



# ABB

## 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. Q 05907

EN 29001 (ISO 9001)



Lenno, Italy – Cert. No. 9/90A

Stonehouse, U.K.



0255

## 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 equipment labelling:

	<b>Warning</b> – Refer to the manual for instructions
	<b>Caution</b> – Risk of electric shock
	Protective earth (ground) terminal
	Earth (ground) terminal

	Direct current supply only
	Alternating current supply only
	Both direct and alternating current supply
	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 Publications Department.

### Use of Instructions



**Warning.**

An instruction that draws attention to the risk of injury or death.



**Caution.**

An instruction that draws attention to the risk of damage to the product, process or surroundings.



**Note.**

Clarification of an instruction or additional information.

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# 1 INTRODUCTION

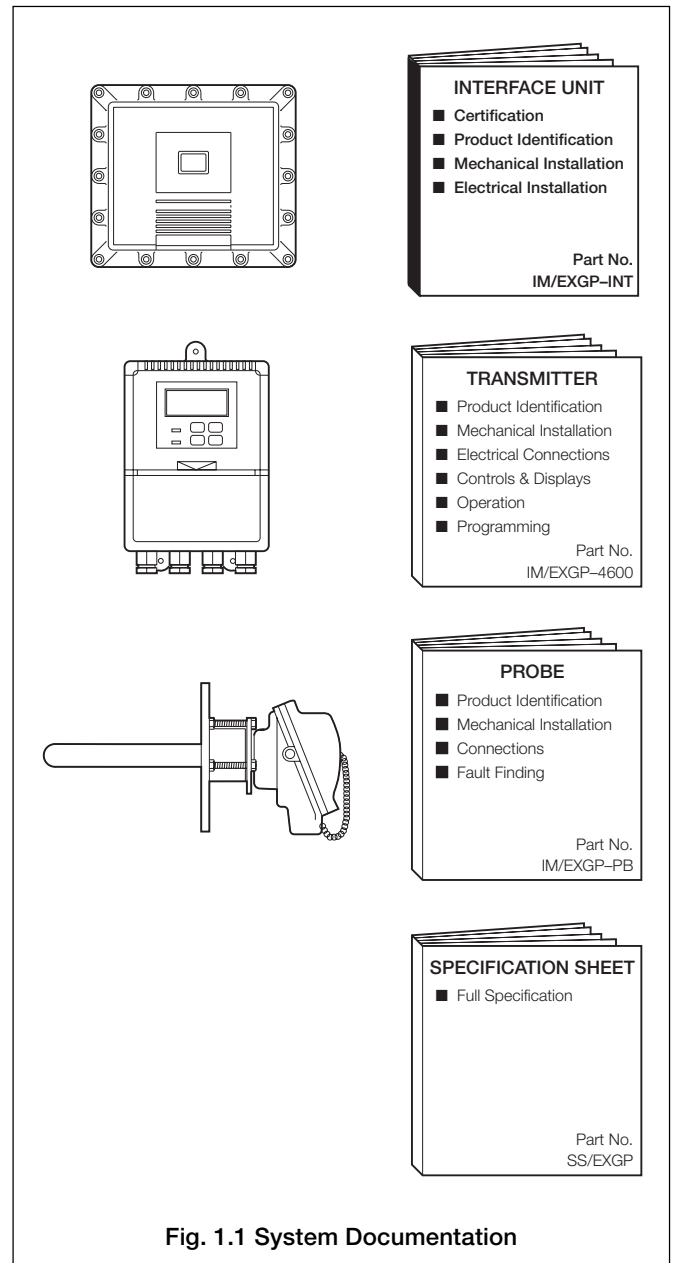
## 1.1 Documentation – Fig. 1.1

Documentation for the EXGP Oxygen Analyzer System is shown in Fig. 1.1.

## 1.2 Certification

The Interface Electronics Unit is certified to the ATEX Directive and CENELEC Standards BS EN50014 and BS EN50018 flameproof II 2G EEx d IIB T6 (Baseefa03ATEX0384).

Certificates and drawings are available for inspection and/or copies can be obtained on application to the Company.



