



GREAT PLAINS INDUSTRIES, INC.

Positive displacement flowmeters

GM1 series instruction manual

To the owner

Thank you for purchasing a GPI GM Series Flowmeter. Please take a few minutes to read through this manual before installing and operating your meter. If you have any problems with the meter, refer to the maintenance and trouble shooting sections of this manual.

This manual contains connection and operating instructions for the GM Series meters. If you need further assistance, contact your local GPI representative or contact GPI by telephone, or by fax.

The GPI GM Series Flowmeter has incorporated the oval rotor principal into its design. This has proven to be a reliable and highly accurate method of measuring flow. Exceptional repeatability and high accuracy over a wide range of fluid viscosities and flow rates are features of the GM Series flowmeter design. The low pressure drop and high pressure rating means the GM Series flowmeter is suitable for both gravity and pump (in-line) applications.

The GPI GM1 Series flowmeters are



available in either PPS (Polyphenylene Sulfide Resins) or 316 Stainless Steel. Standard rotors are made from 316 Stainless Steel with optional PPS rotors with Hastalloy C Shafts available.

Operation



PLEASE READ THIS INFORMATION CAREFULLY BEFORE USE!

Before use, confirm the fluid to be used is compatible with the meter (refer to the GPI fluid compatibility chart), or consult your local GPI representative for advice.

This meter will handle particle sizes up to 0.075mm/0.0003".

To prevent damage from dirt or foreign matter, GPI recommends a Y or basket type 200 mesh strainer be installed as close as possible to the inlet side of the meter (if required contact GPI for

further information).

To prevent damage to the meter slowly fill the system with fluid (this will prevent damage caused by air purge)

Note: Failure to do this could damage the meter.

For pump applications, turn off the pump at the end of each day.

Installation

1. Use thread sealant on all pipe threads.
rotor shafts are always in a horizontal plane. Flow is bi-directional.
2. Ensure the meter is installed so that

3. GPI recommends use of flexible connections.
4. Extreme care must be taken when installing the meter. Pipe strain or overtightening meter connections can cause meter damage.

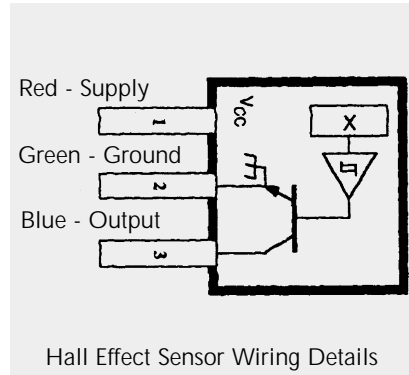
Pulsar details

Hall Effect Sensor Specifications;

- * 4.5V to 24V (4.6 ~ 9mA) operation needs only an unregulated supply.
- * Open collector 25mA output NPN compatible with digital logic.
- * Reverse battery protection.
- * Temperature -40°C / -40°F ~ 150°C / 300°F.

Reed Relay Specifications;

- * Two wire SPST N/O.
- * Switching voltage 150VDC maximum current 0.25 AMPS.
- * Rating 3 watts.
- * Temperature -40°C / -40°F ~ 150°C / 300°F.



Maintenance

Disassembly:

1. Ensure the fluid supply to the meter has been disconnected, and the line pressure has been released before disassembly.
2. Remove four (4) screws (Item 3) and remove the meter body cover (Item 2).
3. Remove o-ring (Item 5) and inspect (replace o-ring if damaged).
4. Remove rotors (Item 4), clean and inspect (replace rotors if damaged).

Reassembly:

1. Place rotors (Item 4) into the meter body. The rotors should be at 90° to each other.

Note: The rotor with magnets must be placed in the body on the same side as the groove on the body (refer to diagram).

2. Lightly rotate the rotors (Item 4) by hand (they must rotate freely).
3. Install o-ring (Item 5).
4. Replace the meter cap (Item 2).

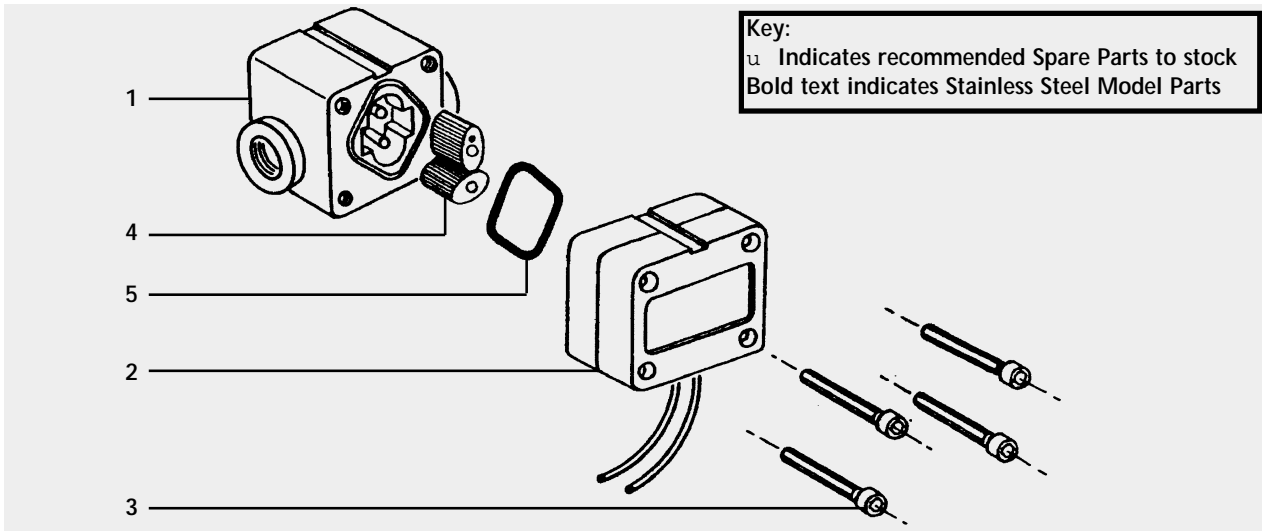
Note: The groove on the cover must line up with the groove on the meter body (refer to diagram).

