1 Introduction

This publication details how to fit / replace a ½ in. NPT or M20 gland onto an AZ10 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 probe removed from the process, only if all safety conditions listed in Section 3, page 2) are met.

**Tools required**

- 3 mm allen key
- Terminal screwdriver
- Small flat-bladed screwdriver
- 2 x 24 mm spanners
- Suitable PPE, including gloves, goggles, high visibility jacket

2 For more information

Further information is available from:

[www.abb.com/analytical](http://www.abb.com/analytical)
or by scanning these codes:
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 probe at the process:
- ensure the process is switched off / shutdown
- notify the plant / process supervisor that the AZ10 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 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 probe from mains electrical power before performing maintenance tasks

4 Kit contents

4.1 ¼ in. NPT gland large-bore spares kit

![Diagram of ¼ in. NPT gland large-bore spares kit]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>¼ in. NPT gland, large-bore</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>O-ring 17.5 ID x 22.4 OD</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>¼ in. NPT gland locknut</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>Information sheet</td>
<td>¼ in. NPT and M20 gland large-bore spares kit (this publication)</td>
</tr>
</tbody>
</table>

Table 4.1 ¼ in. NPT gland large-bore spares kit – part number AZ10 0070

4.2 M20 gland large-bore spares kit

![Diagram of M20 gland large-bore spares kit]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M20 gland, large-bore</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>O-ring 17.5 ID x 22.4 OD</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>M20 LSS locknut</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>Information sheet</td>
<td>¼ in. NPT and M20 gland large-bore spares kit (this publication)</td>
</tr>
</tbody>
</table>

Table 4.2 M20 gland large-bore spares kit – part number AZ10 0057
5 Replacing the gland – large bore

5.1 Replacement procedure

DANGER – Serious damage to health / risk to life
Before replacing the gland:
- isolate mains electrical power supplies to the AZ10 probe
- isolate the test gas supply to the AZ10 probe
- ensure all personnel performing the upgrade are wearing the correct PPE
- 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 $B$.

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.

Referring to Fig. 5.2:
4. Loosen 2 socket-head screws $A$ using 3 mm allen key and remove lid $B$.
5. Disconnect all wires to terminal blocks $C$ and $D$ using terminal screwdriver.
6. Loosen M4 nut on earth stud $E$ and withdraw earth wire $F$ (twisted pair), leaving the other earth wire with clamp washer in place.
7. Loosen gland cable nut $G$ using 24 mm spanner and withdraw cable $H$ through the gland.
8. Remove gland locking nut $I$ (use 2 x 24 mm spanners – one on lower nut) and remove gland from terminal base plate $J$. Discard the gland assembly, including O-ring and locking nut.
10. Fit and secure gland locking nut $M$ with serrated teeth facing terminal plate $J$.

11. Pass cable $H$ through gland $L$ and reconnect cable wires in reverse order of disconnection – refer also to Section 5.1.1, page 4 for cable connections.

DANGER – Serious damage to health / risk to life
The earth wires must be connected to earth stud $E$ and the M4 earth stud nut must be secured and tight before switching on the mains power supply.

12. Tighten gland cable nut $N$.
14. Re-mount the AZ10 probe at the process and reconnect the test gas supply.

Fig. 5.1 Disconnecting the test gas supply to the probe

Fig. 5.2 Replacing the gland – large bore
5.1.1 AZ10 probe cable connections

**DANGER – Serious damage to health / risk to life**
The earth wires (drain wires and clamp washer) must be connected at the earth stud (E) (see Fig. 5.2, page 3) and the M4 earth stud nut must be secured and tight before switching mains power on.

<table>
<thead>
<tr>
<th>Probe connections*</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey</td>
<td>ACJC</td>
</tr>
<tr>
<td>Violet</td>
<td>ACJC</td>
</tr>
<tr>
<td>Green</td>
<td>T/C +</td>
</tr>
<tr>
<td>White</td>
<td>T/C –</td>
</tr>
<tr>
<td>Red</td>
<td>Cell + (oxygen input)</td>
</tr>
<tr>
<td>Black</td>
<td>Cell – (oxygen input)</td>
</tr>
<tr>
<td>Green (internal earth to earth stud) Drain wires (twisted pair from cable) connected at sensor earth stud</td>
<td>The internal earth wire (including clamp washer must be secured at the earth stud and connected at the (green) earth connection of terminal (F) – see Fig. 5.2, page 3</td>
</tr>
<tr>
<td>Brown</td>
<td>Heater 1</td>
</tr>
<tr>
<td>Blue</td>
<td>Heater 2</td>
</tr>
</tbody>
</table>

*Connections to terminals (C) and (D) – Fig. 5.2, page 3

Table 5.1 Cable connections – AZ10 probe