

# Instructions



FLUID COMMANDER

## Electronic Dispensing Control

308238R

EN

For electronically controlled dispense of petroleum, synthetic-based oil, and anti-freeze. For professional use only.

Not for use in explosive atmospheres.



### Important Safety Instructions

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

**120 Vac, 60 Hz, 0.40 Amps**  
**FOR INDOOR USE ONLY**

### Model 235531, Series D

1 Fluid to 12 Stations; U.S. Measurement

### Model 235532, Series D

2 Fluids to 6 Stations; U.S. Measurement

### Model 232077, Series D

2 Fluids to 6 Stations; Metric Measurement

**C1 and cETL certifications apply to Models 235531, 235532, and 232077 only.**



3151640

Cert. to CAN/CSA Std.

C22.2 No. 61010-1

### Model 241905, Series A

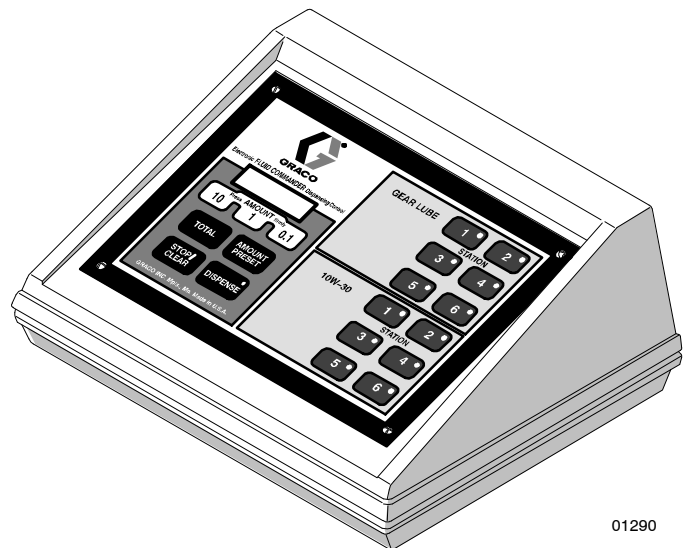
1 Fluid to 12 Stations; U.S. Measurement; Includes air and fluid solenoid valves, pulse meter, and check valve

### Model 232076, Series A

2 Fluids to 6 Stations; U.S. Measurement; Includes air and fluid solenoid valves, pulse meter, and check valve

### Model 240448, Series A

2 Fluids to 6 Stations; Metric Measurement; Includes air and fluid solenoid valves, pulse meter, and check valve



01290

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## Symbols

### Warning Symbol



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

### Caution Symbol



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

**WARNING**

 <small>INSTRUCTIONS</small>	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.</p> <ul style="list-style-type: none"> <li>● This equipment is for professional use only.</li> <li>● Read all instruction manuals, tags, and labels before operating the equipment.</li> <li>● Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.</li> <li>● Do not alter or modify this equipment.</li> <li>● Check equipment daily. Repair or replace worn or damaged parts immediately.</li> <li>● Do not exceed the maximum working pressure of the lowest rated system component. See the instruction manuals of the individual system components for their maximum working pressures.</li> <li>● Handle hoses carefully. Do not pull on hoses to move equipment.</li> <li>● Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 66°C (150°F) or below -40°C (-40°F).</li> <li>● Do not stop or deflect fluid leaks with your hand, body, glove, or rag.</li> <li>● Follow the <b>Shutdown Procedure</b> on page 12 whenever you stop dispensing; or clean, check, or service the equipment.</li> <li>● Comply with all applicable local, state, and national fire, electrical, and safety regulations.</li> </ul>
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# WARNING



## FIRE AND EXPLOSION HAZARD

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

- Connect the electronic dispensing control to a grounded outlet. Ground the other equipment as instructed in their separate instruction manuals.
- All electrical products must be wired by a qualified electrician.
- The control and all electrical products described in this manual must be installed in a non-hazardous location.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop dispensing immediately**. Do not use the equipment until you identify and correct the problem.
- Keep liquids away from the electrical components.
- Disconnect electrical power at the main switch before servicing the equipment.
- Keep the dispense area free of debris, including solvent, rags, and gasoline.
- Do not smoke in the dispense area.

# Installation

KEY		
A*	Control	F*
B	Pressure Relief Kit, 237893, 1-1/2 npt (m x f)	G
C	Supply Tank	H
D	Air Shutoff Valve, bleed-type	J
E	Air Filter	K*
		L
		M*
		N
		P*
		Q
		R
		S
		See pages 16-17 to order Accessories.
		* These parts are included with Model 232076, 240448, or 241905.

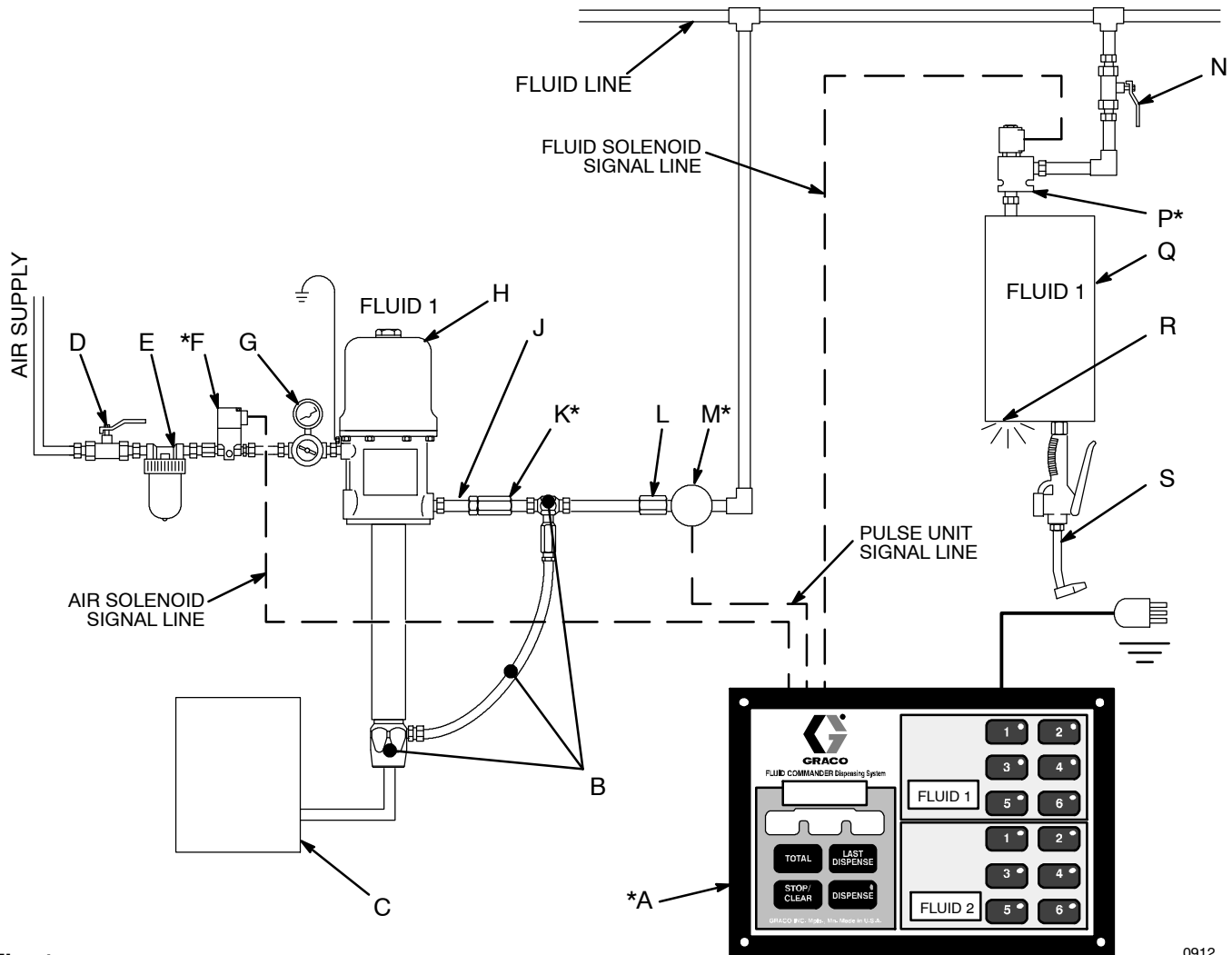


Fig. 1

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**NOTE:** The Electronic Dispensing Control is referred to as the “control” in this manual.

