Instructions for Grain Size Analysis with the LS13-320 Coulter Counter

Sample Preparation:

General sediment samples:

Zero a scale with a Sedigraph jar and scoopula.
Homogenize the sample in the sample baggie by squishing it around.
For muddy samples:

- Dip the scoopula into the sample and put it into the jar on the scale. A tiny amount on the bottom of the scoopula should give you 0.3-0.5g of sample. This is plenty for the analysis.

For sandy samples:

- Collect ~half of a scoopula worth of sample. This should be 1.5-2g of sample.

Thoroughly rinse the scoopula into the jar with dispersant. Fill the jar about half way with dispersant.
Sonicate for 15 minutes then run the sample on the LS13-320.

SSC samples:

Shake vial to resuspend sample
Dump sample into sedigraph jar (green lid) and rinse vial with dispersant. Pull filter out if necessary and put in vial with sample. Fill sedigraph jar ¾ full with dispersant.
Sonicate for 2hrs; Let rest for 15 minutes.
Use tongs to pick up filter and rinse off into sample jar.
Run the dispersed sample on the LS13-320.

Sample Processing:

Turn on computer and open LS 13 320 software.
Rinse the system for 2 minutes (check DI is connected): Control>Rinse> cancel to end
Run offsets, alignment and background: Run>Cycle: select those boxes and deselect all others>Run.

- The Alignment should be between 0-1 and the same height for all.
- The Background should be less than 5 million counts. The manual describes how different backgrounds give an indication of different problems (e.g. bubbles, dirty window, etc).

Select SOP from left hand panel buttons: Ayeyarwady_sop. This will set the proper run cycle SOM and Preferences.
Manually drain to the 3rd nub down using the switch on the ALM.
Pour in sample, rinse Sedigraph jar and fill bucket with more DI if desired based on obscuration. Ideally obs will be between 4-20%. If the water level reaches the 4th nub an alarm will sound.
When your sample is loaded click Start Analysis. Enter the sample information into the window that pops up. Remember to reset the Run Number to 1 and change the Operator if necessary.

- If you want to cancel the process, click Cancel (Stop will only cancel the current run. It won't quit the schedule of runs).

Once the 3 runs are done look at the average plot. You can open the other runs with File>Open for Overlay.
Export the data to a csv with File>Export. Remove the section of the file name with the $ (ex: BR303_03.$av.csv to BR303_03.csv).

Rinse the system for 2 minutes and load the next sample. They system can also be set to autorinse after the sample is run. I haven't set this up because I sometimes rerun samples. There is no easy way to retrieve the sample once it's in the system.
When you are done, thoroughly rinse the system. Manually drain the ALM and refill a few times to check for debris in bends in the tubing.
Turn the Pump off: Control> Pump Off
Turn off computer when done!

Current settings in SOP:

- SOM:
    - 60s sample period, 3 times
    - Compute Sizes, Save File, Export Data (change to csv)
    - Model: Fraunhofer.rf780d
    - Save avg for all runs
    - Pump speed 55
    - No sonication
- Preferences:
    - Export:
        - Sample Info
        - Statistics
        - Size Listing
        - CSV file