INSTRUCTIONS - PARTS LIST 684-015

This manual contains important warnings and information.
READ AND RETAIN FOR REFERENCE

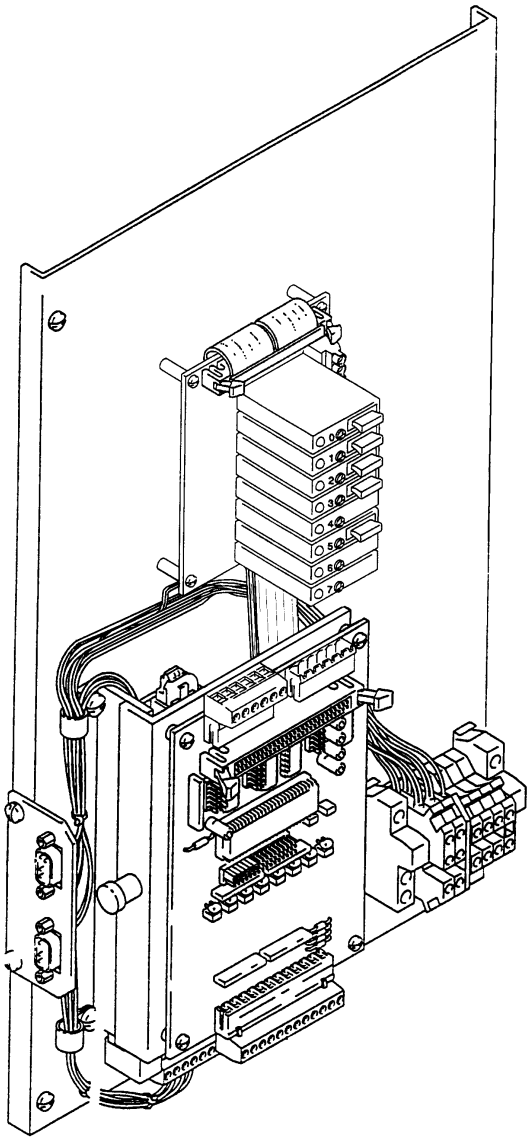
PRECISION MIX™
Proportioning Controller

For Proportional Mixing Of Plural Component Coatings

+ 5 Volts, 1.4 Amps; + 12 Volts, 0.7 Amps; -12 Volts, 0.002 Amps

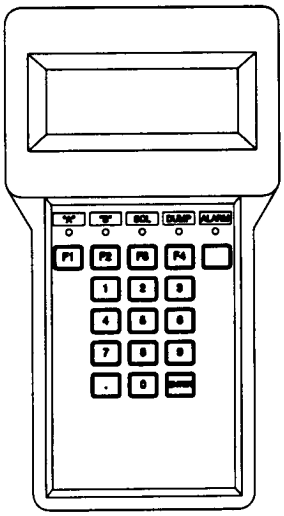
Model: 949-999

For use only in non-hazardous locations. Maximum applied relay voltage shall not exceed +24 volts. Do not operate in hazardous locations, as defined in article 500 of the National Electrical Code (USA).



PATENT PENDING

Part No. 112-434 Black Pendant
Part No. 112-435 Red Pendant
The red pendant is the same as the black pendant except the setup options are not accessible.



GRACO INC. - EAS P.O. Box 1441 MINNEAPOLIS, MN 55440-1441

WARNINGS

Serious injury, explosion, fire or electrostatic shock can occur if the precautions below are not followed. Read and understand all instruction manuals, tags, and warning labels before operating equipment.

Electrical equipment shall only be installed, operated, and serviced by trained, qualified personnel who shall be fully conversant with the requirements stated within this instruction manual.

FIRE, EXPLOSION OR ELECTRIC SHOCK HAZARD

General Safety

To reduce the risk of fire, explosion, or electric shock:

1. Do not operate in hazardous locations, as defined in Article 500 of the National Electrical Code (USA).
2. Operate the Precision Mix™ in well-ventilated areas only.
3. The equipment must be grounded (see below).
4. The operator control station must have an emergency stop that removes all power from the Precision Mix™ Controller when it is activated.
5. Keep liquids away from the electrical components.
6. Disconnect electrical power at the main switch before servicing the Precision Mix™.
7. Do not disassemble the electrical controller. Call a qualified electrician.

All parts of the fluid system must be properly grounded to reduce the risk of static electricity discharge. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances and can cause a fire or explosion and serious injury and property damage.

Sparks may also occur when plugging in or unplugging a power supply cord. Do not plug in or unplug any power supply cords in the spray area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or feel even a slight shock while using the system, stop operating the system immediately. Check for proper grounding of the entire system. Do not use the system again until the cause of the problem is identified and corrected.

Grounding

Check your equipment instruction manuals and local electrical code for detailed grounding instructions for your area and type of equipment, and be sure to ground all of this spray equipment:

1. *Precision Mix™ System:* The Precision Mix™ System must be electrically connected to a true earth ground. The ground in the electrical system is not sufficient. Ground the system as instructed on page 8.
2. *Feed Pumps or Pressure Pots:* use a ground wire and clamp. See your separate pump or pressure pot manual.
3. *Air Compressor:* follow manufacturer's recommendatiions.
4. *Air and Fluid Hoses:* use grounded hoses only.
5. *Spray Gun:* obtain grounding through connection to a properly grounded fluid hose and Precision Mix™ Manifold.
6. *Fluid Supply Container:* according to your local code.
7. *Object Being Sprayed:* according to your local code.
8. *All Solvent Pails Used When Flushing,* according to your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.
9. *To Maintain Grounding Continuity when Flushing or Relieving Pressure,* always hold a metal part of the spray gun firmly to the side of a grounded *metal* pail, then trigger the gun.

Flushing Safety

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding**, at left. Follow the **Pressure Relief Procedure** below. Always use the lowest possible fluid pressure, and maintain firm metal-to-metal contact between the gun and the pail during flushing to reduce the risk of injury from fluid splashing or static sparking.

Pressure Relief Procedure

To reduce the risk of serious injury, including splashing fluid in the eyes or on the skin, always follow this procedure whenever you shut off the Precision Mix™, when checking or servicing any part of the system, when installing, cleaning, or changing fluid tips, and whenever you stop spraying.

1. Set the Precision Mix™ to STANDBY.
2. Relieve fluid and air pressure at the component and solvent feed pumps or pressure pots, as explained in their separate instruction manuals.
3. Set the Precision Mix™ to MIX.
4. Hold a metal part of the spray gun firmly to the side of a grounded metal pail, and trigger the gun to relieve fluid pressure.
5. Set the Precision Mix™ to STANDBY.

If you suspect that the fluid tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

EQUIPMENT MISUSE HAZARD

General Safety
Any misuse of the spray equipment or accessories, such as overpressurizing, modifying parts, using non-Graco replacement parts, using incompatible chemicals and fluid, or using worn or damaged parts, can cause parts to rupture or cause equipment to malfunction and result in serious injury, such as fluid injection, splashing fluid in the eyes or on the skin, or fire, explosion or property damage.

Never alter or modify any part of this equipment; doing so could cause it to malfunction.

Check all spray equipment regularly and repair or replace worn or damaged parts immediately.

Only use genuine Graco replacement parts when servicing the Precision Mix™.

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

System Pressure
Be sure that all spray equipment and accessories are rated to withstand the maximum air and fluid working pressures of the system. Do not exceed the maximum working pressure of any component or accessory used in the system.

Fluid Compatibility
Be sure that all fluids and solvents used are chemically compatible with the wetted parts of each of your system's components. Always read the manufacturer's literature before using fluid or solvent in your system.

IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards - particularly the General Standards, Part 1910, and the Construction Standards, Part 1926 - should be consulted.

TABLE OF CONTENTS

How the Precision Mix™ Works

The standard Graco Precision Mix™ can blend most two-component epoxy or polyurethane paints. The Precision Mix™ is not for use with “quick-setting” paints (those with a pot life of less than 15 minutes). For information on handling quick-setting paints or abrasive fluids, contact your Graco representative or Graco Technical Assistance (see back page).

The system can be set up to mix components supplied from pressure vessels, from feed pumps transferring the materials from their original containers, or from a central paint recirculating line.

The standard Precision Mix™ is designed to operate an air spray or air-assisted airless system with a capacity of up to 2000 cc/min.

This manual describes the electronic controller module, which takes information from the fluid flow meters, installed in the fluid stream, and sends signals to control valves to reliably proportion the two component coatings. All ratio calculations are by volume. Other inputs and outputs are provided to control the flushing process, provide alarm annunciation, and interface with the operator.

Operating Cycle

To begin operation, the spray gun operator enters the desired ratio and other parameters through the pendant and energizes the MIX input. From that point on, normal operation of the Precision Mix™ is controlled by the operation of the spray gun.

When the gun is triggered, the two components enter the Precision Mix™ through separate paint lines and check valves, then are precisely monitored by flow meters.

When the spray gun is triggered, the two components are introduced into the integrator chamber one at a time. Their entry into the chamber is controlled by a dispense valve for each component. The flow meters monitor the exact quantities being dispensed, and send electrical pulses to the controller. The controller monitors these pulses and turns the dispense valves on or off accordingly (based on the target volumes calculated by the controller).

The following is a typical ratio cycle:

- First, the component A (resin) dispense valve opens, and the fluid begins to flow into the integrator chamber. When the correct quantity has been dispensed (based on the calculated target value), the component A dispense valve closes. See Fig. 1.
- Next, the component B (catalyst) dispense valve opens. The fluid begins to flow into the integrator chamber and is lined up proportionately with the previously-dispensed component A sample, then the B dispense valve closes. See Fig 2.
- The process repeats itself as long as the spray gun is triggered. When the trigger is released, the Precision Mix™ idles; it will continue where it left off when the gun is triggered again.

The components are pre-mixed in the integrator, then given a homogeneous blending as they pass through a static mixer tube. Output from the mixer tube to the spray gun may be controlled by a fluid pressure regulator.

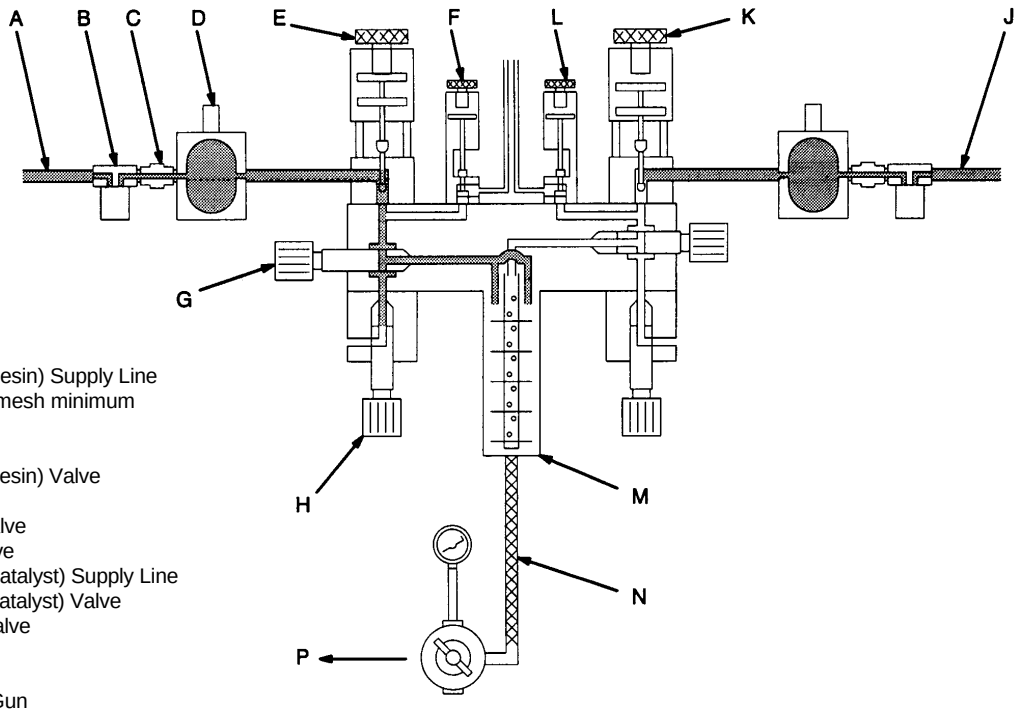
The two components continue to be alternately fed into the mixing block as long as the gun is triggered. When the trigger is released, the system idles. Operation can be stopped at any time by energizing the STANDBY input, or shutting off the main power switch.

Adaptive Overrun Correction

The actual volume of fluid dispensed each cycle can vary slightly from the calculated target. However, the controller monitors this variance and compensates on the next cycle. At each cycle, the controller calculates the proper component A (resin) volume based on the desired ratio, the actual previous component B (Catalyst) volume, and the desired tolerance.

Whenever the fluid overrun is greater than the calculated tolerance volume, a relevant message is displayed on the pendant, the pendant alarm light blinks, the alarm annunciator closes, and the system stops.

