

# IM20P Meter

3A8625A

EN

*For dispensing of petroleum based oils and anti-freeze. For professional use only.*

**Not approved for use in explosive atmospheres or hazardous (classified) locations.**

## Model IM20P

*1500 psi (10.3MPa, 103 bar) Maximum Working Pressure*



### Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment.  
Save these instructions.



# Models

## In-Line Pulse Meter









<b>Model No.</b>	<b>Inlet</b>	<b>Outlet</b>	<b>Thread</b>
133480	3/4 in.	3/4 in.	npt

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# 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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h2 style="margin: 0;">WARNING</h2>	
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point dispensing device at anyone or at any part of the body.</li> <li>• Do not put your hand over the fluid outlet.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Use only extensions that are designed for use with dispensing valve.</li> <li>• Do not use low-pressure flexible extension with this equipment.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop dispensing and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
 	<p><b>FIRE AND EXPLOSION HAZARD</b></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"> <li>• Use equipment only in well-ventilated area.</li> <li>• Eliminate all ignition sources, such as cigarettes and portable electric lamps.</li> <li>• Ground all equipment in the work area.</li> <li>• Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.</li> <li>• Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>

# **WARNING**



### **EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.

- 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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- 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.



### **PERSONAL PROTECTIVE EQUIPMENT**

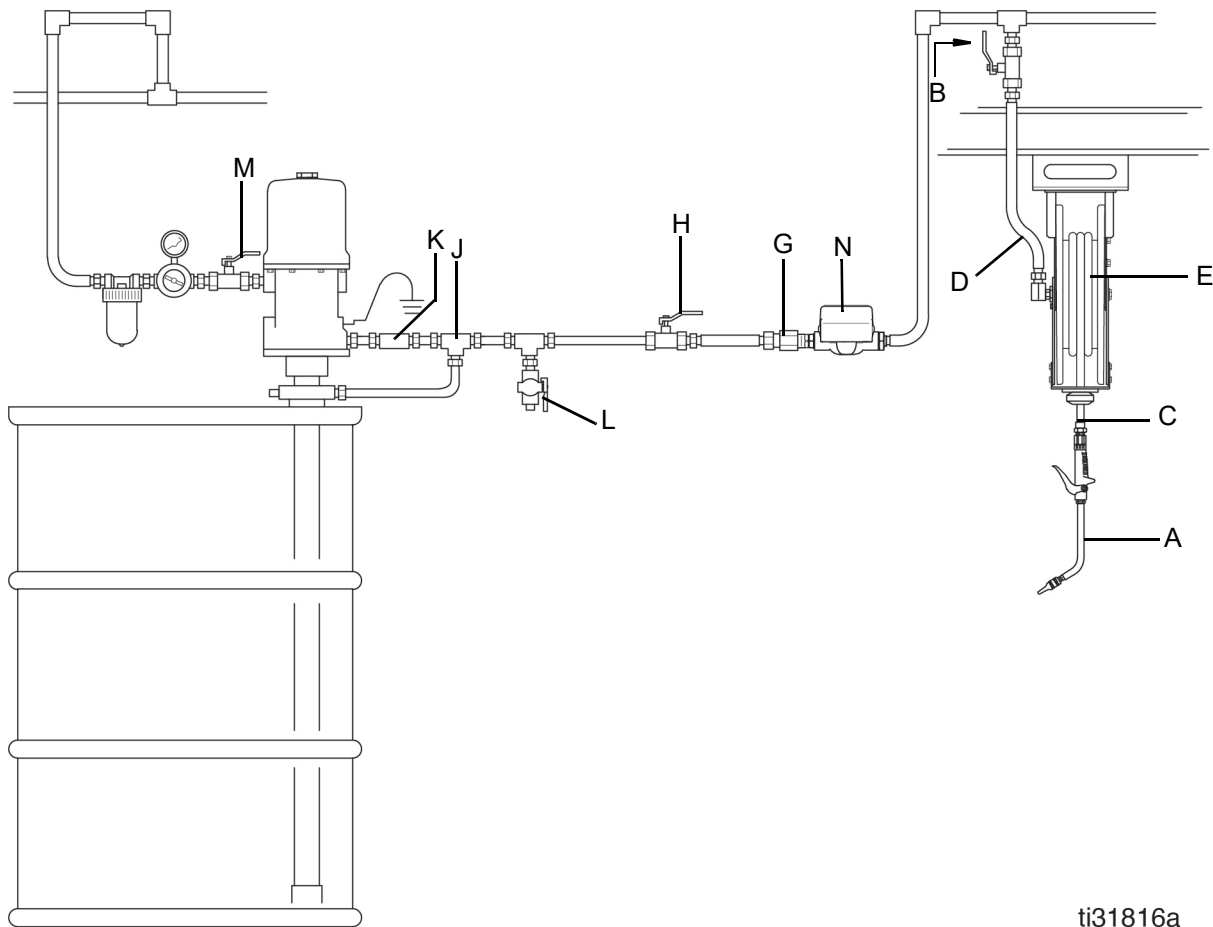
Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

