

Instructions–Parts List



IM5™ Inline Electronic Meter

308687H

For use with petroleum-based and synthetic oils, antifreeze, and windshield washer fluid only

Model 239824

500 psi (3.4 MPa, 34 bar) Maximum Working Pressure
5 gpm (19 lpm) Maximum Flow Rate

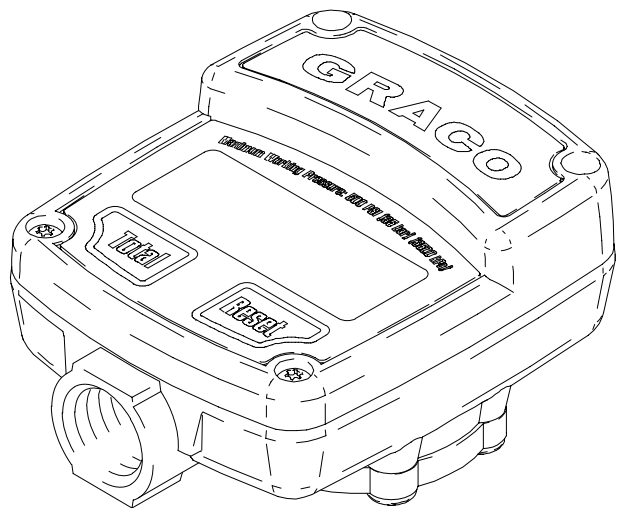


Important Safety Instructions

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

Contents

Warnings	2
Installation	4
Operation	6
Service	8
Troubleshooting	10
Parts	10
Accessories	11
Technical Data	11
Graco Standard Warranty	12
Graco Phone Number	12



3172585
Conforms
to FM 3610
Cert. to CAN/CSA Std C22.2
No. 157



INTRINSICALLY SAFE
APPARATUS AND ASSOCIATED
APPARATUS FOR USE IN CLASS 1,
DIVISION 2, GROUP C, D, T6

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



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

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

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before you operate this equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. See the **Technical Data** on page 11 for the maximum working pressure of this component.
- Use fluids and solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180° F (82° C) or below -40° F (-40° C).
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents, or fluids containing such solvents in pressurized aluminum equipment. Such use could result in a chemical reaction, with the possibility of explosion.
- Do not use hoses to pull equipment.
- Do not lift pressurized equipment.
- Follow the **Pressure Relief Procedure** on page 10 before you clean, check, or service this equipment.
- Tighten all fluid connections before you operate this equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.

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.

- Be sure the entire fluid system is properly grounded. Refer to your pump instruction manual for complete details. See **Grounding** on page 5.
- 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.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispensing area free of debris, including solvent, rags, and spilled gasoline.
- Do not smoke while dispensing flammable fluids.
- You must use one of the battery types as specified in **Replacing the Battery** on page 8. Use of any other batteries than those specified could affect the intrinsic safety of this unit.



SKIN INJECTION HAZARD

Fluid from the dispensing valve, leaks, or ruptured components can inject fluid into your body and cause extreme injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like a minor cut, but it is a serious injury. **Get immediate surgical treatment.**
- Do not point the dispensing valve at anyone or at any part of the body.
- Do not put your hand or fingers over the dispensing valve nozzle.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Use only extensions and automatic tips that are designed for use with your dispensing valve.
- A thermal pressure relief valve is required in closed systems of which this meter is a part.

Installation

These meters must be installed in-line as part of a dispense system as shown in Fig. 1. The typical installation shown is only a guide for selecting and installing an in-line meter; it is not an actual system design. Contact your Graco distributor for assistance in designing a system to suit your needs.