FUNCTIONAL DIAGRAM - COMPONENT A (RESIN) DISPENSE

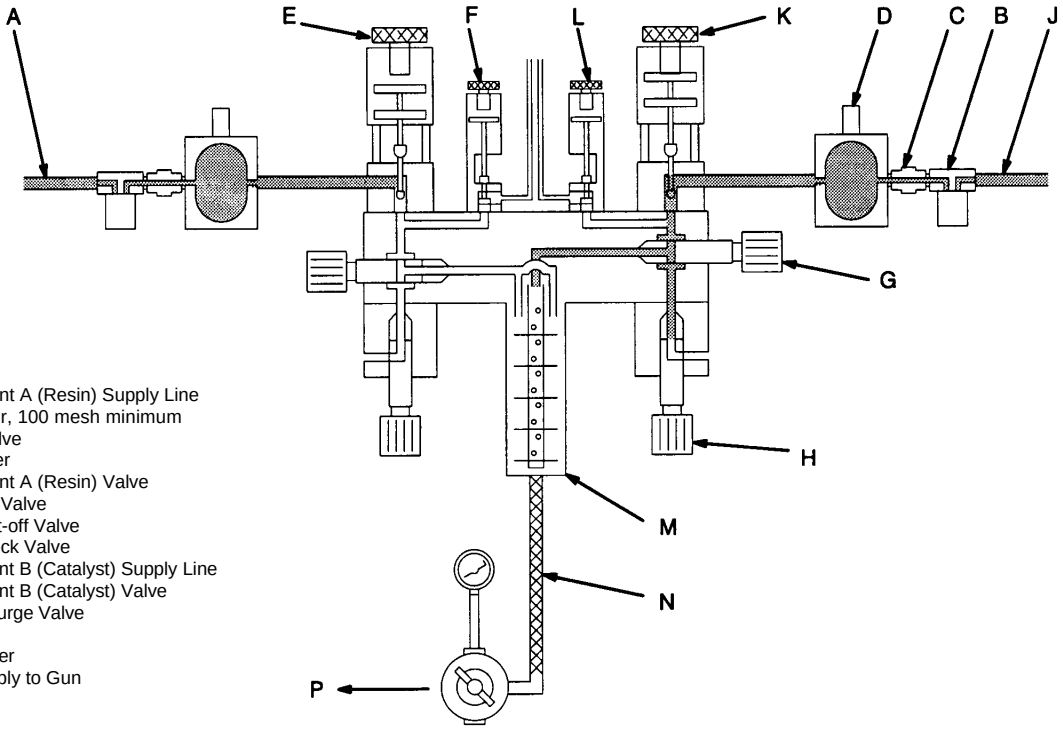


KEY

A Component A (Resin) Supply Line
B Fluid Filter, 100 mesh minimum
C Check Valve
D Flow Meter
E Component A (Resin) Valve
F Air Purge Valve
G Fluid Shut-off Valve
H Ratio Check Valve
J Component B (Catalyst) Supply Line
K Component B (Catalyst) Valve
L Solvent Purge Valve
M Integrator
N Static Mixer
P Fluid Supply to Gun

Fig 1

FUNCTIONAL DIAGRAM - COMPONENT B (CATALYST) DISPENSE



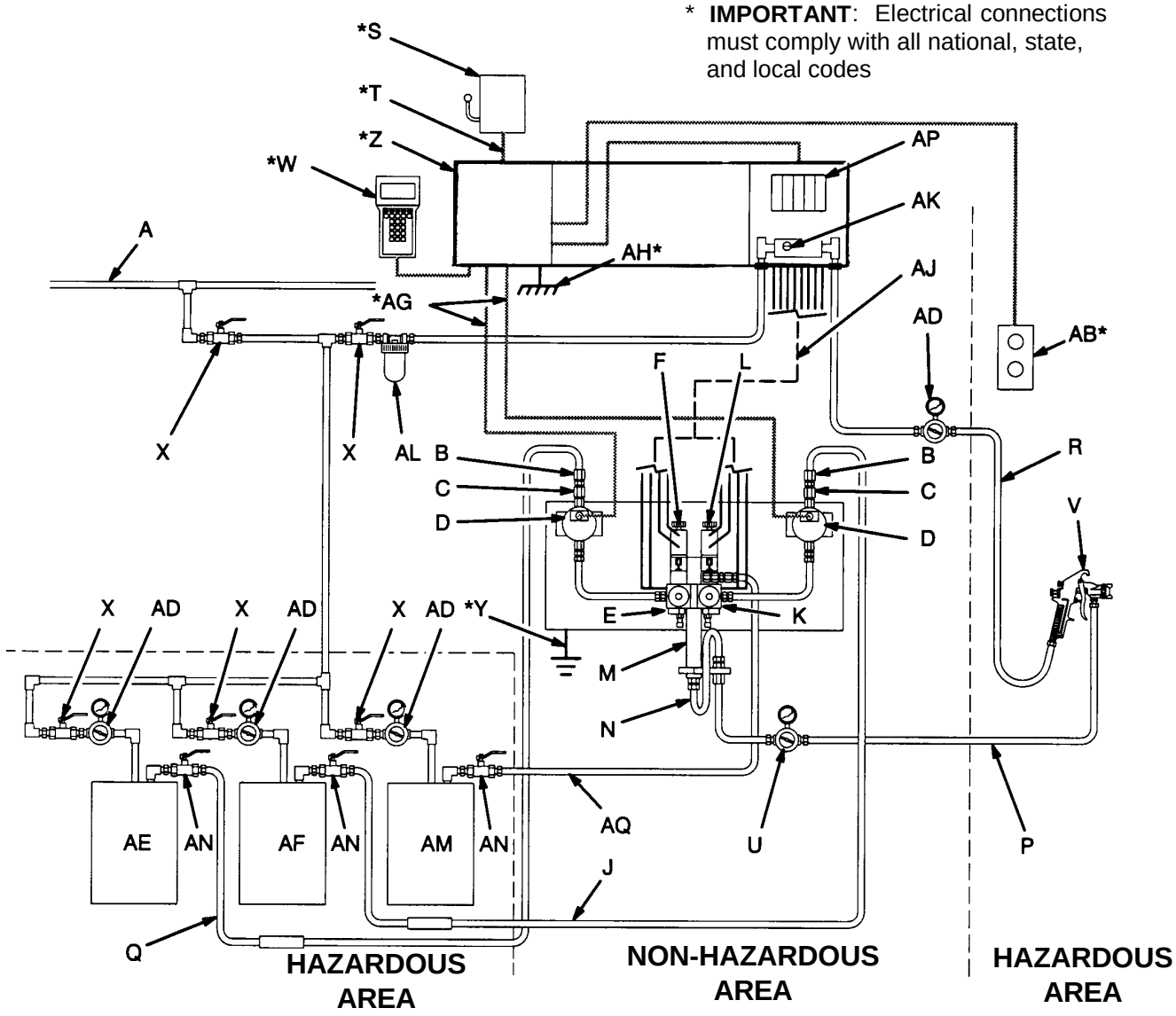
KEY

A Component A (Resin) Supply Line
B Fluid Filter, 100 mesh minimum
C Check Valve
D Flow Meter
E Component A (Resin) Valve
F Air Purge Valve
G Fluid Shut-off Valve
H Ratio Check Valve
J Component B (Catalyst) Supply Line
K Component B (Catalyst) Valve
L Solvent Purge Valve
M Integrator
N Static Mixer
P Fluid Supply to Gun

Fig 2

Typical Installation

* **IMPORTANT**: Electrical connections must comply with all national, state, and local codes



KEY

A Air Supply Line
B Fluid Filter (100 mesh minimum) and fluid component inlet to Precision Mix™
C Check Valve
D Flow Meter
E Component A (Resin) Valve
F Air Purge Valve
J Component B (Catalyst) Supply Line
K Component B (Catalyst) Valve
M Integrator
N Static Mixer
P Fluid Supply Line to Gun
Q Component A (Resin) Supply Line
R Air Hose
S Main Power Switch
T 115V 60 Hz Electrical Supply
U Fluid Pressure Regulator & Gauge
V Spray Gun
W Pendant
X Bleed-Type Air Valve (required)
Y Ground Wire & Clamp 222-011 (Required)
Z Precision Mix™ Controller (in NEMA enclosure)
AB Operator Switch & Emergency Stop
AD Air Regulator & Gauge
AE Supply Tank, Component A (Resin)
AF Supply Tank, Component B (Catalyst)
AG Meter Cable
AH Earth Ground
AJ Solenoid Air Lines
AK Air Flow Switch
AL Air Line Filter (10 micron or better)
AM Supply Tank, Solvent
AN Fluid Shut-off Valve
AP Air Solenoid Valves
AQ Solvent Supply Line

Fig 3

Installation

NOTES:

- Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawings.
- Be sure all accessories are adequately sized and pressure-rated to meet the system's requirements.
- Connect the fluid and air supply lines as instructed in the Precision Mix™ Manifold manual 684-013 and the Solenoid Enclosure manual 308-297.

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if the work is not performed properly. Do not install or service this equipment or perform any of the following installation and adjustment procedures unless you are trained and qualified.

WARNING

To prevent hazardous concentrations of toxic or flammable vapors, spray only in a properly ventilated area. Never operate the spray gun unless ventilation fans are operating.

Check and follow all national, state, and local codes regarding air exhaust velocity requirements.

The Typical Installation shown in Fig 3 is only a guideline for selecting and installing system components and accessories, and is not an actual system design. Follow the Installation Schematic provided by Graco or contact your Graco representative or Graco Technical Assistance (see back page) for assistance.

The following instructions generally presume a standard system using pressure tanks to supply the paint components and solvent. See **Optional System Arrangements** below for possible variations and their effect on the instructions.

Location

WARNING

The standard Precision Mix™ is for use only in non-hazardous locations. Do not operate in hazardous locations, as defined in Article 500 of the National Electrical Code (USA).

NOTE: Special systems are available for use in hazardous locations. Contact your Graco representative.

OPTIONAL SYSTEM ARRANGEMENTS

OPTION "A" -- Feeding Through Circulating Lines

If there is a central paint recirculating line in your shop, the Precision Mix™ can be connected to it instead of to pressure supply tanks. Other than references to the pressure tanks, operation is the same as described in this manual.

The fluid supply must be free of pressure spikes (normally caused by pump stroke changeover). If necessary, install pressure regulators or a surge tank on the fluid inlets to the Precision Mix™, to reduce the feed pressure. Contact Graco for information on fluid pressure regulators.

For maintenance and safety, you must install a ball valve between each supply line and the Precision Mix™.

OPTION "B" -- Feeding Through Pail or Drum Pumps

Instead of pressure supply tanks, the Precision Mix™ can be fed by pail or drum pumps. Operation is the same, other than references to the pressure supply tanks.

The fluid supply must be free of pressure spikes (normally caused by pump stroke changeover). If necessary, install pressure regulators or a surge tank on the fluid inlets to the Precision Mix™, to reduce pulsation and pressure. Contact Graco for information on fluid pressure regulators.

Installation

Connect the Electrical Supply

WARNING

To reduce the risk of fire, explosion, or electric shock, electrical connections must comply with all application national, state, and local electrical codes.

Connect the Precision Mix™ Controller to a +5 volt, 2 amp; +12 volt, 0.5 amp; -12 volt, 0.5 amp grounded electrical supply.

Follow the Installation Schematic provided by Graco.

CAUTION

If power and grounding connections are not properly made, the equipment will be damaged and the warranty will be voided.

Ground the Precision Mix™ System

(See Fig 5)

WARNING

To reduce the risk of fire, explosion, or electric shock:

- The Precision Mix™ system must be electrically connected to a true earth ground; the ground in the electrical system is not sufficient.
- All wires used for grounding must be 10 gauge minimum.
- The operator control station must have an emergency stop that removes all power from the Precision Mix™ Controller when it is activated.
- Refer to your local code for the requirements for a “true earth ground” in your area.
- Also read and follow the warnings on page 2.

Ground the Precision Mix™ system as instructed below and the individual component manuals. Have a qualified electrician check resistance. A ground wire and clamp, part no 222-011, are available from Graco.

Controller

Connect the controller’s green-yellow ground terminal block to the NEMA enclosure’s grounding lug. Connect a ground wire from the enclosure to a true earth ground. The controller enclosure and the manifold mounting surface must be connected to the same true earth grounding point.

Precision Mix™ Manifold

The mounting surface for the Precision Mix™ manifold must be electrically connected to the same true earth ground point as the controller enclosure. Different ground points may cause current to flow through the meter cables, causing incorrect signals.

Flow Meters

Meter cables must be connected as shown in Fig 4. Failure to properly connect the grounded conductor and shield may cause incorrect signals.