## How the Fluid Commander System Works

The operator programs the control by selecting a fluid and station and setting the quantity to dispense. When the operator presses the DISPENSE key, the control energizes the respective air and fluid solenoid valves. As the fluid is dispensed, the pulse meter sends pulses to the control in proportion to the amount of fluid flowing through it. When the number of pulses counted by the control is equivalent to the preset quantity, the air and fluid solenoid valves shut off. Refer to Opera-

tion for more detailed information on using the system.

**NOTE:** The Typical Installation shown above is only a guide for a basic system, showing just one fluid. Call your Graco representative to design a system to suit your needs.

## ⚠ WARNING

### COMPONENT RUPTURE HAZARD

A Pressure Relief Kit is required in your system to reduce the risk of serious injury, which can occur if excessive pressure ruptures the lines and components. Install Kit 237893 as shown in Fig. 1. See page 18 for ordering information.

# Installation

## ⚠ WARNING



### COMPONENT RUPTURE HAZARD

Be sure that all accessories and system components can withstand the pressures developed. The maximum fluid working pressure of the Fluid Commander System is 1500 psi (10.4 MPa, 103 bar). Never exceed the maximum working pressure of the lowest rated accessory (valve, pipe, fitting, hose, etc.) in your system.

**NOTE:** The accessories mentioned in this manual are shown on pages 16 and 17.

## Mount the Control

Place the control on a desktop or mount it on a wall, and locate it at least 18 in. (441 mm) off the floor.

## ⚠ WARNING



### FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

To reduce the risk of fire or explosion, and serious injury, including electric shock:



The control and all electrical products described in this manual must be installed in a non-hazardous location.

All electrical products must be wired by a qualified electrician, following all local, state, and national codes.

Connect the control only to a grounded outlet.

## Connect the Electrical Wiring

Determine the wire gauge to use based on the length of the run:

Up to 200 ft (61 m):	18 AWG
201 to 500 ft (152 m):	16 AWG
501 to 1000 ft (305 m):	14 AWG

Page 6 shows the recommended wiring schematic, using Graco supplied cables, valves, and pulsers.

## ⚠ CAUTION

If you do not use the recommended air and fluid valves, verify that the valves do not exceed 0.6 amp of supply current when operated with 24 Vdc.

Pages 7 and 8 show the alternative wiring schematic, using customer-supplied cables with Graco-supplied valves and pulsers.

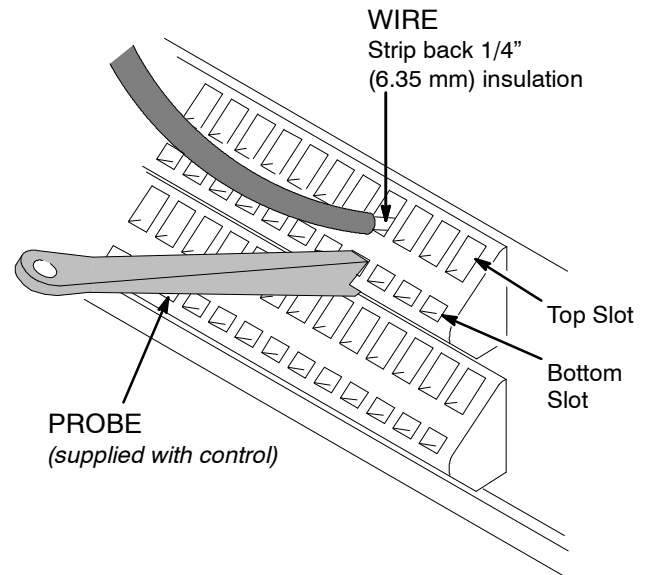
Page 8 shows where the wires connect at the rear of the control, depending on the number of fluids you are using. Fig. 2, below, shows how to make the electrical connections at the control, using the supplied probe.

## ⚠ CAUTION

To ensure correct polarity of the electrical supply, use only the power supply cord supplied with the control. Any other power supply cord may permanently damage the control.

## Apply Labels to the Control

Determine what fluids will be dispensed, and apply the appropriate labels within the raised area on the control, next to the station pads. See Fig. 3, page 11.



Hook the probe into the bottom slot of the terminal block as shown. Press the probe down. Insert the wire into the top slot and remove the probe.

