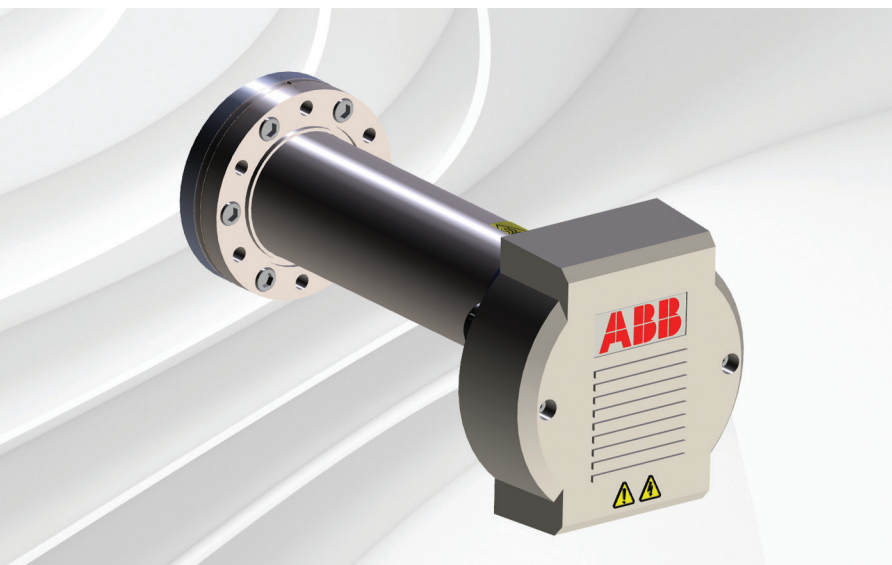


Endura AZ10

Oxygen probe



Sensor sub-assembly tested
spares kit

Measurement made easy

Endura AZ10
oxygen probe

1 Introduction

This publication details how to replace the sensor sub-assembly on an AZ10 oxygen probe.



WARNING – Bodily injury

This symbol in conjunction with the signal word 'WARNING' indicates a potentially dangerous situation. Failure to observe this safety information may result in death or severe injury.

–This procedure can be performed with the AZ10 oxygen probe removed from the process, **only if** all safety conditions listed in Section 3, page 2) are met.

Tools required

- 3 mm allen key
- 5 mm allen key (standard)
- Terminal screwdriver
- Flat-bladed screwdriver
- 24 mm spanner
- Suitable PPE, including gloves, goggles, high visibility jacket

2 For more information

Further information is available from:

www.abb.com/analytical

or by scanning these codes:



Service

3 Health & Safety

3.1 Operational conditions – site conditions / site preparation

DANGER – Serious damage to health / risk to life Site safety– safe site working conditions

- Before maintaining, installing and / or removing the AZ10 oxygen probe at the process:
- ensure the process is switched off / shutdown
 - notify the plant / process supervisor that the AZ10 oxygen probe will be offline during maintenance / removal / installation
 - ensure suitably-qualified personnel wearing adequate PPE are available and used for all maintenance / removal / installation tasks
 - after the AZ10 oxygen probe is removed from the process, blank off the opening in a safe manner

3.2 Operational conditions – high temperatures on exposed sensor surfaces

WARNING – Bodily injury High temperature on exposed surfaces

- exposed sensor surfaces can reach 400 °C (752 °F) through conduction from the process during operation
- ensure both the process and probe are in a safe, cool condition before removing the probe from the process and / or performing maintenance tasks
- do not touch exposed surfaces until the sensor / probe is cool enough to handle with PPE
- suitable PPE must be worn before handling the sensor