⚠ CAUTION

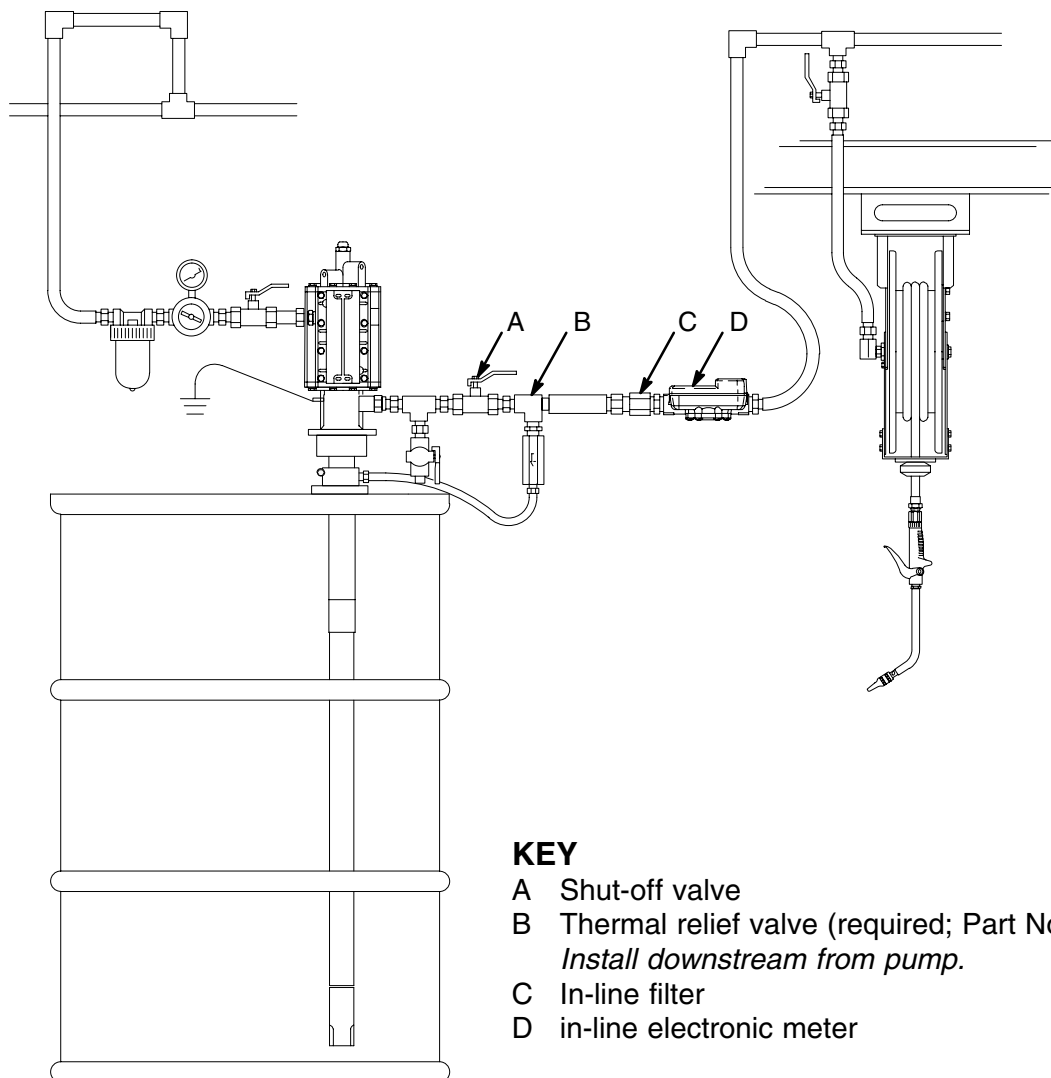
To prevent line contamination, which can cause equipment malfunction or damage, flush the lines before you install this equipment in the system.

⚠ CAUTION

The use of this meter with a control valve and a manual shut-off nozzle is prohibited in systems where the operating pressure exceeds the maximum pressure of the meter or any other component in the system.

⚠ CAUTION

The use of PTFE tape on threaded connections to the meter is not recommended. Such use could contribute to overtightening of the parts and cause the meter housing to crack. Standard pipe thread compound is recommended.



KEY

- A Shut-off valve
- B Thermal relief valve (required; Part No. 235998)
Install downstream from pump.
- C In-line filter
- D in-line electronic meter

Fig. 1

7263A

Installation

Grounding

CAUTION

The use of PTFE tape on threaded connections to the meter is not recommended, because it could interrupt the grounding continuity of the system. Standard pipe thread compound is recommended.

Proper grounding is an essential part of maintaining a safe system.

