Parts

Instructions – Parts List

2K Monitor System

309125 Rev.B

For monitoring the delivery of two-component adhesives and coatings.

Model No. 233061
2K Monitor System for non-IS* meters

Model No. 233062
2K Monitor System for IS* meters

*IS refers to an “Intrinsically Safe” rating for installing meters in hazardous environments.

Read and retain warnings and instructions.

PROVEN QUALITY. LEADING TECHNOLOGY.

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

Table of Contents

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

INJECTION HAZARD

Spray from leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Splashing fluid in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 12 whenever you: are instructed to relieve pressure; stop operation; or clean, check, or service the equipment.
- Tighten all the fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately.

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

- Ground the equipment as instructed in **Grounding the System**, page 10.
- Never use the flow meter with an electrostatic gun isolation stand.
- Keep liquids away from the electronic sensor device.
- Follow the material supplier recommendations when flushing or servicing the meter.
- Do not service the electronic sensor. Return it to your Graco distributor for service.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component.
- Use fluids or solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Comply with all applicable local, state and national fire, electrical and other safety regulations.

Installation

The 2K Monitor system monitors the delivery of two-component materials before mixing and prevents off-ratio conditions that result in costly scrap, rework, and poor quality. The 2K Monitor performs the following functions:

- Monitors mix ratio in-line during your process
- Monitors flow rate of A, B, and A + B
- Tracks total job volume of A, B, and A + B (resettable)
- Tracks total batch volume of A, B, and A + B (resettable)
- Tracks grand total volume of A, B, and A + B (non-resettable)
- Outputs ratio warning and ratio alarm (shut-down)
- Prints out reports
- Communicates with data reporting software that runs on the user's PC

Installing Equipment in Hazardous and Non-hazardous Areas

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
To reduce the risk of fire, explosion, or electric shock:

- All electrical equipment must be installed by a qualified electrician.
- Understand and follow your local code and safety regulations for hazardous location wiring of intrinsically safe circuits.

The wiring schematics (Fig. 4 and Fig. 5) on page 9 show typical installations for a 2K Monitor and two flow meters. Your installation may consist of different components. Not all the components shown are supplied by Graco.

- To install a flow meter and display in a non-hazardous area, refer to Fig. 1, page 5.
- To install an intrinsically safe flow meter in a hazardous area and the 2K Monitor in a non-hazardous area, refer to Fig. 2, page 6.

Do not use more than 200 ft. (61 m) of cable between the meter and the 2K Monitor.

Follow grounding instructions on page 10.

Installation

Installing the Flow Meters

Refer to Fig. 1 or Fig. 2 to locate and install the flow meters, connectors, and a Variable Ratio Hydra-Cat proportioner.

- Flow volume can be measured only at the location where the flow meter is installed.
- Install a check valve to prevent back-flow. The arrows on the flow meter and check valve show the direction of fluid flow.
- The shutoff valves allow you to isolate the meter for service.

Avoid having dust or foreign matter enter the flow meter by taking the following precautions:

- Thoroughly flush the fluid supply lines before installing the flow meter.
- When installing fittings, make sure that no sealing tape overlaps into the inside of the pipe.
- Install a 100 mesh fluid filter upstream of the flow meter.

Calibrate the meter as instructed on page 15 before using the meter for production.

Refer to the **Dimensional Drawings** on page 27 and **Technical Data** on pages 28 through 31 for equipment specifications.