# Installation

## Typical Installation: IM20P

The typical installation shown in FIG. 1 is only a guide. The components shown are typical; however it is not a complete system design. Contact your Graco distributor for assistance in designing a system to suit your needs. Additionally, these dispense valves can be installed on a console.



ti31816a




**FIG. 1: Typical Installation**

**Key:**

- A Dispense Valve
- B Fluid Shutoff Valve - Hose Reel
- C Hose
- D Fluid Inlet Hose
- E Hose Reel
- G In-line strainer
- H Main Fluid Shutoff Valve
- J Pressure relief Valve
- K Check Valve
- L Bleed-off Valve (drain valve)
- M Bleed-type Master Air Valve
- N IM20P In-line Pulse Meter

<b>NOTICE</b>
<ul style="list-style-type: none"> <li>Do not over-tighten fittings. Excessive torque will crack the casting. Only tighten fittings <math>2.5 \pm 0.5</math> turns past finger tight. Do not exceed 80 ft.-lbs (9.04 N•m).</li> <li>Flush lines before installing equipment in the system to prevent contamination which can cause equipment damage or malfunction. See <b>Flush Lines</b>, page 8.</li> </ul>

## Grounding

				
<p>The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.</p>				

**Pump:** follow manufacturer's recommendations.

**Hose reels or consoles:** connect to a true earth ground.

**Air and fluid hoses:** use only conductive hoses.

**Air compressor:** follow manufacturer's recommendations.

**Fluid supply container:** follow local code.





**IM20P meters:** use thread sealant when connecting the meter to the hose. Do not use PTFE tape on the pipe joints, it may cause loss of ground across the pipe joint.

**Waste container while flushing:** use a grounded metal container. Hold hose coupling or metal part of the meter firmly to the side of the waste container while flushing.

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

				
<p>This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.</p>				

1. Turn off the power supply to the pump.
2. Trigger the dispense valve into a grounded 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 ready to pressurize the system.
5. If it is suspected that the valve, extension or nozzle is clogged or that pressure has not been fully relieved:
  - a. Very slowly loosen the fitting nut on the hose to relieve pressure gradually.
  - b. Then loosen the fitting nut completely.
  - c. Clear the obstruction in the valve, extension, or nozzle.

The reference letters used in the instructions on this page refer to Typical Installation, FIG. 1, page 6.

## Pre-Installation Procedure



1. Follow **Pressure Relief Procedure**, page 7.
2. Close the hose reel fluid shut-off valve (B).
3. Ground the hose and reel or console. See **Grounding**, page 7. Do not use PTFE tape on the inlet and outlet port threads; it may cause a loss of ground across the threaded connections.

## Flush Lines

If this is a new installation or if the fluid in the lines is contaminated, flush the lines before installing the dispense valve. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment.

**NOTE:** The dispense valve should not be installed on the hose when flushing the equipment.

1. Follow **Pressure Relief Procedure**, page 7.
2. Close the hose reel fluid shut-off valve (B) at each dispense position.
3. If an existing installation, remove the dispense valve from hose.
4. Place the hose end into a container for waste fluid. Secure the hose in the container so it will not come out during flushing.

**NOTE:** For multiple dispense positions, first flush the dispense position farthest from the pump, and work toward the pump.

5. Slowly open the hose reel fluid shut-off valve (B) at the dispense position. Flush out a sufficient amount of fluid to ensure that the entire system is clean, then close the valve.
6. Repeat step 5 at all dispense positions.

