

PM8 and PM20 Meters

3A8307F

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.

See Models, page 2

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

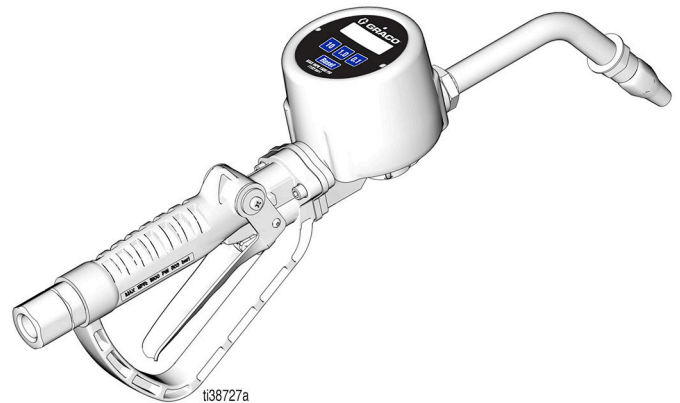
200 psi (1.4 MPa, 14 bar) Maximum Working Pressure - Anti-freeze models

Preset dispensing and measurement in gallons, quarts, pints and liters. The meter is factory set to quarts.



Important Safety Instructions

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



Models

Part No.	Model	Inlet	Thread	Fluid	Extension	Maximum Working Pressure
25U085	PM8	1/2 in.	NPT	Anti-freeze	Rigid	200 psi (1.4 MPa, 14.0 bar)
25U086	PM8	1/2 in.	NPT	Anti-freeze	Flex	200 psi (1.4 MPa, 14.0 bar)
25U087	PM8	1/2 in.	BSPP	Anti-freeze	Rigid	200 psi (1.4 MPa, 14.0 bar)
25U088	PM8	1/2 in.	BSPP	Anti-freeze	Flex	200 psi (1.4 MPa, 14.0 bar)
25U089	PM8	1/2 in.	BSPT	Anti-freeze	Rigid	200 psi (1.4 MPa, 14.0 bar)
25U090	PM8	1/2 in.	BSPT	Anti-freeze	Flex	200 psi (1.4 MPa, 14.0 bar)
26D883	PM8	1/2 in.	NPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
26D884	PM8	1/2 in.	NPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273156	PM8	1/2 in.	NPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273157	PM8	1/2 in.	NPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273158	PM8	1/2 in.	NPT	Gear lubes	Gear lube	1500 psi (10.3 MPa, 103 bar)
273159	PM8	1/2 in.	BSPP	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273160	PM8	1/2 in.	BSPP	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273161	PM8	1/2 in.	BSPP	Gear lubes	Gear lube	1500 psi (10.3 MPa, 103 bar)
273162	PM8	1/2 in.	BSPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273163	PM8	1/2 in.	BSPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273164	PM8	1/2 in.	BSPT	Gear lubes	Gear lube	1500 psi (10.3 MPa, 103 bar)
273165	PM20	1/2 in.	NPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273166	PM20	1/2 in.	NPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273167	PM20	3/4 in.	NPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273168	PM20	3/4 in.	NPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273169	PM20	1/2 in.	BSPP	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273170	PM20	1/2 in.	BSPP	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273171	PM20	3/4 in.	BSPP	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273172	PM20	3/4 in.	BSPP	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273173	PM20	1/2 in.	BSPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273174	PM20	1/2 in.	BSPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)
273175	PM20	3/4 in.	BSPT	Petroleum based oils	Rigid	1500 psi (10.3 MPa, 103 bar)
273176	PM20	3/4 in.	BSPT	Petroleum based oils	Flex	1500 psi (10.3 MPa, 103 bar)

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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>SKIN INJECTION HAZARD</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. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Use only extensions that are designed for use with dispensing valve. • Do not use low-pressure flexible extensions with this equipment. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
 	<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. • Ground all equipment in the work area. • 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. • Use only conductive hoses. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.

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.

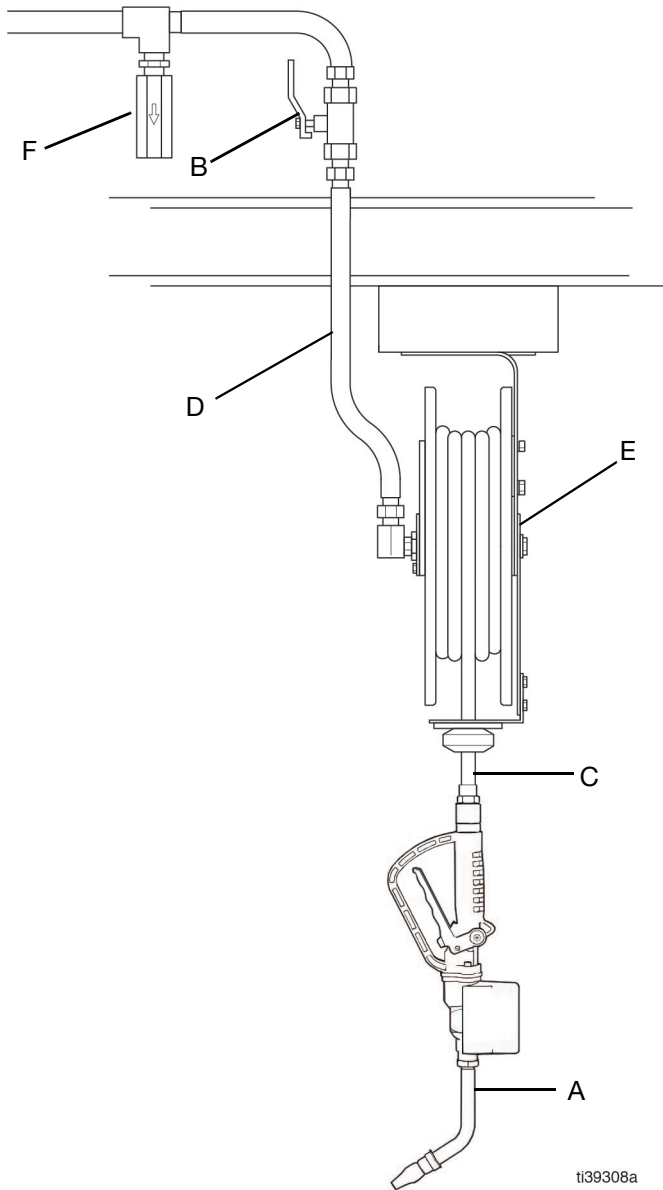


PERSONAL PROTECTIVE EQUIPMENT

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.

