Chip Maintenance

Proper daily instrument maintenance and chip cleaning technique have been identified as key factors in maximizing the lifetime of chips. This guide reviews proper procedures for cleaning and handling the chips. Use with the Best Practices Daily Procedure in the LabChip Quick Reference Card (CLS143579) to prevent the introduction of debris into the chip channels.

Best Practices for Handling Chips

Notes: *Use an aspirator fitted with a pipet tip when cleaning and preparing chips.*
Step 13 does not apply to Protein Chips.

1. Warm the chip and reagents to room temperature for at least 30 minutes. Ensure the dye is completely thawed. Protect the dye from light.
2. Attach a clean pipet tip to the aspirator.
3. Ensure that fresh, nuclease free, sterile water (MilliQ® or equivalent) is available.
4. Rinse and completely aspirate each active chip well twice with water (Milli-Q® or equivalent). For all active wells except the waste well (well 1), aspirate the liquid in the small circular indent at the bottom of each well. NOTE: It will not harm the chip to insert the aspirator tip directly into the circular indent. Do not aspirate the liquid from the small circular indent in well 1.
5. Inspect the inside walls of each well and ensure that no water droplets remain.
6. Add the prepared reagents to the wells as specified in the protocol for the assay. Use a reverse pipetting technique to avoid bubbles and place the tip on the bottom of the well while dispensing.
7. Ensure that the tops of the wells are clean and dry. If necessary, clean the tops of the wells with water and the provided lint-free swab, and then dry using the aspirator.
8. Clean the chip detection window with the provided lint-free cloth moistened with 70% Isopropanol or water.
9. Promptly install the chip, ladder vial, and buffer vial on the instrument.
10. When the final run is completed, promptly remove the chip from the instrument.
11. Repeat step 4 above to wash the chip wells.
12. Add 120 µL of water or storage buffer (see the assay user guide for the appropriate liquid) to each active well.
13. For Nucleic Acid LabChips, place the chip on the instrument and run the wash cycle. Do not repeat the wash cycle without refreshing the contents of the wells. Add an additional 50 µL of water or storage buffer to well 1.
14. Promptly remove the chip and place in the chip storage container.
15. Store the chip as recommended in the assay protocol.

See reverse for chip and reagent ordering information.

Chip and Reagent Ordering Information

Protein Chips and Kits

Protein Chips	P/N
High Resolution Protein LabChip	760524
High Resolution Protein 24 LabChip	CLS138951
HT Protein Clear HR LabChip	CLS148695
24 Protein Clear HR LabChip	CLS148696
Protein Express LabChip	760499
Protein Express 24 LabChip	CLS138950
HT ProteinEXact HR LabChip	CLS150337
24 ProteinEXact HR LabChip	CLS150338

Protein Kits	P/N
Charge Variant Reagent Kit	CLS760670
Glycan Release and Labeling Kit	760523
Glycan Screening Reagent Kit	760525
Low Molecular Weight Reagent Kit	760573
Pico Protein Reagent Kit	760498
Protein Clear HR Reagent Kit	CLS960014
Protein Express Reagent Kit	CLS960008
ProteinEXact HR Reagent Kit	CLS150466

Nucleic Acid Chips and Kits

Nucleic Acid Chips	P/N
DNA 5K/RNA/CZE LabChip	760435
DNA 5K/RNA/CZE 24 LabChip	CLS138949
Extended Range LabChip	760517
Extended Range 24 LabChip	CLS138948
X-Mark LabChip	CLS144006
X-Mark 24 LabChip	CLS145331

Nucleic Acid Kits	P/N
DNA 1K Reagent Kit	CLS760673
DNA 5K Reagent Kit	CLS760675
DNA 12K Reagent Kit	760569
DNA NGS 3K Reagent Kit	CLS960013
gDNA QC Reagent Kit	CLS760685
HiSens DNA Reagent Kit	CLS760672
Pico RNA Reagent Kit	CLS960012
RNA Reagent Kit	CLS960010
Small RNA Reagent Kit	CLS153530

The tables above may not include new chips and reagent kits.