To reduce the risk of static sparking, ground all system components per local and national electrical codes. See the user manuals for the pump and other system components to ground the following:

- *Pump:* Follow the manufacturer's recommendations.
- *Air and fluid hoses:* Use only grounded hoses.
- *Air compressor:* Follow the manufacturer's recommendations.
- *Fluid supply container:* Follow your local code.
- *To maintain grounding continuity when you flush or relieve pressure,* always hold a metal part of the valve firmly to the side of a grounded metal pail, then trigger the valve.

Factory Settings

The meter is factory calibrated for 10W–30 oil, and the default unit of measurement is *quarts*. For other fluids and different units of measurement, see **Changing the Measurement Units and Calibration Factor** on page 7.

Operation

Sleep Mode

The meter automatically shuts down the display after one minute of non-use.

Activation Mode

There are two ways to activate the display:

- Press any button on the keypad to wake up the digital display. The amount displayed is the value stored when the meter went into sleep mode.
- Dispense fluid through the meter to wake up the digital display. Dispensing fluid through the meter causes the meter to count up from the last displayed value. See Fig. 2.

Function of TOTAL

Press and hold the **TOTAL** key to see the accumulated total of fluid dispensed through the meter.

The accumulated total is shown in gallons when the unit of measurement is set in gallons, quarts, or pints. The accumulated total is shown in liters when the measurement is set in liters. The meter accumulates a running total of up to 99,999 gallons (or liters) dispensed before returning to zero. See Fig. 3.

Function of RESET

Press and hold the **RESET** key to clear the digital display after each dispense cycle.

NOTE: Always press the **RESET** key to clear the digital display before each new dispense cycle.

For Maximum Dispensing Accuracy

Set the meter to dispense in pints or quarts when dispensing 1 gallon (3.8 liters) or less.

Measurement Units

Fig. 4 shows the various measurement units as they appear on the display.



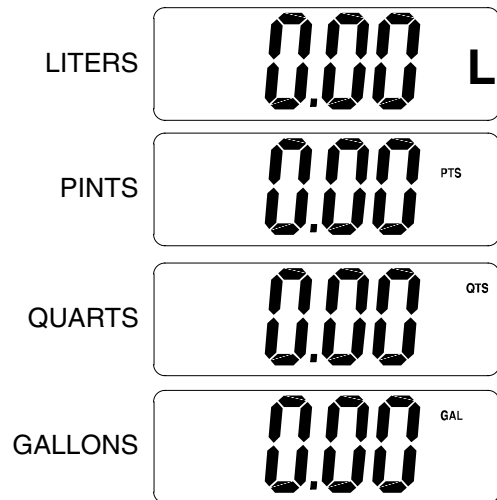
Example of Total for Last Dispense Cycle

Fig. 2



Example of Accumulated Total

Fig. 3



Examples of Measurement Units

Fig. 4

Operation

Changing the Measurement Units and Calibration Factor

NOTE: A one liter Weights and Measures approved container is required for calibration.

This meter is factory calibrated to dispense 10W–30 motor oil at 70° F (21° C) at 2.0 gpm (7.6 lpm) and is acceptably accurate for most common fluids over a typical temperature range. If you will use the meter to dispense antifreeze or other approved fluids, you may have to recalibrate it for greater accuracy.

1. Press and hold both the **TOTAL** and **RESET** buttons for four seconds.

The numbers on the display turn off, and the **L** (for *liters*) and **CAL** (for *calibration*) icons turn on.

2. Set the units of measurement by repeatedly pressing the **RESET** button until the correct unit of measurement is displayed. See the list below:

GAL = gallons
QTS = quarts
PTS = pints
L = liters

3. Press the **TOTAL** button to go to the CALIBRATION menu.

NOTE: If you do not want to change the calibration factor, press the **TOTAL** button again to use the existing calibration factor and to resume normal operation. **To change the calibration factor**, do steps 4 and 5.

4. Dispense exactly one liter of fluid into a calibrated 1-liter container. For proper calibration, you must dispense exactly 1 liter according to the markings on the container.