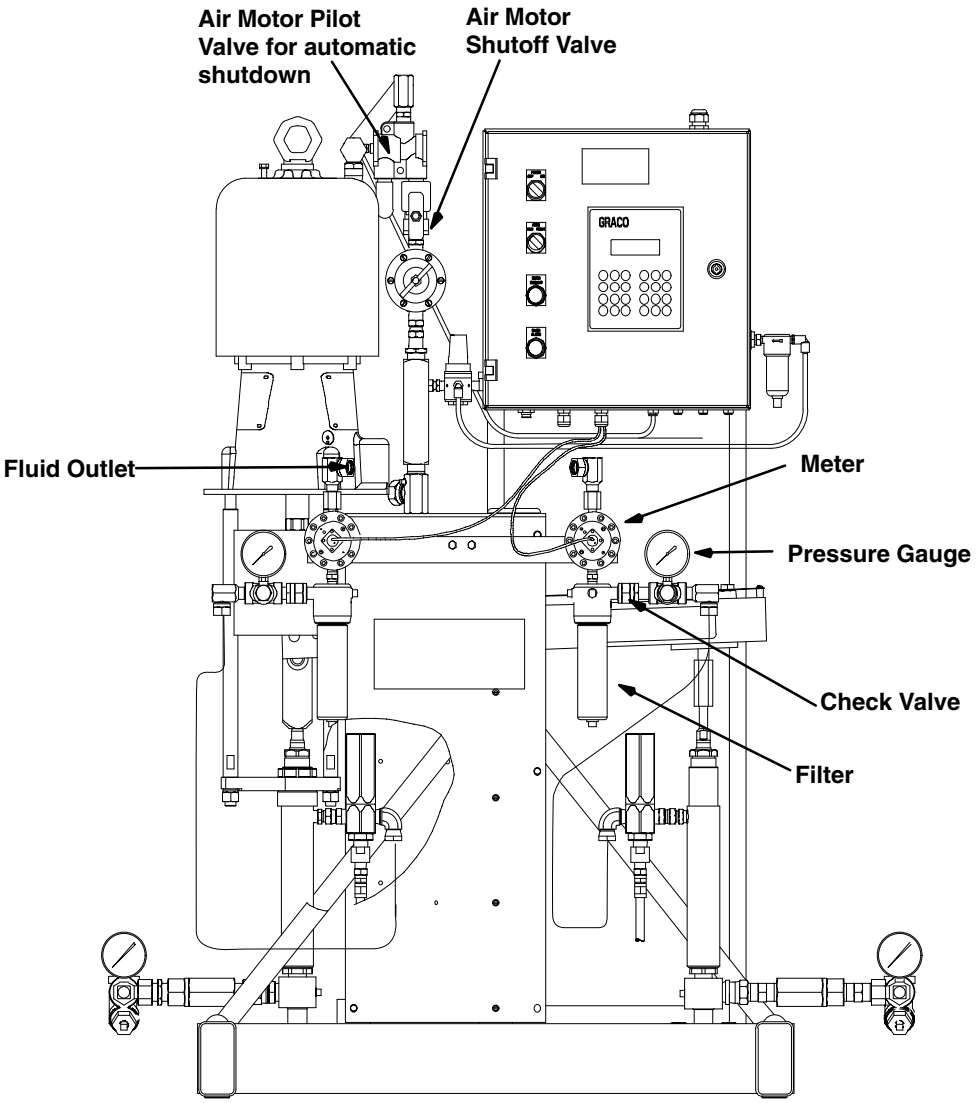

Fig. 1 **Non-hazardous area**

Installation

Typical Installation for Hazardous Areas

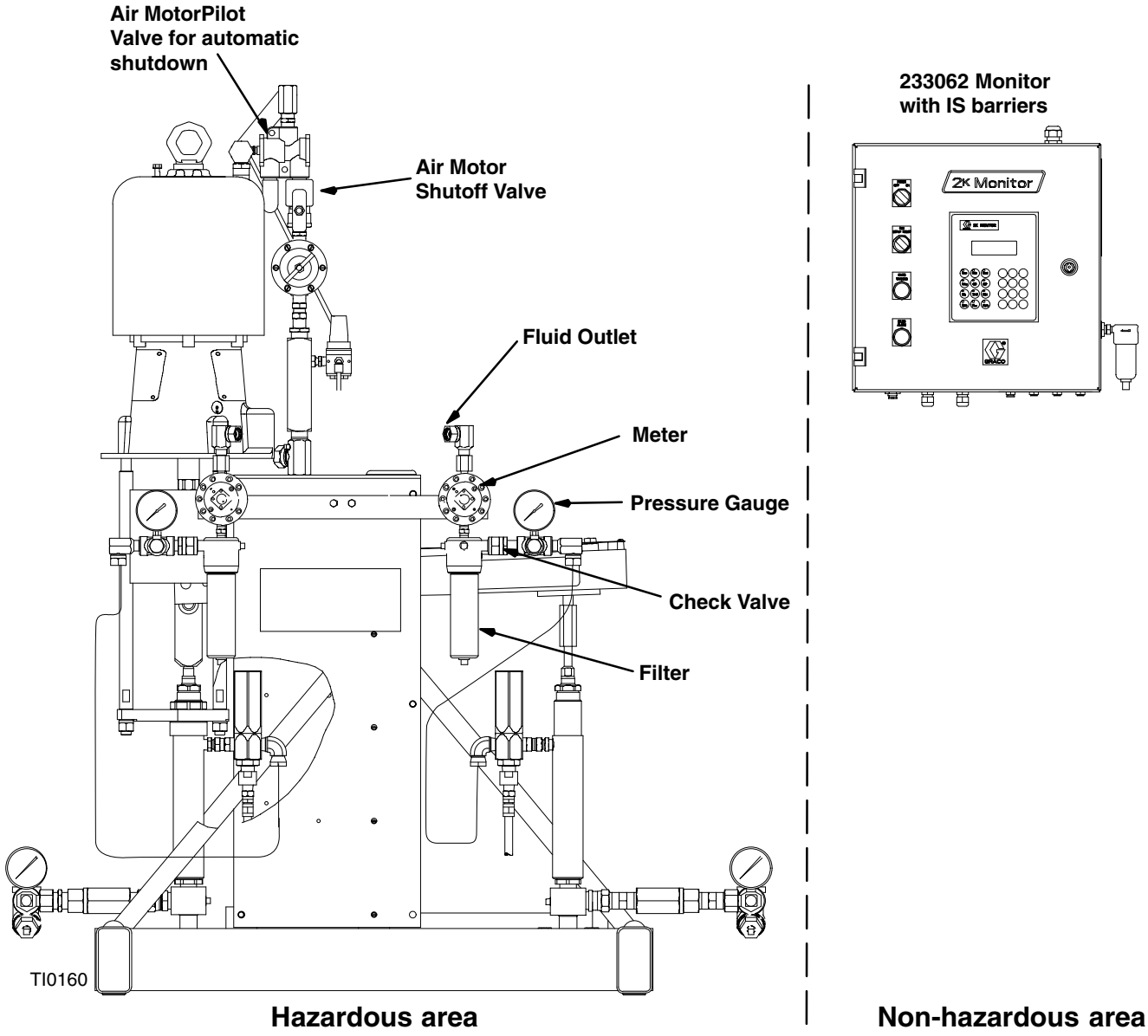

Fig. 2

Installation

Typical Installation for Non-Hazardous Areas

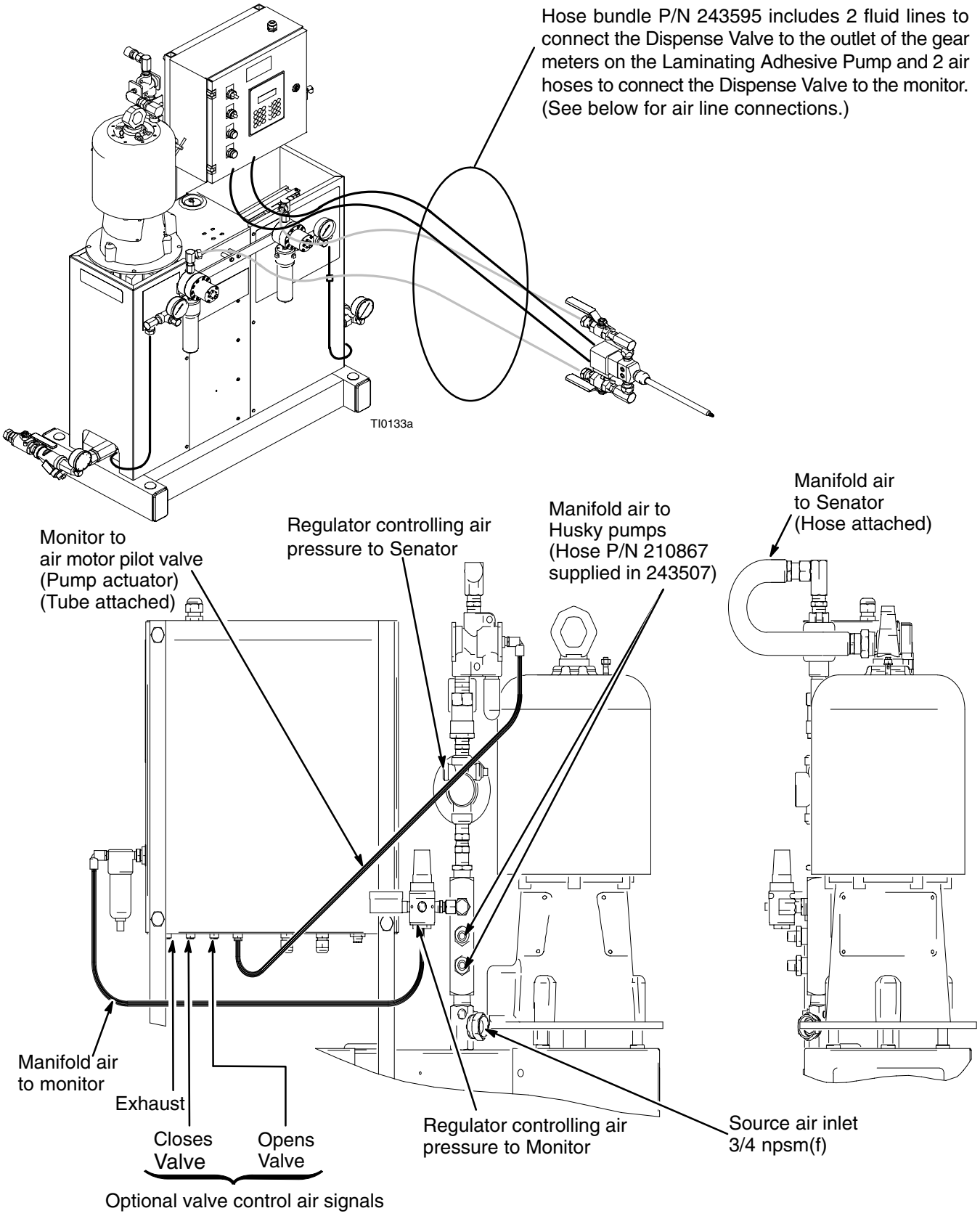

Fig. 3

Installation

Typical Wiring Installation: 2 K Monitor and G3000 Meters in Non-Hazardous Area

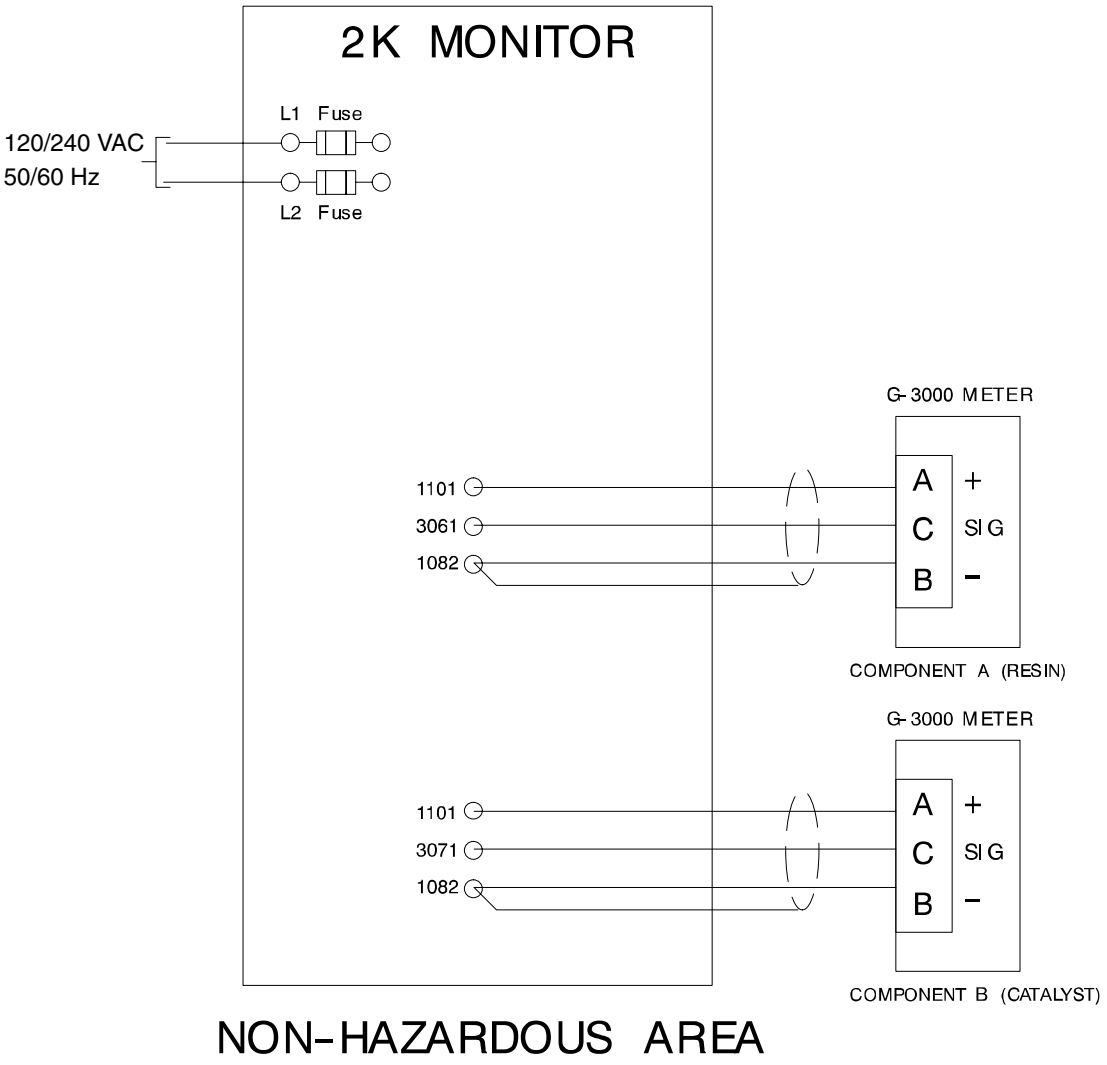

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Fig. 4

Typical Wiring Installation: 2K Monitor in Non-hazardous Area, G3000 Meters In Hazardous Area

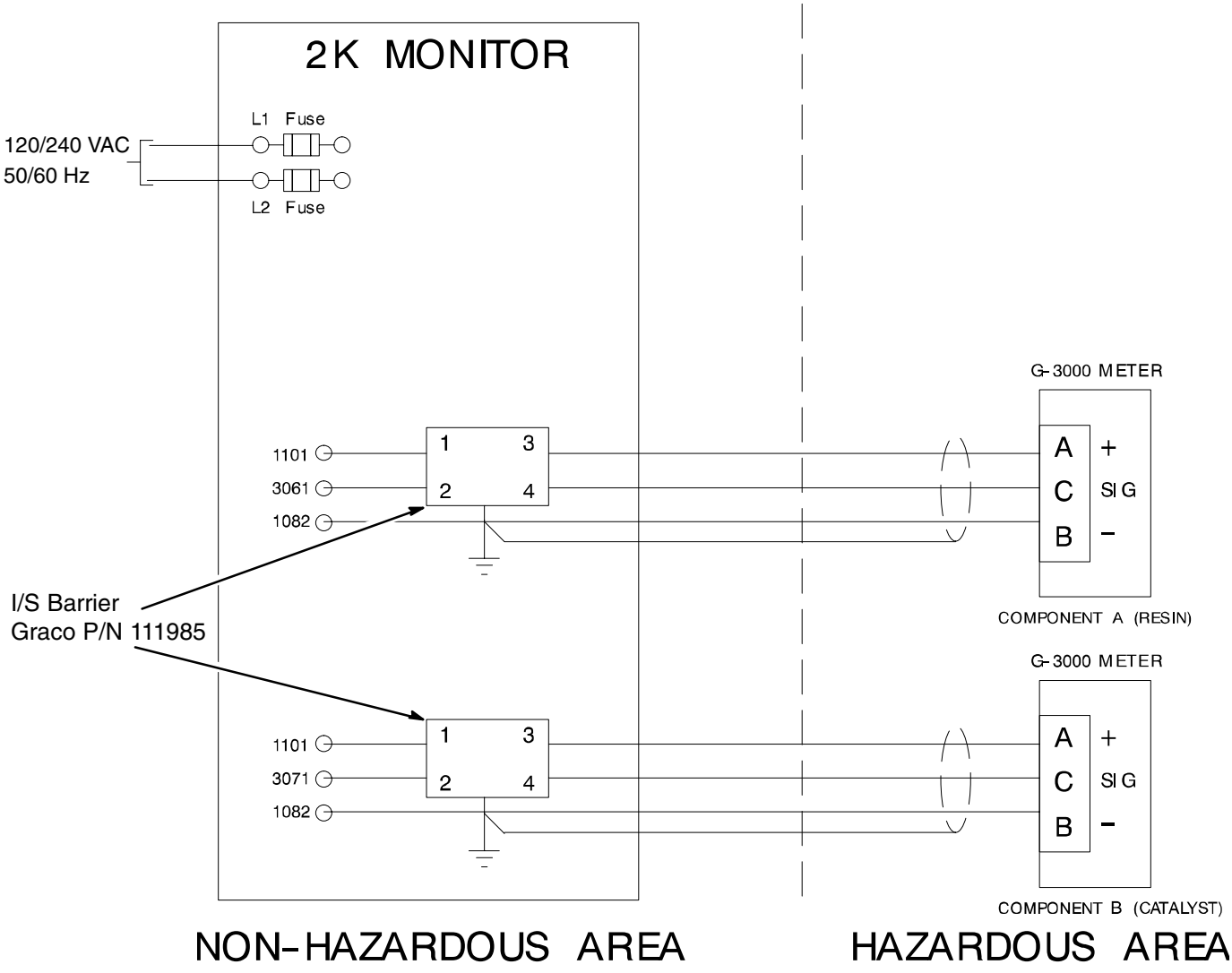

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Fig. 5

Installation

Grounding the System

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

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

- The 2K Monitor 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.
- A qualified electrician must complete all grounding and wiring connections and check the resistance as instructed on page 11.
- Refer to your local code for the requirements for a “true earth ground” in your area.
- Also read and follow the warnings on page 3.

