

Pump Air Control (PAC) for Matrix Systems

312417F
EN

- For Control of Air to Pump Used with Matrix Meters -

Part: 247436

Includes global 120 - 240V (50 - 60 Hz) converter

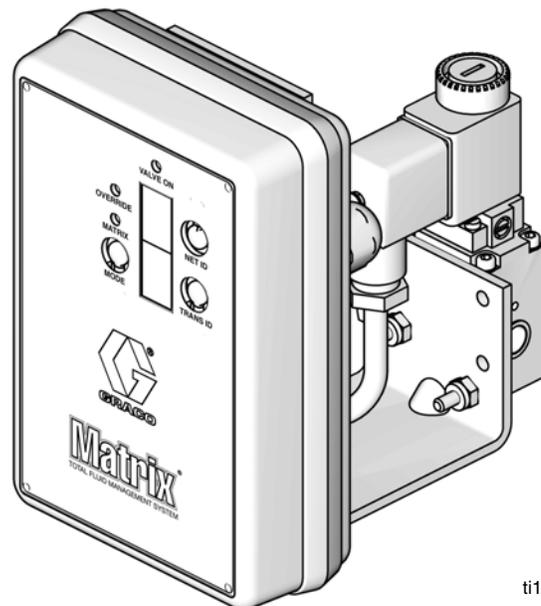
Maximum Air Pressure 145 PSI (1 MPa, 10 bar)

Minimum Air Pressure 23 PSI (.17MPa, 1.7 bar)



Important Safety Instructions

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



ti11959a

Pump Air Control contains an RF device with the following approvals:



FCC ID: TFB-FREESTAR
IC: 5969A-FREESTAR

Industry Canada Statement

The term "IC" before the certification/registration number only signifies that the Industry Canada technical specifications



N14939 - FREESTAR
ZFMSM-101-1 (CEL) / FS24-100ST (LSR)



Intertek

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>ELECTRIC SHOCK HAZARD</p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
	<p>FIRE AND EXPLOSION HAZARD</p> <p>When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources, such as cigarettes and portable electric lamps. • Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground all equipment in the work area. • Use only grounded hoses. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

Installation

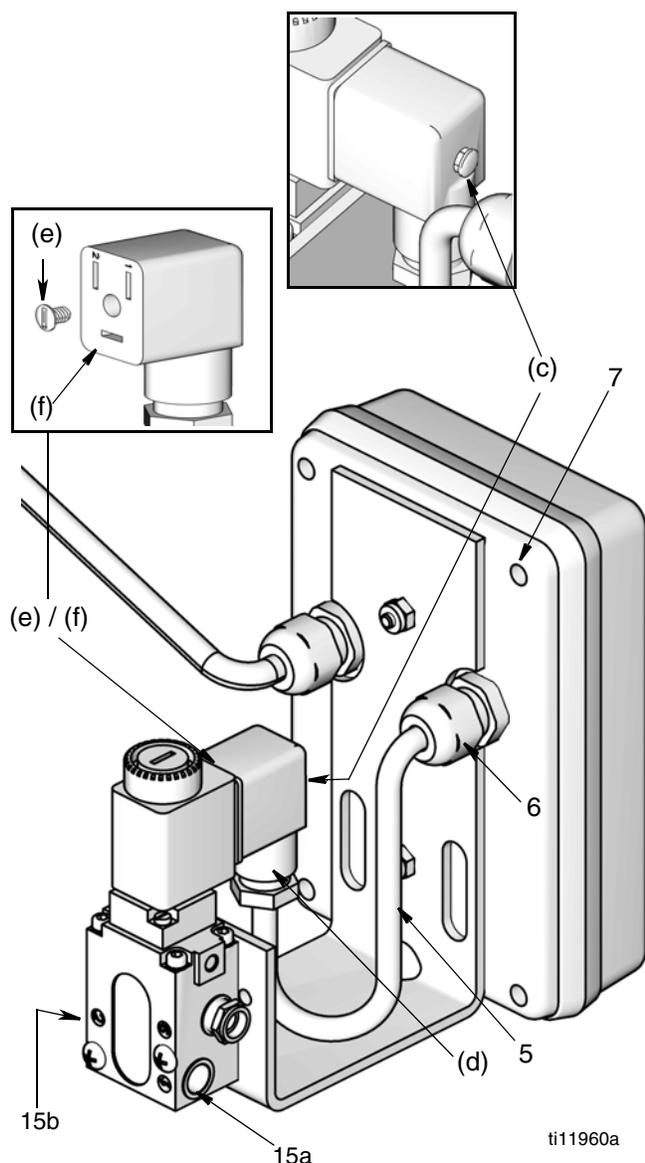
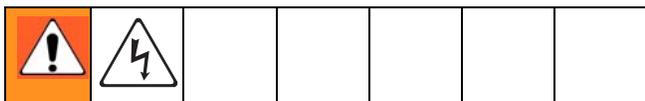


