

Endura AZ20 series probe

Combustion oxygen monitor



Integral transmitter to remote transmitter conversion kits

Kit references:

AZ200738 (integral to remote conversion kit [M20])

AZ200739 (integral to remote conversion kit [NPT])

Measurement made easy

Endura AZ20 series probe
combustion
oxygen monitor

1 Introduction

This publication details removal of an integral AZ20 transmitter and re-connection to a remote AZ20 transmitter. These procedures must be carried out by suitably trained personnel and in accordance with the information given.

Tools required

- Spanner suitable for M5 hexagon head screws (8 mm)
- Open-ended spanner suitable for M20 or ½ in. NPT cable gland
- Small flat-bladed screwdriver
- Operating instruction (transmitter) [IM/AZ20E-EN](#)
- Operating instruction (probe) [IM/AZ20P-EN](#) (required only if the sensor is removed from the process)

2 For more information

Further information is available from:

www.abb.com/analytical

or by scanning these codes:



Sales



Service

3 Health & Safety



WARNING.

Electrical

- Isolate all high voltage supplies to the transmitter before performing replacement procedures.
- Ensure all electrical connections are kept dry at all times.

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 AZ20 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

3.2.3 Endura AZ20 integral transmitter – weight



WARNING – Bodily injury

- The sensor (excluding probe) weighs approximately 3.5 kg (7.7 lb).
- Suitable lifting equipment must be available when installing / removing the integral transmitter from the process.

3.2.4 Endura AZ20 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.

3.2.5 Product disposal / recycling



PRODUCT RECYCLING / DISPOSAL

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



PRODUCT RECYCLING / DISPOSAL (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.



IMPORTANT NOTE

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

4 Isolating the transmitter and shutting down sensor air / gas supplies

4.1 Isolating the integral transmitter

Referring to Fig. 4.1.

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



DANGER – Serious damage to health / risk to life
Isolate the transmitter from mains power supplies before performing this procedure.

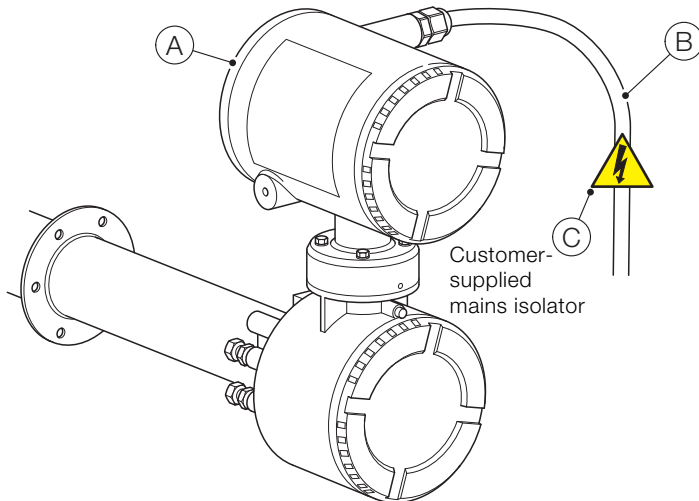


Fig. 4.1 Isolating the integral transmitter from incoming mains power supplies

4.2 Shutting down the sensor assembly at the process



DANGER – Serious damage to health / risk to life
Allow sufficient time for the sensor assembly to cool before performing this procedure.

1. Close / Isolate the air supply valve and shut down the test gas line at the supply.

4.3 Removing the sensor from the process (if appropriate)



DANGER – Serious damage to health / risk to life
– Allow sufficient time for the sensor assembly to cool before performing this procedure.
– An integral sensor weighs 12.5 to 28.3 kg (27.5 to 62.3 lb) depending on probe length – ensure suitable / adequate lifting equipment and personnel are used when performing this procedure.

Referring to IM/Z20P-EN:

1. Disconnect the air supply and test gas connections at the sensor.
2. Remove the sensor from the process in the reverse order of installation. Ensure the sensor cable is free of cable ties / restrictions before taking the sensor away from the process.

