

Endura AZ40

Sensor assembly



Aspirator kit
Kit reference: AZ400 756

Measurement made easy

Endura AZ40
sensor assembly

1 Introduction

This publication details replacement procedures for the AZ40 aspirator (AZ400 756) fitted to Endura AZ40 sensor assemblies. Before carrying out any procedures, read Section 3.

These procedures must be carried out by a suitably-trained technician.

Kit contains:

- Aspirator kit
- This publication

Tools required

- Transmitter door key (supplied with transmitter)
- Operating instruction [OI/AZ40-EN](#)*
- 10 in adjustable spanner (wrench)
- 7/8 in open-ended spanner (wrench)
- Anti-seize compound (suitable for temperatures up to 200 °C [392 °F])

*Operating instruction [OI/AZ40-EN](#) contains mandatory safety information and can be downloaded from the link (above) or by scanning this code:



2 For more information

Further information is available from:

www.abb.com/analytical

or by scanning these codes:



Sales



Service

3 Health & Safety

3.1 Safety precautions

Be sure to read, understand and follow the instructions contained within this document before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.



WARNING – Bodily injury Installation, operation, maintenance and servicing must be performed:

- by suitably trained personnel only
- in accordance with the information provided in this document
- in accordance with relevant local regulations

3.2 Potential safety hazards

3.2.1 Process conditions and requirements



WARNING – Bodily injury

Environmental conditions



– High air / equipment / structure temperatures, poor air quality and adverse environmental conditions may be present when the process is running.



– It is recommended that the process is shut down before performing these procedures.



– The process must be cool enough to enable shutdown, disconnection and removal of the sensor in a safe manner and in accordance with relevant local regulations.

– Appropriate PPE, including mask and goggles must be worn when preparing the process for these procedures.

3.2.2 Endura AZ40 sensor – fibrous material in probe assembly



WARNING – Serious damage to health

Fibrous material



– The sensor and probe assemblies (standard and high temperature versions) contain fibrous material that can be a health hazard if airborne.



– The material, predominantly – aluminosilicate refractory fibres, CAS 142844-00-6. Refractory ceramic fibres (RCF) are classified as:



– Category 1B carcinogen under regulation (EC) No 1272/2008 – the classification, labelling and packaging regulations.

– Category 2B carcinogen by inhalation by The International Agency for Research on Cancer (IARC).

– When removing the sensor cover and subsequent maintenance activities, exposure to the airborne fibres could occur. ABB have conducted air sampling assessments within the breathing zone of the operator and have identified that an exposure limit of 1 fibre / cubic centimetre is unlikely to occur.

– Exposure to any carcinogen must be kept as low as reasonably practicable.

– Appropriate PPE defined below, must be worn when working with probe assemblies (all installation, replacement, maintenance procedures):

– A face fit tested, half mask conforming to EN140 (or equivalent) with a level 3 particulate filter conforming to EN 143 (or equivalent).

– Disposable protective coveralls in accordance with Type 5 ISO 13982-1:2004 (or equivalent).

– Goggles and gloves.

3.2.3 Endura AZ40 sensor / probe – installation to pressurized process



DANGER – Serious damage to health / risk to life
Pressurized equipment – do not install / remove / the sensor / probe if the process is at positive pressure

Installation, operation, maintenance and servicing of pressurized equipment must be performed:

– by suitably trained personnel only

– in accordance with the information provided in this document

– in accordance with relevant local regulations

– when process conditions are suitable to allow enough to enable installation / maintenance

3.2.4 Endura AZ40 sensor – high operational temperature on exposed parts



WARNING – Bodily injury High temperature on exposed surfaces – see Fig. 3.1

- During operation, exposed sensor surfaces can reach 200 °C (392 °F).
- Ensure suitable PPE is available and is worn before handling the sensor.
- Do not touch exposed surfaces until the sensor / probe is cool enough to handle with PPE.

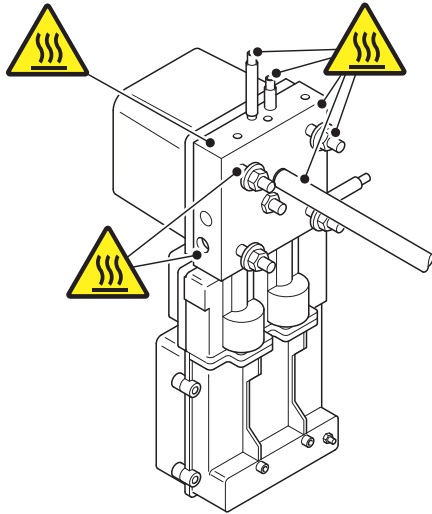


Fig. 3.1 High temperature points on exposed sensor surfaces during operation

3.2.5 Endura AZ40 sensor – weight



WARNING – Bodily injury

- The sensor weighs 9.0 kg (20 lb). When fitted with a probe / filter assembly, the combined sensor / probe weight is dependent on probe length / type plus filter option – refer to Operating instruction OI/AZ40-EN for weight details.
- The sensor / probe assembly must be mounted in accordance with the information supplied in Operating instruction OI/AZ40-EN.
- Suitable lifting equipment must be available when installing / removing the sensor / probe from the process.