Typical Installation



KEY:

- A PM8 or PM20 Metered Dispense Valve
- B Fluid Shutoff Valve - Hose Reel
- C Hose
- D Hose Reel Fluid Inlet Hose
- E Hose Reel
- F Thermal Relief Kit (required). Part No. 237904. (Install downstream from pump.)

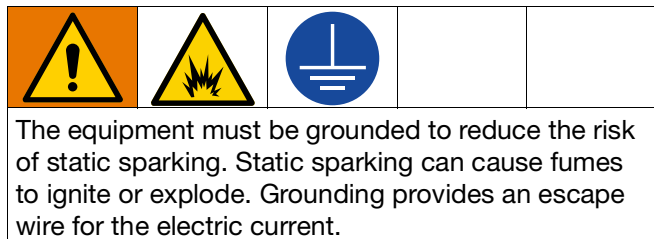
NOTICE

Flush lines before installing equipment in the system to remove contamination that can cause equipment damage or malfunction. See **Flush the Equipment**, page 8.

FIG. 1

Installation

Grounding



Pump: follow manufacturer's recommendations.


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

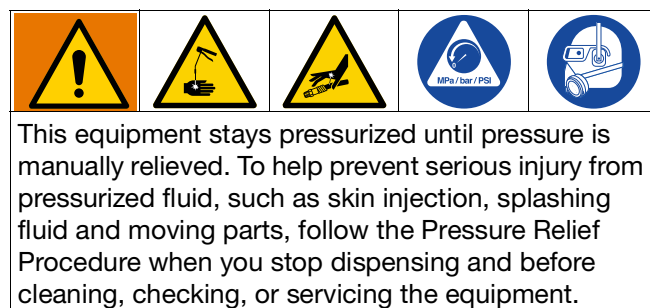
Fluid hoses: use only conductive hoses when dispensing petroleum products.

PM8 and PM20 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.



1. Turn off the power supply to the pump.
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 ready to pressurize the system.
5. If it appears 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. After the pressure has been relieved, loosen the fitting nut on the hose completely.
 - c. Clear the obstruction in the hose or tip.

Pre-Installation Procedure

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



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 pipe joints, it may cause loss of ground across the pipe joint.

Flush the Equipment

For a new installation, or if the fluid in the lines is contaminated, flush the lines before installing the dispense valve. To avoid contaminating the fluid with oil, flush the equipment with the fluid being dispensed 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. For an existing installation, remove the dispense valve from the hose.
4. Place the hose end into a container for waste fluid. Secure the hose in the container so that it will not come out during flushing.

NOTE: For multiple dispense positions, first flush the dispense position farthest from the pump, then work inward 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 of the dispense positions.

Installation of a Meter



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

To install a new meter as a new installation, begin the instructions with Step 3.

1. Follow **Pressure Relief Procedure**, page 7.
2. Loosen and disconnect the hose from the dispense valve being replaced.

For Steps 3 - 9, refer to FIG. 2.

3. Thread the extension (4) into the dispense valve outlet until the o-ring makes contact with the meter.
4. Position the extension for proper alignment.
5. Wrench tighten the jam nut (4a) for rigid extensions and the hose fitting hex for flexible extensions.
6. Thread the new nozzle (5) onto the extension (4), and tighten firmly.
7. Apply thread sealant to the male threads of the hose fitting. Thread the hose fitting into the swivel (101) and tighten firmly.
8. Open all dispense position shut-off valves (B).
9. Start the pump to pressurize the system. See the **Operation** section, page 9, for operating instructions.

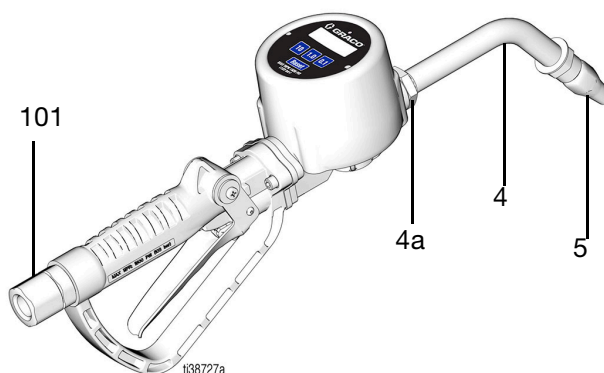


FIG. 2

10. To ensure dispensing accuracy, purge all of the air from the fluid lines and dispense valves before use.

Operation

Preset Meter Operation

The preset operation of the meter is designed so the trigger latch is released when the preset value is reached, which stops the fluid flow.

In order for the preset mechanism to operate correctly, the user must latch the trigger and release the trigger during each dispense.

Holding the trigger in the open position overrides the preset functionality of the PM8/PM20 meter.

For additional operation directions, refer to the **Operation Flowchart**, page 12, and the instructions on page 13.

Manual Operation

The meter is able to be manually operated by pulling and holding the trigger in the open position for as long as fluid flow is desired.

Preset dispense termination and Additional Dispense Limit termination do not function while dispensing fluid manually by holding the trigger open.

The PrE and AddL limits activate the alarms, but the amount dispensed is displayed on the meter. The fluid flow stops only when the trigger is released without activating the trigger latch.