FIG. 1

1. Connect air line inlet to port (15a) (FIG. 1) on PAC.
2. Connect pump air inlet to port (15b) (FIG. 1) on PAC.
3. Tighten fittings securely.
4. Plug power cord in a grounded outlet.

Remote Mounting

Unless otherwise instructed, see FIG. 1 for reference numbers included in these instructions.

The PAC controller can be mounted in a remote, secure location, away from the solenoid. The maximum distance the two components can be separated is 75 feet.



1. If the PAC power cord is plugged into an electric outlet, unplug power cord.
2. Remove the 4 screws (7) from each corner of the PAC cover and remove cover.
3. Inside PAC control box, disconnect P1 SOL (white), P2 SOL (black) and P3 GROUND (green) from terminal block (See Wiring Diagram, page 7.)
4. Loosen cord grip (6) and completely remove cable.
5. Loosen screw (c) on the back of the mini DIN solenoid connection and disconnect solenoid.
6. Remove screw (e) from front cover (f) on mini DIN solenoid connection.
7. Inside mini DIN solenoid connector, disconnect black wire from terminal labeled 1, white wire from terminal labeled 2 and green wire from GROUND terminal.
8. Loosen connector cord grip (d) and completely remove cable.
9. Replace cable with a longer cable (75 feet maximum), feeding one end through cord grip (6) and into inside of PAC control box and the other through cord grip (d) and into mini DIN solenoid connection.

NOTE:

- a. Replacement cable must be 18 AWG, pressure extruded PVC jacket cable or hard usage cord type "S" with STO standard PVC jacket mini DIN solenoid
 - b. Connector (d) (Part No. 121048) is required to connect cable to solenoid.
10. Inside PAC control box connect P1 SOL (white), P2 SOL (black) and P3 GROUND (green) to terminal block (see Wiring Diagram, page 7).

Installation

11. Inside mini DIN solenoid connector, connect black wire to terminal labeled 1, white wire to terminal labeled 2 and green wire to GROUND.
12. Replace cover (f) and screw (e) on mini DIN solenoid connection.
13. Reconnect mini DIN solenoid connection to solenoid.
14. Tighten screw (c) on back of mini DIN solenoid connection.
15. Tighten cord grips (6) and (d).
16. Remotely mount solenoid securely.
17. Mount PAC control box in secure location using bracket (4).

Registering the PAC

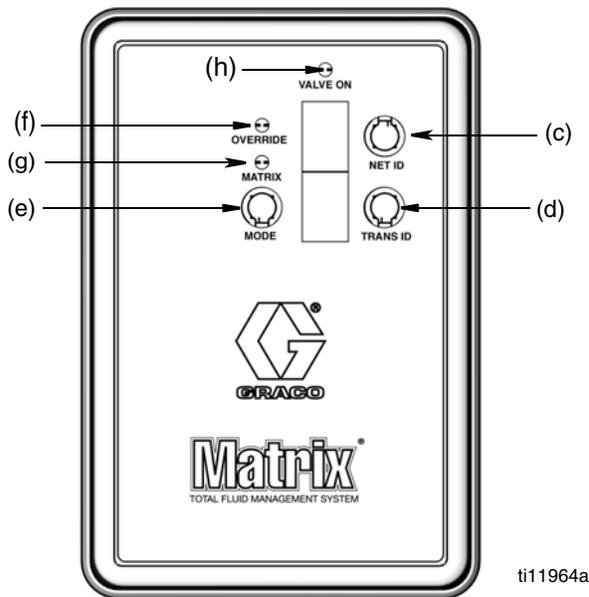


FIG. 2

Mode Configuration

1. Press and hold MODE button (e) (FIG. 2) to select Matrix or Override mode.

 The LED next to selected mode will illuminate to indicate which mode, OVERRIDE (f) or MATRIX (g) is selected.