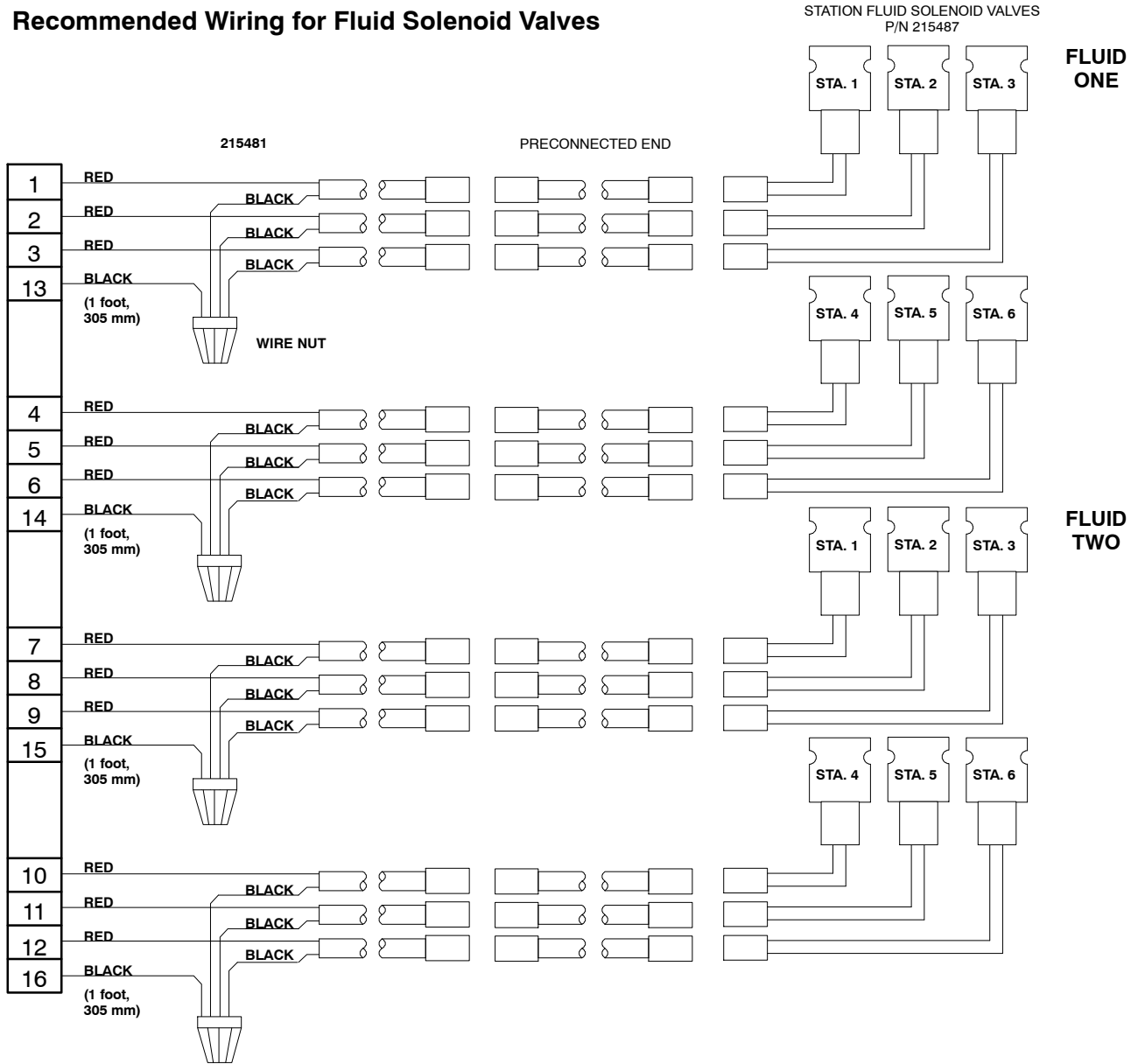
**Fig. 2**

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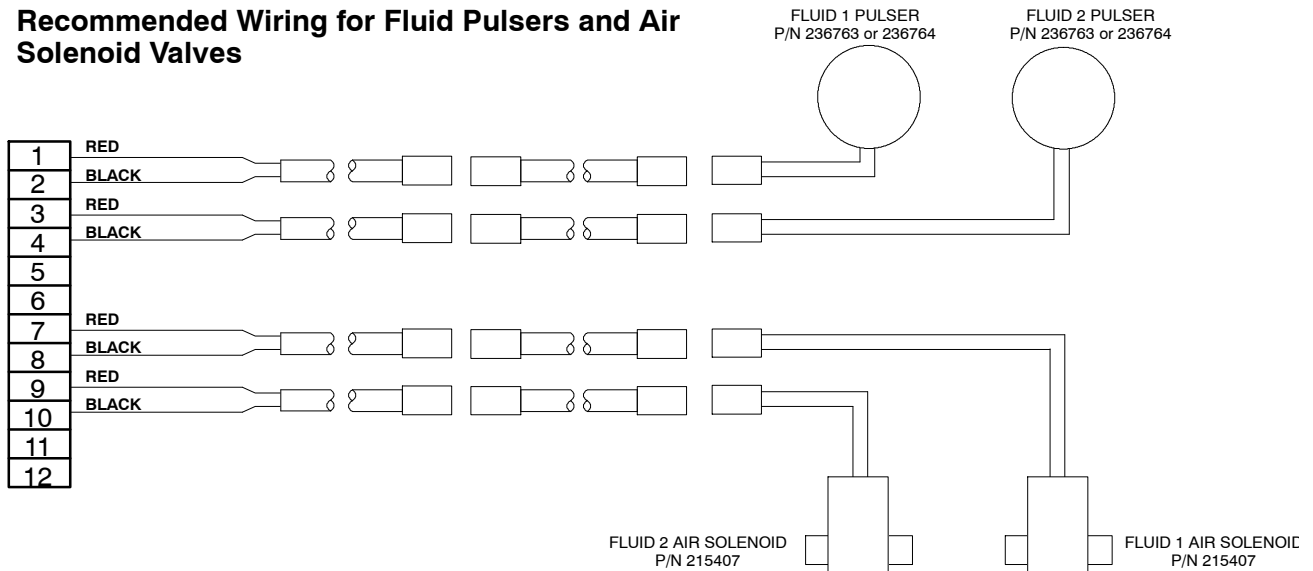
# Installation - Recommended Wiring

Example uses Graco supplied cables, valves and pulsers. See Accessories, pages 16-17.