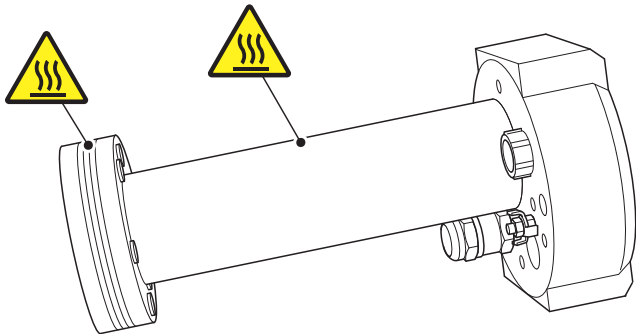


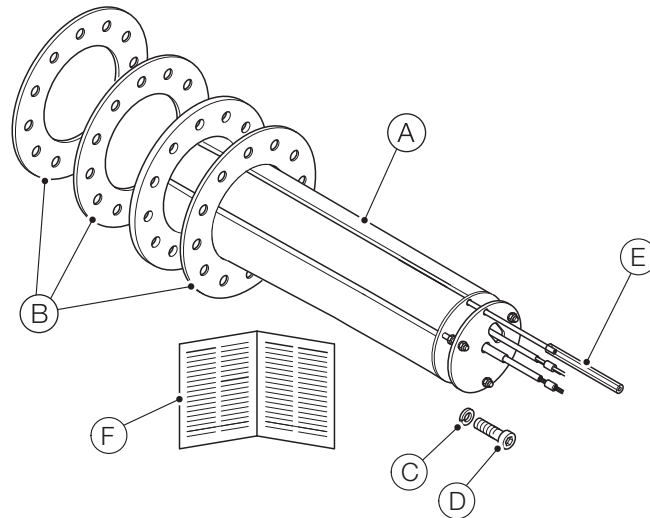
Fig. 3.1 High temperature points on exposed sensor surfaces

3.3 Operational conditions – high voltage mains electrical power

DANGER – Serious damage to health / risk to life This symbol in conjunction with the signal word 'DANGER' indicates an imminent electrical hazard. Failure to observe this safety information will result in death or severe injury.

- isolate the AZ10 oxygen probe from mains electrical power before performing maintenance tasks

4 Kit contents



Item	Description	Qty.
(A)	Sensor sub assembly tested	1
(B)	Mounting gasket	3
(C)	M6 spring washer, stainless steel	6
(D)	M6 x 16 cap-head stainless steel screw	6
(E)	Silicon tubing 90 mm	1
(F)	Information sheet Sensor sub-assembly tested spares kit	1

Table 4.1 Sensor sub-assembly tested spares kit – part number AZ10 0056

5 Replacing the sensor sub-assembly

5.1 Disconnecting the probe test gas supply



DANGER – Serious damage to health / risk to life

Before disconnecting the probe test gas supply:

- isolate mains electrical power supplies to the AZ10 oxygen probe
- isolate the test gas supply to the AZ10 oxygen probe
- allow the probe to cool before touching any exposed parts

Referring to Fig. 5.1:

1. At the process, disconnect test gas pipe (A) from probe test gas inlet (B).

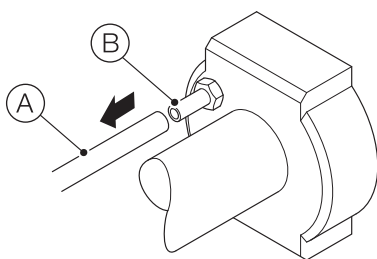


Fig. 5.1 Disconnecting the probe test gas supply

2. Ensure the probe cable has sufficient slack, remove the probe from the process and transfer it to a clean dry working area.
3. Blank off the opening at the process-mounted flange.
4. Proceed to Section 5.2.

5.2 Disconnecting the probe electrical connections



DANGER – Serious damage to health / risk to life

Before disconnecting the probe electrical connections:

- confirm that mains electrical power supplies to the AZ10 oxygen probe have been isolated
- allow the probe to cool before proceeding

Referring to Fig. 5.2:

1. Loosen 2 socket-head screws (A) using a 3 mm allen key and remove lid (B).
2. Disconnect all wires at terminal blocks (C), (D), (E) and (F) using a terminal screwdriver.
3. Carefully remove silicon (test gas) tube (G) from the internal test gas pipe at position (H).
4. Unscrew and remove M4 terminal PCB assembly retaining screw and shakeproof washer (I), lift the terminal PCB assembly up off the sensor sub-assembly location dowels and remove the terminal PCB assembly from probe body.
5. Proceed to Section 5.3, page 4.