## Installation of Meter

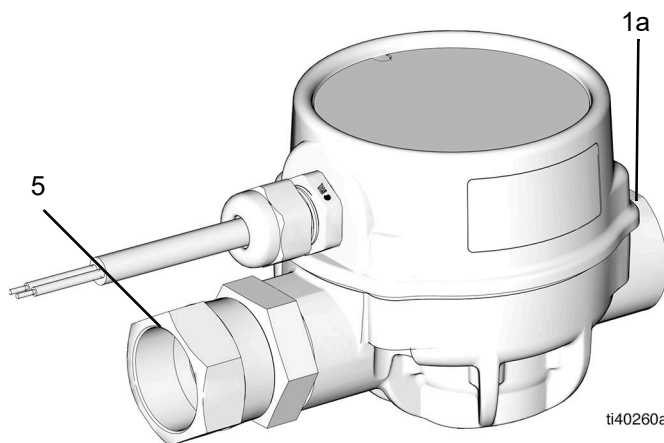
To install a new meter in an existing installation, begin with Step 1 and 2.

To install a new meter in a new installation, begin with Step 3.



1. Follow **Pressure Relief Procedure**, page 7.
2. Loosen and disconnect the hose from the meter being replacing.

For Steps 3 - 7, refer to FIG. 2.



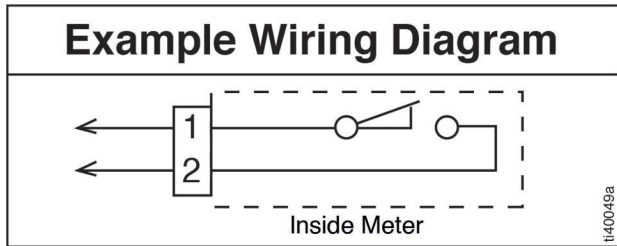
**FIG. 2**

3. Apply thread sealant to the male threads of the hose fitting.
4. Thread the meter (1a) onto the hose fitting. Tighten firmly.
5. Apply thread sealant to the male threads of the hose fitting. Thread the hose fitting into the swivel (5). Tighten firmly.
6. Open all dispense position shut-off valves (B). Start the pump to pressurize the system. See **Operation**, page 9 for operation instructions.
7. To ensure dispensing accuracy, purge all air from the fluid lines and dispense valves before using.



# Operation

The meter requires a Logic Control Device to operate. The Logic Control Device interprets pulse signals from the meter and converts them into a fluid quantity.



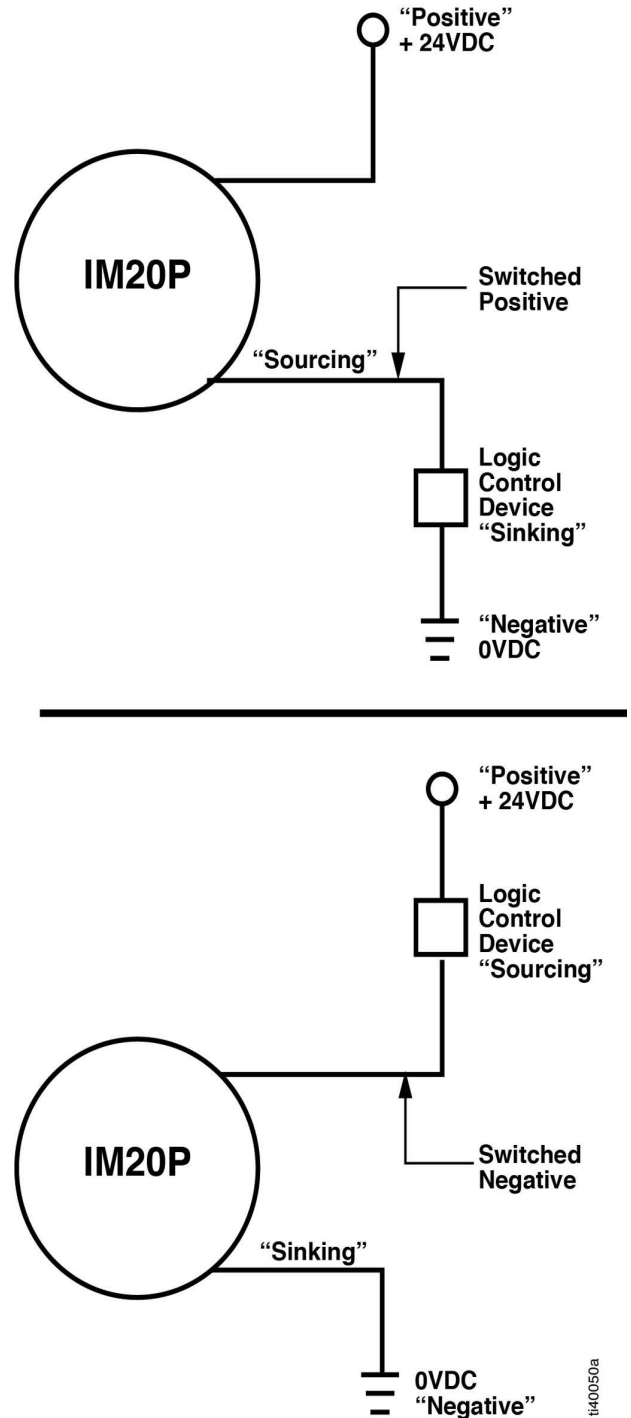
**FIG. 3: External Wiring Diagram (2-wire device)**