Activate the Meter

The meter is activated by pressing any button or by running fluid through the meter (FIG. 3).

Press the Reset key to clear the meter before starting a new dispense cycle. This is the best way to activate the meter, because a second press also clears the quantity of the last dispense cycle.

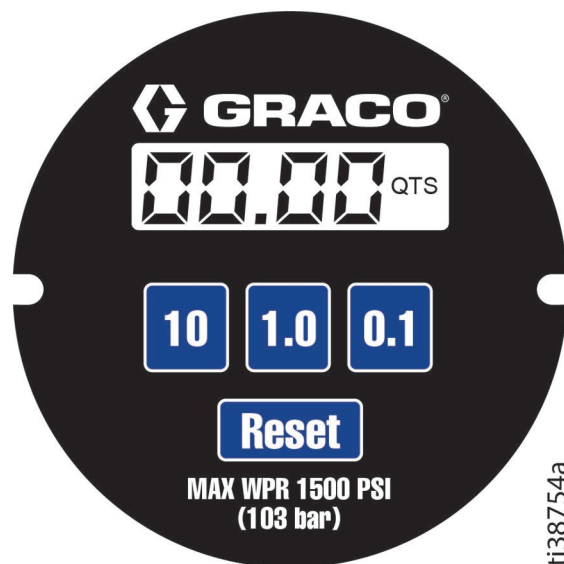


FIG. 3

NOTE: The meter goes blank after approximately one minute of non-use.

When activated, the meter displays the last completed dispense quantity. Additional fluid may be dispensed, increasing the total.

Pressing the Reset key advances the meter to the Default Preset value, which is user definable through the Setup Mode. The meter displays the Default Preset value (factory default value is 4.0).

Pressing the Reset key again advances the meter so that the Preset amount may be configured. The display value is 1.0.

Preset Value Configuration

After reaching the Preset configuration screen, the value is increased using the 10, 1.0, and 0.1 keys.

After configuring the desired Preset value, fluid flow may be commenced. The meter updates until the Preset amount is reached. When fluid flow begins, the value displayed changes from the preset value to the amount dispensed, beginning with 0.0.

Function of Reset

Press the Reset key to clear the quantity of the last dispense cycle and to reset the meter to the Default Preset value (FIG. 3).

Setup Mode

Press and hold the Reset button for approximately six (6) seconds. All LCD segments and LED of the digital display illuminate. The software revision displays for approximately two (2) seconds. The LCD briefly goes blank then displays the Totalizer value, tOtL. The meter is now in Setup Mode.

Totalizer (tOtL)

The tOtL value displayed is the Totalizer total value, which can be reset.

Press and hold the RESET key for approximately six (6) seconds to reset the Totalizer total value.

After viewing or resetting the Totalizer total value, press and release the RESET key in order to advance to the next item in Setup Mode.

Additional Dispense Limit (AddL)

AddL displays on the meter to identify the following value as the Additional Dispense Limit. The limit indicates how much additional fluid may be dispensed after reaching the Preset Value for a top-off application. This functionality allows for fluid top-off without having to set another preset dispense. It also prevents excessive top-off amounts. This value must be configured in whole numbers within the range of 1- 99 units (the default being 1.00). Use the 10 and 1.0 keys to adjust the value.

Once the desired AddL is reached, press the Reset key.

Unit of Measure (Unit)

The meter displays Unit to identify the unit configuration. Pressing the 0.1 key cycles through the available units of measure: PTS, QTS, GAL, and L.

After selecting the desired unit, press the Reset key.

Default Preset (dEFP)

The meter displays dEFP to identify the value as the Default Preset. This meter value can incorporate fractional values with a range of 0.1- 99.9 units. The 10, 1.0, and 0.1 keys are used to adjust the respective values.

Press the Reset key when the desirable dEFP is reached. This exits Setup Mode and displays 0.00.

Calibration Mode

Press and hold the 10 and 0.1 keys for approximately six (6) seconds. The meter displays CAL and the unit of measure displays.

Dispense one (1) quart (or liter, if configured for liters) of fluid into a clean calibrated container. When the volume reaches the desired amount, stop the dispense.

Press the Reset key to save the new calibration and exit Calibration Mode. The digital display on the meter displays 0.00.

To restore the factory default calibration factor, press the 0.1 button and the 10 button simultaneously, then release.

Verify 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. Minimum flow rate should be one (1) gpm (3.8 lpm).
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 the liquid enters the container from the bottom, to prevent fluid aeration.

4. Trigger the dispense valve slowly. Dispense fluid until the calibrated container is full when the nozzle and extensions are removed.

5. Allow the 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 above procedure determines if the meter is accurately dispensing the product and minimizes testing errors. Some variance may occur, depending on the fluid viscosity. If the procedure determines that the meter is not accurate, recalibrate the meter following the procedure in **Calibration Mode**, page 10.

Maximum Dispense Accuracy

(gallon/quart/pint dispenses only)

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

Always press the Reset key to clear the meter before a new dispense cycle.

Dispense Instructions



To reduce the risk of serious bodily injury, including fluid injection, never exceed the maximum working pressure of the valve you are using or the lowest rated component in your system.

