

ProMix[®] 2KS

312778G

Plural Component Proportioner

EN

Automatic system for proportional mixing of plural component coatings, with Wall Mount Fluid Station or RoboMix Fluid Station. For professional use only.

Approved for use in explosive atmospheres (except the EasyKey).

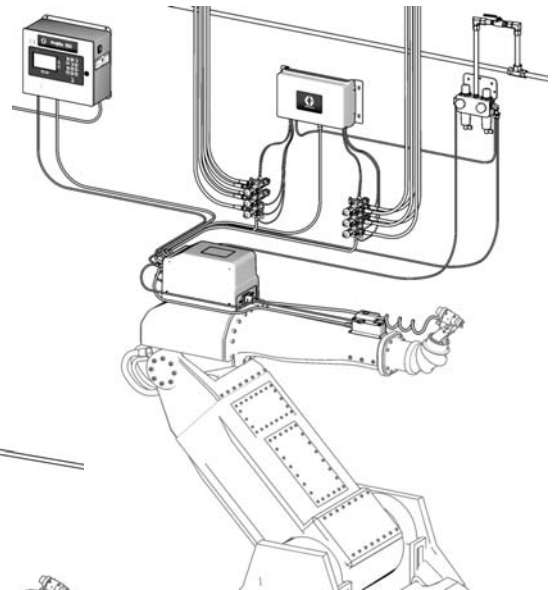


Important Safety Instructions

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

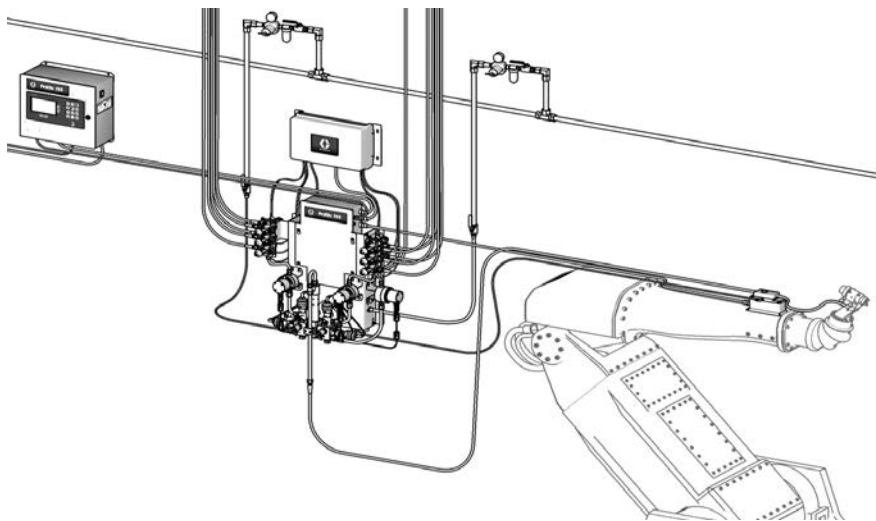
See pages 4-7 for model information, including maximum working pressure. Equipment approval labels are on page 3. Some components shown are not included with all systems.

Automatic System with RoboMix Fluid Station



T112552a

Automatic System with Wall Mount Fluid Station



T112553a



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Related Manuals

Component Manuals in English

Manual	Description
312779	ProMix 2KS Automatic System Operation
312780	ProMix 2KS Automatic System Repair-Parts
312781	Fluid Mix Manifold
312782	Dispense Valve
312783	Color Change Valve Stacks
312787	Color Change Module Kit
312784	Gun Flush Box Kits
310745	Gun Air Shutoff Kit
312786	Dump Valve and Third Purge Valve Kits
312785	Network Communication Kits
308778	G3000/G3000HR/G250/G250HR Flow Meter
313599	Coriolis Flow Meter
313212	Gun Flush Box Integration Kit
313290	Floor Stand Kit
313542	Beacon Kit
313386	Basic Web Interface/Advanced Web Interface
406800	15V825 Discrete I/O Board Kit

15V256 Automatic Upgrade Kit

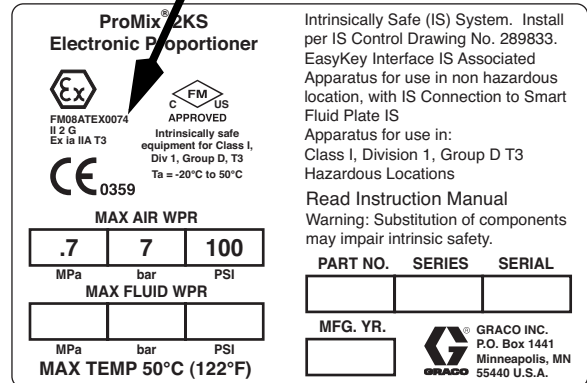
Upgrades a ProMix 2KS manual system to an automatic system. Includes the 255766 Discrete I/O Board. See page 38.

Equipment Approvals

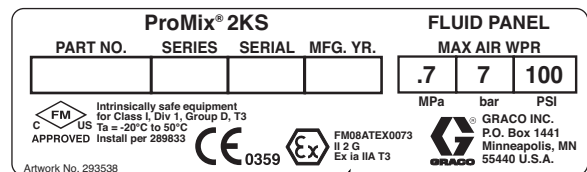
Equipment approvals appear on the following labels which are attached to the Fluid Station and EasyKey™. See FIG. 1 on page 4 and FIG. 2 on page 6 for label locations.

EasyKey and Fluid Station Label

ATEX Certificate is listed here



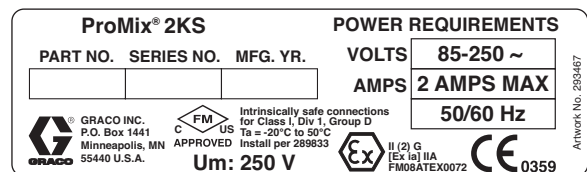
Fluid Station Label



T113581a

ATEX Certificate is listed here

EasyKey Label



T113582a

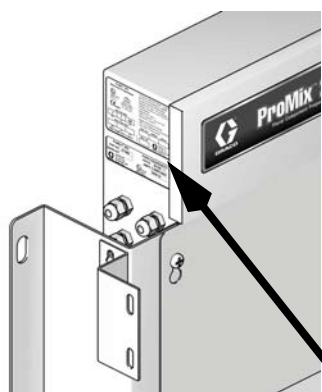
ATEX Certificate is listed here

System Configuration and Part Numbers

Wall Mount Fluid Station Configurator Key

The configured part number for your equipment is printed on the equipment identification labels. See Fig. 1 for location of the identification labels. The part number includes one digit from each of the following six categories, depending on the configuration of your system.

Automatic System	Control and Display	A and B Meter	Color Valves	Catalyst Valves	Flow Control
A	D = EasyKey with LCD Display	0 = No Meters 1 = G3000 (A and B) 2 = G3000HR (A and B) 3 = 1/8 in. Coriolis (A) and G3000 (B) 4 = G3000 (A) and 1/8 in. Coriolis (B) 5 = 1/8 in. Coriolis (A) and G3000HR (B) 6 = G3000HR (A) and 1/8 in. Coriolis (B) 7 = 1/8 in. Coriolis (A and B)	0 = No Valves (single color) 1 = Two Valves (low pressure) 2 = Four Valves (low pressure) 3 = Seven Valves (low pressure) 4 = Twelve Valves (low pressure)	0 = No Valves (single catalyst) 1 = Two Valves (low pressure) 2 = Four Valves (low pressure)	N = No Y = Yes
A (acid models)	E = EasyKey with LCD Display	1 = G3000 (A) and G3000A (B)	0 = No Valves (no color; need to order acid kit 26A096-26A100; see page 9)	0 = No Valves (single catalyst)	N = No



Label Location on Fluid Station


T112423a




Label Location on EasyKey

T112418a

ProMix® 2KS
Electronic Proportioner


FM08ATEX0074
II 2 G
Ex ia IIA T3


APPROVED
Intrinsically safe
equipment for Class I,
Div 1, Group D, T3
Ta = -20°C to 50°C

CE 0359

MAX AIR WPR

.7	7	100
MPa	bar	PSI

MAX FLUID WPR


MPa	bar	PSI

MAX TEMP 50°C (122°F)

Intrinsically Safe (IS) System. Install per IS Control Drawing No. 289833. EasyKey Interface IS Associated Apparatus for use in non hazardous location, with IS Connection to Smart Fluid Plate IS Apparatus for use in: Class I, Division 1, Group D T3 Hazardous Locations

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

PART NO.	SERIES	SERIAL	

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

Maximum Fluid Working Pressure is listed here

Configured Part Number

Fig. 1: Identification Label, Wall Mount Fluid Station Systems

Hazardous Location Approval

Models using a G3000, G3000HR, G3000A, or intrinsically safe Coriolis meter for both A and B meters are approved for installation in a Hazardous Location - Class I, Div I, Group D, T3 or Zone I Group IIA T3.

Maximum Working Pressure

Maximum working pressure rating is dependent on the fluid component options selected. **The pressure rating is based on the rating of the lowest rated fluid component.** Refer to the component pressure ratings below.
Example: Model AD110Y has a maximum working pressure of 190 psi (1.31 MPa, 13.1 bar).

Check the identification label on the EasyKey or fluid station for the system maximum working pressure. See FIG. 1.

ProMix Fluid Components Maximum Working Pressure

Base System (no meters [option 0], no color/catalyst change [option 0], and no flow control [option N])	4000 psi (27.58 MPa, 275.8 bar)
Meter Option 1 and 2 (G3000 or G3000HR)	4000 psi (27.58 MPa, 275.8 bar)
Meter Option 3, 4, 5, 6, and 7 (one or two Coriolis Meters)	2300 psi (15.86 MPa, 158.6 bar)
Meter Option 8 (G3000 and G3000A)	4000 psi (27.58 MPa, 275.8 bar)
Color Change Option 1, 2, 3 and 4 and Catalyst Change Option 1 and 2 (low pressure valves)	300 psi (2.07 MPa, 20.6 bar)
Flow Control Option Y (Yes)	190 psi (1.31 MPa, 13.1 bar)

Flow Meter Fluid Flow Rate Range

G3000 and G3000A	75-3800 cc/min. (0.02-1.0 gal./min.)
G3000HR	38-1900 cc/min. (0.01-0.50 gal./min.)
Coriolis Meter	20-3800 cc/min. (0.005-1.00 gal./min.)
S3000 Solvent Meter (accessory)	38-1900 cc/min. (0.01-0.50 gal./min.)

Standard Features

Feature
EasyKey with LCD
Fiber Optic and Power Cables, 50 ft (15.25 m)
Wall Mount Fluid Station, 50 cc Integrator and Static Mixer
Discrete I/O Board
A Side Dump Valve, if color valve(s) selected
B Side Dump Valve, if catalyst valve(s) selected
Flow Control with 15 ft (4.57 m) Cable (if selected)
Basic Web Interface

RoboMix Fluid Station Configurator Key

The configured part number for your equipment is printed on the equipment identification labels. See Fig. 2 for location of the identification labels. The part number includes one digit from each of the following six categories, depending on the configuration of your system.

RoboMix System	Control and Display	A and B Meter	Color Valves	Catalyst Valves	Flow Control
R	D = EasyKey with LCD Display	0 = No Meters 1 = G250 (A and B) 2 = G250HR (A and B)	0 = No Valves (single color) 1 = Two Valves (low pressure) 2 = Four Valves (low pressure) 3 = Seven Valves (low pressure) 4 = Twelve Valves (low pressure)	0 = No Valves (single catalyst) 1 = Two Valves (low pressure) 2 = Four Valves (low pressure)	N = No Y = Yes

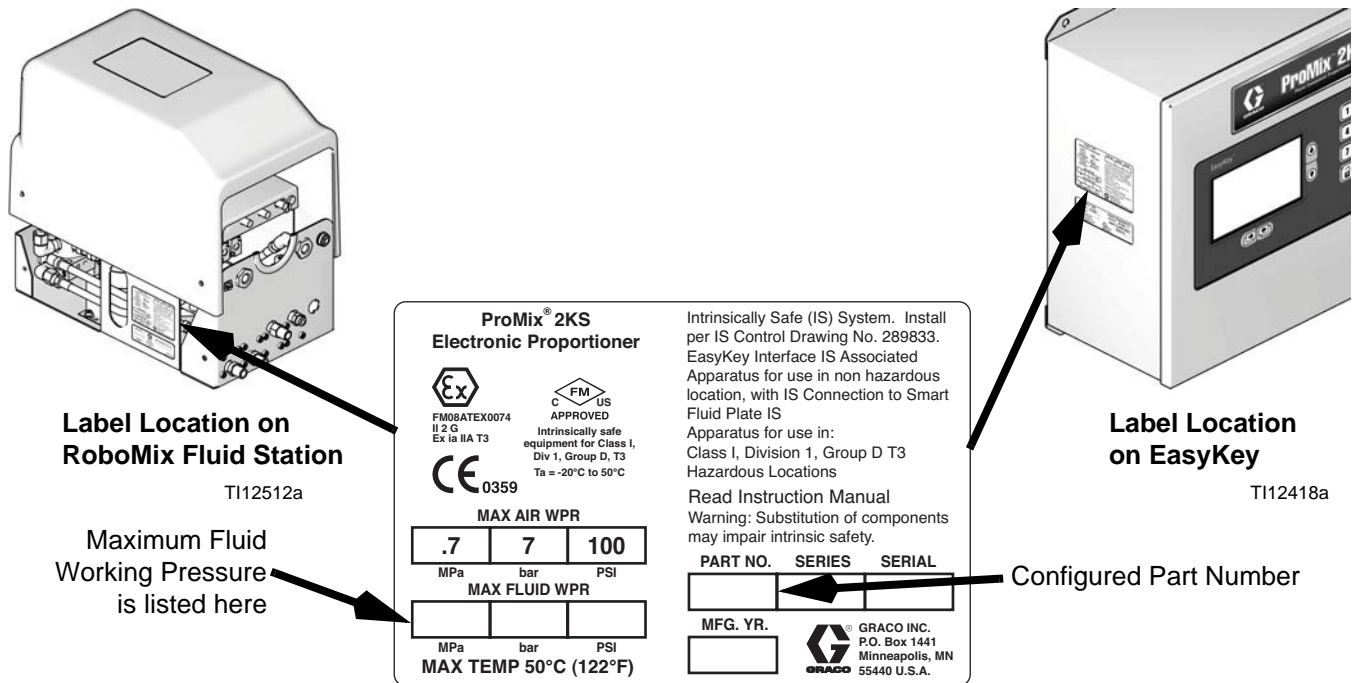


FIG. 2: Identification Label, RoboMix Fluid Station Systems

Hazardous Location Approval	
Models using a G250 or G250HR for both A and B meters are approved for installation in a Hazardous Location - Class I, Div I, Group D, T3 or Zone I Group IIA T3.	
Maximum Working Pressure	
Maximum working pressure rating for RoboMix Systems is 190 psi (1.31 MPa, 13.1 bar).	
Check the identification label on the EasyKey or RoboMix fluid station for the system maximum working pressure. See FIG. 2.	
ProMix RoboMix Systems Maximum Working Pressure	
RoboMix Fluid Station Options (all)	190 psi (1.31 MPa, 13.1 bar)
Flow Meter Fluid Flow Rate Range	
G250 Meter.	75-3800 cc/min. (0.02-1.0 gal./min.)
G250HR Meter	38-1900 cc/min. (0.01-0.50 gal./min.)

Standard Features

Feature
EasyKey with LCD
RS 485 Network Cable, 50 ft (15.25 m)
Fiber Optic and Power Cables, 50 ft (15.25 m)
Remote Fluid Station, 25 cc Integrator
Discrete I/O Board
A Side Dump Valve, if color valve(s) selected
B Side Dump Valve, if catalyst valve(s) selected
Flow Control with 15 ft (4.57 m) Cable (if selected)
Basic Web Interface

Accessories

2KS Accessories

Accessory
15V354 Third Purge Valve Kit
15V202 Third Purge Valve Kit
15V536 Solvent Flow Switch Kit
15V213 Power Cable, 100 ft (30.5 m)
15G710 Fiber Optic Cable, 100 ft (30.5 m)
15G614 Flow Control Extension Cable, 40 ft (12.2 m)
15U955 Injection Kit for Dynamic Dosing
15V034 10 cc Integrator Kit
15V033 25 cc Integrator Kit
15V021 50 cc Integrator Kit
24B618 100 cc Integrator Kit
15W034 Strobe Light Alarm Indicator Kit
15V331 Gateway Ethernet Communication Kit
15V963 Gateway DeviceNet Communication Kit
15V964 Gateway Profibus Communication Kit
15V337 Advanced Web Interface
280555 S3000 Solvent Flow Meter Kit

2KS Acid Compatible Accessories





Intended for use with acid catalyst materials.






Accessory
26A096 No Color /1 Catalyst Change Kit
26A097 2 Color/1 Catalyst Change Kit
26A098 4 Color/1 Catalyst Change Kit
26A099 7 Color/1 Catalyst Change Kit
26A100 12 Color/1 Catalyst Change Kit

NOTE: This is not a complete list of available accessories and kits. Refer to the Graco website for more information about accessories available for use with this product.

Warnings

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





 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing 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.
	<p>INTRINSIC SAFETY</p> <p>Intrinsically safe equipment that is installed improperly or connected to non-intrinsically safe equipment will create a hazardous condition and can cause fire, explosion, or electric shock. Follow local regulations and the following safety requirements.</p> <ul style="list-style-type: none"> • Only models with a G3000, G250, G3000HR, G250HR, G3000A, or intrinsically safe Coriolis meter are approved for installation in a Hazardous Location - Class I, Div I, Group D, T3 or Zone I Group IIA T3. • Do not install equipment approved only for a non-hazardous location in a hazardous area. See the ID label for the intrinsic safety rating of your model. • Do not substitute or modify system components as this may impair intrinsic safety.

 WARNING	
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Tighten all fluid connections before operating the equipment. • 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 Pressure Relief Procedure in the Operation manual, when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines. • Always wear chemically impermeable gloves when spraying or cleaning equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection

Important Two-Component Material Information

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



Isocyanate Conditions

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




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

Material Self-ignition

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

Keep Components A and B Separate

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

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

Moisture Sensitivity of Isocyanates

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

NOTICE

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

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

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

Changing Materials

NOTICE

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

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

Important Acid Catalyst Information

The 2KS Plural Component Proportioner is designed for acid catalysts (“acid”) currently used in two-component, wood-finishing materials. Current acids in use (with pH levels as low as 1) are more corrosive than earlier acids. More corrosion-resistant wetted materials of construction are required, and must be used without substitution, to withstand the increased corrosive properties of these acids.

Acid Catalyst Conditions



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

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

Moisture Sensitivity of Acid Catalysts

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

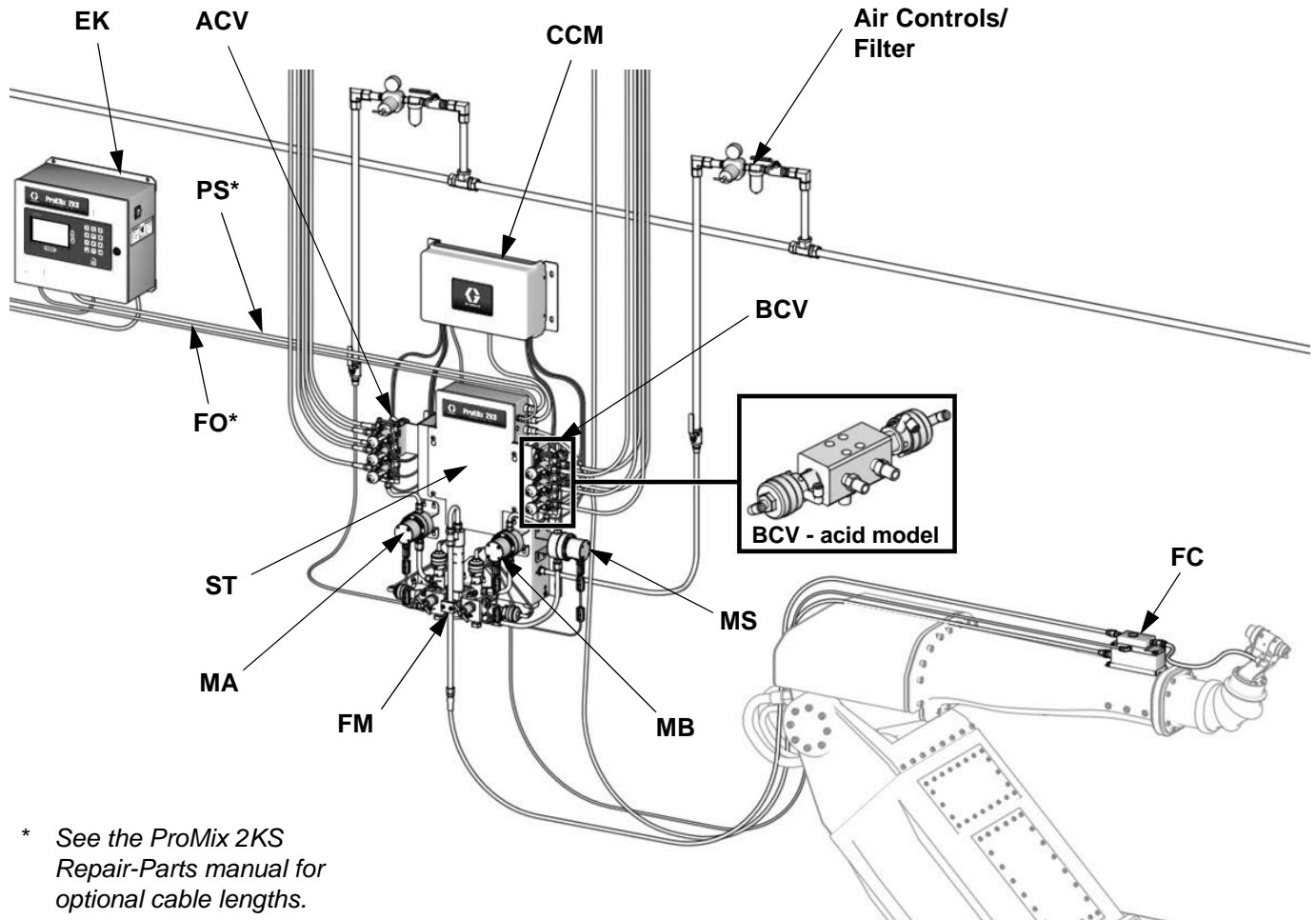
NOTICE

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

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

Component Identification and Definition

See Table 1, and FIG. 3 for the wall mount system components and FIG. 4 for the RoboMix system components.