NOTE: If you dispense more than 1 liter, press the **TOTAL** button to exit the CALIBRATION menu. Pressing the **TOTAL** button at this point does not save the new calibration factor. You must complete steps 1 to 5 change the calibration factor.

5. Press the **RESET** button to store the new calibration factor and resume normal operation.

NOTE: The number on the display is the calibration factor number. It must be in the range of 311 to 466. The following table lists approximate calibration factors for different fluids. Your calibration number may vary slightly due to temperature or flow rate.

Fluid	Calibration Number
oil (10W–30)	389
gear lube	389
automatic transmission fluid	389
antifreeze	367
windshield washer solvent	341

Calibration factors at 70° F (21° C) at 2.0 gpm (7.6 lpm).

Service

Replacing the Battery

WARNING



FIRE AND EXPLOSION HAZARD

Only replace the battery in a non-hazardous location, away from flammable fluids or fumes.

You must use one of the following battery types:

- Duracell® MN1604, PC1604
- Eveready® EN22, 522

Use of any batteries other than those specified could affect the intrinsic safety of this unit.

CAUTION

To avoid damaging the electronic components of the control:

- **Do not** remove the black cover over the electronic area when you replace the battery. There are no user-replaceable components under this cover.
- Do not lay anything on the electronics.
- Do not twist or force parts. Align parts properly as instructed.

WARNING

To reduce the risk of a fire, explosion, and serious burns to the body, handle and dispose of a used battery properly.

Do not short circuit, charge, force over discharge, disassemble, crush, penetrate, incinerate, or heat the battery to a temperature exceeding 185° F (85° C). Any misuse or abuse of the battery may cause it to leak or explode.

WARNING

To avoid malfunction or high-pressure fluid spray, do not remove the metal cover of the metering unit (see Fig. 5). There are no user-serviceable parts inside.

Follow this procedure to replace the battery:

1. **Relieve the pressure.**

WARNING

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 10.

2. Remove the four screws (3) holding the electronic control (1) and the metering unit (4) together.
3. Remove the battery.
4. Install the new battery as shown in Fig. 5.

NOTE: See **Technical Data** on page 11 for recommended battery types.

CAUTION

To avoid pinching the battery wires, install the battery as shown in Fig. 5, so that the battery wire is extended to the far side of the battery compartment.

5. Install the electronic control (1) to the metering unit (4), aligning the longer screw boss on the meter housing with the counterbore in the plastic housing.
6. Install the four screws (3) holding the electronic control (1) and the metering unit (4) together. Torque the screws to 15 to 20 in-lb (1.7 to 2.3 N-m) or until no gap exists between the electronic control and the metering unit.

CAUTION

Closing the gap between the electronic control and the metering unit is very important; it ensures that no moisture can enter the electronics.

Service

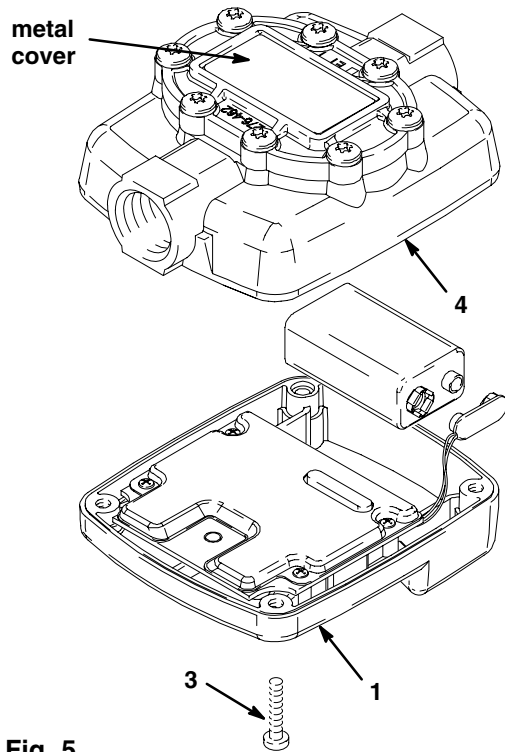


Fig. 5

7262B

6. Replace battery as shown in Fig. 5. (new battery recommended, see **Replacing the Battery** procedure on page 8).

NOTE: See **Technical Data** on page 11 for recommended battery types.

