

ULTRARAE OPERATION TIPS

This document describes several helpful tips for operating the UltraRAE monitor.

How to make an air tight seal for the inlet probe:

When inserting a RAE-Sep tube into the inlet adapter, push the tube into the rubber gasket until you feel that the tube is properly sealed. Next screw on the tube holder cap to seal the other end of the RAE-Sep tube. Then simultaneously twist and push down on the tube cap nut to ensure that the rubber adapters inside the tube holder form good seals against both ends of the RAE-Sep tube.

If the tube reader shows “Unknown Tube”:

Remove the tube, check to see if the tube is inserted backwards. Note that the arrow on the tube should point toward the inside of the unit. Insert the tube again. If the tube reader still shows an “Unknown Tube” message, grab the tube holder cap and twist the cap about ¼ turn. If the problem still persists, then the bar code on the RAE-Sep tube may be damaged. The tube reader can be bypassed and the tube name selected manually as described in the section below. If the “Unknown Tube” message continues to be displayed for several tubes, then the tube reader may need adjustment.

How to adjust the tube reader:

Enter the Special Diagnostic Mode by turning the unit off and turning it back on by holding the [MODE] and [Y/+] keys simultaneously (See Chapter 8 of the Manual). Toggle [MODE] to the CCD screen near the bottom of the menu. Using the [Y/+] and [N/-] keys, adjust the reading to 64 with no tube, 58-61 with a VOC tube, and 46-52 with a Benzene or Halocarbon tube in place and securely seated. If necessary, see Technical Note 134 to adjust the barcode reader more accurately using the hyperterminal. Turn the unit off and back on to return to normal mode. If the tubes still cannot be recognized, the barcode reader can be disabled and the tube type programmed into the unit (See Operation Manual). Otherwise, call the RAE Service Department for technical support.

How to select the tube name manually:

- Step 1.** Remove the tube from the inlet. Press “Y” while the UltraRAE display “Ready..” message
- Step 2.** The display should show “No Tube” and “Manual select?”, press “Y”.
- Step 3.** The display should show a tube name, such as “Benzene?”. Press “N” if you want to change the tube name. Press “Y” to accept the tube name.

- Step 4.** The display should show the selected tube name and “Start?” message alternately. Press “Y” to start the testing.

What to do if the tube reader shows “Invalid lamp forxxxx tube”

This message means that the UV lamp installed inside the unit will not work with the given tube. The correct UV lamp information lamp (9.8 eV, 10.6 eV or 11.7 eV) is printed on the label of the tube box. After installing the correct lamp, the user also needs to change the monitor setup because the unit will not recognize the lamp type automatically:

- Step 1.** Press both “N” and “Mode” keys together for 3 seconds, the display shows the first programming mode menu: “Calibrate Monitor?” Press “N” 4 times.
- Step 2.** The display should show “Change sensor config?”. Press “Y” key.
- Step 3.** The display should show “Change dilution ratio?”. Press “N” key.
- Step 4.** The display should show “Change lamp?”. Press “Y” key.
- Step 5.** The display should show “Lamp = xxxx eV?” where xxxx is the current UV lamp selection.
- Step 6.** Press ‘N’ key until the correct UV lamp type is displayed. Then press “Y” key to accept the correct UV lamp. Press “Y” key again to confirm the change.
- Step 7.** Press “Mode” key twice to return to normal display with “Ready..” message. The unit is now ready to accept the tube with the newly installed UV lamp.

How to change the measurement wait time:

Each type of tube is configured with a default measurement wait time. This is the minimum amount of time to make a valid gas measurement for a given RAE-Sep tube. However, it may be necessary to change the wait time in order to adjust for cold temperature effects, different chemicals (e.g., with the Halocarbon tube), or remote sampling operation (to accommodate for the gas traveling time inside a long sampling hose). Follow the procedure described in the previous paragraph. In step 3, press the “N” two times. The display should show “Change measure wait time?”. Press “Y” and then select the correct tube type. Adjust the time with the N and Y keys.



Recommended measurement times for Benzene RAE-Sep tubes at various temperatures

Temp. (°C)	Temp. (°F)	Time (seconds)
2-10	36-50	150
10-15	50-60	90
15-30	60-86	60
30-40	86-104	40

Calibration and measurements must be done at the same temperature. These times should give errors in the 10-20% range. However, for screening purposes to get values within a factor of 2, one can use 60 s at all temperatures below 30 C, as long as the calibration and measurements are made at the same temperature. The VOC tube can be used at any temperature from 0 - 40°C (32 - 104°F).

Tip on multiple tube operation:

When using different types of RAE-Sep tubes in the UltraRAE, it is very important to calibrate each type of the tube before using the monitor. Thereafter, simply insert the tube into the inlet adapter, and the tube reader will recognize the tube name and use the proper calibration data to perform the gas measurement. If there are more than 8 different types of tubes available, the PC program (ProRAE-7200) must be used to select 8 tubes and download the tube data to the monitor. See section 5.7 of the Operation and Maintenance Manual for details on the download procedure.