5 Disconnecting electrical wiring and removing integral transmitter

Referring to Fig. 5.1:

1. Unscrew and remove probe lid (A) (including O-ring). Retain for reuse.
2. Disconnect wiring at terminal block (B) using a small flat-bladed screwdriver.
3. If AutoCal is fitted, disconnect wiring at terminal block (C) using a small flat-bladed screwdriver.
4. Use an 8 mm open-ended spanner to loosen 4 x (self-retaining) M5 fixings (D) and lift integral transmitter (E) away from probe (F). Discard (internal) O-ring (G).
5. Dispose of integral transmitter in accordance with WEEE Directive or retain for future use, as appropriate.

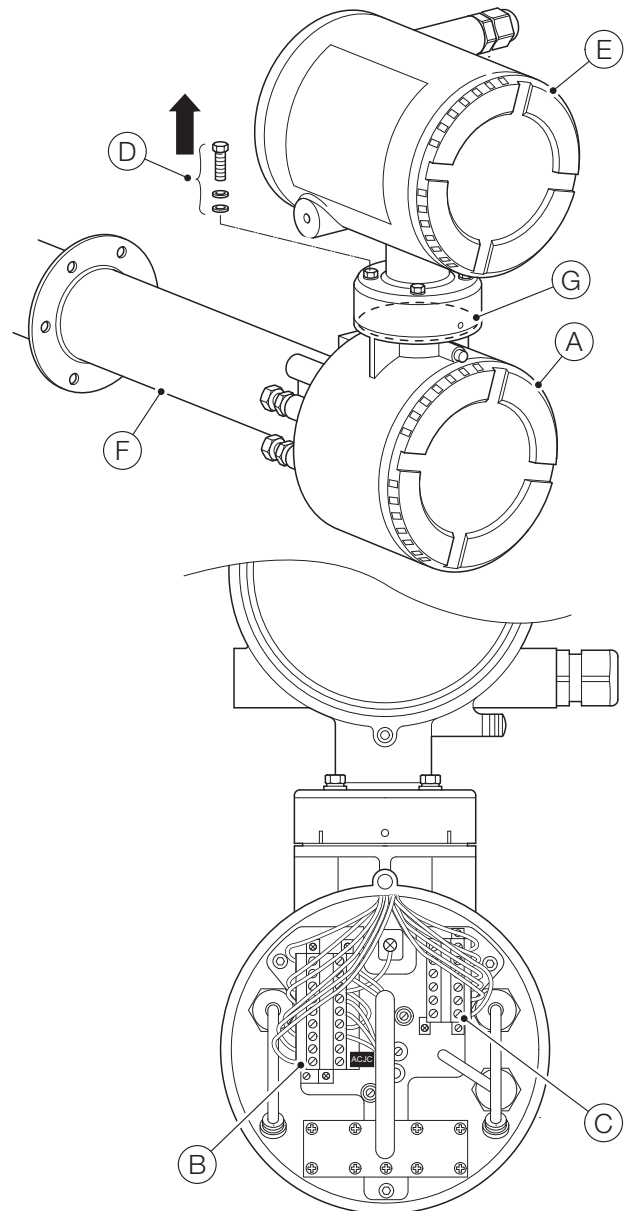


Fig. 5.1 Probe lid removal and disconnecting wiring

6 Fitting the transmitter cap

Referring to Fig. 6.1:

1. Locate remote end cap (A) and O-ring (B) in place on probe body (C) and use an 8 mm open-ended spanner to secure 4 fixings (D).
2. Fit cable gland (E) to cap (A) using an open-ended spanner, ensuring gland top fitting is loose to enable probe cable to pass through.