⚠ CAUTION

To avoid pinching the battery wires, install the battery as shown in Fig. 5, so that the battery wire is extended to the far side of the battery compartment.

7. Install the electronic control (1) to the metering unit (4), aligning the longer screw boss on the meter housing with the counterbore in the plastic housing.
8. Install the four screws (3) holding the electronic control (1) and the metering unit (4) together. Torque the screws to 15 to 20 in-lb (1.7 to 2.3 N-m) or until no gap exists between the electronic control and the metering unit.

⚠ CAUTION

Closing the gap between the electronic control and the metering unit is very important; it ensures that no moisture can enter the electronics.

Replacing the Electronic Control

Follow this procedure to replace the electronic control:

1. Relieve the pressure.

⚠ WARNING

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 10.

2. Remove the four screws (3) holding the electronic control (1) and the metering unit (4) together as shown in Fig. 6.
3. Remove the battery (see **Replacing the Battery** procedure on page 8).
4. Remove all gasket material from the metering unit (4).
5. Assemble adhesive side of new gasket (2) to metering unit (4).

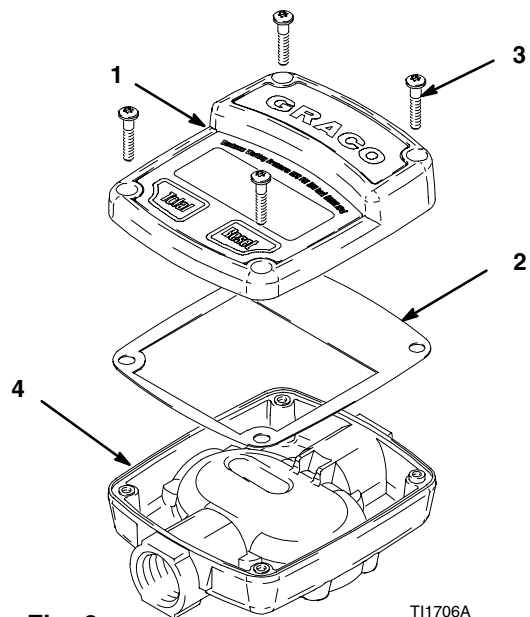


Fig. 6

T11706A

Troubleshooting

⚠ WARNING

PRESSURIZED EQUIPMENT HAZARD

The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the dispenser, or splashing fluid, follow the **Pressure Relief Procedure** whenever you

- Are instructed to relieve pressure
- Stop dispensing
- Check, clean, or service any system equipment
- Install or clean fluid nozzles

Pressure Relief Procedure

1. Turn off the power supply to the pump.
2. Trigger the 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 have completed repairs and are ready to pressurize the system.

NOTE: Before you check or repair the meter, be sure all other valves, controls, and the pump are operating properly.

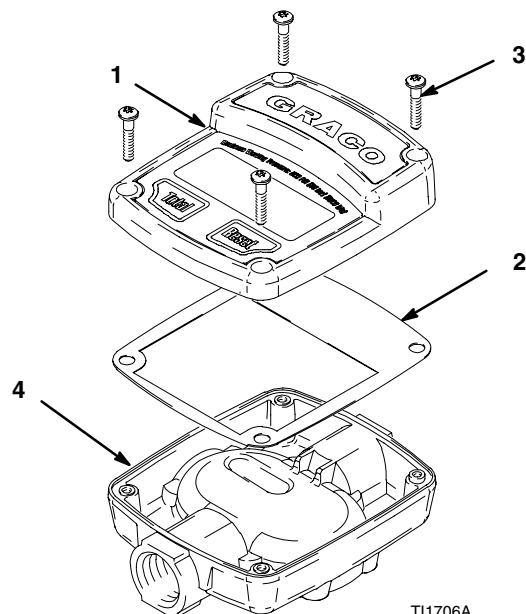
Problem	Cause	Solution
Battery icon is shown on the display.	Battery is low.	Replace the battery. See Replacing the Battery on page 8. See Technical Data on page 11 for the recommended battery.
Digital display does not activate.	Battery is low.	Replace battery. See Replacing the Battery on page 8. See Technical Data on page 11 for the recommended battery.
	Electronic control is malfunctioning.	Replace electronic control.
There is no fluid flow.	Metering unit is malfunctioning.	Replace the meter.
	Strainer, if used, is clogged.	Remove and clean strainer.
	Pump is not turned on.	Turn on the pump.

