OREGON HEALTH & SCIENCE UNIVERSITY
Hospitals and Clinics
Point of Care

ABL 825 Instrument Maintenance

Unscheduled maintenance

Cleaning Out a Clot

1. If a clot is lodged in the measuring chambers, clean it out as follows:

    a) Lift the clear plastic window over the electrode section. Wait 18 seconds until the flow path is drained and the status = HOLD.
    b) Remove one or several electrodes where a clot may be present by pressing on the latch located on the left or right side of the black electrode cover.
    c) Clean the measuring chamber using a cotton swab moistened with DI H_2O. Check that no cotton fibers are left in the chamber.
    d) Clean and dry the gold electrode contact located at the top of the electrode if it appears dirty or wet.
    e) Install the electrodes back into the measuring chamber.

2. If measuring chamber still seems plugged, clean it out more thoroughly as follows:

    a) Open clear window over measuring chamber and wait 18 seconds until status = HOLD.
    b) Open all electrode covers and remove electrodes.
    c) Using cotton swabs soaked with Protein Removal Solution (S5362, stored in refrigerator) clean each electrode chamber.
    d) Wipe each electrode chamber well with swabs soaked in DI H_2O several times to remove residual protein remover.
    e) Re-install all electrodes.
    f) Close window and press RESTART. Instrument will rinse for approximately two minutes.

If you suspect a clot inside the sample probe, proceed to step # 3. If you are done with the clot cleaning, shut the clear window over the measuring chamber, and press RESTART. The instrument will perform a Leakage test and a rinse.

    g) Perform 2 more rinse cycles by opening the syringe flap and closing it to initiate a rinse.
    h) Ask for a 2-Point Calibration (STATUS/CONTROL, Calibration Program, 2-Point).
    i) Run at least 2 levels of QC following clot removal. Calibrate if necessary.

3. Check the sample probe for clots as follows:

    a) Lift the clear plastic window over the electrode section. Wait 18 seconds until the flow path is drained and the status = HOLD.
    b) Open up the capillary inlet flap all the way, and slide it off to the right.
    c) Open up the syringe inlet flap all the way, and slide it off to the right.
    d) Remove the inlet gasket by grabbing it on either side and lifting it upward. Clean the inlet gasket if it's dirty with a swab moistened with DI H_2O or 10% bleach. Rinse well.
    e) Remove the sample probe by sliding the black clip attachment off to the right.
    f) Lift the probe up, and remove it from the instrument. Undo the blue tubing at the end attached to the instrument.
    g) Attach a syringe filled with DI H_2O to the probe tip to push water through until a good stream comes out the tubing.
    h) When done, dry the probe, and reattach the blue tubing to the instrument.
    i) Insert the sample probe into the groove attachment, and seat the tip into the notch that the inlet gasket covers. Slide the black attachment clip back onto the probe.
    j) Replace the inlet gasket, followed by the syringe flap, then the capillary flap.
    k) If you are done with clot cleaning, press the RESTART key. The instrument will perform a Leakage test and a rinse.
    l) Run at least 2 levels of QC following clot removal. Calibrate if necessary.

<u>Daily Maintenance</u>

1. Clean the inlet gasket unit and inlet flaps for blood with10% bleach or disinfectant.

2. The status of the replacements is indicated by the traffic signal in the STATUS/CONTROL touch key. If traffic signal is green, proceed to step 4.

3. If the traffic signal is yellow or red, press REPLACEMENT STATUS touch-key. A clock next to an item indicates that the action is overdue or pending.
    a) To replace fluid, replace fluid container and press REPLACE FLUID touch key. This places the analyzer in the REPLACEMENT mode.
    b) To replace a reagent other than fluid, replace the reagent container and press REPLACE OTHER touch key. This places the analyzer in the HOLD mode.
    c) To exit the REPLACEMENT or HOLD mode, press RESTART. All covers and inlets must be closed to restart the analyzer. The analyzer performs calibrations at more frequent intervals after a RESTART. Refer to the Operator's Manual, page 9-6 for calibration schedule.

