| | Intermountain Forensics | SOP # | MNT-203 |
|---|---|---|---|
| | | Revision # | 01 |
| Forensic DNA Technical Leader Approval | | Issue Date | |
| | | 05/19/20 | |

**ABI 3500 Genetic Analyzer Maintenance**

## *1. Purpose*

To list the maintenance procedures for the ABI 3500 Genetic Analyzer instrument

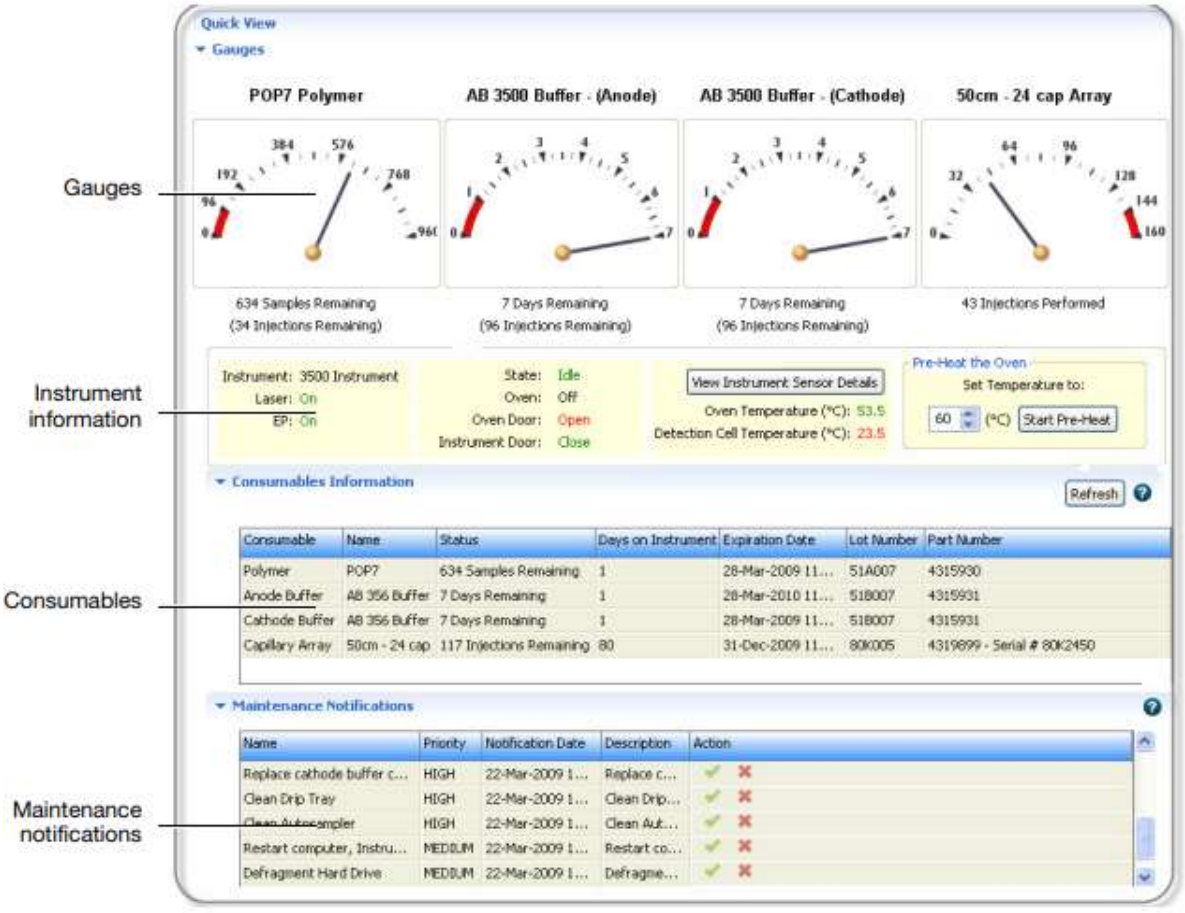
## *2. Summary*

Procedures given for the before-Run, Weekly, Monthly and As-needed maintenance for the ABI 3500 instrument.

## *3. Procedure*

**Before Each Run:**

1. Check consumables on the Dashboard – Refer to the gauges on the Dashboard to see the status for anode buffer container, cathode buffer container, and polymer.




2. Visually inspect the level of fluid inside the anode buffer container and the cathode buffer container. The fluid must line up with the fill line.

3. Check for bubbles in the pump block and channels.

**Change the Anode Buffer Container (ABC)**

4. Remove the ABC from storage.
5. Check for expiration date on the ABC label to make sure it is not expired prior to or during intended use.
6. Allow refrigerated ABC to equilibrate to ambient temperature prior to first use. Do not remove the seal until you have completed step 5, below.

   **IMPORTANT!** Ensure that all the buffer is moved to the larger side of the ABC prior to removing the seal.

7. Verify that buffer level is at or above the fill line and check that seal is intact.

   **IMPORTANT!** Do not use if buffer level is too low or seal has been compromised. A fill tolerance of ± 1 mm is acceptable.