* See the ProMix 2KS Repair-Parts manual for optional cable lengths.

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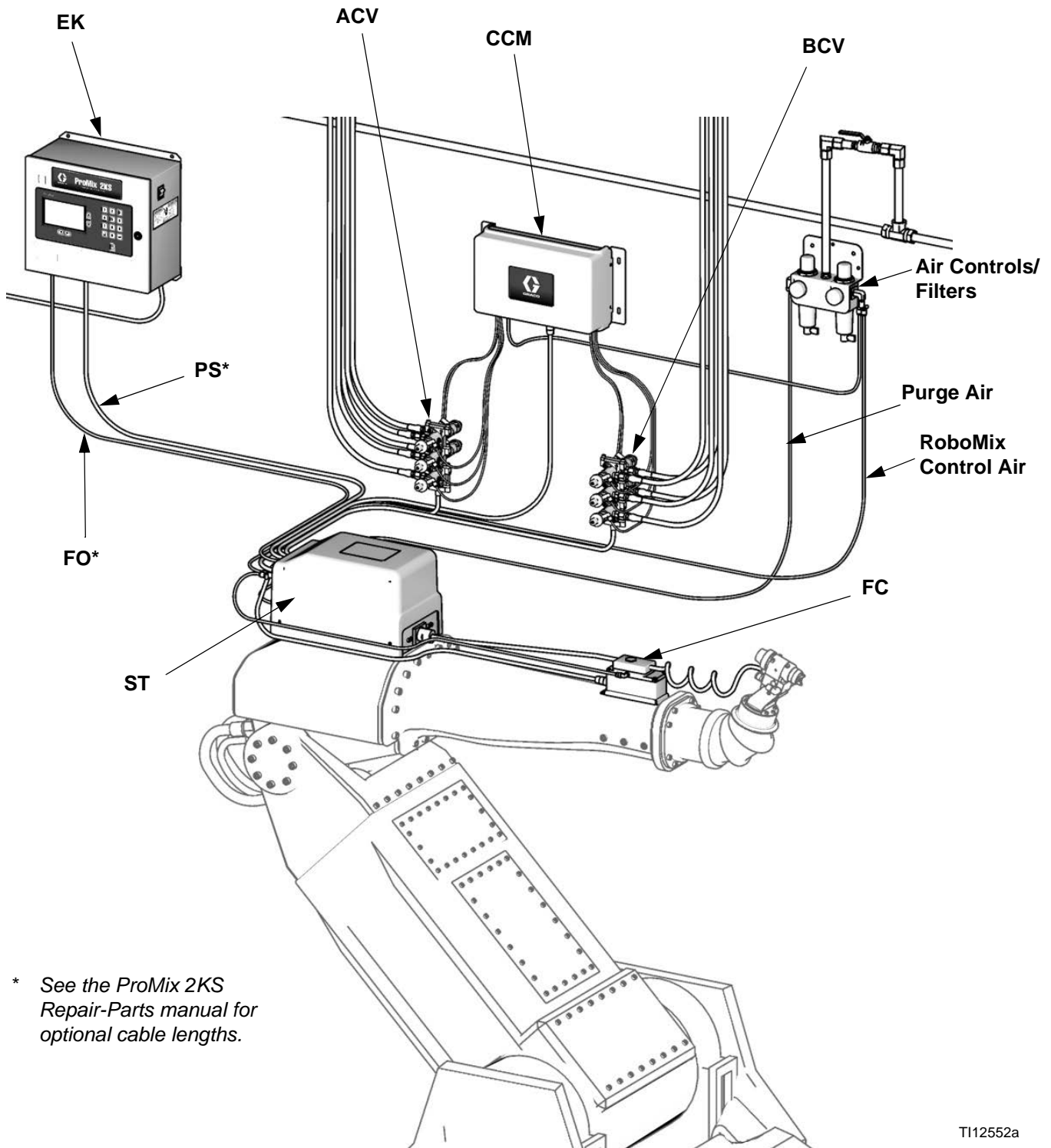
FIG. 3. Wall Mount System, shown with G3000 Meters, Color/Catalyst Change, Accessory Solvent Meter, and Flow Control

Table 1: Component Descriptions

Component	Description
EasyKey (EK)	Used to set up, display, operate, and monitor the system. The EasyKey accepts 85-250 VAC, 50/60 Hz line power and converts that power to acceptable low voltage and optical signals used by other system components.
Wall Mount Fluid Station (ST, used on ADxxxx and AExxxx Models only)	Includes air control solenoids, flow switches, and mountings for the fluid flow meters, and the fluid manifold assembly. Its control board manages all proportioning functions.
RoboMix Fluid Station (ST, used on RDxxxx and RExxxx Models only)	Includes air control solenoids, flow switches, fluid flow meters, and the fluid manifold assembly to control and monitor fluid dispensing. Its control board manages all proportioning functions.
Fluid Manifold (FM)	<ul style="list-style-type: none"> • Pneumatically Operated Dose Valves for component A and B • Purge Valves for solvent and air purge • Sampling Valves for calibrating the flow meters and performing ratio checks (Wall Mount Panel only) • Shutoff Valves for component A and B to close their fluid passages to the mix manifold, to allow for accurate calibration and ratio checks (Wall Mount Panel only) • Mix Manifold, which includes the fluid integrator and static mixer. <ul style="list-style-type: none"> → Fluid Integrator is the chamber where component A and B align at the selected ratio and begin to mix. → Static Mixer has 24 elements to uniformly blend the materials downstream of the fluid integrator.

Table 1: Component Descriptions

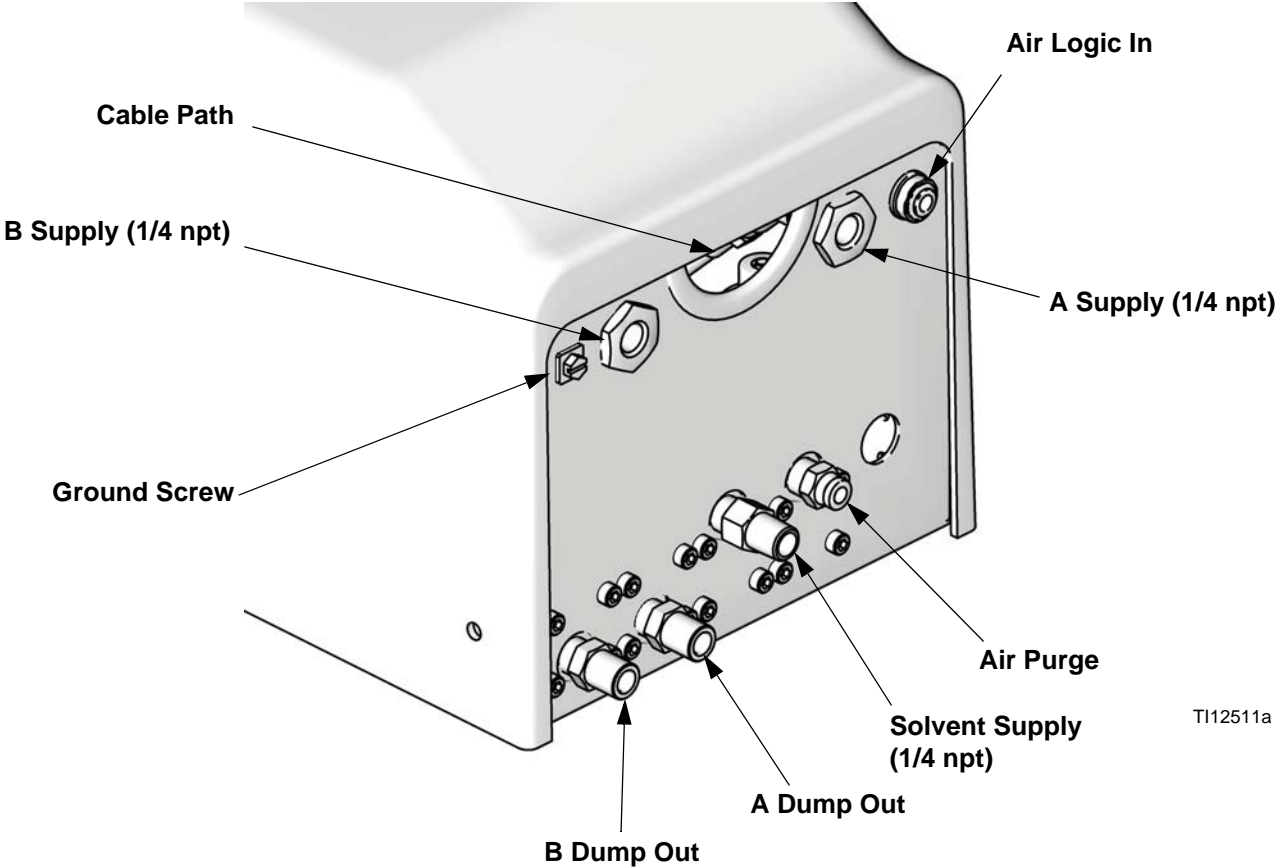
Component	Description
Flow Meters (MA, MB, MS)	<p>The following optional flow meters are available from Graco:</p> <ul style="list-style-type: none"> • G3000 is a general purpose gear meter typically used in flow ranges of 75-3800 cc/min. (0.02–1.0 gal/min.), pressures up to 4000 psi (28 MPa, 276 bar), and viscosities of 20–3000 centipoise. The K-factor is approximately 0.119 cc/pulse. • G3000A is a gear meter for use with acid catalyst fluids. It is typically used in flow ranges of 75-3800 cc/min. (0.02–1.0 gal/min.), pressures up to 4000 psi (28 MPa, 276 bar), and viscosities of 20–3000 centipoise. The K-factor is approximately 0.119 cc/pulse. • G3000HR is a high resolution version of the G3000 meter. It is typically used in flow ranges of 38–1900 cc/min. (0.01–0.5 gal/min.), pressures up to 4000 psi (28 MPa, 276 bar), and viscosities of 20–3000 centipoise. The K-factor is approximately 0.061 cc/pulse. • G250 is a general purpose gear meter, used in RoboMix systems. It is typically used in flow ranges of 75-3800 cc/min. (0.02–1.0 gal/min.), pressures up to 300 psi (2.1 MPa, 21 bar), and viscosities of 20–3000 centipoise. The K-factor is approximately 0.119 cc/pulse. • G250HR is a high resolution version of the G250 meter, used in RoboMix systems. It is typically used in flow ranges of 38–1900 cc/min. (0.01–0.5 gal/min.), pressures up to 300 psi (2.1 MPa, 21 bar), and viscosities of 20–3000 centipoise. The K-factor is approximately 0.061 cc/pulse. • S3000 is a gear meter used for solvents in flow ranges of 38-1900 cc/min. (0.01–0.50 gal/min.), pressures up to 3000 psi (21 MPa, 210 bar), and viscosities of 20–50 centipoise. The K-factor is approximately 0.021 cc/pulse. Required to use the Solvent Push feature. • Coriolis is a specialty meter capable of a wide range of flow rates and viscosities. This meter is available with 1/8 in. or 3/8 in. diameter fluid passages. For detailed information on the Coriolis meter, see manual 313599. The K-factor is user-settable; at lower flow rates use a lower K-factor. <ul style="list-style-type: none"> → 1/8 in. fluid passages: set K-factor to .020 or .061. → 3/8 in. fluid passages: set K-factor to .061 or 0.119.
Color Change Valves (ACV) and Color Change Module (CCM)	An optional component. It is available as a color change valve stack for either low or high pressure with up to 30 color change valves. Each stack includes one additional valve for solvent to clean the fluid line between color changes.
Catalyst Change Valves (BCV)	<p>An optional component. It is available as a catalyst change valve stack for either low or high pressure with up to 4 catalyst change valves. Each stack includes one additional valve for solvent to clean the fluid line between catalyst changes.</p> <p>A different catalyst change valve used on acid catalyst systems.</p>
Dual Fiber Optic Cable (FO)	Used to communicate between the EasyKey and Wall Mount Fluid Station or RoboMix.
Fluid Station Power Supply Cable (PS)	Used to provide power to the Wall Mount Fluid Station or RoboMix.
Flow Control Regulator Assembly (FC)	Includes an air operated fluid pressure regulator, fluid pressure sensor, voltage to air pressure transducer and circuit board. The function of this unit is to receive the flow analog signal and drive (manage) the desired flow rate.



* See the ProMix 2KS Repair-Parts manual for optional cable lengths.

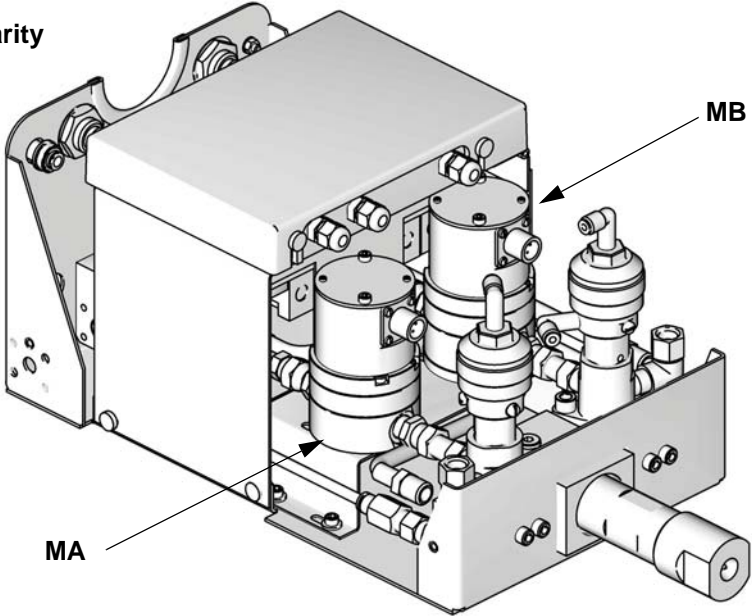
T112552a

FIG. 4. RoboMix System shown with Color/Catalyst Change and Flow Control



T112511a

Cover is removed for clarity

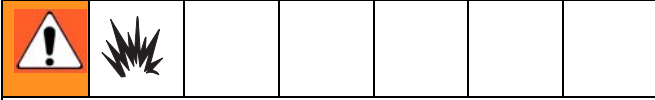


T112579a

FIG. 5: Details of RoboMix Fluid Station

Location

Location Requirements



Do not substitute or modify system components as this may impair intrinsic safety. For installation, maintenance or operation instructions, read instruction manuals. Do not install equipment approved only for non-hazardous location in a hazardous area. See the identification label (FIG. 1 and FIG. 2) on the EasyKey or fluid station for the intrinsic safety rating for your model.

- Mount EasyKey and Fluid Station within 50 ft (15.2 m) of each other, using 15U533 cable.

NOTE: An optional 15V213 100 ft (30.5 m) cable is also available.

- **EasyKey:** Install in the non-hazardous area at a convenient location for the operator to view and operate.
- **Fluid Station:** Install according to requirements for Intrinsically Safe Installation (FIG. 6) and at a convenient location to connect to paint and solvent supplies.

NOTE: For an Intrinsically Safe Installation, the Fluid Station may be located inside or outside the hazardous location. Install according to appropriate electrical codes.

Intrinsically Safe Installation Requirements

See FIG. 6 on page 21.

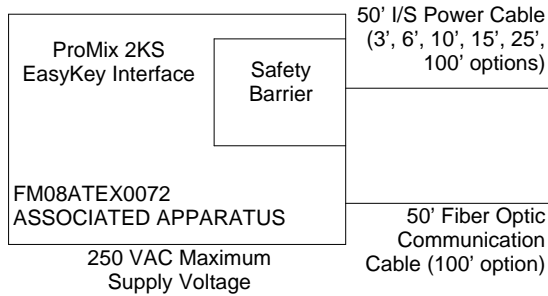
1. The non-intrinsically safe terminals (power rail) must not be connected to any device which uses or generates more than 250 Vrms or dc unless it has been determined that the voltage has been adequately isolated.
2. The installation must meet the requirements of the National Electric Code, Canadian Electrical Code Part I, NFPA 70, Article 504 Resp., Article 505 and ANSI/ISA 12.06.01.
3. Multiple earthing of components is allowed only if high integrity equipotential system is realized between the points of bonding.
4. Do not operate system with safety barrier cover removed.
5. For ATEX, install per EN 60079-14 and applicable local and national codes.
6. For power connection to Coriolis: Install Coriolis flow meters as explosion proof (USA, Canada)/flameproof Ex d (ATEX) per the manufacturer's installation instructions and applicable codes.
7. For signal to 2KS: Terminals 24 and 25 of optional Endress+Hauser Coriolis flow meters installed using intrinsically safe wiring methods.
8. For ATEX installations, interconnecting cabling specified is Type A cable in accordance with EN 60079-14.

Optional Cables

Optional CAN cables and fiber optic cables are available from Graco. See the ProMix 2KS Repair-Parts manual for available part numbers and lengths.

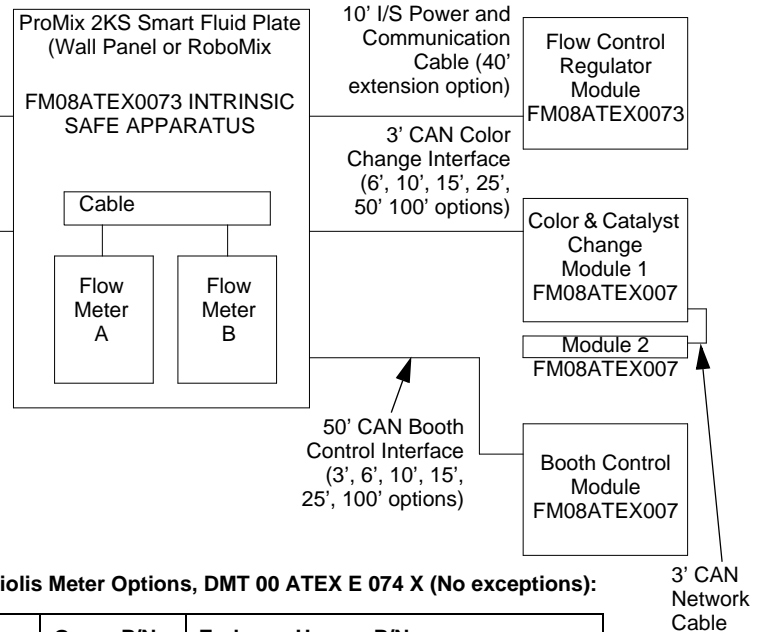
FM08ATEX0074 SYSTEM ASSEMBLY CERTIFICATE

NON-HAZARDOUS LOCATION ONLY



HAZARDOUS (CLASSIFIED) LOCATION

CLASS I, DIV I, GROUP D, T3 (US AND CANADA)
CLASS I, ZONE I GROUP IIA T3 (ATEX ONLY)
TAUB = -20°C TO 50°C



NOTE: See **Intrinsically Safe Installation Requirements** on page 20.

WARNING: Substitution of components may impair intrinsic safety. For installation, maintenance or operation instructions, see instruction manual.

ADVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

Coriolis Meter Options, DMT 00 ATEX E 074 X (No exceptions):

Size	Graco P/N	Endress+Hauser P/N
1/8"	15T633*	80A-04-A-SVW-9-A-N-A-B-B-A-S
3/8"	15T634*	801-08-A-999-9-A-N-A-B-B-A-S
1/8"	16M510*	8CN04-84S89AABA9AC
1/4"	16M519*	8CN06-84S89AABA9AC

Power			
EasyKey			Meter Terminal Block #
+24 Vdc			1
Common			2
Signal			
Fluid Plate Board	J3 Terminal		Meter Terminal Block #
Meter Position	A	B	
Signal	3	6	24
Common	2	5	25

* For P/N 15T633 order Coriolis Meter Kit 15V806.
For P/N 15T634 order Coriolis Meter Kit 258151.
For P/N 16M510 order Coriolis Meter Kit 24M260.
For P/N 16M519 order Coriolis Meter Kit 24M261.