Ground the system (see Fig. 6) as instructed here and in the individual component manuals. 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.

Flow Meters

Connect the meter cables as instructed in the manual for your flow meter. Failure to properly connect the grounded conductor and shield may cause incorrect signals.

Feed Pumps or Pressure Pots

Use a ground wire and clamp to electrically connect the pumps or pots to a true earth ground. See your separate pump or pressure pot manual.

Air and Fluid Hoses:

Use grounded hoses only.

Spray Gun

Follow the spray gun manufacturers grounding instructions.

Fluid Supply Container

Ground the container according to your local code.

Object Being Sprayed

Ground the object according to your local code.

All Solvent Pails Used When Purging

Ground the solvent pails 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.

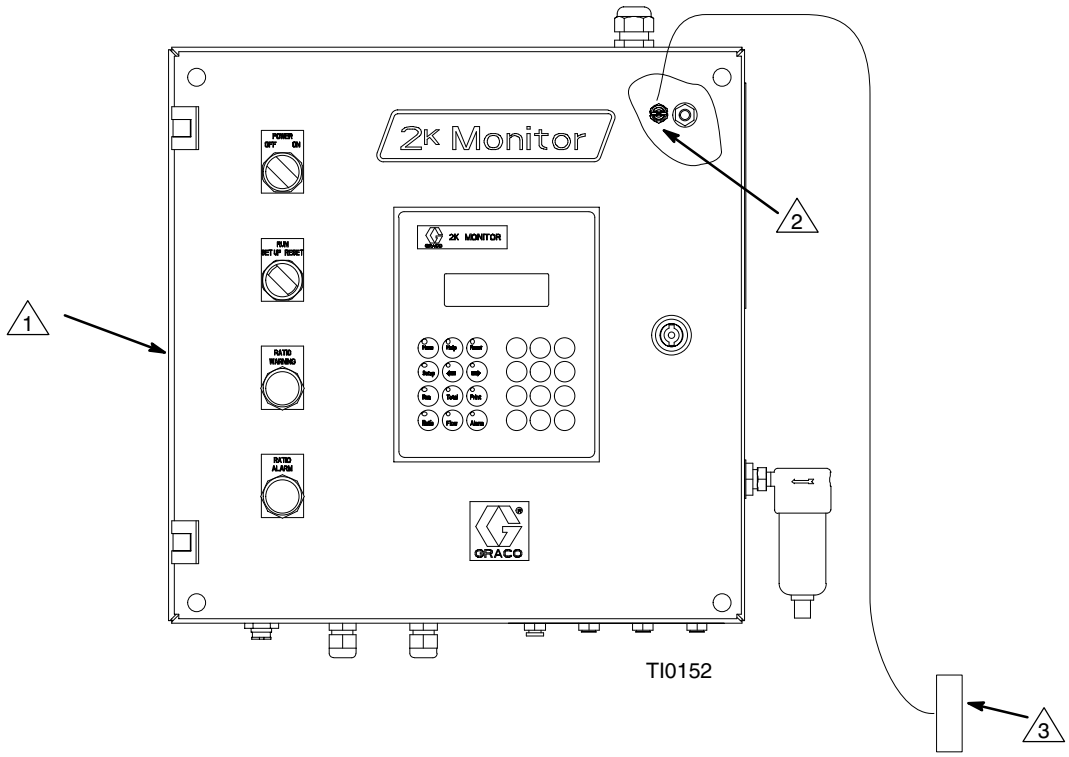
Maintain Grounding Continuity When Purging Or Relieving Pressure

Follow the instructions in your separate gun manual for safely grounding your gun while purging.

Remote Signals

To use any of the remote inputs such as the external alarm (low level, etc.), remote stop, print report, or alarm reset, bring the 24 VDC high signal from terminal 1101 to the appropriate input terminal. Refer to the schematic on page 31.

Installation



KEY

1. Controller
2. Controller's Ground Lug
3. Controller Enclosure Ground Wire must be connected to true earth ground .

Fig. 6

Check the Resistance

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

To reduce the risk of fire, explosion, or electric shock the resistance between the 2K Mointor components and true earth ground must be less than 1 ohm.

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

Operation

Pressure Relief Procedure

⚠ WARNING

INJECTION HAZARD
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying or dispensing,
- check or service any of the system equipment,
- install or clean the spray tip or nozzle.

1. Set the operator switch to RESET.
2. Relieve fluid and air pressure at the component and solvent feed pumps or pressure pots, as explained in their separate instruction manuals.
3. Turn off the proportioner air motor valve (see Figs.1 and 2).
4. Set the operator switch to SETUP.
5. If using an electrostatic gun, make sure the electrostatic power is turned off.
6. Hold a metal part of the spray gun or dispense valve firmly to the side of a grounded metal pail, and trigger the gun to relieve fluid pressure.
7. Set the operator switch to RESET.

Stop production at any time by setting the operator switch to RESET.

Power-up Checklist (see Fig. 7)

✓	Power-up Steps
	2K Monitor System
☞	***Make sure the Operator Station switch is on RESET before turning on the system.***
	1. Turn on the main power switch.
	2. Check that the DC ON LED on the power supply is lit.
	3. Check that the CAN and RUN LEDs on the controller are lit and that the ERR (error) LED is not lit.
	4. Check that the OK LED on all the I/O modules is lit.
	5. Check that the User Interface has powered up and is displaying the RUN screen.

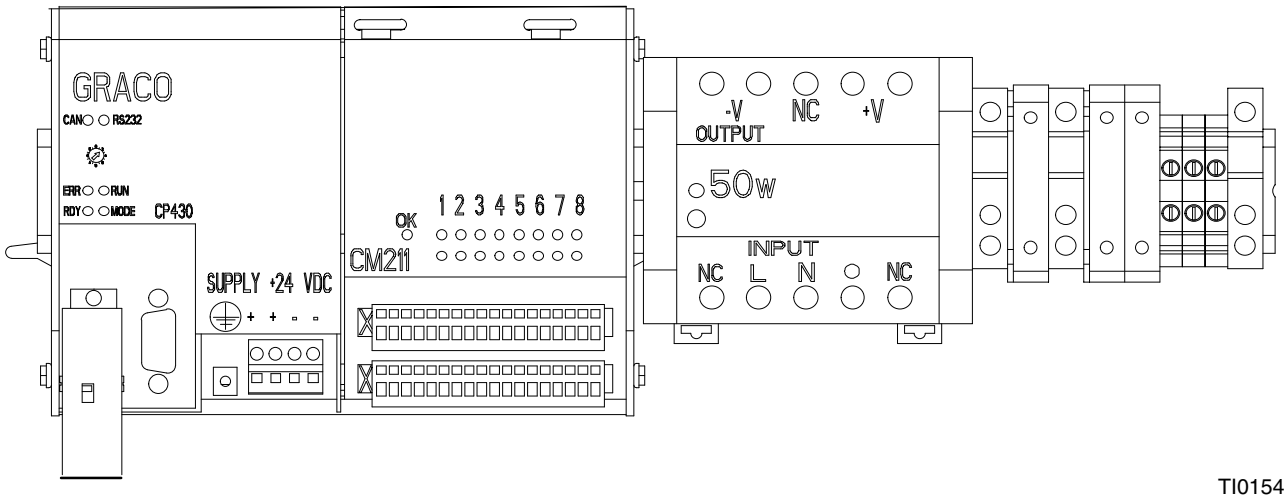


Fig. 7

Operation

Operator Controls and Indicators

Operator Switch

There are three operator switch input settings:

SETUP
RUN
RESET

Setup

Setting the operator switch to Setup is the same as Run except that the system doesn't monitor the ratio and flow rate alarms. The solenoid valve shuts off the air motor pilot valve when the system has dispensed 1000cc.

Run

Setting the operator switch to RUN starts the normal operation. The 2K monitor measures the flow through the "A" and "B" component flow meters. The ratio, flow rate, and totalizer are immediately available on the user interface display. If the ratio exceeds the ratio tolerance warning setpoint, the system turns on the amber warning light. If the ratio continues to go past the alarm setpoint, the system turns on the red alarm light and shuts off the solenoid valve that controls air to the air motor and the dispense valve. If the external alarm (terminal 3051) or the remote stop (terminal 3091) input is high, the 2K Monitor shuts off the solenoid valve. If the flow rate exceeds the maximum setpoint, the system turns on the flow rate alarm output (terminal 3271).

Reset

Setting the operator switch to RESET clears the ratio and flow rate alarms. The solenoid valve is de-energized ("off") in this mode.

Power Switch

Setting the power switch to ON turns on power to the control box (power supply, processor, user interface, etc.).

Ratio Warning Light

This light is lit if the current ratio is out of the warning tolerance (default is 5%). This light will flash when the operator switch is in Setup mode.

Ratio Alarm Light

This light will be lit if the current ratio is out of the alarm tolerance (default is 10%).