4. Perform three levels of aqueous QC every 24 hours of patient testing following the posted QC schedule. Refer to QC section of test procedure.

Weekly Maintenance

1. Perform Protein Removal program to clean the liquid transport system.
   a. The Protein Removal program puts Protein Removal Solution (same as Decontamination Solution) through the pH electrode chamber, oximetry chamber and the waste line to help prevent build-up on high volume instruments.
   b. The process takes approximately 2 minutes and **does not** require the removal of the glucose electrode.
   c. Once the instrument is in the READY mode, press the STATUS/CONTROL key.

   d. Select Auxilliary Programs.

   e. Fill a syringe with 0.5 mL of S5362 Protein Removal/Decontamination Solution. Solution is stored in the refrigerator.

   f. Select Protein Removal key (**not Decontamination!**).

   g. Open the syringe inlet flap, and place the syringe in the inlet gasket for sampling. Note: This program can be terminated at anytime by pressing the STOP key.

   h. Press START. The solution is aspirated, and the protein removal program begins.

   i. Remove the syringe, and close the inlet flap when prompted.

   j. When the program is complete, the analyzer returns to the Main Display screen.

Monthly Maintenance

1. Run the DECONTAMINATION PROGRAM to clean the liquid transport system and all items that come in contact with blood.

   a) Press STATUS/CONTROL, then AUXILIARY PROGRAM.
   b) **Replace the Cl, Glucose, and Lactate electrodes with dummy electrodes.**
   c) Fill a syringe with 0.5 mL of S5362 Decontamination solution.
   d) Press the DECONTAMINATION touch key.
   e) Open the syringe inlet flap and place the syringe tip up to the inlet.
   f) Press START touch key.
   g) At display prompt, remove the syringe and close the inlet flap.
   h) When DECONTAMINATION PROGRAM is complete, the analyzer returns to MAIN MENU.

i) Proceed to Step 2.

2. Replace Glucose Electrode and Lactate Electrode membranes.

   a) Enter HOLD mode and RECORDING REPLACEMENTS screen by pressing STATUS CONTROL, REPLACEMENT STATUS, and REPLACE OTHER.
   b) Record replacement information using the bar code scanner or manually enter the data.
   c) Remove the existing electrode jacket by pushing the tabs on the sides and pulling.
   d) Rinse the electrode with distilled water and shake to remove excess water.
   e) Remove the protective foil of a sealed electrode jacket in the Membrane Box.
   f) Empty a capsule of the electrolyte solution into the electrode jacket.
   g) Press the electrode firmly into the jacket until a click is heard.
   h) Remove the electrode from the Membrane Box.
   i) Dry the electrode contact.
   j) Open the clear window over the electrode chamber, and wait 18 seconds while the chamber drains.
   k) Install the re-membraned electrodes back into the analyzer.
   l) Close the clear window over the electrode chamber.
   m) Remain in the HOLD mode. Do not press RESTART. Proceed to Step 3.

3. Replace the dummy electrode with the Cl electrode.

4. Remove and clean the Inlet Gasket in 10% bleach or disinfectant.
   a) Remove the inlet flaps by sliding the capillary inlet flap off to the right, followed by the syringe inlet flap.
   b) Remove the inlet gasket unit by grabbing it on either side and lifting upward.
   c) Clean the unit and flaps with disinfectant, rinse, and dry.
   d) Replace the inlet gasket unit and inlet flaps.
   e) Press RESTART.
5. Perform three levels of aqueous QC after monthly maintenance. If QC results are within acceptable limits, perform patient testing. If QC fails, repeat QC test. Do not perform patient testing until the problem is resolved. Send patient samples to the Core Lab for testing until the problem is resolved.

