

## The Company

We are an established world force in the design and manufacture of instrumentation for industrial process control, flow measurement, gas and liquid analysis and environmental applications.

As a part of ABB, a world leader in process automation technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

The UKAS Calibration Laboratory No. 0255 is just one of the ten flow calibration plants operated by the Company, and is indicative of our dedication to quality and accuracy.

EN ISO 9001:2000



Cert. No. Q5907

EN 29001 (ISO 9001)



Lenno, Italy – Cert. No. 9/90A

## Electrical Safety

This equipment complies with the requirements of CEI/IEC 61010-1:2001-2 "Safety requirements for electrical equipment for measurement, control, and laboratory use". If the equipment is used in a manner NOT specified by the Company, the protection provided by the equipment may be impaired.

## Symbols

One or more of the following symbols may appear on the instrument labelling:

	<b>Warning</b> – Refer to the manual for instructions		Direct current supply only
	<b>Caution</b> – Risk of electric shock		Alternating current supply only
	Protective earth (ground) terminal		Both direct and alternating current supply
	Earth (ground) terminal		The equipment is protected through double insulation

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Communications Department.

### Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

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## 1 INTRODUCTION

The Zirconia Reference Air Supply Unit is designed to provide a regulated air supply to zirconia probes, such as types Z-FG, Z-GP2 and carburizing.

The unit is available in two options. One incorporates a pressure regulating device operating from a standard factory compressed air supply; the other is fitted with an air pump operating from a mains electrical supply.

Both units provide an air supply regulated to any flow rate between 0 and 1000ml/min. A manually adjustable air flow gauge within each unit enables the selection of the required flow rate on the visual air flow indicator incorporated.

The unit has been designed and tested in accordance with IEC publication 348 – Safety Requirements for Electronic Measuring Apparatus, and is supplied in a safe condition.

This instruction manual contains information and warnings that must be obeyed to ensure safe operation and to ensure the unit remains in a safe condition.

## 2 PREPARATION

### 2.1 Checking the Instrument Code Number – Figs. 2.1 and 2.2

Release the lid retaining screw and open the case lid.

Check the type reference number shown on the instrument identification label within the unit to ensure that the correct instrument is being installed:

003000240 is a mains-powered pump unit

003000241 is a regulator unit

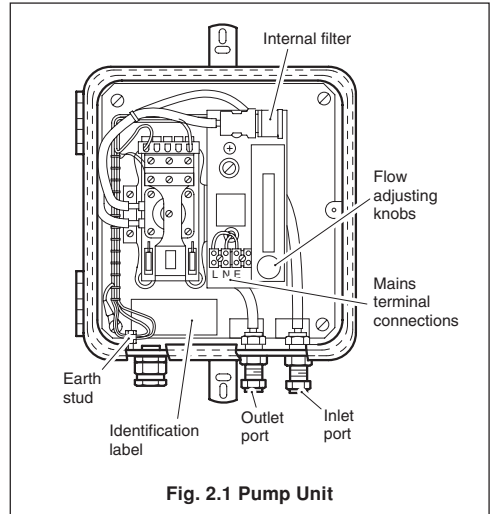


Fig. 2.1 Pump Unit

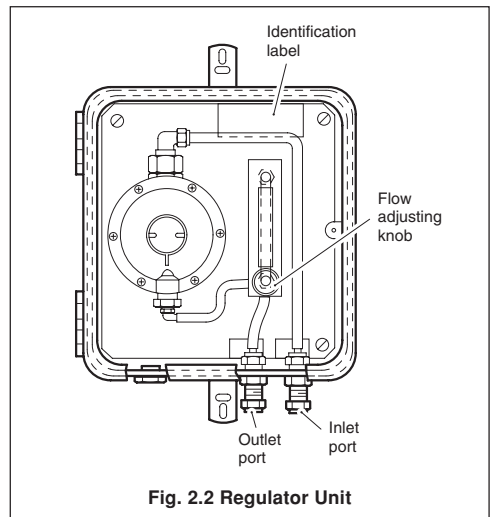


Fig. 2.2 Regulator Unit

## 3 INSTALLATION

### 3.1 Siting

Site the unit in an area free from excessive vibration and within the temperature limits of  $-10$  to  $55^{\circ}\text{C}$  and the humidity limits of 0 to 90% RH.

The unit should be as close to the zirconia probe as possible, at a distance not exceeding 50m.

Environmental conditions at the selected site must not exceed the unit's IP54 rating.

### 3.2 Mounting – Fig. 3.1

The unit is suitable for wall mounting. Overall dimensions, including fixing centers, are shown in Fig. 3.1. The unit must be positioned vertically with the air ports at the bottom and secured using the brackets provided; one at the top and the other at the bottom.