IS Control Drawing 289833

FIG. 6. Intrinsically Safe Installation

General Information

- Reference numbers and letters in parentheses in the text refer to numbers and letters in the illustrations.
- FIG. 3 on page 15 shows the basic components of an automatic wall mount system. FIG. 4 on page 18 shows the basic components of an automatic Robo-Mix system. Contact your Graco distributor for actual system designs.
- Be sure all accessories are adequately sized and pressure-rated to meet system requirements.
- There must be a shutoff valve between each fluid supply line and the ProMix system.
- A 100 mesh minimum fluid filter must be installed on component A and B fluid supply lines.
- To protect the EasyKey screens from paints and solvents, clear-plastic protective shields are available in packs of 10 (Part No. 197902). Clean the screens with a dry cloth if necessary.

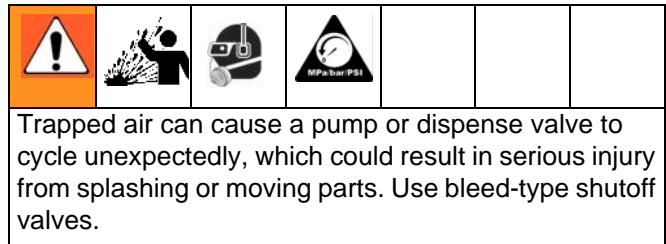
Wall Mounting

1. See **Dimensions and Mounting Hole Layouts**, page 46.
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.

Air Supply

Requirements

- **Compressed air supply pressure:** 75-100 psi (517-700 kPa, 5.2-7 bar).
- **Air hoses:** use grounded hoses that are correctly sized for your system.



- **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.
- **Air line filter:** a 10 micron or better air filter is recommended to filter oil and water out of the air supply and help avoid paint contamination and clogged solenoids. See FIG. 3 or FIG. 4.

Air Connections

See the **System Pneumatic Schematic** on page 43.

1. Tighten all ProMix system air and fluid line connections as they may have loosened during shipment.
2. Install a bleed-type air shutoff valve into the control air filter inlet. See FIG. 7 for Wall Mount systems and FIG. 8 for RoboMix systems.
3. Connect a clean, dry, main air supply line to the bleed-type air shutoff valve at the main air inlet. This air line supplies air to operate the gun, solenoids, and dispense valves.

NOTE: See **Technical Data** on page 55 for additional air supply/consumption information.

4. Install a bleed-type shutoff valve into the air purge valve line.

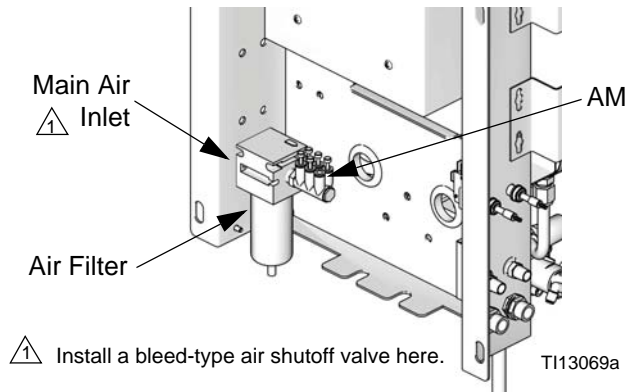


FIG. 7. Wall Mount Air Supply Inlet

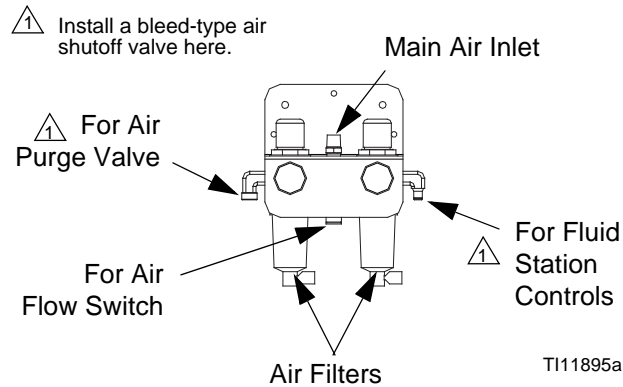


FIG. 8. RoboMix Air Supply Control

⚠ Purge air line (AT) must be a separate air supply, connected to the check valve (CV). Do not connect the purge air line to the unit's main air supply or to the air manifold.

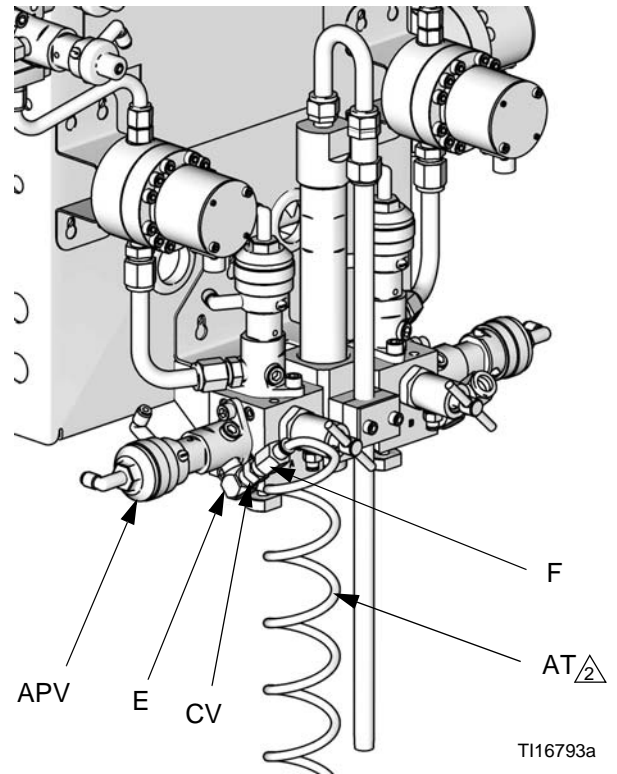


FIG. 9. Purge Air Supply Tube and Check Valve

- See FIG. 9. Install the supplied elbow (E), check valve (CV), and tube fitting (F) at the inlet of the air purge valve (APV). Use the 25 ft (7.6 m), 1/4 in. (6 mm) OD purge air tubing (AT, supplied) to connect a clean, dry air supply to the fitting (F) at the air purge valve inlet. Install filters/dryers as needed.

NOTICE

Use a separate purge air supply line for the air purge valve (APV). Do not connect the air purge valve to the unit's main air supply or to the air manifold (AM, FIG. 7), to avoid contaminating the solenoids, air logic lines, or unit's main air supply with fluid if the air purge valve (APV) and check valve (CV) fail.

Do not shorten the 25 ft (7.6 m), 1/4 in. (6 mm) OD purge air tubing (AT). Check daily for any visible solvent accumulation. Notify your supervisor if solvent is present.




NOTICE





The ProMix potlife timer will not function properly when used with multiple guns operating simultaneously. To avoid having mixed material set in the equipment, carefully monitor potlife by some other means.

<p>If using a Graco electrostatic PRO™ Gun, a shutoff valve must be installed in the gun air line to shutoff the atomizing and turbine air to the gun. Contact your Graco distributor for information on air shutoff valves for electrostatic applications.</p>						

Fluid Supply

Requirements

						
Do not exceed the pressure rating of the lowest rated component. See the identification label (FIG. 1 on page 4 and FIG. 2 on page 6).						

						
To reduce the risk of injury, including fluid injection, you must install a shutoff valve between each fluid supply line and the fluid manifold assembly. Use the valves to shut off fluid during maintenance and service.						

ProMix models are available to operate air spray or air-assisted systems with a capacity of up to 3800 cc/min.

- 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.
- For an airless system, the user must supply a gun trigger signal to the ProMix 2KS.
- See manual 313599 for Coriolis meter installation and operation instructions.
- If you are using dynamic dosing, see **Fluid Connections** at right and also see **Setup the Fluid Manifold for Dynamic Dosing** on page 26.

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

Fluid Connections

1. Connect the solvent supply lines.
 - a. Connect the solvent supply line to the 1/4 npt(f) solvent purge valve inlet. See FIG. 10.
 - b. **Multiple color system:** also connect a solvent supply line to the color change stack (Q), top valve 4 or 5. See FIG. 11.
2. Connect the component A supply line(s).
 - **Single color system:** connect component supply line to the component A flow meter inlet.
 - **Multiple color system:** connect component A supply lines to the color change valve stack (S) inlets. See FIG. 11. The color number is marked on the valve air supply line.

NOTE: Paint Recirculating System Only

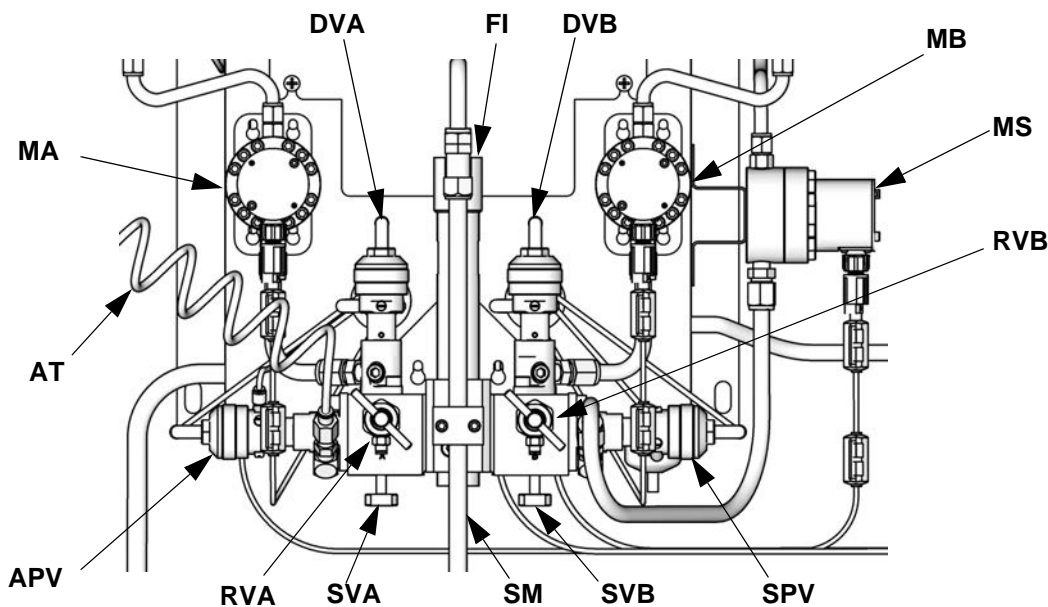
- The color change valves have two fluid ports for each individual valve. If you are recirculating paint, plumb the valves in one port and out the other.
- Another option is to use a tee fitting to recirculate.

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

3. Connect the component B line to the component B flow meter inlet.

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

4. Connect the gun fluid supply line between the fluid manifold static mixer outlet and the gun fluid inlet.

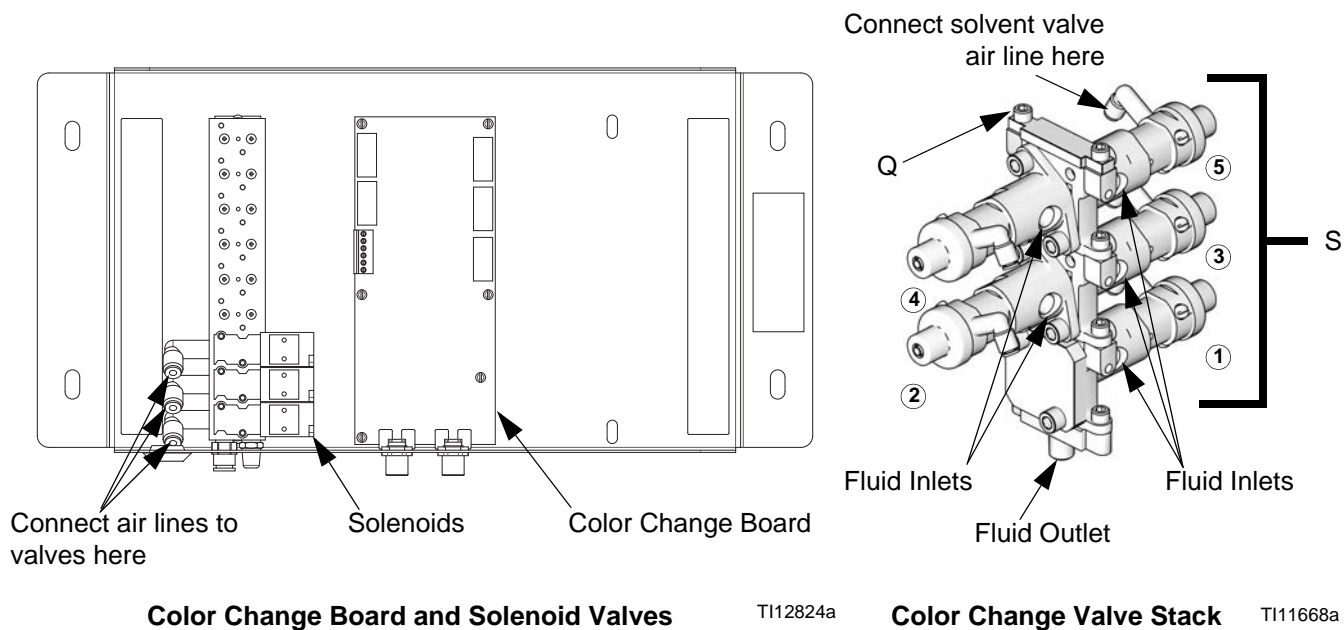


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Key:

- | | | | |
|-----|----------------------------|-----|---------------------------------|
| MA | Component A Meter | SVB | Component B Shutoff Valve |
| DVA | Component A Dose Valve | MS | Solvent Meter (accessory) |
| RVA | Component A Sampling Valve | SPV | Solvent Purge Valve |
| SVA | Component A Shutoff Valve | APV | Air Purge Valve |
| MB | Component B Meter | SM | Static Mixer |
| DVB | Component B Dose Valve | FI | Fluid Integrator |
| RVB | Component B Sampling Valve | AT | Air Purge Valve Air Supply Tube |

FIG. 10. Wall Mount Fluid Station, Sequential Dosing



Color Change Board and Solenoid Valves

T112824a

Color Change Valve Stack

T111668a

FIG. 11. Color Change Valves Air and Fluid Connections

Setup the Fluid Manifold for Dynamic Dosing

If you will be operating using dynamic dosing, the fluid manifold must be setup properly for your application. Order the 15U955 Injection Kit (accessory).

1. Remove the screws (A) and static mixer bracket assembly (B). See FIG. 12.
2. Loosen the static mixer nut (N1). Remove and retain the static mixer (SM).
3. Loosen the u-tube nuts (N2 and N3). Discard the u-tube (C) and the static mixer fitting (D).
4. Remove and retain the 1/4 npt(m) fitting (F). Remove the integrator (G) and discard.

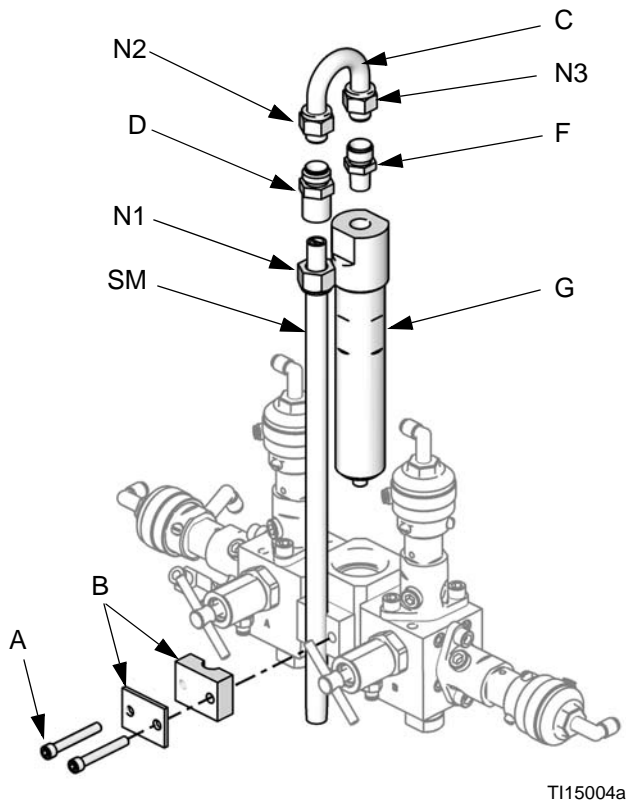


FIG. 12. Disassemble Integrator and Static Mixer

5. See FIG. 13. Remove the remaining parts from the restrictor housing (H). Retain the plug (J) and base (K). Discard all the used o-rings,
6. Rotate the restrictor housing (H) 180° so the set-screw (S) is at top left, as shown in FIG. 13. Remove and retain the two setscrews (S). Discard the o-rings (L3). The position of these screws will be reversed when reassembled.
7. Install one larger o-ring (L1*) in the housing (H). Screw the injection cap (M*) into the housing.
8. Determine the desired flow range for your application. Select the appropriate size restrictor for your selected flow and ratio, using the **Dynamic Dosing Restrictor Selection Graphs** on pages 48-53 as a guide. Install the restrictor (R*) in the base (K).
9. Assemble the smaller manifold o-ring (L2*), restrictor (R*) and base (K), one larger o-ring (L1*), and plug (J) as shown.

* These parts are included in the 15U955 Injection Kit.

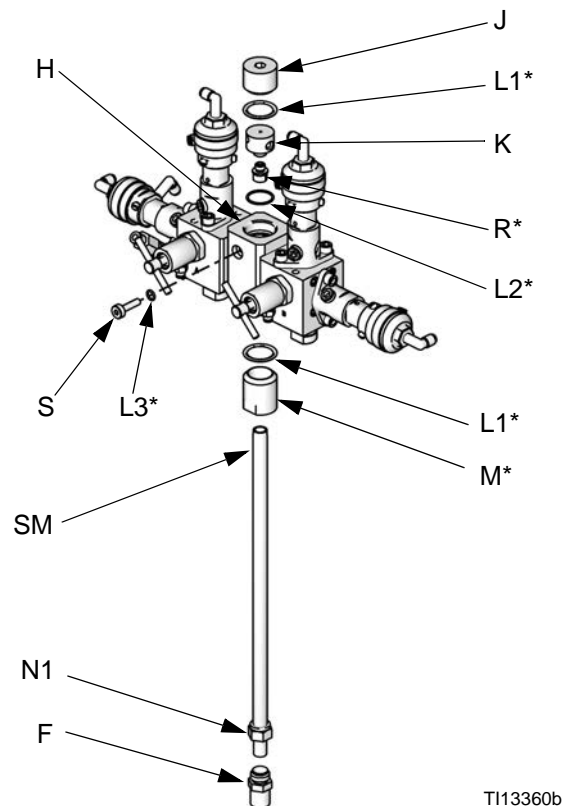


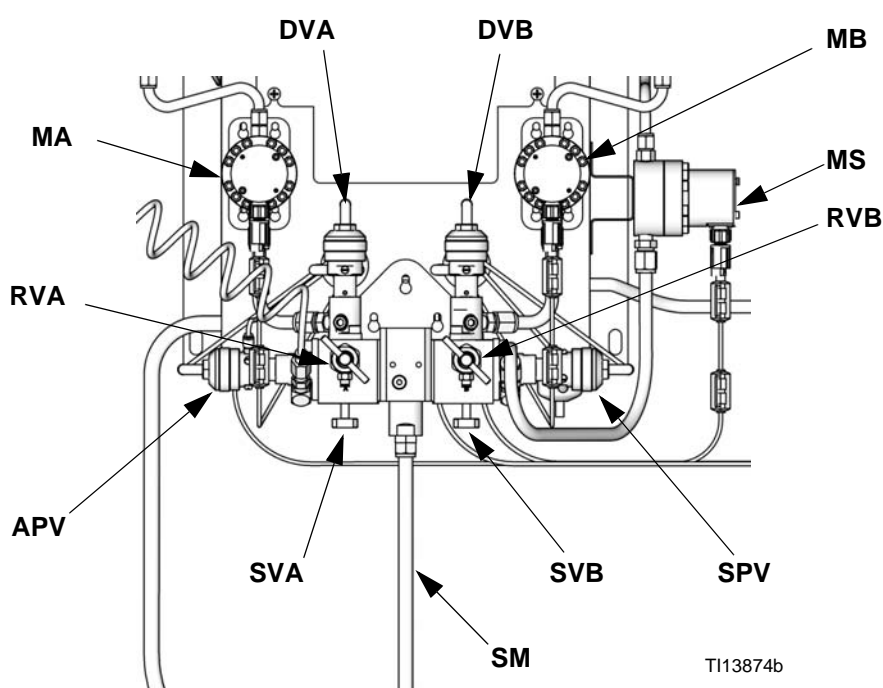
FIG. 13. Install 15U955 Injection Kit

10. Install the two setscrews and o-rings (L3*). Install the long setscrew (S) at the front of the housing, for ease of access.
11. Screw the static mixer (SM) into the injection cap (M*). Install the retained fitting (F) on the static mixer tube and secure with the nut (N1).
12. Follow instructions under **Fluid Connections** on page 24.