- In the MATRIX (preferred) (g) (FIG. 2) mode, the pump will not operate unless it receives an authorization code from Matrix software. Unauthorized dispenses are not allowed in this mode.
- The OVERRIDE mode (f) (FIG. 2), turns on air to the pump so the pump can be used without authorization through Matrix. VALVE ON LED (h) will indicate the solenoid valve is activated/deactivated.

1. Press and hold NET ID button (c) (FIG. 2) to increment NET ID to match desired Network ID.
2. Press and hold TRANS ID button (d) (FIG. 2) to increment TRANS ID to match desired Transceiver ID.
3. Once the correct NET ID and TRANS ID are flashing, to register the PAC with Matrix™ PC Software, press and hold both buttons (c) and (d) for a few seconds until you notice the display:
 - momentarily go black,
 - then flicker,
 - and then the numbers reappear steady.

-  The flicker is a signal that the PAC has successfully been registered with Matrix.
- Numbers will flash until PAC unit is successfully registered with Matrix PC software.

Manual Override (A)

The Manual Override Switch turns on air to the pump and allows you to prime the system without power.

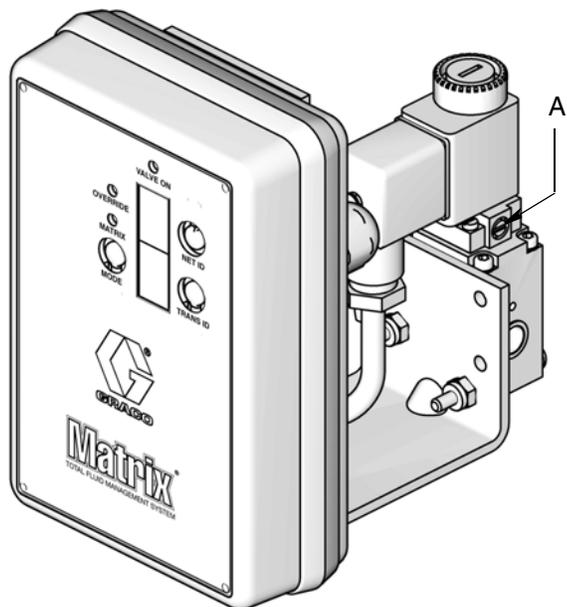


FIG. 3

1. Insert a small, flat screwdriver in slot of Manual Override Switch screw (A).
2. Rotate Manual Override Switch screw (A) clockwise approximately 1/4 turn.

NOTICE

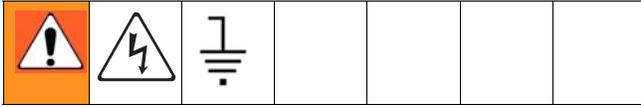
Do not turn Manual Override Switch screw (A) more than 1/4 turn. Overturning this screw could cause it to come out; rendering the unit inoperable.

3. Before you can resume normal PAC communication with Matrix you must reset the Manual Override Switch screw (A) to the normal operation position. To do this, insert small, flat screwdriver in the slotted opening and turn the Manual Override Switch screw (A) counter-clockwise approximately 1/4 turn back to the original position.

Wiring Diagram

See FIG. 4 for wiring diagrams.

Grounding



- The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.
- Connect power cord to a 3-wire grounded plug according to your local electrical code. The green ground wire must be attached to the green grounding screw in plug.