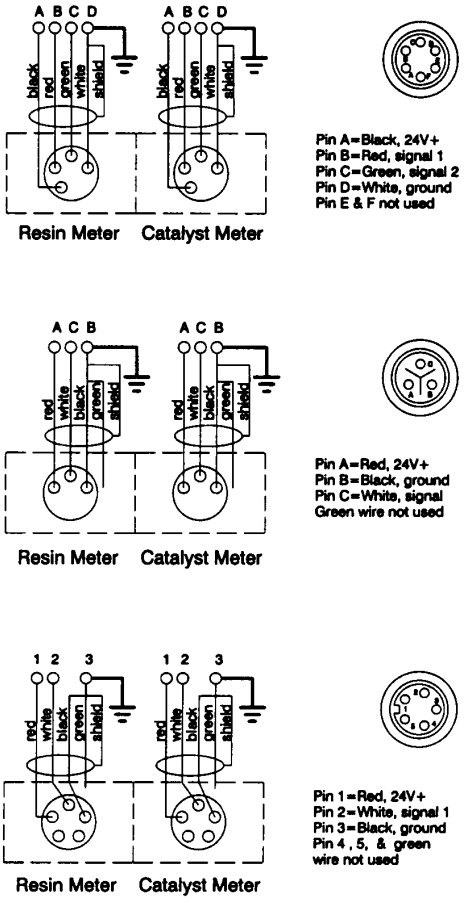


Fig 4

Installation

KEY

4 Controller Enclosure
5 Flow Meter Cable; connect as shown in Fig. 4
6 Ground wire connection point for solenoid enclosures grounding wire and manifold mounting surface‘s grounding wire.
7 Manifold Mounting Surface Ground Wire; must be connected to same true earth ground (8) as controller.
8 True Earth Ground; check your local code for requirements.
9 Controll Enclosure Grounding Wire; must be connected to same true earth groun (8) as manifold mounting surface is connected to.
10 Controller Enclosure’s Grounding Lug
11 Controller Grounding Wire (green-yellow wire); connect to controller enclosure’s grounding lug (8)
12 Controller

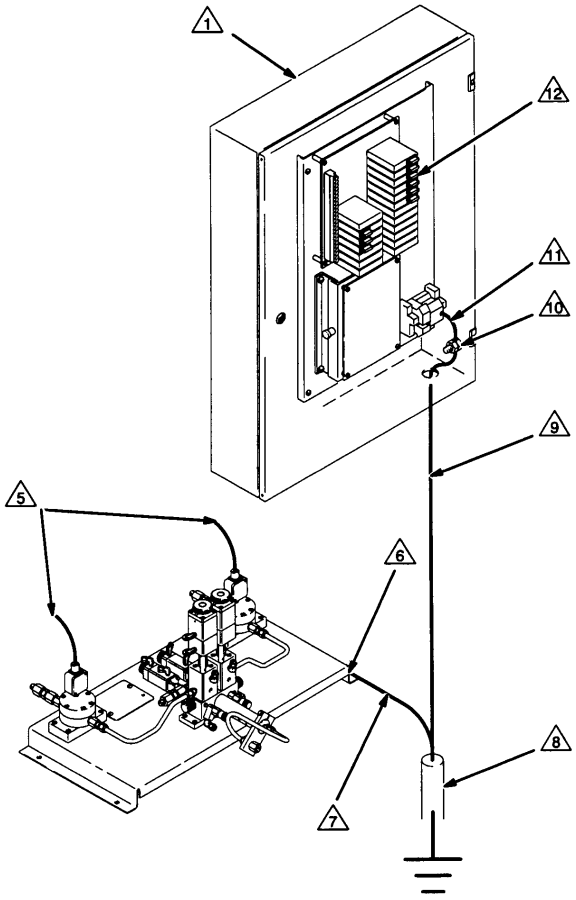


Fig 5

Connect Other Wiring

Connect the 24 VDC meter cables to terminals inside the controller enclosure as shown on the prints provided by Graco.

Connect The Pendant

Connect the pendant cable to the 9-pin controller connector marked PENDANT.

NOTE: The NEMA enclosure bulkhead has a 6-pin connect for the pendant.

Operator Controls and Indicators

Operator Controls

There are no operator controls on the controller itself. Two remote devices provide operator interface; these are the Operator Switch and the Pendant.

Operator Switch (See Fig 6)

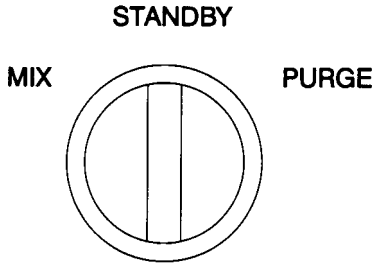
There are three operator input settings:

MIX
STANDBY
PURGE

Setting:	STANDBY	MIX	PURGE
Use:	To start or stop system	To start normal operation (mixing and dispensing)	To operate air and solvent purge valves
Function:	Idles system	Cycles the fluid system	Cycles between two solenoid outputs *

** This cycling can be either a function of time or of volume*

NOTE: Moving the Operator switch from PURGE to MIX clears most alarms



Typical Operator Switch

Fig 6

Pendant (See Fig 7)

Pendant Display

When first powered up, the screen on the pendant displays the calculated target volumes to achieve the desired ratio, and how much fluid has been dispensed in this cycle for each component. As fluid is dispensed, the display will change to reflect the amount remaining before a cycle change.

On the bottom line of the display are the labels for the four soft keys, F1 through F4. Example: If you are at the Title screen, shown below, RUN is F1, SETUP is F2, BAT is F3, and GTOT is F4.

GRACO
PRECISION MIX™
REV. 1.2 RECIPE 00
RUN SETUP BAT GTOT

Pendant Indicators

The pendant is a small display terminal with a 4x20 character display, 5 LED indicators, and a keyboard for entering setup parameters. The left four indicators match the solenoid outputs for component A (“A”), component B (“B”), purge, (SOL) and the dump valve (DUMP). The right indicator blinks to in-dicate an alarm condition.

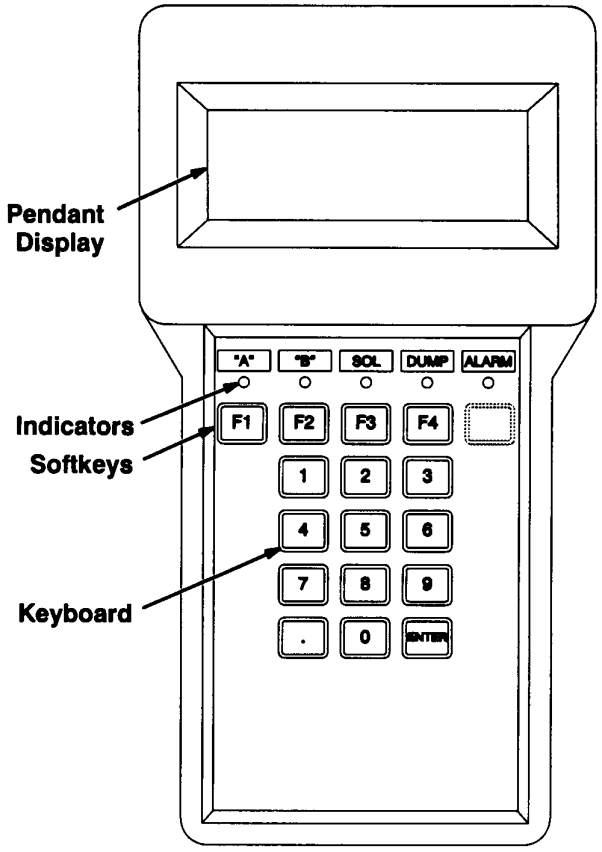


Fig 7

Pendant Screens

NOTE: The keys indicated after the screen will move you to the next screen that is shown, unless otherwise indicated

Run Screens

Target/Actual Display

	TARGET	ACTUAL (cc)	
A	XX.X	XX.X	
B	XX.X	XX.X	
NXT			RPT

Press NXT

TARGET (left hand column) is the desired volumes of Component A and Component B that the controller will maintain.
ACTUAL (right hand column) shows the quantities of Component A and Component B as they are being dispensed.

Flow Rate/Ratio Display

FLOW 0000 cc/M	
DESIRED RATIO X.X	
CURRENT RATIO X.XX	
NXT	RPT

Press NXT

FLOW is a real time display of how much flow is going through the system. It updates every two seconds and is the average of the last two flow rate displays. The flow rate display can be altered in the setup program to read in ounces. See the **Display Units in cc or oz** screens on page 21.
DESIRED RATIO is the display of what ratio the unit is programmed to run at.
CURRENT RATIO is a display of what ratio the unit actually dispensed on the last cycle.

Component Totalizer

A=00000	cc
B=00000	cc
TOT VOL=00000 cc	
NXT RESET	RPT

Press NXT

Total volume of Component A (A=), Component B (B=), and Component A + B (TOT VOL+) are displayed. The totalizers are reset by pressing the RESET key or pressing the RPT key. This screen can be altered in the setup program to read in ounces. See the **Display Units in cc or oz** screens on page 21.

Total Solvent, Idle and Pot Life

SOLVENT=00000	cc
TIME TO IDLE 4 MIN	
POT LIFE	
NXT RESET	RPT

To use total SOLVENT, you must have an optional flow meter installed on the Precision Mix™ solvent inlet.
TIME TO IDLE is a 4 minute clock that counts down the time that the spry device is not in use. After 4 minutes of not triggering the spray device, the mix manifold closes and the screen changes to the following System Idle screen.

SYSTEM IDLE
POT LIFE REMAINING
MIN

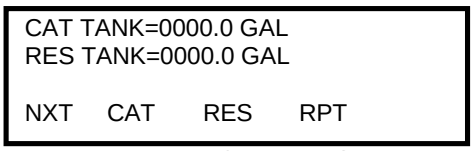
Press NXT

When the spray device is triggered, the Precision Mix™ will start again where it left off.
POT LIFE REMAINING displays how long the mixed fluid has been sitting in the lines. If the unit is turned on and nothing has been mixed, the pot life will not count down.

Pendant Screens

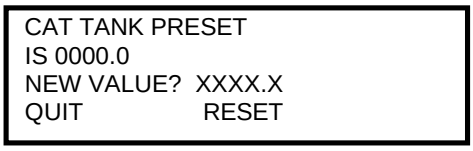
Run Screens (continued)

Tank Volume

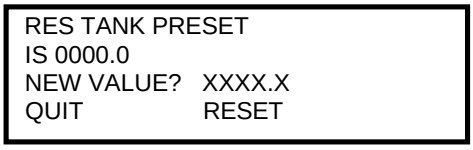


Press CAT or RES
(Press NXT to go to **Alarm** screen)

This screen can be used to display how much fluid is left in the catalyst feed tank (CAT TANK) and the resin feed tank (RES TANK). By pressing the CAT or RES key you will see a screen that looks like the one of the two following screens.



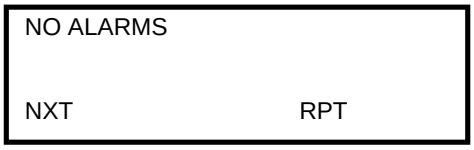
or



Press QUIT

Enter a value that is less than the amount of fluid that is in the tank and press the ENTER key. The screen should now display the new value on line 2. If you want to use the same value that was previously displayed, press the RESET key. Press the QUIT key to go back to the previous TANK VOLUME screen. As fluid is used from the tank, the value for the catalyst and resin tank will drop. When one or both of them reaches 0, the unit will stop and the alarm will display.

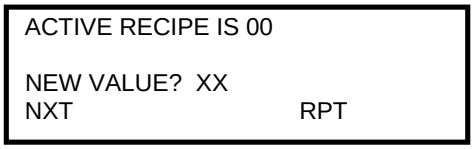
Alarm



Press NXT

If an alarm is activated on the Precision Mix™, this screen automatically appears, displaying the alarm that occurred. See the alarm descriptions on pages 24and 25 This screen holds the last three alarms. The most recent alarm will appear on the bottom of the screen. NOTE: A Run Report will clear the Alarm screen.

Current Recipe



This screen only appears when the recipe portion of the program is turned on. This screen will show you the recipe the unit is currently running.

Press unmarked key to get back to the **Main Title** screen. Press SETUP key to access the **Setup** screens.

Pendant Screens

Setup Screens

NOTE: Entries made in the Setup screens are buffered. When the QUIT key is pressed, returning you to the title screen, the changes made in Setup are transferred to the battery-backed memory. Since the data used while operating is also buffered, changes made in Setup will not effect Precision Mix™ operation until the operator switch is moved to the Standby position and then back to Mix, transferring the data from the battery-backed memory to the operating buffer.

Main Title Screen

```
GRACO
PRECISION MIX™™
REV. 1.2 RECIPE 00
RUN   SETUP BAT   GTOT
```

Press SETUP

This screen can only be accessed by pressing the unmarked key in the F5 location on the black pendant. This screen shows the Revision No. of the software. It will also show the present Recipe No. the Precision Mix™ is operating with if the recipe portion of the program is turned on. From this screen, you can go into the Run, Setup, Batch Totalizer, Grand Totalizer and Clock screens.