## Recommended Wiring for Fluid Solenoid Valves



## Recommended Wiring for Fluid Pulsers and Air Solenoid Valves

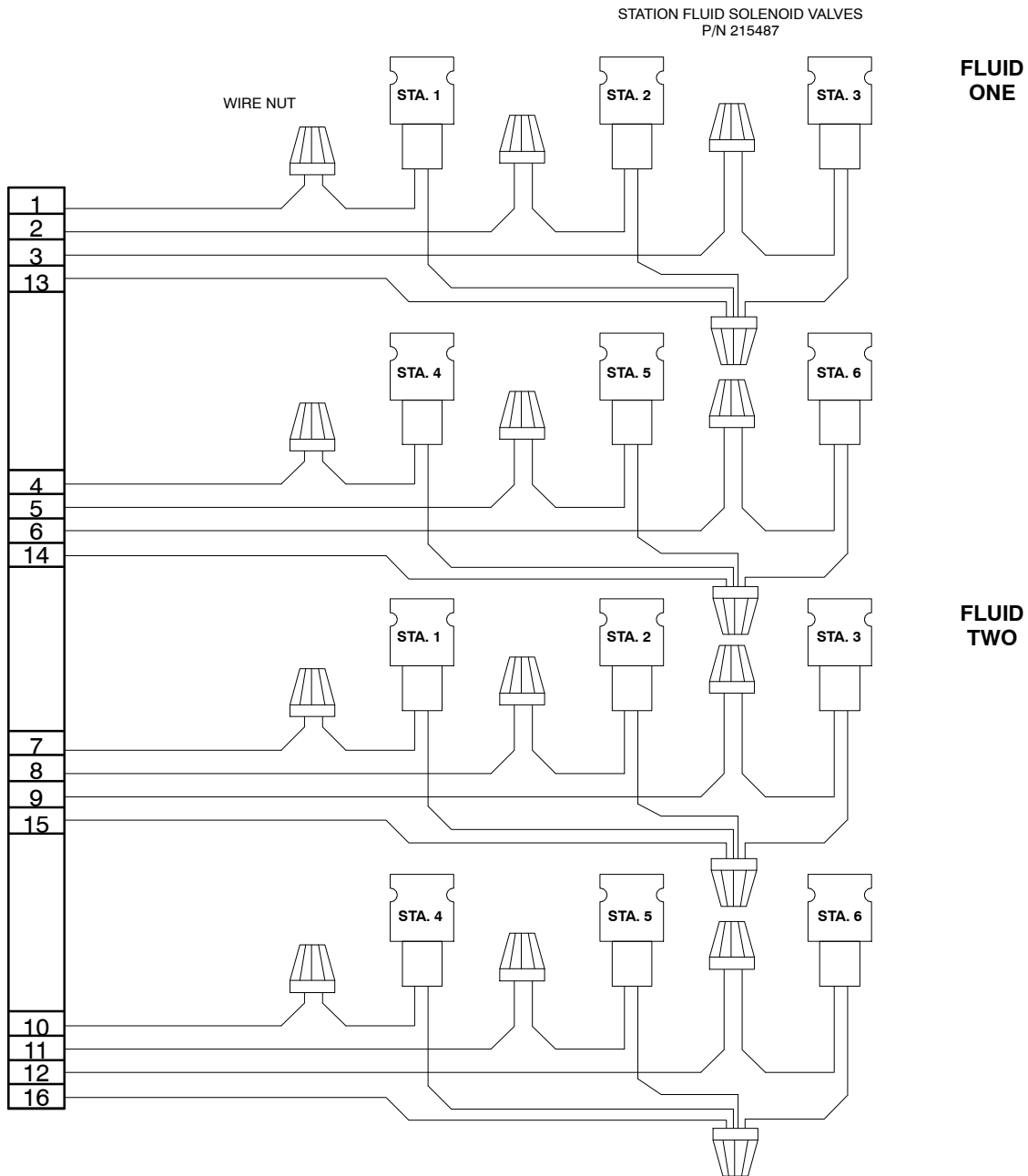


# Installation - Alternative Wiring Scheme

Example uses customer-supplied wires. Valves and pulsers supplied by Graco. See Accessories, pages 16-17.

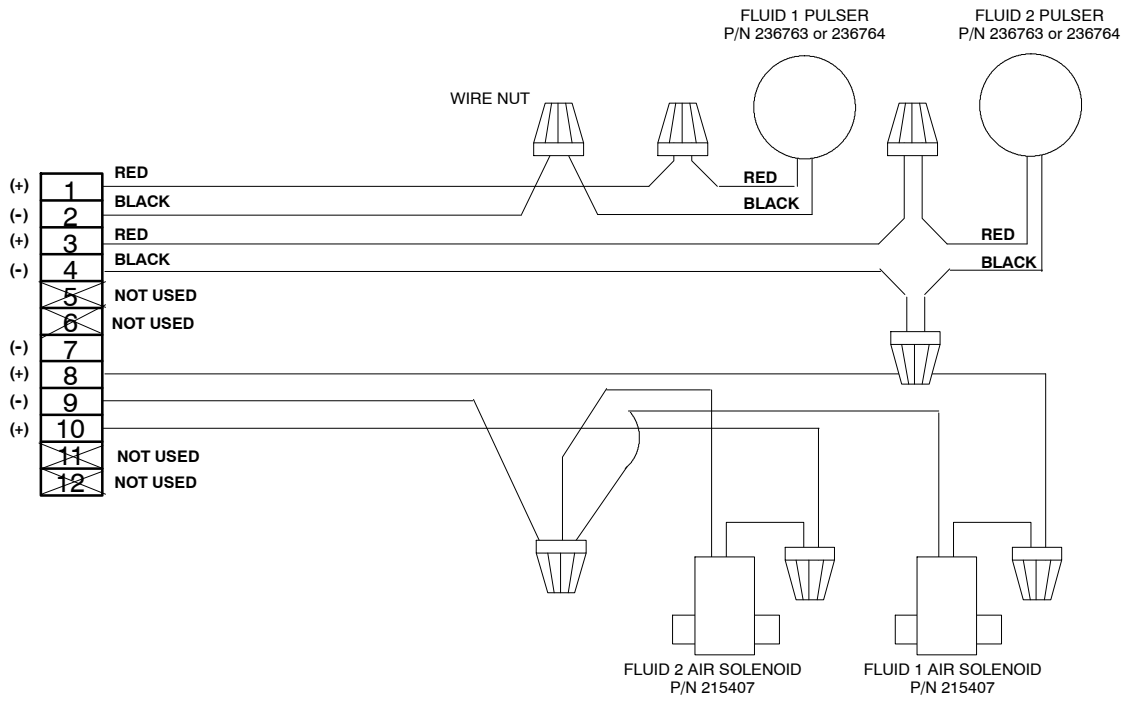
**NOTE:** Wire size is dependent on distance from control module to solenoid valve.

## Alternate Wiring for Fluid Solenoid Valves



# Installation - Alternative Wiring Scheme

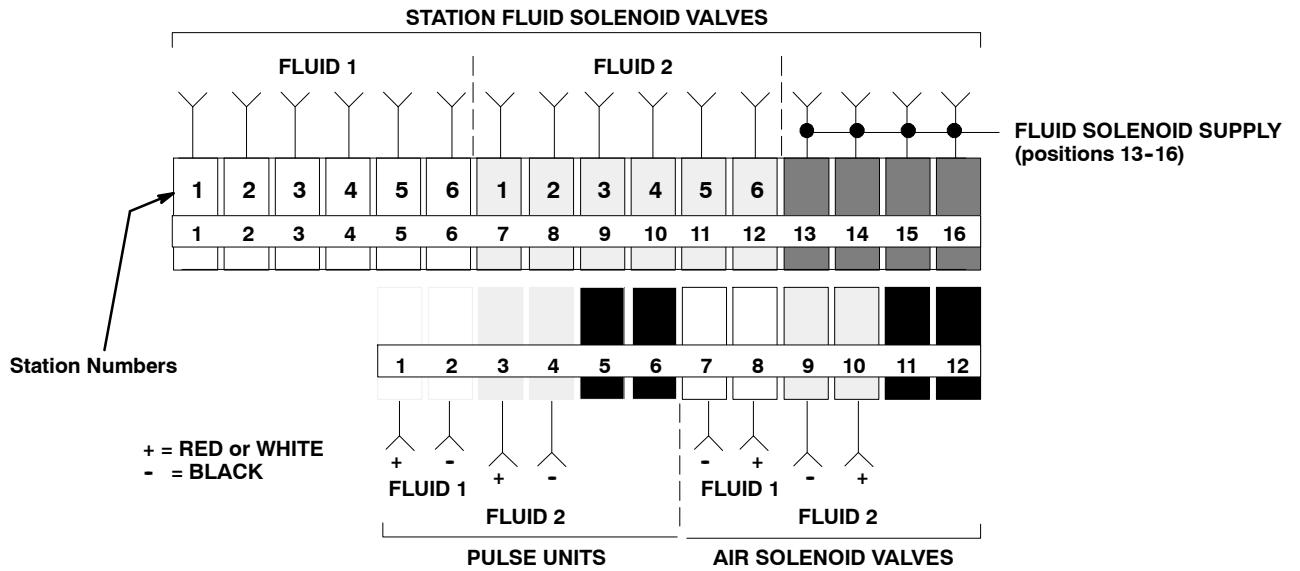
## Alternate Wiring for Fluid Pulsers and Air Solenoids