3.2.6 Endura AZ40 analyzer – electrical



WARNING – Bodily injury

To ensure safe use when operating this equipment, the following points must be observed:

- up to 240 V AC may be present. Ensure the supply is isolated before removing the terminal cover
- normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and / or temperature

Safety advice concerning the use of the equipment described in this document or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Endura AZ40 transmitter – weight



WARNING – Bodily injury

- The transmitter weighs 7.6 kg (17 lb) and must be mounted in accordance with the information supplied in Operating instruction OI/AZ40-EN.
- Suitable lifting equipment must be available when installing / removing the transmitter from the mounting.

4 Isolating the transmitter

Referring to Fig. 4.1.

1. Isolate transmitter (A) from incoming mains powers supplies (B).



DANGER – Serious damage to health / risk to life

The transmitter must be isolated from mains powers supplies before carrying out this procedure.

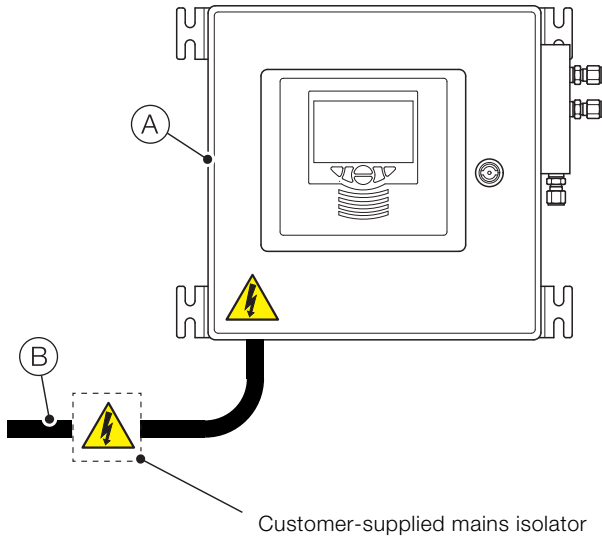


Fig. 4.1 Isolating the transmitter from incoming mains power supplies

5 Shutting down / removing the sensor assembly from the process



DANGER – Serious damage to health / risk to life

Allow sufficient time for the sensor assembly to cool before performing these procedures.

5.1 Shutting the sensor assembly down at the process

Referring to Fig. 5.1.

1. Close the air supply valve (A) and shut down the test gas line (B) at the supply.

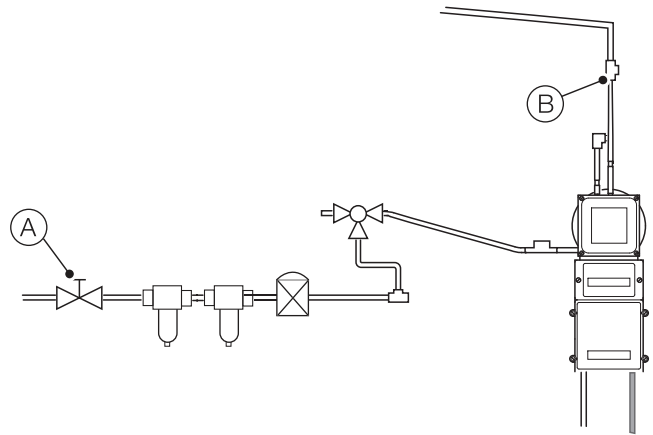


Fig. 5.1 Shutting down instrument air and test gas supplies

5.2 Disconnecting the sensor air and test gas supplies at the process

Referring to Fig. 5.2:

1. Disconnect air line (B) and test gas line (C) at sensor (D).

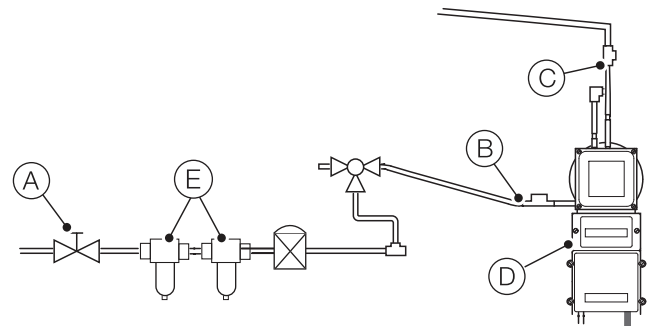


Fig. 5.2 Disconnecting instrument air and test gas supplies

5.3 Disconnecting the sensor electrical power and signal cables at the process



DANGER – Serious damage to health / risk to life

Allow sufficient time for the sensor assembly to cool before performing this procedure.



