# Weekly maintenance

## Performing the weekly wash

***Materials required:***

- 5% solution of Reagent Probe Wash 3 (REF 03164495, PN B01-4183-01)
- ISE Wash (REF 01307361, PN B01-4174-01)
- Deionized water

Time: 38 minutes

Analyzer mode: READY

**BIOHAZARD**

Wear personal protective equipment. Use universal precautions.

Laboratories running the system more than 8 hours per day or running large numbers of dialysis or urine samples are advised to perform this Weekly wash procedure **Daily**, in place of the Shutdown wash procedure. The Weekly Wash is the same as the Daily Shutdown Wash, except that a 5% solution of reagent probe wash 3 is substituted for 10% cuvette wash solution.

**NOTES**

The daily shutdown wash does not need to be performed on the day you perform the weekly wash. When performing weekly maintenance, be sure to perform the procedures in the following sequence:

1. Weekly wash (this procedure)
2. Lamp energy check
3. Cuvette blank measurement

For location of washes on the CTT and RTT trays, refer to Figure 5-14.

1. At the Operation Panel, select **Wash**.
2. Ensure the 10-mL tube at CTT position #49 contains a 5% solution of Reagent Probe Wash 3, the cup at CTT position #15 contains ISE Detergent, and a 10-mL tube of pure water is at CTT position #16
3. Ensure the bottle at RTT1 and RTT2 position #49 contains a 5% solution of Reagent Probe Wash 3.
4. Ensure the bottle at RTT1 and RTT2 position #50 contains DI water.

   **NOTE**

   At your laboratory's discretion, you may use other positions for the washes on each of the trays, but you must change the entries for the alternate positions in the appropriate fields on the WASH Set window.
5. At the WASH Set window, define the WASH2 container positions as follows:
   a. Select **WASH2**.
   b. Select **2** for Cycles (the default setting).
   c. Type **49** in the CTT cup position 1st time field and **50** in the CTT cup position 2nd time field.

d. Type **49** in the RTT1 and RTT2 cup positions 1st time fields and **50** in the RTT1 and RTT2 cup positions 2nd time fields.

6. Select **Execute**.
7. After the wash, check the lamp energy and run the cell blank measurement test.

**NOTE**

Perform the lamp energy check and cuvette blank measurement only once a week, even if the weekly wash is run daily.

## *Checking and replenishing the lamp coolant*

***Materials required:***

- Lamp coolant additive (REF 04533710, PN B01-4496-51)
- Deionized water

**BIOHAZARD**

Wear personal protective equipment. Use universal precautions.

Time: 5 minutes

Analyzer mode: READY

The lamp is cooled by circulating liquid coolant. As the volume of coolant decreases, the heat of the lamp increases.

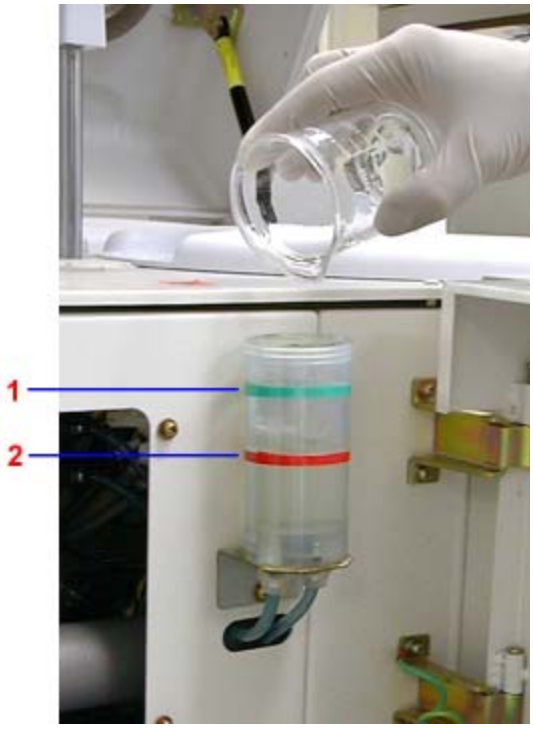
**NOTE**

Check the lamp coolant level daily and whenever the system generates a lamp coolant warning and turns off the lamp.

1. Open the upper right front door to gain access to the lamp coolant reservoir.
2. Check the fluid level in the reservoir.

   If the level is between the lower and upper marks, proceed to step 4.

3. If the reservoir fluid level is less than 5 cm, add coolant as follows:
   a. Turn the reservoir cover counterclockwise to remove it.
   b. Fill the reservoir to the 9-cm mark with a 5% solution of Lamp Coolant Additive (REF 04533710, PN B01-4496-51) in deionized water.




**1** Upper Mark (Green Line)
**2** Lower Mark (Red Line)

**Figure 5-15. Reservoir levels Upper and Lower**

c. Replace the reservoir cover. Do not over tighten.

4. Replace the lamp access cover.

**NOTE**
If adding coolant does not clear the lamp coolant warning, call your local technical support provider or distributor.

## *Checking lamp energy*

**NOTES**
Check the lamp energy after cleaning or replacing cuvettes, and after replacing the lamp.

When completing weekly maintenance, be sure to perform the procedures in the following sequence:

1. Weekly wash
2. Lamp energy check (this procedure)
3. Cuvette blank measurement

***Materials required:***

No materials required

Time: 15 minutes

Analyzer mode: READY

**BIOHAZARD**

Wear personal protective equipment.
Use universal precautions.

**IMPORTANT**
Do not touch or turn the reaction tray at any time during the lamp energy check procedure. The reaction tray should turn freely. If the reaction tray is shifted, repeat the procedure, since a shift could result in an erroneous lamp energy reading.

