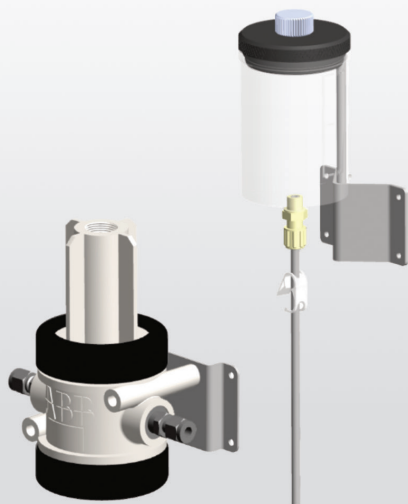


# 700 ULTRA Series

## 12 mm pH/Redox (ORP) sensors



Flow chamber and accessories

Measurement made easy

### Introduction

This publication details part numbers and installation procedures for sensor flow cell mounting accessories and the reservoir for use with the 700 ULTRA series sensors.

### Tools/equipment required

- Adjustable spanner
- 3.5M KCL solution (part number: AWR119E003EN)

### For more information

Publications for the associated sensors multi-input transmitters are available for free download from:

[www.abb.com/measurement](http://www.abb.com/measurement)

or by scanning this code:



#### Search for or click on:

Operating instruction 700 ULTRA series pH/Redox (ORP) sensors	<a href="#">OI/700-EN</a>
Operating instruction AWT440 multi-input transmitter	<a href="#">OI/AWT440-EN</a>
Operating instruction AWT420 universal 4-wire single- and dual-input transmitter	<a href="#">OI/AWT420-EN</a>
Data sheet AWT440 multi-input transmitter	<a href="#">DS/AWT440-EN</a>
Data sheet AWT420 universal 4-wire single- and dual-input transmitter	<a href="#">DS/AWT420-EN</a>
Operating instruction AWT210 2-wire conductivity, pH/ORP plon transmitter	<a href="#">OI/AWT210-EN</a>
Data sheet AWT210 2-wire conductivity, pH/ORP plon transmitter	<a href="#">DS/AWT210-EN</a>

## 1 Safety

### Potential safety hazards

The sensor operates with a maximum of 3.3 V DC. There are no hazardous voltages present in the sensor.

#### **⚠ WARNING**

Before installing or removing a sensor from the process, reduce process pressure to zero. During sensor removal ensure the sensor is cool enough to handle.

#### **⚠ WARNING**

##### Potential high pressure/high temperature

- These procedures must be carried out by suitably trained personnel and in accordance with any local regulations and practices.

## 2 Specification

### Flow cell materials

- Stainless steel flow cell
  - 316 stainless steel
  - 30% GF polypropylene
  - nitrile
- Plastic flow cell
  - 30% GF polypropylene
  - ABS
  - Nitrile

### Flow cell process pressure

Maximum operating process pressure: atmospheric pressure  
6 bar (87 psi)

### Flow cell process temperature

Maximum operating process temperature: 100 °C (212 °F)

