

Before starting any analyses with the FROG-4000 it is important that the instrument is clean. The best indicator of whether a FROG is clean is to run a blank sample and examine the baseline. Figure 1 shows a dirty baseline and Figure 2 shows a clean baseline (Note: it is normal to have a peak in the beginning of the chromatogram). To clean a FROG-4000 perform the following steps:

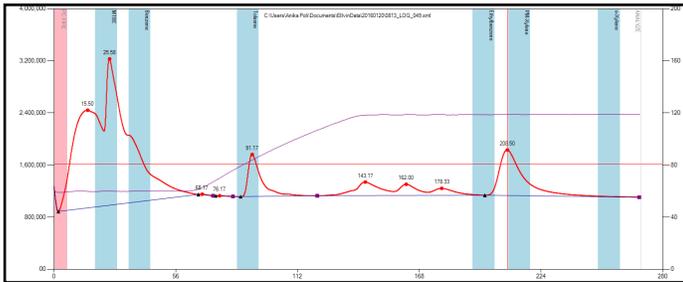


Figure 1: Dirty Baseline

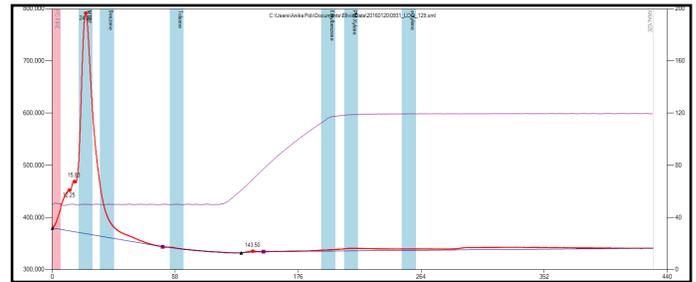


Figure 2: Clean Baseline (Note that the peak in the beginning is normal)

## Step 1: Replace the molecular sieves and activated carbon in the scrubber block on the FROG.

Defiant Technologies recommends replacing the scrubber materials once a month if FROG is used daily or once every 3 months if FROG is used once a week. It may also be helpful to replace the scrubber material more often if the FROG is used in a dirty environment, or if high concentration samples are frequently run with the FROG. Refer to the FROG user manual for details on replacing molecular sieves and activated carbon (Vol. 5, page 110).

## Step 2: Perform a warm water rinse.

- Locate the 60 mL plastic syringe and the glass sparge bottle in the FROG's case.
- Fill the 60 mL syringe with warm water (tap water is acceptable, DI water is better). Place the sparge bottle in the down (dropped) position on the FROG.
- With the load/analyze valve set in the load position, attach the 60 mL syringe to the luer fitting on the front of the FROG and use the 60mL syringe to rinse the sample loading passageway on the Frog.
- When the sparge bottle is full, carefully remove it from FROG. **It is very important that you do not lift the sparge bottle up like you would normally run a sample.** The water in the full sparge bottle could damage parts of the instrument if the bottle is lifted up.
- Keep rinsing the FROG with the 60 mL syringe and emptying the sparge bottle as needed until all 60 mL of warm water have been used.
- Rinse syringe and sparge bottle with clean DI water.

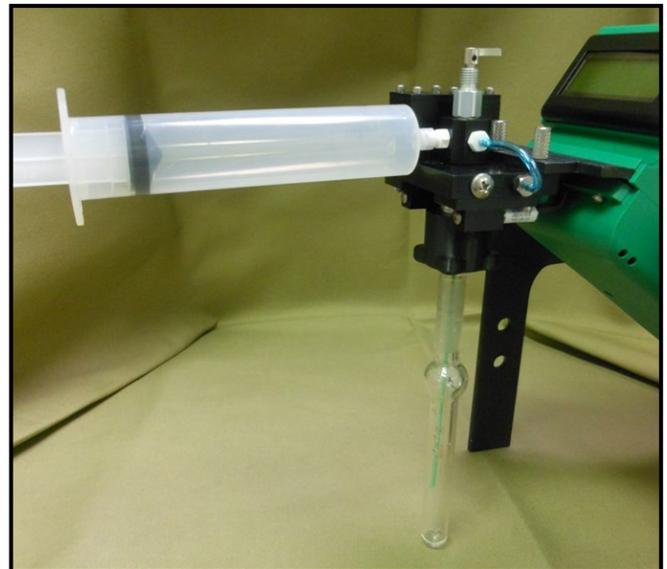


Figure 3: Performing a hot water rinse on the FROG

## Step 2: Set FROG up to run blanks (with either clean air or water)

- For water, fill sparge bottle with 5 mL clean water
- For air, attach carbon scrubber to the end of the FROG's air sampler transfer line. Alternatively if you do not have access to a scrubber and are using the FROG in a room that has clean air, it is acceptable to use the room air as a blank sample.

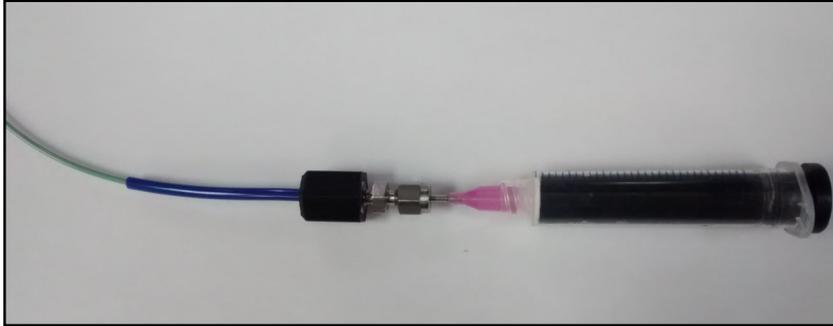


Figure 4: Activated Carbon Scrubber attached to transfer line to provide clean air for the FROG

- Using the Ellvin software hold the shift key down when clicking on the “Play button” that starts a run. This will enable continuous mode. The Frog will automatically start another run as soon as it is finished with the current run. Continuous mode can also be enabled when the FROG is not connected to software by holding down the yellow button while switching the instrument on.
- Periodically check in on your Frog and examine the baseline. If the baseline looks clean (flat except for a peak in the beginning) then you have successfully cleaned up your FROG. If the baseline looks dirty (has peaks) then let the Frog continue to run until the baseline appears clean.