Setup Ratio Title Screen

```
SETUP RATIO?
RECIPE 00

NO    YES    QUIT    RPT
```

Press YES

If you want to change the program in the ratio category, press the YES key. If you do not want to change the program in the ratio category, press the NO key to move to the **Setup Purge Title** screen (on page 14). Press the QUIT key to return to the **Main Title** screen. **NOTE:** RECIPE 00 only appears when the recipe portion of the program is activated.

Program Ratio

```
RATIO A/B IS XX.X:1
BY VOLUME
NEW VALUE? XX.X
NO              QUIT
```

Press NO
(Press QUIT to return to
Setup Ratio Title screen)

With this screen, you select the volumetric mix ratio the Precision Mix™ will operate at. The volume can be set from 0:1 to 99.9:1. The value of Component B that you enter must be a 1. If your B value does not equal one, you must convert the ratio. *Example:* If a 3:2 ratio is desired, you would convert the ratio to 1.5:1. 1.5 parts of Component A would then be dispensed to every 1 part of Component B. To enter this value, press the 1, the decimal point, and the 5 on the pendant keyboard. Then press the ENTER key. The new value will display on the top line.

Ratio Tolerance

```
RATIO TOLERANCE
VALUE IS XX
NEW VALUE?  XX
NO              QUIT
```

Press NO

With this screen, you select the tolerance of the ratio entered above. If this tolerance is exceeded, the Precision Mix™ will shut down. The value can be set from ± 0 to 25 percent.
Example: If the mix ratio is 2:1 and the tolerance is 5%, when the Precision Mix™ checks the ratio on each cycle, if the ratio is within 2.1:1 or 1.9:1, the system will continue to operate. If the ratio is not within those values, the system will shut down. To enter this value, press 0, then 5 and ENTER. The new value will display on line two.

A Dispense Time

```
A DISPENSE TIME
LIMIT IS XXX SEC
NEW VALUE?  XXX
NO              QUIT
```

Press NO

This is a settable time limit that monitors the amount of time it takes from the beginning of the Component A dispense to the end. The clock counts down when the spray device is triggered and will reset once the dispense is completed. If the time elapses before the dispense is complete, the Precision Mix™ will go to an alarm condition. To enter a new value, type in the number on the key pad and press ENTER. The value can be set from 0 to 999 seconds. It will display on line 2. NOTE: This setting will not function properly if the air switch in the solenoid enclosure is not set correctly. See manual 308-297.

Pendant Screens

Setup Screens (continued)

B Dispense Time

```
B DISPENSE TIME
LIMIT IS XXX SEC
NEW VALUE?  XXX
NO                QUIT
```

Press QUIT

The B Dispense Time screen functions the same way as the A Dispense Time screen, except it is measuring the amount of time it takes to dispense Component B.

Setup Purge Title Screen

```
SETUP PURGE?
RECIPE 00

NO      YES     QUIT    RPT
```

Press YES

If you want to change the program in the purge category, press the YES key. If you do not want to change the program in the purge category, press the NO key to move to the **Setup Alarms Title** screen (on page 16). Press the QUIT key to return to the **Main Title** screen. NOTE: RECIPE 00 only appears when the recipe portion of the program is activated.

Purge Component A on Time or Volume

```
PURGE A ON TIME
CHANGE TO VOLUME?

NO      YES     QUIT
```

Press NO to keep on TIME
Press YES to change to VOLUME

With this screen, you select how the Component A portion of the purge sequence will count down, by time or by volume. To purge by volume, you must have a flow meter in line with the Precision Mix™ Component A purge valve.

NOTE: The following screens show what will appear if purge is setup for time, first, and then the screen that will appear if setup for volume.

First Dispense of the Purge Sequence

```
 FIRST PURGE
TIME IS XX.X SEC
NEW VALUE?  XX.X
NO                QUIT
```

or

```
FIRST PURGE
VOL IS XXX cc
NEW VALUE?  XXX
NO                QUIT
```

Press NO

The purge sequence always starts on Component A. The first dispense of the purge sequence is a settable time/volume. You can set the time/volume for the FIRST PURGE to be more or less than the setting for the rest of the purge cycle. *To enter a new value,* key in the number and press ENTER. The value can be set from 0 to 99.9 seconds or 0 to 999 cubic centimeters. It will display on line two.

Pendant Screens

Setup Screens (continued)

Purge Component A

```
PURGE A
TIME IS XX.X SEC
NEW VALUE?  XX.X
NO                QUIT
```

or

```
PURGE A
VOLUME IS XXX cc
NEW VALUE?  XXX
NO                QUIT
```

Press NO

The purge sequence consists of two purge valves, one for Component A and one for Component B, alternating on and off. The value you enter for PURGE A determines how long the Component A purge valve is open for each dispense cycle during the purge sequence, with the exception of the first and last dispense, which have their own values. *To enter a new value,* key in the number and press ENTER. The value can be set from 0 to 99.9 seconds or 0 to 999 cubic centimeters. It will display on line two.

Purge Component B on Time or Volume

```
PURGE B ON TIME
CHANGE TO VOLUME?

NO      YES      QUIT
```

Press NO to keep on TIME
Press YES to change to VOLUME

With this screen, you select how the Component B portion of the urge sequence will count down, by time or by volume, To purge by volume, you must have a flow meter in line with the Precision Mix™ Component B purge valve. This screen functions the same as the Purge Component A selection screen.

Last Dispense of the Purge Sequence

```
LAST PURGE
TIME IS XX.X SEC
NEW VALUE?  XX.X
NO                QUIT
```

or

```
LAST PURGE
VOL IS XXX cc
NEW VALUE? XXX
NO                QUIT
```

Press NO

The last dispense of the purge sequence is always Component B. The last dispense of the purge sequence is a settable time/volume. You can set the time/volume for the LAST PURGE to be more or less than the setting of the rest of the purge cycle. *To enter a new value,* key in the number and press ENTER. The value can be set from 0 to 99.9 seconds or 0 to 999 cubic centimeters. It will display on line two.

Purge Component B

```
PURGE B
TIME IS XX.X SEC
NEW VALUE? XX.X
NO                QUIT
```

or

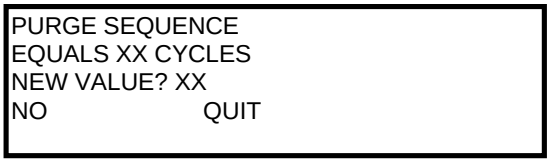
```
PURGE B
VOLUME IS XXX cc
NEW VALUE? XXX
NO                QUIT
```

Press NO

The value you enter for PURGE B determines how long the Component B purge vale is open for each dispense cycle during the purge sequence. To enter a new value, key in the number and press ENTER. The new value will display on line two. The value can be set from 0 to 99.9 seconds or 0 to 999 cubic centimeters. It will display on line two.

Pendant Screens

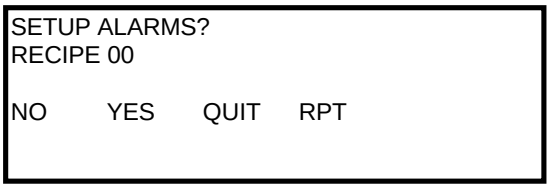
Setup Screens (Continued)
Number of Purge Cycles



Press NO
(Press QUIT to return to **Setup Ratio Title** screen)

With this screen, you select how many times the purge sequence shifts between Component A purge and Component B purge when the Operator Switch is set to PURGE. The value can be set from 0 to 99 cycles. NOTE: At the end of the purge cycle, the purge sequence will immediately stop and a message requesting a change to STANDBY will be displayed on the pendant.

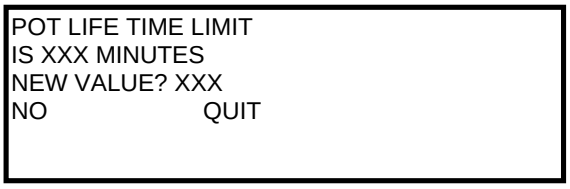
Setup Alarms Title Screen



Press YES

If you want to change the program in the alarms category, press the YES key. If you do not want to change the program in the alarms category, press the NO key to move to the **Change Installation Title** screen (on page 19). Press the QUIT key to return to the **Main Title** screen. **NOTE:** RECIPE 00 only appears when the recipe portion of the program is activated.

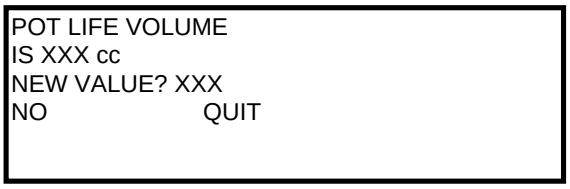
Pot Life Time Limit



Press NO

With this screen, you set the maximum time allowed for mixed fluid to sit in the system before tripping a pot life alarm. Enter a time value that represents the fluid while it is still at its normal viscosity. To enter a new value, key in a number and press ENTER. The value can be set from 0 to 999 minutes. It will display on line two. NOTE: The pot life timer is reset either by a purge, or by the passage of a specified amount of fluid.

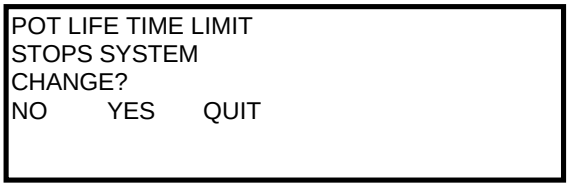
Pot Life Reset Volume



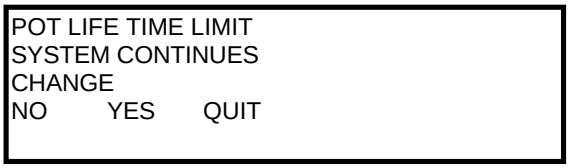
Press NO

With this screen, you set the volume of fluid the Precision Mix™ will mix before the pot life timer resets. Enter a valve that represents the volume of mixed fluid that is in the system. To enter a new value, key in a number and press ENTER. The value can be set from 0 to 999 cubic centimeters. It will display on line two.

Pot Life Alarm



or



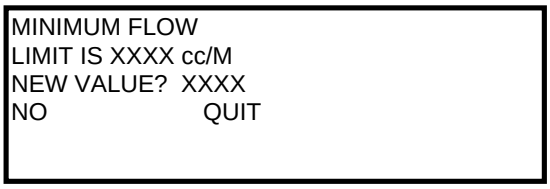
Press NO

These screens allow you to select to have the pot life alarm stop the system or allow it to continue operating. In either case, the alarm light on the pendant blinks, the alarm annunciator output goes on, and the relevant alarm message is displayed on the pendant. When the pot life alarm is reset by either a purge or the movement of the specified amount of fluid, the alarm light will go out, the alarm output will go off, and the display will return to the **Target/Actual** screen (on page 11).

Pendant Screens

Setup Screens (Continued)

Minimum Flow Rate Limit

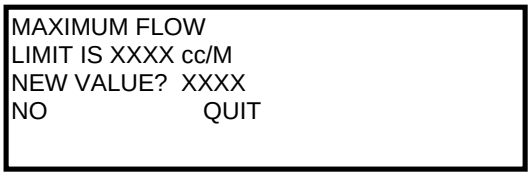


Press NO

With this screen, you set the minimum allowable flow rate of the Precision Mix™. Minimum flow rate is calculated by measuring the total time of a cycle. If the flow rate drops below the allowable setting, an alarm will activate. If you do not want to use this feature, set the value to 0000 cc/M. *To enter a new value,* key in a number and press ENTER. The value can be set from 0 to 9999 cubic centimeters per minute. It will display on line two.

NOTE: The MINIMUM FLOW LIMIT letting uses the information from the flow rate display and will not activate the alarm if the spray device is turned off or the flow rate drops below the setting for less than two flow rate checks.

Maximum Flow Rate Limit

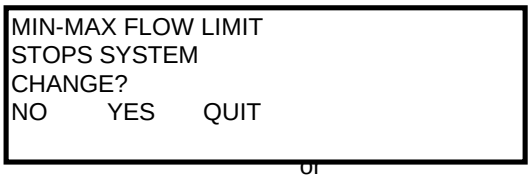


Press NO

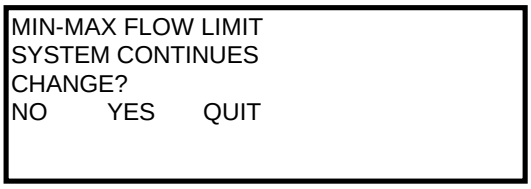
With this screen, you set the maximum allowable flow rate of the Precision Mix™. Maximum flow rate is calculated by measuring the total time of a cycle. If the flow rate exceeds the allowable setting, an alarm will activate. If you do not want to use this feature, set the value to 9999 cc/M. *To enter a new value,* key in a number and press ENTER. The value can be set from 0 to 9999 cubic centimeters per minute. It will display on line two. (The standard Precision Mix™ is rated for 2000 cc/minute maximum fluid flow).