### Reservoir materials

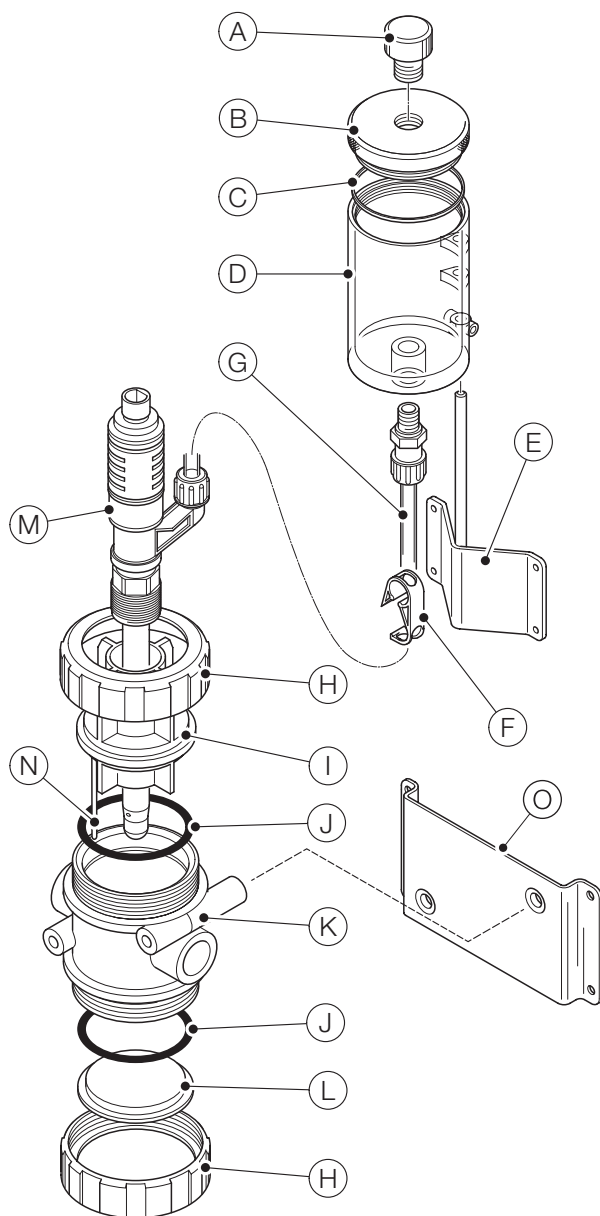
Natural polypropylene + Delrin lid/plug

## 3 Spares and accessories

Description	Part number	Qty
NPT plastic flow chamber assembly + PG13.5 adapter	3KXA163000L0014	1
NPT stainless steel flow chamber assembly + PG13.5 adapter	3KXA163000L0013	1
Reservoir complete with mounting bracket and interconnecting tube	3KXA163700L0001	1
Pack of flow cell o-rings (2 off)	3KXA163000L0113	1 pack
Flow cell plastic PG13.5 adapter	3KXA163000L0118	1
Flow cell plastic locking ring	3KXA163000L0116	1
This publication - 700 ULTRA Series   12 mm pH/Redox (ORP) sensors	IN/ANAINST/040-EN	1

Table 1 Spares and accessories for 700ULTRA series sensors

## 4 Assembly overview



Item	Description	Item	Description
(A)	Reservoir blanking plug	(I)	Flow cell PG13.5 adapter kit
(B)	Reservoir lid	(J)	Pack of flow cell o-rings (2 off)
(C)	Reservoir o-ring	(K)	Flow cell (plastic or stainless steel)
(D)	Reservoir	(L)	Flow cell plastic base plate
(E)	Reservoir mounting plate	(M)	700ULTRA sensor
(F)	Reservoir interconnect tube clip	(N)	Solution earth pin
(G)	Reservoir interconnecting tube	(O)	Mounting bracket (not supplied with 700 ULTRA panel)
(H)	Flow cell plastic locking ring	-	Calibration kit (not shown)

Figure 1 Assembly components

## 5 Dimensions

Dimensions in mm (in).