DANGER – Serious damage to health / risk to life

The transmitter must be isolated from mains power supplies before performing this procedure.

Referring to Fig. 5.3:

1. Use a medium flat-bladed screwdriver to unscrew 4 (captive) cover screws (A) and remove cover (B) from sensor assembly (C).
2. Disconnect mains cable (D) from terminal block (E).
3. Disconnect signal cable (F) from terminal block (G).
4. Disconnect thermocouple cables (H) from terminal block (I).
5. If optional blowback is fitted, disconnect cable (J) from terminal block (K).

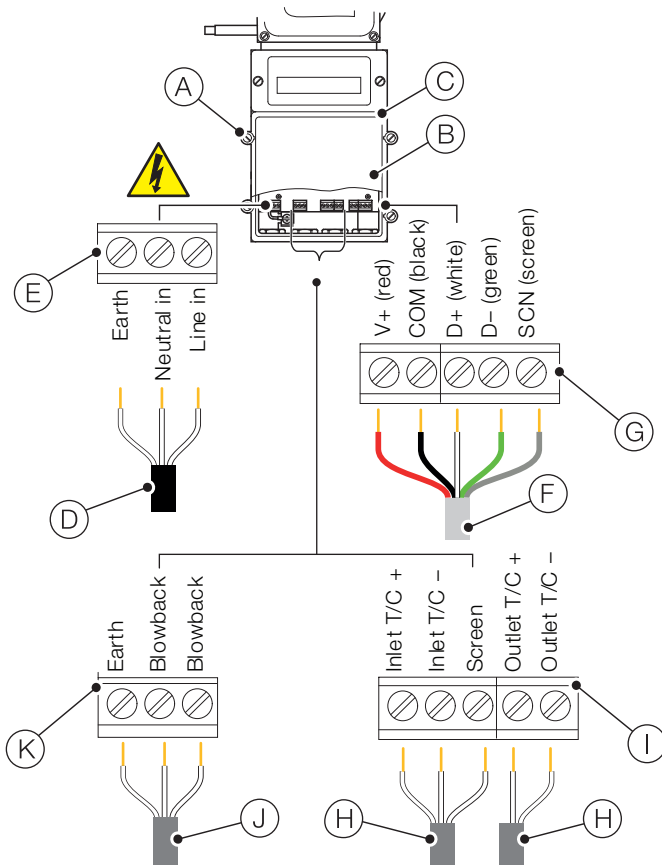


Fig. 5.3 Disconnecting sensor cables

5.4 Removing the sensor assembly from the process



DANGER – Serious damage to health / risk to life

Allow sufficient time for the sensor assembly to cool before performing this procedure.

Referring to Fig. 5.4:

1. Use a 10 in. adjustable spanner (wrench) to remove 4 nuts, washers and lockwashers (A) securing sensor assembly (B) to mounting flange (C). Set items aside for re-use.
2. Carefully remove the sensor assembly and the attached probe (including filter assembly) from the process.
3. Temporarily cover process opening until the sensor assembly is ready to be re-installed.

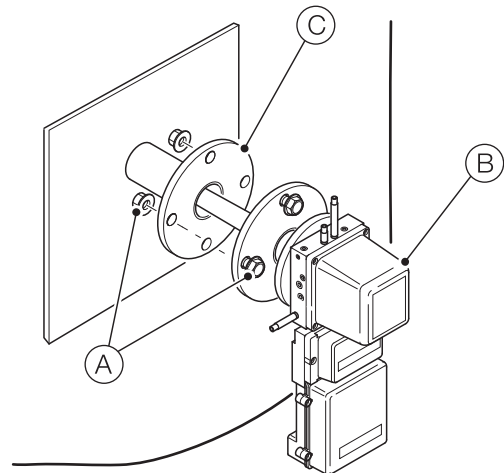


Fig. 5.4 Removing the sensor assembly from the process

5.5 Removing the exhaust filter and adaptor flange (if fitted) from the sensor

Referring to Fig. 5.5:

1. If a flange adaptor (A) is fitted, use a 10 in. adjustable spanner (wrench) to loosen and remove flange mounting nuts and washers (B) and slide flange over probe shaft.
2. Remove exhaust filter (E) from aspirator (F) using an open-ended 7/8 in. spanner (wrench). Check condition of exhaust filter (E). If it needs replacing, refer to INS/ANAINST/012-EN.