NOTE: The MAXIMUM FLOW LIMIT setting uses the information from the flow rate display and will not activate the alarm if the spray device is turned off or the flow rate exceeds the setting for less than two flow rate checks.

Minimum and Maximum Flow Rate Limit



or



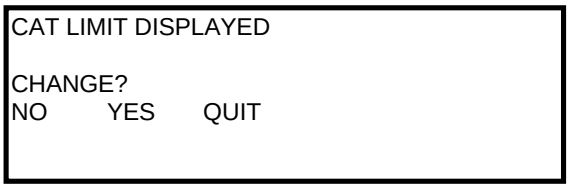
Press NO

These screens allow you to either have the minimum or maximum flow limit alarm stop the system or continue operating. This alarm occurs when the flow rate exceeds the limits set by the MIN-MAX FLOW LIMIT entries. In either case, the alarm light on the pendant blinks, the alarm annunciator output goes on, and the relevant alarm message is displayed on the pendant. When the MIN-MAX FLOW LIMIT is reset by returning within the limits set, the alarm light will go out, the alarm output will go off, and the display will return to the **Target/Actual** screen (on page 11).

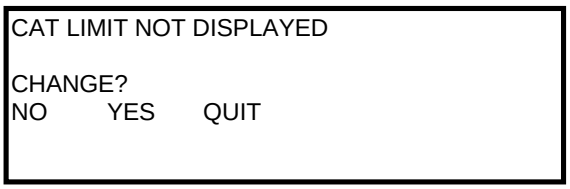
Pendant Screens

Setup Screens (Continued)

Catalyst Tank Limit Display



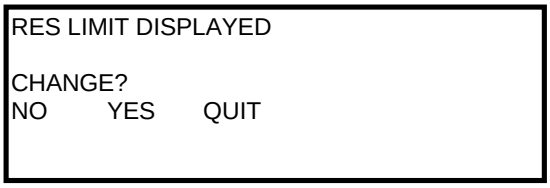
or



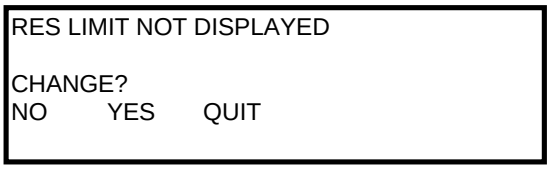
Press NO

These two screens allow you to select whether the Catalyst Tank Volume feature in the run screen (refer to page 12) is turned on or off. If it is turned off, the catalyst tank display will not appear in the run screens.

Resin Tank Limit Display



or



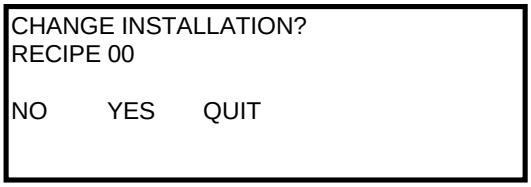
Press NO

These two screens allow you to select whether the Resin Tank Volume feature in the run screen (refer to page 12) is turned on or off. If it is turned off, the resin tank display will not appear in the run screens.

Pendant Screens

Setup Screens (Continued)

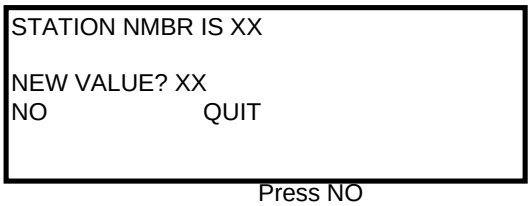
Change Installation Title Screen



Press YES

If you want to change the program in the installation category, press the YES key. If you do not want to change the program in the installation category, press the NO key to return to the **Setup Ratio Title** screen (on page 13). Press the QUIT key to return to the **Main Title** screen. **NOTE:** RECIPE 00 only appears when the recipe portion of the program is activated.

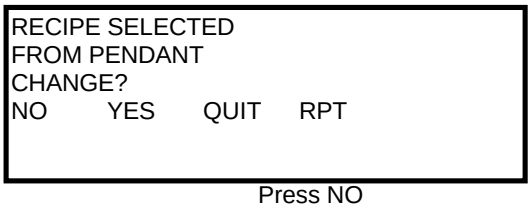
Precision Mix™ Identification Number



Press NO

With this screen, you can set a specific ID number for the Precision Mix™. The ID number you choose will print out on the run report and the setup report. You will need to use this feature when there are multiple Precision Mix™ units connected to one printer. Station #00 is the default. It cannot be used when multiple units are connected to one printer. When station #1 to 8 are used, a (@U10) message will appear on line one of the printed reports; this is normal. *To change the station number,* key in the new value and press ENTER. The new number will display on line one.

Recipe Input Select



Press NO

These two screens only appear when the recipe portion of the program is turned on. The recipe selected from I/O screen is not available for usage on this unit. Whatever is selected will globally change for all recipes.

Pendant Screens

Setup Screens (Continued)

Component A Flow Meter Calibration Factor

```
A FLOWMETER
VALUE IS .XXX
NEW VALUE? >XXX
NO      TEST    QUIT
```

Press NO to go to **Comp. B Flow Meter Calibration Factor** screen.
Press TEST to go to next screen.

Since flow meters come in many different sizes and styles, it is necessary to tell the Precision Mix™ Control what size the flow meters are so it can properly read the electrical pulse the flow meter sends to it. With this screen, you input the size of the Component A flow meter. The flow meter size must be entered in cubic centimeters per electrical pulse. You cannot enter a whole number. The number you enter must be a 3 digit decimal, but do not enter the decimal point. *Example:* If the electrical pulse of Flow Meter A - 1 equals 0.230 cc, you would press the 2, the 3, and the 0 on the pendant keyboard. Then press ENTER. The new value will display on line two.

CAUTION

Before pressing the TEST key, close the fluid shut-off valve on the Component A side of the Precision Mix™ manifold. The fluid must be shut off as pressing the TEST key will automatically open the Component A (resin) valve.

See manual 308-243 for the most commonly used flow meter sizes. If you do not know the size of the flow meter or do not feel the number is accurate, make sure the fluid supply is shut off, then press the TEST key to go to the **Flow Meter Calibration Test** screen, below.

Resin Flow Meter Calibration Test

```
RESIN FLOWMETER
CALIBRATION XXXX
ENTER VOL XXXX
QUIT
```

NOTE: The Component A fluid shut-off valve must be closed before you come to this screen. See the **CAUTION**, above.

This screen allows you to produce a custom calibration factor for the resin (Component A) flow meter. To find the proper calibration factor, follow this procedure:

1. Place a container under the resin ratio check valve tube.
2. Open the resin ratio check valve. Make sure there is no air in the ratio check port.
3. Close the ratio check valve.
4. Press the QUIT key.
5. Press the TEST key.
6. Weigh a clean container and record the weight.
7. Place the container on a scale under the ratio check valve tube.
8. Open the ratio check valve. Allow an adequate quantity of a fluid, that is of a know accurate weight per gallon, to flow into the container.
9. Close the ratio check valve.
10. Weigh the sample and calculate how many cubic centimeters of fluid was dispensed.

CAUTION

Do not run a second calibration test until you exit Setup and enter the Run mode. After you do that, you can re-enter Setup to do a second test.

On line two of the Flow Meter Test screen there will be a number that represents how much fluid the Precision Mix™ determined wad dispensed, based on the previously entered calibration factor. To enter a new calibration factor, key in how much fluid was actually dispensed (four digit number in cc) and press ENTER. This will take you back to the Component A Flow Meter Calibration Factor screen, shown above. The new calibration factor will display on line two.

Pendant Screens

Setup Screens (Continued)

Component B Flow Meter Calibration Factor

```
B FLOWMETER
VALUE IS .XXX
NEW VALUE?  .XXX
NO       TEST    QUIT
```

Press TEST

```
CAT FLOWMETER
CALIBRATION XXXX
ENTER VOL XXXX
QUIT
```

The **Component B Flow Meter Calibration Factor** screens and the **Solvent Flow Meter Calibration Factor** screens function the same as the **Component A Flow Meter Calibration Factor** screen on page 20. To set the calibration factor, follow the instructions there.

CAUTION

Before pressing the TEST key, close the Precision Mix™ fluid shut-off valve that will close the fluid path for the flow meter you are testing. The fluid must be shut off as pressing the TEST key will automatically open the flow meter valve that you are testing.

NOTE: After completing the Flow Meter Tests, flush the ratio check valve and open the fluid shut-off valve before operating the Precision Mix™ again.

Display Units in cc or oz

```
DISPLAY UNITS cc
CHANGE TO oz?

NO       YES      QUIT
```

or

```
DISPLAY UNITS oz
CHANGE TO cc?

NO       YES      QUIT
```

Press QUIT until you are at the **Main Title** screen. Then press BAT to go to **Batch Totalizer** screens.

These two screens allow you to select whether the Run Screen, Totalizers, Run Screen Flow Rate, Target/Actual, Purge by Volume Inputs, Pot Life Reset Volume Input, Minimum Flow Rate Input and Maximum Flow Rate Input displays in cubic centimeters units or ounces units.

Grand Totalizer Screens

The Grand Totalizers are not resettable. They keep a running total in gallons of all the fluid dispensed by the system.

Grand Totalizer Component

```
GTOTAL A=00000 GAL
GTOTAL B=00000 GAL
GTOT SOL=000000 GAL
NXT                    RPT
```

Press NXT

This screen displays the grand total volume of Component A (GTOTAL A), Component B (GTOTAL B), and Solvent (GTOT SOL). To use the solvent grand totalizer (GTOT SOL), you must have a flow meter on the Precision Mix™ solvent inlet.

Grand Total Paint and Total Component Dump

```
TOT PAINT=00000 GAL
TOT DUMP=00000 GAL

QUIT                   RPT
```

Press Quit to go to **Main Title** screen

These screens are not available for usage on this unit.

Precision Mix™ Alarm Descriptions

If the machine stops from an alarm condition, the associated alarm output will be active. The alarm outputs are described below. In addition, the alarm light on the pendant blinks and a relevant message is displayed on the pendant.

Unless otherwise instructed on these pages, *clear the alarm and restart the system as follows:*

1. Purge the mixed material line.

2. Turn the Operator Switch to PURGE, then to MIX.

Ratio Alarm Output

This output will be on output module #5. Any of the following conditions will set this alarm:

1. **Ratio Low XX.XX**
   When this alarm displays, the Precision Mix™ has dispensed a cycle (A + B)at a mix ratio higher than the ratio target plus the tolerance

2. **Ratio High XX.XX**
   When this alarm displays, the Precision Mix™ has dispensed a cycle (A + B) at a mix ratio higher than the ratio target plus the tolerance.

3. **Dose Time A**
   When this alarm displays, the Precision Mix™ has not completed a dose of component A in the preselected amount of time.

4. **Dose Time B**
   When this alarm displays, the Precision Mix™ has not completed a dose of component B in the preselected amount of time.

5. **Overdose A**
   When this alarm displays, the Precision Mix™ has continued dispensing fluid on the Component A side after the valve has shifted to the Component B side.

6. **Overdose B**
   When this alarm displays, the Precision Mix™ has continued dispensing fluid on the Component B side after the valve has shifted to the Component A side.

7. **Flow When Stopped A**
   When this alarm displays, the Precision Mix™ has allowed fluid to flow on the Component A side when the system is in STANDBY.

8. **Flow When Stopped B**
   When this alarm displays, the Precision Mix™ has allowed fluid to flow on the Component B side when the system is in STANDBY.

Flow Too Low/High Alarm

Any of the following conditions will set this alarm:

1. **Flow Too Low**
   When this alarm displays, the Precision Mix™ is dispensing a lower fluid flow rate than preselected in the setup screens.

2. **Flow Too High**
   When this alarm displays, the Precision Mix™ is dispensing a higher fluid flow rate than preselected in the setup screens.