NOTE: Use a minimum 20 ft (6.1 m) x 1/4 in. (6 mm) ID gun fluid supply hose when using dynamic dosing. If the material is harder to integrate, use a longer hose.

13. Tune the fluid pressure and flow as explained in the ProMix 2KS Operation Manual.

NOTE: When using dynamic dosing it is very important to maintain a constant, well-regulated fluid supply. To obtain proper pressure control and minimize pump pulsation, install a fluid regulator on the A and B supply lines upstream of the meters. In systems with color change, install the regulator downstream of the color/catalyst valve stack.



Key:

- MA Component A Meter
- DVA Component A Dose Valve
- RVA Component A Sampling Valve
- SVA Component A Shutoff Valve
- MB Component B Meter
- DVB Component B Dose Valve
- RVB Component B Sampling Valve
- SVB Component B Shutoff Valve
- MS Solvent Meter (accessory)
- SPV Solvent Purge Valve
- APV Air Purge Valve
- SM Static Mixer

FIG. 14. Wall Mount Fluid Station, Dynamic Dosing

Solvent Meter Accessory

The ProMix 2KS Solvent Push feature requires installation of the accessory solvent meter (MS). Order Graco Part No. 280555 S3000 Solvent Meter Kit. See manual 308778.

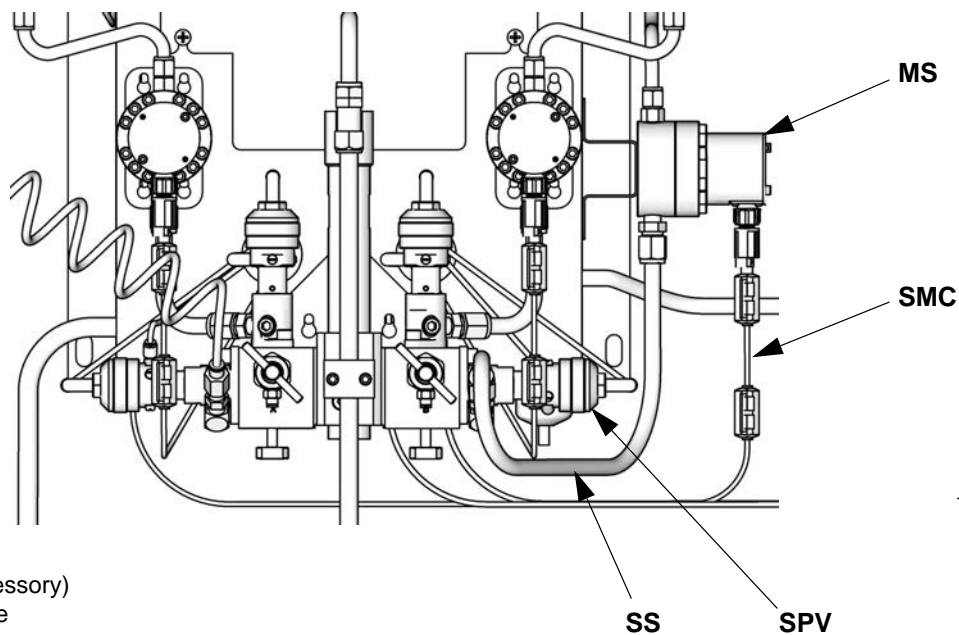
NOTE: You must assemble the meter sensor to the meter body before connecting the cable to the sensor for the meter to function properly.

1. See FIG. 15. Install the solvent meter (MS) on the side of the fluid station, using the bracket and hardware provided with the meter. Connect the solvent meter cable (SMC) to Pins 1, 2, and 3 of J12 on the fluid panel control board. See the **System Electrical Schematic** on page 45. Connect the cable ground wire to the fluid station ground terminal.

2. Connect a solvent supply line (SS) from the outlet of the solvent meter (MS) to the inlet of the solvent purge valve (SPV).

NOTE: If you are using a 3rd purge valve instead of the solvent purge valve to run the Solvent Push feature, connect the solvent supply line from the solvent meter to the inlet of the 3rd purge valve.

3. Connect the main solvent supply to the inlet of the solvent meter (MS).



Key:

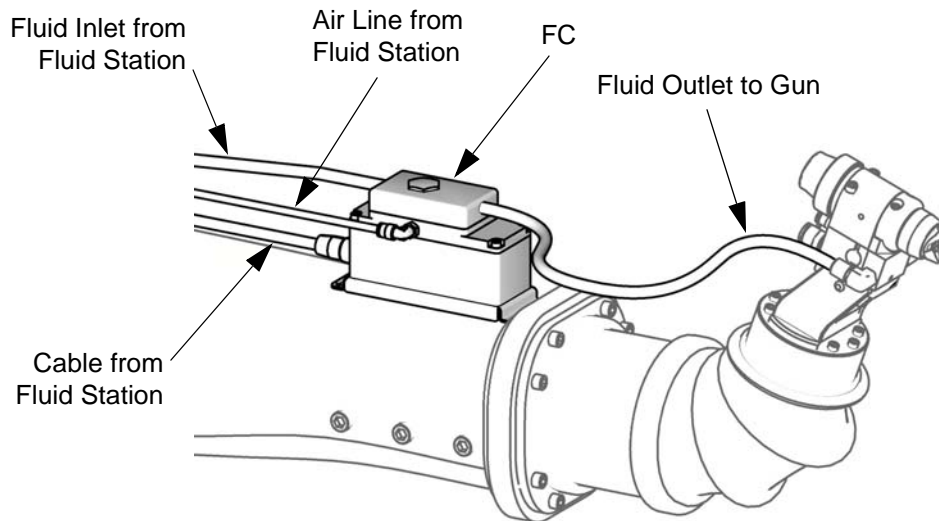
- MS Solvent Meter (accessory)
- SPV Solvent Purge Valve
- SMC Solvent Meter Cable
- SS Solvent Supply Line

FIG. 15. Solvent Meter

Flow Control

The intrinsically safe flow regulator (FC) is required to use flow control in your system.

1. Connect a 1/4 in. (6 mm) OD air supply line to the air inlet fitting of the flow regulator (FC). Connect the other end of this line as follows:
 - a. Wall Mount Systems: Connect to the air manifold at the rear of the wall mount fluid station.
 - b. RoboMix Systems: Install a 1/4 in. (6 mm) OD tube tee at the air logic inlet of the RoboMix. Connect the flow control air line to one branch of the tee and the main air line to the other branch.
2. Connect a fluid inlet line from the static mixer tube at the fluid station to the 1/8 npt(f) inlet of the flow regulator (FC).
3. Connect a fluid outlet line from the 1/8 npt(f) outlet of the flow regulator (FC) to the spray gun inlet.
4. Connect the flow control cable to J5 on the fluid station control board and to the cable connector on the flow regulator (FC).






T113656a

FIG. 16. Flow Control Regulator

Electrical


Requirements

						
<p>All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.</p> <p>Enclose all cables routed in the spray booth and high traffic areas in conduit to prevent damage from paint, solvent, and traffic.</p>						


NOTE: All options ordered on the ProMix system are electrically tested at the factory.

The ProMix operates with 85-250 VAC, 50/60 Hz input power, with a maximum of 2 amp current draw. The power supply circuit must be protected with a 15 amp maximum circuit breaker.

Not included with system:

- Power supply cord compatible to your local power configuration. Wire gauge size must be 8-14 AWG.
- The input power access port  is 22.4 mm (0.88 in.) diameter. It accepts a bulkhead strain relief fitting or conduit. See FIG. 18.

Connect Main Power

1. Provide power to the EasyKey. Install a bulkhead strain relief or conduit bulkhead through the EasyKey port . See FIG. 18.
2. See FIG. 17 and the **System Electrical Schematic** on page 44 for the L1, N, and ground wiring connections inside the EasyKey.

3. Ground the EasyKey to a true earth ground. See **Grounding**, page 36.

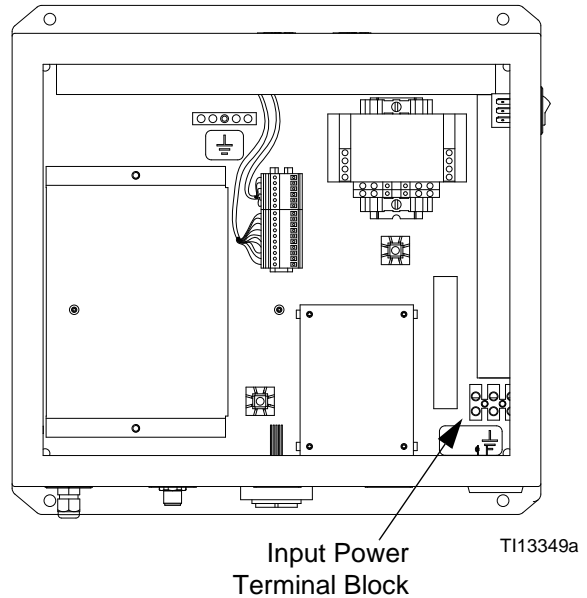


FIG. 17. Main Power Connection

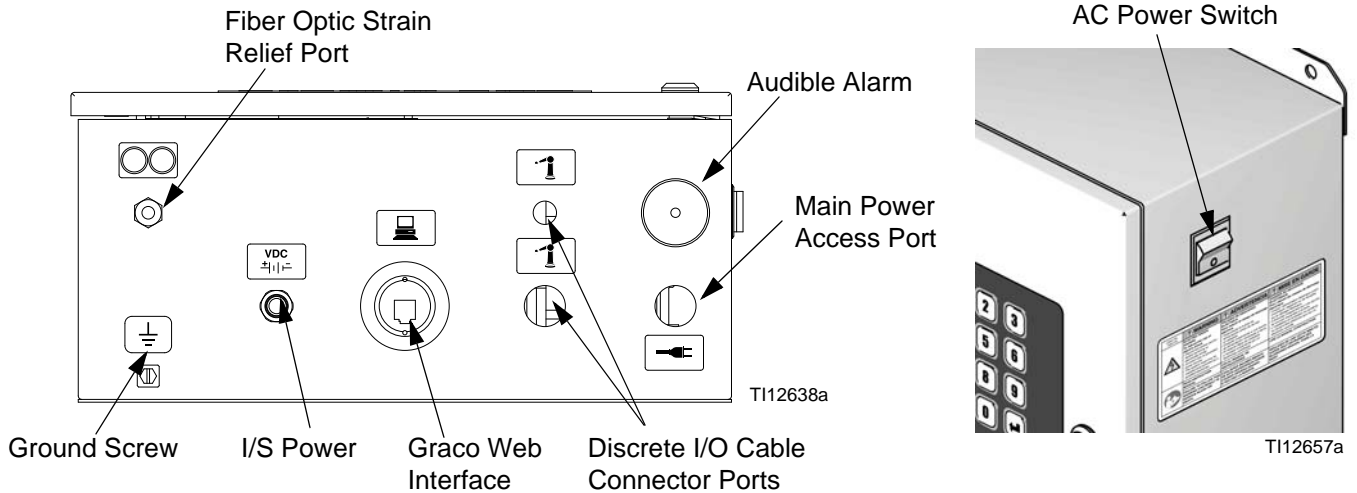




Fig. 18. EasyKey Connections and AC Power Switch

Connect EasyKey to Fluid Station Control

There are two 50 ft (15.2 m) cables to route between the EasyKey and Fluid Station Control: the Fluid Station Power Cable and the Fiber Optic Cable.

1. Connect the appropriate Fluid Station Power Cable end to the EasyKey connector $\pm \text{VDC}$. See FIG. 18.
2. Connect the other cable end to the Fluid Station Control connector $\pm \text{VDC}$ (J10). See FIG. 20.
3. The Fiber Optic Cable is shipped from the factory attached to the Fluid Station connector . See FIG. 18.

NOTE: If you need to detach the Fiber Optic Cable from the Fluid Station, note how the cable is routed inside the enclosure. Never cut the fiber optic cable. Cutting can damage the cable and will defeat the color-coded cable connections.

4. Route the opposite Fiber Optic Cable end through the EasyKey strain relief connector . Do not route the cable with tight bends or kinks.

NOTE: The fiber optic cable has a minimum bend radius of 1.6 in. (40 mm).

5. Route the fiber optic cable end through the square adhesive backed tie holder. Connect the blue and

black cable connectors to the matching connectors on the EasyKey circuit board. See FIG. 19. Insert the cable connectors until they bottom out (approximately ¼ in. [6 mm]), then tighten the threaded connector.

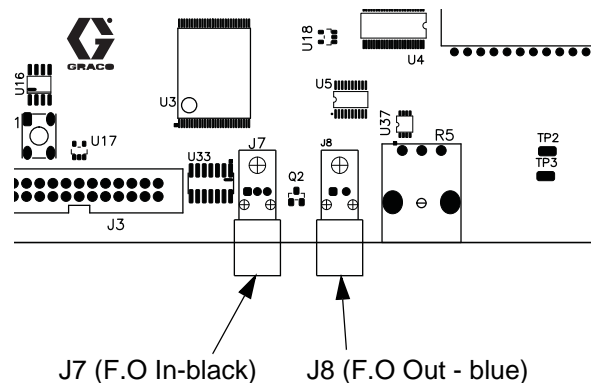



Fig. 19 EasyKey Circuit Board

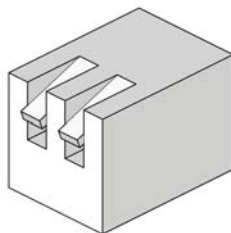
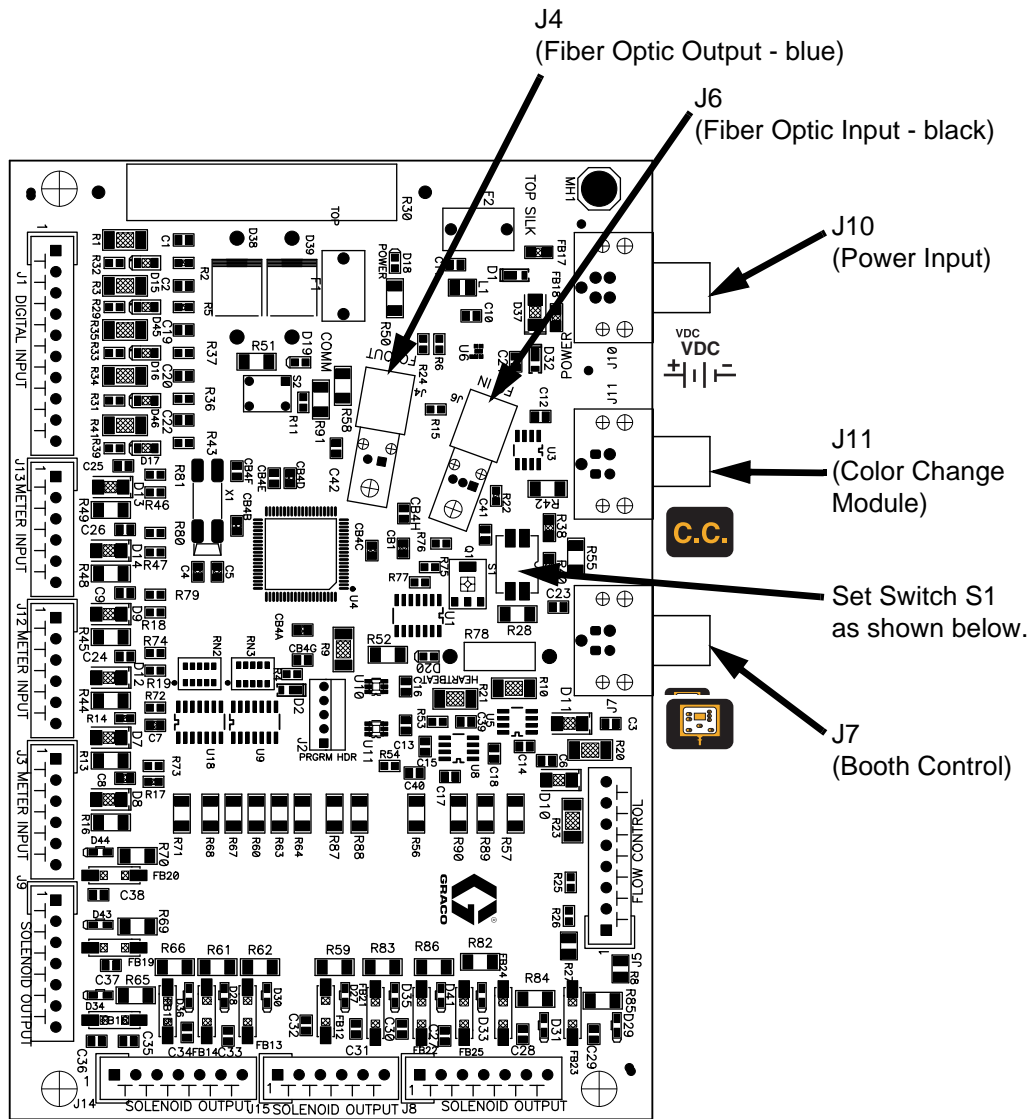
NOTICE

To avoid cracking the circuit board, do not over-tighten or cause excessive stress on the circuit board connector.

6. Tighten the strain relief connector .

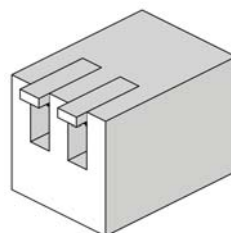
Fluid Station Control Board Switch Settings

On the 2KS fluid station control board, set switch S1 to ON (down) or OFF (up), as shown in FIG. 20.



TI15224a

Set switch S1 to ON (down) if system has Booth Control OR Color Change, or neither.



TI15223a

Set switch S1 to OFF (up) if system has Booth Control AND Color Change.

Fig. 20. Fluid Station Board Connections

Connect Color Change Module

To install the color change module(s), see manual 312787.

Connect a 5-pin electrical cable from the labeled connection port **C.C.** (J11) on the fluid station control board to the color change board. See FIG. 21.

If you are using two color change modules to add colors, connect a 5-pin electrical cable from the first color change board to the second color change board.

Set switches S3-S6 on the color change board(s) as shown in Table 2 and FIG. 21, depending on the number of color change boards and color change modules being used in your system.

For wiring between the color change board and the solenoids, see the color change module electrical schematic, FIG. 22.