8. Tilt the ABC slightly to make sure most of 1× buffer is in the larger side of the container. There should be less than 1 ml of 1× buffer remaining in the smaller side of the container.
9. Verify that the buffer is at the fill line.
10. Peel off the seal at the top of the ABC.
11. Place the ABC into the Anode end of the instrument, below the pump.

    **IMPORTANT!** The RFID label must be facing the instrument (and not you) to ensure that the RFID information is read accurately by the instrument.

12. Close the instrument door to re-initialize.

    **Note:** If you do not close the instrument door to re-initialize, you need to click Refresh from the Dashboard.

13. Click Refresh from the Dashboard to update the screen.
14. Check the Quick View section of the Dashboard for updated status after changing the ABC.

**Change the Cathode Buffer Container (CBC)**

15. Remove the CBC from storage.
16. Check for expiration date on the CBC label to make sure it is not expired prior to or during intended use.
17. Allow refrigerated CBC to equilibrate to ambient temperature before use.
18. Wipe away condensation on the CBC exterior with a lint-free lab cloth.
19. Verify that buffer level is at or above the fill line and check that seal is intact.

    **IMPORTANT!** Do not use if buffer level is too low or seal has been compromised. A fill tolerance of ± 0.5mm is acceptable.
    **Note:** The meniscus must be at or above the fill line.

20. Tilt the CBC back and forth gently and carefully to ensure that the buffer is evenly distributed across the top of the baffles.

    **Note:** If you do not tilt the CBC back and forth, the buffer sticks to the baffles, due to surface tension.

21. Verify that the buffer is at or above the fill line.
22. When ready to install CBC, place the container on a flat surface (such as a lab bench) and peel off the seal.

23. Wipe off any buffer on top of the CBC with a lint-free cloth. Ensure that the top of the container is dry.

    **IMPORTANT!** Failure to perform this action may result in an arcing event and termination of the run.

24. Place the appropriate septa on both sides of the CBC.
    a. Align the buffer septa (the part that is symmetrical) over the 24 holes of the CBC.
    b. Push the septa lightly into the holes to start and then push firmly to seat the septa.
25. Install the CBC on the autosampler.

    **Note:** When properly installed, it will click on the autosampler as the tabs are snapped in place.

26. Close the instrument door to re-initialize.

27. Click Refresh from the Dashboard to update the screen.

28. Check the Quick View section of the Dashboard for updated status after changing the CBC.

**Weekly Maintenance:**

29. Check the storage conditions of the used arrays to ensure the array tip is covered in the reservoir.

30. Run the Wash Pump and Channels wizard.

31. Use a lab wipe to clean the anode buffer container valve pin assembly on the polymer delivery pump.

32. Restart the computer and instrument.

**Monthly Maintenance:**

33. Flush the pump trap
    a. Fill the supplied 20 mL, all-plastic Luer lock syringe (in the PDP Cleaning kit, 4359572) with distilled or deionized water. Expel any bubbles from the syringe.

       **IMPORTANT!** Do not use a syringe smaller than 20 mL. Doing so may generate excessive pressure within the trap.

    b. Attach the syringe to the forward-facing Luer fitting at the top of the pump block. Hold the fitting with one hand while threading the syringe onto the fitting with the other hand.
    c. Open the Luer fitting by grasping the body of the fitting and turning it to loosen. Attached syringe and turn counterclockwise approximately one-half turn.

       **IMPORTANT!** DO NOT USE EXCESSIVE FORCE when you push the syringe plunger as this may damage the trap seals. Take approximately 30 seconds to flush 5 mL of either distilled or deionized water through the trap.
       **Note:** Because the water trap volume is approximately 325 µL, a relatively small volume of water is adequate for complete flushing. However, a larger volume only improves flushing as long as force and flow rate are kept within the limits given above.

    d. Remove the syringe from the Luer fitting. Hold the fitting with one hand while turning the syringe counterclockwise with the other hand.
    e. Close the Luer fitting by lightly turning clockwise until the fitting seals against the block.

34. Empty the condensation container and the water trap waste container.

35. Replace cathode buffer container septa.

36. Run a performance check

37. Clean the autosampler

38. Clean the drip tray

39. Check disk space

40. Defragment the hard drive

**Wizards:**

41. In the Maintenance Wizards screen, click the desired wizard button.

42. Follow the prompts in the Wizard window.

43. Click Refresh from the Dashboard to update the screen.

**IMPORTANT!** Once started, Wizard operations cannot be canceled.

44. Wizards
    a. Install a Capillary Array
    b. Remove bubbles from the polymer pump
    c. Wash the pump chamber and channels
    d. Fill the array with fresh polymer
    e. Replenish the polymer installed on the instrument
    f. Change the type of polymer installed on the instrument with the option to change the capillary array.
    g. Shutdown the Instrument.

## *4. References*

Applied Biosystems 3500/3500xL Genetic Analyzer User Guide

## *5. Definitions*

N/A