The number of pulses per volumetric unit varies based upon fluid viscosity. The default calibration factor is 172 pulses per quart, based upon the fluid viscosity of a 10w30 motor oil.

Fluid	Viscosity	Temperature	Rate of Flow	Calibration Factor*
Engine Oil	10W30	77°F (25°C)	5 gpm	172
Gear Lube	75W90	77°F (25°C)	5 gpm	172
ATF	5W20	77°F (25°C)	5 gpm	172
Anti-freeze**		77°F (25°C)	5 gpm	150

\*Calibration factor may vary slightly due to temperature or rate of flow.  
 \*\*Viscosity of anti-freeze will vary based upon the water dilution ratio.

The meter sensor design allows for both PNP and NPN Logic Controller Devices (FIG. 4).



**FIG. 4:**

## To Verify the Accuracy

1. Use a clean, calibrated container.

NOTE: If using a single container, be sure to clean it after each dispense.

2. Set the pump air pressure at the lowest possible setting for dispensing fluid.
3. Place the tip of the nozzle at the bottom of the calibrated container.

NOTE: 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.

4. Trigger the dispense valve slowly. Dispense fluid until the calibrated container is full.
5. Allow product to sit for 20 minutes, then compare the actual, physical measurement in the calibrated container to the measurement interpreted by the Logic Control Device.

NOTE: The above procedure determines if the meter is accurately measuring the product and minimizing testing errors. Some variance may occur depending on the viscosity of the fluid. If this procedure determines that the meter is not accurate, recalibrate the Logic Control Device. Recalibrating will vary depending upon the Logic Control Device settings.

# Recycling and Disposal

## End of Product Life

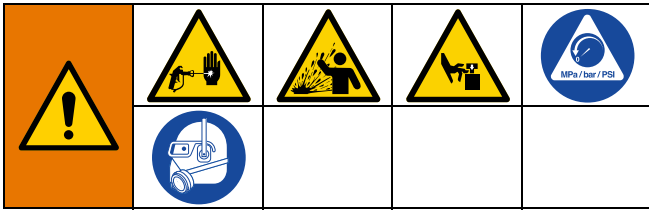
At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove circuit boards and other electronic components. Recycle according to applicable regulations.
- Do not dispose of electronic components with household or commercial waste.



- Deliver remaining product to a recycling facility.