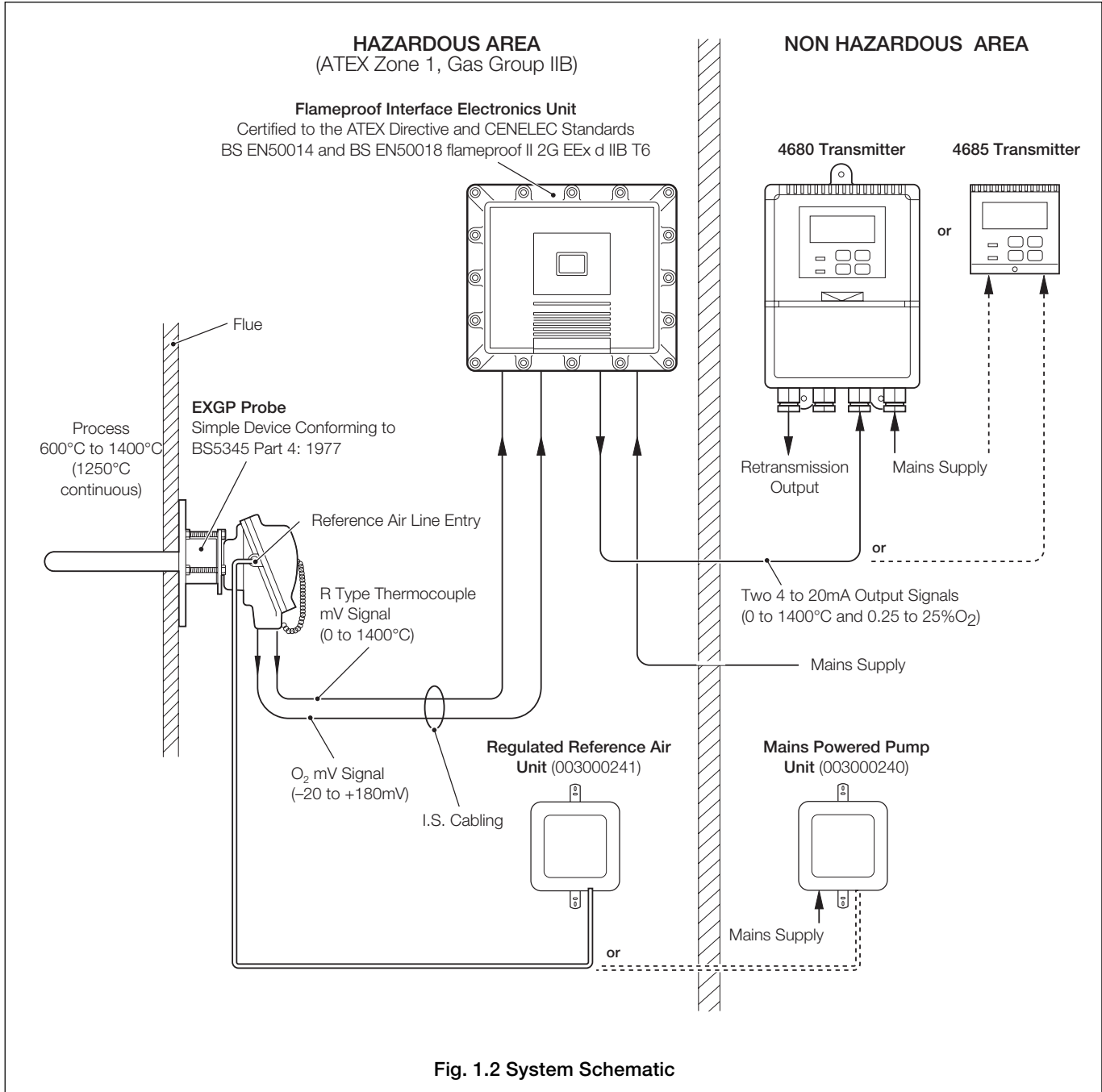
**Fig. 1.1 System Documentation**

## ...1 INTRODUCTION

### 1.3 System Hardware – Fig. 1.2

The Interface Electronics Unit is an explosion proof wall-mounted unit with no external user controls. The unit has been designed for use in an area in which explosive atmospheres are present in quantities that require special precautions for the construction and use of electrical apparatus. The