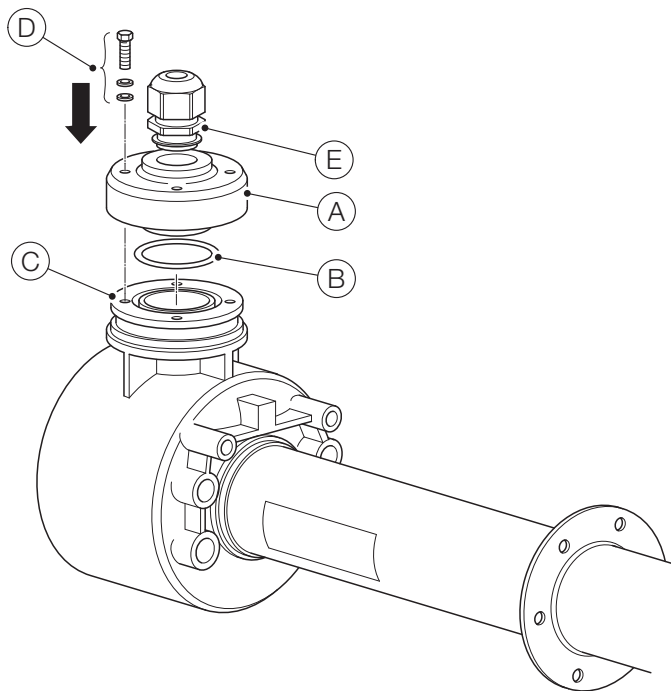


Fig. 6.1 Fitting the transmitter cap

7 Cable preparation

i IMPORTANT NOTE

Probe to transmitter cable must be purchased separately – it is not supplied as part of this kit.

7.1 Endura AZ20 probe to remote Endura AZ20 Transmitter



DANGER – Serious damage to health / risk to life

The Endura AZ20 cable carries the screened signal wires and the separately screened 90 to 264 V AC heater wires safely.

- If alternative cables are used, the cable sizes and insulation specifications must be adhered to and the 90 to 264 V AC heater wires must be screened separately to prevent interference to the signal cables.
- If the signal cables are not contained in a suitable metallic conduit, they must also be screened separately to prevent external interference.

Referring to Fig. 7.1:

1. Expose the signal and screen wires by cutting the outer insulation sheath / screen foil and inner (heater) insulation sheath / screen foil back to the following lengths:
 - Probe connection wires:
 - braided copper shield (A)
25 to 30 mm (1 to 1.2 in.)
 - connection wires (B)
100 mm (4 in.)
 - Transmitter connection wires (incl. screens) (C)
100 mm (4 in.)
2. At both ends of the cable, twist the 2 screen wires (D) together to form one twisted pair at each end and fit an earth sleeve (not supplied) over each twisted pair. Leave 10 mm (0.4 in.) of each twisted pair exposed for connection at the terminal plugs.
3. Prepare the signal and heater wire ends (E) for connection at the terminal plug(s) by cutting sleeves back to expose 10 mm (0.4 in.) of bare wire.

i IMPORTANT NOTE

On non-AutoCal probes, do not cut the AutoCal wires back to the outer insulation sheath. Instead, tape them together at both the transmitter and probe end to allow a future AutoCal upgrade if required to be performed using the existing cable.

AutoCal wires comprise:

- White / Yellow – PS2
- White / Black – PS Common
- White / Orange – PS1
- White / Green – SV1
- White / Red – SV Common
- White / Blue – SV2

