

Endura AZ40

High temperature filter assembly kit



Replacing AZ40 high temperature filter assembly

Kit reference: AZ400-761, -771, -772

Measurement made easy

Kit references:
AZ400-761
AZ400-771
AZ400-772

Introduction

This publication details replacement procedures for the following AZ40 high temperature filter assembly kits fitted to Endura AZ40 sensor assemblies:

- AZ400-772, 0.6 m (2 ft) assembly
- AZ400-771, 0.9 m (3 ft) assembly
- AZ400-761, 1.2 m (4 ft) assembly.

Before performing any procedures, read Section 3, page 2. These procedures must be carried out by a suitably-trained technician.

Kit contains:

- High temperature filter assembly
- This publication – Endura AZ40 | Sensor assembly | High temperature filter assembly seals kit (part no. INS/ANAINST/026-EN)

Tools/Items required

- Operating instruction [OI/AZ40-EN](#)*
- 10 in. adjustable spanner (wrench)
- 7/8 in. Spanner (wrench)
- Medium flat-bladed screwdriver
- Small crosshead screwdriver
- 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 via the link (above) or by scanning this code:



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1 Health & Safety

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

Potential safety hazards

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.

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 fibers, CAS 142844-00-6. Refractory ceramic fibers (RCF) are classified as:
 - Category 1B carcinogen under regulation (EC) No 1272/2008 – the classification, labeling and packaging regulations.
 - Category 2B carcinogen by inhalation by The International Agency for Research on Cancer (IARC).
-  – When removing the sensor cover and during subsequent maintenance activities, exposure to the airborne fibers could occur. ABB have conducted air sampling assessments within the breathing zone of the operator and have identified that an exposure limit of 1 fiber/cubic centimeter 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 (during all installation, replacement and 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.

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
- only when process conditions are suitable for installation/maintenance

...1 Health & Safety

Endura AZ40 sensor – high operational temperature on exposed parts

WARNING – Bodily injury

High temperature on exposed surfaces – see Figure 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.

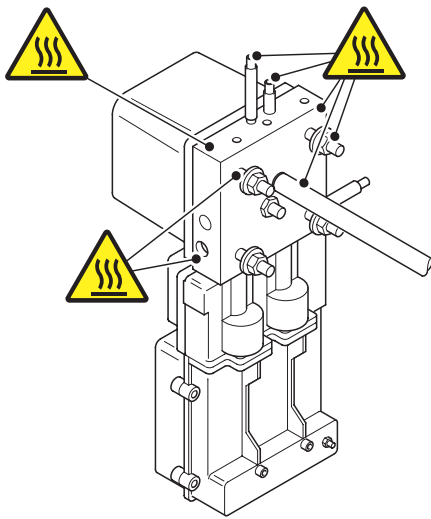


Figure 1 High temperature points on exposed sensor surfaces during operation

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.

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.

Product disposal/recycling

PRODUCT DISPOSAL/RECYCLING

Dispose/Recycle separately from general waste under the WEEE directive.

PRODUCT DISPOSAL/RECYCLING

Europe only

- Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August 2005. To conform to European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users should now return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.
- ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible.

NOTICE

For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment for proper disposal.

2 Isolating the transmitter

Referring to Figure 2, isolate transmitter (A) from incoming mains power supplies (B).

⚠ DANGER – Serious damage to health/risk to life

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

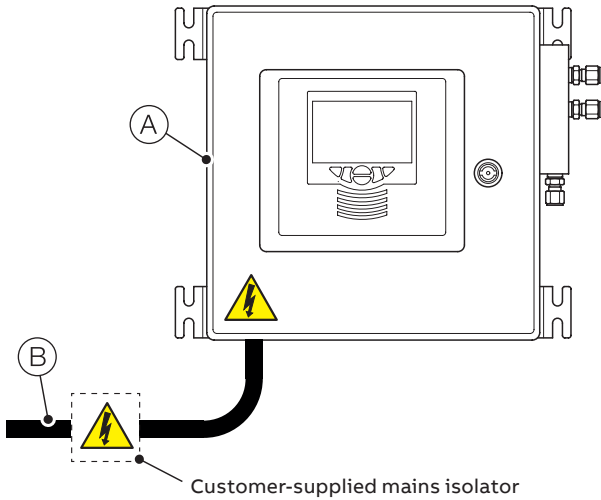


Figure 2 Isolating the transmitter from incoming mains power supplies

3 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 this procedure.

Shutting the sensor assembly down at the process

Referring to Figure 3, close air supply valve (A) and shut down test gas line (B) at the supply.