unit converts two intrinsically safe mV input signals from an EXGP probe (connected via zener barriers) into two mA output signals for retransmission to a 4680 or 4685 Series transmitter.

The unit can only be connected to a EXGP Probe – see *Section 4* of the *Probe Guide*.



## 2 PREPARATION

### 2.1 Checking the Code Number – Fig. 2.1

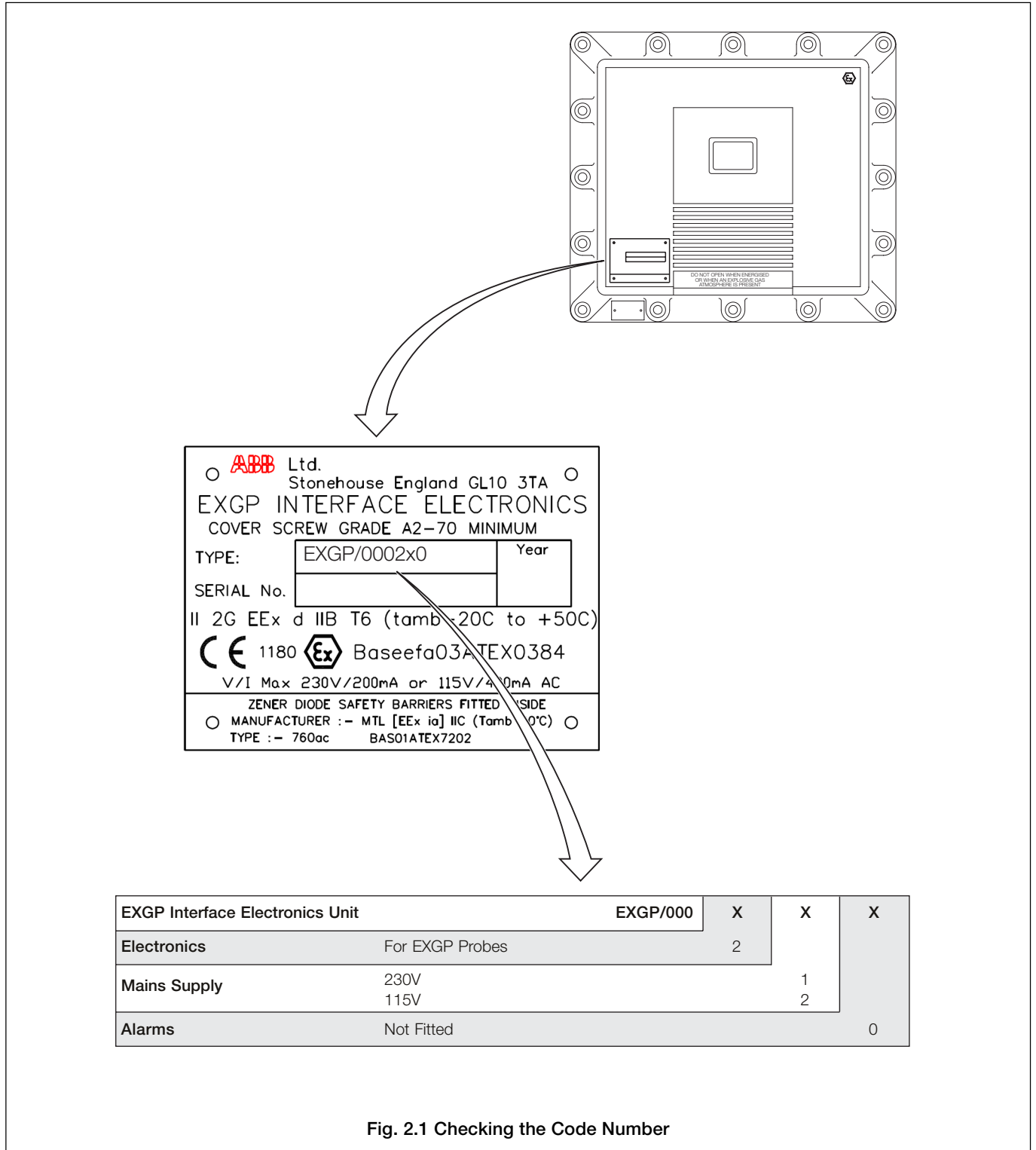
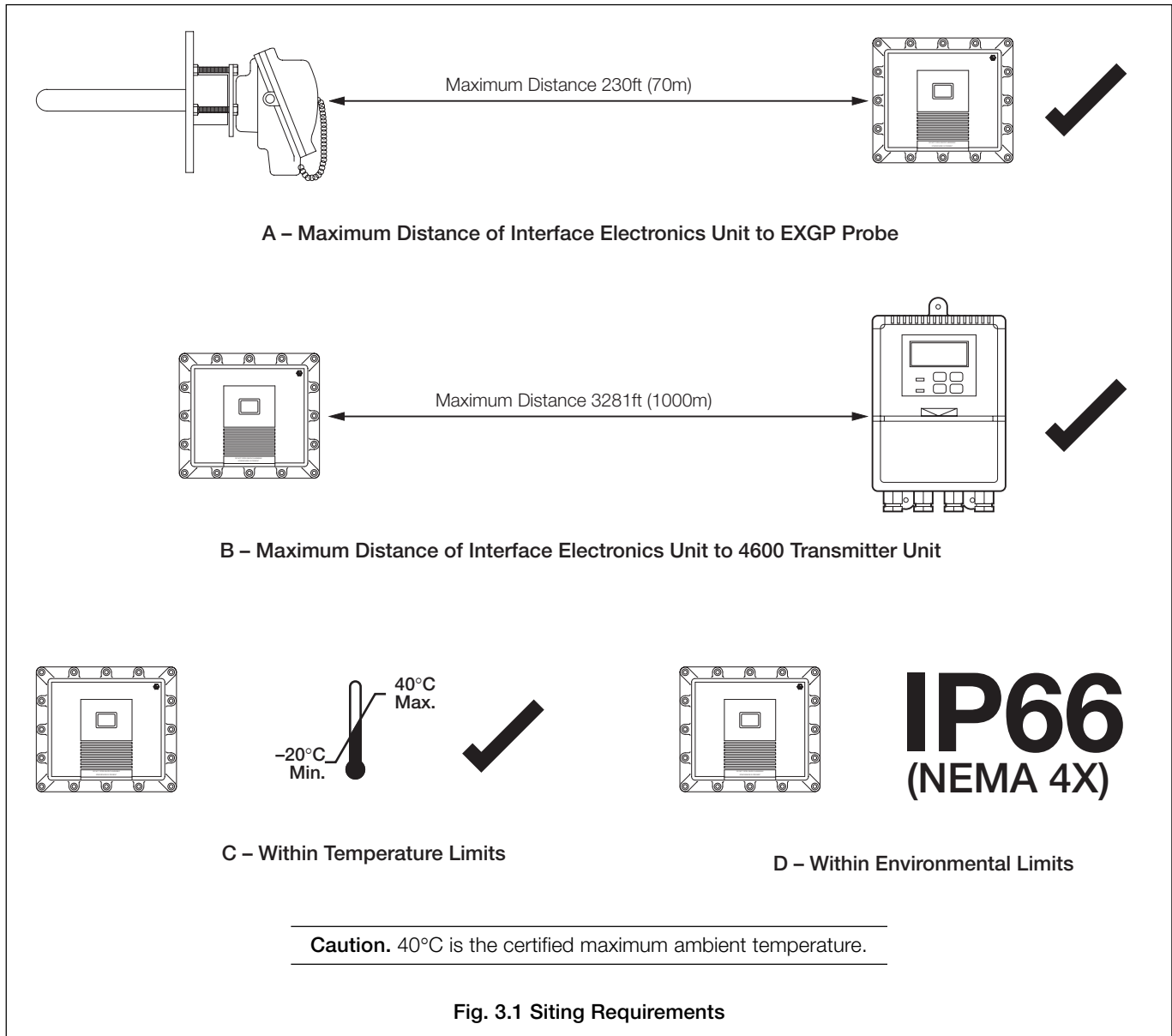


