FLOWMETER

MODELS:
1MFA, 4MFA, 6MFA and 8MFA Series

SAVE THESE INSTRUCTIONS

Federal (USA) law restricts this device to sale by or on the order of a physician.

300 Held Drive
Northampton, PA 18067 USA
ISO 13485 Certified

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Fax: (+001) 610-262-6080
www.precisionmedical.com
RECEIVING / INSPECTION
Remove the Precision Medical, Inc. Flowmeter from the packaging and inspect for damage. If there is any damage, DO NOT USE and contact your Provider.

INTENDED USE
The Flowmeter is intended for use by physicians, respiratory therapists and other authorized hospital personnel to administer selected doses of medical gases to a patient.

READ ALL INSTRUCTIONS BEFORE USING
This manual instructs a Professional to install and operate the Flowmeter. This is provided for your safety and to prevent damage to the Flowmeter. If you do not understand this manual, DO NOT USE the Flowmeter and contact your Provider.

SAFETY INFORMATION - WARNINGS AND CAUTION

⚠️ WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠️ CAUTION
Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Operating Instructions

Symbol for “USE NO OIL”

Symbol indicates the device complies with the requirements of Directive 93/42/EEC concerning medical devices and all applicable International Standards. (On CE marked Devices ONLY)
## WARNING

- Use Flowmeters only for their “Intended Use” as described in this manual.
- ALWAYS confirm prescribed flow before administering to patient and monitor flow on a frequent basis.
- Flowmeters may contain magnetic, ferrous material that may affect the results of an MRI.

### To Reduce the Risk of Fire or Explosion:
- ALWAYS follow ANSI and CGA standards for Medical Gas Products and Flowmeters and Oxygen Handling.
- **DO NOT** use or store oils, greases, organic lubricants or any combustible materials on or near this Flowmeter.
- **DO NOT** use near any type of flame or flammable/explosive substances, vapors or atmosphere.
- **DO NOT** smoke in an area where oxygen is being administered.

## CAUTION

- Flowmeters must be operated with the Flow Tube in a vertical, upright position.
- Only personnel instructed and trained in its use should operate this Flowmeter.
- Ensure all connections are tight and leak free.
- Only use oxygen-safe leak detector.
- **DO NOT** autoclave.
- **DO NOT** gas sterilize with EtO (Ethylene Oxide).
- **DO NOT** clean with aromatic hydrocarbons.
- **DO NOT** immerse Flowmeter in any kind of liquid. This will void the warranty.
- The 1MFA3001, 4MFA1001 & 6MFA1001 Flowmeters may have a factory installed restrictor. Prior to use, check Flowmeter labeling for flow restrictions.
- The 1MFA3001, 4MFA1001 & 6MFA1001 Flowmeters contain a glass Flow Tube which is fragile. Special care should be observed to avoid breaking the Flow Tube.

(Continued on Inside)
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Flow Range</th>
<th>Graduations</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 200 cc</td>
<td>20 cc (0-200)</td>
<td>0-100 cc ±10 cc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>101-200 cc ±14 cc</td>
</tr>
<tr>
<td>0 – 1 l/min</td>
<td>.1 (0-1) l/min</td>
<td>0-1 ± .05 l/min</td>
</tr>
<tr>
<td>0 – 3 l/min</td>
<td>.125 (0-1) l/min, .25 (1-3) l/min</td>
<td>0-3 ± .15 l/min</td>
</tr>
<tr>
<td>0 – 5 l/min</td>
<td>.25 (0-5) l/min</td>
<td>0-5 ± .20 l/min</td>
</tr>
<tr>
<td>0 – 6 l/min</td>
<td>.5 (0-6) l/min</td>
<td>0-6 ± .50 l/min</td>
</tr>
<tr>
<td>0 – 8 l/min</td>
<td>.5 (0-8) l/min</td>
<td>0-8 ± .25 l/min</td>
</tr>
<tr>
<td>0 – 15 l/min</td>
<td>.5 (0-5) l/min, 1 (5-15) l/min</td>
<td>0-5 ± .25 l/min, 6-15 ± .50 l/min</td>
</tr>
<tr>
<td>0 – 26 l/min</td>
<td>1 (2-26) l/min</td>
<td>2-4 ± .50 l/min, 5-26 ± 10% of reading</td>
</tr>
<tr>
<td>0 – 70 l/min</td>
<td>5 (0-70) l/min</td>
<td>0-70 ± 3 l/min</td>
</tr>
</tbody>
</table>

**Flush Flow** is the output of the flowmeter when the flow indicator is beyond the highest calibrated graduation. The Flush Flow range is as indicated on the flowmeter labeling.