### 700 ULTRA reservoir/mounting bracket assembly

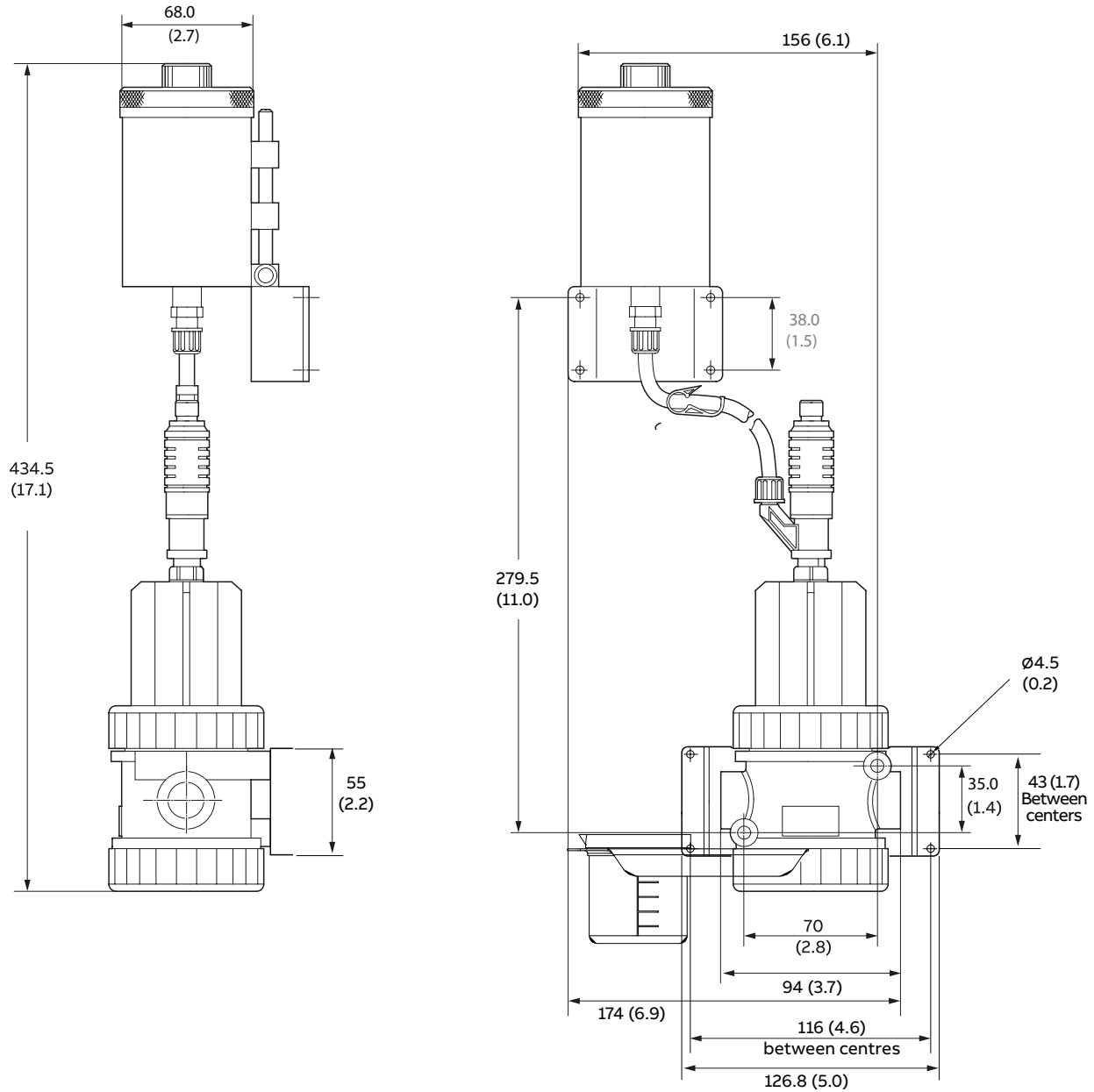


Figure 2 700 ULTRA reservoir/mounting bracket assembly

## ...5 Dimensions

Dimensions in mm (in).

### NOTICE

When installing the flow cell and mounting bracket, the mounting should be in the same plane.

The interconnecting tube should not be bent or constricted (so that the flow is against gravity) to ensure constant flow of electrolyte.