Fig. 2.1 Checking the Code Number

### 3 MECHANICAL INSTALLATION

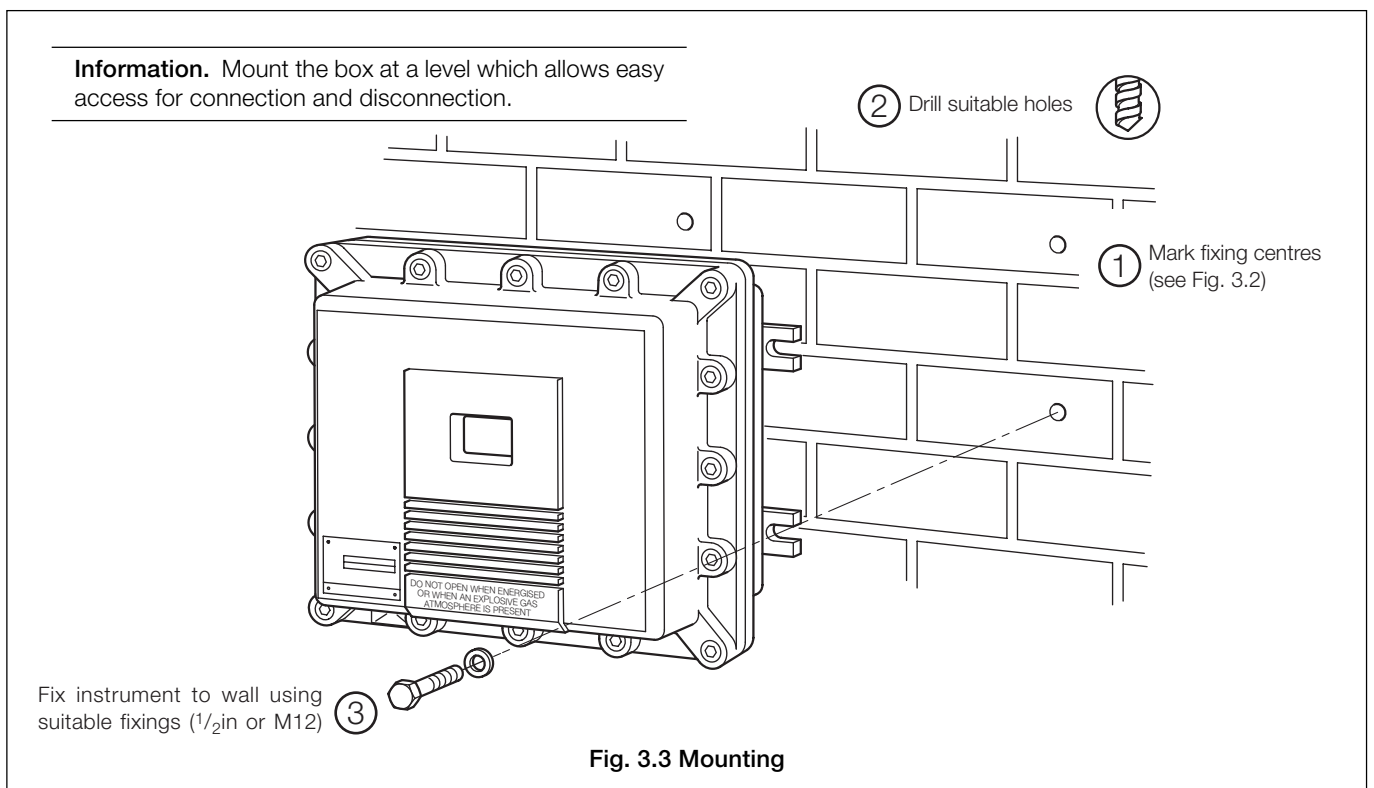
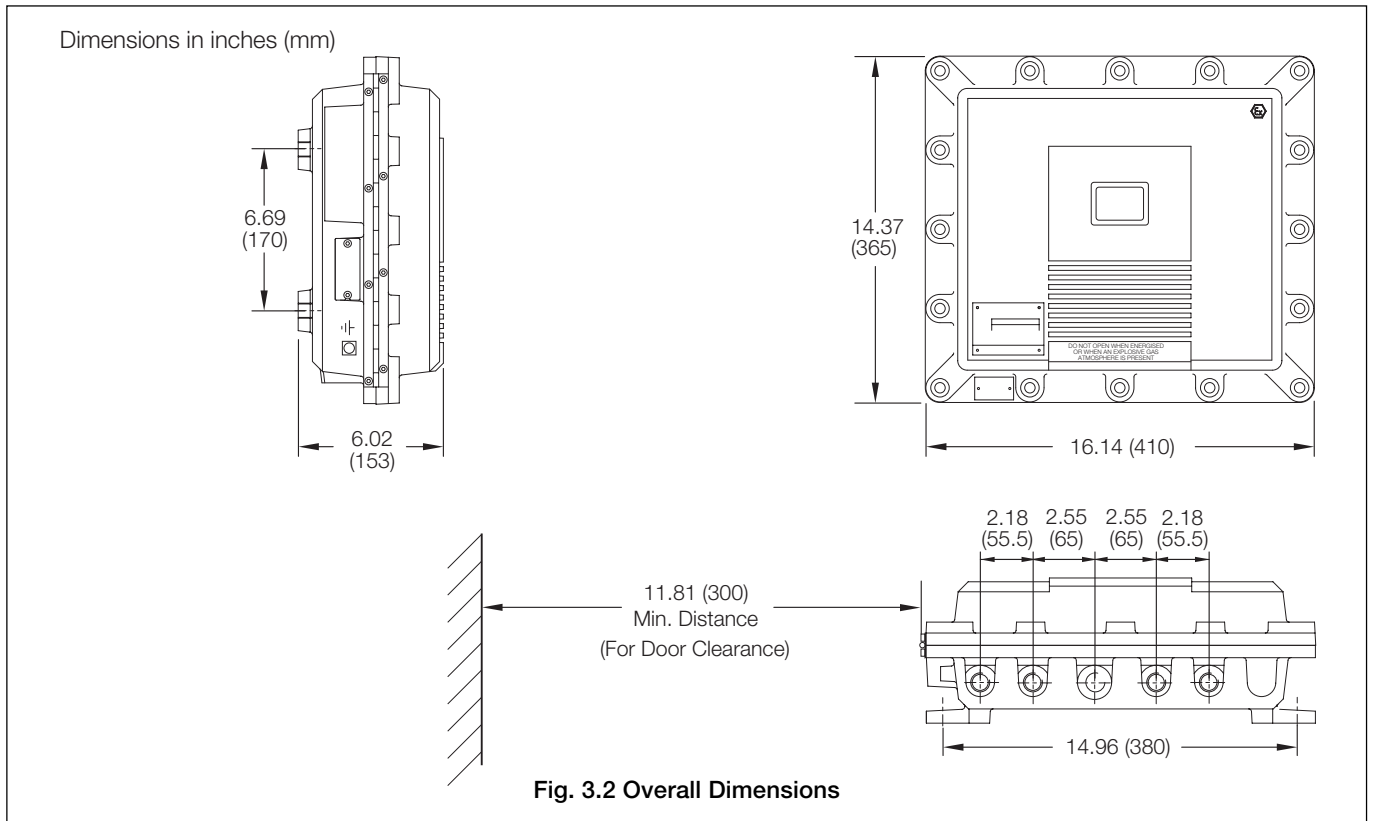
#### 3.1 Siting Requirements – Fig. 3.1

**Caution.** When siting the Interface Electronics Unit choose a location free from excessive vibration.



3.2 Mounting – Figs. 3.2 and 3.3

**Warning.** Installation and repair must be carried out only by the manufacturer, authorized agents or persons conversant with the construction standards for hazardous area certified equipment.



## 4 ELECTRICAL INSTALLATION

**Warning.** Before making any connections, ensure that the power supply, any high voltage-operated control circuits and high common mode voltages are switched off.

### 4.1 Cable and Gland Specifications

**Caution.**

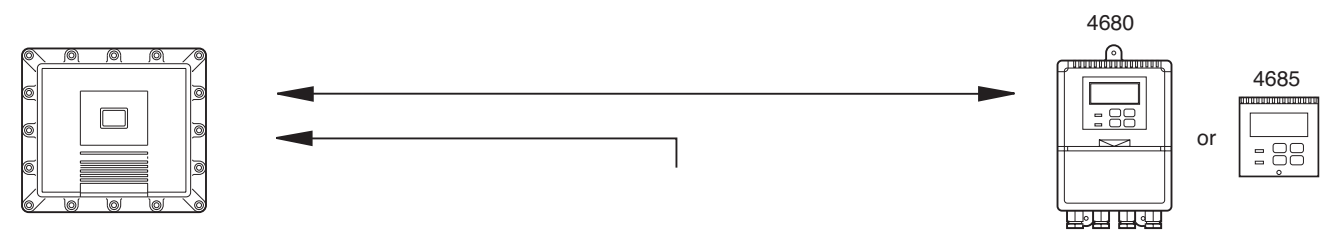
- Installation and repair must only be carried out by the manufacturer, authorized agents or persons conversant with the construction standards for hazardous area certified equipment. The specifications detailed in Table 4.1 are for **system electrical requirements only**.
- The Capacitance and Inductance or Inductance to Resistance (L/R) ratio of the cables connected to the output (hazardous area terminals) of the zener barriers mounted in the EXGP Interface Electronics Unit must not exceed the values detailed in Table 4.1.
- All cables must be suitable for flameproof 'd' type enclosures for mechanical construction.
- Glands used on the Interface Electronics Unit must be certified flameproof EEx d 'Barrier Gland' type.