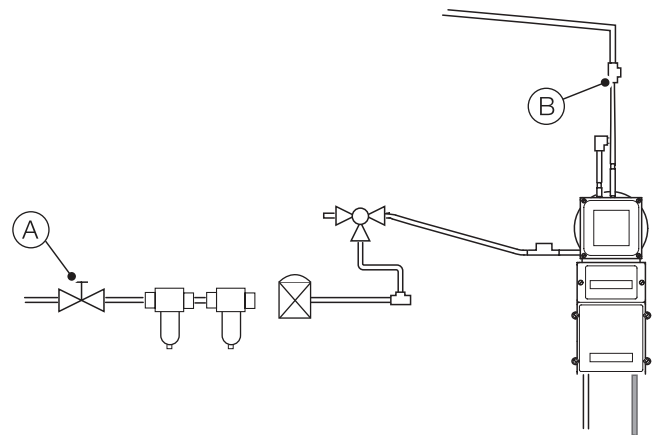


Figure 3 Shutting down instrument air and test gas supplies

Disconnecting the sensor air and test gas supplies at the process

Referring to Figure 4, disconnect air line (A) and test gas line (B) at sensor (C).

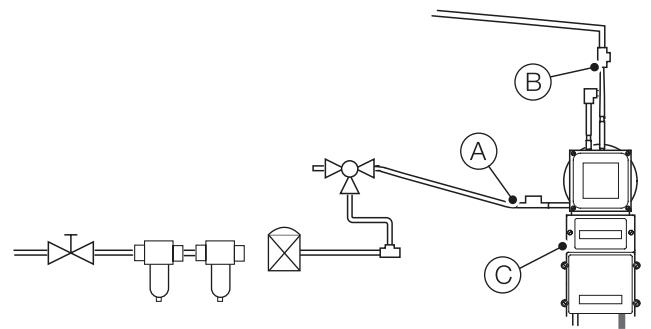


Figure 4 Disconnecting instrument air and test gas supplies

...3 Shutting down/removing the sensor assembly from the process

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 Figure 5:

- 1 Using a medium flat-bladed screwdriver, 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).

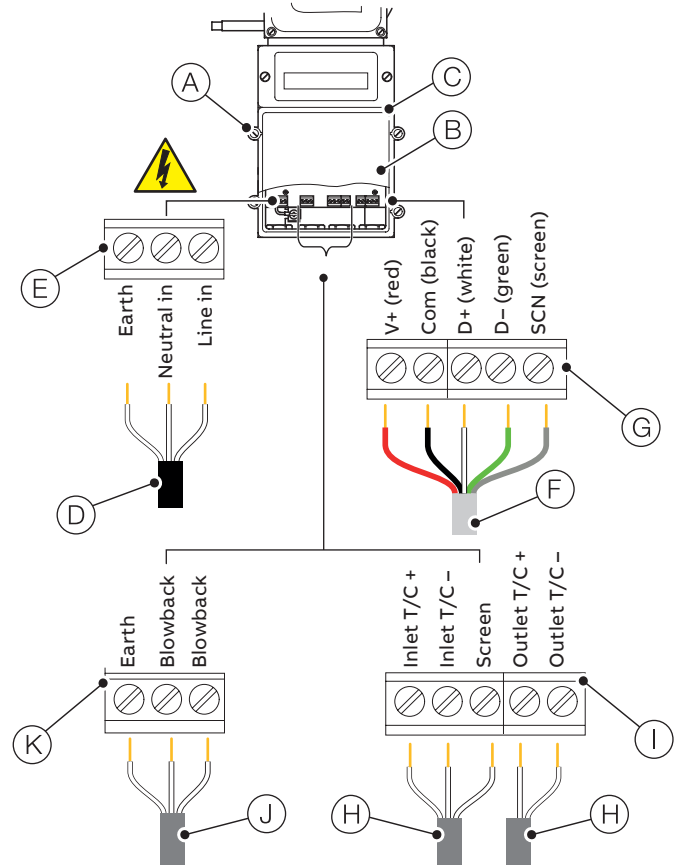


Figure 5 Disconnecting the sensor cables

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 Figure 6:

- 1 Using a 10 in adjustable spanner (wrench), 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.