Pot Life Exceeded

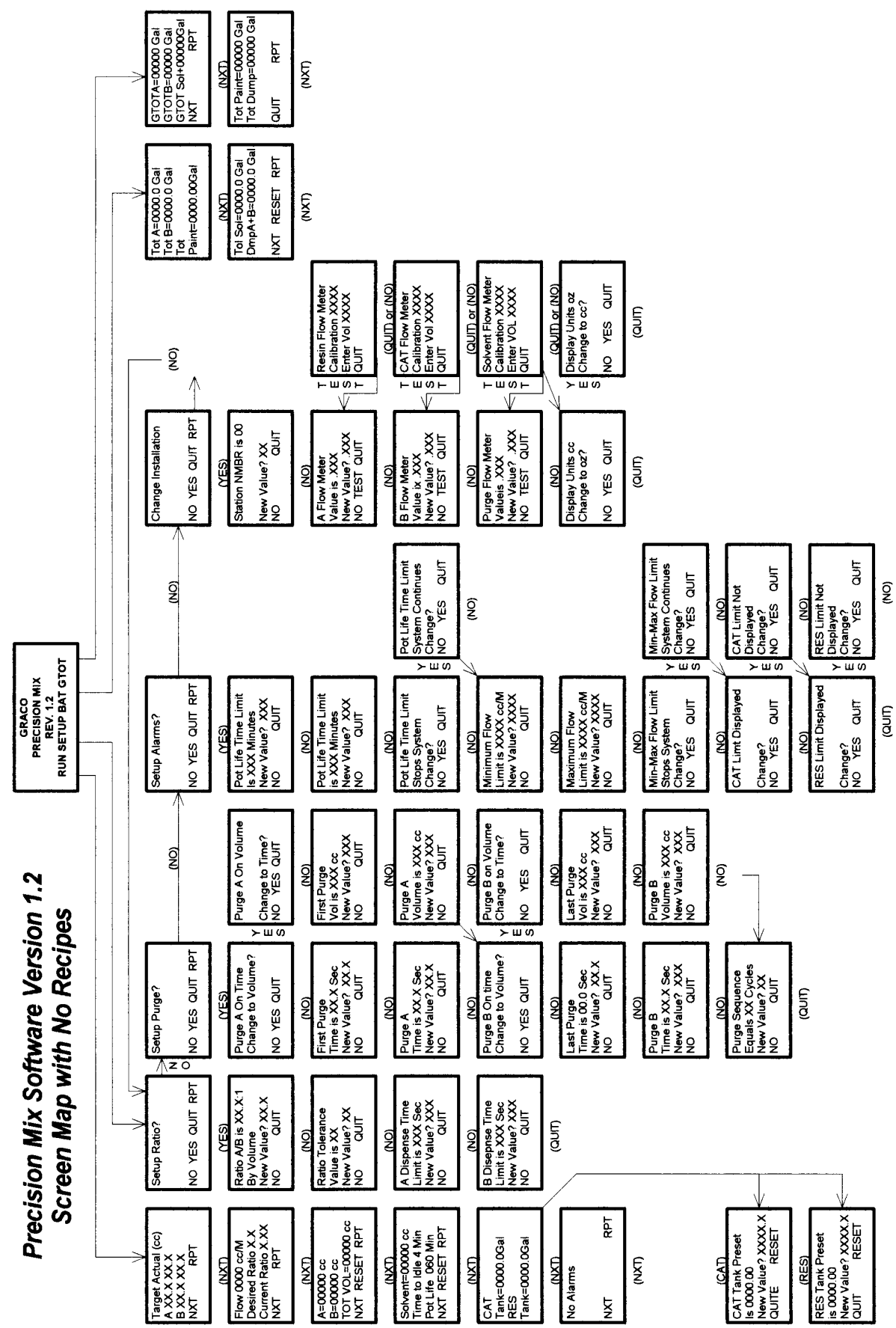
This alarm will be on when the Precision Mix™ has not dispensed enough mixed material of a preselected quantity in the preselected amount of time.

To remove this alarm:

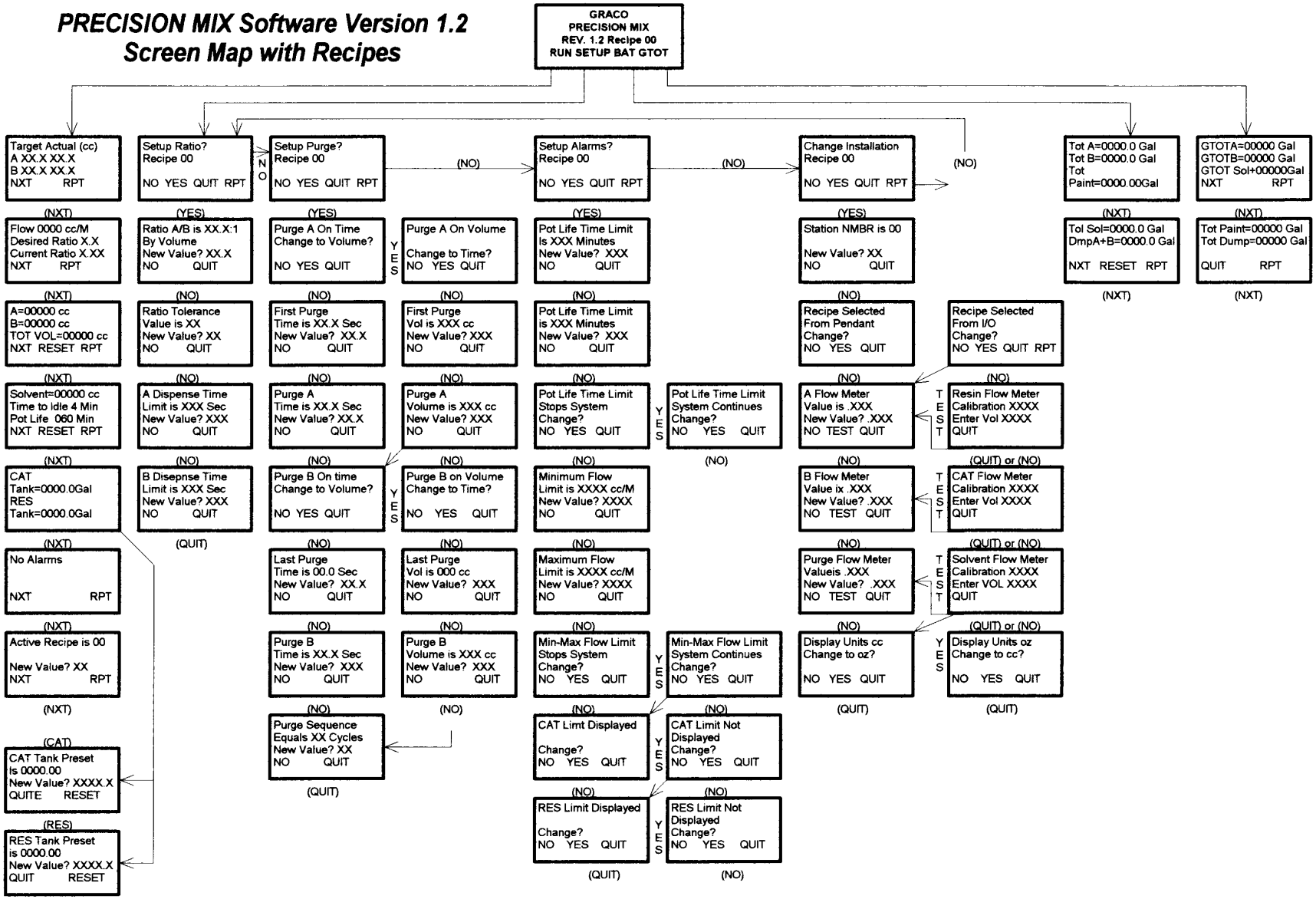
1. Purge the mixed material line.

2. Turn the Operator Switch to PURGE, then to MIX, and dispense the preselected quantity of material.

Precision Mix Software Version 1.2
Screen Map with No Recipes



PRECISION MIX Software Version 1.2
Screen Map with Recipes



Precision Mix™ Alarm Descriptions

Tank Empty Alarm Output

Any of the following conditions will set this alarm:

1. **Cat Tank Empty**
   When this alarm displays, the Precision Mix™ has dispensed the amount of Component B that was entered into the Catalyst Tank Volume screen.

   To remove this alarm:

   a. Turn the Operator Switch to STANDBY.

   b. Press NXT key until you are at the Tank Volume screen.

```
CAT TANK=0000.0 GAL
RES TANK=0000.0 GAL

NXT      CAT      RES      RPT
```

   c. Press CAT key.

```
CAT TANK PRESET
IS 0000.0
NEW VALUE? XXXX.X
QUIT                RESET
```

   d. Enter a new value or press RESET to reset to the old value.
   e. Turn the Operator Switch to MIX.

2. **Res Tank Empty**
   When this alarm displays, the Precision Mix™ has dispensed the amount of Component A that was entered into the Resin Tank Volume screen.

   To remove this alarm:

   a. Turn the Operator Switch to STANDBY.

   b. Press NXT key until you are at the Tank Volume screen.

```
CAT TANK=0000.0 GAL
RES TANK=0000.0 GAL

NXT      CAT      RES      RPT
```

   c. Press RES key.
   d. Enter a new value or press RESET to reset to the old value.
   e. Turn the Operator Switch to MIX.

Memory Failure Alarm

When this alarm displays, the software in the Precision Mix™ memory does not match the software installed in the Precision Mix™ unit. No alarm output module is associated with this alarm.

To remove this alarm:

Reinitiate the Precision Mix™ software. See page 27.

Parameters Not Set Go to Setup Alarm

When this alarm displays you have selected a recipe that has not been setup for ratio and flow meter calibration factors. No alarm output module is associated with this alarm.

To remove this alarm:

1. Press the blank key (black pendant only).

2. Go to the Setup screen for the recipe you want to use.

3. Enter the values for ratio and flow meters.

You will not be able to use that recipe.

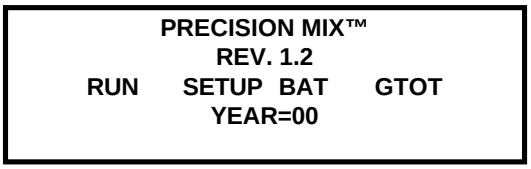
Setting the Clock

The Precision Mix™ Controller has an internal clock which allows the operator to display the year, month, day, hour, and minute of each report and each alarm. Once set, the clock will continue to run whether the Precision Mix™ controller is on or off.

To set the clock:

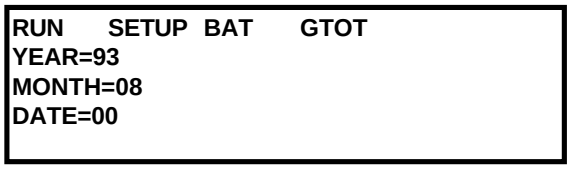
1. Press the blank key in the upper right corner of the pendant once, to get to the Main Title screen.

2. Press the black key once again to get into the clock setup mode.



3. Enter a 2 digit value (year) and the pendant will automatically scroll to the next screen.

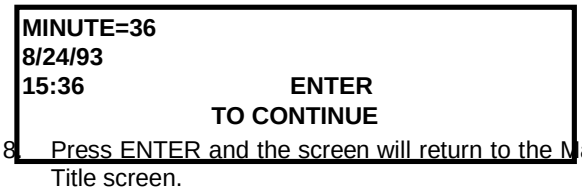
4. Enter a 2 digit value (month) and the pendant will automatically scroll to the next screen.



5. Enter a 2 digit value (date) and the pendant will automatically scroll to the next screen.

6. Enter a 2 digit value in military time and the pendant will automatically scroll to the next screen.

7. Enter a 2 digit value (minutes) and the pendant will automatically scroll to the next screen.



8. Press ENTER and the screen will return to the Main Title screen.

New Precision Mix™ Software

WARNING

To reduce the risk of electric shock, the power to the Precision Mix™ Controller must be off before you begin to change the software. The Controller shall only be serviced by trained, qualified personnel.

NOTE: If you change the Precision Mix™ software, you must initiate the new program. Initiating the software removed the old program and loads the new program.

Installing the New Software

1. Turn off the power to the Precision Mix™ Controller.
2. Locate the computer card on the Precision Mix™ Controller. See page 32
3. Locate the software chip on the computer card. See Fig 8. Note the direction of the chip and which side of the chip the blank spaces are on.

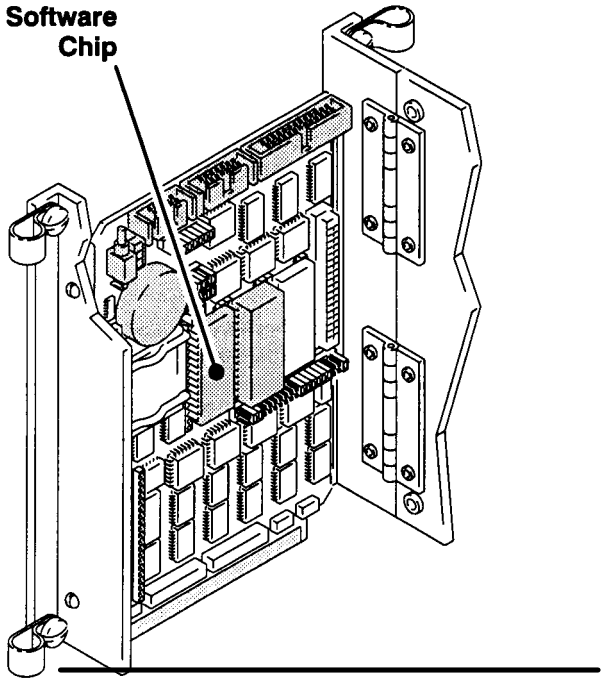


Fig 8

4. Use an I.C. extraction tool to remove the old software chip. Pull the chip directly up. See Fig 9.

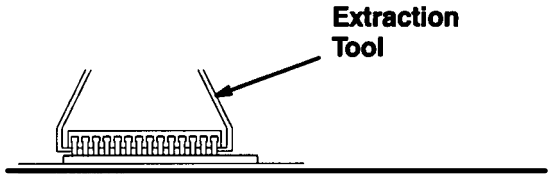


Fig 9

To remove the software chip without an extraction tool, carefully pry the chip out evenly on both sides. See fig 10.

