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APPLICATION NOTE NO. 64-1 **September 2003**

Plumbing Installation - SBE 43 DO Sensor and Pump on a CTD

This Application Note describes installation of an SBE 43 Dissolved Oxygen (DO) Sensor and pump (and associated plumbing) on an SBE 9*plus* CTD, using PN 90087 Universal Plumbing Kit. The plumbing guidelines for the SBE 9*plus* also apply to an SBE 19, 19*plus*, or 25 CTD, except as noted.

Preparation

Parts Included in PN 90087 Universal Plumbing Kit

PN	Description	Quantity
23337	Pump air release valve - for vertical configuration only	1
30387	Tube, 1/2" Y-fitting - for connection to pump air release valve, vertical configuration only	1
30388	Tygon tubing, 19 mm (0.75 in.) OD, 13 mm (0.5 in.) ID	4 ft
30579	Tygon tubing, 13 mm (0.5 in.) OD, 9.5 mm (0.375 in.) ID - for connections to DO sensor	0.5 ft
30389	Cable tie, 102 mm (4 in.) - to secure tubing connections	20
30458	Cable tie, 381 mm (15 in.) - to secure Y-fitting to main housing	2

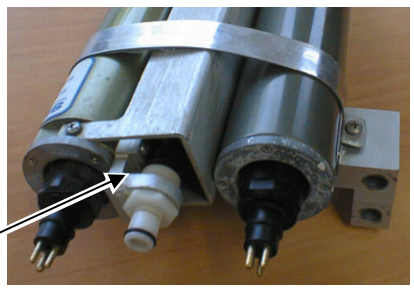
Tools Required

Sharp knife or scalpel for cutting tubing
Straight-edge ruler for measuring and cutting

Installation

Note for SBE 9*plus* or 25:
If your conductivity sensor does not have a conductivity tube support, install the conductivity tube support kit before installing the plumbing. (See Application Note 36 for installation details)

Conductivity tube support kit:
Part Number 50094 for aluminum sensors
Part Number 50108 for titanium sensors



Basic considerations for plumbing installation:

- Use the minimum tubing lengths necessary, but avoid tight bends in the tubing. Tight bends place stress on the tubing connections at the sensors, which can lead to failures at the connections.
- Do not create any vertical loops in the tubing. Loops trap air, preventing the pump from working properly.
- Secure each tubing connection with two cable ties.

Plumbing installation details differ, depending on whether the sensors will be deployed in a horizontal or vertical configuration, as explained in the following sections.

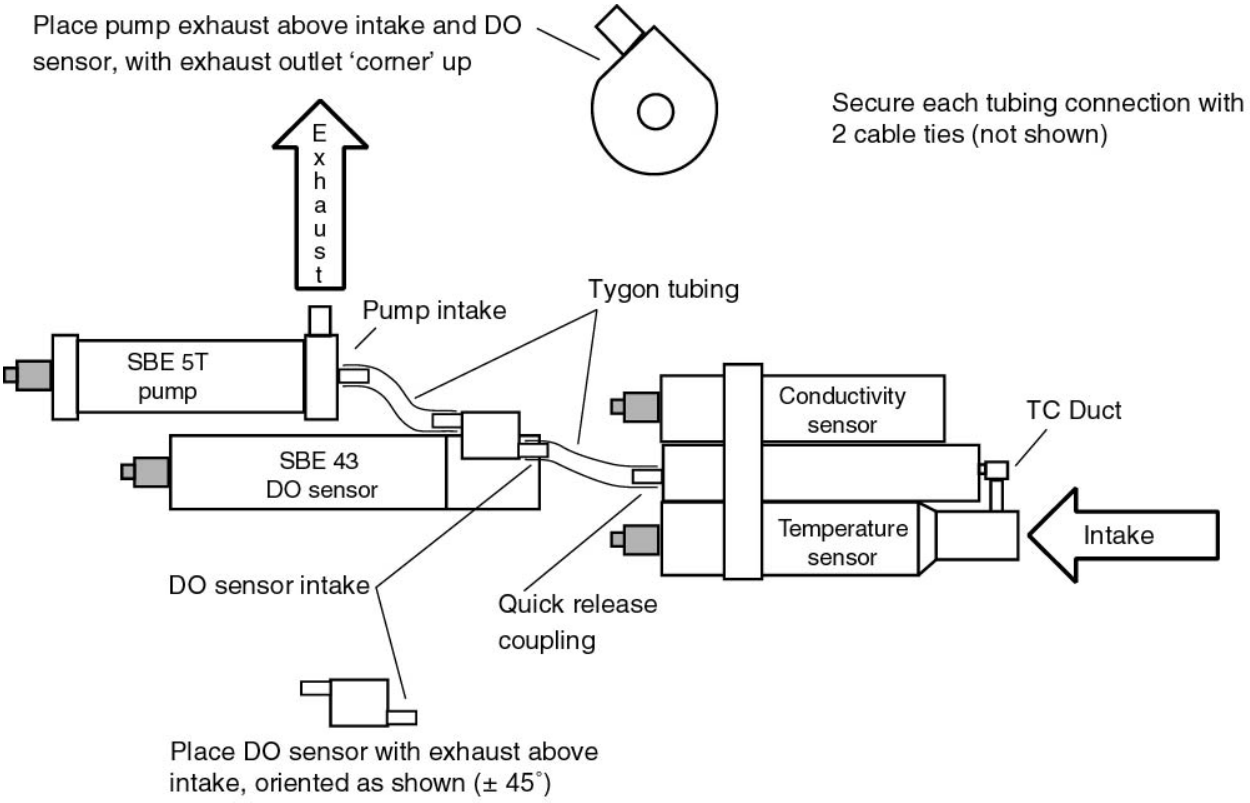
Horizontal Configuration Schematic and Details