**Transport / Storage Requirements**  
-40°F (-40°C) to 140°F (60°C)

The gas and inlet pressures are indicated on the Flow Tube or Flowmeter body.

**NOTE:** Storage / Transport outside the specified range may cause damage to the flowmeter.

The effect on accuracy of flow due to variations in ambient temperature is standard accuracy +7.3% @ 32°F (0°C) and -3.0% @ 104°F (40°C).

The above Flowmeter models are calibrated at specified inlet pressure, 70°F (21°C), standard atmospheric pressure. International models are calibrated per specifications marked on Flow Tube or Flowmeter body.

Specifications are subject to change without prior notice.

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*For the most current manual revision  
please visit our website: [www.precisionmedical.com](http://www.precisionmedical.com)*

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Tell us how we are doing!  
Visit us at [www.precisionmedical.com](http://www.precisionmedical.com)
OPERATING INSTRUCTIONS

WARNING
Read this User Manual before installing or operating the Flowmeter.

CAUTION
Inspect the Flowmeter for visual damage before use, DO NOT USE if damaged.

NOTE: Precision Medical, Inc. strongly recommends the use of kink proof Cannula.

1. Turn Knob to the “OFF” position.

2. Connect the Flowmeter to the appropriate gas source. The appropriate gas and pressure are specified on the Flow Tube or Flowmeter body.

3. Verify that the Float Ball is at the very bottom of the Flow Tube.
   NOTE: If the Float is not resting at the bottom of the Flow Tube, the product is leaking; consult the “TROUBLESHOOTING” Guide.

4. Adjust Flow:
   To increase - Turn Knob counterclockwise
   To decrease - Turn Knob clockwise

5. Set flow by aligning center of Float Ball with indicator lines on the Flow Tube.

6. Adjusting flow beyond the last calibrated indicator line will result in an undetermined flow.

7. To obtain maximum flush flow, turn Knob fully Counterclockwise.
   NOTE: Flush flow is any flow above the last calibrated line on the Flow Tube with an unrestricted flow, as indicated on flowmeter labeling.
Returns

Returned products require a Returned Goods Authorization (RGA) number. Any product returned to Precision Medical, Inc. must be packaged in a sealed container to prevent damage. Precision Medical, Inc. will not be responsible for goods damaged in transit. Return Policy available on the Internet, www.precisionmedical.com.

Troubleshooting

If the Flowmeter fails to function, consult your Provider or Precision Medical, Inc.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will not shut off</td>
<td>• Leak</td>
<td>• Replace Tetraseal and/or Housing</td>
</tr>
<tr>
<td></td>
<td>• Defective Valve</td>
<td>• Replace Body Assembly</td>
</tr>
<tr>
<td>Sticking Float Ball</td>
<td>• Debris in Flow Tube</td>
<td>• Clean Flow Tube &amp; Float Ball</td>
</tr>
<tr>
<td>Unable to set desired flow</td>
<td>• Blocked Inlet</td>
<td>• Replace Body Assembly</td>
</tr>
<tr>
<td>Knob will not turn</td>
<td>• Valve seized</td>
<td>• Replace Body Assembly</td>
</tr>
</tbody>
</table>

**8MFA Models DO NOT have serviceable parts.**

Cleaning Instructions

1. Disconnect all connections before cleaning.
2. Clean exterior surfaces of the Flowmeter with a cloth dampened with a mild detergent and water.
3. Wipe dry with a clean cloth.