Fig 10

5. Install the new software chip with the last row of pins in the last row of holes. Make sure the ship is facing the correct direction and all the pins are in the holes. See Fig 11.

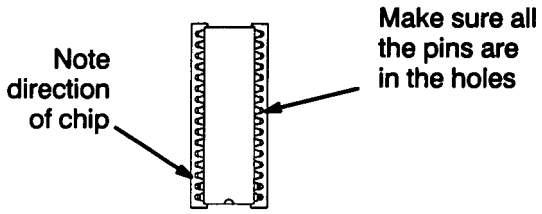


Fig 11

Initiating the New Software

1. Locate the I/O board on the Precision Mix™ Controller. See page 32
2. Locate the inputs for Precision Mix™ paint start (input #7) and the purge start (input #4).
3. Connect a jumper wire from terminal #1 to #9, and then to #15 (on the I/O board). This will turn on the paint and purge at the same time, when the Precision Mix™ is turned on.
4. Turn on the power to the Precision Mix™ Controller. The paint (#7) and purge (#4) input lights should be lit. The display on the pendant should be blank.
5. Turn the power off to the Precision Mix™ Controller.
6. Remove the jumper wires installed in step 3.

The program on the new chip has now been initiated.

NOTE: When the software is changed, the setup parameters will change to the default. Go through the entire program and set the proper parameters.

Operation

The following instructions generally presume a standard system using pressure supply tanks for the paint components and solvent, and air spray guns. Also see **Optional System Arrangements** on page 7 for possible variations and their effect on the instructions.

Flushing The Mixing System

Flush the mixing system with solvent and air at the end of each workday or before any break longer than the pot life of the fluid. Use the following flushing procedure:

WARNING

For your safety, read the warning section **Flushing Safety** on page 3 before flushing, and follow all the recommendations given there. ALWAYS wear protective eyewear when flushing.

1. Open the fluid pressure regulator.
2. Turn the Operator Switch to STANDBY. Refer to Fig 6, page 10.
3. During the following procedure (steps 4 to 7), follow the instructions given in your separate gun manual for safely grounding your gun while flushing.
4. Pull the trigger to hold the spray gun open. If the gun is air-operated, open it manually (trigger only).

NOTE: Solvent flushes the right-hand (catalyst) side of the mixing block, and the inner tube of the integrator. Air flushes the left-hand (resin) side of the mixing block, and the outer tube of the integrator. Depending on the components being used, you may flush with solvent, air, or both - modify the following procedure accordingly.

5. Turn the Operator Switch to PURGE. The purge sequence will automatically cycle. See page 14 for setup of purge sequence.
6. Should the system require further purging, turn the Operator Switch to STANDBY and back to PURGE for another sequence.
7. Set the Operator Switch back to STANDBY to stop the purge sequence.
8. Adjust the fluid pressure regulator back to the normal working pressure.

Emergency Flush Procedure

If the electrical power is interrupted, the system can be purged by using the following procedure:

1. Open the gun trigger.
2. Press the manual override button (H) on the solvent solenoid valve, which is inside the Precision Mix™ solenoid enclosure. Refer to Fig 12.
3. Hold the button in until the system is thoroughly flushed.

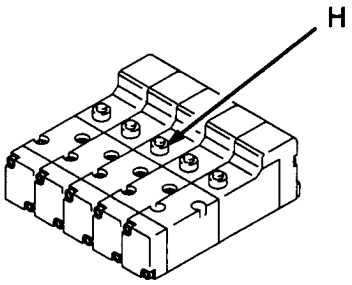


Fig 12

Starting Production

NOTE: When you first start up the system after it has been shut down for a period of time, it will cycle rapidly until system pressure is built back up. This is normal and there is no cause for alarm.

1. Check that paint and solvent supply tanks are filled.
2. Check that fluid valves are turned on and the fluid pressure to the Precision Mix™ is properly set.
3. Check that the air pressure to the Precision Mix™ is properly set; most applications require about 80 PSI (6 bar); 60 PSI (4.2 bar) is the minimum setting.
4. Check that the Precision Mix™ fluid shut-off knobs, dispense valve knobs, and purge valve knobs are all opened.
5. Turn ON the main power switch, push the NXT key on the pendant and check of the desired ratio is correct.
6. Cycle through the other pendant screens and check that the totalizer and target volumes are satisfactory.

7. Remove any air from the fluid lines of the system:
    a. Shut off the air to the gun by closing the air regulator on the Precision Mix™.
    b. Hold a metal part of the spray gun firmly to the side of a grounded metal pail and pull the trigger.
    c. Set the Operator Switch to MIX.
    d. If the flow meters overrun because of air in the system, operation will stop. Repeatedly set the Operator Switch to STANDBY, then back to MIX until paint flows air-free from the spray gun.
8. If the paint output is too low, increase the air pressure on both supply tanks; if too high, reduce the air pressure, close the dispense valves further, or adjust the fluid pressure regulator.

CAUTION

Do not use the first 4 to 5 oz. (120 to 150 ml) of paint from the system, as it may not be thoroughly mixed.

9. Check the air pressure regulators on the supply tanks, to be sure that the feed pressures are approximately the same.
10. Check or reset the air regulator in the spray air line.
11. Check or reset the (optional) fluid pressure regulator on the static mixer outlet. Use the adjustment key to adjust the regulator.
12. Begin production by setting the Operator Switch to MIX.
13. Operation of the Precision Mix™ is controlled by the operation of the spray gun. When the gun is triggered, the dispense valves open and allow the A and B components to enter the mix manifold and be mixed and dispensed to the gun.

WARNING

To reduce the risk of serious injury, including fluid injection or splashing fluid in the eyes or on skin, always follow the **Pressure Relief Procedure** on page 2 and disconnect all power to the Precision Mix™ before checking or servicing any part of the system, before installing, cleaning, or changing fluid tips, and whenever you stop spraying.

Monitoring the Fluid Supply

The Precision Mix™ controller is equipped with software to monitor the amount of fluid used and shut down the system and provide an alarm when a limit is reached. See the Tank Volume screen on page 12 to set these limits.

NOTES:

- If required, switch on the supply tank agitators briefly whenever the fluid needs stirring.
- Periodically check the fluid level in the paint and solvent supply tanks, and refill as necessary.

CAUTION

Never allow the paint supply tanks to empty completely while the Precision Mix™ is operating. Fill them periodically, as needed. Failure to do so may cause the metering ratios to be incorrect.

Stopping Production

Stop operation at any time by switching to STANDBY. If you stop time will not exceed the pot life of Component A or B, no additional action is needed, except to relieve pressure at the spray gun. If you stop time will exceed the pot life, you must flush the mixing system. See **Flushing the Mixing System**, page 28.

Operation

1. Turn OFF the main power switch.
2. Bleed off all fluid pressure on both dispense valves.
3. Disconnect the base supply and catalyst supply and connect a regulated solvent line in both places.
4. Turn ON the main power switch and turn the Operator Switch to MIX.
5. At the spray gun, purge the fluid into a grounded waste container until the solvent comes out clear.
6. Turn OFF the main power switch and switch to STANDBY.
7. Bleed off all fluid pressure on the solvent. Disconnect the solvent supply from the filter inlets, and connect the new color in its place, then reconnect the catalyst supply line.
8. Using the procedure for **Setting Parameters**, at right, change the ratio and other parameters to the new values.
9. Turn ON the main power switch and switch to MIX.
10. Begin production.

Setting Parameters

NOTE: See pages 23 amd 24 for a map of Setup screens.

To set parameters you must have a black pendant, which as the unmarked key to the right of F4 enabled. Pushing this key displays the revision screen with the choices: RUN, SETUP, BAT and GTOT.

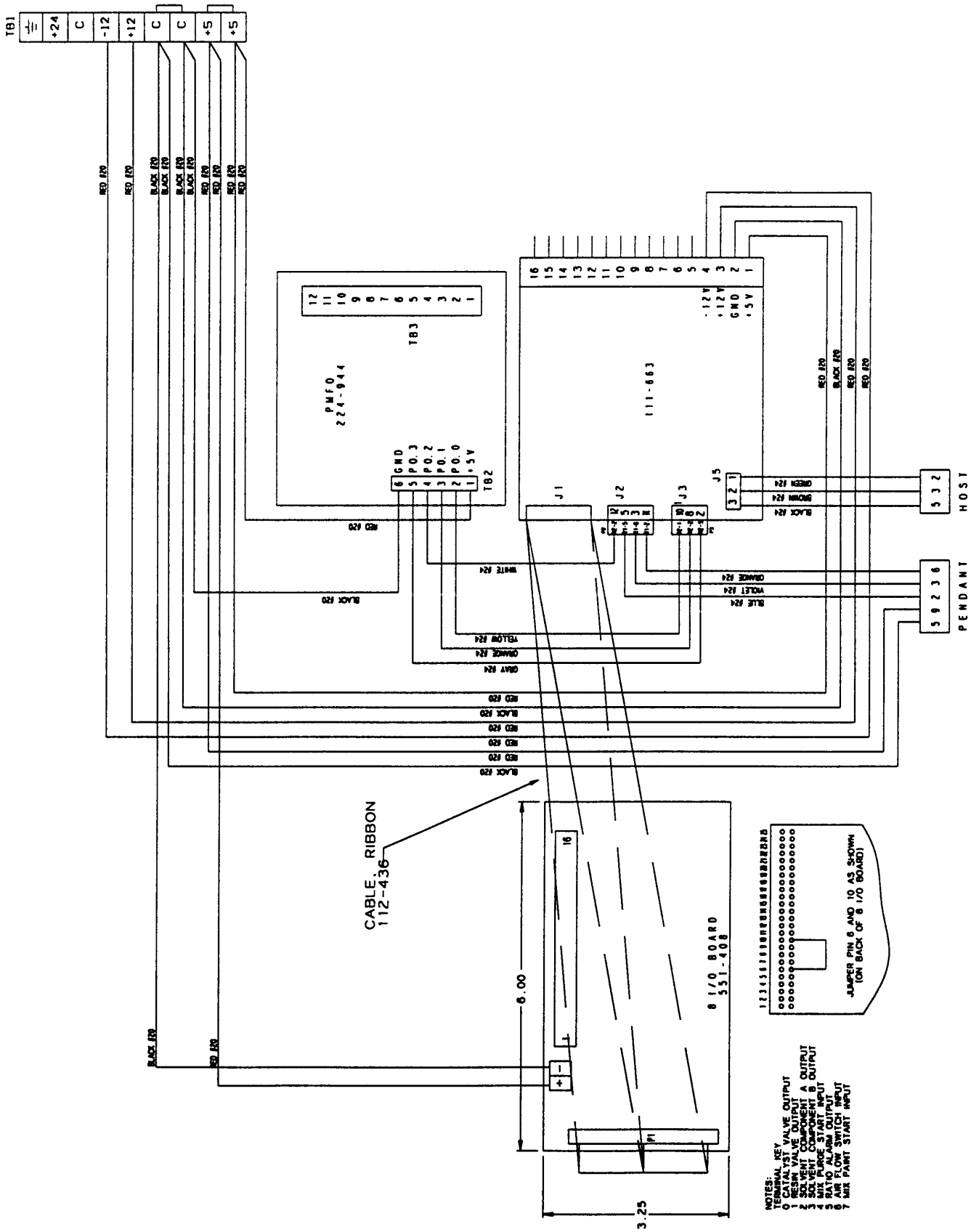
Pushing the SETUP key displays the first of several screens for setting up or changing parameters.

Setup pendant screens are described on pages 11 to 22.