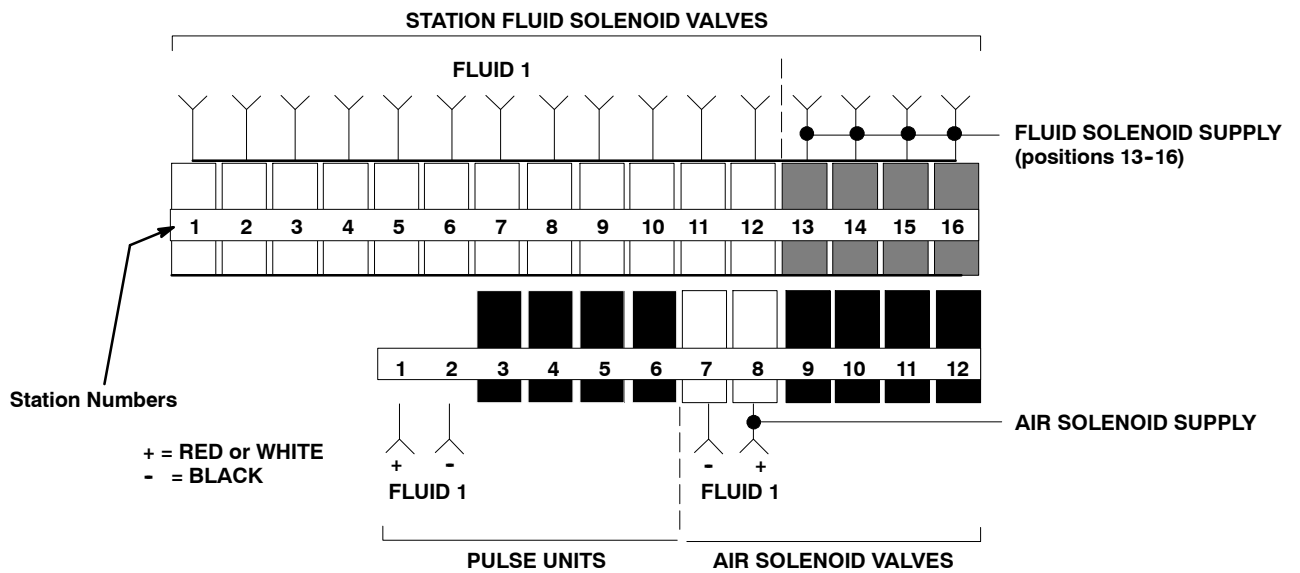


# Installation - Wiring at Control

## Two Fluids To Six Stations



## One Fluid To Twelve Stations



# Operation

## CAUTION

To prevent the system from overheating, do not leave the control in the dispense mode without dispensing for longer than 1 hour.

**NOTE:** Refer to Fig. 3, page 11.

## Program the Security Code and Set the Units of Measurement

A four digit security code is required to activate the control after turning it on. This prevents unauthorized use of your system. Refer to the instructions on the last page of this manual to set the security code.

The control is factory-set to dispense in quarts (U.S.) or liters (metric). Refer to the instructions on the last page of this manual to change the units of measurement. Tear out the last page and keep it in a secure place.

## Activate the Control

Turn on the switch at the rear of the control. During power-up, all display segments must show and all station and dispense lights must light steadily for 3 to 4 seconds. When the display shows four dashes, enter your security code.

## Enter the Order

Press the station number key for the appropriate fluid. The light on the key will come on.

Press the white keys firmly to enter the amount.

*For example,* to enter 25.4 units, press the **10** twice, the **1** five times, and the **0.1** four times.

If you make a mistake, press **STOP/CLEAR** and enter the total amount again.

**NOTE:** Holding-down an amount key will cause the digit to change continually until the key is released.

Press **DISPENSE**. The digital display shows all zeros and the **DISPENSE** light blinks. As the order is dispensed, the display counts up and the fluid to the reel is shut off when the preset amount is delivered.

## To Check the Preset Amount During Dispense.

Press and hold **AMOUNT PRESET**. The order continues to be delivered unless you stop or clear it.

## To Stop the Dispense and Check the Preset Amount

Press **STOP/CLEAR** and then press and hold **AMOUNT PRESET** to verify the original order. Press **DISPENSE** to continue the order.

## To Stop or Clear an Order

Press **STOP/CLEAR** twice to cancel and clear the order.

**NOTE:** The control delivers just one fluid to one station at a time. During delivery, all pads are inactivated except **AMOUNT PRESET** and **STOP/CLEAR**.

## To Find the Total Units Delivered of Each Fluid

Press any station key for one fluid. Press and hold **TOTAL** to read the amount. Repeat for the other fluid.

# Operation

## KEYPAD FOR TWO FLUIDS TO TWO STATIONS

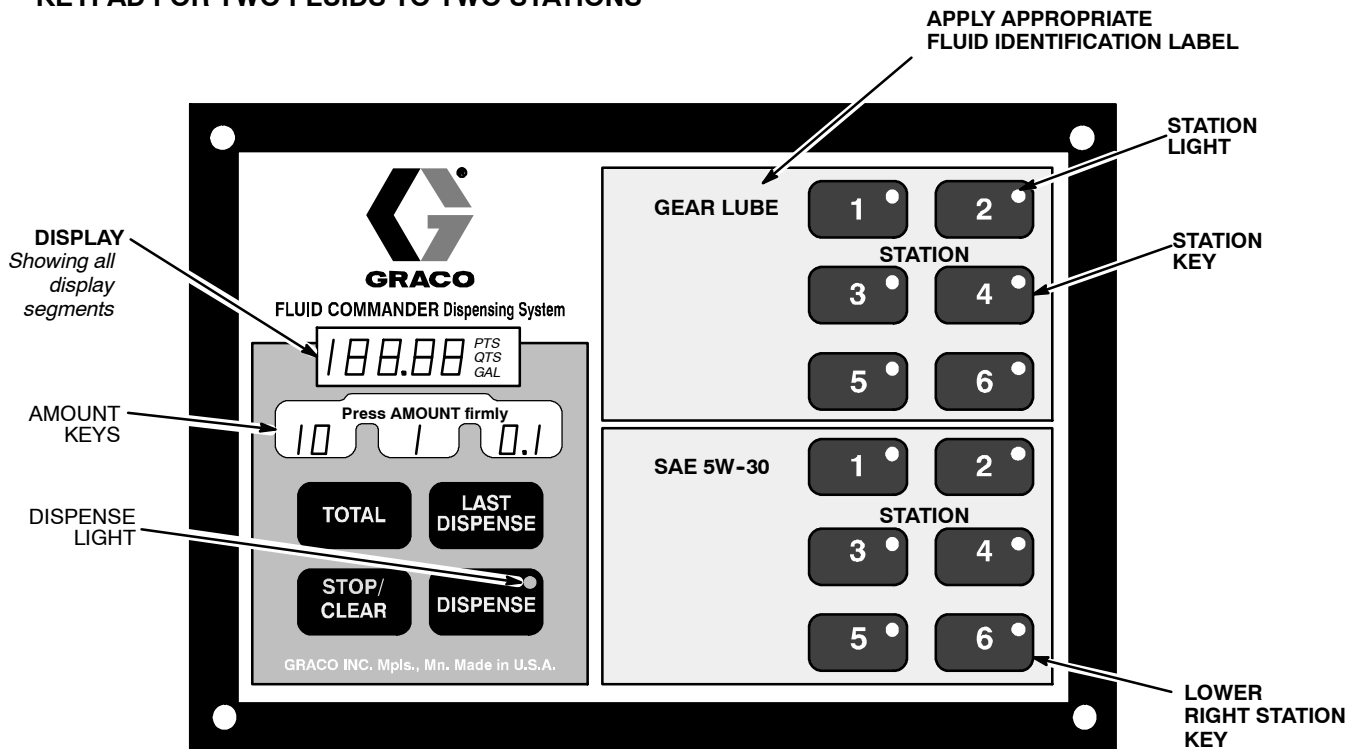


Fig. 3

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## Maintenance - Control

### If Power is Cut off

1. Each control has a built-in backup battery for its memory. When power is restored, reactivate the control by entering the security code. The total amounts dispensed will be stored in memory. If power was cut off during a dispense cycle, the control will show the fluid, station, and amount already dispensed. Just press **DISPENSE** to continue.
2. The ON/OFF switch is also a 0.40 amp circuit breaker. If the system shuts off unexpectedly, switch it off and on again. If the problem continues, first check the hard wiring. If the control seems to be the problem, return it to Graco for repair.