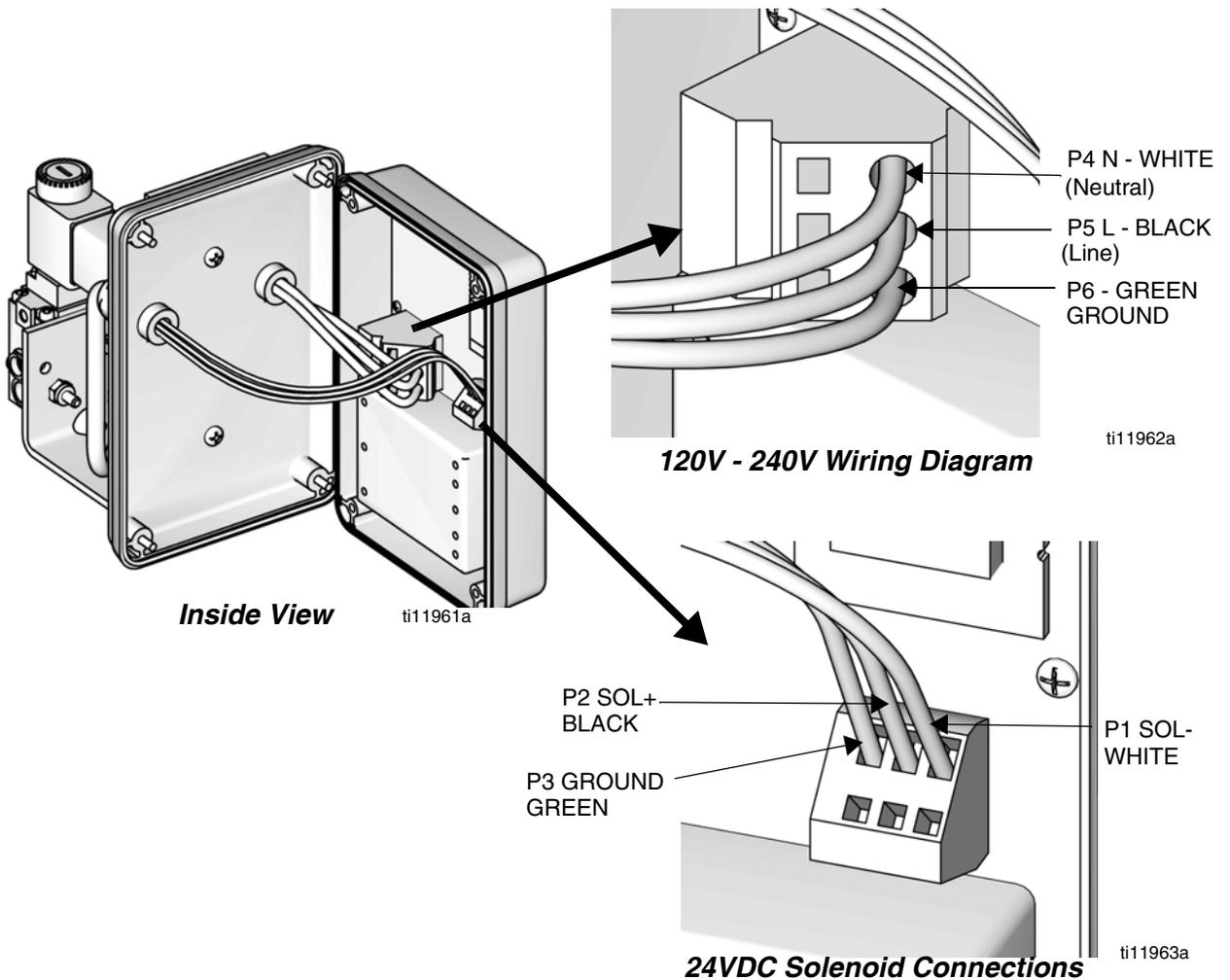


FIG. 4

Error Codes

When an error code is present, LED's will flash between NET ID and TRANS ID and ERROR CODE. To clear an Err1 or Err2 error, user must address the issue. To clear and Err3 or Err4 error, user must cycle between Matrix Mode to Override Mode and back.

Error Code	Cause	Solution
Err 1	Solenoid open circuit	Check for disconnected wires
Err 2	Solenoid short circuit	Replace solenoid
Err 3	No RF signal	Verify Matrix Client is running and transceiver is plugged in and powered
Err 4	No communication with internal RF module	Replace circuit board

Troubleshooting

Problem	Cause	Solution
Flashing Seven Segment Display with NET ID and TRANS ID	Unit is not registered with Matrix PC software	Hold both NET ID and TRANS ID until numbers flash
Alternating Seven Segment Display with NET ID TRANS ID and ERROR CODE	Solenoid shorted	Error Codes Err1 and Err2 require fixing solenoid issue
	Solenoid Open No RF present	To clear Err3, switch to override mode by holding mode button. Coming back to Matrix mode error will be cleared if unit can communicate. Err3 ignored when in override mode.
Valve will not shut off in Matrix Mode	Solenoid valve has been placed in Manual Override	Turn Manual Override all the way counter-clockwise

Repair

Pressure Relief Procedure



This equipment will stay pressurized until the pressure has been manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the dispense valve or splashing fluid, follow this **Pressure Relief Procedure** when ever you:

- Are instructed to relieve pressure.
 - Check, clean or service any system equipment.
 - Install or clean fluid nozzles or filter.
1. Turn off power supply to the pump or close upstream ball valve.
 2. Trigger the dispense valve into a waste container to relieve pressure.
 3. Open any bleed-type master air valves and fluid drain valves in the system.
 4. Leave the drain valve open until you are ready to pressurize the system.

