



## **DIAMOND RANGE FLOWMETER**



**0-15LPM Diamond Flowmeter  
(White – Oxygen; Black – Air)**



**0-2.5LPM Diamond Flowmeter  
(Pink Body)**



**0-5LPM Diamond Flowmeter  
(Beige Body)**

## **INSPECTION**

Remove the Diamond Flowmeter from the packaging and inspect for damage. If there is any damage, DO NOT USE, and contact Therapy Equipment Ltd.

## **FUNCTION/INTENDED USE**



The Diamond Flowmeter should only be used by Hospital personnel authorised to administer gases to a patient.



Read all instructions before using – DO NOT USE the Flowmeter if you do not understand the instructions given in these User Instructions.

The function of the Flowmeter is to provide a calibrated supply of gas to the patient from a regulated gas source.

The Flowmeter is calibrated to operate from an inlet pressure of 4 Bar. The indicated flowrate may vary if not operated at 4 Bar input pressure.

The unit should be operated and stored in a dry clean environment within the temperature range of -10°C to +40°C. If the unit is operated outside of the defined range there may be inaccuracies in the indicated flow.

If any resistance to the free flow of gas is applied to the Flowmeter, it may result in the inaccuracy of the indicated flow.

## USER INSTRUCTIONS

### **Source of Supply: Regulator**

1. Ensure that the Regulator is switched off before connection.
2. Screw the Flowmeter inlet nut on to the Regulator Outlet, ensuring that the nut is tight, and that the Flowmeter is in an upright position i.e. with the Tube vertical.
3. Ensure that the Flowmeter is fitted with a tubing nipple, so that the patient tubing can be connected.
4. Turn the cylinder on slowly. If there is any sound of gas hissing, turn the cylinder off, and examine for leaks. If the Flowmeter is found to be leaking, please return to the manufacturer.
5. Turn the Flowmeter Control Knob anti-clockwise, and confirm that there is a Gas Flow, and that the ball on the inside of the tube is registering a flow.
6. Connect the Patient Tubing over the Tubing Nipple outlet, and adjust the Flowmeter to the requisite flow (Read flow from the centre of the ball).
7. To turn the Flowmeter off, turn Control Knob in a clockwise direction, and ensure that the Flowmeter Ball registers zero flow. Care should be taken not to over tighten the Control Knob when turning the Flowmeter off. After each use the Cylinder should be turned off and the Regulator vented of residual pressure.

### **Source of Supply: Wall Outlet**

1. Ensure that the Flowmeter has a Probe fitted,. The Diamond Range O2 Flowmeter has an integral Probe which is compatible with British Standard Oxygen outlets.
2. Ensure that the Flowmeter is fitted with a tubing nipple, so that the patient tubing can be connected.
3. Push the Flowmeter & Probe into the Wall Outlet for the correct gas.
4. If there is any sound of gas hissing, examine for leaks. If the Flowmeter is found to be leaking, please return to the manufacturer.
5. Turn the control knob in an anti-clockwise direction, and confirm that there is a Gas Flow, and that the ball on the inside of the tube is registering a flow.
6. Connect the Patient Tubing over the Tubing Nipple outlet, and adjust the Flowmeter to the requisite flow (Read flow from centre of the ball).
7. To turn the Flowmeter off, turn Control Knob in a clockwise direction, and ensure that the Flowmeter Ball registers zero flow. Care should be taken not to over tighten the Control Knob when turning the Flowmeter off.

**CARE** : Always ensure the Flowmeter is in the OFF position prior to removing the Flowmeter from the Gas Supply.

**It is the responsibility of the end user to ensure that the correct unit and flow is selected.  
Therapy Equipment accepts no responsibility for the selection of an incorrect unit or  
flowrate.**

## ACCURACY

In accordance with BS EN ISO 15002:2008:

Flowmeters are supplied to an accuracy of +/- 10% of the indicated value or 0.5 LPM whichever is the greater.

## HUMIDIFIERS/NEBULISERS

Humidifiers/Nebulisers maybe used with the Diamond Range Flowmeter. Remove the Tubing Nipple from the Flowmeter, and connect the Humidifier to the male DISS thread.

## USE OF ANIMAL TISSUES/PHthalATES/ANTIMICROBIAL PROPERTY

The Diamond Flowmeter Range has not been manufactured using any Animal Tissue or Phthalates. Hose Assemblies when fitted do have an Anti-Microbial Biocidal Property – full details are available on request.