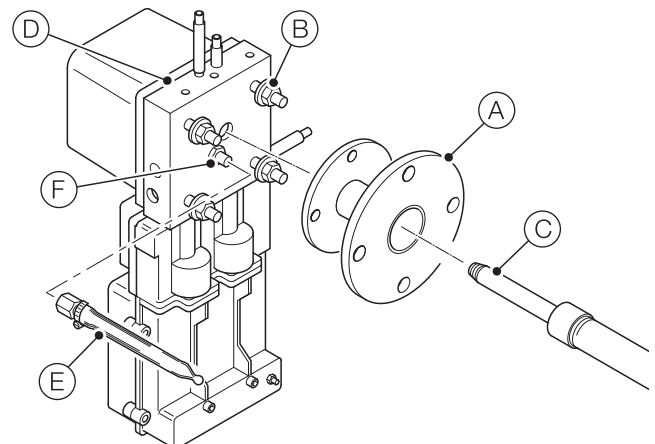


Fig. 5.5 Removing the probe, exhaust filter, adaptor flange from the sensor

6 Replacement procedure

Referring to Fig. 6.1:

1. Use an open-ended $\frac{7}{8}$ in. spanner (wrench) to unscrew and remove aspirator (A). Withdraw the aspirator, insert (B) and seal (C) from flange block (D).
2. Discard the removed items.



IMPORTANT (NOTE)

Dispose of the old aspirator / insert / seal in accordance with the guidelines contained in Operating instruction OI/AZ40-EN.

3. Clean the aspirator chamber thoroughly.



CAUTION – Damage to equipment

Do not scratch chamber surfaces – damage to any internal face will affect aspirator performance.

4. Locate a new seal (C) in the aspirator chamber, ensuring it is seated correctly.
5. Fit the new insert (B) into the new aspirator (A), ensuring it is seated correctly.
6. Apply a light coating of an anti-seize compound (suitable for temperatures up to 200 °C [392 °F]) to the threaded portion (E) of the aspirator.
7. Insert the aspirator / insert assembly into the aspirator chamber and use a $\frac{7}{8}$ in. spanner (wrench) to secure to a torque of 28 ± 2 in.-lb (3.2 Nm).



CAUTION – Damage to equipment

Do not overtighten.

8. Prepare the sensor assembly for operation by reversing the shutdown procedure – refer to Sections 5 and 4 (page 4).
9. Refer to Operating instruction OI/AZ40-EN to restore the analyzer to full operational condition.

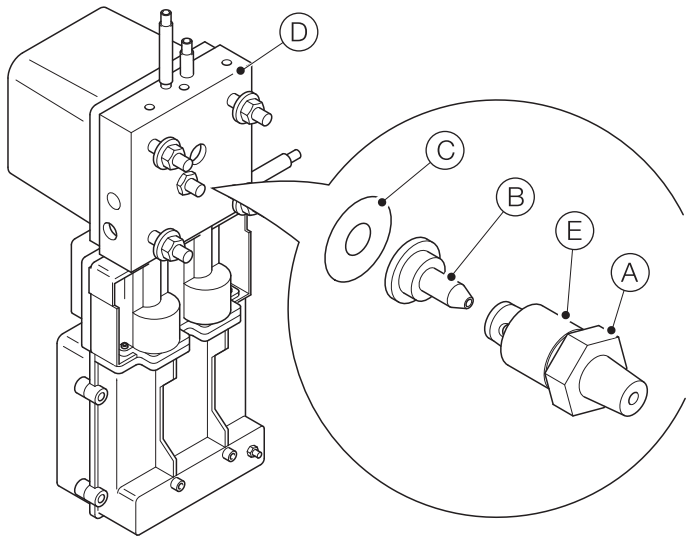


Fig. 6.1 Replacing the aspirator (probe omitted for clarity)

Notes

ABB Limited**Measurement & Analytics**

Howard Road, St. Neots
Cambridgeshire, PE19 8EU
UK

Tel: +44 (0)0870 600 6122

Fax: +44 (0)1480 213 339

Email: instrumentation@gb.abb.com

ABB Inc.**Measurement & Analytics**

125 E. County Line Road
Warminster
PA 18974

USA

Tel: +1 215 674 6000

Fax: +1 215 674 7183

abb.com/measurement



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