<u>Quarterly Maintenance (Combine with Monthly Maintenance)</u>

1. Replace fan filter by:
   a) Remove existing filter from the fan compartment.
   b) Rinse fan filter in water to clean dust. Set aside to dry.
   c) Place cleaned filter in position on top of the fan.

2. Replace Reference, Electrolyte, pO_2, pCO_2, Glucose, and Lactate Electrode Membranes:
   a) Remove the dummy electrodes.

b) Enter HOLD mode and RECORDING REPLACEMENTS screen by pressing STATUS CONTROL, REPLACEMENT STATUS, and REPLACE OTHER.
c) Record replacement information using the bar code scanner or manually enter the data.
d) Remove electrode.
e) Remove the existing electrode jacket by pushing the tabs on the sides and pulling.
f) pO_2 Electrodes only, brush the electrode tip if the electrode sensitivity exceeds 30.0 pA/mmHg.
g) Rinse the electrode with distilled water and shake to remove excess water. **It is important to rinse salt deposits off the electrodes! Do not dry the electrode.**
h) Remove the protective foil of a sealed electrode jacket in the Membrane Box.
i) Glucose or Lactate electrodes ONLY, empty a capsule of the electrolyte solution into the electrode jacket.
j) Press the electrode firmly into the jacket until a click is heard. **Note: Check that the old o-ring is NOT on the reference electrode prior to installing a new jacket**.
k) Remove the electrode from the Membrane Box. **Note: Remove air bubbles on pO_2 and pCO_2 electrodes. Press the tabs on the electrode jacket and move the electrode up and down slightly in the electrolyte until the bubble disappear.**
l) Rinse the reference electrode with distilled water and dry with lint-free tissue.
m) Dry the electrode contact.
n) Install the electrode back into the analyzer.
o) Remain in the HOLD mode. Do not press RESTART. Proceed to Step 4.

3. Perform Hgb Calibration.
tHb calibration is performed every 3 months, when recommended by the manufacturer, or when indicated by the Quality Control Data.
a) Verify the most recent 1-point calibration to ensure that no errors are present.
b) At STATUS/CONTROL, press CALIBRATION PROGRAM then tHB CALIBRATION.
c) Use the bar code reader to enter the bar code on the tHb Calibration Solution insert.
d) Tap the top of the solution ampule until all solution collects at the bottom of the ampule.
e) Break off the ampule neck and place in the H700 Adapter.
f) Open the syringe inlet flap and place the adapter tip into the inlet.
g) Press START touch-key.
h) Remove the adapter when prompted and close the syringe inlet flap.
i) Do not discard the s7770 ampule.
j) Review the results. If results pass, proceed with step 5. If results fail, refer to Operator's manual, Chapter 12 for troubleshooting.

4. Verify tHb Calibration.
   a) Open the syringe inlet flap.
   b) Place the adapter with the S7770 ampule (used in tHb Calibration) to the inlet.
   c) Select the ALL 195 μL mode touch-key.
   d) Press the START key.
   e) Close the inlet flap at the prompt.
   f) Review the results. If results pass and are within the package insert limits, the calibration is valid and the instrument may be used.
   g) If the results fail, repeat the tHb Calibration.
   h) If the repeat tHb Calibration fails, repeat.
   i) If the second repeat tHb Calibration fails, contact Customer Service at 1-800-736-0600. Do not use the analyzer for patient testing.

5. Perform three levels of aqueous QC after quarterly maintenance. If QC results are within acceptable limits, perform patient testing. If results fail, repeat QC test. Do not perform patient testing until the problem is resolved. Send all patient samples to the Core Lab until the problem is resolved.