# Troubleshooting

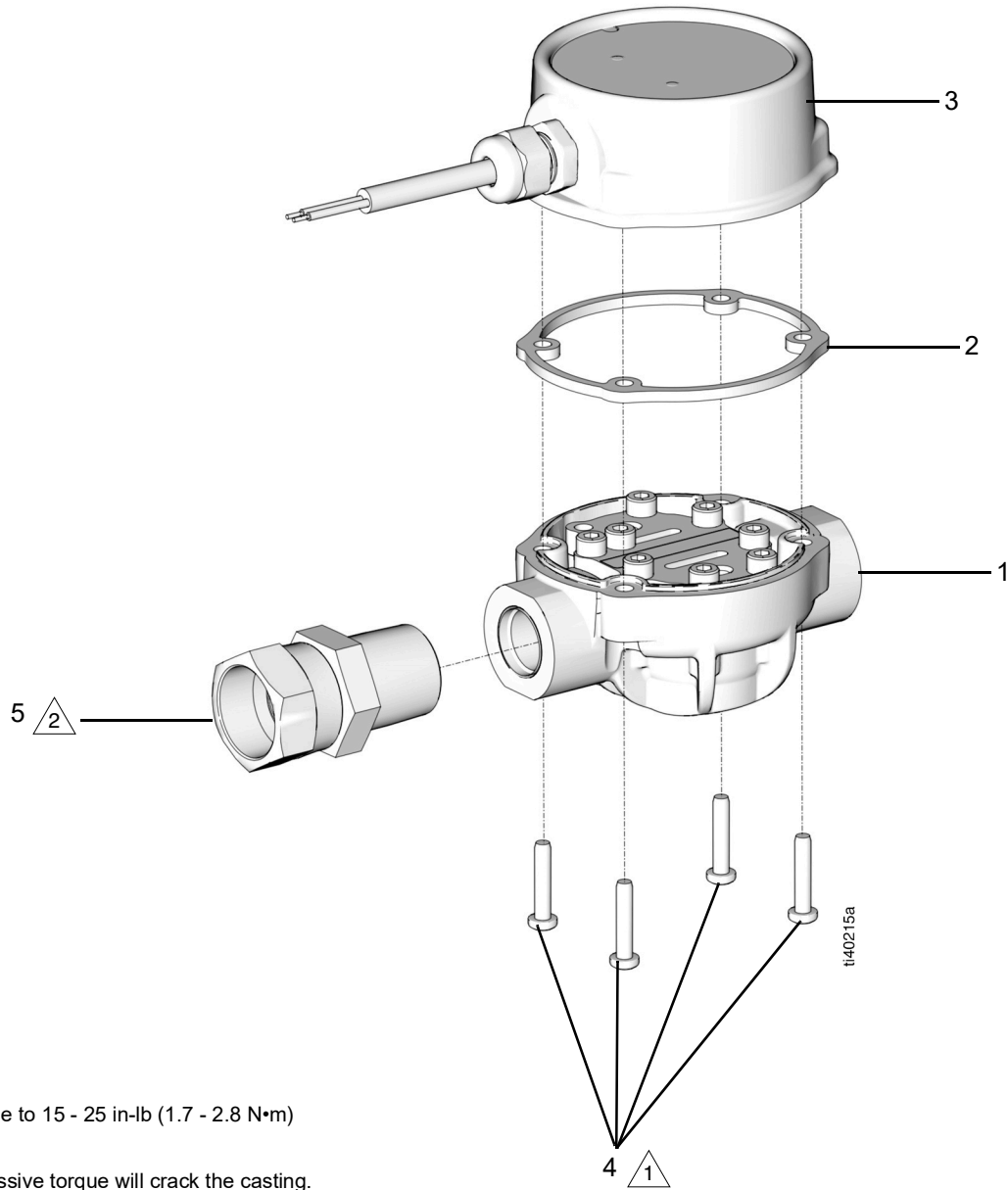


1. Relieve pressure before checking or servicing the equipment, following the **Pressure Relief Procedure**, page 7.
2. Check all possible problems and causes before disassembling the dispensing valve.

Problem	Cause	Solution
Slow or no fluid flow	Strainer (G) is clogged.	Clean or replace strainer (G).
	Pump pressure is low.	Increase pump pressure.
	Shut off valve is not fully open.	Fully open shut off valve.
	Foreign material is jammed in the meter element.	Contact your local Graco distributor for repair or replacement.
Fluid leaks from swivel (5)	Swivel (5) is loose.	Torque the swivel (5) to 15 to 20 ft-lbs (20 to 27 N•m).  If the problem remains, contact your Graco distributor for repair or replacement.



# Parts



1 Torque to 15 - 25 in-lb (1.7 - 2.8 N•m)

2 Excessive torque will crack the casting.  
Torque to Only tighten fittings  $2.5 \pm 0.5$  turns  
past finger tight.

**Part Number**

Ref.	Part	Description	Qty.
1	25E383	METER, sub-assembly	1
2†	129949	SEAL, bezel	1
3†	25U382	CONTROL, electronics	1
4†	131172	SCREW, Torx Pan HD	4
5	118459	FITTING, swivel, 3/4 in.	1

† Parts included in Kit 133490 (purchase separately).

