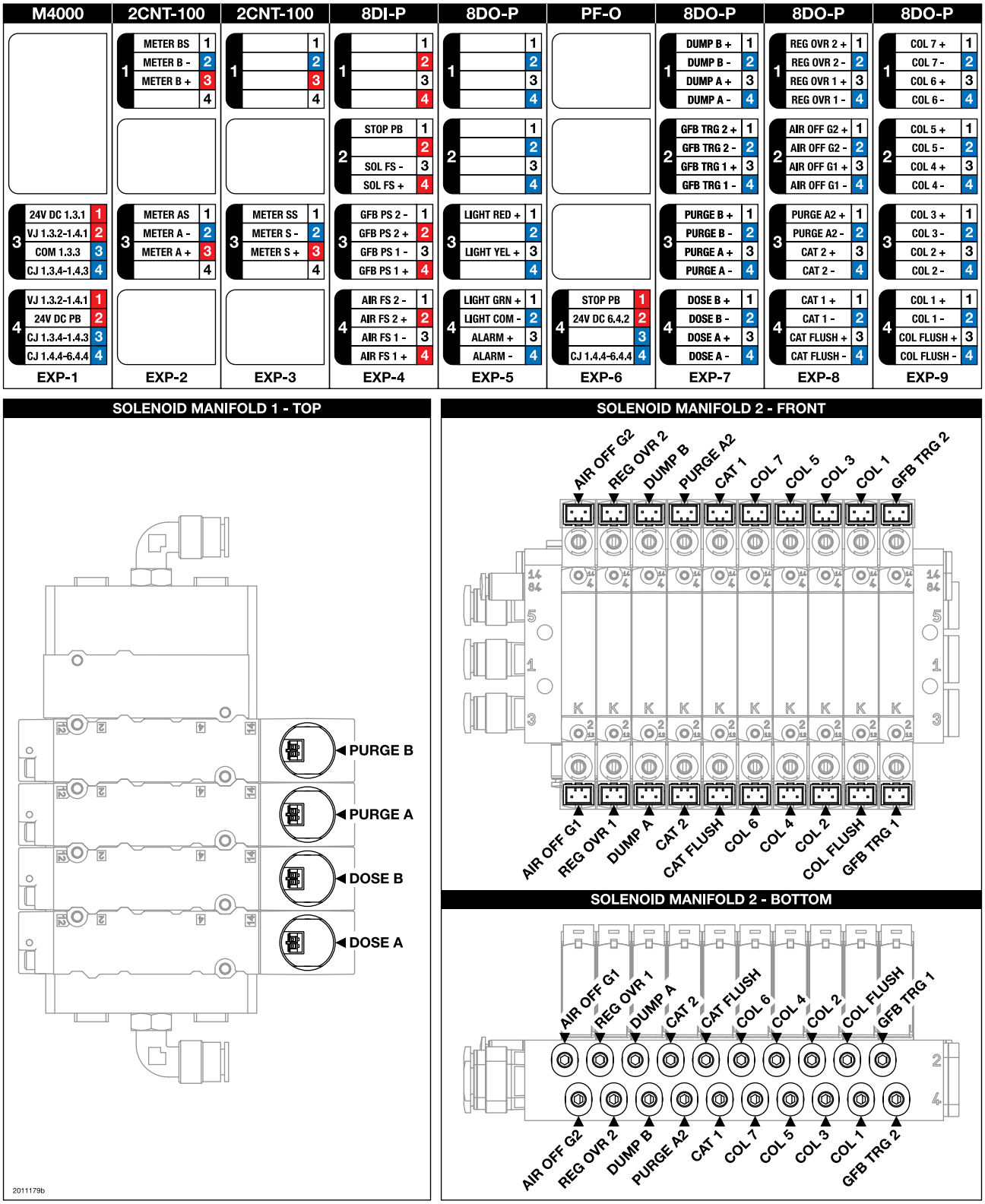


FIG. 59 ProMix V Module Connections

Technical Specifications

ProMix V, Package Meter Proportioner		
	US	**Metric**
Weight		
PVMNM01	120.00 lbs	54.40 kg
PVMNM02	122.12 lbs	55.39 kg
PVMNM03	122.24 lbs	55.44 kg
PVMNM04	125.80 lbs	57.06 kg
PVMNM05	126.50lbs	57.38 kg
PVMNM06	126.62 lbs	57.43 kg
PVMNM07	126.62 lbs	57.43 kg
PVMNM08	130.96 lbs	59.40 kg
PVMNM09	130.22 lbs	59.06 kg
PVMNM10	130.22 lbs	59.06 kg
PVMNM11	130.34 lbs	59.12 kg
PVMNM12	134.56 lbs	61.03 kg
PVMNM13	120.00 lbs	54.40 kg
PVMNM14	122.12 lbs	55.39 kg
PVMNM15	122.24 lbs	55.44 kg
PVMNM16	125.80 lbs	57.06 kg
PVMNM17	126.50 lbs	57.38 kg
PVMNM18	126.62 lbs	57.43 kg
PVMNM19	126.62 lbs	57.43 kg
PVMNM20	130.96 lbs	59.40 kg
PVMNM21	130.22 lbs	59.06 kg
PVMNM22	130.22 lbs	59.06 kg
PVMNM23	130.34 lbs	59.12 kg
PVMNM24	134.56 lbs	61.03 kg
PVMBM01	125.00 lbs	56.70 kg
PVMBM02	127.12 lbs	57.66 kg
PVMBM03	127.24 lbs	57.71 kg
PVMBM04	130.80 lbs	59.32 kg
PVMBM05	131.50 lbs	59.65 kg
PVMBM06	131.62 lbs	59.70 kg
PVMBM07	131.62 lbs	59.70 kg
PVMBM08	135.96 lbs	61.67 kg
PVMBM09	135.22 lbs	61.33 kg
PVMBM10	135.22 lbs	61.33 kg
PVMBM11	135.34 lbs	61.39 kg
PVMBM12	139.56 lbs	63.30 kg
PVMBM13	125.00 lbs	56.70 kg
PVMBM14	127.12 lbs	57.66 kg
PVMBM15	127.24 lbs	57.71 kg
PVMBM16	130.80 lbs	59.32 kg
PVMBM17	131.50 lbs	59.65 kg
PVMBM18	131.62 lbs	59.70 kg

ProMix V, Package Meter Proportioner		
	US	**Metric**
PVMBM19	131.62 lbs	59.70 kg
PVMBM20	131.96 lbs	61.67 kg
PVMBM21	135.22 lbs	61.33 kg
PVMBM22	135.22 lbs	61.33 kg
PVMBM23	135.34 lbs	61.39 kg
PVMBM24	139.56 lbs	63.30 kg
Maximum working fluid pressure for acid catalyst compatible units	3000 psi	20.68 MPa, 206.8 bar
Maximum working fluid pressure	4000 psi	27.6 MPa, 275.8 bar
Maximum working air pressure	100	0.69 MPa, 6.89 bar
Air supply	85 to 100 psi	0.59-0.69 MPa, 5.86-6.89 bar
Air inlet size	3/8 npt(f)	