4. Proceed to Section 8, page 6 to make probe cable connections at the remote probe.

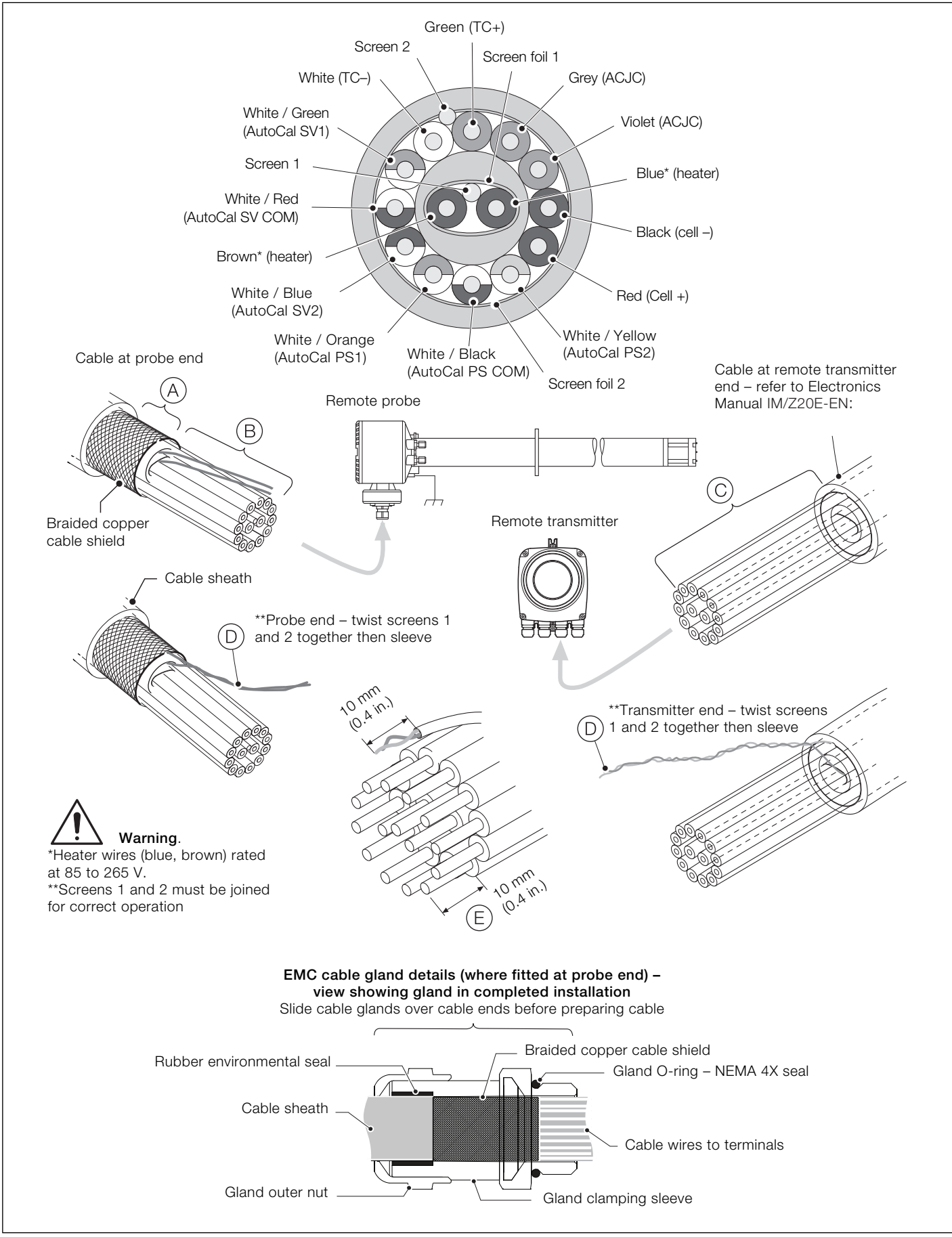


Fig. 7.1 Preparing the probe cable

8 Connecting AZ20 probe cable and refitting the probe lid

Referring to Fig. 8.1:

1. Pass probe cable (A) through probe entry gland (B) and feed into the probe allowing sufficient cable to make connections at probe terminal plug(s) (C) and (D).
2. Make transmitter connections to terminal plug (C) as shown in Table 8.1 using a small flat-bladed screwdriver:

Terminal / Cable color	Tag ID	Tx connection
Violet	ACJC	Pt1000 cold junction compensation
Grey	ACJC	Pt1000 cold junction compensation
Red	Cell +	Oxygen input (+ve)
Black	Cell -	Oxygen input (-ve)
Green	TC+	Thermocouple (+ve)
White	TC -	Thermocouple (-ve)
Light yellow (sleeved screens)	SCN	Screens 1 and 2 (screens 1 and 2 must be connected for correct operation)
Brown	H	Oven
Blue	H	Oven

Table 8.1 Probe transmitter cable connections

3. If AutoCal is **fitted**, proceed with step 4.
If AutoCal is **not fitted**, proceed to step 5.
4. Make AutoCal terminal plug connections as shown in Table 8.2 using a small flat-bladed screwdriver:

Terminal / Cable Color	Tag ID	AutoCal connection
White / Yellow	PS2	Pressure switch gas 2
White / Black	PS COM	Pressure switch common
White / Orange	PS1	Pressure switch gas 1
White / Green	SV1	Solenoid valve gas 1
White / Red	SV COM	Solenoid valve common
White / Blue	SV2	Solenoid valve gas 2

Table 8.2 AutoCal connections at probe

5. Tighten top fitting of cable gland (B) using an open-ended spanner (suitable for M20 or 1/2 in. NPT cable gland [as fitted]) to clamp probe cable in position.
6. Refit probe lid (E) and O-ring (F).
7. Refer to IM/Z20E-EN for transmitter connections.
8. When transmitter connections have been made, probe air and gas supplies can be re-made ready for probe operation.

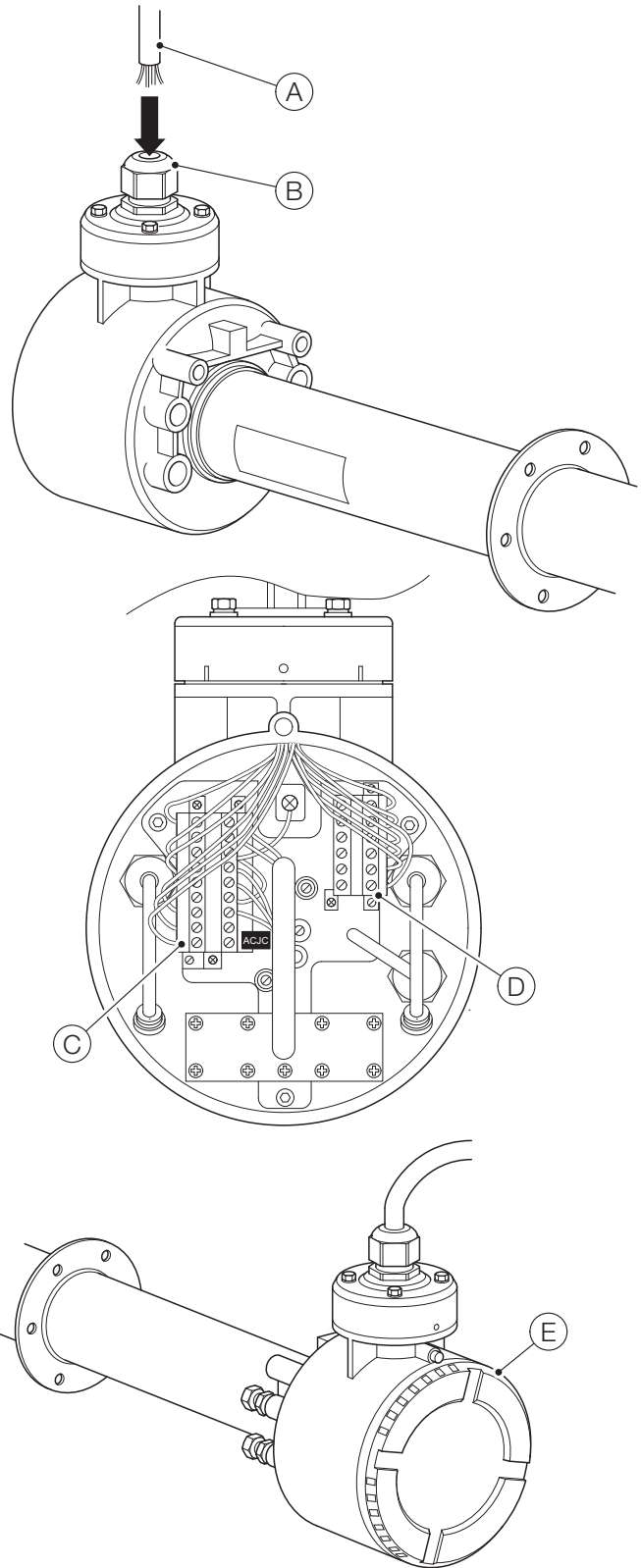


Fig. 8.1 Connecting probe cable and refitting probe lid

Notes

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