CAPILLARY ARRAY CLEANING

There are three Methods to clean/flush a capillary array to remove a clog: A combination of two or more of the methods outlined below may be required in some cases.

A. **Flush with CE Grade Water**

B. **Submerse Capillary Array Tips/Electrodes in Hot Water (150°F – 200°F)**

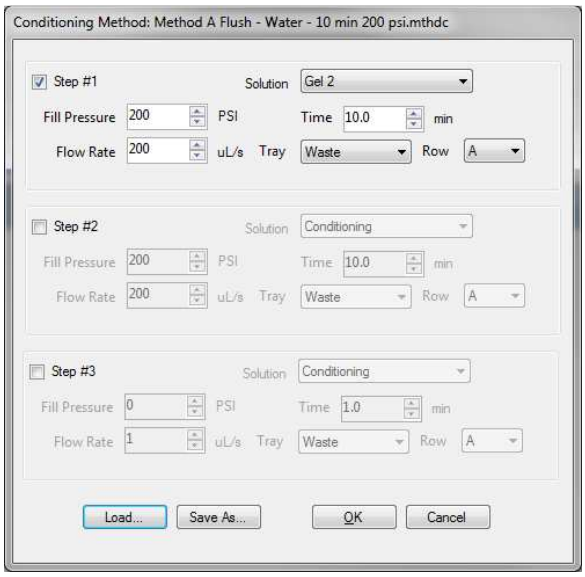
C. **Cleaning the Capillary tips, Electrodes and Capillary Walls**

Method A - Flush with CE Grade Water

When a capillary array is suspected to have any clogged capillaries, the first step is to flush the array with CE Grade Water.

1. From the Operations Tab located on the Main Screen window, select [**Add to queue**] under the Capillary Array-Conditioning commands menu.

2. From the Select Conditioning Method window, select the [**Method A Flush - Water - 10 min 200 psi.mthdc**] from the dropdown menu. Select Edit to ensure that the method matches the parameters seen below:



3. If necessary, adjust the method to that shown in the screenshot (Row will not be selectable on a 96 capillary instrument). Select **[OK]**.

4. Select **[OK]** again to add the method to the Method Queue.

5. Open the Waste Drawer (second drawer from top) and place an empty 96-Well Deep Well Plate onto the plate holder.

6. Open the Fragment Analyzer™ Side Compartment to replace the Gel 2 bottle with a bottle containing CE Grade Water. The minimum solution volume required to run the Method A Flush - Water for 10 minutes is ≥ 10 mL for a 12 Capillary Array, ≥ 15 mL for a 48 Capillary Array, and ≥ 20 mL for a 96 Capillary Array.

7. Close the door to the Instrument Side Compartment and select the Start Icon from the Method Queue to run the Capillary Conditioning Method.

8. Once the Capillary Array Conditioning Method is complete, open the Waste Drawer and remove the 96-Well Deep Well Plate. Check the volume of water present in each of the wells used for the flush.

    - For a 10 minute flush there should be ~ 150 µL of CE Grade Water in each well.

If the waste plate has similar amounts of water present in each well:

1. Empty the 96-Well Deep Well Plate and return it to the Waste Drawer.

2. Open the Side Compartment of the Fragment Analyzer™ instrument and replace the bottle containing CE Grade Water with an empty bottle and perform a Capillary Conditioning to remove any residual water from the capillaries.

If a well has significantly less or no water present in a well, Method A can be repeated, or proceed to Method B or C.

Method B - Submerse Capillary Array Tips/Electrodes in Hot Water (150˚F – 200˚F)

1. Select the [**Park**] icon in the Main Screen window to place the plate being held back into its respective drawer and move the Stage platform to the bottom of the instrument.

2. Fill a 96-Well Deep Well Plate with 1 mL of Hot Water (150˚F to 200˚F) for soaking the tips of the capillary array.

   - For a 12-Capillary Array - fill each well in Row A of a 96-Well Deep Well Plate with 1 mL of Hot Water.

   - For a 48-Capillary Array, fill each well in Row A-D of a 96-Well Deep Well Plate with 1 mL of Hot Water.

   - For a 96-Capillary Array, fill each well of the 96-Well Deep Well Plate with 1 mL of Hot Water.

3. Open the Buffer Drawer (first drawer from top) and place the hot water filled 96-Well Deep Well Plate onto the plate spacer. Close the Buffer Drawer securely.

4. From the Main Screen window, locate the Hotel Positioning Icons under the Operation Tab. Select the [**Buffer**] icon to position the plate underneath the Capillary Array.