Solenoid (2) Replacement

For the following instructions refer to FIG. 5 and parts pages 10 and 10.

1. Unplug power cord from outlet.
2. **Relieve pressure** following **Pressure Relief Procedure** provided.
3. Disconnect air line inlet at fitting (15a) and pump air inlet at fitting (15b) as shown in FIG. 5.
4. Disconnect cable assembly (5) from solenoid (2) by loosening screw (c) sufficiently to unplug connector from solenoid.
5. Loosen and remove nuts (3) and screws (1) securing solenoid (2) to bracket (4).
6. Install new solenoid (2) on bracket (4) using nuts (3) and screws (1). Tighten nuts securely.
7. Reconnect cable assembly (5) to solenoid and tighten screw (c).

8. Connect air line inlet to port (15a).
9. Connect pump air inlet to port (15b).
10. Plug power cord in grounded outlet.

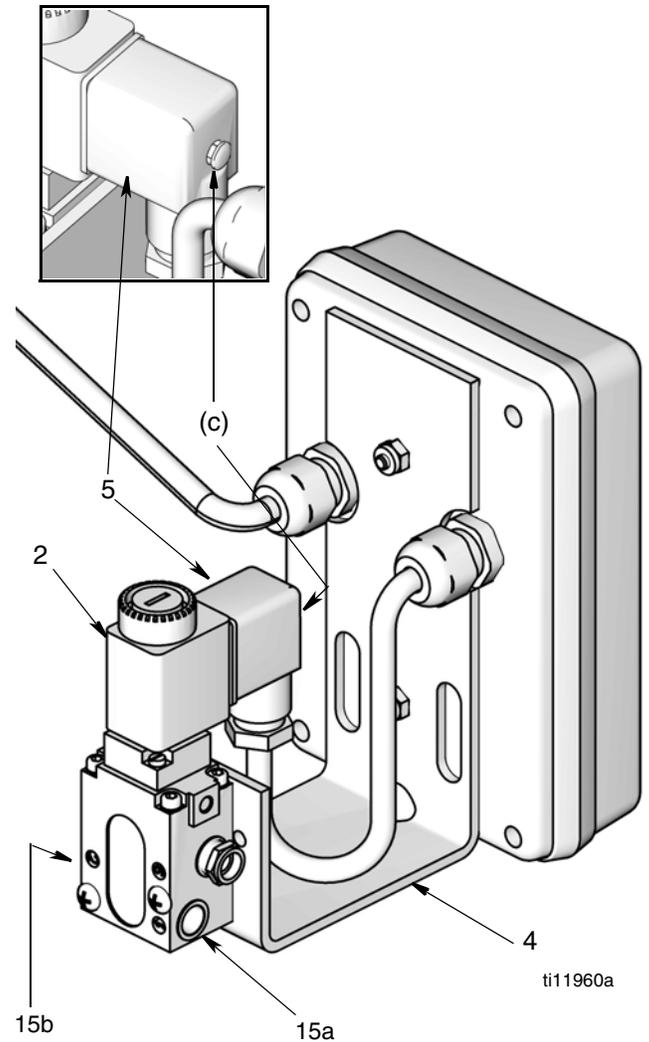
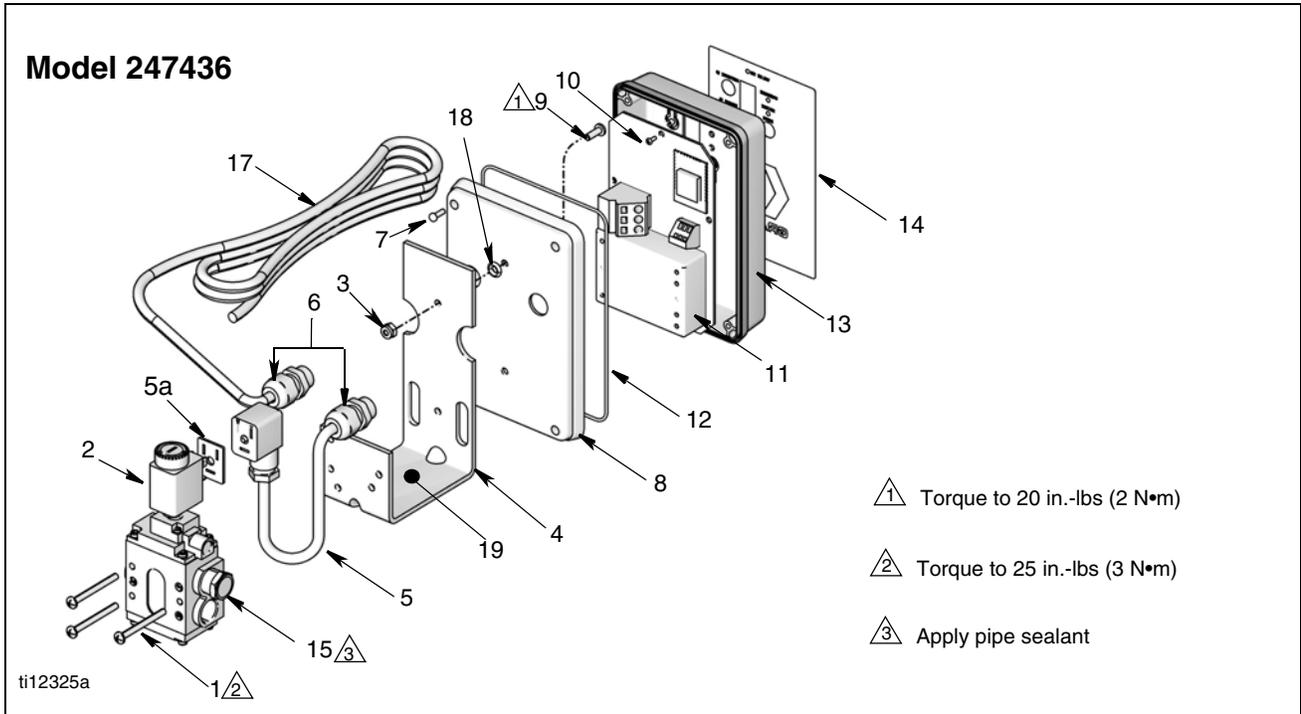