### Flow chamber

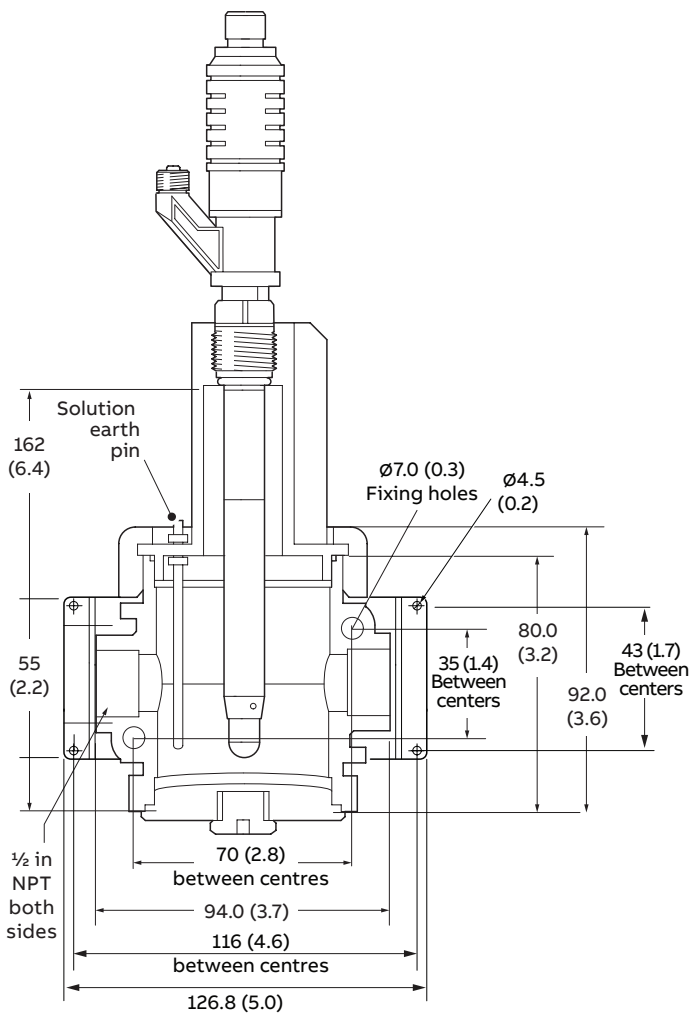


Figure 3 Flow chamber dimensions

### Free-standing reservoir/mounting bracket assembly

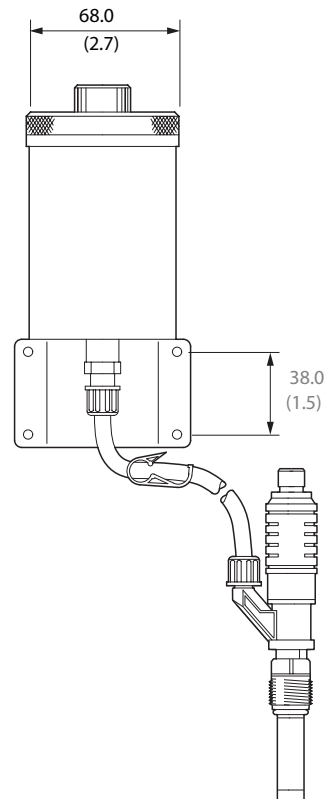


Figure 4 Free-standing reservoir/mounting bracket assembly

## 6 Installation

### Flow chamber and reservoir assembly

#### WARNING

Isolate the sensor and flow chamber from process before proceeding.

Referring to Figure 5:

- 1 Insert sensor (A) into flow chamber (B) and screw into place until hand-tight, ensuring to orientate the side arm (E) towards the reservoir.
- 2 Make process connections both sides (C) and (D) of flow chamber (B) using  $\frac{1}{2}$  in NPT connectors (not supplied).
- 3 If process is below  $10 \mu\text{S}$  ground the solution earth pin – see Figure 3.

Refer to the next page for additional installation instructions.

#### Notes.

- The PG13.5 is free to rotate independent of the electrode body rotation.
- To minimize back pressure, ensure short outlet plumbing is to atmosphere.