5. Replace four screws (Item 3).



CAUTION:
Care must be taken not to overtighten the screws (Item 3) or damage may occur.

Display parts listing



Item No.	No. Off.	Rec. Parts	Part or Set (Order from this column only)	Part Description
1	1		MS1R-1S	Meter Body Assy. (BSP)
1	1		MS1R-1C	Meter Body Assy. (BSP) Hastalloy C Shafts
1	1		MS1S-1S	Meter Body Assy. (BSP) Stainless Steel
1	1		MS1R-2S	Meter Body Assy. (NPT)
1	1		MS1R-2C	Meter Body Assy. (NPT) Hastalloy C Shafts
1	1		MS1S-2S	Meter Body Assy. (NPT) Stainless Steel
2	1	*	MS3R-S	Meter Cap Hall Effect Sensor
2	1	*	MS3S-S	Meter Cap Hall Effect Sensor Stainless Steel
2	1	*	MS3R-SR	Meter Cap Reed Switch
2	1	*	MS3S-SR	Meter Cap Reed Switch Stainless Steel
3	4	*	MS98s	Screws
3	4	*	MS113s	Screws Stainless Steel
4	2	*	MS6s	Rotor (Set)
5	1	*	BS127V	O-ring (Viton)
5	1	*	BS127TE	O-ring (Teflon)
5	1	*	BS127E	O-ring (EPDM)

Meter specifications

Meter Type	Pulse
Flow Ranges (Litres per hour/US Gallons per hour)	
Above 5 centipoise	1 to 100 / 0.26 to 26.4
Below 5 centipoise	2 to 100 / 0.53 to 26.4
Accuracy of Reading	+/- 1%
Maximum Viscosity	1000 Centipoise
Maximum Operating Pressure	500/1000 kPa/ 75/150 PSI/ 5/10 Bar
Maximum Operating Temperature	80°C / 176°F
Pulse Type	Hall Effect Sensor / Reed Switch
Pulses per Litre/US Gallons	1000/3785
Meter Dimensions	50 x 50mm / 1.97" x 1.97" (Meter Body) 65mm / 2.58" (Port Face to Face)
Weight	240g / 8.5oz

Trouble shooting

TROUBLE SHOOTING GUIDE		
TROUBLE	CAUSE	REMEDY
Fluid will not flow through the meter	A) Foreign matter blocking rotors B) Line strainer blocked C) Damaged rotors D) Meter connections over tightened	A) Dismantle meter, clean rotors (Strainer must be fitted in line). B) Clean strainer C) Replace rotors (Strainer must be fitted in line) D) Re-adjust connections
Reduced flow through the meter	A) Line strainer partially blocked B) Fluid is too viscous	A) Clean strainer B) Maximum viscosity 1000 centipoise
Meter reading inaccurate	A) Fluid flowrate is too low or too high B) Air in fluid C) Excess wear caused by incorrect installation	A) See specifications for min. and max. flowrates B) Bleed air from system C) Check meter body and rotors
Meter not giving a pulse signal	A) Faulty hall effect sensor or reed switch B) Faulty magnet C) Rotors installed in wrong position	A) Replace meter cap B) Replace rotors C) Refer to correct rotor positioning - assembly instructions.

Warranty

Great Plains Industries, Inc. Limited Warranty Policy

Great Plains Industries, Inc., 5252 East 36th Street North, Wichita, Kansas USA 67220-3205, hereby provides a limited one year warranty against defects in material and workmanship on all products manufactured by Great Plains Industries, Inc. This warranty shall extend to the purchaser of this product and to any person to whom such product is transferred during the warranty period.

The warranty period shall begin on the date of the original new equipment purchase. Warrantor's obligation hereunder shall be limited to repairing defective workmanship or replacing or repairing any defective part or parts. This warranty shall not apply if:

- a.) The product has been altered or modified outside the warrantor's duly appointed representative;
- b.) The product has been subjected to neglect, misuse, abuse or damage or has been installed or operated other than in accordance with the manufacturer's operating instructions.

To make a claim against this warranty, notice of claim must be given in writing to the company at its address below no later than 30 days after the expiration of the warranty period. Such notice shall identify the defect in the product. The company shall, within 14 days of receipt of such notice, notify the customer to either send the product, transportation prepaid, to the company at its office in Wichita, Kansas, or to a duly authorized service center. The company shall perform all obligations imposed on it by the terms of this warranty within 60 days of receipt of the defective product.

GREAT PLAINS INDUSTRIES, INC. EXCLUDES LIABILITY UNDER THIS WARRANTY FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES INCURRED IN THE USE OR LOSS OF USE IF THE PRODUCT WARRANTED HEREUNDER.

The company herewith expressly disclaims any warranty of merchantability or fitness for any particular purpose other than for which it was designed.

This warranty gives you specific rights and you may also have other rights which vary from U.S. state to U.S. state.

NOTE: In compliance with MAGNUSON MOSS CONSUMER WARRANTY ACT - Part 702 (governs the resale availability of the warranty terms).



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