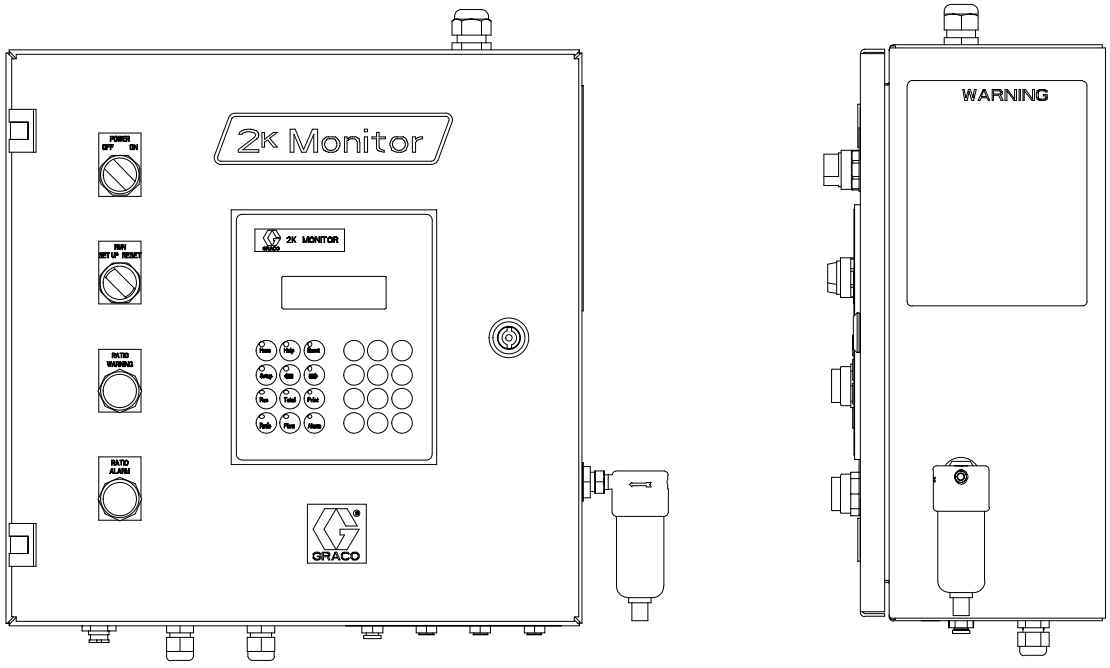


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Fig. 8

Operator Screen Navigation Map

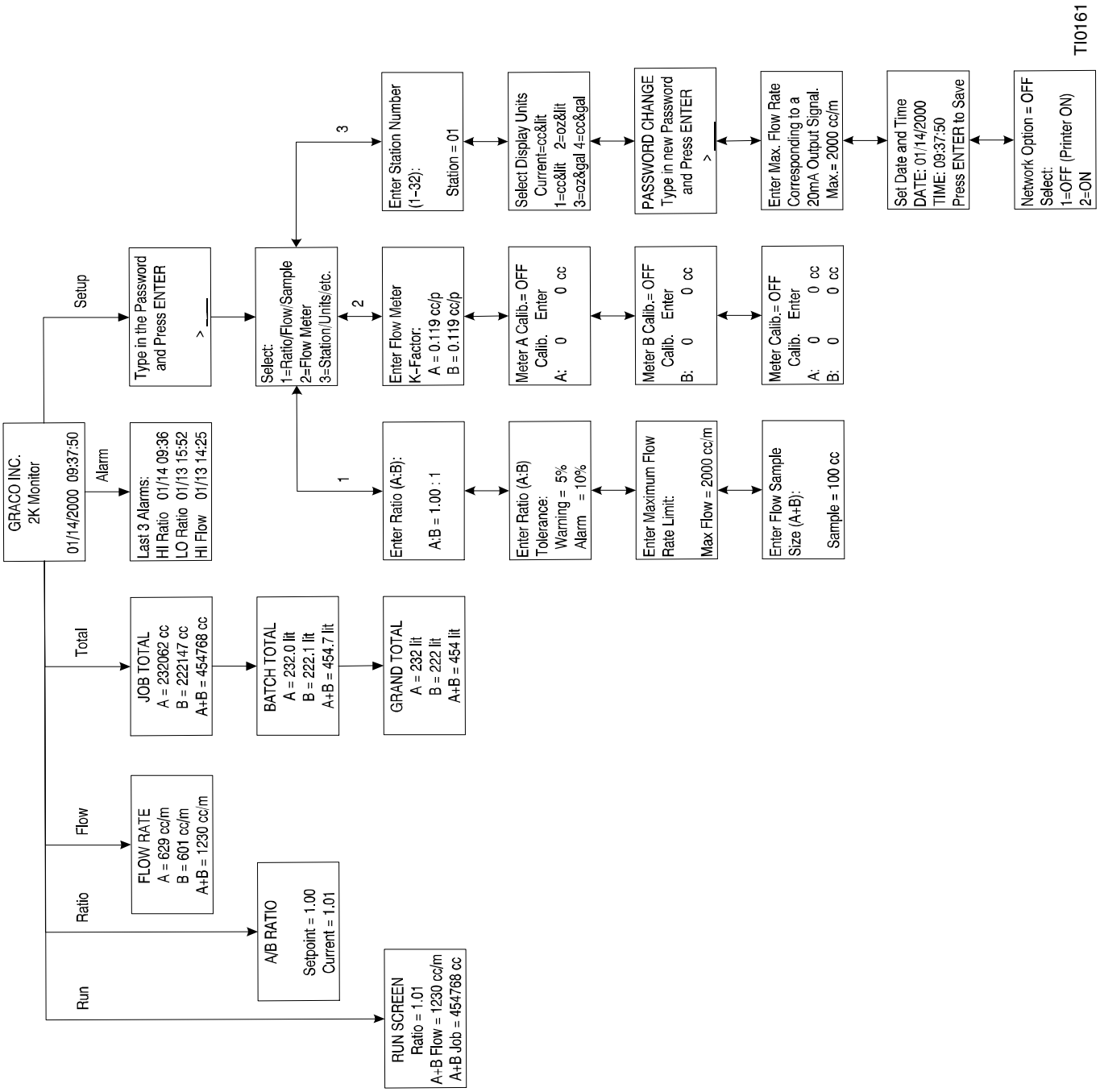

Fig. 9

Operation

Screens	Information
Enter Flow Meter K–Factor: A = 0.119 cc/p B = 0.119 cc/p	The current K-Factor will appear when this screen is displayed. A new K-Factor can be entered on this screen. Using the part number found on the meter identification tag, verify that the K-Factors for the meters are set correctly. Compare the values displayed on the screen to those in the Meter K-Factor reference table below. The K-Factor value must be entered in cubic centimeters per electrical pulse.

Meter K-Factor Reference Table

Meter Part Number	Model Number	K-Factor (cc/pulse)
239–716	G3000	0.119
235–587	PPM 3050	0.114
235–588	PPM 3100	0.229
235–592	PPM 3550	0.588

Component A only

Meter A Calib.= OFF

	Calib.	Enter
A:	0	0 cc

or
Component B only

Meter B Calib.= OFF

	Calib.	Enter
B:	0	0 cc

or
Components A and B

Meter Calib.= OFF

	Calib.	Enter
A:	0	0 cc
B:	0	0 cc

The meters can be calibrated by dispensing material to a calibrated container and entering the amount dispensed. The system will automatically calculate the new cc/pulse K-Factor and enter it into the system.

Take a large sample (500 cc or more) of a fluid that is a known accurate weight per gallon to ensure that any error in measuring the sample is spread out.

⚠ WARNING

PRESSURIZED EQUIPMENT HAZARD
To avoid splashing fluid in the eyes when calibrating the meters:

- Wear eye protection.
- Start with the air motor at a low pressure to avoid splashing and to simulate the normal operating cycle rate.

Flow Meter Calibration

Refer to the Graco Variable Ratio or Fixed Ratio Hydra-Cat Proportioner manual for instruction on how to operate the proportioner. For the Graco 2K Ultra-Lite dispense valve, use a ratio check adapter kit (626–611 and 512–292) when doing meter calibration.

1. Make sure all the hoses, from the proportioner through the flow meters and to the dispense ends, are filled with fluid (check for trapped air).
2. Close both the component A and component B fluid dispense ends (valves).
3. Place a graduated beaker under the component A and another beaker under the component B fluid dispense ends.
4. Press the RESET button to begin the calibration.
5. To avoid splashing, slowly open both component A and component B fluid dispense valves. Allow a large sample of fluid to flow into the beakers.
6. Close both dispense valves when a sufficient sample has been dispensed.
7. The screen will display the volume of fluid the 2K monitor determined in the “Calib.” field, based on the previously entered calibration factor.
8. If the actual volume dispensed into the beakers is different, type the actual volume dispensed in the “Enter” field and press ENTER.
9. The meter K-Factor screen will appear with the new calculated value.
10. Flush the dispense valves if applicable.

Operation

Programing the Password

The password is initially set to zero at the factory. Setting a password is recommended to control access to setup data and job/batch totalizer reset functions. Follow the flow chart in Fig. 9 on page 14 to change the password.

If the Password is lost

1. Turn off power to the controller
2. Connect a jumper wire from terminal block 1101 (24 Vdc) to terminal block 3081. Connect a second jumper wire from terminal block1101 (24 Vdc) to terminal block 3101.
3. Turn on the power to the controller.
4. Follow the flow chart in Fig. 9 on page 14 to change the password.
5. Turn off the power to the controller.
6. Remove both jumper wires
7. Turn on power to the controller and continue normal operation.

Operating the 2K Monitor

Press any button to activate the 2K Monitor (turn on the background light). This light turns off when the keypad has not been used for ten minutes.

Mode Switch

Make sure the mode switch (see Fig. 10) is set to 2 before beginning normal operation of the system. The possible mode switch settings are as follows:

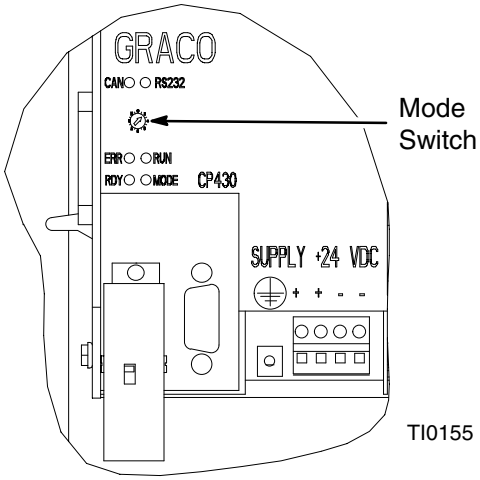

Fig. 10

Switch Position	Used For
f	Diagnostics *(do not use in normal operation)*
0	Operating system download
2	Default setting for normal operation

User Interface

The User Interface (see Fig. 11) is a small terminal with a 4x20 character display and a 24-key keypad. Twelve of the keys are illuminated with LEDs.

Navigational Keys (active when illuminated)

HOME Key: Press to go to the HOME screen.

SETUP Key: Press to go to the SETUP screen (ratio, tolerance, k-factors, etc.).

RUN Key: Press to go to the RUN screen. This screen displays current ratio, the sum of A and B flow rates, and the sum of A and B job totalizer.

RATIO Key: Press to go to the RATIO screen. This screen displays the ratio setpoint and the current ratio.

FLOW Key: Press to go to the FLOW RATE screen. This screen displays component A, component B, and A+B current flow rates.

TOTAL Key: Press to got to the JOB TOTAL screen. This screen displays component A, component B, and A+B job totalizer. Press previous ⟨ ⇐) or next ⟨ ⇒) to display batch or grand totalizer.

ALARM Key: Press to go to the ALARM screen to view the last 3 alarms.

PRINT Key: On the Network Option screen, if NO is off, the printer is on and reports can be printed. Press to print a pre-defined report (job, batch, grand totalizer, alarm, or setup).

⇐ **Key:** Press to view the previous screen.

⇒ **Key:** Press to view the next screen.