Air filtration for air logic (Graco-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	1.0:1 to 50.0:1	
On-ratio accuracy	Up to ± 1%, user selectable	
Fluid inlet sizes	1/4 npt(f)	
Fluid outlet size (static mixer)	1/4 npt(f)	
External power supply requirements	100-240 VAC, 50/60 Hz, 1.34 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge	
Operating temperature range	41° to 122°F	5° to 50°C
Environmental conditions rating	Indoor use, pollution degree (2), installation category II	
Fluids handled	• solvent and waterborne paints	
	• polyurethanes	
	• epoxies	
	• acid catalyzed varnishes, for specific acid compatible ProMix V models	
Fluid flow rate range		
G3000, G250, G3000A Meter	0.02 to 1.00 gal/min	75 to 3800 cc/min
G3000HR, G250HR Meter	0.01 to 0.50 gal/min	38 to 1900 cc/min
Coriolis Meter	0.005 to 1.00 gal/min	20 to 3800 cc/min
S3000 Solvent Meter (accessory)	0.01 to 0.53 gal/min	38 to 2000 cc/min
Noise level		
Sound pressure level	Below 70 dBA	
Sound power level	Below 85 dBA	
Materials of Construction		
Wetted materials on all models	303, 304, 316 SST; Tungsten carbide (with nickel binder); perfluoroelastomer; PTFE	
Wetted materials on acid models	316, 17-4 SST; PEEK perfluoroelastomer; PTFE	

California Proposition 65

CALIFORNIA RESIDENTS

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

Graco Standard Warranty

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

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 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 S 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.

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

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

Original instructions. This manual contains English. MM 3B0203
Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

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