#### 4.1.1 EXGP Probe to Interface Electronics Unit – Table 4.1

Gland Specification Probe	Cable Specification (Intrinsically Safe Signals)	Gland Specification Interface Unit
M16 Non-certified	R Type Thermocouple (mV) Input: 16/0.2, 2-core, overall screened, R-type thermocouple compensating cable, conforming to BS4937. Capacitance 3 $\mu$ f, Inductance 0.20mH, L/R Ratio 28 $\mu$ H/ $\Omega$ – see Caution above	M20 flameproof certified barrier gland 'd'
M16 Non-certified	Oxygen (mV) Input: 16/0.2, 2-core copper, overall screened Capacitance 3 $\mu$ f, Inductance 0.20mH, L/R Ratio 28 $\mu$ H/ $\Omega$ – see Caution above	M20 flameproof certified barrier gland 'd'

**Table 4.1 Cable and Gland Specifications (electrical requirements only)**

4.1.2 Interface Electronics Unit to Transmitter – Table 4.2



Gland Specification – Interface	Cable Specification (EEx d Signals)	Gland Specification – Transmitter
M20 flameproof certified barrier gland 'd'	Retransmission (mA) Output Signals (Oxygen and Temperature): 16/0.2, 4-core 2TP copper, overall screen, flameproof. (Not supplied) NB: max loop resistance 750Ω.	4680: M20 Uncertified (fitted) 4685: No gland required
M20 flameproof certified barrier gland 'd'	Mains Power Supply: 3-core, 0.5mm copper (min.) (Not supplied)	4680: M20 Uncertified (fitted) 4685: No gland required

Table 4.2 Cable and Gland Specifications (electrical requirements only)

4.2 Access to Terminals – Fig. 4.1

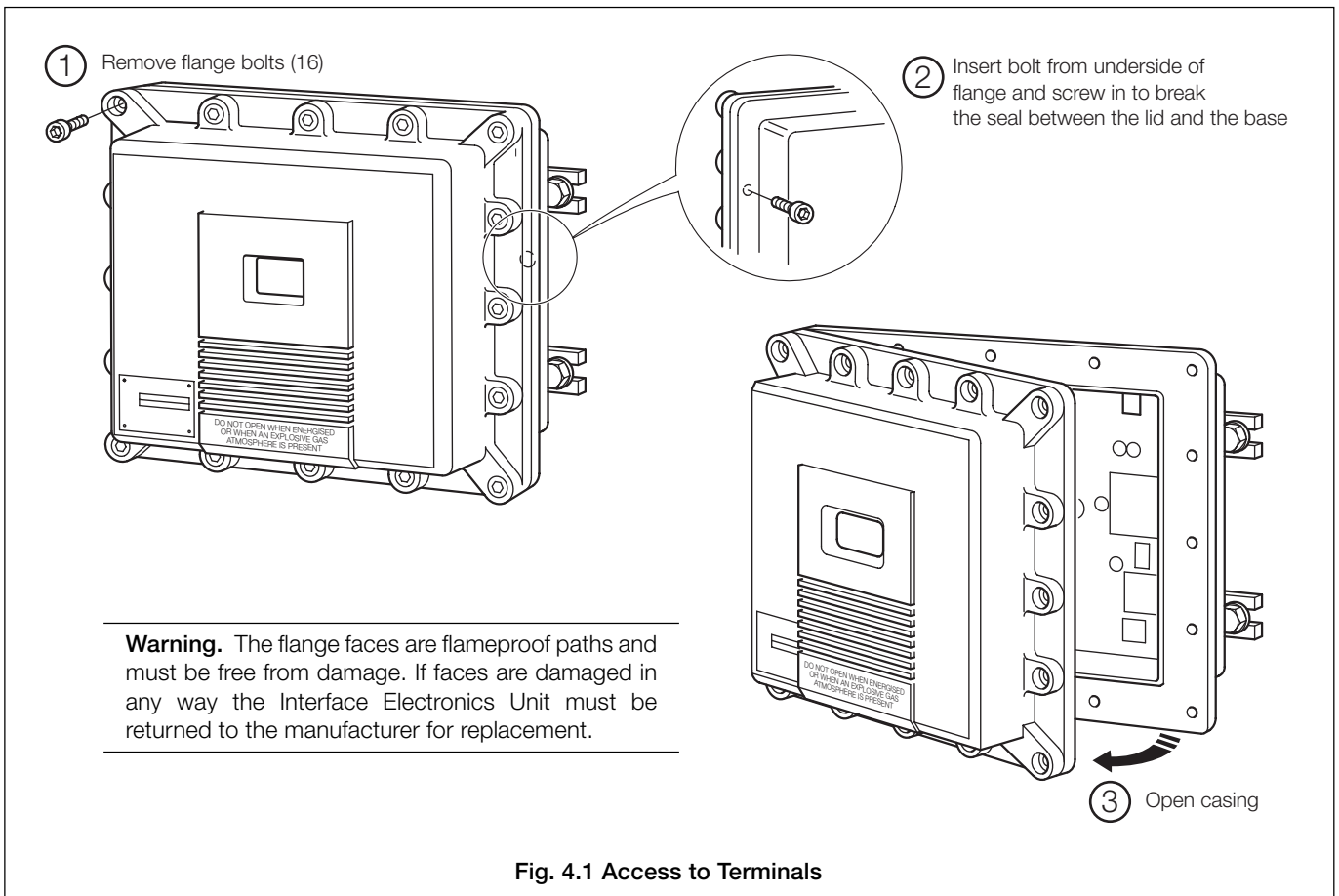


Fig. 4.1 Access to Terminals

## ...4 ELECTRICAL INSTALLATION

### 4.3 Zener Barriers – Fig. 4.2

The two zener barriers fitted to the unit are identified by a label positioned under the barrier – see Fig. 4.2.