HELP Key: Press to view on-line help for pre-defined screen.

RESET Key: Press to reset totalizer or flow meter calibration mode.

↵ **ENTER Key:** Press to enter numerical data.

← **BACK SPACE Key:** Press to cancel numerical data entered and revert to the previous data.

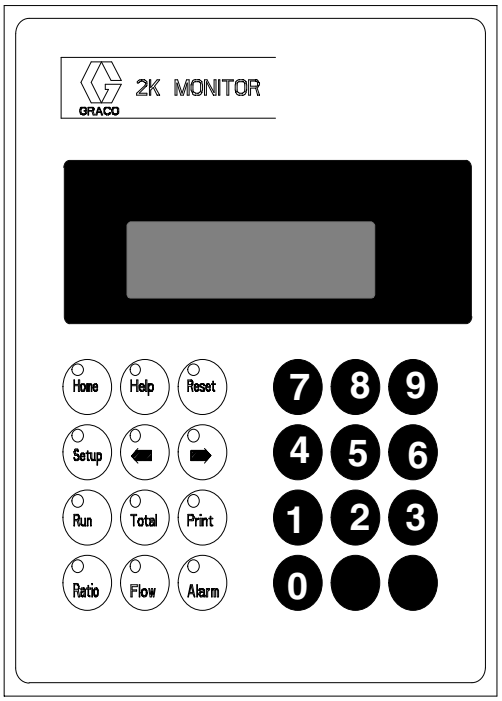

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Fig. 11

2K Monitor Reports

From the Select screen for Setup

```
  Graco 2K Monitor - Setup/Run Report
Station:0           02/02/2000  10:32
Software Version:  0.07

A Flow Meter K-factor (cc/pulse) = 0.119
B Flow Meter K-factor (cc/pulse) = 0.119

Ratio A:B (setpoint)           = 1.00
Ratio A:B (highest actual)     = 70.71
Ratio A:B (lowest actual)      = 0.00
Ratio Warning Tolerance (%)    = 5
Ratio Alarm Tolerance (%)      = 10

Flow Rate Limit(setpoint)      = 2000 cc/m
Flow Rate (highest actual)     = 90319 cc/m

Job Total A      = 33249 cc
Job Total B      = 34351 cc
Job Total A + B  = 67600 cc

Batch Total A      =   33.2 liters
Batch Total B      =   34.3 liters
Batch Total A + B  =   67.5 liters

Grand Total A      =     33 liters
Grand Total B      =     34 liters
Grand Total A + B  =     67 liters

Last 3 Alarms:
LO Ratio   02/02 10:32
HI Ratio   02/02 10:32
HI Flow    02/02 10:31
```

From the Job Total screen

```
  Graco 2K Monitor - Job Total Report
Station:0           02/02/2000  10:14

Job Total A      = 15408 cc
Job Total B      = 15341 cc
Job Total A + B  = 30749 cc
```

From the Batch Total screen

```
  Graco 2K Monitor - Batch Total Report
Station:0           02/02/2000  10:15

Batch Total A      =   15.4 liters
Batch Total B      =   15.3 liters
Batch Total A + B  =   30.7 liters
```

From the Grand Total screen

```
  Graco 2K Monitor - Grand Total Report
Station:0           02/02/2000  10:15

Grand Total A      =     15 liters
Grand Total B      =     15 liters
Grand Total A + B  =     30 liters
```

From the Alarm Report screen

```
  Graco 2K Monitor - Alarm Report
Station:0           02/02/2000  10:15

Last 3 Alarms:
LO Ratio   02/02 10:15
HI Ratio   02/02 10:14
HI Flow    02/02 10:14
```

Troubleshooting

⚠ WARNING

INJECTION HAZARD
To reduce the risk of an injection injury or other serious injury, follow the **Pressure Relief Procedure** on page 12 before checking or servicing the meter assembly.

NOTE: The sensor is not a serviceable part. Replace it if it is malfunctioning.

Problem	Cause	Solution
No flow volume displayed at monitoring unit	Flow volume is too low to measure	Increase flow volume or use approprieate flow meter
	Fluid is not flowing	See **Problem:** Fluid is not flowing, below
	Damaged cable	Replace cable
	Improper input voltage to sensor	Make sure input power is 24 VDC
	Blow I/S barrier fuse	Replace fuse; see page 20
	Damaged sensor*	Replace sensor
Fluid is not flowing	Clogs in fluid line or in meter*	Clean fluid line and/or meter; see flow meter manual
	Gears worn or damaged	Service meter; see flow meter manual
Display will not turn on	Blow external power fuse	Replace fuse; see page 22
Inaccurate flow reading	Faulty flow sensor or meter	Replace sensor or meter
Ratio low or ratio high	The dispensed amount of resin (A) compared to catalyst (B) does not meet the programmed ratio tolerances.	Check for normal fluid pressure for both resin and catalyst. Check for adequate fluid supply. Check the programmed ratio and compare it with the hydra-cat proportioner ratio.
No signal for alarm situation	Incorrect setup	Correct configuration
	Incorrect wiring	Correct wiring
	External power is off	Turn on power
Display readout faulty	Excessive static discharge	Replace LCD display
	Ambient temperature too high	Lower ambient temperature
Keypad failure	Excessive wear	Replace membrane switch
Fuses blown	Short circuit	Check wiring
	Excessive load	Replace fuse; see page 22
Communication failure	Incorrect address or baud rate	Verify the both switches are set to position “1”
	Incorrect cabling	Check cable/wiring
	Display was in Sleep Mode	Retry communications
Low Battery Alarm/Factory default settings are loaded after power-up	Dead battery	Replace battery (follow procedure on page 19

* To isolate a flow meter problem, pulses can be simulated by disconnecting the flow meter cable connector and repeatedly pushing it back on to make contact. If the display registers some flow, the flow meter or the sensor assembly is bad, but the cable and connections into the monitor are good.

Service

Replacing the Controller Battery

The Controller is supplied with a lithium battery, which maintains the internal memory during power outages. It is recommended that the battery be replaced every one to two years to prevent memory loss. The system has an alarm, "LO BATT", to indicate when the battery is getting low.

⚠ CAUTION

If the battery fails or is not installed correctly, the Controller memory could be lost.

Changing the Battery

1. Record the setup data on a sheet of paper.
2. To avoid damage to the system, remove power before disconnecting the cables. Turn the 2K Monitor power switch (D) to OFF. See Fig. 12.
3. To access the battery door, disconnect the cables from the Controller communications ports, CAN (H) and RS232 (J). See Fig. 13.
4. Turn the power back on.

⚠ WARNING

ELECTRIC SHOCK HAZARD
Only qualified electricians should perform this procedure. To avoid losing the Controller memory, the power must be on while the battery is changed. **Do not touch the circuit board while the power is on as this could cause electric shock.**

5. Remove the battery door (K). Pull lightly on the battery ribbon until the battery pops out of the slot.
6. Install the new battery (part no. 114836) into the battery slot, with the ribbon underneath the battery. Install the battery door (K).
7. Turn off the power before connecting the cables.
8. Reconnect the communication cables.
9. Turn the power back on. Re-enter the setup data.

NOTE: Record the date the battery was replaced for future maintenance reference.

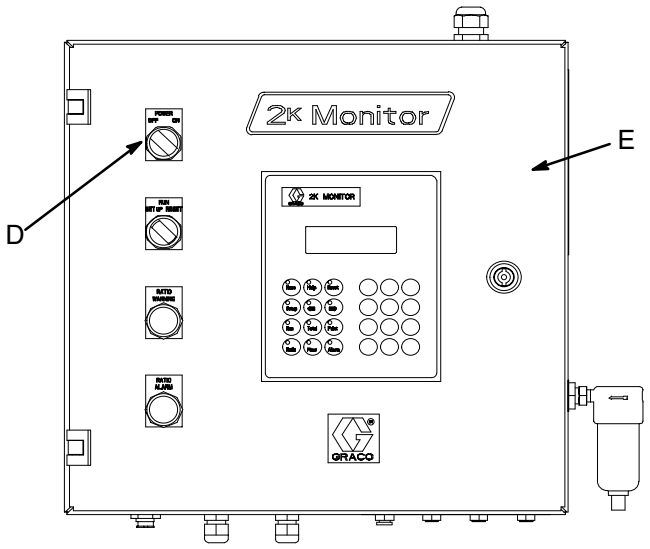

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Fig. 12

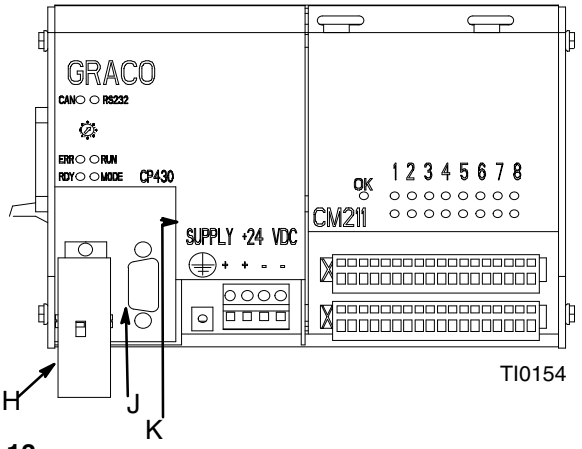

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Fig. 13

Service

Replacing Isolation Barrier Fuses

1. Turn the 2K Monitor power switch (D) to off. See Fig. 12.
2. Open the controller door (E).
3. Remove the barrier cover (F) for the fuse being replaced. See Fig. 14.
4. Place a screw driver in the barrier slot and gently pry out the fuse.
5. Install a new fuse (part no. 115429) and re-install the barrier cover (F).

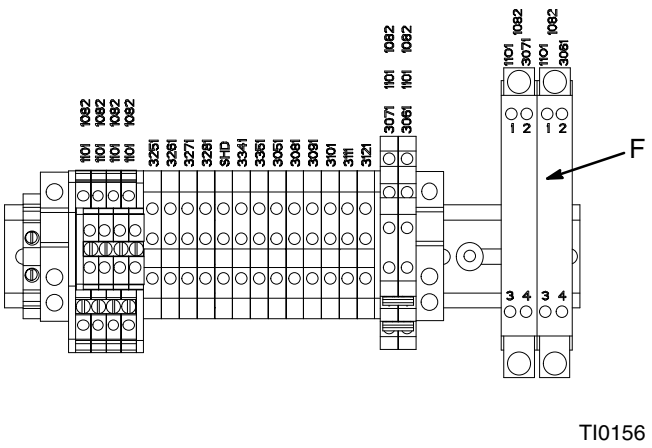


Fig. 14

Replacing the User Interface

1. Turn the 2K Monitor power switch (D) to off. See Fig. 12.
2. Disconnect the power (A) and communications (B) connectors from the back of the User Interface. See Fig. 15.
3. Remove the 6 screws (G), and remove the User Interface.
4. Install the new User Interface and secure it with the 6 screws (G).
5. Set both switches (I) to position “1”.
6. Reconnect the power (A) and communications (B) connectors.

