



GREAT PLAINS INDUSTRIES, INC.

Positive displacement flowmeters **GM003 series instruction manual**

To the owner

Please take a few minutes to read through this manual before installing and operating your meter. Always retain this manual for future reference. 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 GM003 meters. For models with displays, an additional manual is supplied. If you need further assistance, contact your local representative or distributor for advice.

This 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 oval rotor design. With low pressure drop and high pressure rating means oval rotor flow meters are suitable for both gravity and pump (in-line) applications.

The GPI GM003 Series Flowmeters are available in either PPS (Polyphenylene



Sulfide Resins), Aluminium or 316 Stainless Steel. Standard rotors are made from 316 Stainless Steel. Optional PPS rotors with Hastalloy C Shafts available on PPS models only.

Operation



PLEASE READ THIS INFORMATION CAREFULLY BEFORE USE!

Before use, confirm the fluid to be used is compatible with the meter. Refer to Industry fluid compatibility charts or consult your local representative for advice.

To prevent damage from dirt or foreign

matter it is recommended that a Y or basket type 200 mesh strainer be installed as close as possible to the inlet side of the meter. Contact your local representative for advice.

Note:

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

Failure to do this could damage the meter.

To reduce pressure build up turn off the pump at the end of each day.

Installation

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

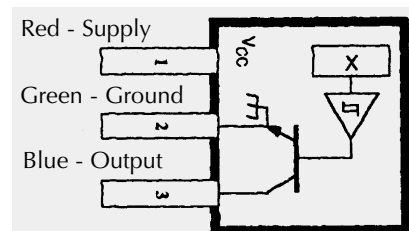
Pulsar details

Hall Effect Sensor Specifications;

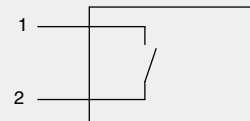
- 1 4.5V to 24V (4.6 ~ 9mA) operation needs only an unregulated supply.
- 1 Open collector 25mA output NPN (Current Sink) compatible with digital logic.
- 1 Reverse battery protection.
- 1 Temperature -40°C / -40°F ~ 150°C / 300°F.

Reed Relay Specifications;

- 1 Two wire SPST N/O.
- 1 Switching voltage 150VDC maximum current 0.25 AMPS.
- 1 Rating 3 watts.
- 1 Temperature -40°C / -40°F ~ 150°C / 300°F.
- 1 Duty Cycle 20% on 80% off.



Hall Effect Sensor Wiring Details



Reed Switch Wiring Details

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 90o 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).

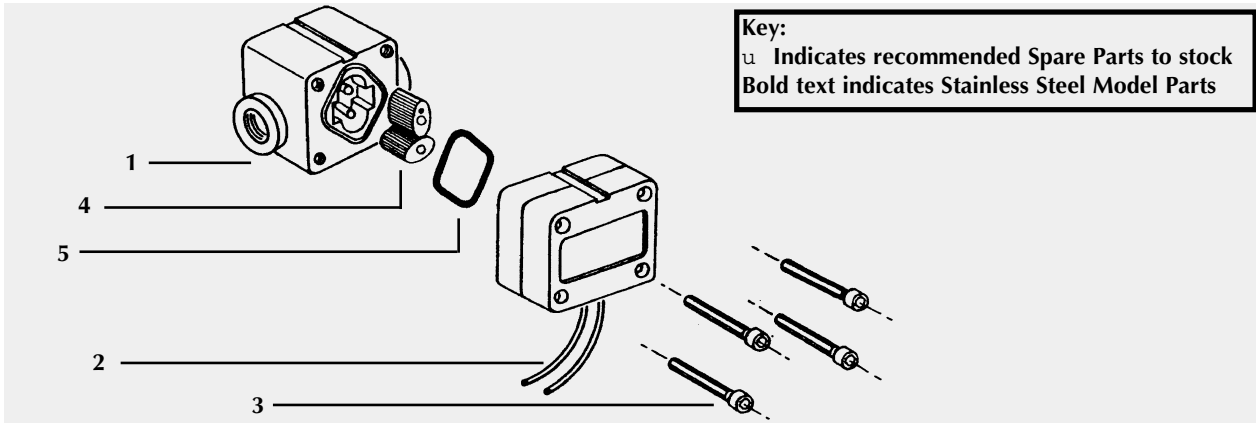
5. Replace four screws (Item 3).



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		MS2R-1S	Meter Body Assy. (BSP)
1	1		MS2R-1C	Meter Body Assy. (BSP) Hastalloy C Shafts
1	1		MS2S-1S	Meter Body Assy. (BSP) Stainless Steel
1	1		MS2R-2S	Meter Body Assy. (NPT)
1	1		MS2R-2C	Meter Body Assy. (NPT) Hastalloy C Shafts
1	1		MS2S-2S	Meter Body Assy. (NPT) Stainless Steel
1	1		MS2AL-1S	Meter Body Assy. (BSP) Aluminium
1	1		MS2AL-2S	Meter Body Assy. (NPT) Aluminium
2	1	u	MS3R-S	Meter Cap Hall Effect Sensor
2	1	u	MS3S-S	Meter Cap Hall Effect Sensor Stainless Steel
2	1	u	MS3R-SR	Meter Cap Reed Switch (Ryton & Alumin. Models)
2	1	u	MS3S-SR	Meter Cap Reed Switch Stainless Steel
3	4	u	MS98s	Screws (Ryton & Alumin. Models)
3	4	u	MS113s	Screws Stainless Steel
4	2	u	MS7-1Es	Rotor SS Hall (Set)
4	2	u	MS7-1HEs	Rotor SS High Viscosity Hall (Set)
4	2	u	MS7-1Rs	Rotor SS Reed (Set)
4	2	u	MS7-1HRs	Rotor SS Reed High Viscosity (Set)
4	2	u	MS7Rs	Rotor PPS Reed (Set)
4	2	u	MS7Es	Rotor PPS Hall (Set)
5	1	u	BS127Vs	O-ring (Viton)
5	1	u	BS127Ps	O-ring (Perfluoro Elastomer)

Meter specifications

Meter Type

Flow Ranges (Litres/hr or US Gall./hr)

Above 5 centipoise

Below 5 centipoise

Accuracy of Reading

Maximum Viscosity

Max. Operating Pressure **Ryton Models**
SS Models

Max. Operating Temp. **Ryton Models**
SS Models

Pulse Type

Pulses per Litre/US Gallons

Meter Dimensions (Width x Height)

Meter Dimensions Port Face to Face

Weight

Wetted Components **SS Models**
Ryton Models

SS & Ryton Models

15 to 500 / 4 to 132

25 to 500 / 6 to 132

+/- 1%

1000 Centipoise

500kPa/75PSI/5Bar

1000/kPa/150PSI/10Bar

80°C / 176°F

120°C / 248°F

Hall Effect Sensor/Reed Switch

400/1514

50x50mm / 1.97" x 1.97"

65mm / 2.58"

SS 600g / 21.2oz **Ryton** 240g / 8.5oz

316 SS, Zirconia Bush

Ryton, 316 SS, Zirconia Bush, Hastalloy C

Aluminium Models

15 to 500 / 4 to 132

25 to 500 / 6 to 132

+/- 1%

1000 Centipoise

500kPa/75PSI/5Bar

80°C / 176°F

Hall Effect Sensor/Reed Switch

400/1514

50x50mm / 1.97"x1.97"

60mm / 2.36"

320g / 12oz

6061 Alum., 316 SS, Ryton

Zirconia Bush

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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