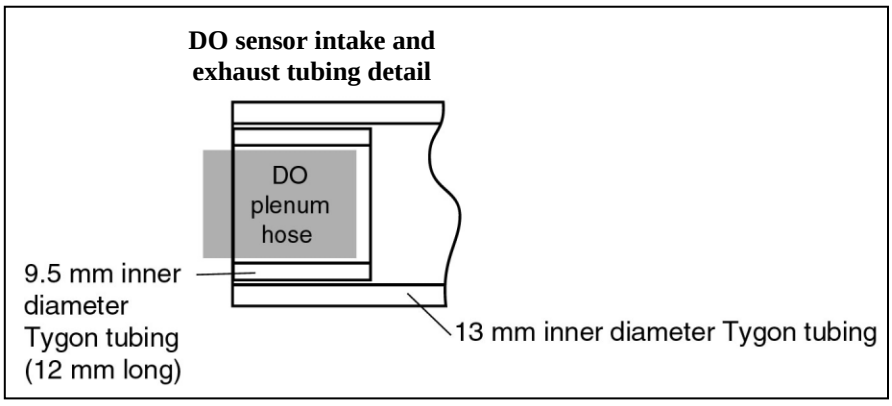
The horizontal configuration is most commonly used when the CTD is integrated with an SBE 32 Carousel Water Sampler with an extension stand. When installing plumbing for the horizontal configuration:

- Configure the system as follows:
  - Place the DO sensor intake above the conductivity sensor exhaust.
  - Place the pump intake above the DO sensor exhaust.
  - Orient the pump with the exhaust outlet *corner* up.

  Failure to configure the system in this manner can trap air, preventing the pump from working properly.
- Place a 13 mm (0.5 inch) long piece of the 9.5 mm ID Tygon tubing at the DO sensor intake and exhaust. Slide the larger diameter tubing (13 mm ID) over the smaller diameter tubing to provide tight seals.

If the system does not include a DO sensor, connect the tubing from the conductivity cell directly to the pump intake.