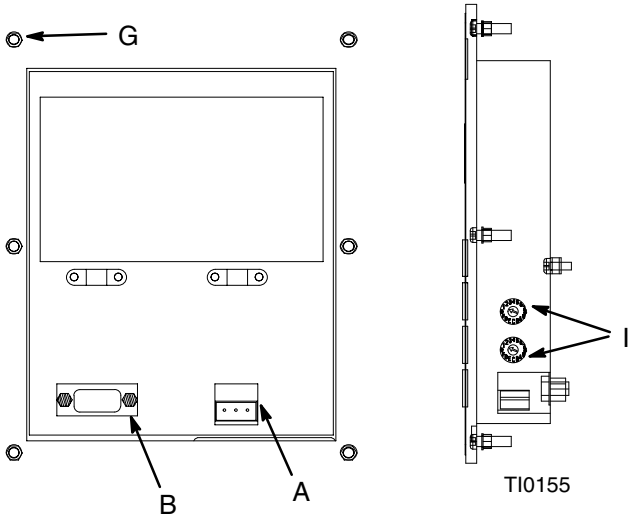


Fig. 15

Service

Replacing the Power Supply

1. Turn the 2K Monitor power switch (D) to off. See Fig. 12 and Fig. 16.
2. Turn off the main power to the 2K Monitor controller.
3. Open the controller door.
4. Disconnect the 6 wires from the power supply.
5. Pull down the clips (C), holding the power supply in place. Remove the power supply from the din rail.
6. Install the new power supply and push up the clips.
7. Reconnect the 6 wires to the power supply.

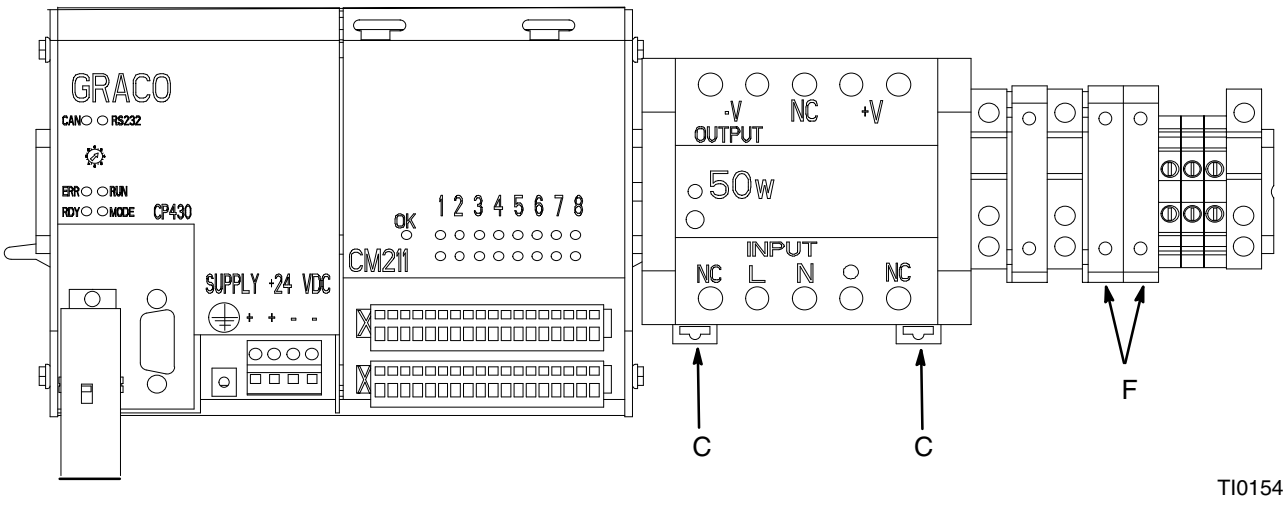


Fig. 16

Service

Replacing Power Supply Fuses

1. Turn the 2K Monitor power switch (D) to off. See Fig. 12.
2. Turn off the main power to the 2K Monitor controller.
3. Open the controller door.
4. Remove the two fuses from the fuse holders (F). See Fig. 16. Install the two new fuses.

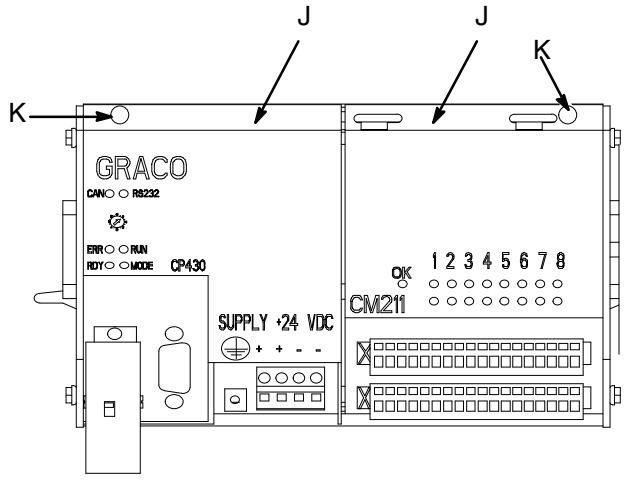


Fig. 17

Replacing Control Modules

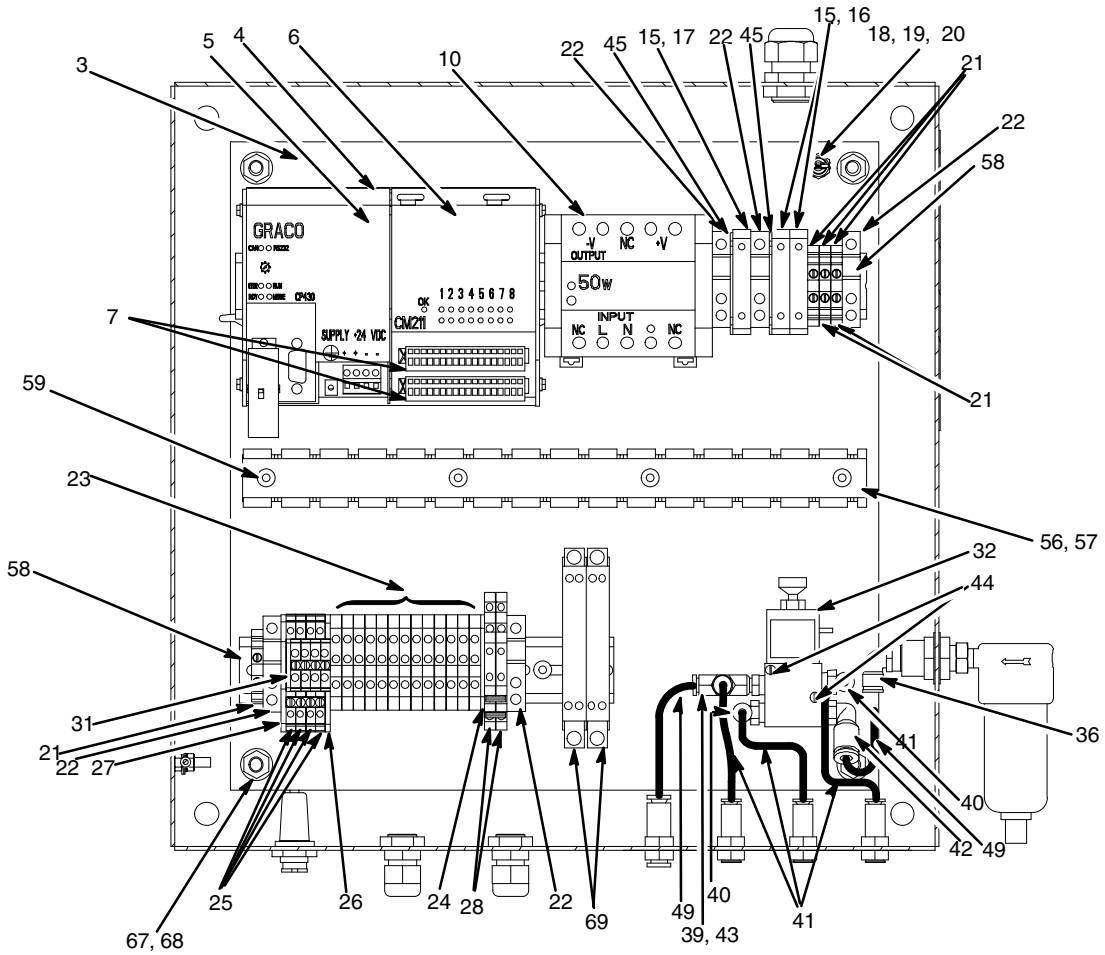
1. Turn the 2K Monitor power switch (D) to off. See Fig. 12.
2. Turn off the main power to the 2K Monitor controller.
3. Open the controller door.
4. Remove the screws (K) from the modules (J) between the removed end plate and the module being replaced. See Fig 17.
5. Slide the module(s) away from the module being replaced to unplug that module from the others.
6. Remove the module. Install the new module and push the other modules against it.
7. Secure the modules with the screws (K).