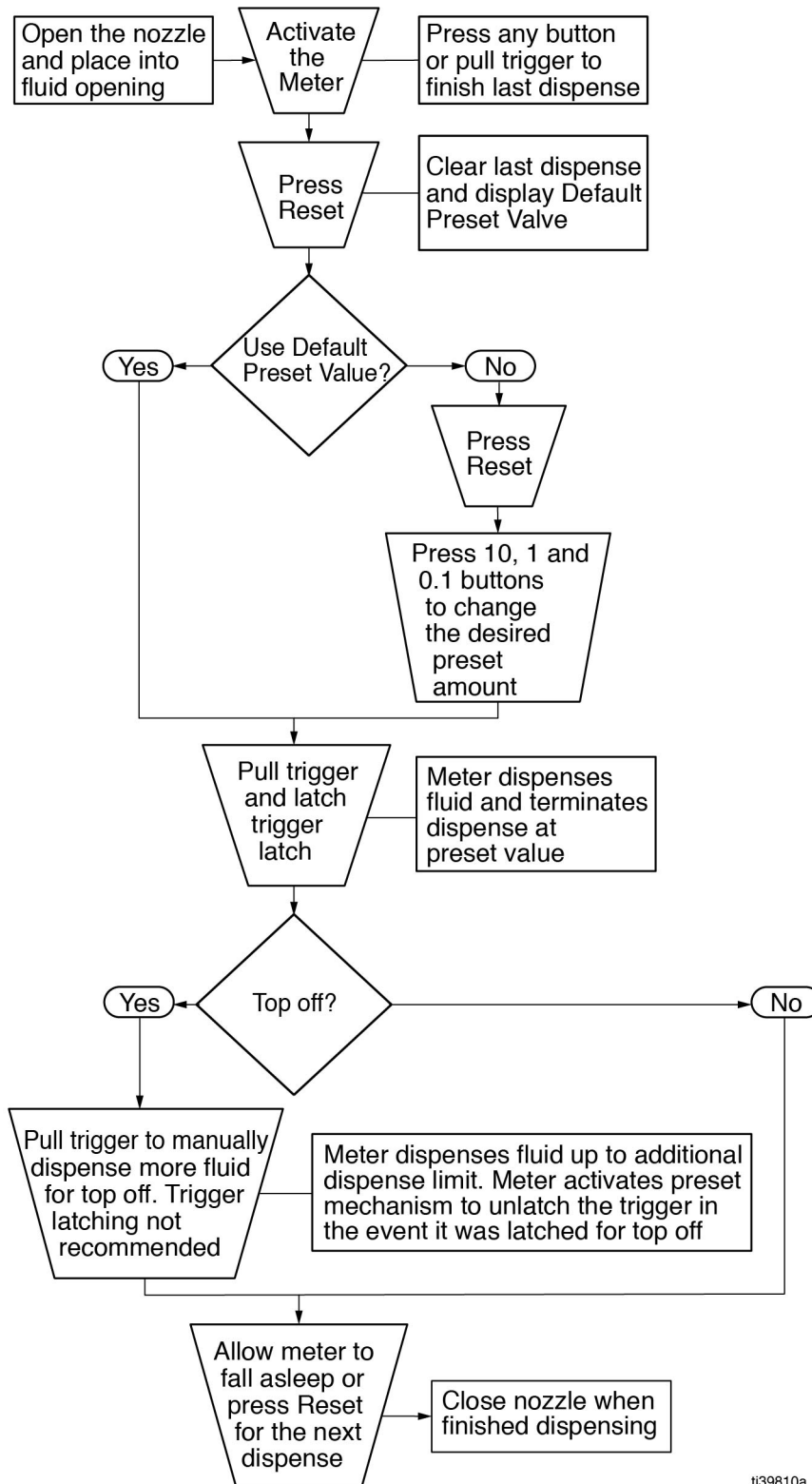
NOTICE

The preset mechanism of the valve releases the trigger latch and allows the trigger to return to the closed position. Manually holding the trigger in the open position defeats this preset mechanism. The correct operation is latching the trigger in the open position then releasing the grip on the trigger.

Hands-on operation is recommended to prevent the metered valve assembly from being dislodged from the dispense position during a dispense and to prevent accidental over dispensing in the event of a malfunction.

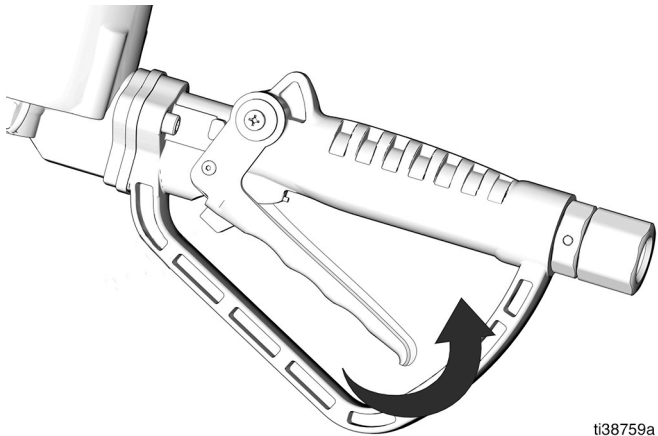
Do not latch the trigger in the event of bAtt low battery display or when the display is blank. The solenoid, which is used to stop dispenses, will not function without power.

Operation Flowchart



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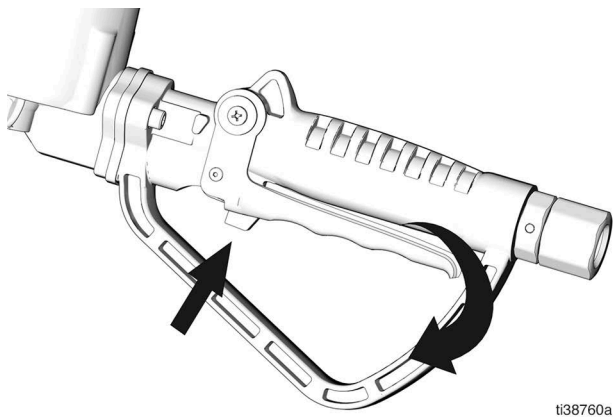
1. Open the dispense nozzle and point it into the fill port or a container.
2. Activate the meter.
3. Press Reset to clear the prior total.
4. Accept the default preset or adjust the preset value.
5. Dispense by squeezing the trigger toward the valve body (FIG. 4).