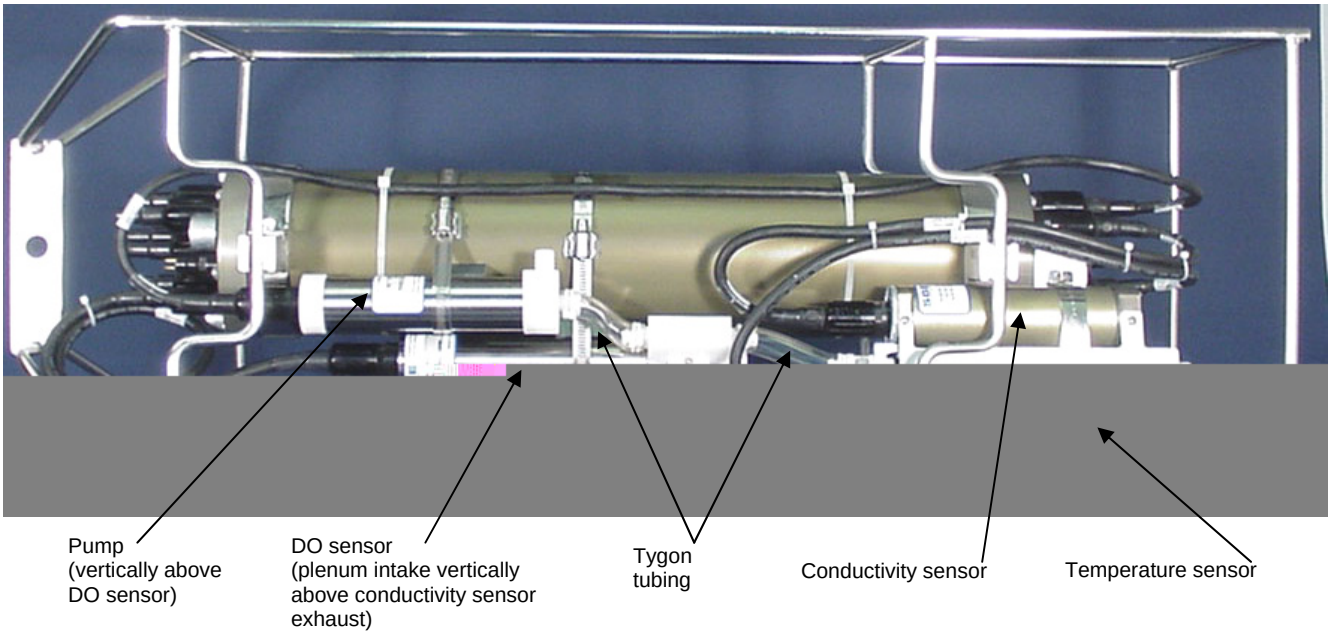
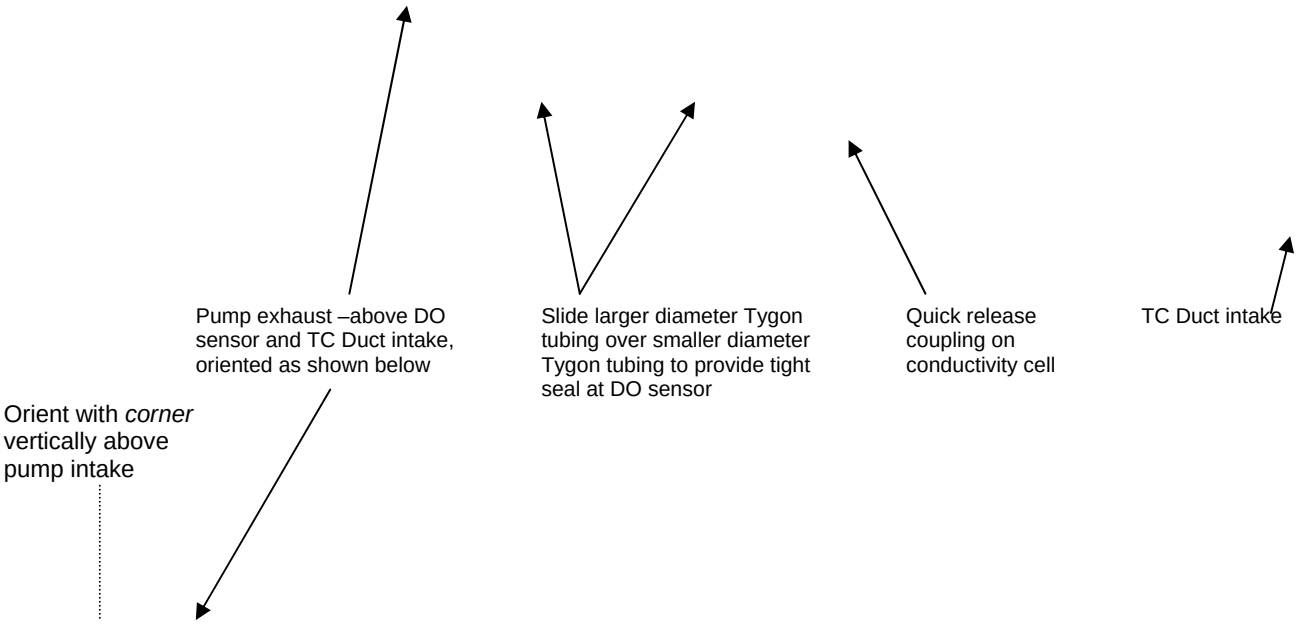




Horizontal Configuration Schematic and Details (continued)

Secure each tubing connection with two cable ties (not shown).

Overall View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