Table 2: Color Change Board Switch Settings

Two Color Change Boards								Effect on System
Color Change Board 1				Color Change Board 2				
S3	S6	S5	S4	S3	S6	S5	S4	
Termination Resistor	Board ID	Catalyst On/Off	Color On/Off	Termination Resistor	Board ID	Catalyst On/Off	Color On/Off	
OFF	ON	ON	ON	ON	OFF	NOT USED		4 catalyst valves, 30 color valves
OFF	ON	OFF	ON	ON	OFF	NOT USED		0 catalyst valves, 30 color valves
One Color Change Board								Effect on System
ON	ON	ON	ON	NOT PRESENT				
ON	ON	ON	OFF	NOT PRESENT				
ON	ON	OFF	ON	NOT PRESENT				

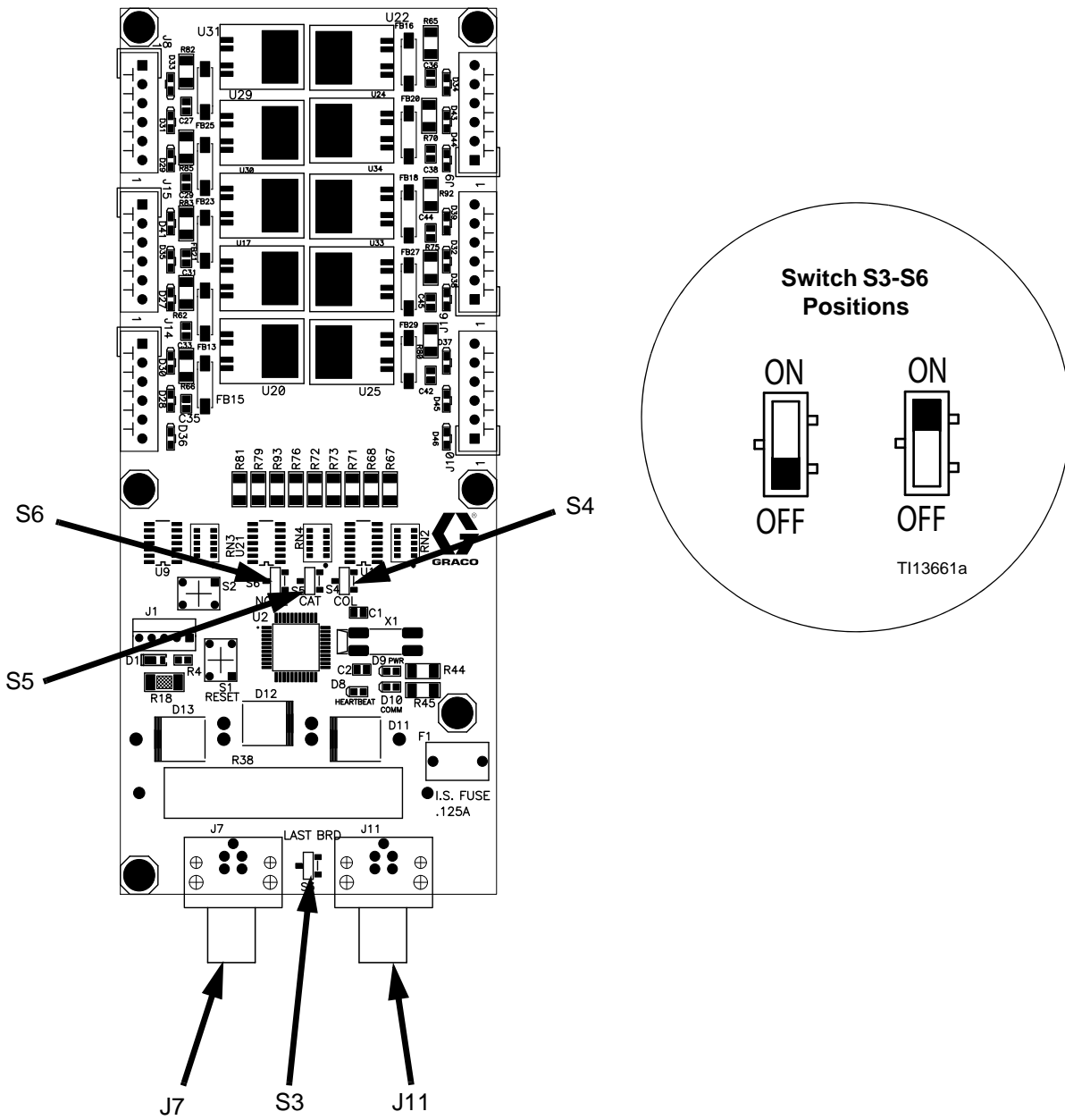


FIG. 21. Color Change Board Switches S3-S6

WIRING DIAGRAM

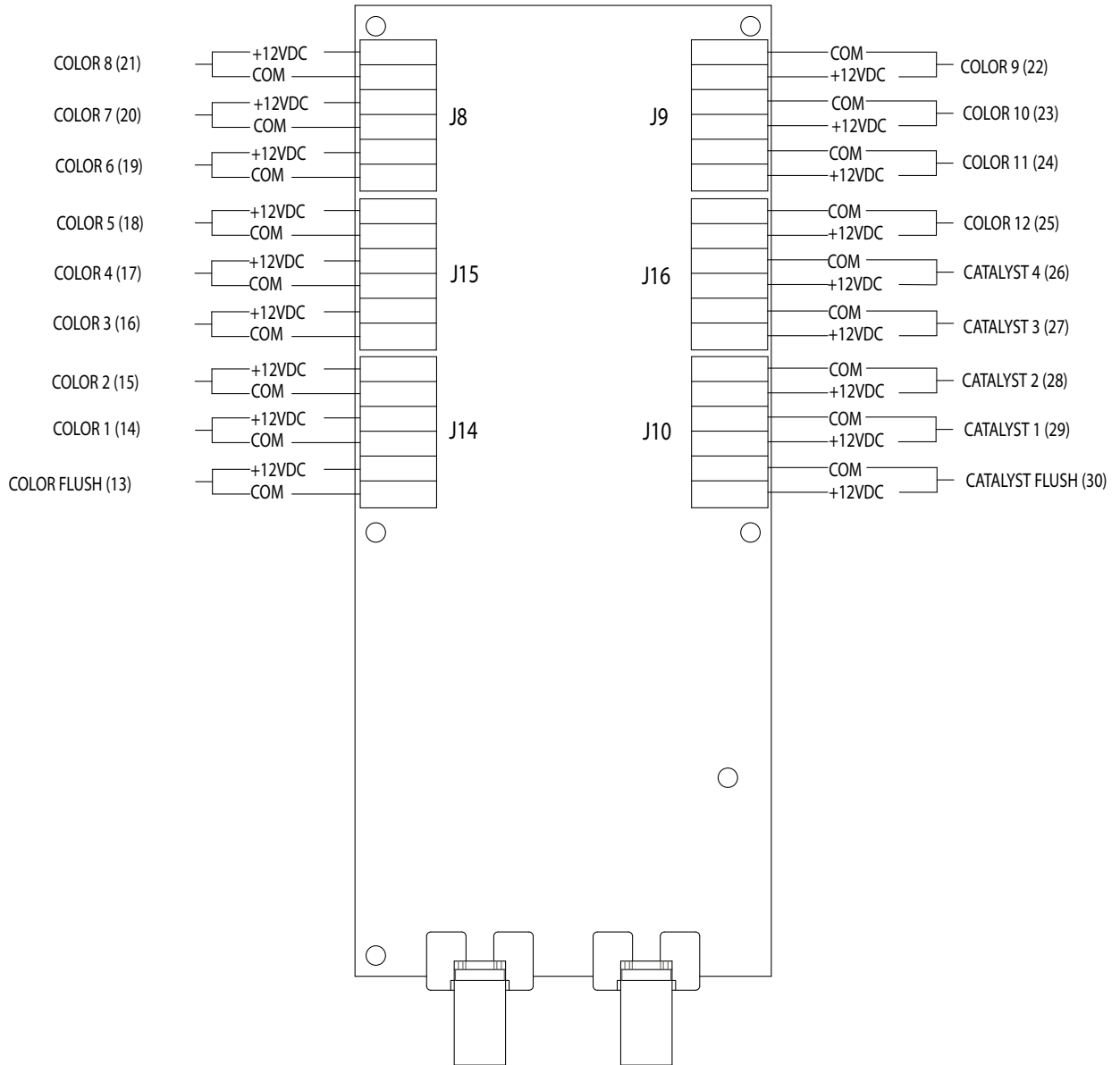






FIG. 22. Color Change Module Electrical Schematic

Grounding

						
<p>Your system must be grounded. Read Warnings, page 10. For intrinsic safety, ground wires for the EasyKey, Fluid Station, and Gun Flush Box must all be connected to the same true earth ground. See FIG. 23, page 37.</p>						

Ground the ProMix system as instructed here and in the individual component manuals. A ground wire and clamp, part no. 223547, is available from Graco.

NOTE: To prevent electrical noise interference from high voltage equipment, do not connect the robot ground to the same ground point used by these ProMix 2KS components.

NOTE: Different ground points (unequal potential) may cause current to flow through component cables, causing incorrect signals.

EasyKey

Connect a ground wire from the EasyKey ground screw to a true earth ground. FIG. 23.

Gun Flush Box (Manual or Semi-automatic mode only)

Connect a ground wire from the Gun Flush Box ground lug to a true earth ground. FIG. 23.

Wall Mount Fluid Station

Connect a ground wire from the Wall Mount Fluid Station ground screw to a true earth ground. FIG. 23.

RoboMix Fluid Station

Connect a ground wire from the RoboMix Fluid Station ground lug to a true earth ground. FIG. 23.

Color Change Module

Connect a ground wire from the Color Change Module ground screw to a true earth ground. A ground wire and clamp, part no. 223547, is available from Graco. FIG. 23.

Flow Meters

Connect the meter cables as shown in the **System Electrical Schematic Hazardous Area** on page 45. Failure to properly connect the shield may cause incorrect signals.

Feed Pumps or Pressure Pots

Connect a ground wire and clamp from a true earth ground to the pumps or pots. See pump or pressure pot manual.

Air and Fluid Hoses

Use grounded hoses only.

Spray Gun

Follow the grounding instructions in your gun manual.

Fluid Supply Container

Follow local code.





Object Being Sprayed

Follow local code.

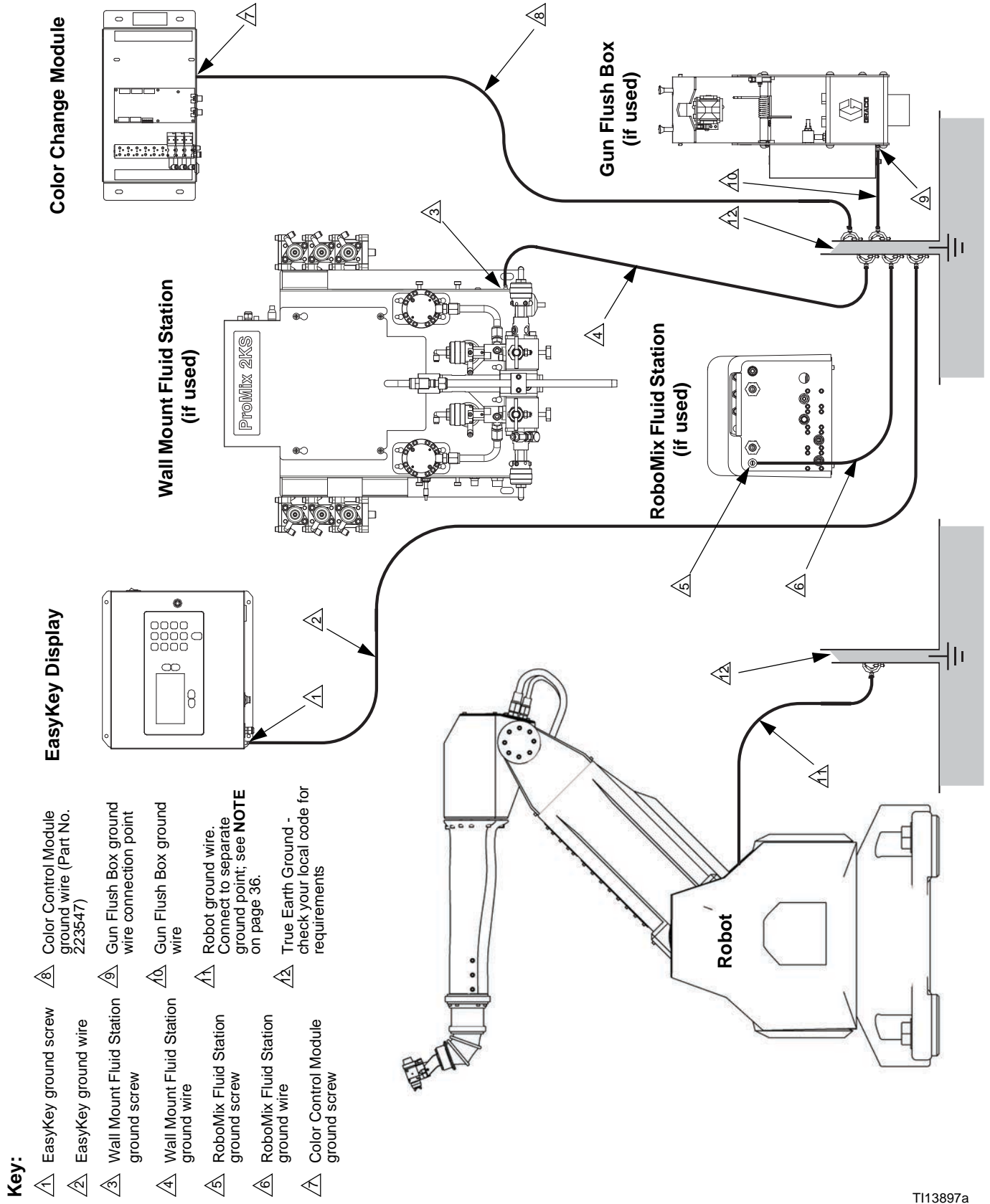
All Solvent Pails Used When Purging

Follow local code. Use only conductive metal pails/containers placed on a grounded surface. Do not place the pail/container on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.

Check Resistance

						
<p>To ensure proper grounding, resistance between ProMix components and true earth ground must be less than 1 ohm. Read Warnings, page 10.</p>						

Have a qualified electrician check resistance between each ProMix component and true earth ground. If resistance is greater than 1 ohm, a different ground site may be required. Do not operate the system until the problem is corrected.



Key:

- 1 EasyKey ground screw
 - 2 EasyKey ground wire
 - 3 Wall Mount Fluid Station ground screw
 - 4 Wall Mount Fluid Station ground wire
 - 5 RoboMix Fluid Station ground screw
 - 6 RoboMix Fluid Station ground wire
 - 7 Color Control Module ground screw
 - 8 Color Control Module ground wire (Part No. 223547)
 - 9 Gun Flush Box ground wire connection point
- 11 Robot ground wire. Connect to separate ground point; see NOTE on page 36.
- 12 True Earth Ground - check your local code for requirements

Fig. 23: Grounding

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Install Automatic Upgrade Kit 15V256

Use this kit to upgrade a ProMix 2KS manual system to an automatic system.

15V256 Kit Parts

Ref.	No.	Part No.	Description	Qty
	1	15V825	KIT, board, discrete I/O; includes 2, 3, and 4	1
	2	n/a	SUPPORT, board	4
	3	n/a	CONNECTOR, plug, 6 position	2
	4	n/a	CONNECTOR, plug, 8 position	2
	5	n/a	HARNESS, wire	1
	6	n/a	BOARD, automatic key	1
	7	n/a	SCREW, machine, pan-hd; 4-40 x 1-1/2 in. (38 mm)	1

Parts labeled n/a are not available separately.

Before Installation

<ul style="list-style-type: none"> To avoid electric shock, turn off EasyKey power before servicing. Servicing EasyKey exposes you to high voltage. Shut off power at main circuit breaker before opening enclosure. All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations. Do not substitute or modify system components as this may impair intrinsic safety. Read Warnings, page 10. 						

NOTICE
To avoid damaging circuit board when servicing, wear grounding strap on wrist and ground appropriately.

Install the Auto Key Board

1. Shut off ProMix 2KS power (0 position). FIG. 24. Also shut off power at main circuit breaker.

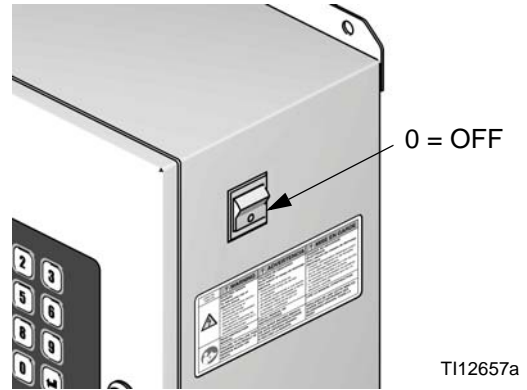


FIG. 24: Power Off

2. Unlock and open EasyKey door with its key.
3. Locate the display board (C). FIG. 26.
4. Remove one screw (E) from the display board assembly. FIG. 25.
5. Align connector J4 on the underside of the auto key board (6) with J3 on the display board. Press them together. FIG. 26.
6. Secure the auto key board (6) with the screw (7).

Install the Discrete I/O Board

Install the Discrete I/O board (1) in the position shown in FIG. 26, using the four board supports (2) supplied in the kit. See FIG. 27 for board orientation.

Install the I/O Terminal Strips

1. Install the supplied din rail to the left of the power supply (PS) as shown in FIG. 26, using two 6-32 x 1/4 in. (6 mm) machine screws supplied with the wire harness (5).
2. The supplied wire harness has one 28 in. (711 mm) cable with a 10-pin terminal strip, one 28 in. (711 mm) cable with a 6-pin terminal strip, and a 3 ft (0.92 m) CAT 5 cable.
 - a. Install the 6-pin terminal strip (6T) and 10-pin terminal strip (10T) on the din rail. See FIG. 26.
 - b. Connect the CAT 5 cable to J1 on the I/O board.
 - c. Route the wire harness cables through the wire channel of the EasyKey to the display board (C).
 - d. Connect the CAT 5 cable to J6 on the display board.
 - e. Connect the 6-pin cable to J10 on the display board.
 - f. Connect the 10-pin cable to J5 on the display board.
3. See the **System Electrical Schematic** on page 44 for complete board wiring information.
4. Close and lock the EasyKey door.

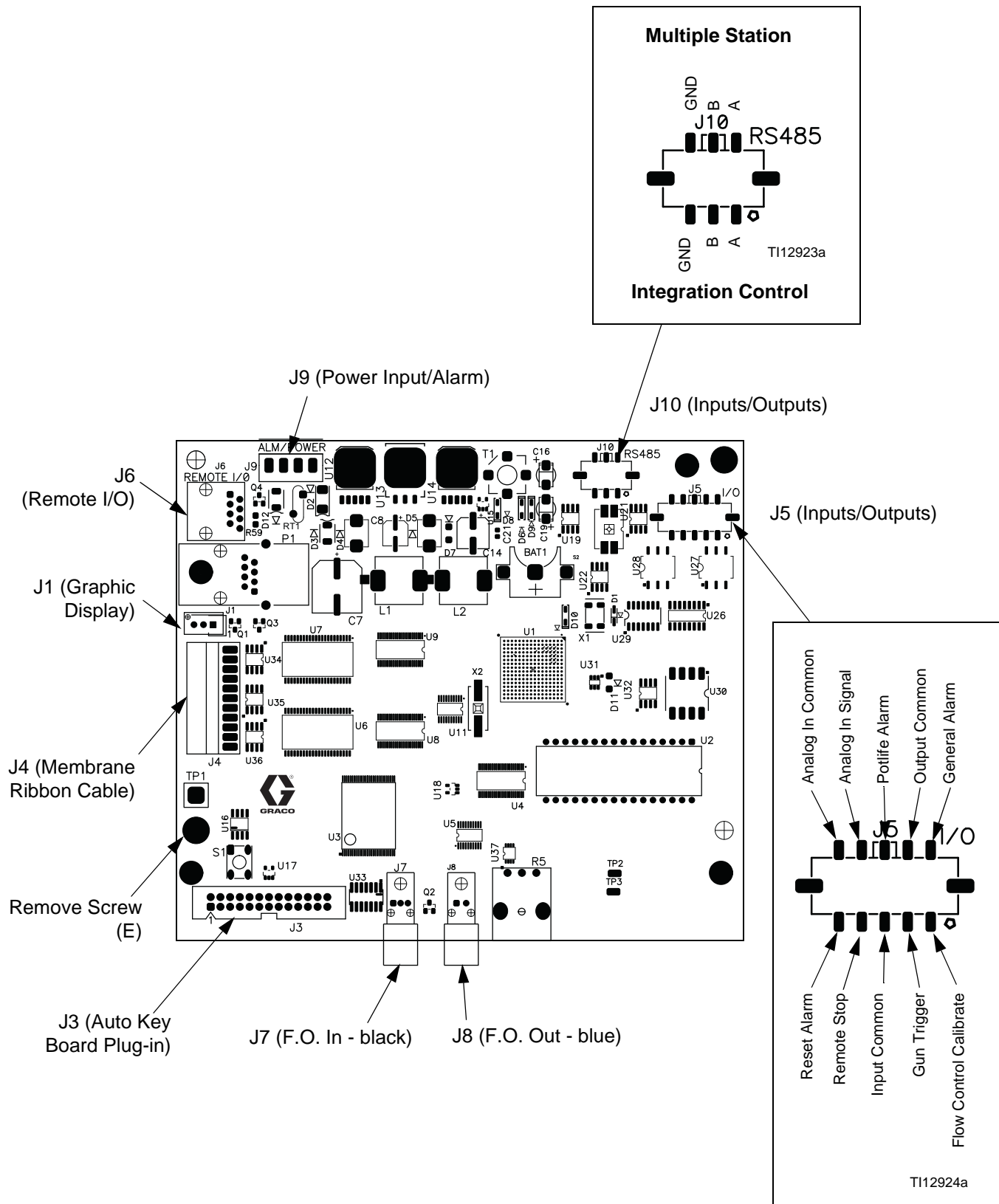
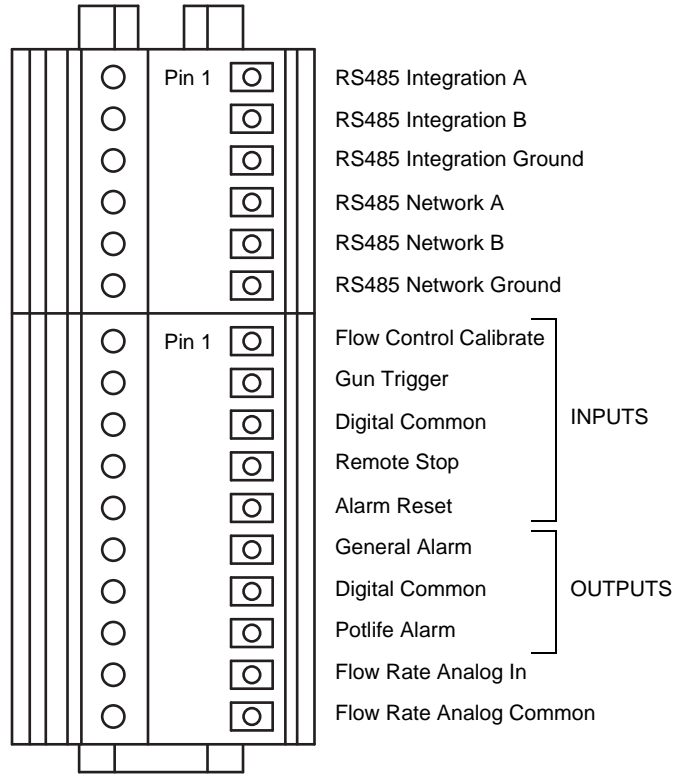
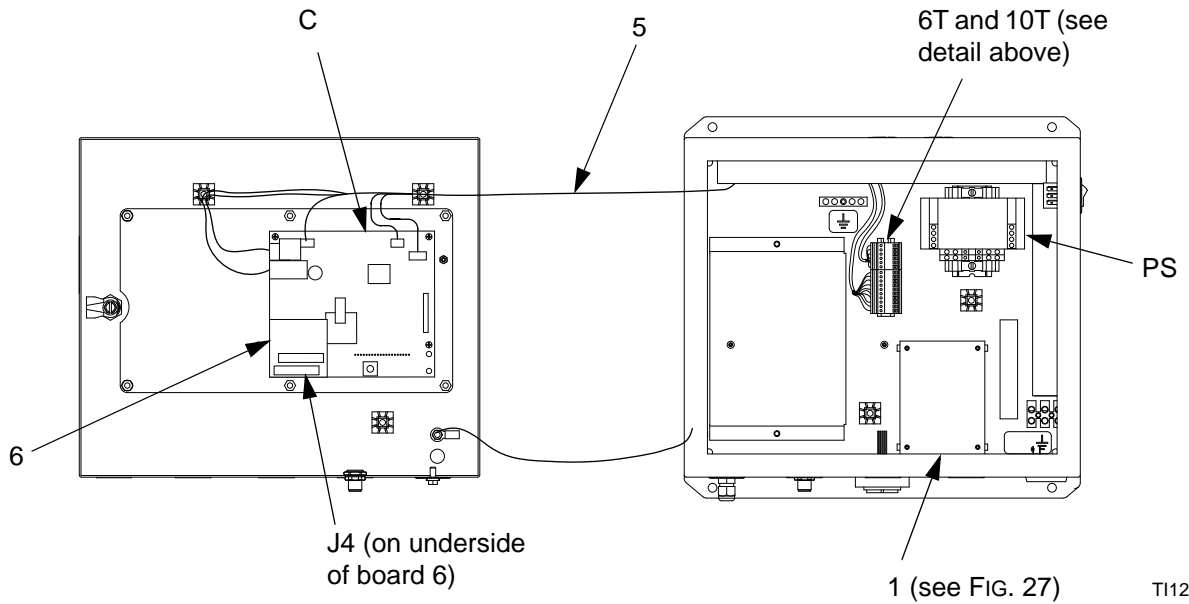