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FIG. 4

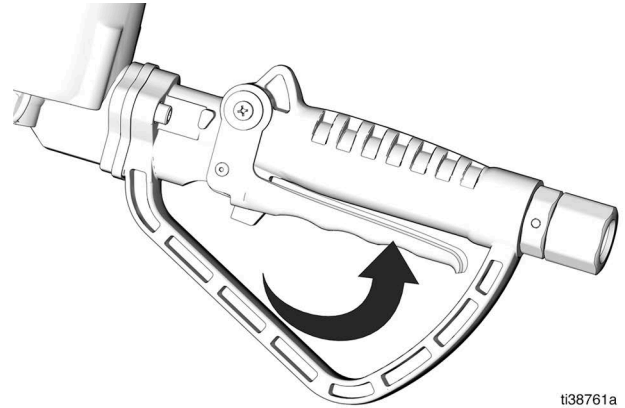
6. Press the trigger latch button to lock the trigger valve in the open position (FIG. 5).
7. Slowly release the trigger while pressing the trigger latch button (FIG. 5).



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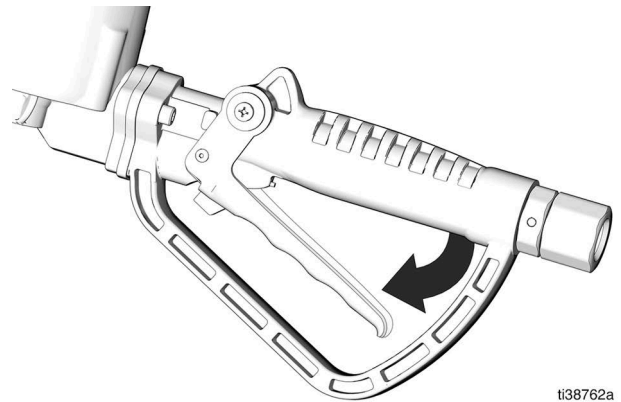
FIG. 5

8. To stop dispensing before the Preset amount is reached, release the trigger latch by pulling the trigger toward the valve body, and releasing the trigger (FIG. 6 and FIG. 7).
9. Close the nozzle when the dispense is completed.



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FIG. 6



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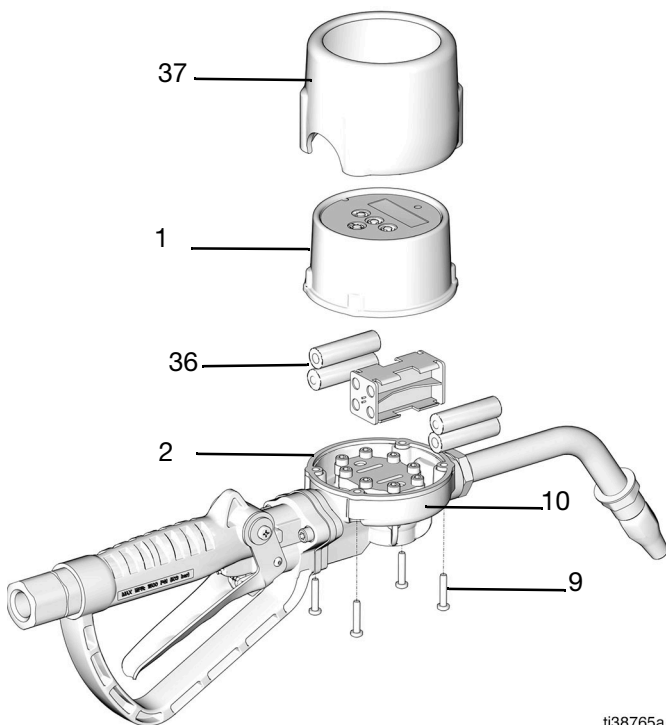
FIG. 7

Battery Installation



NOTE: The reference numbers in the following instructions refer to FIG. 8 and FIG. 9.

1. Follow the **Pressure Relief Procedure**, page 7.
2. Remove the impact guard (37).
3. Remove the four (4) screws (9) from the meter housing (10), and remove the electronics bezel (1).
4. Locate the battery pack and remove the batteries (36).
5. Dispose of the batteries according to local regulations for battery disposal.
6. Insert new batteries (36) as shown on the battery holder (negative and positive positions). Press down firmly.
7. Reinstall the battery pack.
8. Position the wires as shown in FIG. 9, to minimize pinching the wires between the meter housing and the bezel housing.
9. Inspect the bezel seal (2) for damage. Replace, if needed.
10. Place the electronics bezel (1) onto the meter housing (10).
11. Reinstall the four (4) screws (9), tightening the screws in a diagonal pattern to 15 - 25 in-lb (1.7 - 2.8 N•m).



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FIG. 8

12. Reinstall the impact guard (37).

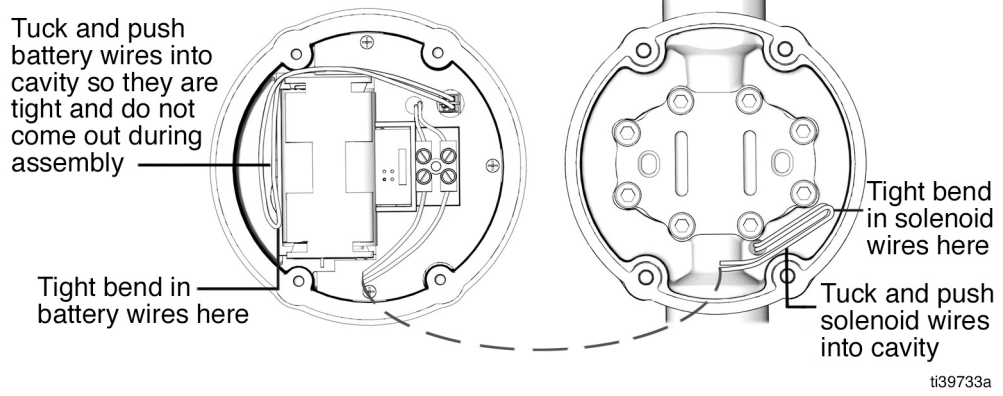


FIG. 9

Recycling and Disposal

End of Product Life

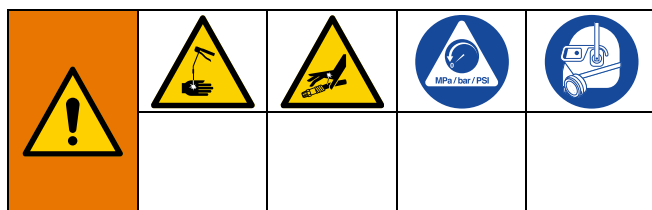
At the end of the product's useful life, dismantle and recycle it in a responsible manner.

