

**Engineering Note: EN0056 - ORBA2c Installation and Calibration**

Summary: ORBA2c - Installation and Calibration of Hydro-Probe Orbiter Ceramic Arm

Products affected: Hydro-Probe Orbiter Models (ORB3), (ORB2) and (ORB1)

Revision Date: April 2016

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The ORBA2c Hydro-Probe Orbiter Ceramic Arm should be installed following the instructions in the Hydro-Probe Orbiter Installation guide. All operations for the ORBA2c are the same as installing a previous version of the Hydro-Probe Orbiter arm.

**NOTE 1: The metal part of the arm is not warranted against wear.**

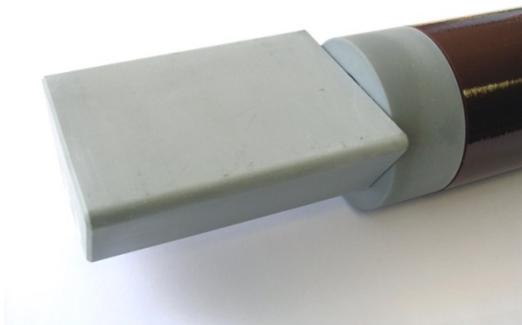
**NOTE 2: The Arm is fitted with two steel protection rings and a Hawiflex protection sleeve. These must be used at all times. The protection must be replaced when it wears and can no longer protect the metal arm. If necessary the Hawiflex sleeve may be cut to reduce its height but all metal parts of the arm exposed to wear must be protected.**

**NOTE 3: Do not pressure wash the arms. Pressure washing can damage the seal between the ceramic and the metal of the arm.**



ORBA2 with steel protection rings and Hawiflex protection sleeve fitted

The area immediately above the ceramic is subject to very high wear. In the event that the steel protection rings wear away too quickly, a ceramic protection ring may be purchased from Hydronix. This will offer better protection from wear but may not have the impact resistance of the steel rings. The ceramic ring should be monitored daily for signs of damage.



ORBA2 with ceramic protection ring.

## Updating Hydro-Probe Orbiter (ORB3)

If you are replacing any model of Orbiter arm with a new ORBA2c on a Hydro-Probe Orbiter Model ORB3, then all factory parameters will be automatically copied from the memory device on the new arm into the Hydro-Probe Orbiter Head Unit (ORB3) when the sensor is powered on. Temperature coefficients and factory air and water calibrations will be automatically updated.

It is then recommended that Hydro-Com version 2 be used to carry out an Auto-Cal to correctly set up the Orbiter.

## Updating Hydro-Probe Orbiter (ORB1) or Orbiter (ORB2)

If you are replacing an Orbiter arm with the ORBA2c Ceramic Head Arm on an older Hydro-Probe Orbiter model either (ORB1) or (ORB2), then the Hydro-Probe Orbiter Head Unit will need to have its configuration changed. The new arm must also then be calibrated.

## Updating Temperature Compensation

For the new arm to operate correctly, the temperature compensation coefficient for the resonator must be changed in the configuration settings. This is done using Hydro-com software, which can be downloaded, free of charge, from the Hydronix website: [www.hydronix.com](http://www.hydronix.com). This will require RS485 communications to the Hydro-Probe Orbiter so a suitable adapter such as the Hydronix SIM module - USB to RS485 adapter will also be needed.

The temperature compensation coefficients should be changed to the values shown in the table below:

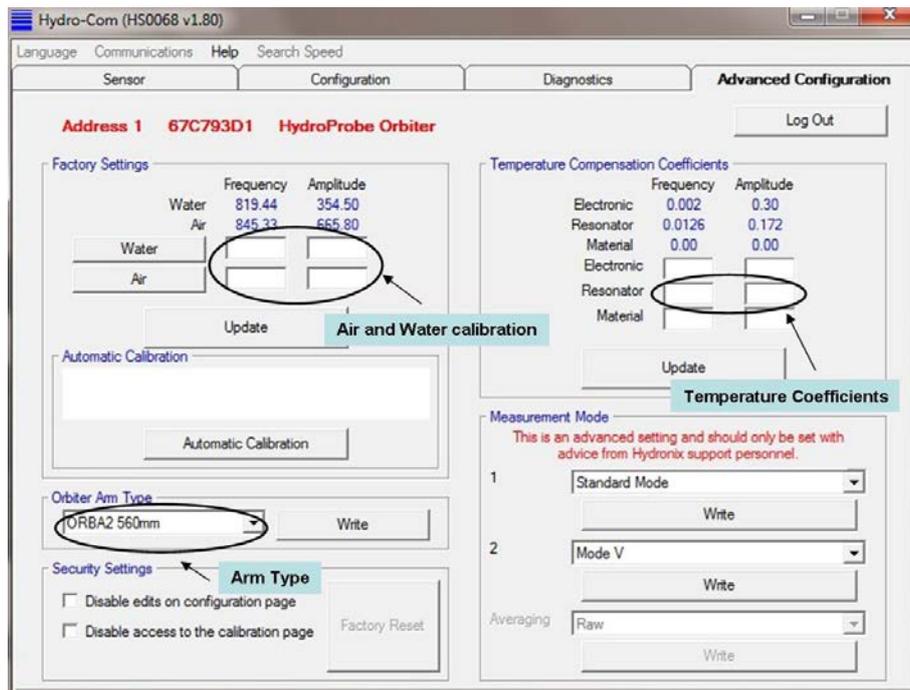
Product	Software Version	New Values			
		Electronics Frequency	Electronics Amplitude	Resonator Frequency	Resonator Amplitude
Orbiter (ORB1)	HS0063	<i>No change</i>	<i>N/A</i>	+0.015	<i>N/A</i>
Orbiter (ORB2)	HS0089	-0.0035	-0.15	+0.015	+0.036

This is done by typing the new value into the Electronics and Resonator boxes shown below, and then clicking on Update or Save Changes.