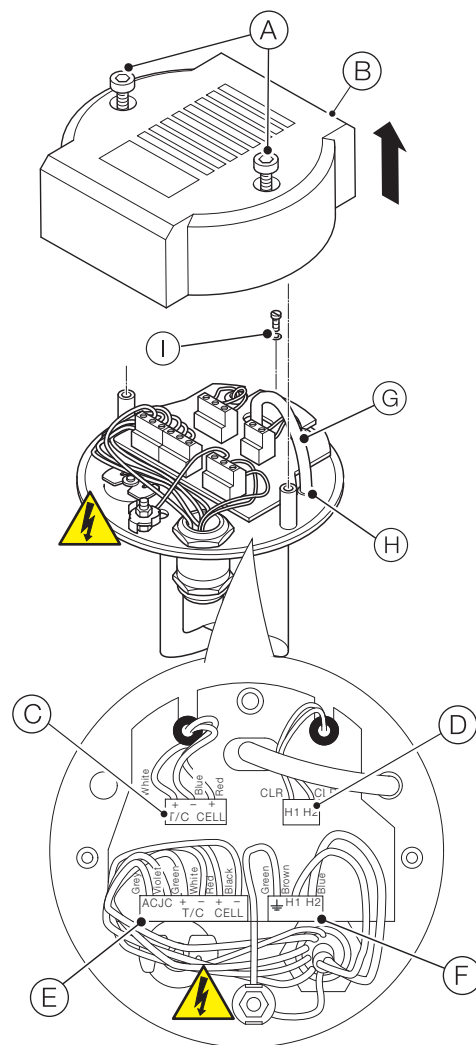


Fig. 5.2 Disconnecting the probe electrical connections

5.3 Disconnecting the sensor sub-assembly from the probe body

Referring to Fig. 5.3:

1. Stand probe body (A) upright on a clean dry surface.
2. Use a 5 mm Allen key to loosen and remove 6 x M6 cap-head screws (B), remove spring washers (C) and discard fixings.

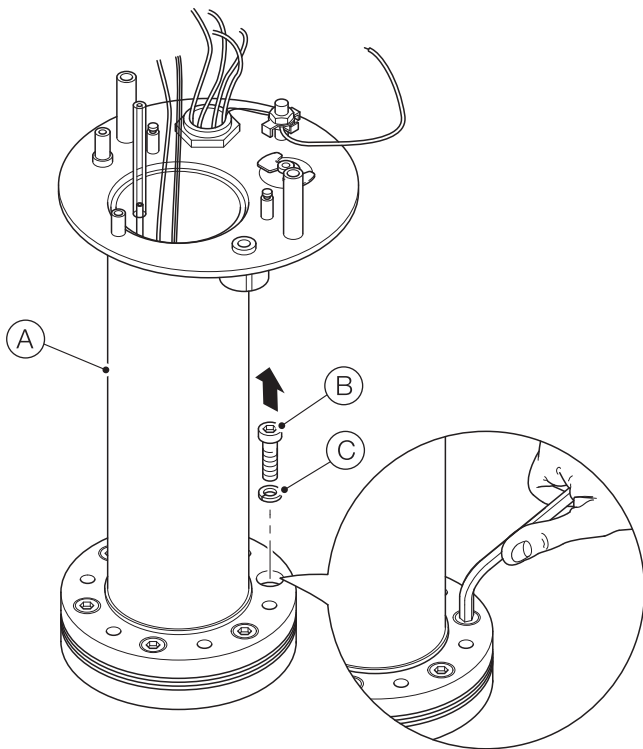


Fig. 5.3 Disconnecting the sensor sub-assembly from the probe body

Referring to Fig. 5.4:

3. Lift probe body (A) away from sensor sub-assembly (B).
4. Lift sensor sub-assembly (B) (including 2 mounting gaskets (C)) away from arrester flange (D).
5. Discard sensor sub-assembly (B) including 2 mounting gaskets (C).
6. Retain arrester flange (D) for re-use (see Section 5.4, page 5) and clean mating surfaces before refitting.