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



- Deliver remaining product to a recycling facility.

Troubleshooting



1. Follow **Pressure Relief Procedure**, page 7, before checking or repairing the dispensing valve.
2. Check all possible problems and causes before disassembling the dispensing valve.

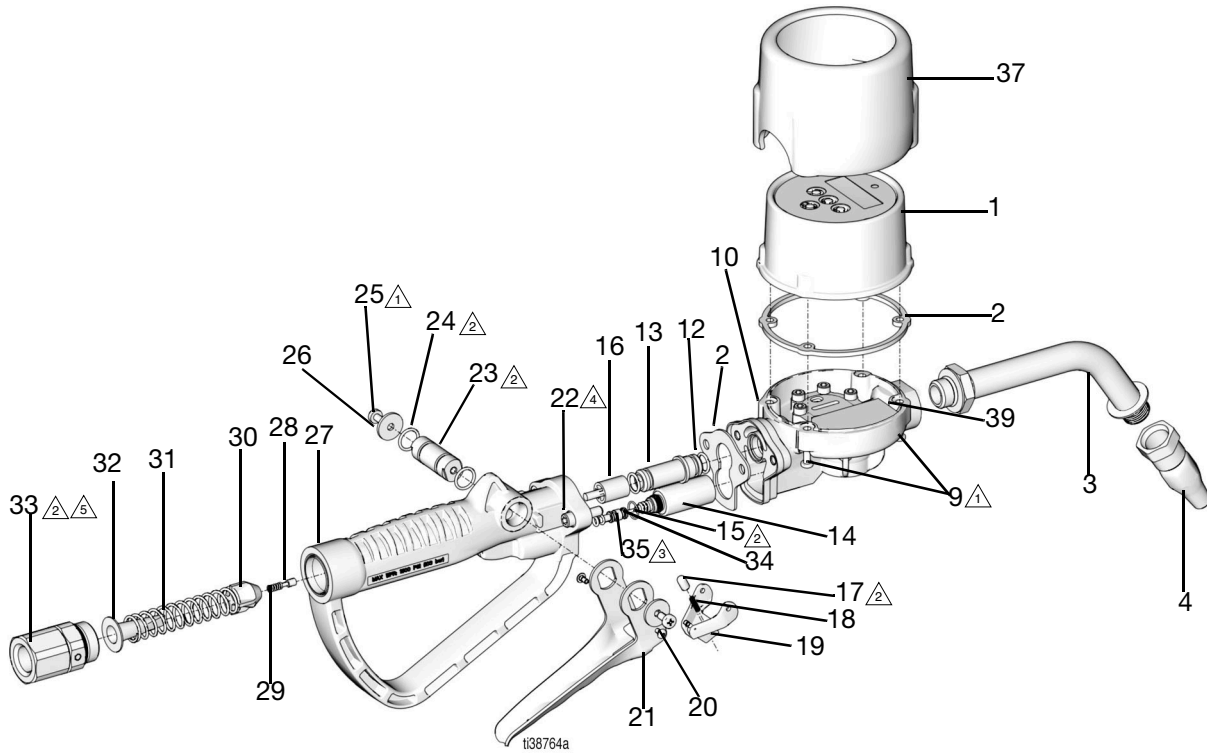
Problem	Cause	Solution
Display does not activate or is showing unintelligible characters	Electronic control is malfunctioning	Replace electronic control. Order PM8/20 Electronics Kit. Kit includes electronic control, seal and mounting screws.
	Two or more batteries are installed with incorrect polarity.	Check the polarity of all four (4) batteries, and correct if necessary.
	Batteries in electronic control are depleted	Replace batteries.
Slow or no fluid flow	Strainer (32) is clogged.	Clean or replace strainer (32).
	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 (101)	Swivel (33) is loose.	Torque the swivel (33) to 15 to 20 ft-lbs (20 to 27 N•m). If the problem remains, contact your Graco distributor for repair or replacement.
	Damaged or worn o-ring(s) (PN 105765) (Reference item 33, Parts , page 21)	Replace the o-rings (PN 105765) and torque the swivel (33) to 15-20 ft-lbs (20 to 27 N•m). If the problem remains, contact your Graco distributor for repair or replacement.
Fluid flow does not stop when valve is closed	Worn valve seat (30)	Replace valve seat (30). Rebuild valve using valve kit 18F174 for oil and gear lube models, 18F175 for anti-freeze models.
Fluid leaks from trigger barrel seals	Damaged or worn o-ring(s) (24)	Replace o-rings (24). Rebuild valve using valve kit 18F174 for oil and gear lube models, 18F175 for anti-freeze models.
Trigger lock on/off feature does not work	Damaged trigger components	Replace trigger assembly. Order PM8/20 Trigger Kit (18F172).