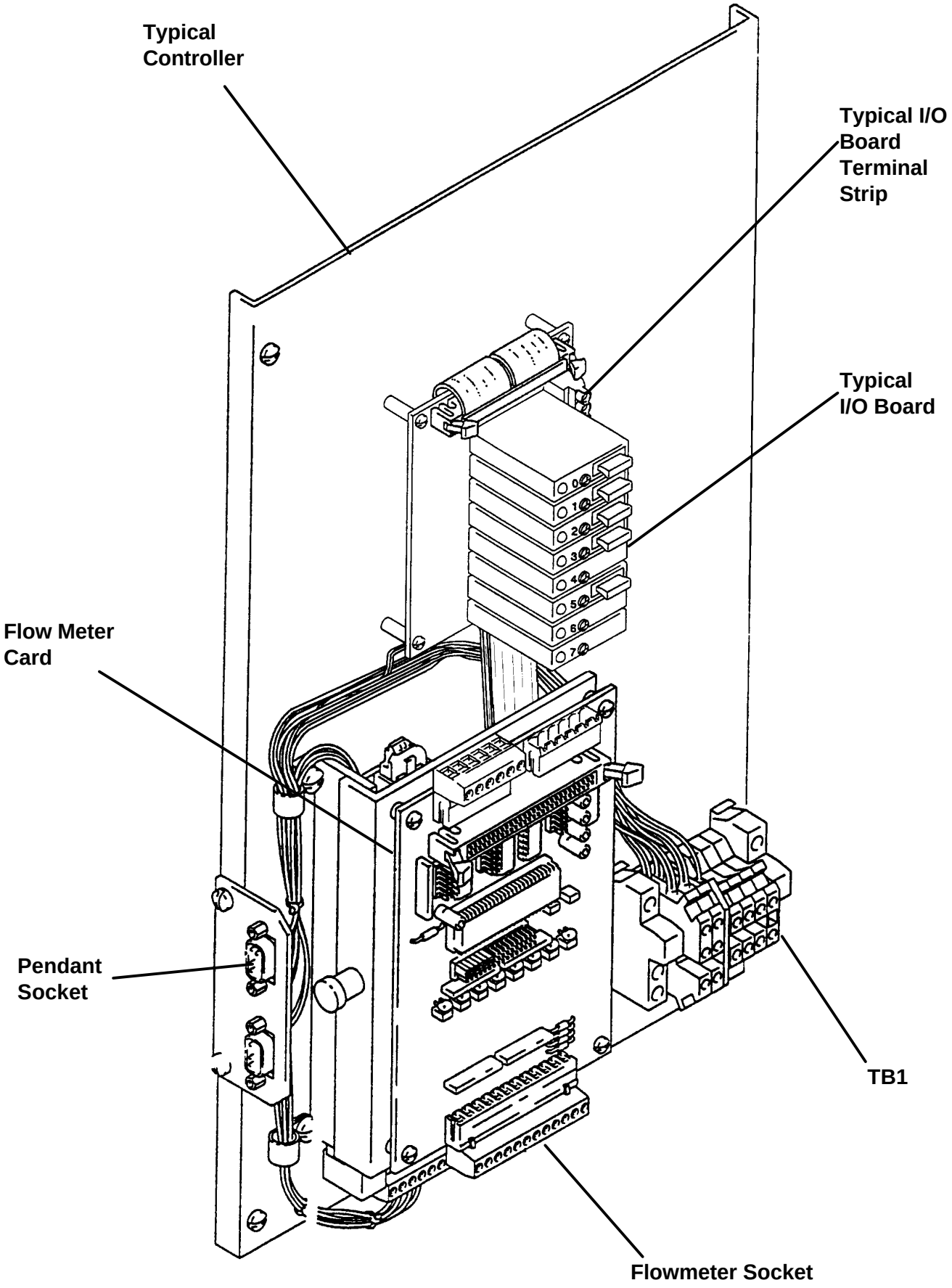
Maintenance

The Precision Mix™ Controller requires no regular maintenance. However, it is a good practice to check with Graco periodically to see if hardware or software updates are available.

Precision Mix™ Controller Electrical Schematic

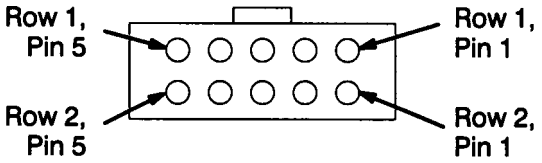


Typical Controller Component Guide

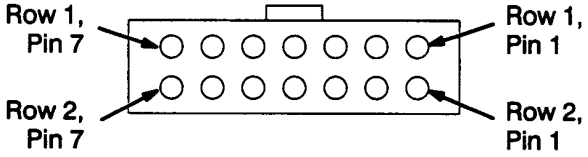


111-663 Computer Card

Flow Meter Card Plug (Front View)



Pendant Plug (Front View)

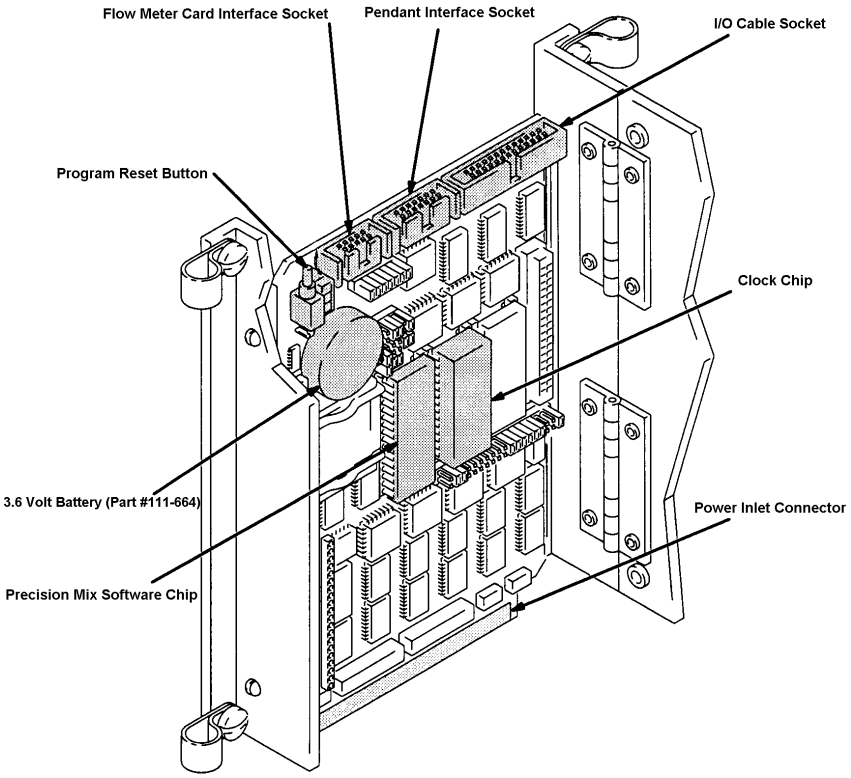


Flow Meter Plug Pin Assignments
Row 2, Pin 1: TB2, Pin 5 (Yellow)
Row 2, Pin 2: TB2, Pin 4 (Orange)
Row 2, Pin 5: TB2, Pin 2 (Gray)

Pendant Plug Pin Assignments
Row 1, Pin 6: Pend. 3 (Purple)
Row 1, Pin 5: Pend. 2 (Blue)
Row 1, Pin 2: Pend. 6 (Orange)
Row 2, Pin 2: TB2, Pin 4 (White)

Changing the Computer Card

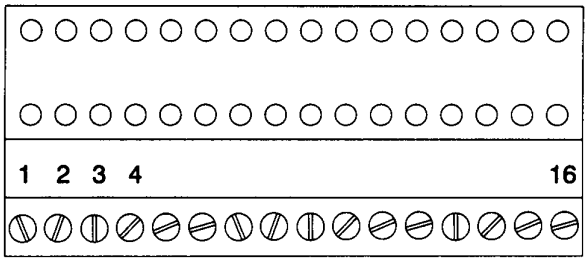
1. Turn OFF the main power switch.
2. Pull out the thumb screw on top of the controller assembly and carefully flip up the assembly and board.
3. Remove the connectors from the computer card:
    a. I/O Board
    b. Pendant Interface
    c. Flow Meter Card Interface
    d. Printer Interface
4. Loosen the two screws on the small bracket.
5. Slide the bracket away from the computer card.
6. Slide the computer card out from the power inlet connector and other bracket.
7. Install the Computer Card in the reverse order of disassembly.



Power Inlet Connector Pin Assignments

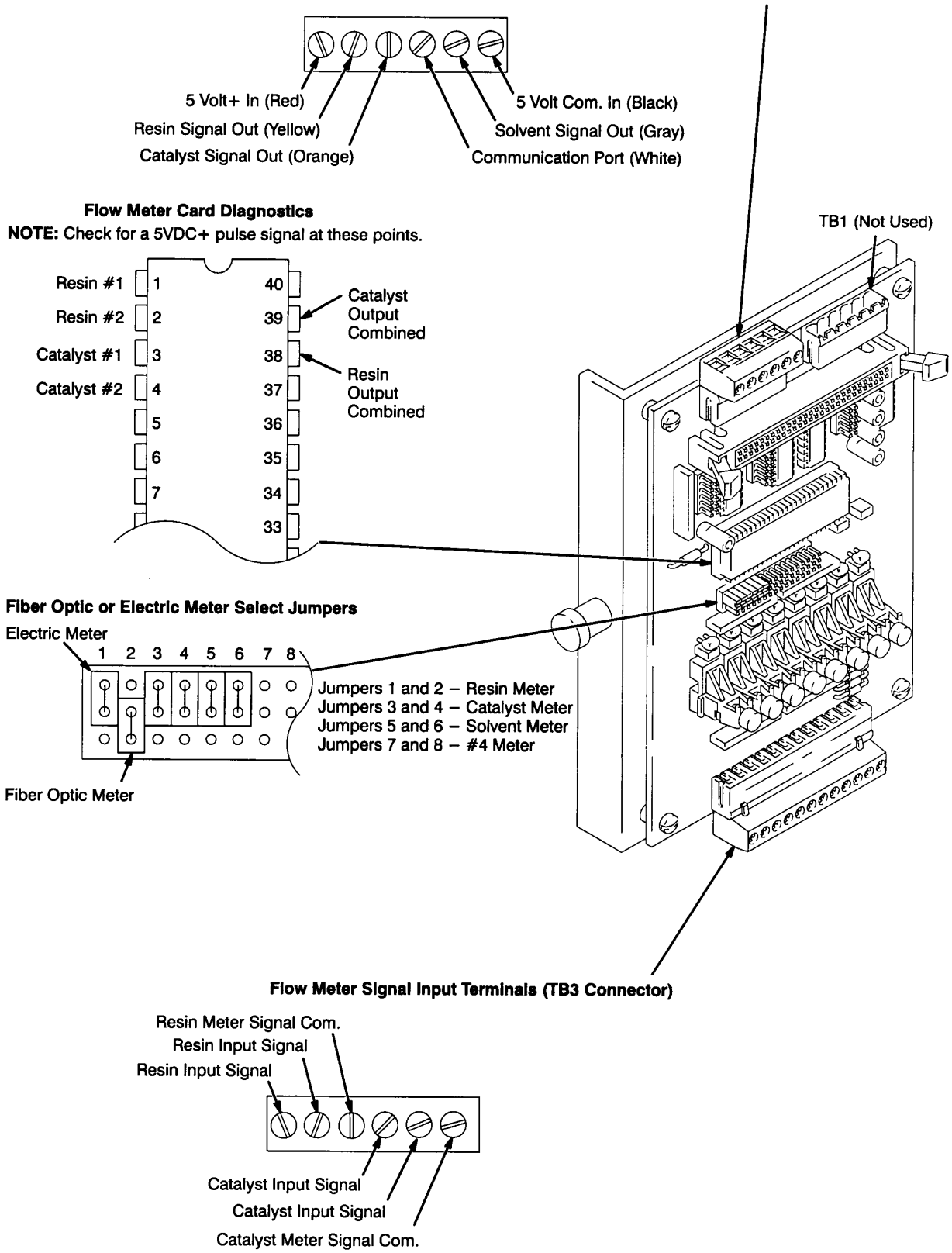
Pin 1: +5 Volts
Pin 2: Common
Pin 3: + 12 Volts
Pin 4: - 12 Volts

Back View of Power Inlet Connector



224-944 Flow Meter Card

Flow Meter Card Power Inlet and Flow Meter Signal Outlet Terminals (TB2 Connector)



Notes

Notes

Notes

The Graco Warranty and Disclaimers

WARRANTY
Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months or two thousand hours of operation from time of sale, repair or replace any part of the equipment proven 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, any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility with Graco equipment of 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 claim. 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 includes the costs of parts, labor and transportation.

DISCLAIMERS AND LIMITATIONS
The terms of this warranty constitute purchaser's sole and exclusive remedy and are in lieu of any other warranties (express or implied), **including warranty of merchantability or warranty of fitness for a particular purpose**, and of any non-contractual liabilities, including production liabilities, based on negligence or strict liability. Every form of liability for direct, special or consequential damages or loss is expressly excluded and denied. In no case shall Graco's liability exceed the amount of the purchase price. Any action for breach of warranty must be brought within two (2) years of the date of sale.

EQUIPMENT NOT COVERED BY GRACO WARRANTY
Graco makes no warranty, and disclaims all implied **warranties of merchantability and fitness for a particular purpose**, with respect to accessories, equipment, materials, or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motor, 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.

Technical Data

Electrical supply .....+5 Volts, 1.4 Amps; +12 Volts, 0.7 Amps; -12 Volts, 0.002 Amps
Electrical consumption ..... 16 watts

Graco Phone Number

To place an Precision Mix™ equipment order, contact your Graco distributor or call Graco, EAS.
For Precision Mix™ technical assistance, call Graco, EAS.

Phone No. (612) 379-3700

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