### To Clean the Control

Spray mild household cleaner (only) on a soft cloth and wipe the control clean. Do not allow the cleaner or any other fluid to seep under the front panel.

### The Control is Not User-Repairable

Do not open the control or attempt to make any repairs yourself

# Maintenance - Fluid Solenoid Valve

## Shutdown Procedure

### WARNING



#### ELECTRIC SHOCK HAZARD

To reduce the risk of serious injury, including electric shock or splashing fluid in the eyes or on the skin, always follow this procedure before servicing any part of the Fluid Commander system and before checking for loose or shorted wires.

1. Turn off the control and unplug it.
2. Shut off the power to the pump(s)
3. Relieve fluid pressure as instructed in your pump and/or dispensing valve manual(s).

## To Clean the Solenoid Valve

The solenoid valve is normally closed. Foreign matter could hold the valve open, preventing it from stopping the fluid flow. If that happens, follow the procedure below.

1. Follow the **Shutdown Procedure**, above. Be sure to open the dispensing valve controlled by the solenoid valve to relieve line pressure.
2. Close the shutoff valve ahead of the solenoid valve.
3. Unscrew the nut, remove the operator, and unscrew the piston from the body. See Fig. 4.

4. Clean the parts and the seat in the body. Blow air into the body to clear the fluid passageways.
5. Reassemble the valve and dispense fluid to see if the open condition has been corrected. If it has not, replace the solenoid valve.

**NOTE:** Dispense fluid at the dispensing valve, controlled by the cleaned or replaced solenoid valve, until all air is purged from the system.

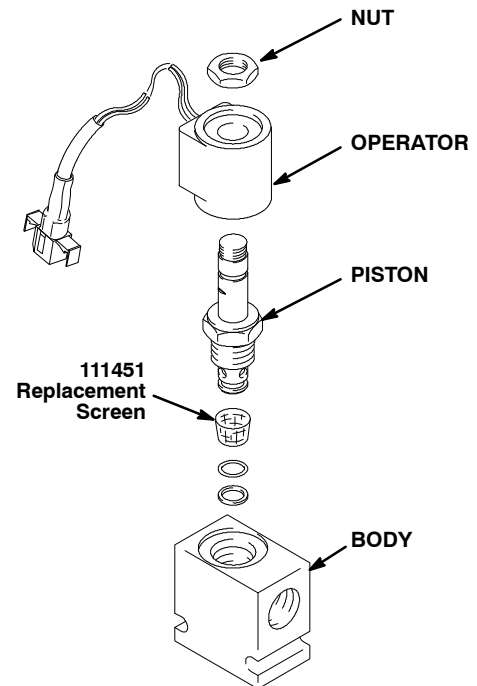



Fig. 4

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# Maintenance – Pulse Meter

**⚠ WARNING**

**ELECTRIC SHOCK HAZARD**  
To reduce the risk of serious injury, follow the **Shutdown Procedure** on page 12 before servicing the pulse meter.



**⚠ CAUTION**

To avoid damaging the electronic components of the pulse meter module (1):

1. Do not lay anything on the pulse module.
2. If you lay the pulse module down, make sure the open side faces up.
3. Do not twist or force the parts. Align parts properly as instructed.

## To Replace the Complete Pulse Meter

1. Follow the **Shutdown Procedure** on page 12.
2. Disconnect the cable from the pulse module, taking note of the wiring polarity.
3. Remove the old pulse meter and install the new one, observing the original wiring polarity.

## To Replace the Electronic Pulse Module

1. Follow the **Shutdown Procedure** on page 12.
2. Disconnect the cable from the pulse module, taking note of the wiring polarity.
3. Remove the screws. Lift off the pulse module.
4. Install a new pulse module (1). Align the notches on the underside of the pulse module with the cutaways in the top of the metering unit. Use the new screws and torque them oppositely and evenly to 10–12 in-lb (1.2–1.4 N•m). See Fig. 5.
5. Connect the pulse module wires to the cable, observing the original wiring polarity.

## To Replace the Metering Unit

1. Follow the **Shutdown Procedure** on page 12.
2. Remove the screws. Lift off the pulse module.

3. Remove the old metering unit.
4. Install a new metering unit (2). Align the notches on the underside of the pulse module with the cutaways in the top of the metering unit. Use the new screws and torque them oppositely and evenly to 10–12 in-lb (1.2–1.4 N•m). See Fig. 5.

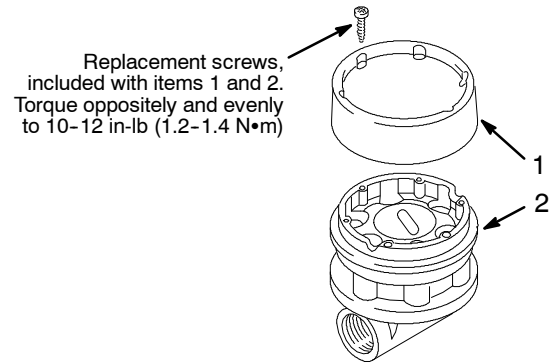


Fig. 5

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## To Verify the Accuracy of a Pulse Meter Module

1. Use a clean, calibrated container. If using a single container, be sure to clean it after each dispense.
2. Have pump air pressure at the lowest possible setting for dispensing fluid.
3. Put the tip of the nozzle at the bottom of the calibrated container.
4. If the tip of the dispense valve does not reach the bottom of the calibrated container, use a length of plastic tubing over the tip of the nozzle to ensure liquid enters the container from the bottom.
5. Trigger the gun slowly so the fluid immediately covers the tip of the dispense valve.
6. Dispense 1 quart of fluid according to the metered display on the dispense valve.
7. Allow product to sit for 20 minutes, then compare the actual, physical measurement in the calibrated container to the measurement displayed on the meter.

**NOTE:** The procedure above will determine if the meter is accurately dispensing the product and minimize testing errors. Some variance may occur depending on the viscosity and flow rate of the fluid.

# Troubleshooting

Problem	Cause	Solution
Will not dispense - ready light is on or dim	Pump failed	Repair pump
	Check valve installed backward	Verify fluid flow path through check valve
	Air solenoid failed	Clean or replace solenoid
	Fluid solenoid and light <ul style="list-style-type: none"> <li>Fluid solenoid plumbing installed incorrectly</li> <li>Carbon steel fluid solenoid being used with anti-freeze</li> <li>Fluid solenoid wired incorrectly</li> <li>Incorrect bulb in Ready Light kit</li> <li>Fluid solenoid is clogged or has failed</li> </ul>	<ul style="list-style-type: none"> <li>Verify the correct plumbing installation from the markings on the solenoid (i.e., P=Input [pressure], R=Output [Return])</li> <li>Use 514150 fluid solenoid for anti-freeze</li> <li>Verify wiring using this manual (see pages 6-9) and the Ready-Light instruction form (307696)</li> <li>Verify bulb is Graco JKL1820</li> <li>Clean or replace the fluid solenoid</li> </ul>
Will not dispense - panel light on, ready light off	Incorrect wiring at the back of the console	Verify wiring, (see pages 6-9)
	Wiring continuity problem	Check voltage on the back of panel. If the reading is 20-24 VDC at the box with no light on and the solenoid is not active, replace wiring (see pages 6-9).
	Console failure	If the voltage reading is not 20-24 VDC, replace console
	Fluid solenoid is clogged or has failed	Clean or replace solenoid
Low dispense flow - ready light is on	Clogged inlet strainer on dispense valve	Clean or replace the inlet strainer
	Fluid solenoid is clogged or has failed	Clean or replace the fluid solenoid
	Pump is undersized (pressure and/or flow) for application	Replace with properly sized pump
	Plumbing is blocked somewhere in the system	Flush plumbing lines without dispense valves or filter screens installed
Will not count - pump is working, ready light on	Pulse meter failed	Swap pulse meter module with known good module to determine if problem is the pulse meter, wiring, or control box
	Pulse meter module installed incorrectly	Verify module is wired according to the polarity and that the notch of the module aligns with the notch in the module base of the pulse meter
	Wiring problem	If still no count, verify voltage on the lower pin strip. Should read a minimum of 15 VDC (see pages 6-9).
	Console failed	Replace console