Problem	Cause	Solution
Meter does not shut off at the preset value	Preset limit incorrectly set	Set AddL (Additional Dispense Limit) to a lower value to prevent mishaps.
	Valve seat (30) is worn	Replace the valve seat (30).
	Trigger is manually held open when the solenoid activates	Latch the trigger during present dispenses.
	Weak batteries	Replace old batteries with four (4) new batteries - E91 alkaline Energizer recommended.
	Trigger assembly is damaged	Replace the trigger assembly (18F172).
	Dynamic inlet pressure is exceeded	Reduce the flow rate, fluid viscosity is causing excessive pressure drop.
	Solenoid damaged	Replace the solenoid (18F171).
	The temperature limit is exceeded	Limit the operating temperature to the maximum allowed.
	Faulty solenoid wire connection	Check and repair, as needed, the solenoid wire connection to the terminal block within the bezel housing.
Leaks from nozzle	Worn nozzle seals	Replace the nozzle (4).
	Valve seat (30) is worn	Replace the valve seat (30).

Alarms

Alarm	Alarm Type	Cause	Solution
PrE	Over-Dispense Alarm	Fluid flow does not stop upon reaching the present amount.	See Troubleshooting , page17.
AddL	Limit-Exceeded Alarm	The trigger is manually held open until the pre-defined limit is exceeded.	Release trigger or adjust the limit to a larger amount.
Err7	Calibration Error	An out of range of normal invalid calibration factor is obtained during calibration operation.	Recalibrate the meter. Make sure that the correct unit of measure is selected and that the correct volumetric calibration container is being used. Contact Graco Customer Service if recalibration is unsuccessful.
bAtt	Low Battery Alarm	The battery voltage is too low to operate the meter.	Replace batteries.
		One of the batteries is installed with incorrect polarity.	Check for proper polarity for all four (4) batteries, and correct as needed.

Parts



- 1 Torque screws to 15 - 25 in-lb/1.7 - 2.8 N•m)
- 2 Apply thin film of lubricant
- 3 Install 35 without grease or oil. Use soapy water to lubricate.
- 4 Torque to 60 - 72 in-lb/6.8 - 8.1 N•m)
- 5 Torque to 15- 20 ft-lb/20.0 - 27.0 N•m)

Part Number

Ref.	Part	Description	Qty.
1	✚	BEZEL, PM8, PM20	1
1	‡	BEZEL, PM8, AF	1
2	✚ † ✚ ‡	GASKET, PM8, BEZEL	1
3	255194	(Models 25U085, 25U087, 25U089, 273156, 273159, 273162, 273165, 273167, 273169, 273171, 273173, and 273175), 26D883	
	16Y863	(Models 25U086, 25U088, 25U090, 273157, 273160, 273163, 273166, 273168, 273170, 273172, 273174, and 273176), 26D884	
	255754 15K672	(Models 273158, 273161, and 273164)	
4	17T207	NOZZLES (Models 25U085 through 25U090, 273156, 273157, 273159, 273160, 273162, 273163, 273165, and 273166)	
	255461	Nozzles (Models 273165 through 273176)	
	255470	NOZZLES (Models 273158, 273161, and 273164)	
	17R220	NOZZLES (models 26D883 and 26D884)	1
9	✚ † ✚ ✚ ✚ ✚ ✚ ✚ ‡	SCREW, mach., torx pan hd	4
10	✘	METER, assembly	1
12	* 197650	O-RING, buna-n	2
13	*	FITTING, connector, PM8/PM20	1
14	◆	SOLENOID, PM8/PM20	1
15	◆	O-RING, 10.50 x 1.00 mm	1
16	★ 277673	ROD, push (Models 273156 - 273176)	1
16	✚	ROD, push (Models 25U085 - 25U090)	1
17	☼	GUIDE, spring, PM8/PM20	1
18	☼	SPRING, compression	1
19	☼	TRIGGER, latch, assy	1
20	☼	PIN, latch, attachment	2
21	☼	TRIGGER	1
22	GC2250	SCREW, SHDC, AS, .250 x .875	2
23	★ ✚	CAM, valve, PM8	1
24	★ ✚ 113574	O-RING, seal	2
25	110637	SCREW, machine, panhead	2
26	191552	WASHER, flat	2
27		VALVE, handle, medium flow SD	1

Ref.	Part	Description	Qty.
28	★ ✚ 15U700	PLUNGER, trigger lift	1
29	★ ✚ 15U701	SPRINGS, secondary	1
30	★ ✚ 15U704	SEAT, valve	1
31	★ ✚	SPRING, main valve	1
32	★ 15M308	STRAINER, wire mesh (Models 273156 - 273176)	1
32	✚ 133191	STRAINER, wire mesh (Models 25U085 - 25U090, 26D883, 26D884)	1
33	247344	SWIVEL, straight 1/2 npt used by 273156, 273157, 273158, 273165, 273166. 25U085, 25U086, 26D883 and 26D884	1
	247345	SWIVEL, straight 3/4 npt used by 273167, and 273168	1
	24H098	SWIVEL, straight 1/2 bspp used by 273159, 273160, 273161, 273169, 273170, 25U087, and 25U088	1
	24H100	SWIVEL, straight 3/4 bspp used by 273171, and 273172	1
	24H097	SWIVEL, straight 1/2 bspt used by 273162, 273163, 273164, 273173, 273174, 25U089, and 25U090	1
	24H099	SWIVEL, straight 3/4 bspt used by 273175, and 276176	1
34	◆	BUSHING, solenoid, PM8/PM20	1
35	◆	PACKING	2
36	121413	BATTERY, pkg. 4-count, alkaline AA	1
37	273181	GUARD, impact, PM8/PM20	1
39	✚ ✚ ‡	FOAM, cushion	3