FIG. 25: 255767 Display Board Connectors

I/O Terminal Strip Detail



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FIG. 26: EasyKey Control Boards

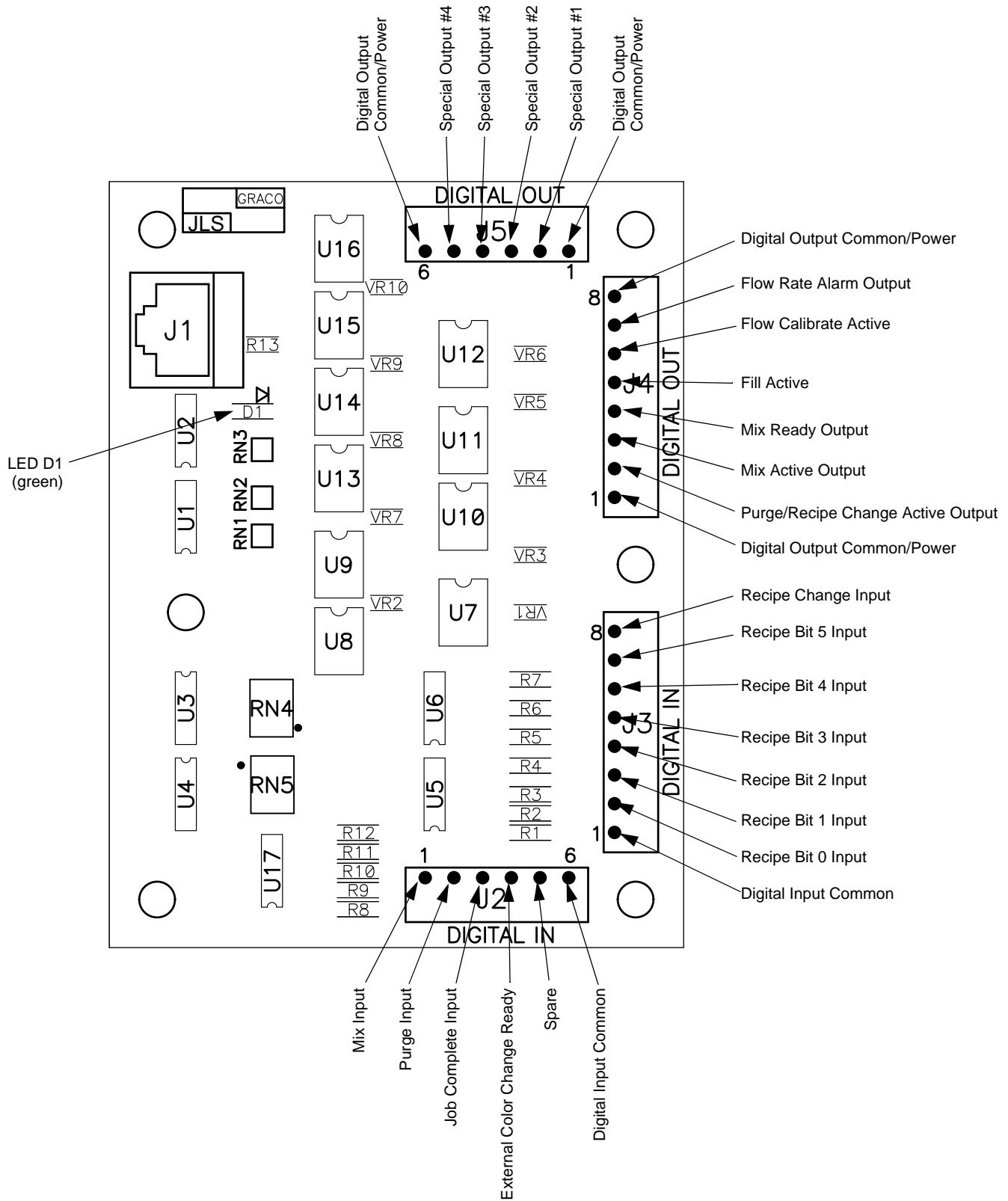
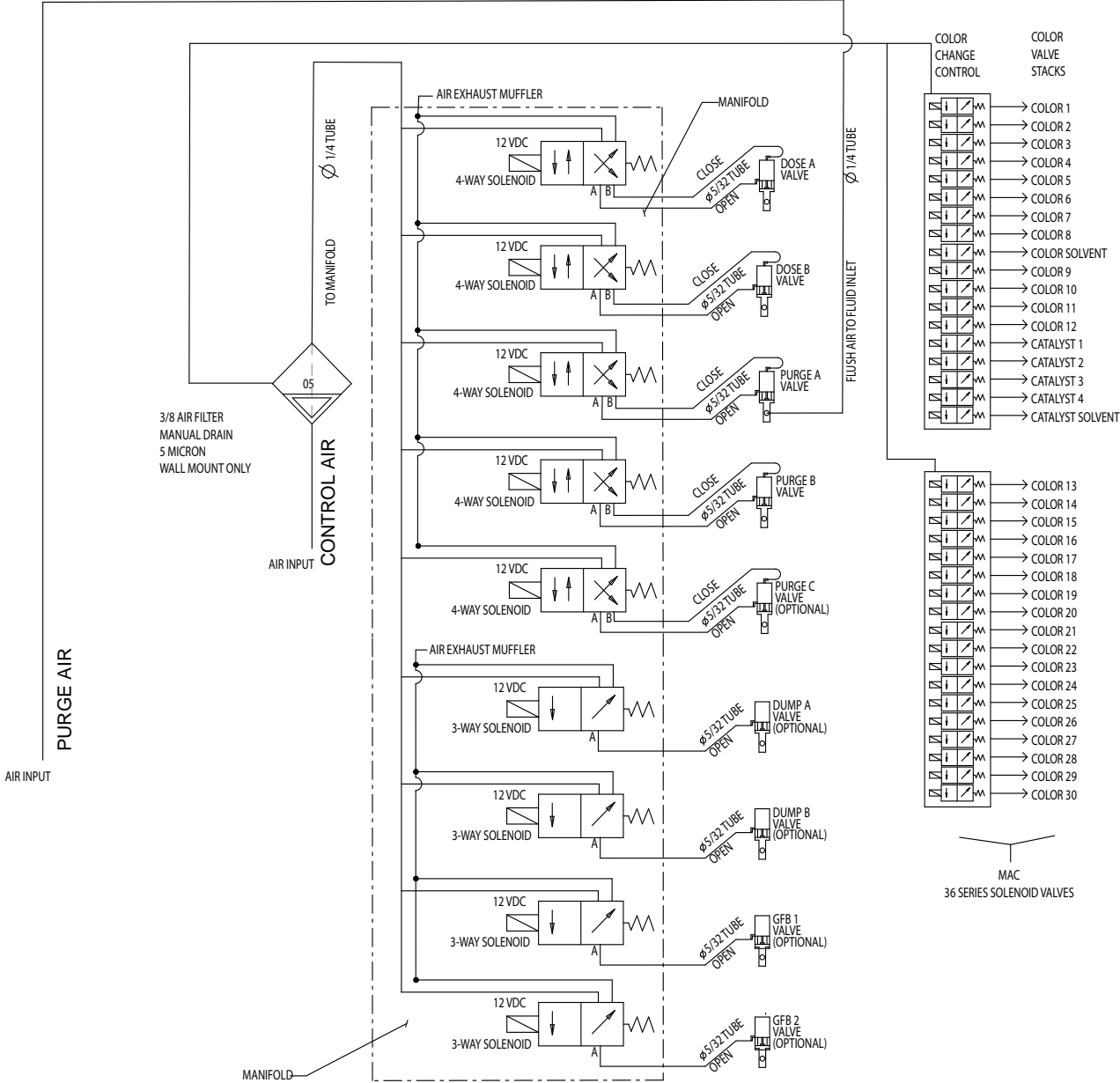


Fig. 27: 255766 Discrete I/O Board

Schematic Diagrams

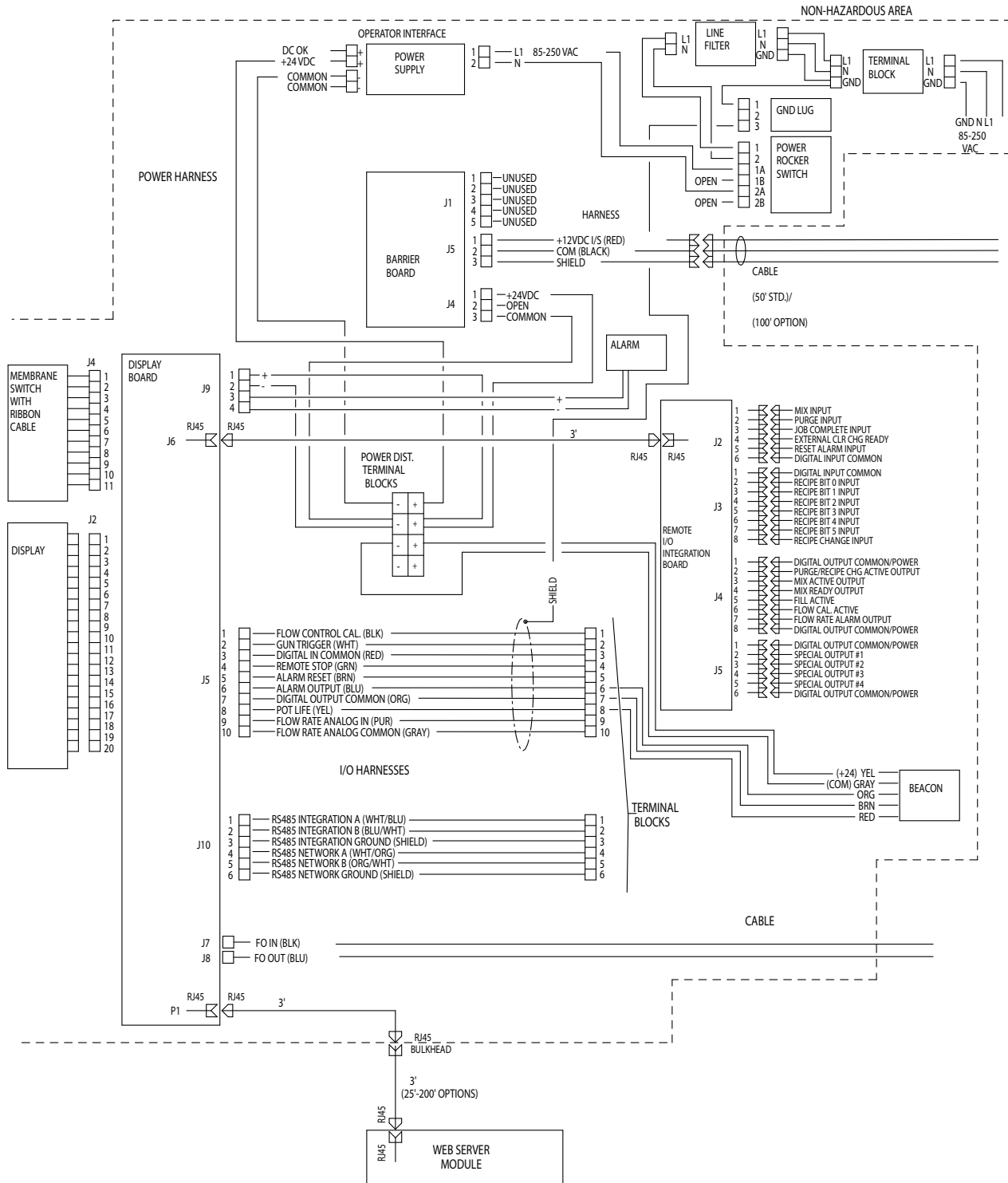
System Pneumatic Schematic



System Electrical Schematic

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix 2KS system. Some components shown are not included with all systems.

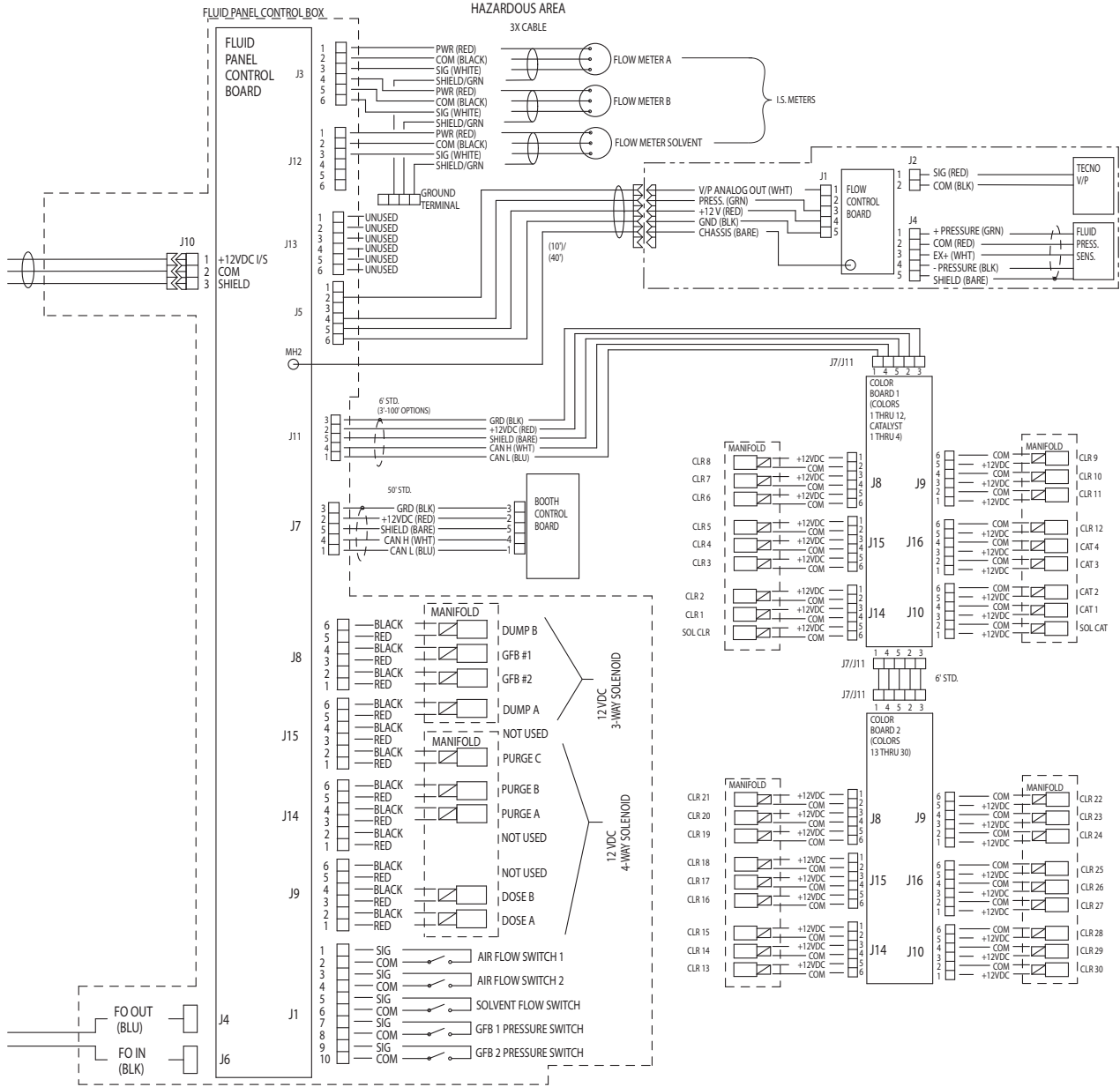
Non-Hazardous Area



System Electrical Schematic

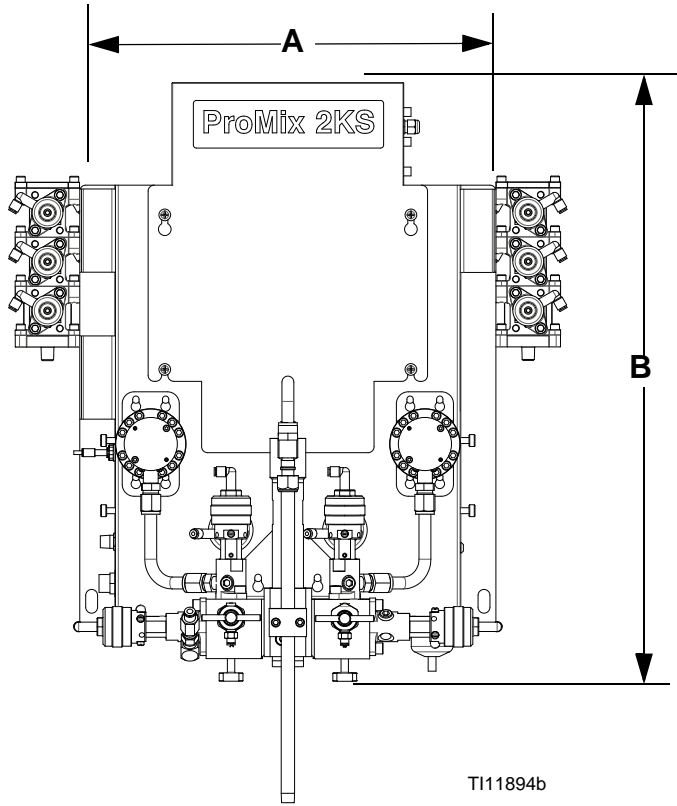
NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix 2KS system. Some components shown are not included with all systems.