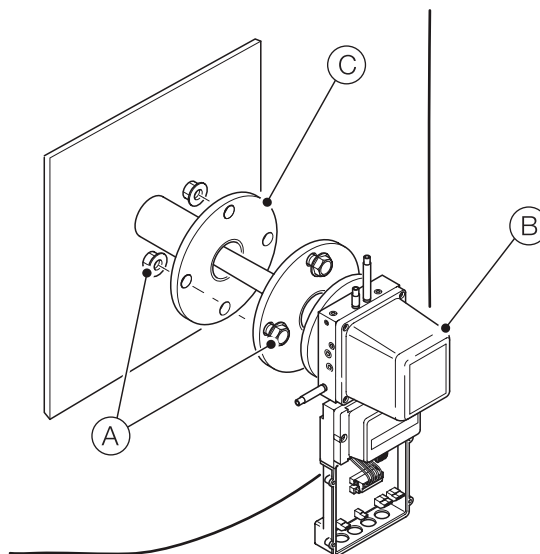


Figure 6 Removing the sensor assembly from the process

4 Removing the probe and adaptor flange (if fitted) from the sensor

⚠ CAUTION – Damage to equipment

Appropriate PPE (gloves/goggles) must be worn when performing this step. The ceramic material around the probe may be fragile after exposure to high temperature. When removing the probe from the sensor, handle with great care. Do not subject any part of the probe to shock.

Referring to Figure 7:

- 1 If flange adaptor (A) is fitted, use a 10 in adjustable spanner (wrench) to loosen and remove flange mounting nuts and washers (B).
- 2 Remove and retain flange adaptor (A).
- 3 Carefully unscrew probe assembly (C), remove from manifold (D) and discard.

NOTICE

Refer to [Product disposal/recycling](#) on page 4 for product disposal/recycling guidelines.

- 4 Proceed to [Section 5](#) on page 9.

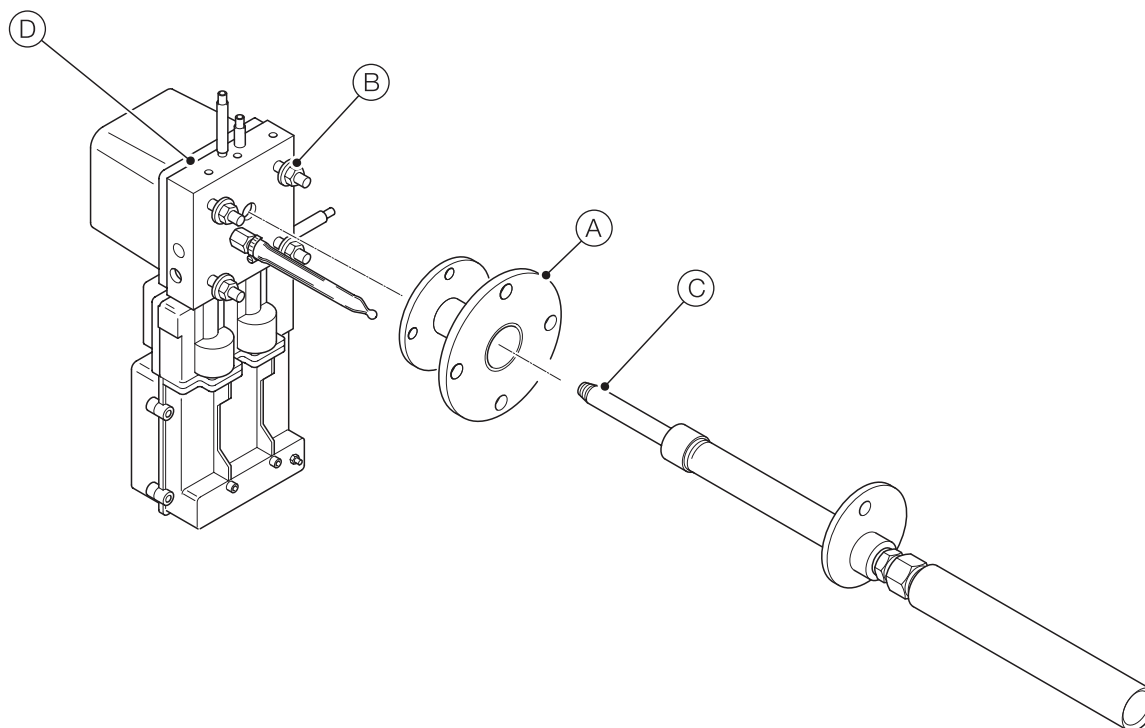


Figure 7 Removing the probe and adaptor flange (if fitted) from the sensor

5 Replacement procedure

⚠ CAUTION – Damage to equipment

Appropriate PPE (gloves/goggles) must be worn when performing this step. The ceramic material around the probe may be fragile after exposure to high temperature. When removing the probe from the sensor, handle with great care. Do not subject any part of the probe to shock.