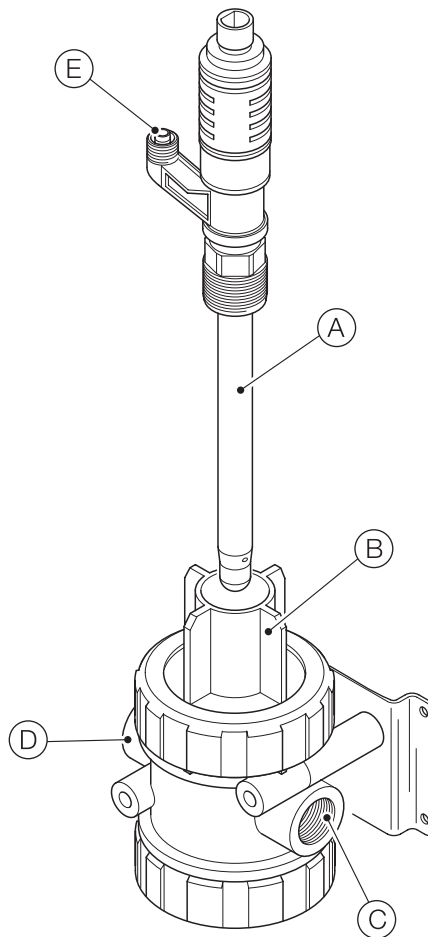


Figure 5 Flow chamber installation

## ...6 Installation

### ...Flow chamber and reservoir assembly

#### ⚠ CAUTION

Please wear appropriate PPE when handling the KCl solution. Refer to the appropriate SDS for more information.

Referring to Figure 6:

- 4 Secure reservoir mounting bracket (A) to a firm surface, ensuring mounting plate (B) is level.
- 5 Secure reservoir (C) to mounting bracket (A) using fixings (D) (customer-supplied).
- 6 Remove the nut and ferrule set (E) from reservoir (C), slide over outlet tubing (F).
- 7 Push outlet tubing (F) over fitting, then re-attach ferrule and nut set (E). Screw in until finger-tight.
- 8 Ensure flow clip (G) is closed, and fill reservoir (C) using supplied salt solution.
- 9 Remove air from outlet tubing (F) by releasing flow clip (G) to enable a few drops of salt solution to flow through the outlet tubing into calibration beaker (H). This can be poured back into the reservoir.
- 10 Remove nut (K), ferrule (L) and sealing bung (M) from 700Ultra sidearm (N), slide over the outlet tubing (F).
- 11 Push outlet tubing (F) over fitting, then re-attach ferrule (L) and nut (K). Screw in until finger-tight
- 12 Open flow clip (G) and check for leaks
- 13 Bring the process back to operational state.
- 14 Prepare the sensor for operation – refer to Operating Instruction [OI/700-EN](#).

**Note.** Ensure the level of the electrolyte solution in the sensor is full. Refer to Operating Instruction [OI/700-EN](#) for additional information.