Notes

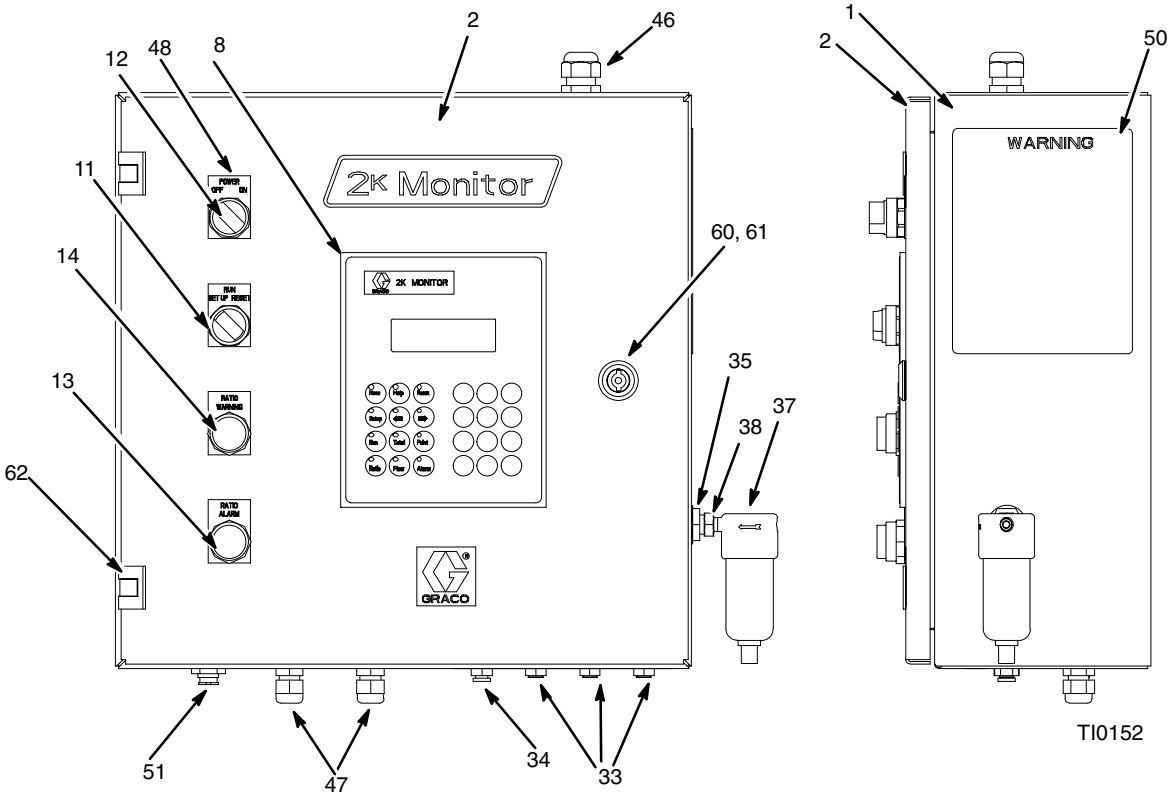
Parts

Ref. No.	Part No.	Description	Qty.
1	196150	ENCLOSURE 16x16x6”	1
2	196151	DOOR	1
3	196152	PLATE, back panel	1
4	115798	RACK, 2 module slots	1
5	115808	PROCESSOR, CP430	1
6	115800	MODULE, combination CM211	1
7	115799	CONNECTOR, plug	2
8	115801	DISPLAY, user interface	1
9	196091	WIRE HARNESS, user interface	1
10	115802	POWER SUPPLY, +24VDC 50W	1
11	513499	SWITCH, 3 position (2 NO)	1
12	195061	SWITCH, 2 position (2 NO)	1
13	115803	LIGHT, 24VDC, red	1
14	115804	LIGHT, 24VDC, amber	1
15	514556	HOLDER, fuse	3
16	114788	FUSE, time lag 2A, 250V	2
17	115805	FUSE, time lag 2.5A, 250V	1
18	104029	CLAMP, ground	1
19	111307	WASHER, lock M5	3
20	110911	NUT, hex M5	5
21	112443	TERMINAL BLOCK, ground	4
22	112446	BRACKET, end, universal	5
23	112444	TERMINAL, block	13
24	112445	COVER, end	1
25	114885	TERMINAL, block, double	4
26	114884	PLATE, spacer	1
27	114886	COVER, end, double	1
28	114839	TERMINAL, block, triple	2
29	114899	CONNECTOR, shorting bar, blue	**
30	114900	CONNECTOR, shorting bar, red	**
31	114894	BAR, fixed bridge	**
32	115807	SOLENOID, 24VDC	1
33	598251	FITTING. bulkhead, 5/32T	3
34	104176	FITTING, bulkhead, 1/4T	1
35	104641	FITTING, bulkhead, 1/4T (FBE)	1
36	C19391	FITTING, elbow, 1/8npt x 1/4T	1
37	513341	FILTER, air, 5 micron	1
38	151519	ADAPTER, 1/4npt(M) x 1/8npt (M)	1
39	502722	FITTING, tee, male run	1
40	598140	FITTING, elbow, 1/8npt x 5/32T	2
41	598095	TUBE, 5/32”, OD	2 FT.
42	597151	FITTING, elbow, 1/8npt x 1/4T	1
43	551843	FITTING, reducer, 1/4T x 5/32T	1
44	100699	SCREW, pan head, 4-40 x 1”	2
45	514771	HOLDER, fuse, end	2
46	114421	CONNECTOR, strain relief	1
47	195889	CONNECTOR, strain relief	2
48	115806	PLATE, legend, (4x514025)	1
49	590332	TUBE, 1/4”, OD	2 FT.
50	194741	LABEL	1
51	193738	HARNESS, wire, local printer	1
52	65159	WIRE, 18 gauge black	A/R
53	65161	WIRE, 18 gauge, red	A/R
54	65313	WIRE, 20 gauge, green w/ yellow	A/R
55	513420	WIRE, 18 gauge, blue	A/R
56	595544	DUCT, Wireway, 1”x2”	**
57	595545	COVER, Wireway, 1”	**
58	514014	RAIL, din	**
59	114838	RIVET, pop. 3/16” diameter	8
60	114784	LATCH	1
61	114887	KEY, latch	1
62	114785	HINGE, door	2
63	111750	WASHER, flat	2
64	108050	WASHER, lock	2
65	105468	SCREW	2
66	108788	WASHER	4
67	105329	NUT	4
68	194337	RING, wire	3
69	111985	BARRIER, intrinsically safe	2

Parts

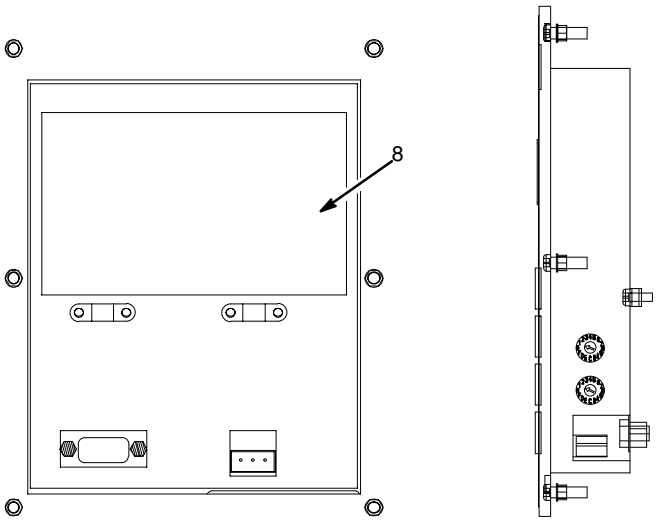


TI0154



TI0152

Parts



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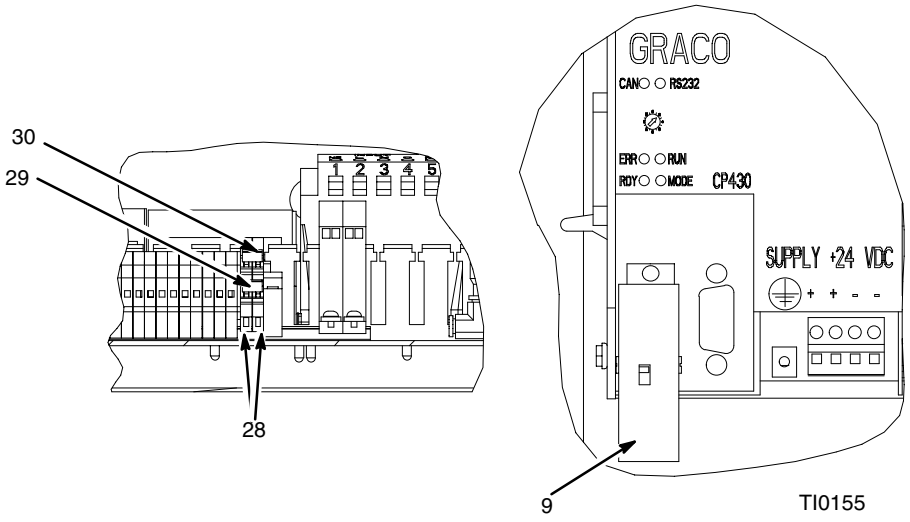


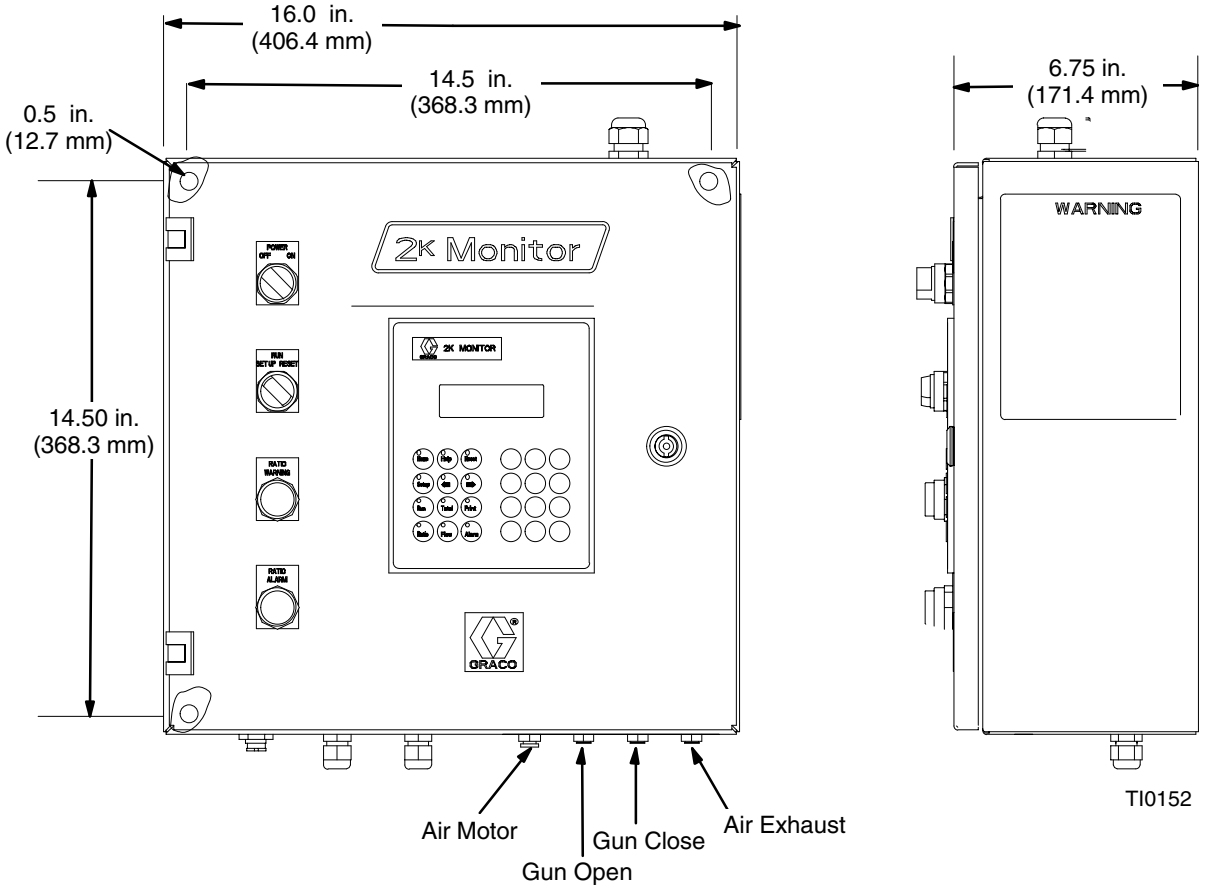
TI0155

Accessories

Flow Meter Cables

Part No.	Description
948920	6 ft. (1.8 m) cable
948922	25 ft. (7.6 m) cable
948924	50 ft.(15.24 m) cable
948926	100 ft. (30.5 m) cable