IMPORTANT (NOTE)

If the lower gasket has bonded to arrester flange surface, avoid damage to the mating surfaces when removing and / or cleaning the flange.

7. Proceed to Section 5.4, page 5.

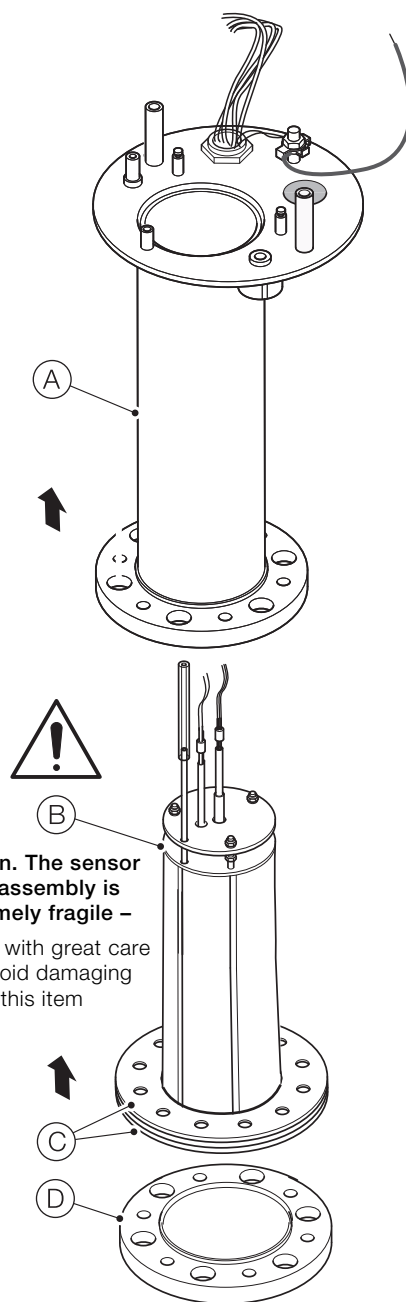


Fig. 5.4 Separating the sensor sub-assembly from the probe body

5.4 Fitting the new sensor sub-assembly

i IMPORTANT (NOTE)

The silicon tubing should be pre-fitted as part of the assembly. If not pre-fitted, fit it at Section 5.5, page 6.

Referring to Fig. 5.5:

1. Place gasket (A) on arrester flange (B) and align screw holes.
2. Carefully pass (new) gasket (C) over sensor sub-assembly body (D) until it sits evenly on the face of the sensor sub-assembly flange with the screw holes aligned.
3. Carefully position sensor sub-assembly (D) on arrester flange (B) and align notch (E) with marker (F).
4. Carefully lower probe body (G) over sensor sub-assembly (D) and align marker (H) with notch (E) and marker (F).
5. Fit M6 spring washers (I) to probe body flange and secure assembled probe body / sensor sub-assembly to arrester flange (B) using 5 mm Allen key.

i IMPORTANT (NOTE)

All M 6 spring washers / screws must be fitted and secured.