**Warning.** Always refer to the label for correct orientation and re-connection if a new zener barrier is fitted.

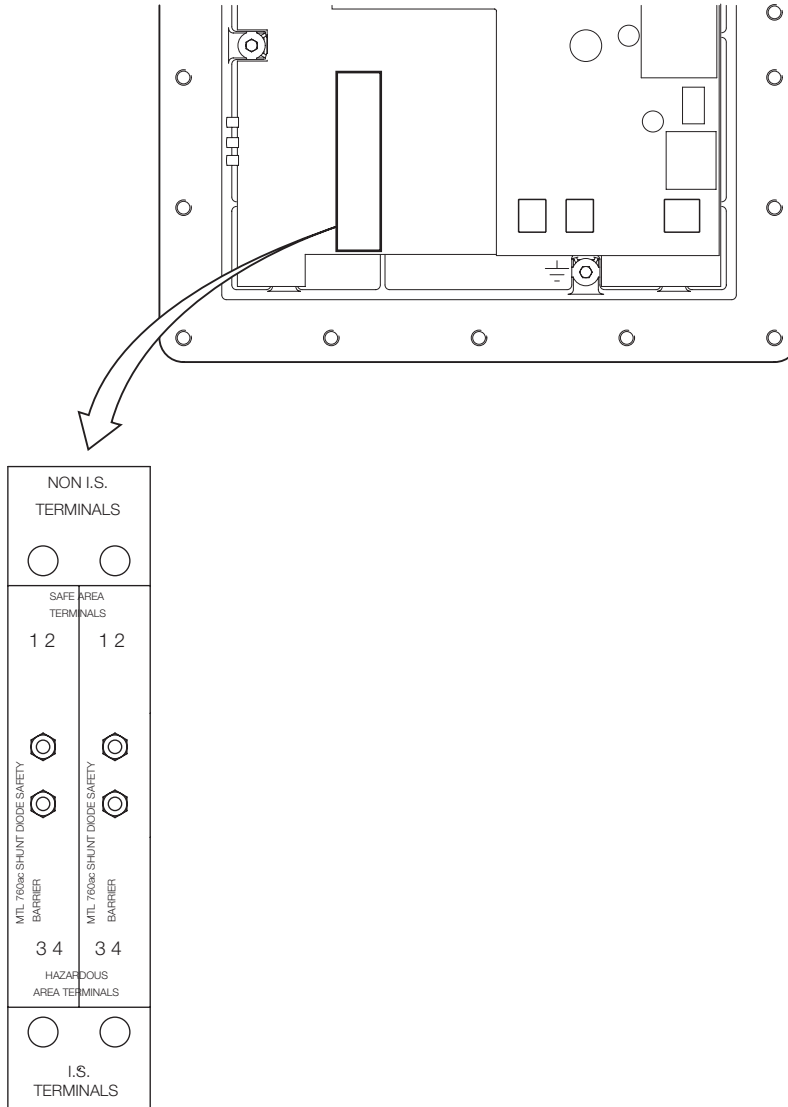


Fig. 4.2 Zener Barrier Identification Label

4.4 Cable Routing – Fig. 4.3

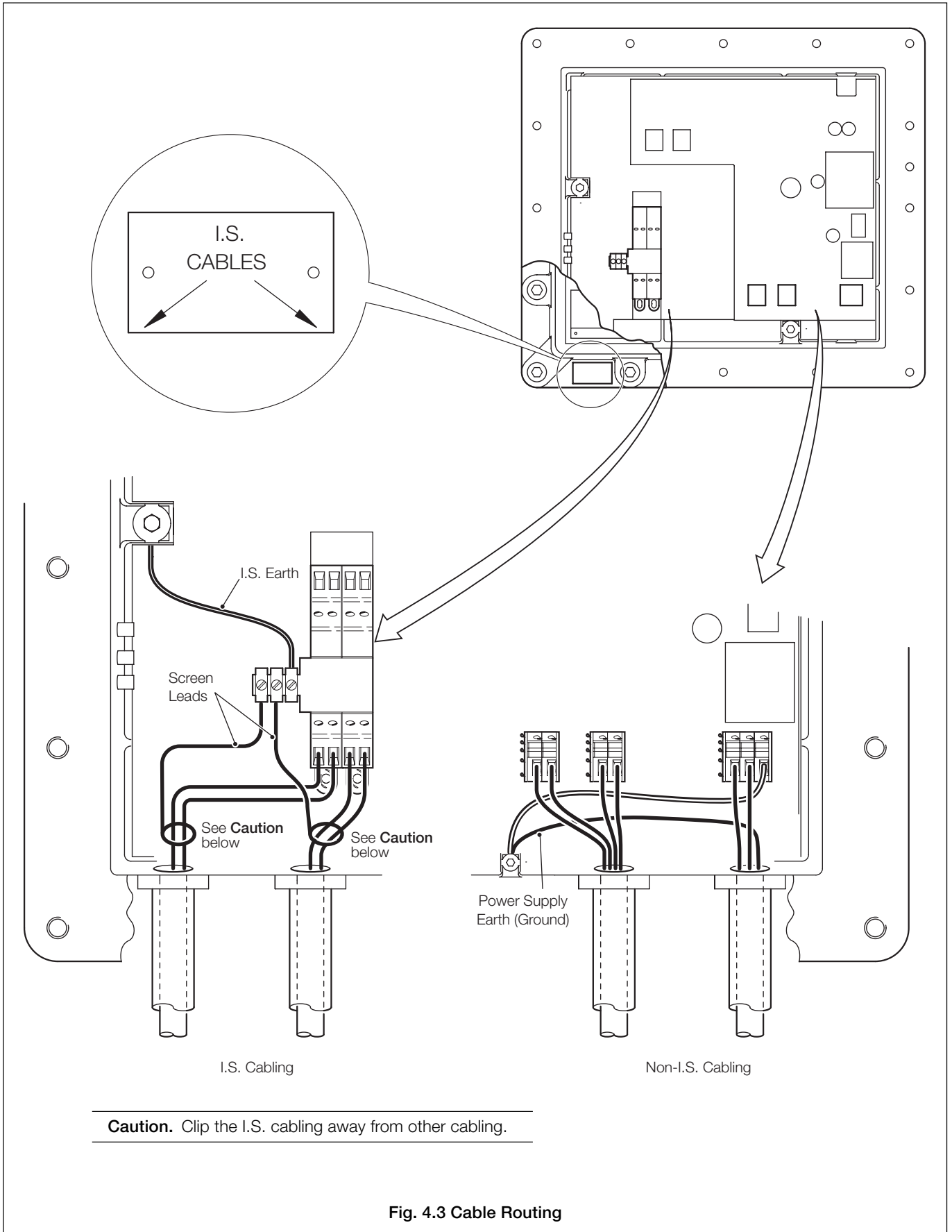


Fig. 4.3 Cable Routing

## ...4 ELECTRICAL INSTALLATION

### 4.5 Electrical Connections – Fig. 4.4

**Warning.** The power supply earth (ground) **must** be connected to ensure safety to personnel and reduction of the effects of radio frequency interference (RFI). Connect the power supply earth (ground) lead directly to the case earth stud and **not** to the 'E' terminal.