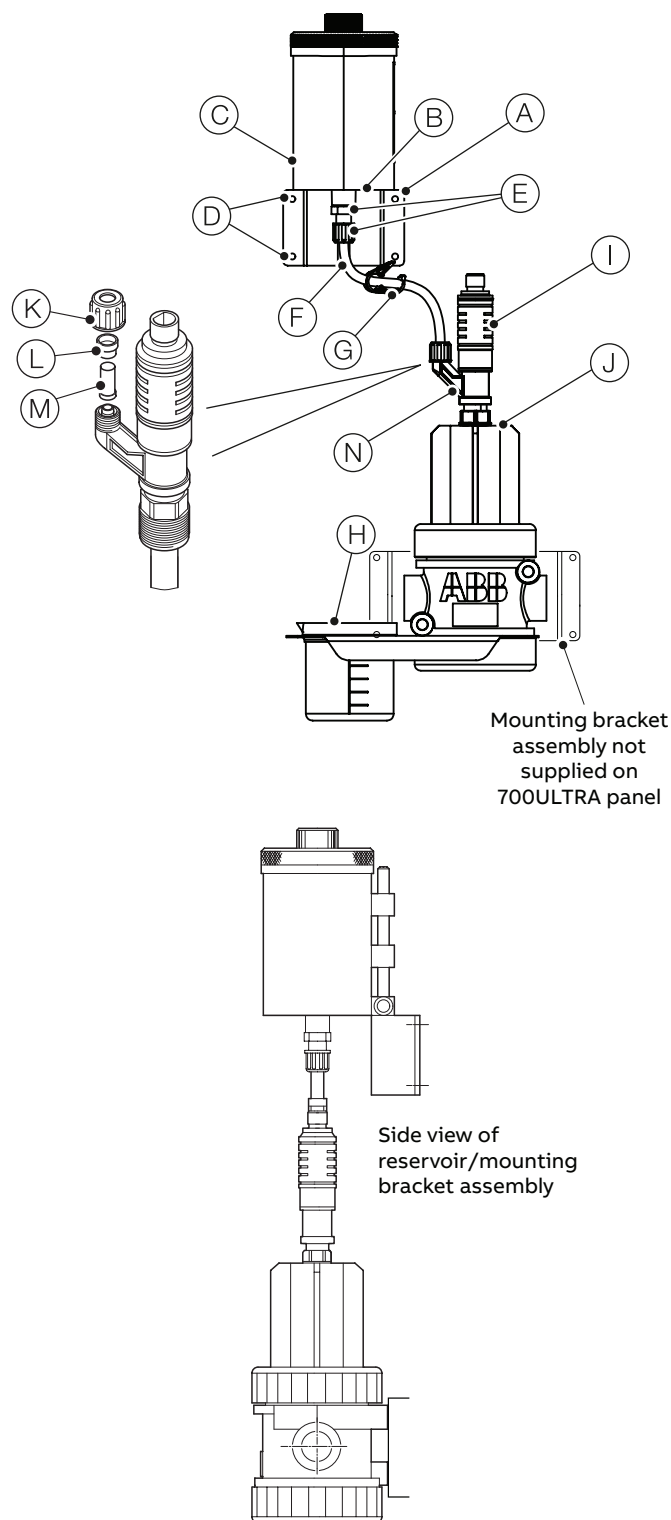


Figure 6 Flow chamber and reservoir assembly installation

## 7 Maintenance

### Flow chamber

#### **⚠ WARNING**

- Ensure that the sensor connections are kept dry at all times, and correct PPE is equipped.
- Ensure process is isolated to flow chamber before proceeding with any maintenance.

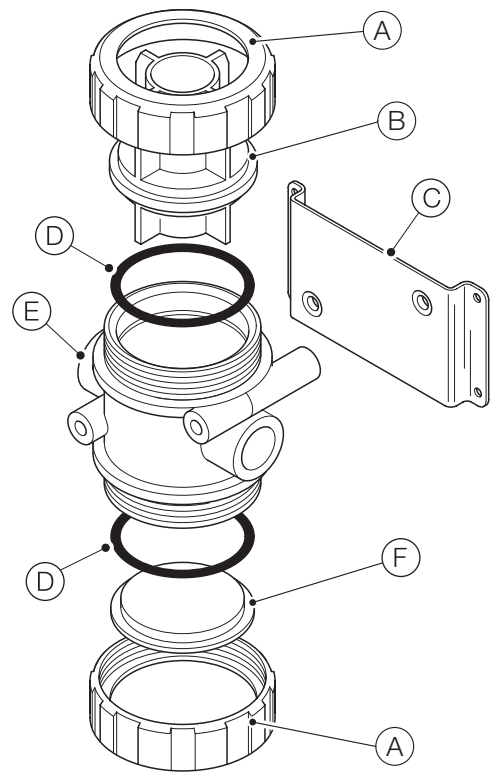
Referring to Figure 5, page 5:

- 1 Remove sensor (A) from flow chamber (B).
- 2 Disconnect process connections both sides (C) and (D) of flow cell (E).

Referring to Figure 7:

- 3 Unscrew both flow cell locking rings (A).
- 4 Unscrew locking ring (B).
- 5 If fitted, remove and clean mounting bracket\* (C).
- 6 Clean the flowcell (E) using a soft cloth.
- 7 Before re-assembling, ensure O-rings (D) are located correctly on base plate (F).
- 8 Tighten flow cell locking rings (A) until hand-tight.
- 9 Refer to Section 6 to refit the sensor and bring the process back to operational state.

\*Not used if panel mounting.



**Figure 7** Cleaning the flow chamber

### Reservoir

When cleaning the reservoir, ensure that all connectors are wiped with a soft cloth to minimize and build up of deposits

Ensure that the electrolyte level in the reservoir is maintained, and that the interconnecting tubing is free of blockages and no crystals have formed that may impede flow.

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