5. Allow the Capillary Array to soak for a minimum of 15 minutes to an hour.

6. Select the [**Park**] icon to return the 96-Well Deep Well Plate to the Buffer Drawer and place the Stage in a resting position at the bottom of the instrument.

7. Perform Method A as described in this Appendix to check the flow of solution through each capillary, or proceed directly to Method C .

Method C - Cleaning the Capillary tips, Electrodes, and Capillary Walls

WARNING: 0.5 N NaOH is CORROSIVE. Causes severe eye and skin burns. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves. Refer to the SDS for all warnings and precautions before proceeding.

The Method C - NaOH flush is the best method for opening clogged capillaries, returning separation to normal as well as ridding the Fragment Analyzer™ system of contamination.

1. Clean the Conditioning Solution, Gel 1, and Gel 2 bottle caps with Isopropanol or EtOH.

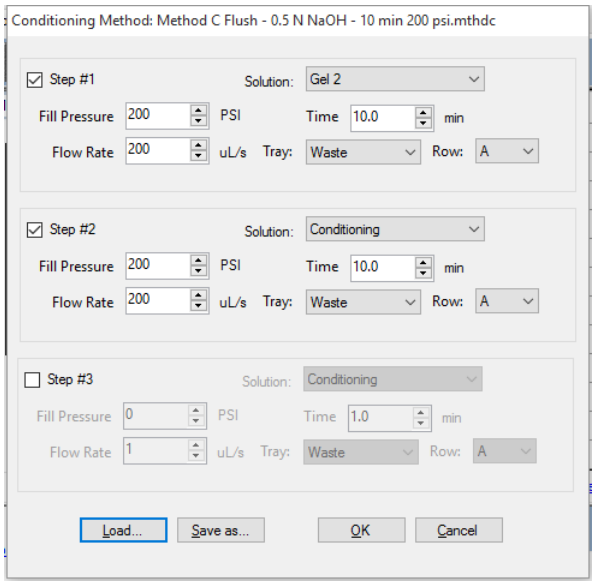
2. Open the Fragment Analyzer™ Side Compartment and replace the Gel 2 bottle with a bottle containing 0.5N NaOH. The minimum solution volumes required to run the Default Capillary Conditioning Method for 10 minutes is ≥ 10 mL for a 12 Capillary Array, ≥ 15 mL for a 48 Capillary Array, and ≥ 20 mL for a 96 Capillary Array.

3. From the Utilities menu select the **[Prime]** function. Check the boxes next to Conditioning, Gel 1, and Gel 2. Select **[OK]** to Prime all lines with NaOH.

4. Place a new bottle with new Conditioning Solution in the Conditioning Solution position. The minimum solution volumes required to run the Default Capillary Conditioning Method for 10 minutes is ≥ 10 mL for a 12 Capillary Array, ≥ 15 mL for a 48 Capillary Array, and ≥ 20 mL for a 96 Capillary Array.

5. From the Operations Tab located on the Main Screen window, select [**Add to Queue**] under the Capillary Array- Conditioning commands menu.

6. From the Select Conditioning Method window, select the [**Method C Flush - 0.5 N NaOH - 10 min 200 psi.mthdc**] from the dropdown menu. Select Edit to ensure that the method matches the parameters seen in the following screen:



7. If necessary, adjust the method to that shown in the screenshot (Row will not be selectable on a 96 capillary instrument). Select **[OK]**.

8. Select **[OK]** again to add the method to the Method Queue.

9. Open the Waste Drawer (second drawer from top) and place a 96-Well Deep Well Plate filled with 0.6mL per well of 0.5N NaOH in Row A for a 12 Capillary Array, rows A-D for a 48 Capillary Array, or all 96 wells for a 96 Capillary Array onto the plate holder.

10. Close the door to the Instrument Side Compartment and select the green Start Icon from the Method Queue to run the Capillary Conditioning Method.

11. Once the Capillary Array Conditioning Method is complete, open the Waste Drawer and remove the 96-Well Deep Well Plate. Check the volume of solution present in each of the wells.

    - The waste tray wells will be full. Ensure all wells have a similar amount of waste present.

12. Empty the 96-Well Deep Well Plate in the proper aqueous waste disposal area and return it to the Waste Drawer (second drawer from the top).

CAUTION: A separation with a Full Conditioning MUST BE PERFORMED IMMEDIATELY after a 0.5N NaOH flush, or damage will occur to the capillary array.