Caution

- DO NOT over tighten Knob when turning off. This will cause damage to the Flowmeter.
- Pressures other than those indicated on the Flow Tube or Flowmeter body may affect the accuracy of the indicated flow.
- Gas Temperatures other than 70° F (21°C) may affect the accuracy of the indicated flow.
- Attaching accessories to the outlet (which may increase resistance to outlet flow) may change indicated flow but will not affect the accuracy of the flow.
- ONLY use appropriate gas specific indexed fittings to connect Flowmeter to gas source. Use Oxygen connections for oxygen Flowmeters; use air connections for air Flowmeters.
- DO NOT attempt to repair the 8MFA Flowmeters. There are no serviceable parts.
DECLARATION OF CONFORMITY

Precision Medical, Inc.
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Northampton, PA 18067, USA
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The Netherlands
Phone: +31 (0) 70.345.8570 Fax: +31 (0) 70.346.7299

Flowmeters 1MFA, 4MFA, 6MFA & 8MFA Series
Classification: IIa
Classification criteria: Clause 3.2 Rule 11 of Annex IX of MDD

We hereby declare that an examination of the under mentioned production quality assurance system has been carried out following the requirements of the UK national legislation to which the undersigned is subjected, transposing Annex II, 3 of the Directive 93/42/EEC and Directive 2007/47/EC on medical devices.

We certify that the production quality system conforms to the relevant provisions of the aforementioned legislation, and the result entitles the organization to use the CE 0473 marking on those products listed above.

Applied Standards: EN 1041, EN 14971, EN ISO 13485, ISO 15001, ISO 15002, ISO 15223-1

Notified Body: AMTAC Certification Services Limited
Address: Davy Avenue Knowlhill Milton Keynes MK5 8NL, UK
Certification Registration No’s: 1126 CE Date of Expiry: 03 August 2017
Devices already manufactured: S/N traceability Device History Records
Validity of DOC: 04 August 2012 to Date of Expiry
Manufacture Representative: Quality Manager
Position: Quality Systems/ISO Representative
Date of Issue: 04 August 2012

REPLACEMENT PARTS *

<table>
<thead>
<tr>
<th>PART</th>
<th>6MFA</th>
<th>4MFA</th>
<th>1MFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>NA</td>
<td>1575</td>
<td>NA</td>
</tr>
<tr>
<td>Washer</td>
<td>NA</td>
<td>1787</td>
<td>NA</td>
</tr>
<tr>
<td>Disc</td>
<td>NA</td>
<td>1009</td>
<td>1114</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td>1143</td>
<td></td>
</tr>
<tr>
<td>Tetraseal™</td>
<td></td>
<td>1123</td>
<td></td>
</tr>
<tr>
<td>Flow Tube</td>
<td>Kit # 503213</td>
<td>Kit # 503214</td>
<td>Kit # 503215</td>
</tr>
<tr>
<td>Float Ball</td>
<td>1576</td>
<td>1005</td>
<td>1029</td>
</tr>
<tr>
<td>Body Assembly</td>
<td>1891</td>
<td>1897</td>
<td>502053</td>
</tr>
<tr>
<td>Knob</td>
<td>1007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holder</td>
<td>506176</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 8MFA Models DO NOT have serviceable parts.

International parts specifications and specific ratings are available upon request.
LIMITED WARRANTY
AND LIMITATION OF LIABILITY

Precision Medical, Inc. warrants that the Medical Gas Flowmeter (the Product) will be free of defects in workmanship and/or material for the following period:

(a) Flow Tube and Housing  Lifetime of the product  
(b) Needle Valve  Five (5) years from shipment  
(c) All other parts of the Medical Gas Flowmeter not identified in (a) or (b) above  One (1) year from shipment

Warranty does not cover breakage / abuse.

Should any failure to conform to this warranty appear within the applicable period, Precision Medical, Inc. shall, upon written notification thereof and substantiation that the goods have been stored, installed, maintained and operated in accordance with Precision Medical, Inc.’s instructions and standard industry practice, and that no modifications, substitutions, or alterations have been made to the goods, correct such defect by suitable repair or replacement at its own expense.

ORAL STATEMENTS DO NOT CONSTITUTE WARRANTIES.

The representative of Precision Medical, Inc. or any retailers are not authorized to make oral warranties about the merchandise described in this contract, and any such statements shall not be relied upon and are not part of the contract for sale. Thus, this writing is a final, complete and exclusive statement of the terms of that contract.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESS OR IMPLIED.

Precision Medical, Inc. shall not under any circumstances be liable for special, incidental or consequential damages including but not limited to lost profits, lost sales, or injury to person or property. Correction of non-conformities as provided above shall constitute fulfillment of all liabilities of Precision Medical, Inc. whether based on contract, negligence, strict tort or otherwise. Precision Medical, Inc. reserves the right to discontinue manufacture of any product or change product materials, designs, or specifications without notice.

Precision Medical, Inc. reserves the right to correct clerical or typographical errors without penalty.