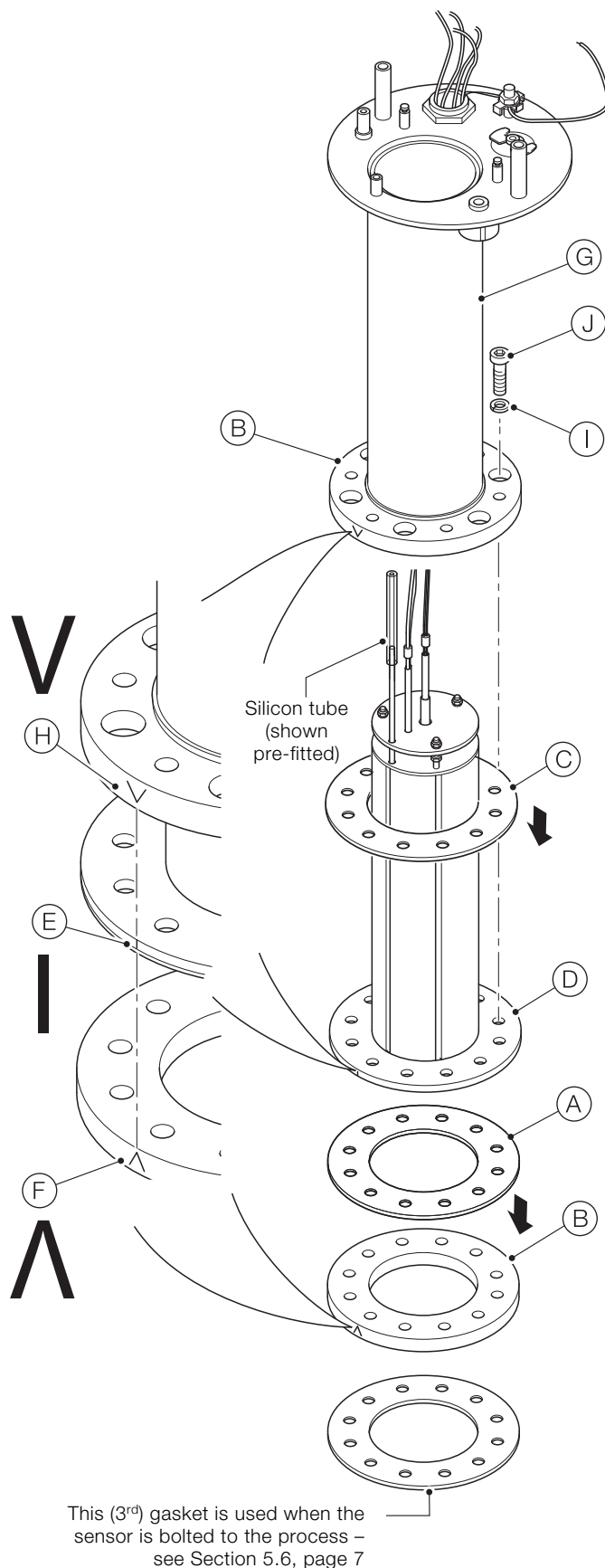


Fig. 5.5 Securing the sensor sub-assembly to the probe body

6. Proceed to Section 5.5, page 6.

5.5 Connecting the sensor sub-assembly



DANGER – Serious damage to health / risk to life

Before reconnecting the sensor sub-assembly:
– ensure mains electrical power supplies to the AZ10 oxygen probe are isolated

Referring to Fig. 5.6:

1. If the sensor tube (A) is not pre-fitted, slide it over external test gas connector (B) for approximately 10 mm (0.4 in.).
2. Offer terminal PCB assembly (C) to the probe body mounting plate and feed (internal) thermocouple / cell wires (D) through the grommet above terminal (E).
3. Feed (internal) heater wires (F) through the grommet above terminal (G).
4. Route silicon tube (A) through the centre slot of terminal PCB assembly (C).
5. Locate the terminal PCB assembly on the probe body mounting plate location dowels and secure using M4 screw / shakeproof washer (H).
6. Connect (internal) heater wires (F) to terminal (G) using a terminal screwdriver.
7. Carefully slide silicon tube (A) over external test gas connection (I) until it is seated fully.
8. Connect (internal) thermocouple / cell wires (D) to terminal (E) using terminal screwdriver.
9. Connect (internal) earth wire (J) to the earth (\perp) connection on terminal (K) using terminal screwdriver.
10. Connect remaining cable wires to terminals (K) and (L) – see Table 5.1:



DANGER – Serious damage to health / risk to life

Ensure earth wires connected to earth stud (M) are secured and the M4 earth stud nut is fully tight before switching on the mains power supply.