FIG. 5

Parts



Parts

F/N	Part No.	Description	Qty	F/N	Part No.	Description	Qty
1	121071	SCREW, machine, #8-32 x 1-3/4, model 247436	3	10		SCREW, thd forming, pnh	4
2	120826	VALVE, solenoid	1	11		BOARD, circuit, assembly (PAC)	1
3	109466	NUT, lock, hex	5	12		SEAL	1
4		BRACKET, mounting	1	13		COVER, enclosure	1
5		CABLE, assembly	1	14		LABEL, overlay	1
5a		GASKET	1	15	111881	MUFFLER	1
6		GRIP, cord	2	17	121045	CABLE, 3-wire (18 AWG)	1
7		SCREW, machine, pnh	4	18		PACKING, o-ring	2
8		BASE, enclosure	1	19		LABEL, identification	1
9		SCREW, machine, pnh	2				

Technical Data

Operating Pressure Range	23-145 PSI (1.7 - 10 bar)
Maximum Air Flow	93 SCFM (2.6m ³ /min.)
Air Supply (to PAC)	3/8 NPT, Female
Air Outlet (to Pump)	3/8 NPT, Female
Power Supply	120-240 VAC line voltage, 24VDC solenoid
Output Power	10mW - 100mW
AMPS	1A
Frequency	50/60 Hz
RF Communication	2.4 GHz
Obstructed RF Communication Range (based on building construction and RF environment)	250-300 ft (76.2 - 91.0 m)
Operating Temperature Range	32°F to 122°F (0°C to 50°C) NOTE: Display will not function below 32°F (0°C)
RF Operating Temperature Range	-40°F to 185°F (-40°C to 85°C)
Storage Temperature Range	-40°F to 185°F (-40°C to 85°C)
Enclosure	Type 3
Weight	3.4 lbs (1.5 kg)

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 two (2) years 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's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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For patent information, see www.graco.com/patents.

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Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

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

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