## 4 AIR CONNECTIONS

The air intake port is situated to the right of the output port at the bottom of the instrument.

Both ports have compression fittings suitable for 6mm o.d. tubing.

### 4.1 003000240 Pump Unit – Fig. 2.1

The air intake port is labelled 'PUMP INTAKE' and under normal circumstances no connection need be made to this port. The air intake passes through an internal filter before being pumped to the zirconia probe.

When conditions in the vicinity of the intake port are exceptionally dirty, dusty or damp, it is recommended that air is drawn from a cleaner environment by connecting a suitable length of stainless steel or p.v.c. tubing to the intake port and terminating it in a clean area. The length of this tube must not exceed 50m.

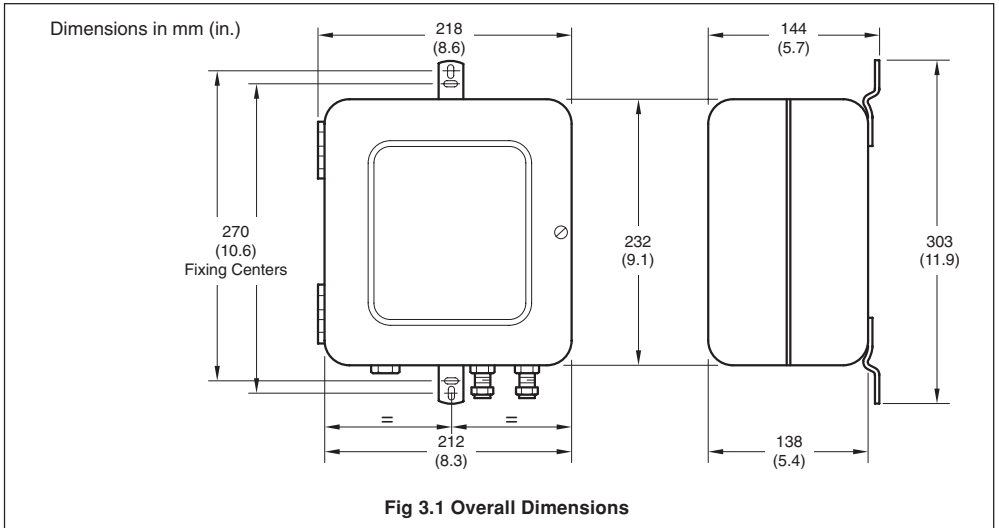
The air output port is labelled 'REF AIR TO PROBE' and must be connected to the zirconia probe with stainless steel or p.v.c. tubing, maximum length 50m.

### 4.2 003000241 Regulator Unit – Fig. 2.2

The air intake port is labelled 'REGULATOR AIR SUPPLY' and connection to this port must be made in 6mm o.d. steel or p.v.c. tubing. Clean, dry, oil free air at 1 to 20 bar max. must be supplied to this port.

It is recommended that a suitable, hand operated isolating valve be used in the air supply line to the unit.

The air output port is labelled 'REF AIR TO PROBE' and must be connected to the zirconia probe with stainless steel or p.v.c. tubing, maximum length 50m.



## 5 POWER SUPPLY CONNECTIONS

### 5.1 003000240 Pump Unit



#### Warning.

- Before making any other connections, ensure that the earth terminal is connected to earth. Any interruption of the earthing circuit either inside or outside the instrument, or disconnection of the earth terminal, is likely to make the instrument dangerous. Intentional interruption is prohibited.
- Before making further connections ensure that the power supply is switched off.

Ensure that the unit is suitable for the line voltage supplied. The power supply for this equipment must contain a switch or other means of disconnection from the mains and must be protected by a fuse or fuses from 0.5A up to and including 1A.

Mains electricity cables must be routed through earthed metal conduit but the unit is fitted with a cable gland to accept cables up to 7mm o.d. in size. Where the equipment is fitted with a mains cord and plug, the mains plug must be inserted only in an earthed socket outlet. The earthing circuit must not be negated by the use of an extension cable without an earth conductor.

### 5.2 003000241 Regulator Unit

No electrical connections to this unit are required.

## 6 SETTING UP AND OPERATION



**Warning.** When the apparatus is connected to the mains supply, the terminals may be live and the opening of covers (except those to which access can be gained by hand), or removal of parts, is likely to expose live parts.

### 6.1 003000240 Pump Unit

Switch on the electrical supply. Open the case lid and adjust the flow adjusting knob (see Fig. 2.1) to achieve the required air flow rate. Turning the knob clockwise reduces the air flow rate.

Close the case lid securely.

### 6.2 003000241 Regulator Unit

Turn on the main air supply. Open the case lid and adjust the flow adjusting knob (see Fig. 2.2) to achieve the required air flow rate. Turning the knob clockwise reduces the air flow rate.

Close the case lid securely.