## WARNINGS



**DO NOT** use near sources of ignition. Always follow recommended procedures, including the guidance given in HSE document 'Take Care with Oxygen'



**DO NOT** use Oils, greases, or any combustible materials on or near this Flowmeter



**DO NOT** smoke in an area where Oxygen is being administered



**DO NOT** autoclave

## TROUBLESHOOTING

| <u>PROBLEM</u>                                           | <u>ANALYSIS</u>                                                               | <u>ACTION</u>                                                                                                                                                                                                   |
|----------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Loose Connection/Leaking                                 | Gas escape causing Oxygen environment, and incorrect reading on the Flowmeter | <ul style="list-style-type: none"><li>• Ensure that all connections to the Flowmeter are tight</li><li>• Refer to manufacturer</li></ul>                                                                        |
| Incorrect Inner Tube                                     | Incorrect dosage of gas being supplied                                        | <ul style="list-style-type: none"><li>• Refer to manufacturer</li></ul>                                                                                                                                         |
| Static Electricity causing the ball to stick in the tube | Flowmeter could be read as flowing, when it is off                            | <ul style="list-style-type: none"><li>• Take ball out of tube, and clean Flowmeter Ball and Inner Tube with anti-static spray to discharge the static and recheck operation or return to manufacturer</li></ul> |
| Pushing against Control Knob during use, alters flowrate | Incorrect dosage of Oxygen being supplied                                     | <ul style="list-style-type: none"><li>• Ensure that Flowmeter Control Knob is clear of obstacles during use</li></ul>                                                                                           |
| Flowmeter Outer Tube cracking                            | Incorrect Cleaning wipe possibly being used                                   | <ul style="list-style-type: none"><li>• Only use approved Medical Devices wipe</li><li>• Refer to manufacturer</li></ul>                                                                                        |

## CAUTION

- **DO NOT** over tighten the Control Knob when turning off. This will cause damage to the Flowmeter, and may lead to inconsistencies in flowrate after setting.
- Ensure all connections are tight and leak free
- Ensure all connections are suitable for the gas being administered.

## TECHNICAL SPECIFICATION

Inlet Connection - 3/8" BSP Nut/Nipple

|                          |   |                 |   |                       |
|--------------------------|---|-----------------|---|-----------------------|
| Constitutional Materials | - | Body            | - | O2 Compatible Plastic |
|                          |   | Valve           | - | Brass                 |
|                          |   | Probe Nose      | - | Stainless Steel       |
|                          |   | Inner Tube      | - | Anti-Static Plastic   |
|                          |   | Ball/Outer Tube | - | Polycarbonate         |

## REPLACEMENT PARTS DETAILS

A Full range of spares are available (see Catalogue),

These should not be required as the unit is covered by a comprehensive warranty which includes any damage to the product.

## CLEANING INSTRUCTIONS

Wipe over the outside of the Flowmeter and the gas supply hose with an alcohol or disinfecting wipe. If you suspect that the Flowmeter is contaminated, remove it from use and refer the device to the appropriate department. We do not recommend the use of Detergent Based Hard Surface Wipes.

## EXPLANATION OF SYMBOLS



Use no oil or grease in the operation of the Flowmeter



Read from centre of the Ball

## PREVENTATIVE MAINTENANCE

Whilst the Flowmeter is supplied with a Lifetime Function and Accidental Damage Warranty (7 years), the unit should be included in an annual function inspection.

Particular care should be exercised to ensure that the internal components are not exposed to lubricants/grease not recommended by Therapy Equipment Ltd. The Flowmeter should never be disassembled whilst under pressure.

- The unit should be wiped with an Alcohol or Disinfecting Wipe to clean
- A check should be made annually to ensure the unit is damage free and leak tight
- A leak test should be performed on the unit by turning the unit on full flow, and occluding the outlet. The ball will drop to zero and remain still if the unit is leak free. If there is any movement on the ball there is a leak.
- Care should be exercised to ensure that the Flowmeter does not give incorrect readings as a result of a build up of Static Electricity. Static Electricity manifests itself by the ball apparently 'sticking' to the side of the Inner Tube regardless of flow. Should the Flowmeter show signs of a Static Electricity charge then the unit should be returned to manufacturer. It is also strongly recommended that the frequency of Preventative Maintenance check be increased on those units/areas that demonstrate a static problem.

It is estimated that the Ball/Tube type Flowmeter has a maximum life of 7 years, and should be replaced after this time.



| Revision No. | 0        | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Date         | 29/10/04 | 07/12/04 | 08/11/05 | 26/11/09 | 25/10/12 | 28/01/13 | 30/01/13 | 24/06/13 | 15/01/14 | 25/11/14 | 04/02/15 |
| Issue        | A        | B        | C        | D        | E        | F        | G        | H        | I        | J        | K        |