Dimensions



Technical Data

User Interface	
Display	4 x 20 character LCD display
Keypad	Membrane keypad with 24 keys, 12 of which are illuminated with LEDs.
Mix Ratio Range	0.25 to 99.99:1
Mix Ratio Tolerance Range	1% minimum (user selectable**)**
Minimum Flow Rate	50 cc/minute with G3000 meter. Using higher viscosities and/or appropriate accessory meters can enable system for flow rates as low as 10 cc/minute.
Maximum Flow Rate	2000 cc/minute with G3000 meter To 4000 cc/minute with lessor resolution meter options.
Air Supply Pressure Range	80–125 psi (550–900 kPa, 5.5–9 bar) Filtration required for atomizing air quality desired.
Fluid Filtration Required for flowmeter	100 mesh (149 micron) minimum
Viscosity Range of Fluids	20 to 30000 cps with G3000 meters Heavier viscosities can be proportioned with use of optional meters and hardware. Meters must be selected for the appropriate resolution and pressure drop at the process flow rate with that viscosity fluid.
Wetted Parts	
G3000 Meters	303, 304, 17–4 stainless steel; tungsten carbide (with nickel binder), Chemrez, PTFE, CV75
Using other Flow Meters with the 2K Monitor	
Maximum Hz signal	20 KHz
Minimum input voltage	18 Vdc
Maximum input voltage	30 Vdc
Maximum Power Requirement	50 watts
Power Supply Voltage Range	85–265VAC, 50–60 Hz., single phase
Communications	
Printer (standard)	RS–232
Network/PC (optional with kit)	RS–485
Network Communication Protocol	Modbus
Cable Lengths	
Printer Cable	
Standard	10 ft. (3.05 m)
Maximum	50 ft. (15.2 m)
Network Cable	
Minimum	none
Total cable maximum length	4000 ft. (1220 m)

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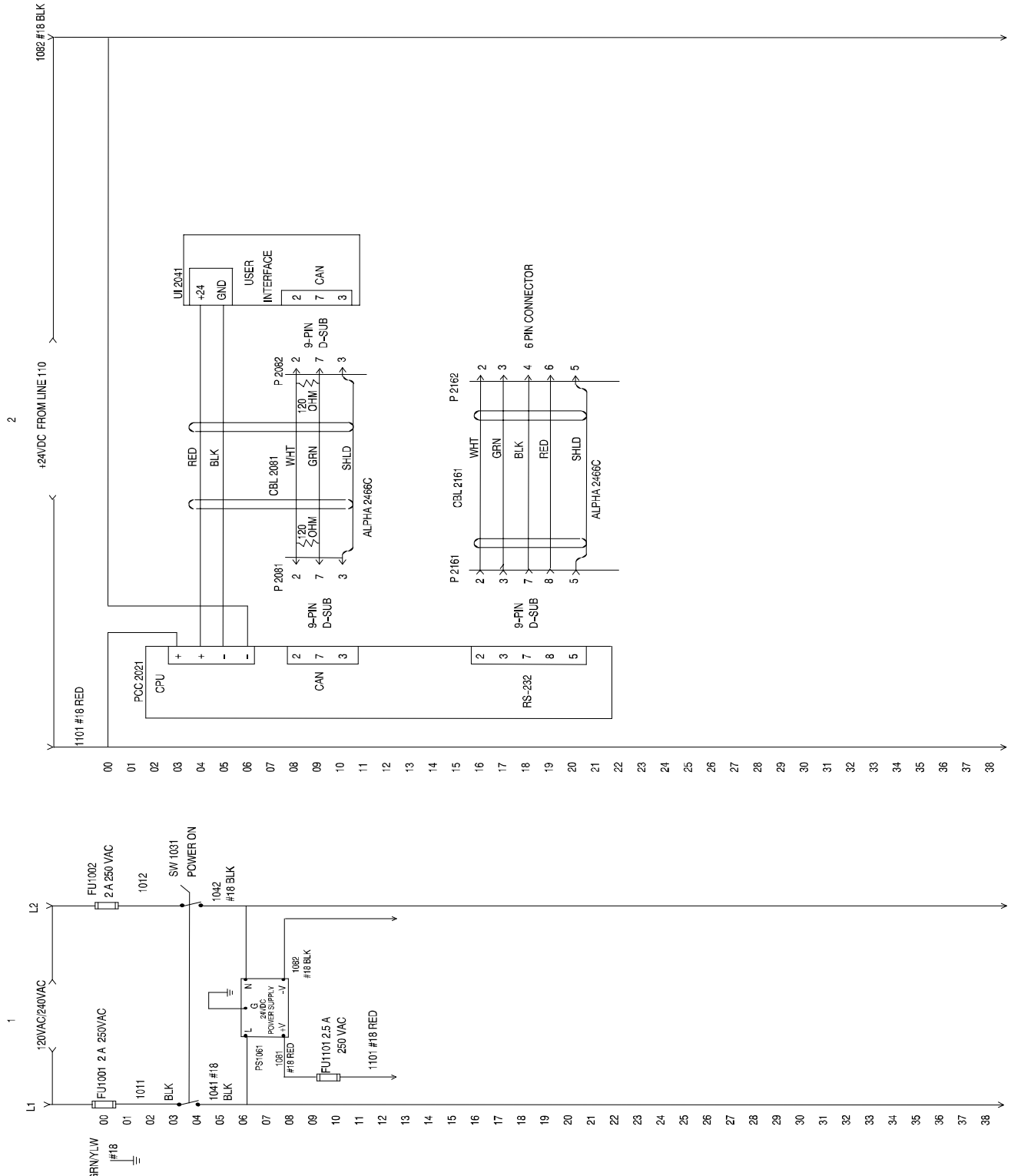
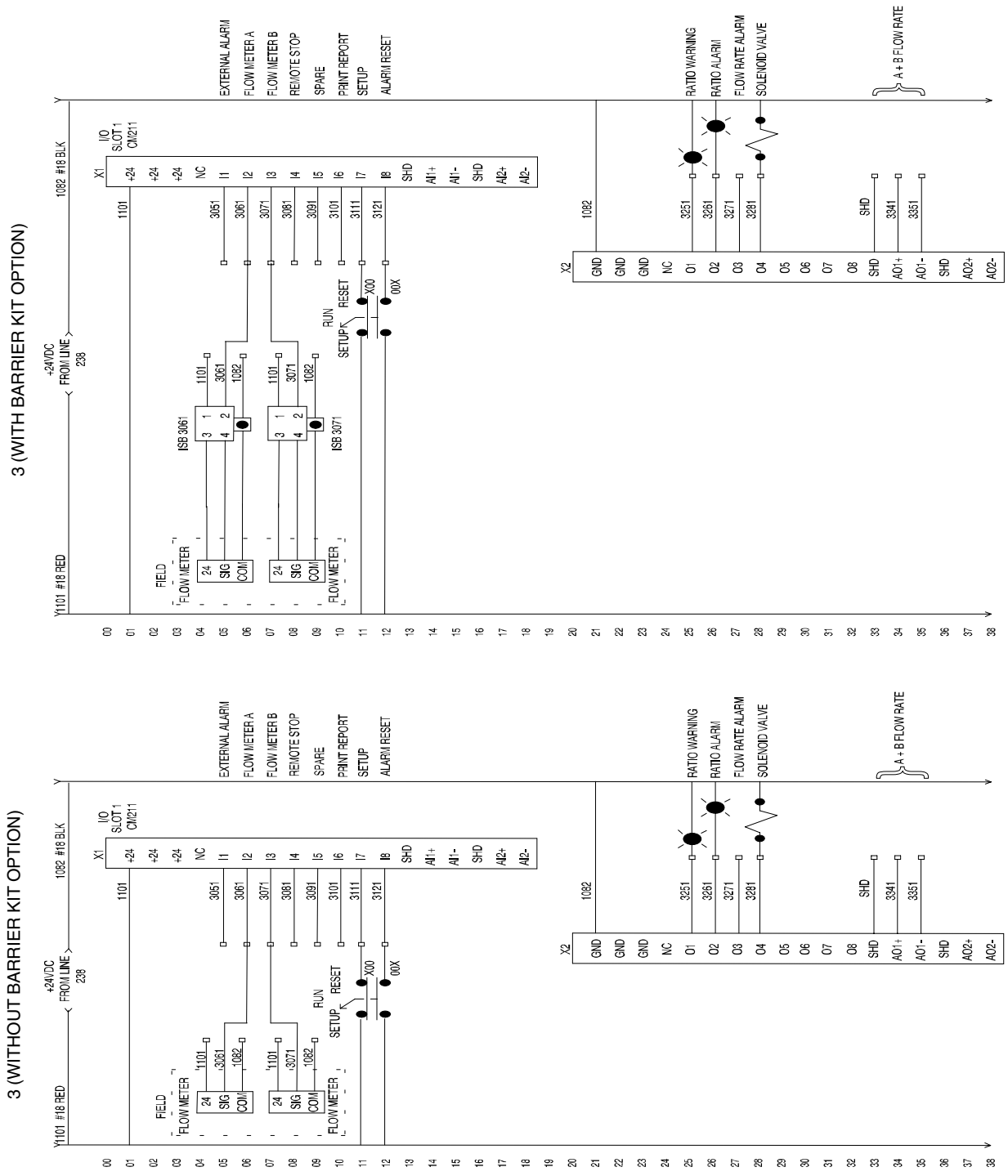
Technical Data

Display Parameters	
Grand Totalizer	
Selectable Units	L, gal
Count	Up
Maximum displayed value	Non-volatile memory 99999999 L or 2642079 gal
Batch Totalizer	
Selectable Units	L, gal
Count direction	Up
Maximum displayed value	99999.9 L or 26420.1 gal
Job Totalizer	
Selectable Units	cc, oz.
Count direction	Up
Maximum displayed value	999999 cc or 33806 oz
Reset	Manual
Flow Rate	
Display update time	1 second
Background lighting	
No activity shut-off time	10 minutes

Technical Data




3 (WITH BARRIER KIT OPTION)
3 (WITHOUT BARRIER KIT OPTION)
TI0158
+24VDC FROM LINE 238
Y1101 #18 RED
1082 #18 BLK
I/O SLOT 1 CM211
X1
X2
EXTERNAL ALARM
FLOW METER A
FLOW METER B
REMOTE STOP
SPARE
PRINT REPORT
SETUP
ALARM RESET
RATIO WARNING
RATIO ALARM
FLOW RATE ALARM
SOLENOID VALVE
A + B FLOW RATE
FIELD FLOW METER
ISB 3061
ISB 3071
RUN
SETUP
RESET
X00
00X

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

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