## 7 MAINTENANCE

### 7.1 003000240 Pump Unit

If the input air is clean and dry, little or no maintenance will be required. However, if after a period of use the required air flow rate cannot be achieved, clean the internal air filter as follows:

Carefully extract the filter from its retaining clips and remove the two plastic tubes attached. Unscrew and remove the hexagonal filter cover and gently extract the filter packing pieces using a small, pointed tool or stiff piece of wire such as a paper clip.

Carefully wash the filter and filter packing pieces using a proprietary cleaning fluid. When dry, reassemble and refit the filter.

### 7.2 003000241 Regulator Unit

The regulator unit does not require maintenance.

## 8 SPARES

### 8.1 003000240 Pump Unit

Description	Part No.
Fuse 200mA 250V	J/0231/546
Filter unit	B9734
Flow gauge	B9941
Pump unit (state whether 240V or 110V)	B9943
Bulkhead coupling	002320046
Copper washer	002320096

### 8.2 003000241 Regulator Unit

Description	Part No.
Flow gauge	B9941
Pressure regulator	003000248
Bulkhead coupling	002320046
Copper washer	002320096

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## 9 SIMPLE FAULT FINDING

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If the instrument does not appear to be working satisfactorily, carry out the checks detailed below before contacting the Customer Support Organization.

### 003000240 Pump Unit

Is the unit connected correctly? – see Section 5.1

Is there power to the instrument?

Are all pipelines free from obstructions?

Is the internal filter clean?

### 003000241 Regulator Unit

Is the main air supply present?

Are all pipelines free from obstructions?

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## 10 SPECIFICATION

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### Output

Reference air 0 to 1000ml/min

### Supply

003000240 10VA 110V 50/60Hz or  
20VA 240V 50/60Hz

003000241 Clean, dry, oil-free air at 1 to 20 bar max.

### Environmental data

Operating temperature limits –10 to 55°C (14 to 131°F)

Storage temperature limits –20 to 80°C (–4 to 176°F)

Humidity limits 0 to 90% RH

Protection IP54

### Mechanical data

Mounting Surface

Dimensions 212mm wide x 232mm high x 144mm deep  
(8.3 in. wide x 9.1 in. high x 5.7 in. deep)

Weight 3.5kg (7.7 lbs)

# PRODUCTS & CUSTOMER SUPPORT

## Products

### Automation Systems

- *for the following industries:*
  - Chemical & Pharmaceutical
  - Food & Beverage
  - Manufacturing
  - Metals and Minerals
  - Oil, Gas & Petrochemical
  - Pulp and Paper

### Drives and Motors

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- *Drive systems*
- *Force Measurement*
- *Servo Drives*

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- *Single and Multi-loop Controllers*
- *Circular Chart , Strip Chart and Paperless Recorders*
- *Paperless Recorders*
- *Process Indicators*

### Flexible Automation

- *Industrial Robots and Robot Systems*

### Flow Measurement

- *Electromagnetic Flowmeters*
- *Mass Flow Meters*
- *Turbine Flowmeters*
- *Flow Elements*

### Marine Systems & Turbochargers

- *Electrical Systems*
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### Process Analytics

- *Process Gas Analysis*
- *Systems Integration*

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- *Pressure*
- *Temperature*
- *Level*
- *Interface Modules*

### Valves, Actuators and Positioners

- *Control Valves*
- *Actuators*
- *Positioners*

### Water, Gas & Industrial Analytics Instrumentation

- *pH, conductivity, and dissolved oxygen transmitters and sensors*
- *ammonia, nitrate, phosphate, silica, sodium, chloride, fluoride, dissolved oxygen and hydrazine analyzers.*
- *Zirconia oxygen analyzers, katharometers, hydrogen purity and purge-gas monitors, thermal conductivity.*

## Customer Support

We provide a comprehensive after sales service via a Worldwide Service Organization. Contact one of the following offices for details on your nearest Service and Repair Centre.

### United Kingdom

ABB Limited  
Tel: +44 (0)1453 826661  
Fax: +44 (0)1453 829671

### United States of America

ABB Inc  
Tel: +1 215-674-6000  
Fax: +1 215-674-7183

### Client Warranty

Prior to installation, the equipment referred to in this manual must be stored in a clean, dry environment, in accordance with the Company's published specification.

Periodic checks must be made on the equipment's condition. In the event of a failure under warranty, the following documentation must be provided as substantiation:

1. A listing evidencing process operation and alarm logs at time of failure.
2. Copies of all storage, installation, operating and maintenance records relating to the alleged faulty unit.

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**ABB** has Sales & Customer Support expertise  
in over 100 countries worldwide

[www.abb.com](http://www.abb.com)

The Company's policy is one of continuous product  
improvement and the right is reserved to modify the  
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