Parts

Model 239824 (Includes replaceable items 1–3)

Ref. No.	Part No.	Description	Qty.
1	245598*	CONTROL, electronic	1
2	113930	GASKET	1
3	113941	SCREW	4
4		UNIT, Metering (cannot be sold separately)	1

* Replacement screws and gasket are included with item 1.

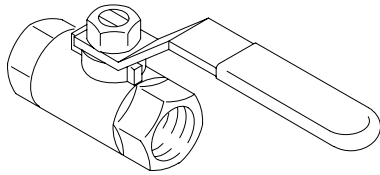


TI1706A

Accessories

Shutoff valve 108458

Install upstream from the meter. Shuts off fluid supply from the pump. 1/2–14 npt(f) both ends.



Thermal Relief Kit 235998

(1/2–14 npt(m) x 1/2–14 npt(f))

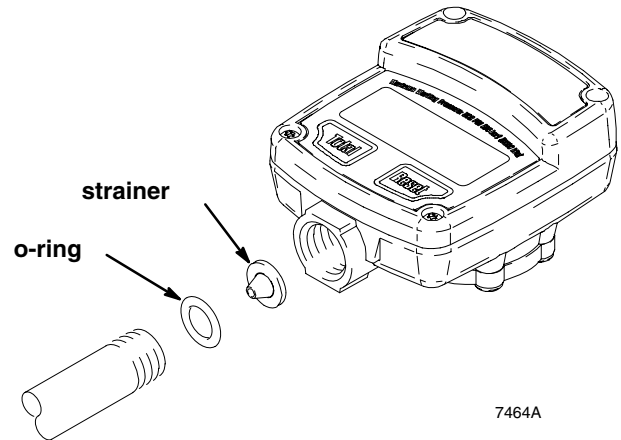
Install downstream from the pump.

Strainer Kit 239876

(includes strainer and o-ring)

Install the strainer before the meter or before the valve on the meter/valve combination.

Install the o-ring after the strainer to hold the strainer in place. *See below.*



Technical Data

Flow range	0.5 to 5 gpm (1.9 to 19 lpm)
Maximum working pressure	500 psi (3.4 MPa, 34 bar)
Minimum working pressure	5 psi (34 kPa, 0.3 bar)
Weight	1.8 lb (0.82 kg)
Units of measurement	Factory-set in quarts
	Display shows quantity in 0.01 increments up to 999.99 gallons, quarts, pints, or liters.
	Totalizes in gallons or liters up to 99,999 units.
† Accuracy	+/- 0.5 percent
‡ Repeatability	+/- 0.15 percent
Inlet and outlet	1/2 npt
	<i>Meter can be installed with flow in either direction.</i>
Operating temperature range	-4° F to 122° F (-20° C to 50° C)
Storage temperature range	-13° F to 122° F (-25° C to 50° C)
Wetted parts	nickel, zinc, LCP, nitrile rubber
* Battery	standard 9V alkaline
Expected battery life in a typical shop environment	6 to 12 months

† At 2.5 gpm (9.5 lpm), at 70° F (21° C), with 10-weight oil, and 1 gallon dispensed.
May require calibration; out-of-box accuracy is +/- 1.25 percent.

‡ At 2.5 gpm (9.5 lpm), at 70° F (21° C), with 10-weight oil, and 1 gallon dispensed.

* Battery required to meet safety approvals:
Duracell® MN1604, Duracell PC1604, Eveready® EN22, Eveready 522

Duracell® is a registered trademark of Duracell Inc.

Eveready® is a registered trademark of Eveready Battery Co., Inc.

Graco Standard Warranty

Graco warrants all equipment 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.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

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.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, 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.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

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Graco Phone Number

For the latest information about Graco products, visit www.graco.com.

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

Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655 **Fax:** 612-378-3590 Fax

*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 308687

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