Hazardous Area

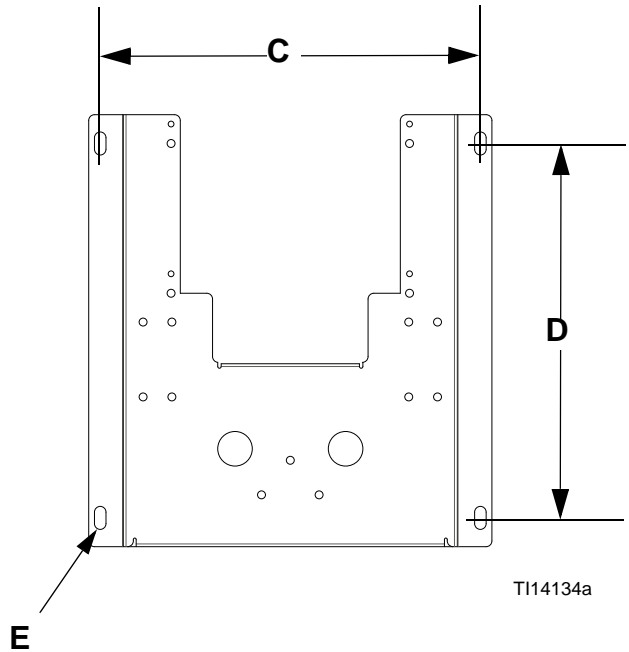


Dimensions and Mounting Hole Layouts

Wall Mount Fluid Station



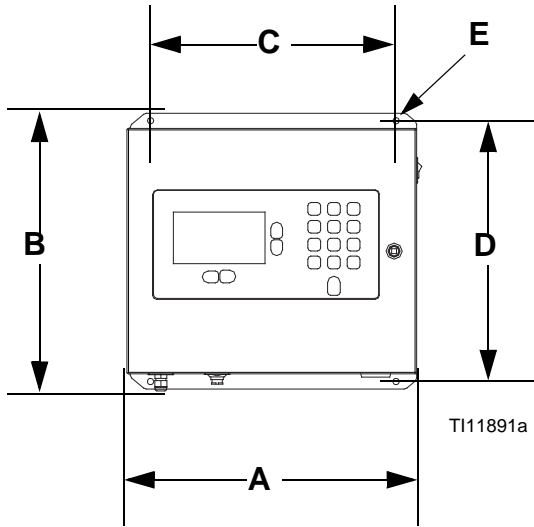
Mounting plate only shown, for clarity



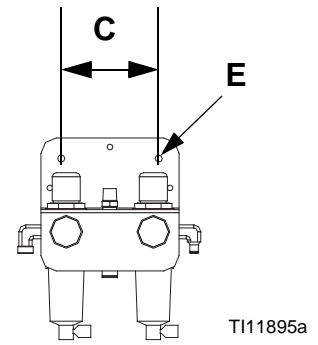
NOTE: Height is shown from top of panel to fluid shutoff valves, and does not include the effect of variable fluid integrator heights. Width of panel does not include optional color/catalyst valve stacks.

Module	A Overall Width in. (mm)	Overall Depth in. (mm)	B Overall Height in. (mm)	Mounting Dimensions, Width (C) x Height (D) in. (mm)	E Mounting Hole Size in. (mm)	Weight lb (kg)
EasyKey	14.0 (355.6)	6.6 (167.6)	13.5 (342.9)	12.0 x 12.75 (304.8 x 323.9)	0.3 (7.6)	22.2 (10.1)
Wall Panel	17.5 (444.5)	11.0 (279.4)	27.0 (685.8)	16.5 x 16.25 (419.1 x 412.8)	0.5 (12.7)	50 (22.7)
Air Supply Control	8.9 (226.1)	3.8 (96.5)	9.9 (251.5)	4.75 (120.7)	0.34 (8.73)	4.65 (2.12)
RoboMix	19.45 (494.0)	8.875 (225.4)	9.0 (228.6)	8.5 x 5.5 (215.9 x 139.7)	0.44 (11.1)	29.65 (13.46)
Flow Control Module	7.13 (181.1)	2.52 (64.0)	3.86 (98.0)	6.63 x 1.50 (168.4 x 38.1)	0.25 (6.3)	3.9 (1.78)
Color Change Module	See Color Change Module manual 312787.					

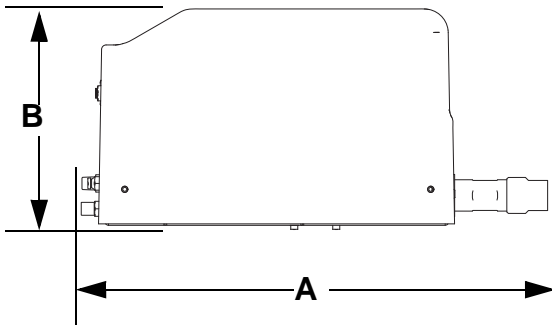
EasyKey



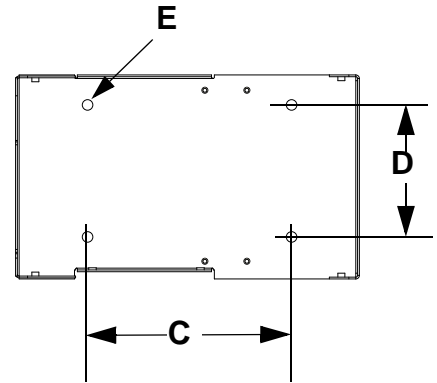
Air Supply Control



RoboMix Fluid Station

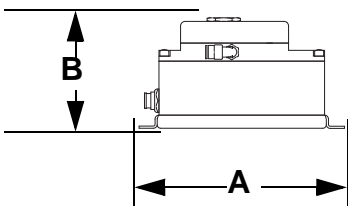


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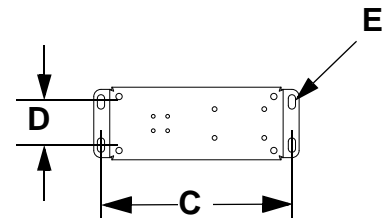


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Flow Control Module



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Dynamic Dosing Restrictor Selection Graphs

Use the graphs on pages 49- 53 as a guide to determine the correct restrictor size for your desired flow and material viscosity. Table 3 lists the available restrictor sizes.

Example:

Application: air spray system with a 5:1 mix ratio

Fluid Supply: 1:1 pumps at 100 psi (7 bar, 0.7 MPa)

Flow Rate: 300 cc/min at the gun

Select the Restrictor Size: choose either the .040 or .070 orifice, to ensure that the pressure differential is not more than 10-20 psi (0.7-1.4 bar, .07-0.14 MPa), provided the fluid viscosities are similar to those tested.

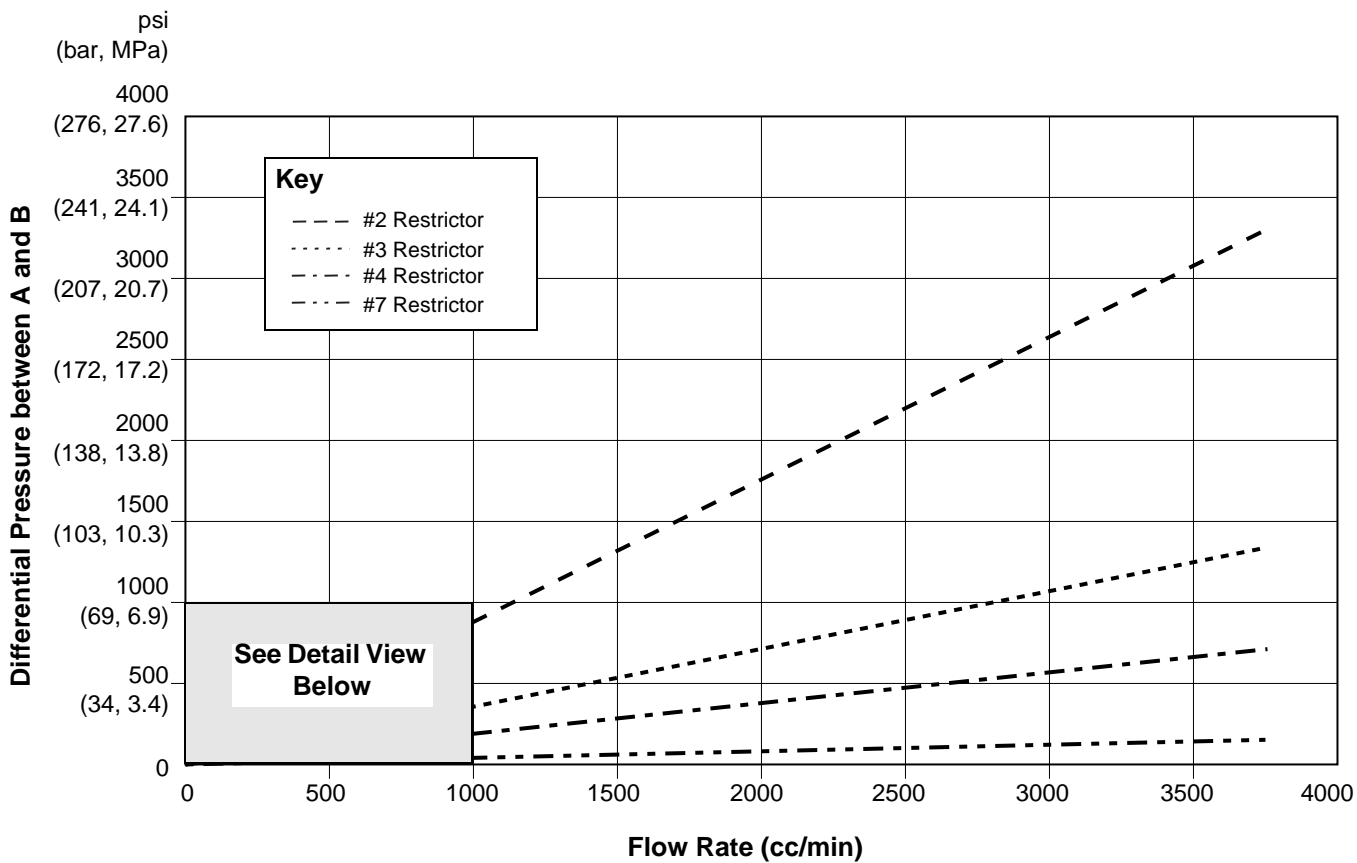
- If the viscosity of component B is lower than the viscosity of the chart used for selection you may need to use a smaller restrictor or decrease the pressure differential.
- If the viscosity of component B is higher than the viscosity of the chart used for selection you may need to use a larger restrictor or increase the pressure differential.
- In systems using an air-assisted gun, if the fluid pressure of component A is higher than the component A pressure from the charts you may need to use a larger restrictor or increase the pressure differential.

Table 3: Restrictor Sizes

Size Code	Orifice Size	Part No.
2*	.020	15U936
3*	.030	15U937
4*	.040	15U938
5✓	.050	15U939
6✓	.060	15U940
7*	.070	15U941
8✓	.080	16D554

* These restrictors are included in Injection Kit 15U955.

✓ These restrictors are optional sizes, not included in the Injection Kit.



Detail View

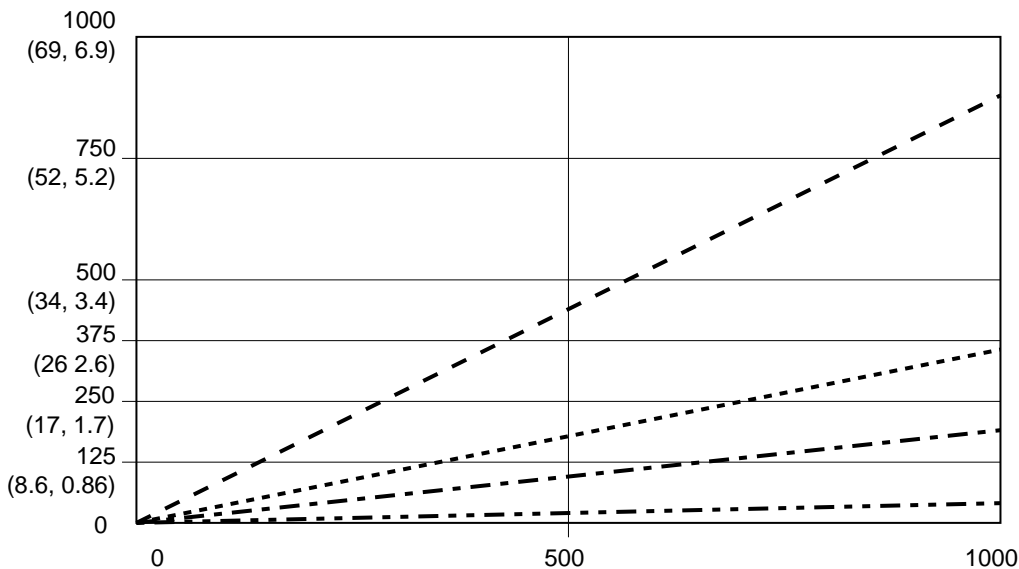


FIG. 28. Dynamic Dosing Performance (1:1 Ratio, 90 centipoise fluid, 100 psi A side pressure)

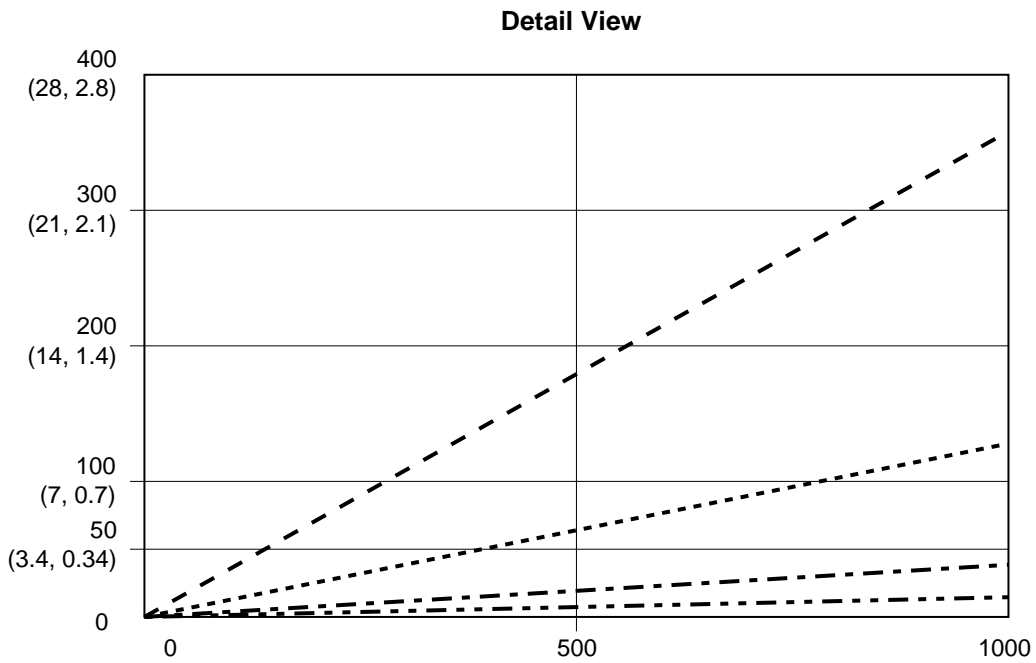
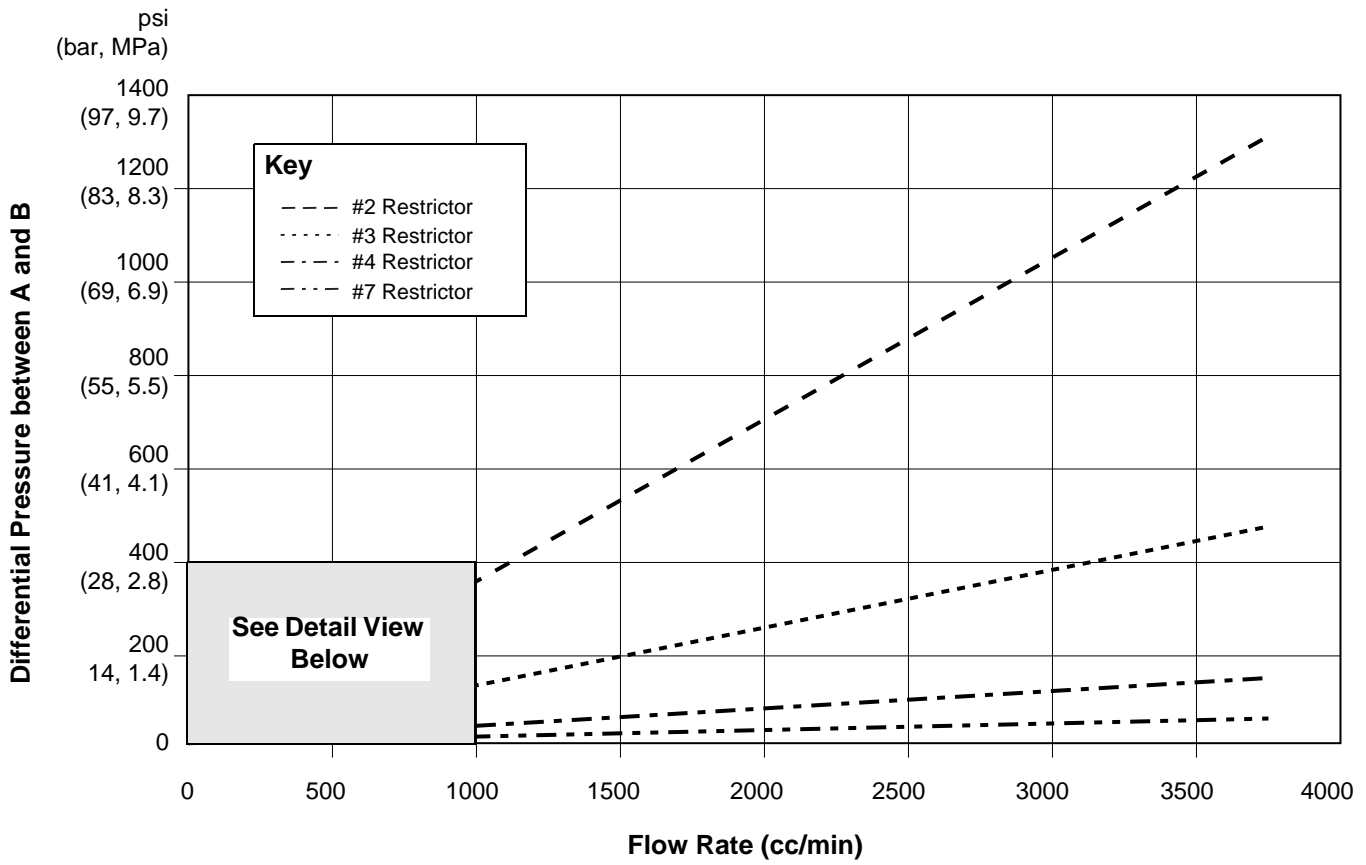
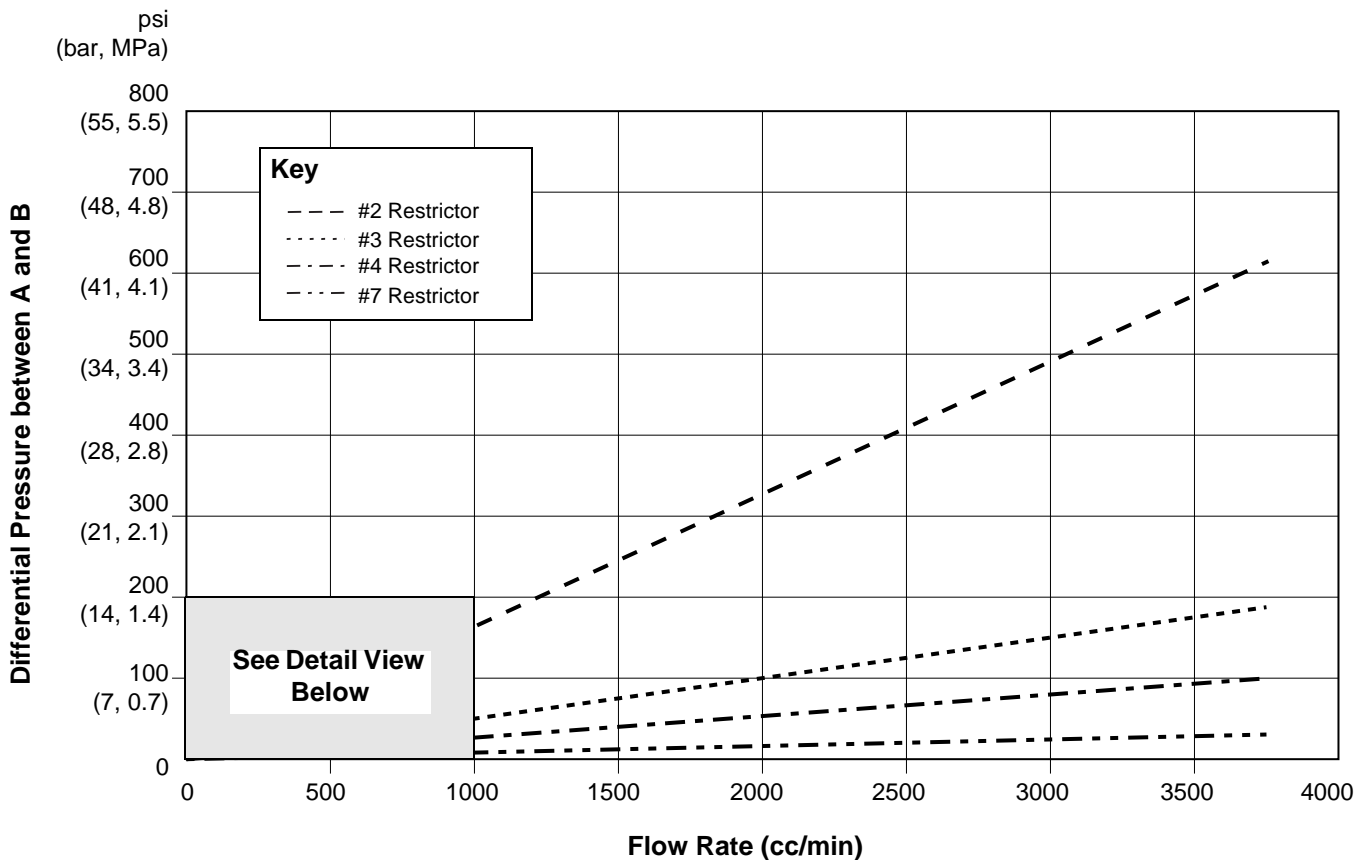