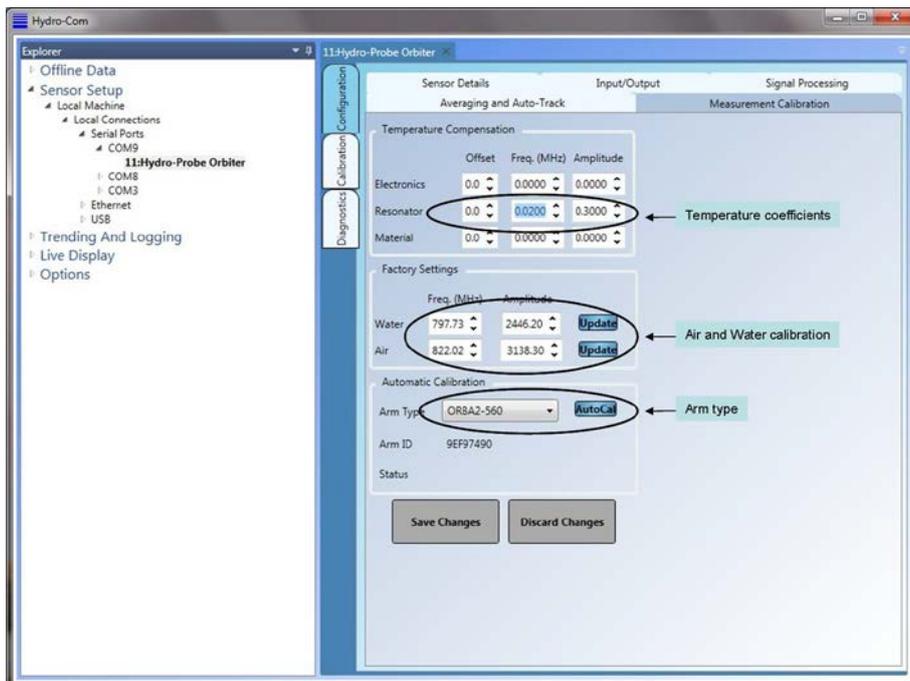
The arm type then needs to be set by selecting from the drop down box and clicking Update or Save Changes.

An Air and Water calibration can then be made.

## Hydro-Com 1.8 configuration changes



## Hydro-Com 2.0 configuration changes



## Calibrating the Arm

Once the resonator temperature compensation coefficients and arm type have been set the Hydro-Probe Orbiter can be calibrated.

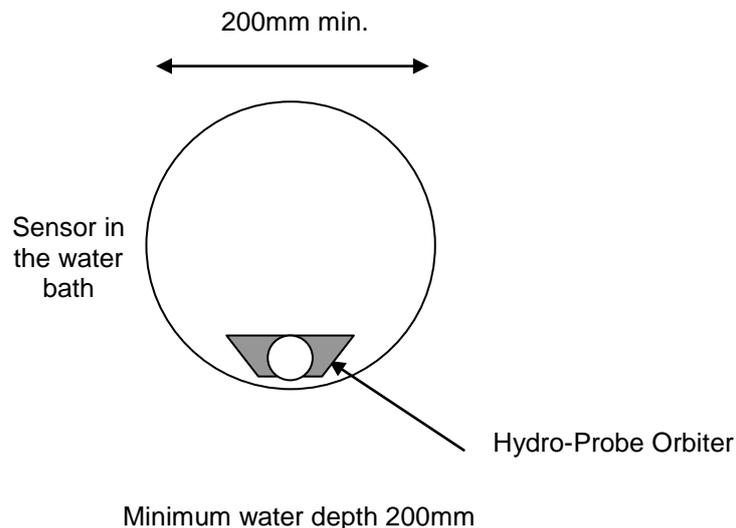
## Using Hydronix Hydro-Com Configuration Utility

The calibration is performed by making separate readings in both air and water. With the sensor connected to a computer the Hydro-Com utility can be used to make the measurements and update the sensor as shown in the screen shots previously.

The air reading should be made with the face-plate of the sensor clean, dry and free from obstructions. On the Hydro-Com page as shown press the button to make the air measurement. The software will make a new air measurement.

The water reading should be carried out in a bucket filled with a clean brine solution. This solution should be made up from water with 0.5% by weight of salt (e.g. 10 litres of water to be mixed with 50gm of salt). The level of water needs to cover the ceramic face-plate, and at least 200mm of water is needed in front of the ceramic. It is suggested that the sensor is held in the bucket offset to one side with the face towards the centre of the bucket (see Figure 1), hence the measurement is carried out with a full bucket of water in front. Press the Water button. The software will make a new water measurement.

Once both readings are made, the sensor can be updated by pressing the update button in the Hydro-Com software and it is then ready for use.



**Figure 1: Water Calibration**

## Calibration of Recipes

**NOTE: Once the alignment of the sensing arm is changed inside a mixer, the resultant density change of material passing the sensing head will have an effect on the recipe. This would apply when a new arm is fitted, despite pointing the faceplate in the same approximate direction as the previous installed arm. It is therefore advisable to recalibrate the recipes before continuing batching.**