# Troubleshooting

Problem	Cause	Solution
Will not count – pump is working, ready light on. Anti-freeze applications	Pulse meter failed	Swap pulse meter module with known good module to determine if problem is the pulse meter, wiring, or control box
	Wiring problem	Verify the the pulse meter is installed within 24” of the pulse meter converter
	Pulse meter converter failed	Replace pulse meter converter
	Console failed	Replace console
Will not shut off – ready light on	Console failed (verify the the module display shows the amount dispensed)	Replace console
Will not shut off – ready light on, light shuts off when amount dispensed is attained	Fluid solenoid is clogged or has failed	Clean or replace the solenoid
Under-dispensing – (See page 13 to verify meter accuracy.)	No check valve installed before the meter	Install check valve prior to meter
	Pulse meter failed	Swap pulse meter with known good module
	Installed a 215474 mechanical pulse meter without using the 244342 converter box	Ensure the 244342 is installed per instruction form 309276
	Console failed	Replace console
Over-dispensing – (See page 13 to verify meter accuracy.)	Pump air motor pressure turned up too high, aerating oil	Dispense into calibrated container and allow fluid to settle for a minimum of 30 minutes. If volume is correct, turn air motor pressure down and test again. Stop when over-dispense problem is eliminated.
	Pulse meter failed	Swap pulse meter with known good module
	Console failed	Replace console
Console display – (----) displayed on console	Temporary loss of power to the system	After power is restored, enter password to bring up system. If password is not accepted. Refer to the “Programming Security Code and Changing Measurement Units” page for instructions.
Console display – (EEEE) displayed on console	No dispense amount was entered into the console prior to pressing the Dispense button	Ensure dispense amount is entered prior to pressing the Dispense button
Console display – unit of measure changes	Unit of measure was not programmed into the console	Refer to the “Programming Security Code and Changing Measurement Units” page for instructions.
Console display – keypad does not work	Ribbon cable between keypad and back of console is loose internally	Remove the four screws from the cover of the console. Reseat the ribbon cable and retest.

# Accessories

## REPLACEMENT PROBE 110968

For installing wires at rear of the control.

## FLUID CHECK VALVE 111620

1500 psi (10.4 MPa, 103 bar) Maximum Working Pressure; 1/2 npt(fbe)

## PRECONNECTED CABLES, 18 AWG

215481 100 ft (30.5 m), connectors both ends

## PULSE METER - Oil and ATF 236763

For U.S. Measurement (gallon/quart/pint)

### TECHNICAL DATA

#### Electrical

Input Voltage ..... 15 V Maximum  
Current Loop Output ..... 4 milliamps OFF  
10 milliamps ON

#### Hydraulic

Maximum Flow ..... 12 gpm  
(45.6 liter/min.)  
Max. Working Pressure ..... 1500 psi  
(10.4 MPa, 103 bar)  
Inlet/Outlet ..... 1/2 npt

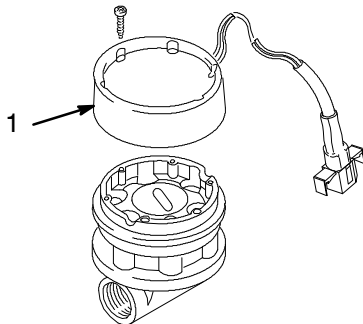
#### Wiring gauge

**required** ..... 18 AWG up to 200 ft (61 m)  
16 AWG 201 to 500 ft (152 m)  
14 AWG 501 to 1000 ft (305 m)

### Replacement Part for 236763

#### Ref.

Ref. No.	Part No.	Description
1	223655	ELECTRONIC PULSE MODULE



01325

## PULSE METER - Oil and ATF 236764

For Metric Measurement (liter)

### TECHNICAL DATA

#### Electrical

Input Voltage ..... 15 V Maximum  
Current Loop Output ..... 4 milliamps OFF  
10 milliamps ON

#### Hydraulic

Maximum Flow ..... 45.6 liter/min.  
(12 gpm)  
Max. Working Pressure ..... 10.4 MPa, 103 bar  
(1500 psi)  
Inlet/Outlet ..... 1/2 npt

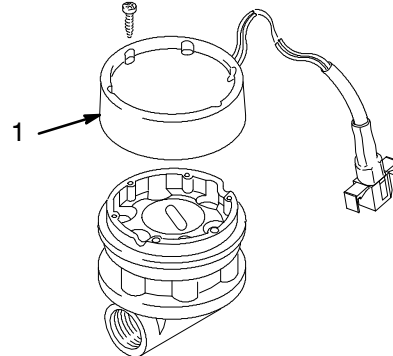
#### Wiring gauge

**required** ..... 18 AWG up to 200 ft (61 m)  
16 AWG 201 to 500 ft (152 m)  
14 AWG 501 to 1000 ft (305 m)

### Replacement Part for 236764

#### Ref.

Ref. No.	Part No.	Description
1	223655	ELECTRONIC PULSE MODULE



01325

## PULSE METER - Anti-Freeze

U.S. Measurement (gallon/quart/pint)

Order 244404 which includes:

215474 Pulse meter (English)

244342 Pulse Converter

Metric Measurement (liter)

Order both: 215475 Pulse Meter (Metric) and

244342 Pulse Converter

See instruction manuals 308847 and 309276 for more information. Available on Graco's website:

**www.graco.com.**

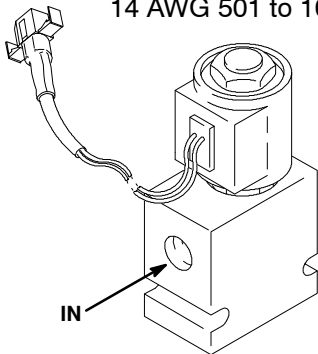


# Accessories

## FLUID SOLENOID VALVE 215487

### TECHNICAL DATA

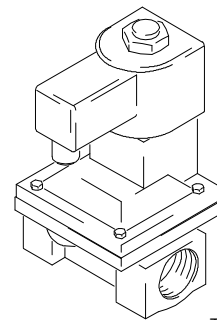
Type ..... 2 way normally closed  
 Electrical Rating ..... 28 V DC, 0.46 amp  
 NOTE: provides minimum current draw  
 when operated at 24 V DC  
 Coil Insulation ..... Class H  
 Leads ..... 18 AWG x 18 in. (457 mm) long  
 Maximum Working Pressure ..... 3000 psi  
 (21 MPa, 207 bar)  
 Inlet/Outlet ..... 1/2 npt  
 Minimum Actuation Volts Required ..... 20  
 Wiring Gauge Required for  
 Length of Run .... 18 AWG up to 200 ft (61 m)  
 16 AWG 201 to 500 ft (152 m)  
 14 AWG 501 to 1000 ft (305 m)



