

Mixing Chamber Installation and Use

The mixing chamber for Sequoia's LISST-VSF instrument consists of the following pieces:

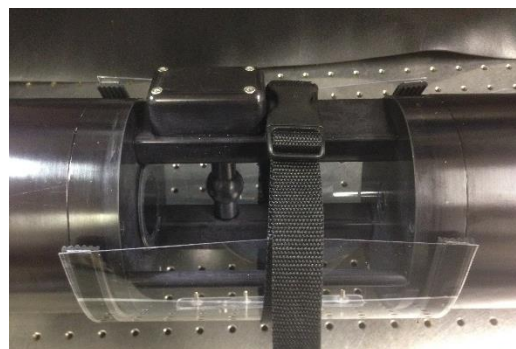
1. Clear plastic wrap with four stir bar pins
2. Four clear cross-shaped stir bars
3. Long forceps
4. At least two metal or fabric straps to secure the Lexan wrap onto the LISST-VSF
5. The mixing chamber motor assembly
6. The mixing chamber motor controller box
7. Power supply for motor controller box

Assembling the Mixing Chamber

Start by cleaning the LISST-VSF optical windows as well as the surrounding surfaces. When using the mixing chamber, the entire space between the two pressure cases will be filled with water. Therefore, it is important to clean the aluminum surfaces around the windows, as they will be in contact with your water sample. The clear plastic wrap and stir bars should also be cleaned directly prior to use.

Position the LISST-VSF on the instrument stands so the connector endcap is to your left and the block at the top of the rotating eyeball is on the top of the instrument. Wrap the plastic sheet around the sample volume of the LISST-VSF with the rubber strips facing the instrument. Position the wrap so the opening is at the top of the instrument. The stir bar pins should be offset to one side. Attach a fabric strap around the center of the wrap to temporarily hold the wrap onto the instrument. This will free up both hands and allow you to install either fabric straps or metal straps on the sides of the wrap. The straps should be installed over the rubber strips on both sides of the plastic wrap. When the straps are installed correctly, these rubber strips will create a water tight seal against the surface of the instrument.

The stir bars can now be placed on the pins inside the wrap. Use the included forceps to place the stir bars onto the pins. Slide the mixing chamber motor assembly onto the two small bars that protrude from the bottom of the plastic wrap. Press the motor assembly firmly against the wrap, then use the thumb screws to secure the motor assembly in place. **The motor assembly should be attached to the wrap at an angle, it should not be vertical.** You may need to rotate the instrument to make enough room to fit the motor assembly onto the wrap.



Plug the motor assembly cable into the motor controller box. Supply power to the motor controller box through the barrel jack using the provided power supply.

For best results, syphon or pump water into and out of the mixing chamber. Pouring water directly into the chamber will promote bubble formation. If you must pour water into the chamber, pour water down the side of the sample volume to help suppress bubbles.

Operating the Motor Controller

The motor controller box allows adjustment of the stir bar speed and for periodic changes in the stir bar rotation direction. The controller has three preprogrammed speed settings: Low, Medium, and High. The motor controller is setup to automatically switch the stir bar rotation direction after a specified period of time. Periodic changes in rotation direction allow for maximum mixing of the sample volume. On the motor controller LCD screen the time between each direction change is called 'Duration'. The value listed next to duration is in seconds. The default value is 5 (i.e. rotation direction change every 5 seconds). You may increase or decrease this value. Setting the duration to zero will disable the rotation change feature.

When power is applied to the motor controller box, the controller will automatically power up. You will see an arrow pointing to 'Speed'. This indicates the speed setting is selected. Turn the knob to change the speed. Press down on the knob to toggle between setting the speed or duration. You will see the arrow move when the knob is pressed. Rotate the knob to set the duration time in seconds. It is up to you to decide the optimum speed and duration values for your specific application.

The contrast of the LCD screen may change with age or temperature. If you are having difficulty viewing the screen, the contrast can be adjusted. Press the knob down and hold it down for at least 5 seconds. You will see the screen change to the 'LCD Contrast' screen. Rotate the knob to adjust the contrast. The contrast change will take effect immediately. Continuing turning the contrast up or down until the text is easily viewed. Note this is a *contrast* setting, it will not change the brightness of the LED backlight. Press the knob down again to save the value and return to the main screen. The new LCD contrast value will be saved, even after disconnecting power from the controller box.