1. At the Menu Panel, select **Maint**, then select **Lamp Energy Monitor**.

   The Lamp Energy Monitor window displays.

2. Ensure the bottle at position #50 in Reagent Tray 1 (RTT1) contains deionized water.
3. Select **Check Energy**.

   The Lamp Energy Monitor dialog box displays.

4. Type **50** in the RTT1 bottle posi. field, then select **3: 70 mL** for the Container field.
5. Select **Meas. Start**.
   - The reagent probe aspirates deionized water from RTT1 and dispenses it into reaction cuvette #1.
   - The reaction disk rotates until cuvette #1 is in the detection position.
   - The Operation window displays Lumi.Check and then WAIT.

   **NOTE**
   Perform steps 6 - 10 while in the WAIT state.

6. At the Lamp Energy Monitor window, in the Luminous Energy Check area, enter the settings:
   a. Type **1000** in the Meas. times field.

      Enter the number of times to measure the lamp energy (normal setting: 1000).

   b. Type **100** in the Meas. cycle field.

      Enter the time (in µs) to elapse after each lamp energy measurement (normal setting: 100).

   c. Select **AD**.
   d. Select **Auto.**
7. Select **Meas. Energy**.

   The message, "Execute the lamp energy check?" displays.

8. Select **OK**.
9. On the Lamp Energy Monitor window, select **Collect Data**.
10. Calculate the scatter plot:
    a. Note the value of the 340-nm AD count field.
    b. Add 50 to the 340-nm AD count and type the sum in the top field to the left of the graph, then select **Enter**.
    c. Subtract 50 from the 340-nm AD count (**noted in step 10 a**) and type the difference in the bottom field, to the left of the graph, then press **Enter**.

The lamp energy displays as a scatter plot.

- If the points are mostly within ±40 of the center, the lamp is normal.
- Otherwise replace the lamp

11. **Only** if you replaced the lamp or a cuvette segment, select **Regist Data**, then select **OK** in the Registration window.

    If not, proceed to step 12.

    **NOTE**

    The system uses the data from the lamp energy data registration as the comparison standard for the next calculation of the attenuation ratio.

12. Exit the Lamp Energy Monitor window, then select **Initialize** to switch the system from the WAIT state to the READY state.
13. Run cell blank measurement.

### *Reading lamp energy data*

1. Execute the lamp energy check and acquire the data.
   - A graph displays at the window.
   - The lamp energy check data displays to the left of the graph.
2. Select a wavelength for which to display data.
3. Display the voltage or the AD value.
4. (Optional) Change the vertical scale of the graph.

## *Measuring cuvette blanks*

When performing weekly maintenance, be sure to perform the procedures in the following sequence:

1. Weekly wash
2. Lamp energy check
3. Cuvette blank measurement (this procedure)

***Materials required:***

- No materials required

Time: 20 minutes

Analyzer mode: READY

**BIOHAZARD**

Wear personal protective equipment.
Use universal precautions.

Reaction cuvettes undergo changes in absorption with use. After the weekly wash, perform the cuvette blank measurement to determine the change. The cuvette blank is only run weekly, even if your lab runs the Weekly Wash as a daily procedure.

1. At the Menu Panel, select **Maint**, then select **User Maintenance**.
2. In the Cell blank meas.check area, select **Start CB**.

   The measured cuvette blank values for 221 cuvettes and a list of abnormal cells are printed in approximately 15 minutes.

3. To save the data, select **Yes**.
4. Evaluate the results:
   - 17 cuvette cells are in each cuvette set. Replace cuvette sets when 4 or more cells in a set are flagged abnormal.

     **NOTE**
     An abnormal cuvette is defined as any cuvette with an **H**, **L**, or **N** flag.

   - If all the cells fail, replace the lamp.
5. If required, reprint the results.
6. Retain the statistical results and abnormal cell blank list printout with laboratory records.

## *Cell blank measurement results*

### Printed data

The printed data is the OD (optical density) value X 1000. Each cell has two values and a mean value.

### Abnormal cuvettes

A list containing abnormal cuvettes is printed as part of the cell blank. The list contains marks indicating abnormality. Cuvettes on the list are not used for analysis. Abnormal cuvettes have the following characteristics:

- Cuvettes exceeding the cell standard value (set in the System Parameters System window) are marked "H" or "L."
- Cuvettes exceeding the cell breakup limit value (set in the System Parameters Settings window) are marked "N."
- Cuvettes exceeding the skip absorbance value (set in the System Parameters Settings window) are skipped (marked **E**), and therefore not used for analysis.
- Cuvettes exceeding the lamp energy voltage limits are skipped (marked U or D), and therefore not used for analysis.
- Abnormal cuvettes remain registered as abnormal until a future measurement determines that they can be used.

### Reference value

The reference value (the average value of the measurements of all cuvettes) remains the same until the next measurement.

## *Cleaning the analyzer and rack handler exterior panels*

***Materials required:***

- Lint-free towel
- 10% solution of bleach (5% sodium hypochlorite) and water

**BIOHAZARD**

Wear personal protective equipment. Use universal precautions.

Time: 10 minutes

Analyzer mode: READY

1. Put the analyzer and rack handler (if applicable) in Standby mode.
2. Turn off the 30-A power switch at the back of the system.

**WARNING**

Turn off the main power switch at the back of the analyzer, to avoid catching the toweling in the cooling fans.

3. Close the analyzer cover.
4. Prepare a 10% solution of bleach and DI water.
5. Dampen lint-free towels with the solution and wipe the following exterior surfaces:
   - top cover
   - side panels
   - front panel
   - bear panel
6. Using deionized water, wipe the exteriors again.
7. Turn on the 30-A power switch at the back of the system.
8. Return the system to the Operating mode and the rack handler to the ON mode (if applicable).