✚ Parts included in 18F169 Bezel Kit

‡ Parts included in 18F170 Gasket Kit

◆ Parts included in 18F171 Solenoid Kit

☼ Parts included in 18F172 Trigger Kit

* Parts included in 18F173 Connection Kit

★ Parts included in 18F174 Valve Repair Kit

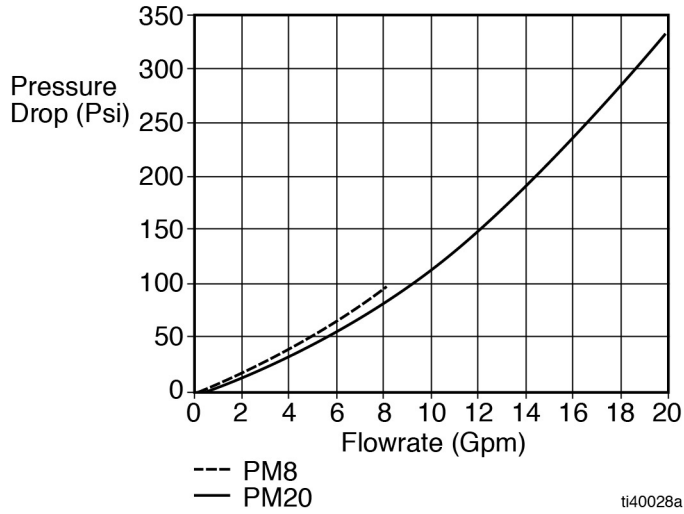
✚ Parts included in 18F175 AF Valve Repair Kit

✘ Parts included in 18F176 Meter Kit (this kit is assembled as one unit)

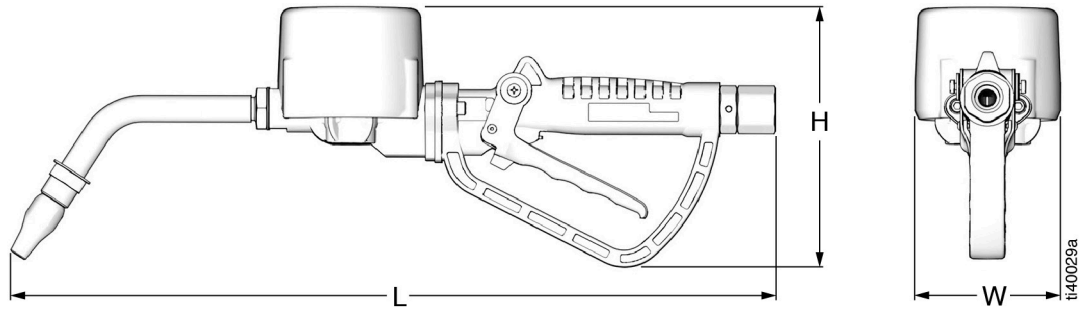
‡ Parts included in 18F390 Anti-freeze Bezel Kit

Performance Charts

PM8/PM20 Pressure Drop 10 Weight Oil at 70°F (21°C)



Dimensional Drawing



Item	Length		Width		Height	
	in.	mm	in.	mm	in.	mm
PM8, rigid	21.4 in.	544.0 mm	4.1 in.	103.5 mm	7.2 in.	183 mm
PM8, flex	30.7 in.	780.0 mm	4.1 in.	103.5 mm	7.2 in.	183 mm
PM8, gear lube	22.6 in.	575.0 mm	4.1 in.	103.5 mm	7.2 in.	183 mm
PM20, rigid	21.4 in.	544.0 mm	4.1 in.	103.5 mm	7.2 in.	183 mm
PM20, flex	30.7 in.	780.0 mm	4.1 in.	103.5 mm	7.2 in.	183 mm

Technical Specifications

PM8 and PM20 Meters		
	US	Metric
Recommended maximum flow rate (under normal operating conditions)		
PM8 Metered Dispense Valves	8 gpm	30.3 lpm
PM20 Metered Dispense Valves	20 gpm	75.7 lpm
PM8 Gear Lube Metered Dispense Valves	5 gpm	18.9 lpm
Minimum flow rate (under normal operating conditions)		
PM8 and PM20 Metered Dispense Valve	0.25 gpm	0.95 lpm
Maximum static operating pressure		
PM8 Anti-freeze models	200 psi	1.38 MPa, 13.8 bar
PM8/PM20 Oil and PM8 Gear Lube models	1500 psi	10 MPa, 102 bar
Maximum Dynamic Operating Pressure*		
PM8 Anti-freeze Models	200 psi	1.38 MPa, 13.8 bar
PM8/PM20 Oil and PM8 Gear Lube models PM20 Metered Dispense Valve	600 psi	4.14 MPa, 41.4 bar
Temperature Range**		
Operating Temperature Range**	- 20°F to 125°F	-29°C to 52°C
Storage Temperature Range	- 40°F to 185°F	-40°C to 85°C
Ingress Protection		
All models	IP69K per IEC 60529	
Weight		
All models	5.2 lb.	2.4 kg
Units of Measure		
All models	Quarts, pints, gallons, liters	
Maximum Dispense	19999.9 units	
Maximum Preset Dispense	19999 units	
Maximum Totalizer Record	19999 units	
Inlet Sizes		
PM8 Metered Dispense Valves	1/2 npt, bspp and bspt; model dependent	
PM20 Metered Dispense Valves	1/2 and 3/4 npt, bspp, and bspt; model dependent	
Outlet Sizes		
PM8 Metered Dispense Valves	3/4 in. ORB	
PM20 Metered Dispense Valves	3/4 in. ORB	
Accuracy		
Accuracy (displayed value compared to dispensed value)***	+ or - 0.5 percent	
Battery		
All models**	4 AA, Recommended batteries are E91 alkaline Energizer®	
Materials of Construction		
Wetted materials	aluminum, stainless steel, carbon steel, acetal, nitrile rubber, Geolast®	

*This is the maximum allowable pressure at the inlet of the meter when fluid is flowing through the valve.

**Lithium ion batteries are required for operating temperatures below 0°F (-18°C).

***At 2.5 gpm (9.5 lpm) at 70°F (21°C) with 10-weight oil and one gallon dispensed. May require calibration.

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California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – 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.

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

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

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

Original instructions. This manual contains English. MM 3A8307

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