<u>Bi-Annual Maintenance</u>

1. Replace Electrode Module Pump tubes.
   a) Enter HOLD mode and record the Electrode Module Pump tube replacement action.
   b) Disconnect the ends of the tube from connectors.
   c) Grip one end of the old tube and free the fastener from the fastening slot by pulling upward.
   d) Pull upward to free the remainder of the old tube from around the pump rotor and the other fastening slot.
   e) Secure the fastener of one end of the new tube in one of the fastening slots.
   f) Grip the other fastener and wrap the new tube around the pump rotor, laying the tube along the top of the rollers. Secure the fastener in the other fastening slot.
   g) Press ROTATE PUMPS touch-key to turn the pump and seat the tube. The pumps may be rotated manually by turning the rotor a few rotations in a counter clockwise direction.
   h) If the new tubing is seated correctly, the new tube should begin to be drawn downwards onto the rollers.
   i) Attach the ends of the tube to the connectors, pushing the tube onto the connector as far as possible.

2. Replace the Solution Pump Tube.

   a) While in the HOLD mode, record the Solution Pump tube replacement action.
   b) Remove the pump clamp and disconnect the ends of the old tube from connectors.
   c) Grip one end of the old tube and free the fastener from the fastening slot by

pulling outward and then lifting upward.

d) Pull upward to free the remainder of the old tube from around the pump rotor and of the fastening slot.
e) Secure the fastener of one end of the new tube in one of the fastening slots. The short end of the new tube is to be on the left and the long end on the right.
f) Grip the other fastener and wrap the new tube around the pump rotor, laying the new tube along the top of the rollers. Secure the fastener in the other fastening slot.
g) Press ROTATE PUMPS touch-key to turn the pump and seat the tube. The pumps may be rotated manually by turning the rotor a few rotations in a counter clockwise direction.
h) Attach the ends of the tube to the connectors, pushing the tube onto the connector as far as possible.
i) Slide a new pump clamp over the right side connector so that it is seated over the enlarged portion of the tube end and clamp shut.

3. Replace Inlet Gasket.

a) Remove the inlet flaps by sliding the capillary inlet flap off the right, followed by the syringe inlet flap.
b) Remove the existing inlet gasket by grabbing it on either side and lifting it upward.
c) Slide the new inlet gasket unit onto the mount.
d) Push down on the top of the unit to secure it in place.
e) Verify that inlet probe tip is securely positioned in the groove at the base of the mount.
f) Reinstall the inlet flaps by sliding the syringe inlet flap onto its mounting post, followed by the capillary inlet flap.
g) If no more replacement actions are needed, mount all parts and covers. Press RESTART.

4. Replace the Upper and Lower Waste Pump Tubes.

a) While in HOLD mode, record the Waste Pump tube replacement action.
b) Disconnect the ends of the tube from connectors.
c) Grip one end of the old Upper tube and free the fastener from the fastening slot by pulling upward.
d) Pull upward to free the remainder of the old tube from around the pump rotor, sliding the right fastener out of the fastening slot.
e) Remove the old Lower tube in the same manner.
f) Take the short end of the new Lower Waste Pump tube and secure the fastener into the lower right side fastening slot.
g) Grip the other fastener and wrap the tube around the pump rotor, laying the tube along the top of the rollers. Secure the fastener in the lower left side fastening slot.
h) Press ROTATE PUMPS touch-key to turn the pump and seat the tube. The

pumps may be rotated manually by turning the rotor a few rotations in a counter clockwise direction.

i) Connect the right end of the new tube to one of the right side connectors and the left end of the tube to one of the left side connectors. Ensure that the new tube ends are installed completely onto the connectors.
j) Install the new Upper Waste Pump tube following steps f-i.

5. Press RESTART touch-key.

6. Perform three levels of aqueous QC after Bi-Annual maintenance. If QC results are within acceptable limits, perform patient testing. If results fail, repeat QC test. Do not perform patient testing until problem is resolved. Send patients samples to the Core Lab.

<u>Bi-Annual Maintenance performed by POCT</u>

1. Calibration verification is performed to validate the AMR.
2. Patient correlations are performed with the Core Lab.

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