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.

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.

GM002 Series Flowmeters are available in either PPS (Polyphenylene Sulfide) 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.

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 bidirectional.
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.

Pulser details

Hall Effect Sensor Specifications:
1. 4.5V to 24V (4.6 ~ 9mA) operation needs only an unregulated supply.
2. Open collector 25mA output NPN compatible with digital logic.
3. Reverse battery protection.
4. Temperature -40°C / -40°F ~ 150°C / 300°F.

Reed Relay Specifications:
1. Two wire SPST N/O.
2. Switching voltage 150VDC maximum current 0.25 AMPS.
3. Rating 3 watts.
4. 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.
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).

<table>
<thead>
<tr>
<th>Red - Supply</th>
<th>Green - Ground</th>
<th>Blue - Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Item No.</th>
<th>No. Off.</th>
<th>Rec. Parts (Order from this column only)</th>
<th>Part Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>MS1R-1S</td>
<td>Meter Body Assy. (BSP)</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1R-1C</td>
<td>Meter Body Assy. (BSP) Hastalloy C Shafts</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1S-1S</td>
<td>Meter Body Assy. (BSP) Stainless Steel</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1R-2S</td>
<td>Meter Body Assy. (NPT) Hastalloy C Shafts</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1R-2C</td>
<td>Meter Body Assy. (NPT) Stainless Steel</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1AL-1S</td>
<td>Meter Body Assy. (BSP) Aluminium</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MS1AL-2S</td>
<td>Meter Body Assy. (NPT) Aluminium</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MS3R-S</td>
<td>Meter Cap Hall Effect Sensor</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MS3S-S</td>
<td>Meter Cap Hall Effect Sensor Stainless Steel</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MS3R-SR</td>
<td>Meter Cap Reed Switch</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MS3S-SR</td>
<td>Meter Cap Reed Switch Stainless Steel</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>MS98s</td>
<td>Screws</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>MS113s</td>
<td>Screws Stainless Steel</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>MS6s</td>
<td>Rotor Set</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>MS6-1s</td>
<td>Rotor Set Stainless Steel</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>BS127Vs</td>
<td>O-ring (Viton)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>BS127Ps</td>
<td>O-ring (Perfluoro Elastomer)</td>
</tr>
</tbody>
</table>

Key:
- Indicates recommended Spare Parts to stock
- Bold text indicates Stainless Steel Model Parts

Meter specifications

**Meter Type**
- **SS & Ryton Models**
  - Flow Ranges (Litres/hr or US Gall./hr)
    - Above 5 centipoise: 2 to 100 / 0.53 to 26.4
    - Below 5 centipoise: 5 to 100 / 1.32 to 26.4
  - Accuracy of Reading: +/- 1%
  - Maximum Viscosity: 1000 Centipoise
  - Max. Operating Pressure: 500kPa/75PSI/5Bar
  - Maximum Operating Temp.: 80°C / 176°F
  - Pulse Type: Hall Effect Sensor/Reed Switch
  - Pulses per Litre/US Gallons: 1000/3785
  - Meter Dimensions (Width x Height): 50x50mm / 1.97” x 1.97”
  - Meter Dimensions Port Face to Face: 65mm / 2.58”
  - Weight: 240g / 8.5oz
  - Wetted Components: 316 SS, Zirconia Bush

- **Aluminium Models**
  - Flow Ranges (Litres/hr or US Gall./hr)
    - Above 5 centipoise: 2 to 100 / 0.53 to 26.4
    - Below 5 centipoise: 3 to 100 / 0.8 to 26.4
  - Accuracy of Reading: +/- 1%
  - Maximum Viscosity: 1000 Centipoise
  - Max. Operating Pressure: 500kPa/75PSI/5Bar
  - Maximum Operating Temp.: 80°C / 176°F
  - Pulse Type: Hall Effect Sensor/Reed Switch
  - Pulses per Litre/US Gallons: 1000/3785
  - Meter Dimensions (Width x Height): 50x50mm / 1.97”x1.97”
  - Meter Dimensions Port Face to Face: 60mm / 2.36”
  - Weight: 310g / 11oz
  - Wetted Components: 6061 Alum., 316 SS, Ryton

**Wetted Components**
- SS Models: 316 SS, Zirconia Bush, Hastalloy C
- Ryton Models: Ryton, 316 SS, Zirconia Bush, Hastalloy C
Trouble shooting

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

Warranty

Great Plains Industries, Inc. Limited Warranaty 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 said 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).