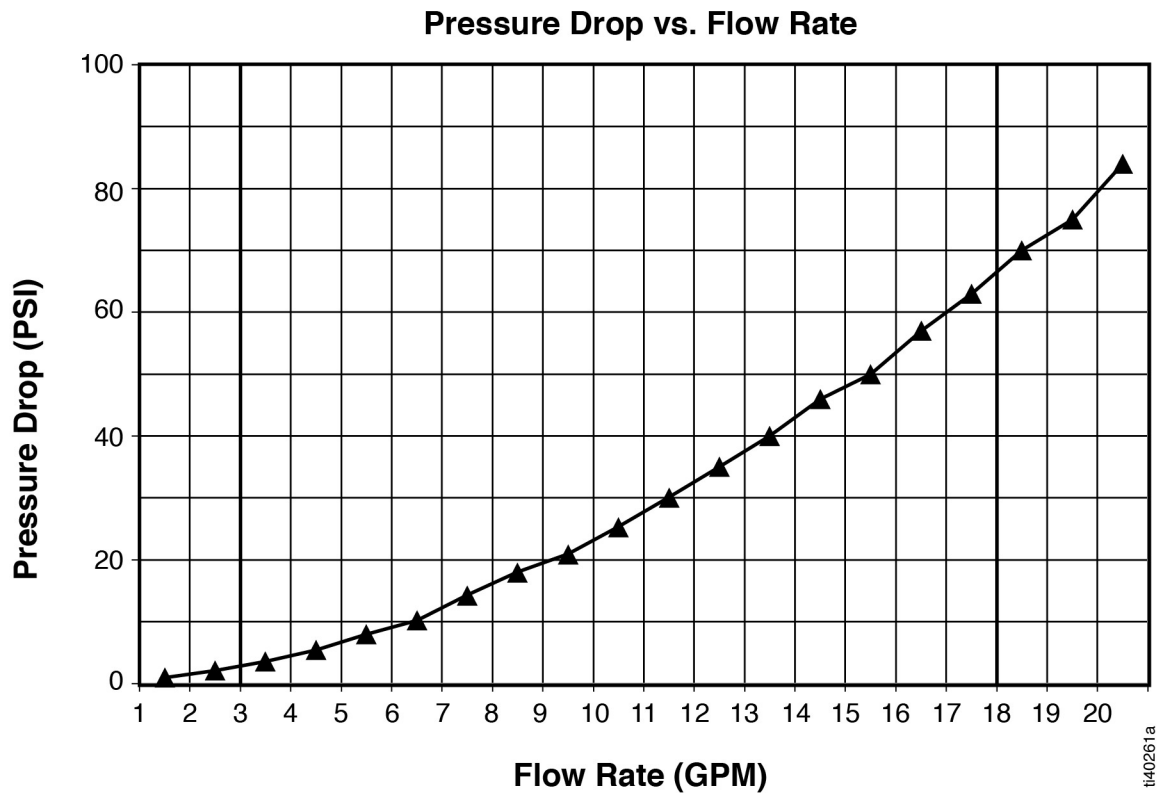
# Technical Specifications

<b>IM20P In-Line Pulse Meter</b>		
	<b>US</b>	<b>Metric</b>
<b>Recommended maximum flow rate (under normal operating conditions)</b>		
IMP20 In-line Meter	20 gpm	75.7 lpm
<b>Minimum flow rate (under normal operating conditions)</b>		
IMP20 In-line Meter	0.25 gpm	0.95 lpm
<b>Meter Pressure Loss:</b> Tested in 10W oil at 70°F (21°C). Flow rate varies with fluid pressure, temperature, viscosity, inlet fitting size and nozzle type.		
IMP20 In-line Meter	35 psi at 12 gpm	2.41 bar at 45.4 lpm
<b>Maximum operating pressure</b>		
IMP20 In-line Pulse Meter	1500 psi	10 MPa, 102 bar
<b>Weight</b>		
IM20 In-line Pulse Meter	1 lb. 4 oz.	0.57 kg
<b>Temperature</b>		
Operating Temperature Range	-22°F to 180°F	-30°C to 82°C
Storage Temperature Range	-40°F to 185°F	-40°C to 85°C
<b>Ingress Protection</b>		
IMP20 In-line Pulse Meter	IP69K as per DIN 40050-9	
<b>Inlet Sizes</b>		
IMP20 In-line Pulse Meter Valves	3/4 npt	
<b>Outlet Sizes</b>		
IMP20 In-line Pulse Meter	3/4 npt	
<b>Operating Voltage</b>		
All models	12 - 24 VDC	
<b>Materials of Construction</b>		
Wetted materials	aluminum, stainless steel, carbon steel, acetal, nitrile rubber, Geolast™	
<b>Notes</b>		
All trademarks or registered trademarks are the property of their respective owners.		



# Pressure Drop Chart

## ISO 46 Hydraulic Fluid



# California Proposition 65

**CALIFORNIA RESIDENTS**

**⚠ WARNING:** Cancer and reproductive harm – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# 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.

**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**

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

# Graco Information

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

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

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

*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.*

Original instructions. This manual contains English. MM 3A8625

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Revision A, July 2021