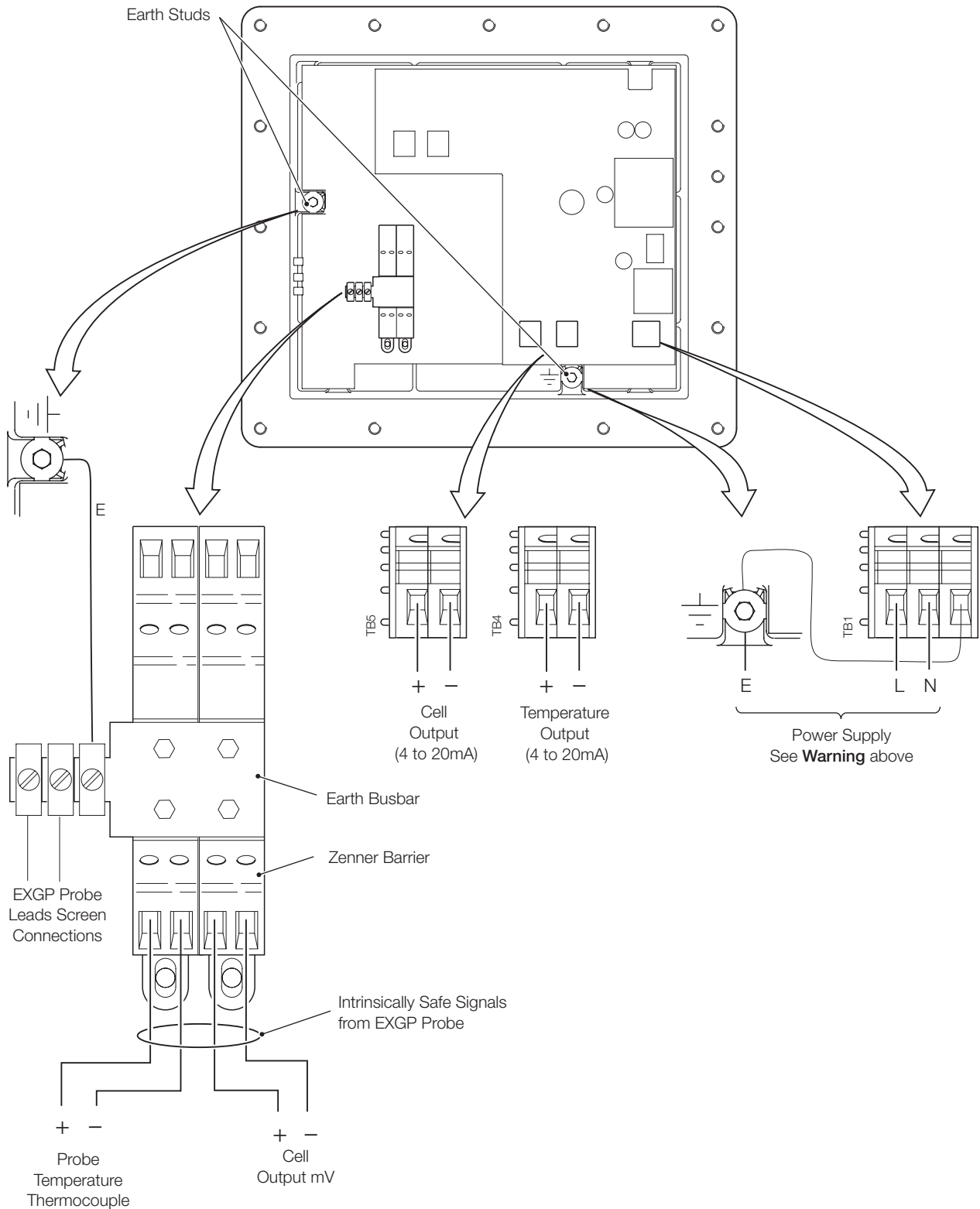


Fig. 4.4 Electrical Connections

4.6 Selecting Mains Voltage – Fig. 4.5

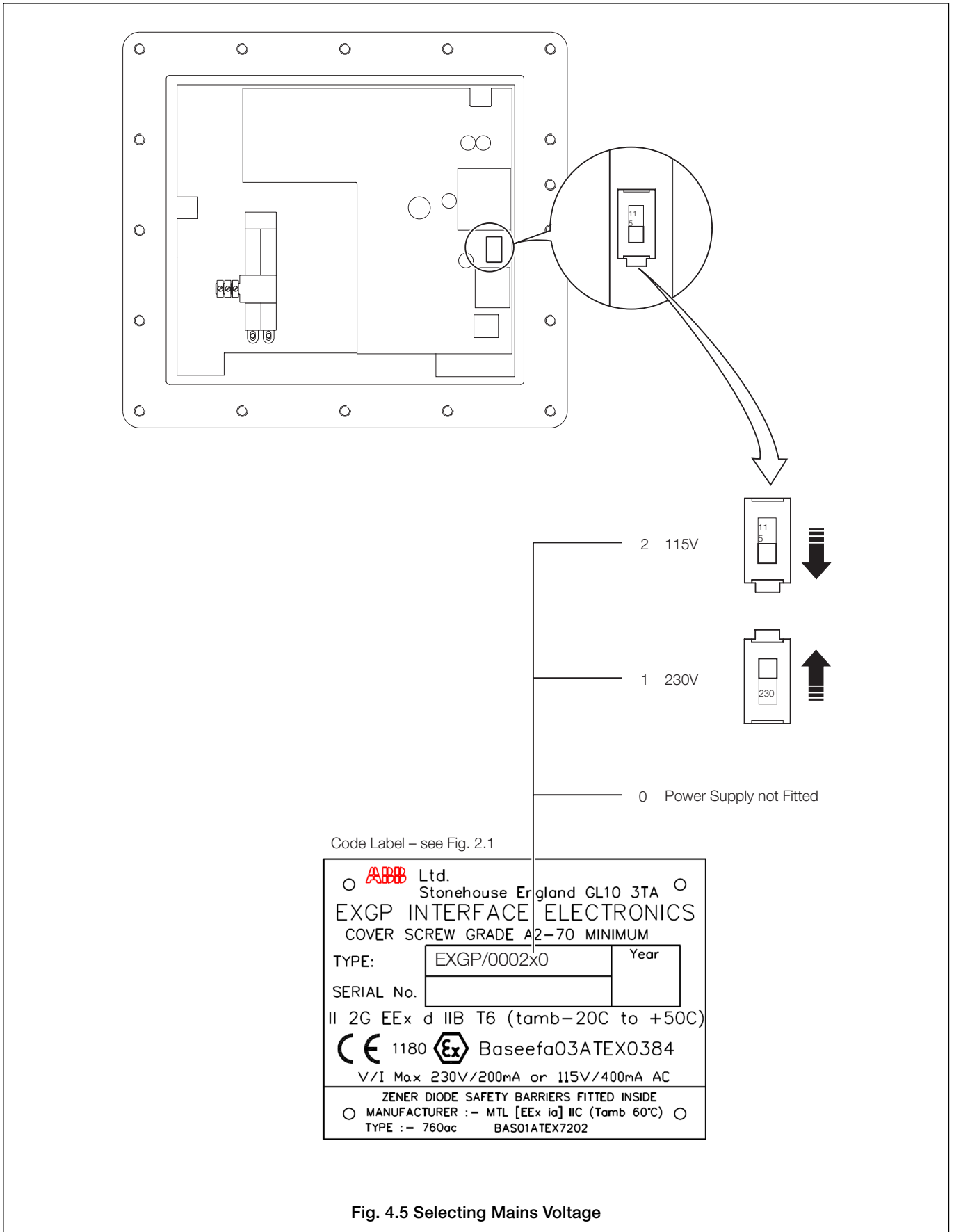
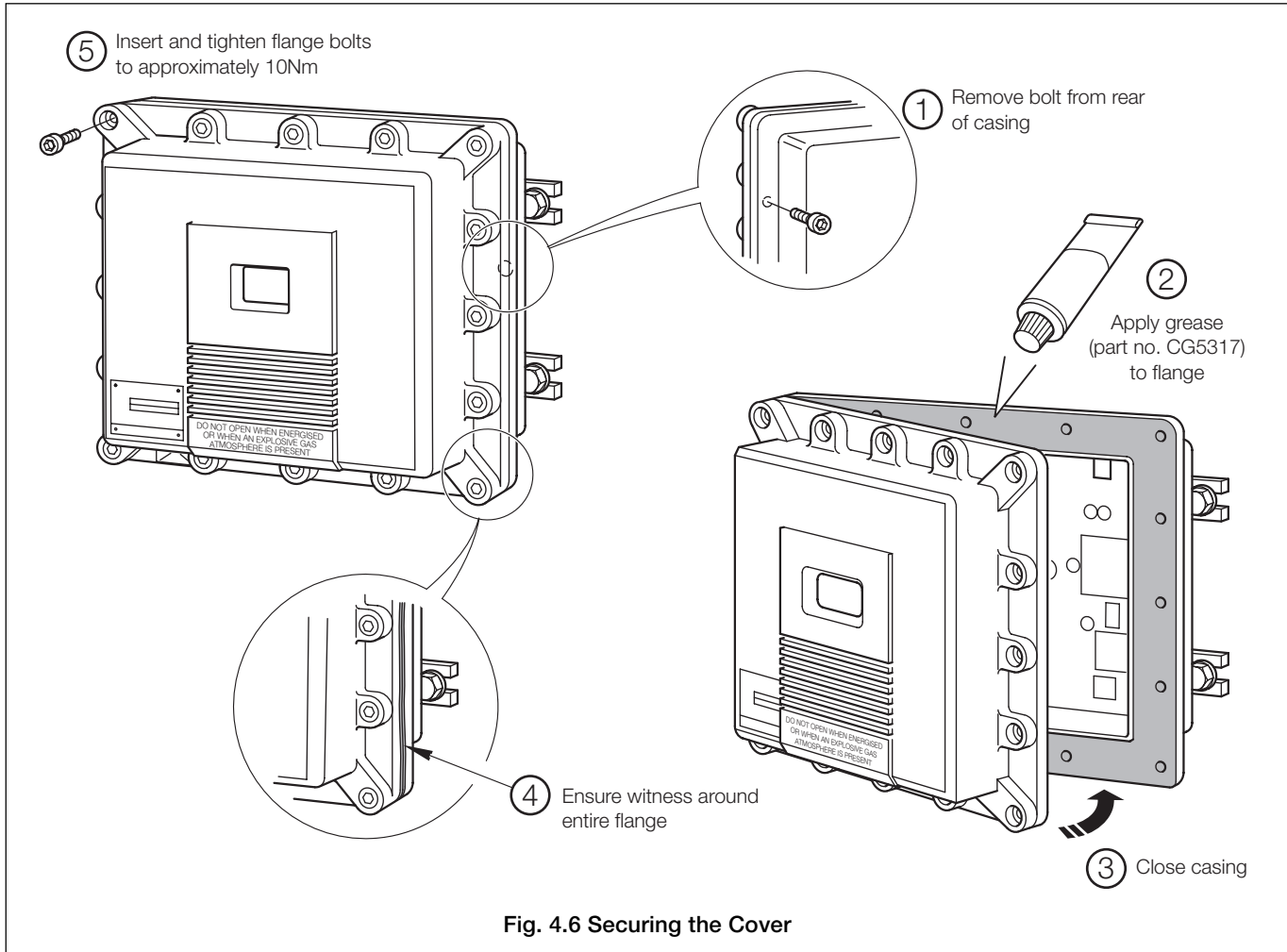


Fig. 4.5 Selecting Mains Voltage

## ...4 ELECTRICAL INSTALLATION

### 4.7 Re-sealing the Cover after Connection – Fig. 4.6

**Warning.** Ensure all electrical connections have been made correctly before re-sealing and securing the cover. **Do not** switch on mains power until the cover has been re-sealed and secured with all 16 (SS Grade A2–70) cover bolts tightened evenly to approx. 10Nm. There should be no visible gap in the joint between lid and base. If in doubt check that a 0.20mm feeler gauge does not fit into the gap at any point.



### 4.8 Switching Power On

**Information.**

- Ensure the Probe has been installed and connected correctly – see *Sections 3 and 6 of the Probe Guide*.
- If a 4680 or 4685 Transmitter unit is used, ensure that it has been installed and connected correctly as detailed in *Sections 3 and 4 of the Transmitter Guide*. Before switching the transmitter on, refer to *Section 5 for Controls and Displays* and *Section 6 for Instrument Start-up*.
- The interface unit has no independent ON/OFF switch and must be powered-up from the mains switch.

### 4.9 System Calibration

The interface unit is calibrated from the transmitter – see *Section 7 of the Transmitter Guide* for system calibration. For other transmitters refer to the relevant instruction manual supplied with the instrument.

If a fault is suspected, calibrate the unit as detailed in the Electrical Calibration Supplement. If the fault persists, return the unit to the Company.

# PRODUCTS & CUSTOMER SUPPORT

## Products

### Automation Systems

- *for the following industries:*
  - Chemical & Pharmaceutical
  - Food & Beverage
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  - Pulp and Paper

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- *Force Measurement*
- *Servo Drives*

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- *Circular Chart, Strip Chart and Paperless Recorders*
- *Paperless Recorders*
- *Process Indicators*

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

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- *Systems Integration*

### Transmitters

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

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- *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: +1 775 850 4800  
Fax: +1 775 850 4808

#### 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

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The Company's policy is one of continuous product  
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