

## Application Note: Number AN23

# Conductivity Cell Installation - AIC Cells

When installing conductivity cells it is important to locate the cell in a position where the pipe is always completely full. The cell electrodes must be in complete contact with the water sample. If air is trapped around the cell electrode it will cause errors in the measurement. If oil, grease or any insulating material is allowed to build up on the electrode surface measurement errors will also occur.

### TBPS Cells K=1 and K=0.1

TBPS cells are suitable for installation into non metallic pipework. Ideally the cell should be installed from the side of the fitting as shown in figure 1. This method is less likely to be subjected to trapped air. The "T" fitting should be modified to allow the face of the cell to be flush with the inside of the fitting or pipe wall. It is acceptable for the cell to be slightly recessed when the cell is installed from the side of the fitting.

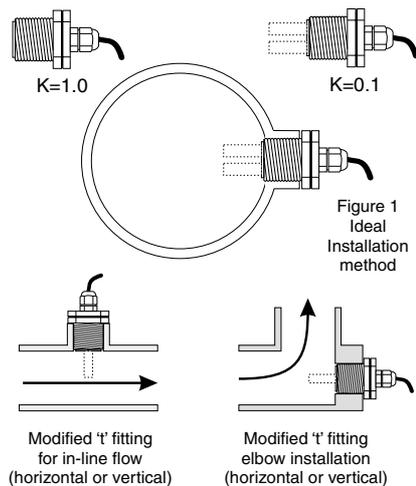


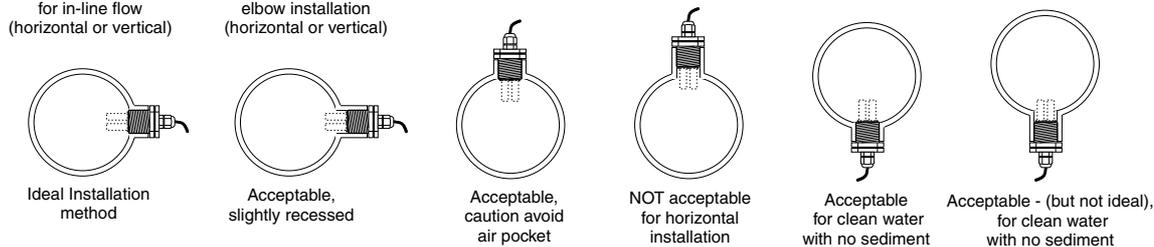
Figure 1  
Ideal  
Installation  
method

Alternatively a 3/4" BSP hole may be drilled/threaded into the side of a fitting such as an existing elbow or "T" fitting.

It is acceptable to install the cell from the top or bottom of the pipe or fitting provided care is taken to prevent air pockets or build up of sediment.

In applications where the pipe diameter is less than 50mm the reduced sample volume around the cell electrodes may affect the accuracy of the reading. In these applications in-line calibration correction is recommended.

For installation into the side wall of a tank, vessel etc. the information above applies.



### TBTH and TBTHHT Cells K=10, K=1, K=0.1 and K=0.01

TBTH and TBTHHT cells are suitable for installation into metallic and non metallic pipework. The cell measurement is made on the inside of the cell body ensuring it is virtually unaffected by the surrounding sample or volume.

The cell may be mounted in a horizontal or vertical position and is usually installed into a modified "T" fitting. The cell will provide a reliable and stable reading as long as there is a flow through the cell.

Ideally the cell should be installed into an elbow installation with the flow entering the cell at the base opening and exiting from the holes around the perimeter (see figure 2). This method will provide a fast response. Alternatively the cell may be installed across the flow as shown in figure 3, note this is not recommended for K=10 cells. This will provide a stable and accurate measurement, but the response time will be slower. In most applications this will not present a problem. TBTH and TBTHHT cells are also suitable for installation into sample flow lines. These are usually installed in a flow bypass or a sample to waste arrangement. Sample line measurement usually provides a slower response, but has the advantage of allowing the cell to be removed without disturbing the process.

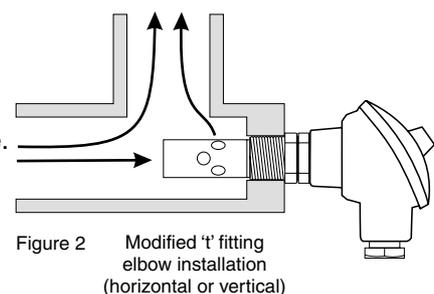


Figure 2  
Modified 't' fitting  
elbow installation  
(horizontal or vertical)

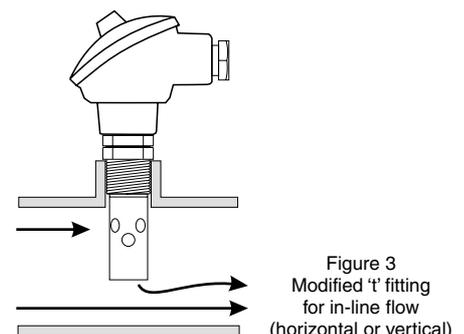


Figure 3  
Modified 't' fitting  
for in-line flow  
(horizontal or vertical)