## FLUID SOLENOID VALVE 514150

### TECHNICAL DATA

Type ..... 2 way normally closed  
 Electrical Rating ..... 24 V DC coil, 10 watts  
 Leads ..... 3 wire; 2 similar wires used for  
 DC connect. Third wire used  
 for AC earth ground  
 Maximum Working Pressure ..... 150 psi  
 (1.0 MPa, 10 bar)  
 Inlet/Outlet ..... 1/2 npt  
 Wiring Gauge Required for  
 Length of Run .... 18 AWG up to 200 ft (61 m)  
 16 AWG 201 to 500 ft (152 m)  
 14 AWG 501 to 1000 ft (305 m)

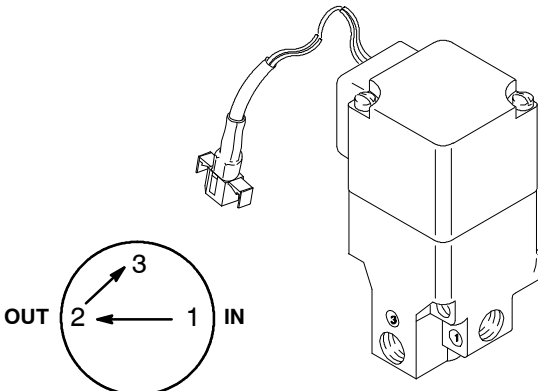


TI3108A

## AIR SOLENOID VALVE 215407

### Technical Data

Type ..... 3 way solenoid operated air valve,  
 normally closed  
 Electrical Rating ..... 24 V DC, 0.25 amps  
 Coil Insulation ..... General purpose, Class A  
 Encapsulated - Continuous Duty  
 Leads ..... 18 AWG x 12.0 in. (305 mm) long  
 Inlet/Outlet ..... Adapted to 3/8 npt  
 Wiring Gauge Required for  
 Length of Run .... 18 AWG up to 200 ft (61 m)  
 16 AWG 201 to 500 ft (152 m)  
 14 AWG 501 to 1000 ft (305 m)



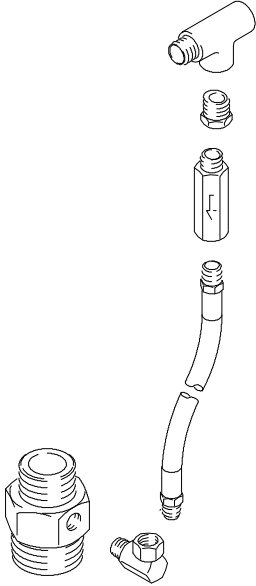
01327

# Accessories

## PRESSURE RELIEF KIT 237893

900 psi (6.2 MPa, 62 bar) Maximum Working Pressure

Relieves fluid line pressure when it exceeds 900 psi (6.2 MPa, 62 bar).

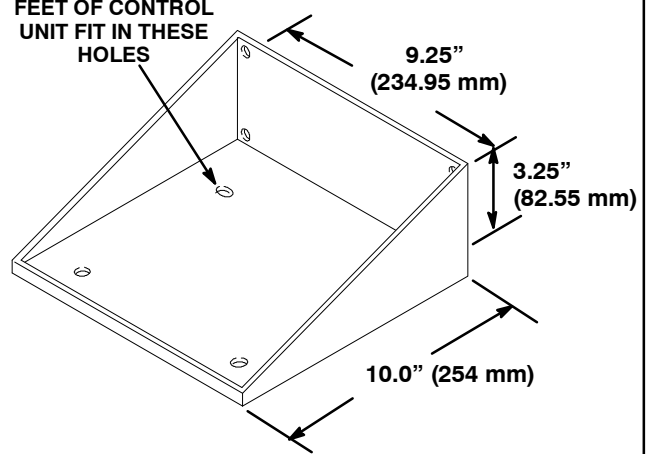


TI0692

## SHELF

186472

FEET OF CONTROL UNIT FIT IN THESE HOLES



# Technical Data

Fluid System Max. Working Pressure .....	1500 psi (10.4 MPa, 103 bar)
Power Input .....	110/120 volt, 60 Hz
Main Supply Voltage Fluctuations .....	Not to exceed $\pm$ 10% of the nominal voltage
Circuit Breaker .....	0.40 amp
Units of Measurement	
Totalizing .....	Gallons/Liters to 19999
Dispensing .....	0.01 increments up to 199.99 Pints, Quarts, Gallons, or Liters
Power Supply Cord .....	7.5 ft (2.3 m), 18 AWG,3 conductor, molded vinyl plugs, 125 Vac, 10 amps
Control Power Output .....	24 Vdc nominal at 0.60 amp maximum to any (1) fluid valve and any (1) air valve simultaneously
Backup Battery .....	Lithium, 3.6 volt, 1.0 amp hour capacity (not replaceable)
Internal Fuses .....	2.5 amp, 250 volt, non-serviceable
Operating Temperature Range* .....	+41 to 104°F (5 to 40°C)
Storage Temperature Range .....	-20 to +150°F (-28 to + 65°C)
Maximum Relative Humidity .....	80% for temperatures up to 88° F (31° C), decreasing linearly to 50% relative humidity at 104° F (40° C)
Installation Category .....	II, indoor use only
Altitude .....	Up to 6562 ft (2000 m)
Pollution Degree .....	2
Control Dimensions	
Length .....	8 in. (203 mm)
Width .....	10 in. (245 mm)
Height .....	4 in. (102 mm)
Weight .....	4.5 lb (2.0 kg)

\* If the control is operated at higher ambient temperatures, periods of no flow must be more frequent and longer to prevent overheating.

# Graco Standard Warranty

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

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

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

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# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the distributor closest to you:

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

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

This manual contains English. MM 308238  
For patent information: [www.graco.com/patents](http://www.graco.com/patents)

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# Programming Security Code and Changing Measurement Units

For the Fluid Commander Dispensing Control

**TEAR OUT THIS SHEET ALONG THE DOTTED LINE  
and keep it in a secure place after initially entering  
the security code and setting the measurement units.**

## TO PROGRAM YOUR SECURITY CODE

1. Turn on the control.
2. When the display shows - - - - press the following keys: **DISPENSE**, **TOTAL**, most lower right station key, and **0.1** key.
3. The display shows **P P P P**.
4. Enter any four station key numbers; this is your security code.
5. Enter the same four numbers again to activate the control.
6. Record the sequence of numbers and keep in a secure place.

## TO CHANGE MEASUREMENT UNITS

*(Gallon, Quart or Pint only – controls measured in liters cannot be changed)*

1. Turn on the control.
2. When the display shows - - - - press the following keys: **DISPENSE**, **TOTAL**, most lower right station key, and **TOTAL**.
3. The display shows **L1** and the station lights come on for the first fluid.
4. Press the **0.1** key to change the measurement units.
5. Press any station key for the next fluid, and press the **0.1** key to change units.
6. Press **TOTAL** to end.
7. Enter your security code to activate the control.

tear out page along this line