FIG. 29. Dynamic Dosing Performance (5:1 Ratio, 90 centipoise fluid, 100 psi A side pressure)



Detail View

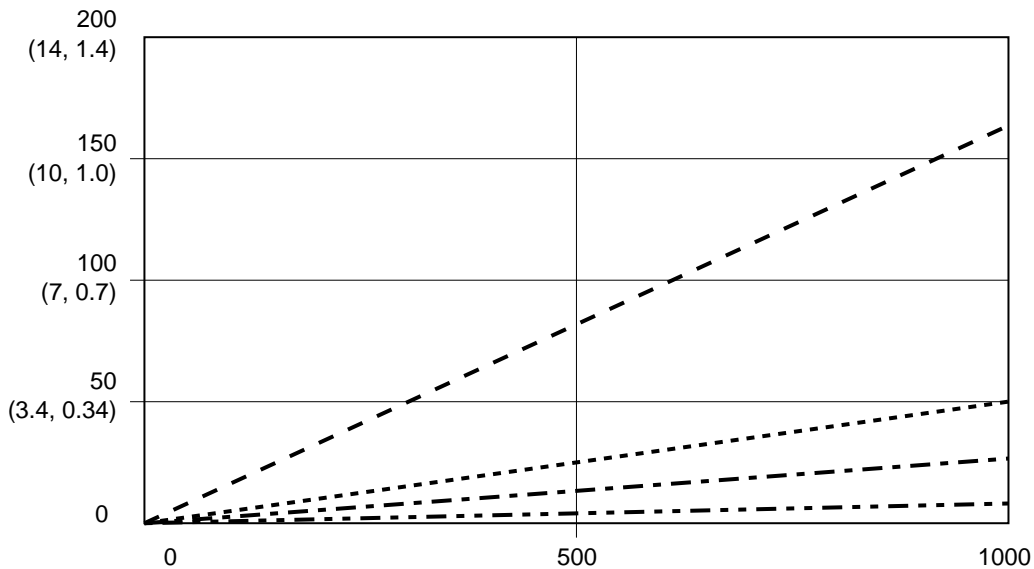


FIG. 30. Dynamic Dosing Performance (10:1 Ratio, 90 centipoise fluid, 100 psi A side pressure)

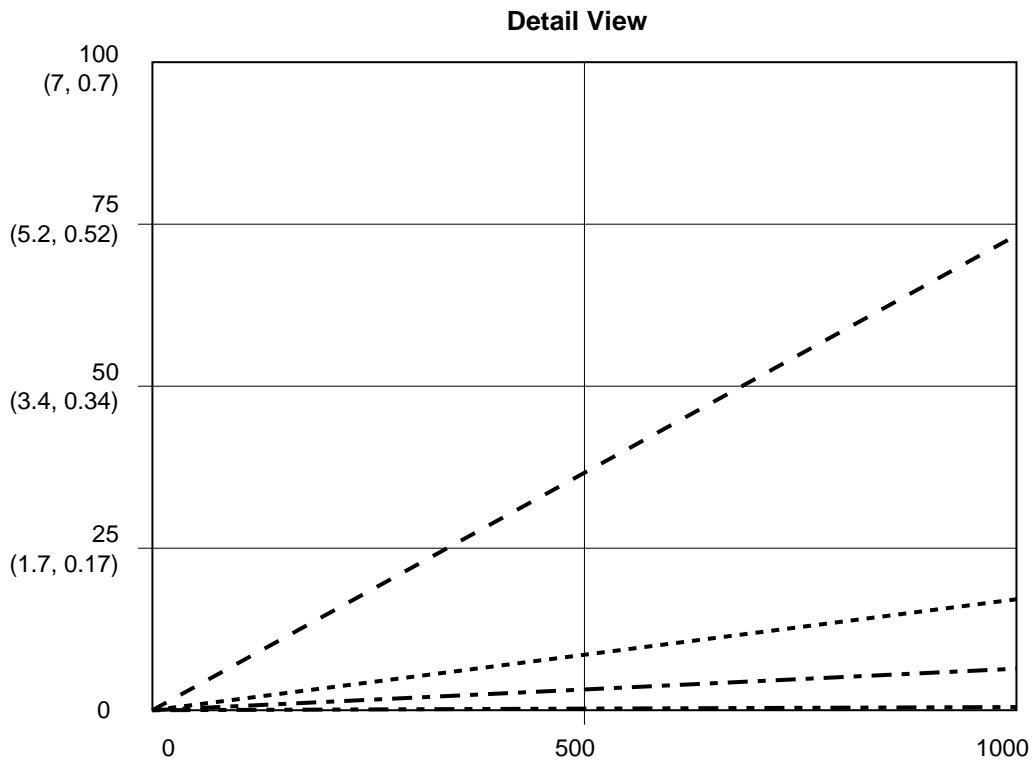
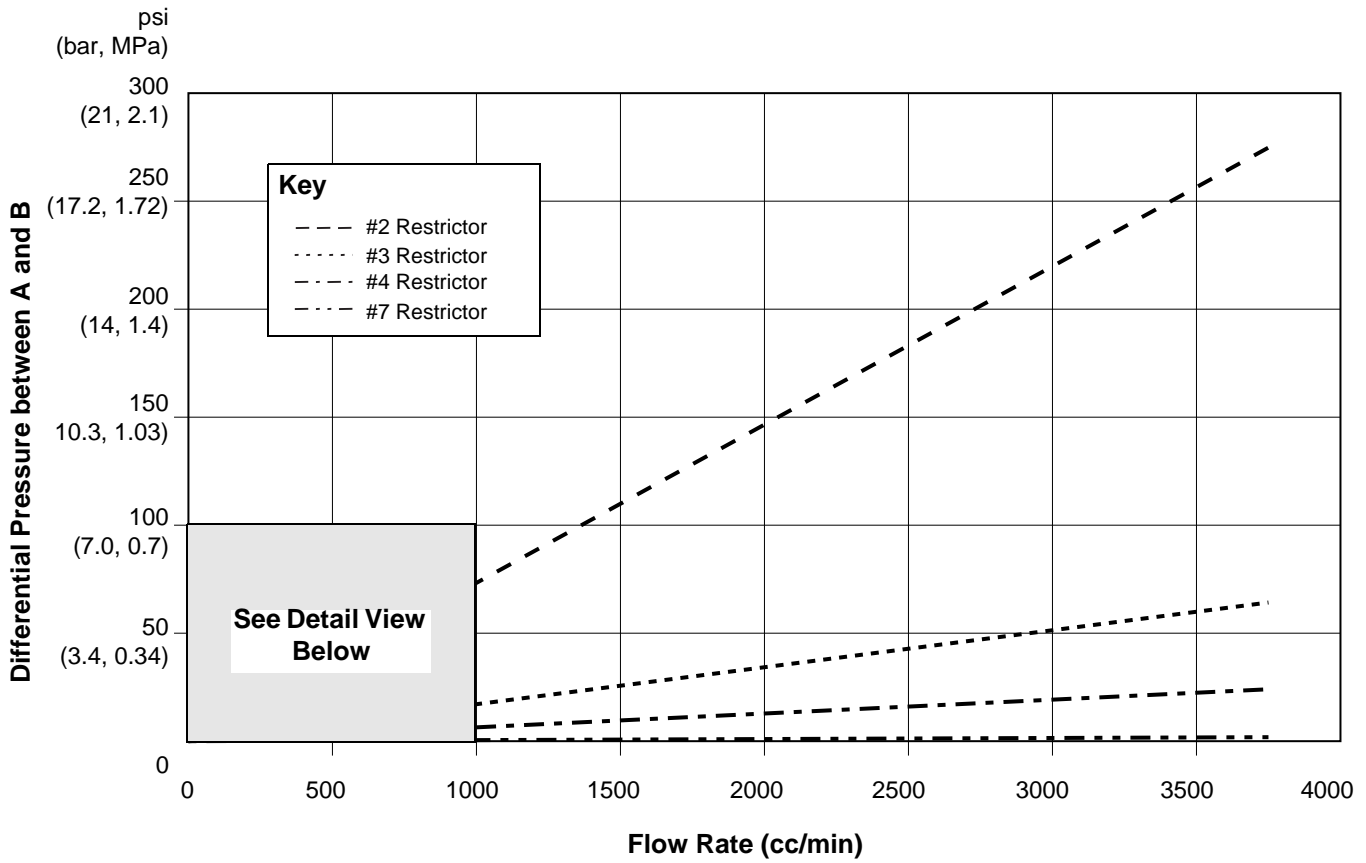


FIG. 31. Dynamic Dosing Performance (20:1 Ratio, 90 centipoise fluid, 100 psi A side pressure)

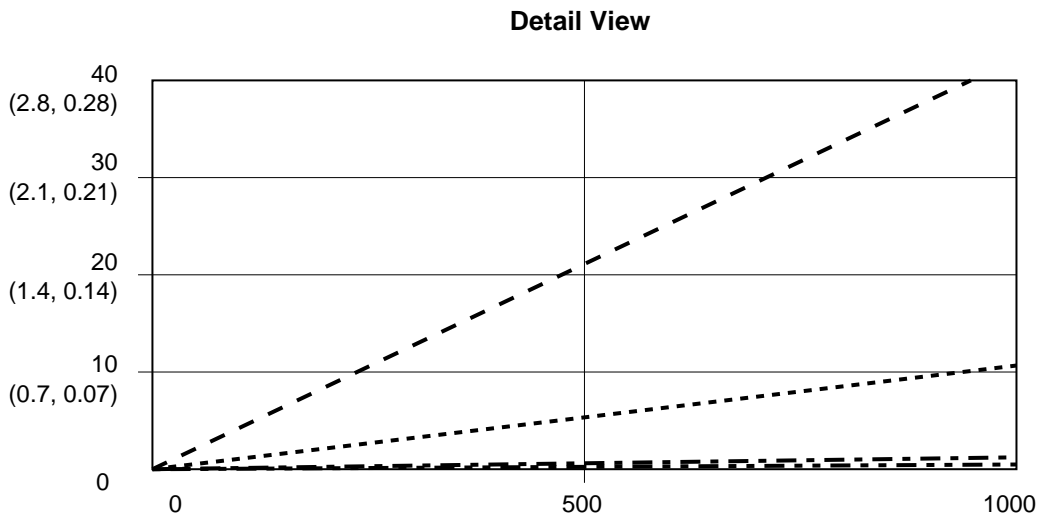
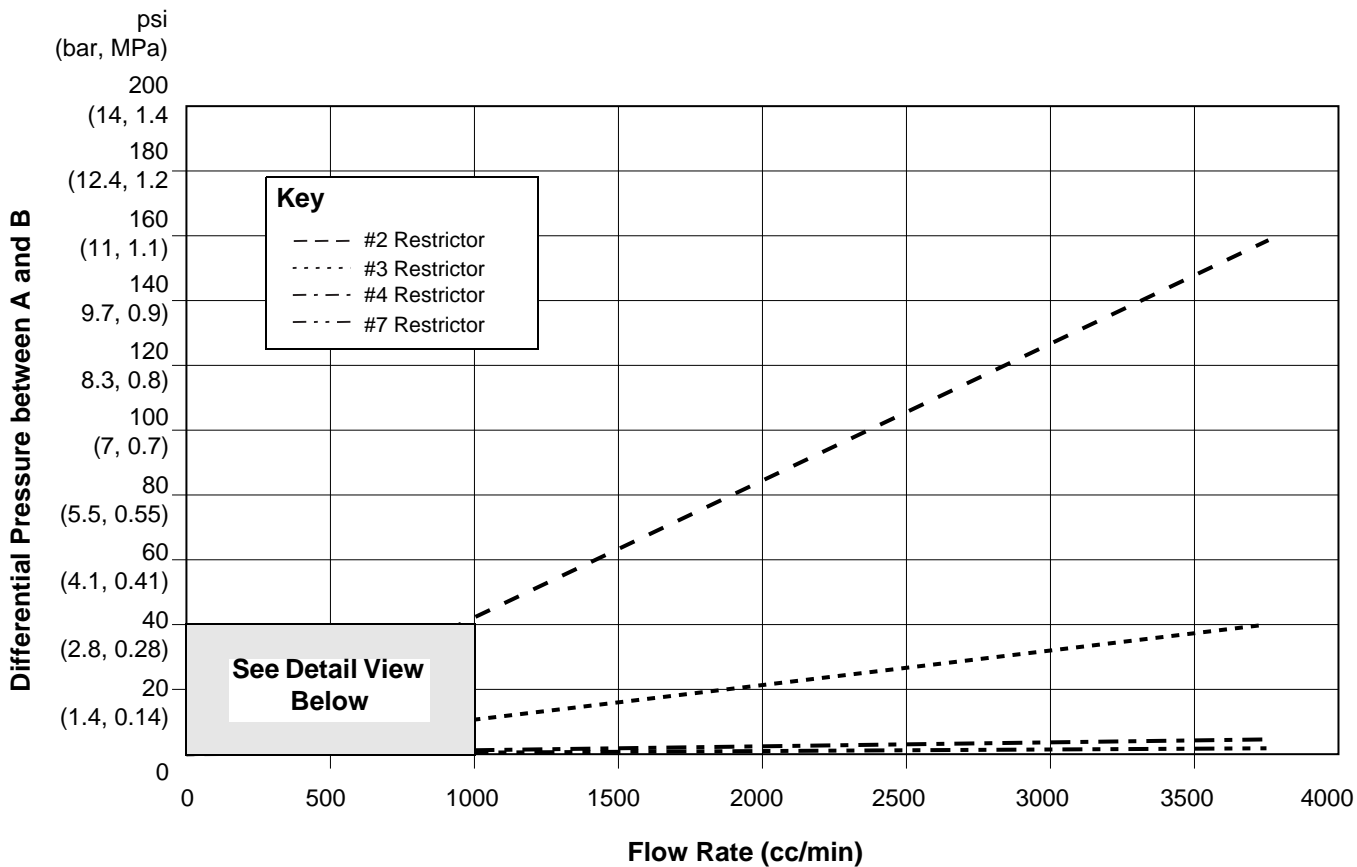
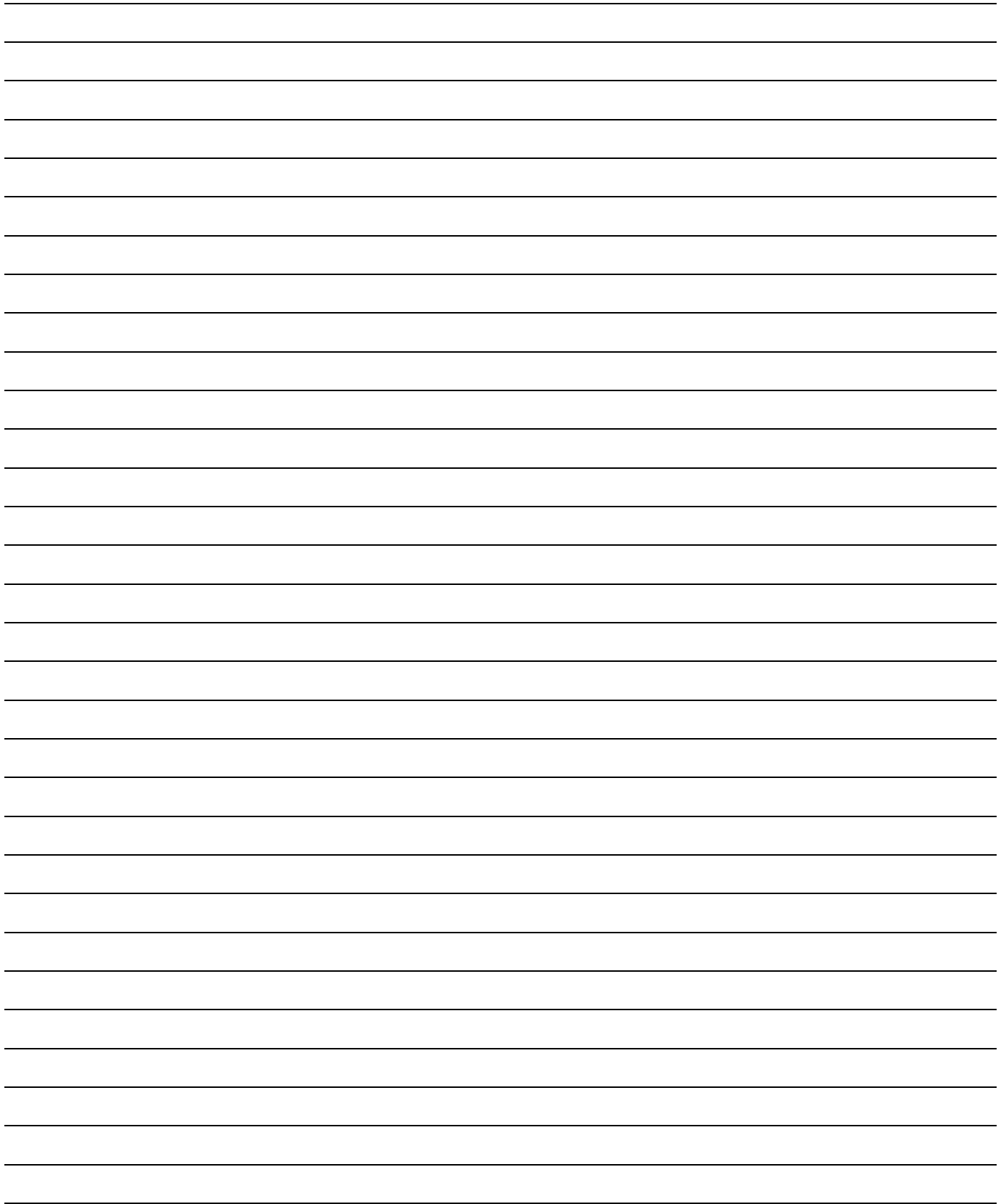


FIG. 32. Dynamic Dosing Performance (30:1 Ratio, 90 centipoise fluid, 100 psi A side pressure)



Technical Data

Maximum fluid working pressure	<i>Base system:</i> 4000 psi (27.58 MPa, 275.8 bar) <i>Low pressure color change:</i> 300 psi (2.07 MPa, 20.6 bar) <i>High pressure color change:</i> 3000 psi (21 MPa, 210 bar) <i>Coriolis meter:</i> 2300 psi (15.86 MPa, 158.6 bar) <i>RoboMix system:</i> 190 psi (1.31 MPa, 13.1 bar) <i>Flow control:</i> 190 psi (1.31 MPa, 13.1 bar)
Maximum working air pressure	100 psi (0.7 MPa, 7 bar)
Air supply	75 - 100 psi (0.5 - 0.7 MPa, 5.2 - 7 bar)
Air filter inlet size	3/8 npt(f)
Air filtration for air logic and purge air (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	0.1:1- 50:1*
On-ratio accuracy	up to \pm 1%, user selectable
Fluids handled	one or two component: <ul style="list-style-type: none"> • solvent and waterborne paints • polyurethanes • epoxies • acid catalyzed varnishes • moisture sensitive isocyanates
Viscosity range of fluid	20- 5000 cps*
Fluid filtration (user-supplied)	100 mesh minimum
Fluid flow rate range*	
G3000, G250, G3000A Meter	75 - 3800 cc/min. (0.02-1.00 gal./min.)
G3000HR, G250HR Meter	38 - 1900 cc/min. (0.01-0.50 gal./min.)
Coriolis Meter	20 - 3800 cc/min. (0.005-1.00 gal./min.)
S3000 Solvent Meter (accessory)	38 - 1900 cc/min. (0.01-0.50 gal./min.)
Fluid inlet sizes	
Flow Meter	1/4 npt(f)
Dose Valve/Color Valve Adapters	1/4 npt(f)
Fluid outlet size (static mixer)	1/4 npt(f)
External Power Supply Requirements	85 - 250 Vac, 50/60 Hz, 2 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge
Operating temperature range	41- 122° F (5-50° C)
Environmental Conditions Rating	indoor use, pollution degree (2), installation category II
Noise Level	
Sound pressure level	below 70 dBA
Sound power level	below 85 dBA
Wetted parts	303, 304 SST, Tungsten carbide (with nickel binder), perfluoroelastomer; PTFE
Wetted materials on acid model (AE100N)	316, 17-4 SST; PEEK, perfluoroelastomer; PTFE

* Dependent on programmed K-factor and application. The maximum allowable flow meter pulse frequency is 425 Hz (pulses/sec). For more detailed information on viscosities, flow rates, or mixing ratios, consult your Graco distributor.

See individual component manuals for additional technical data.

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Original instructions. This manual contains English. MM 312778

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Revision G, December 2016