Probe connections	Note
Grey	ACJC
Violet	ACJC
Green	T/C +
White	T/C –
Red	Cell + (oxygen input)
Black	Cell – (oxygen input)
Green (internal earth between earth stud and earth connection on terminal (K)). Drain wires (twisted pair from cable) connected at sensor earth stud	The internal earth wire (including clamp washer must be secured at the earth stud and connected at the (green) earth connection of terminal (K) – see Fig. 5.6.
Brown	Heater 1
Blue	Heater 2

Table 5.1 AZ10 oxygen probe cable connections

11. Refit lid (N) using M4 screws (O).

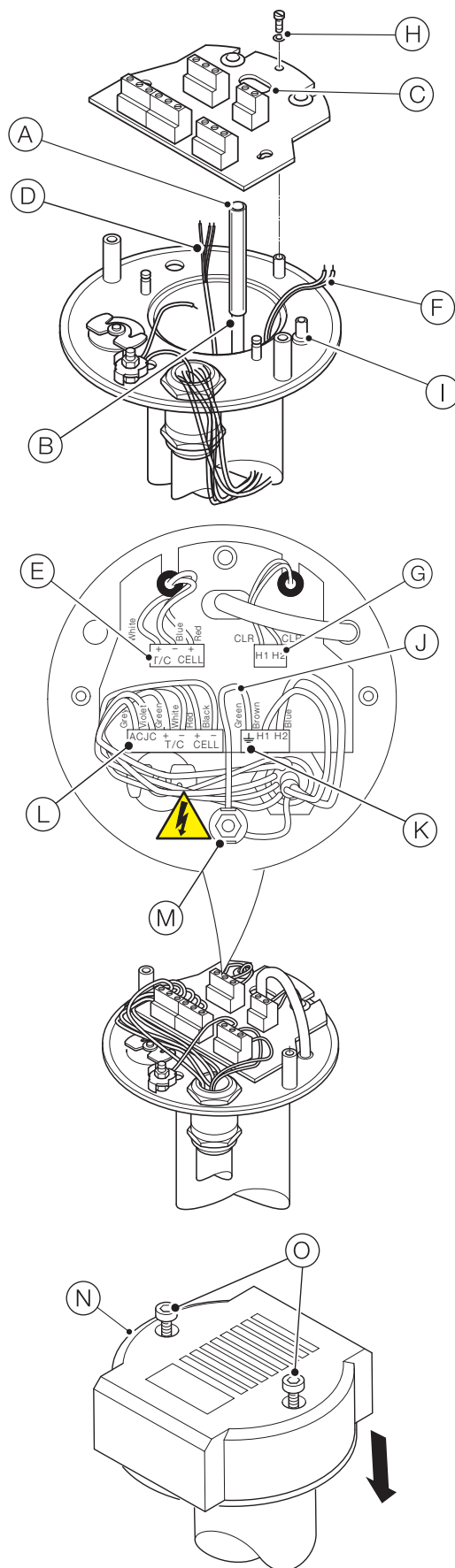


Fig. 5.6 Connecting the sensor sub-assembly

12. Proceed to Section 5.6, page 7.

5.6 Refitting the probe and reconnecting the test gas

1. Remove the blanking plate from the probe mounting flange at the process.
2. Fit the 3rd gasket (see Fig. 5.5, page 5) in place on the process-mounted flange.

Referring to Fig. 5.7:

3. Ensure the probe cable has sufficient slack, offer the probe up to the mounting flange and secure in position.
4. Reconnect test gas pipe (A) to probe test gas inlet (B).

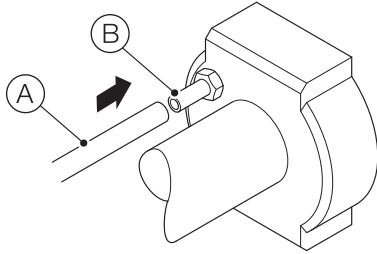


Fig. 5.7 Re-connecting the test gas supply to the probe

5. Switch on the test gas supply and mains power to the probe.
6. Refer to OI/AZ10/Marine-EN to prepare the analyzer for operation.

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