Referring to Figure 8:

- 1 If flange adapter (A) is required, fit it to sensor assembly (B) using 4 hex nuts/washers (C).
- 2 Remove gland nut (D), bush (E) and Lava seal (F) from filter assembly (G)*.
- 3 Slide gland nut (D), bush (E) and Lava seal (F) onto probe (H) with chamfered side towards filter assembly (G).
- 4 Apply a light coating of an anti-seize compound (suitable for temperatures up to 200 °C [392 °F]) to gland nut threads (I).
- 5 Slide probe shaft (H) into sealing connector (J).
- 6 Slide Lava seal (F) and bush (E) into sealing connector (J) then thread gland nut (D) onto sealing connector (J) and tighten finger-tight.
- 7 Adjust probe until the insulator cement joint just contacts gland nut (D).
- 8 Slowly tighten gland nut (D) ½ a turn.
- 9 Check probe (H) is held firmly. If movement is detected, carefully tighten gland nut (D) a further ¼th of a turn.
- 10 Repeat step 9 until probe shaft (H) is held firmly.
- 11 Apply a light coating of an anti-seize compound (suitable for temperatures up to 200 °C [392 °F]) to the threaded end (K) of probe.
- 12 Thread the probe with filter assembly into the ¼ in NPT port (L) and tighten.

*Filter assemblies are available in 3 lengths:

- AZ400-772, 0.6 m (2 ft)
- AZ400-771, 0.9 m (3 ft)
- AZ400-761, 1.2 m (4 ft)

13 Align spacer (M) to support the probe/filter assembly within the standoff.

14 Prepare the sensor assembly for operation by reversing the disconnection and shutdown procedures – refer to [Section 3](#) on page 5 and [Section 2](#) on page 5.

15 Refer to Operating instruction [OI/AZ40-EN](#) to restore the analyzer to full operational condition.

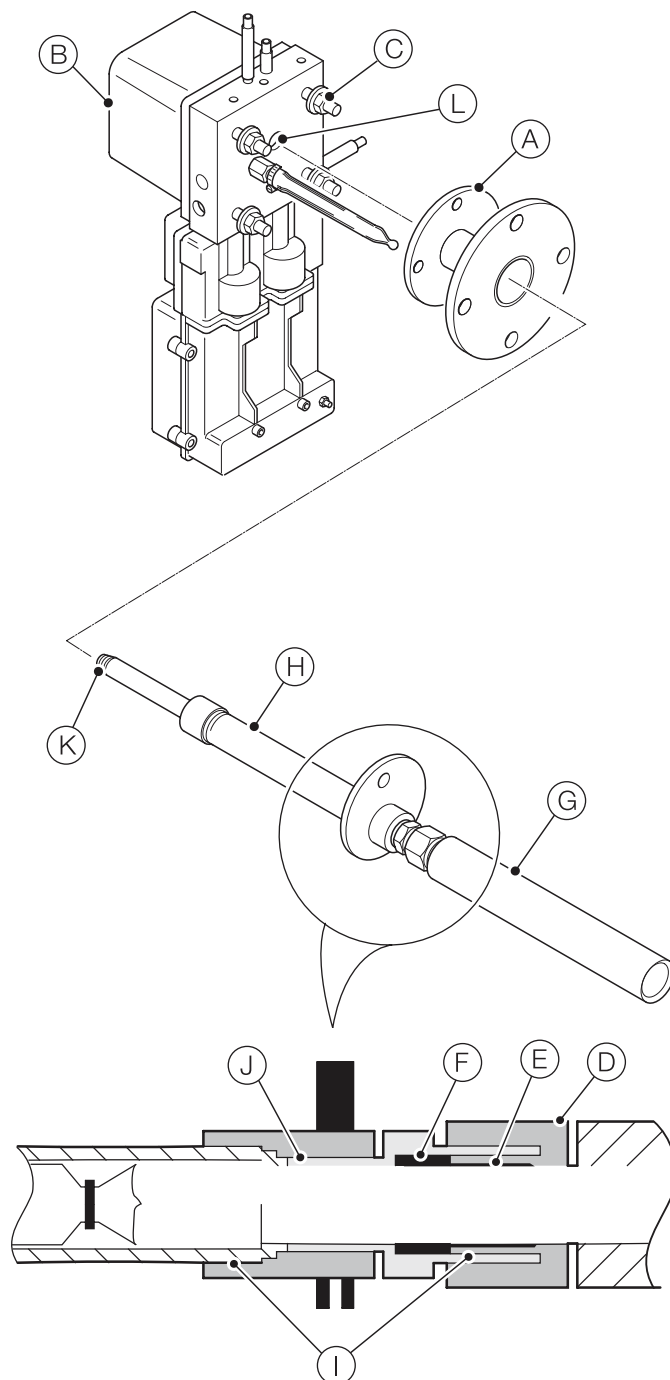


Figure 8 High temperature probe and filter assembly

Notes

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