To view available chips, go to http://www.perkinelmer.com/category/microfluidic-chips.

To view available reagent kits, go to http://www.perkinelmer.com/category/microfluidic-reagents.

To download the latest version of this guide or assay guides, go to http://www.perkinelmer.com/Product/ht-labchip-gx-ii-touch-cls138160 and click the Resources, Events & More tab.

Daily Routines

Proper daily instrument maintenance and chip cleaning technique have been identified as key factors in maximizing the lifetime of chips. In order to routinely achieve optimum performance and reach the specified chip lifetimes, it is important keep the chip interface clean and free of dried reagents or debris. Please refer to the *LabChip Chip Maintenance Quick Guide* (CLS146025) for details on chip cleaning and preparation.

Best Practices Daily Procedure

Note: *Steps 14-17 do not apply to Protein Chips.*

1. Warm the chip and reagents to room temperature for at least 30 minutes. Ensure the dye is completely thawed. Most dye must be protected from light. Refer to the assay user guide.
2. **Purge the Pressure Lines on the instrument.**
3. **Clean the electrodes and O-rings by wiping them with a lint-free swab dampened with water (Milli-Q® or equivalent). Allow to dry.**
4. Prepare the gel/dye solution and samples according to the protocol for the assay.
5. Wash the active chip wells twice with water (Milli-Q® or equivalent).
6. Aspirate all water and ensure the wells are completely dry.
7. Add reagents to the wells as specified in the protocol for the assay.
8. Ensure the tops of the chip wells are clean and dry. If necessary, clean the tops of the wells with water (Milli-Q® or equivalent) and the provided lint-free swab, then dry using the aspirator.
9. Insert the chip, select the run parameters, and start the run.
10. **Upon completion of the run(s), promptly remove the chip.**
11. **Immediately wipe the electrodes with a lint-free swab to remove any residual gel.**
12. Rinse and completely aspirate the active chip wells two times with water (Milli-Q® or equivalent).
13. Protein Chips: Add 120 µL of water or storage buffer to each active well and skip to step 18.
14. DNA/RNA Chips: Fill the active chip wells with Storage Buffer (120 µL per well).
15. DNA/RNA Chips: Place the chip on the instrument and select Wash.
16. DNA/RNA Chips: **Promptly remove the chip upon completion of the wash.** Do not repeat the chip wash without refreshing the contents of the wells.
17. DNA/RNA Chips: Add an additional 50 µL of water or storage buffer to well 1.
18. Store the chip according to the protocol for the assay.
19. **Purge the Pressure Lines on the instrument.**
20. **Clean the electrodes and O-rings by wiping them with a lint-free swab dampened with water (Milli-Q® or equivalent).**
21. **Inspect the area around the chip holder and plate holder for dust/particles. Clean with a lint-free wipe moistened with water (Milli-Q® or equivalent).**

Removing the O-rings for Cleaning

One time per month, or if current or pressure leaks are observed, remove and thoroughly clean the O-rings, and wipe the O-ring seats with a lint-free swab dampened with water (Milli-Q® or equivalent). Refer to the *LabChip GX Touch/GXII Touch User Manual* for the monthly cleaning procedure.

Inspecting the Objective Lens

If particles or smudges are found on the objective lens, clean the lens **GENTLY, USING OPTICAL WIPES AND WATER (Milli-Q® or equivalent) ONLY**. Use of other materials, or vigorous cleaning, can damage the objective.

Instrument Shutdown

The instrument should be properly shut down each night. Close the LabChip GX Touch software, and then click **Start → Shut Down** to shut down the computer.

Working with your LabChip System

Observation	Possible causes	What to do
General observation that data does not look as expected.	Did the chip prime properly?	Open and close the chip door without changing any of the reagents and restart the run. The chip will automatically reprime.
No ladder or sample peaks detected, but marker peaks are detected. ***Note:*** *The lower marker peak height will most likely be greater than normal height.*	**1.** Air bubble or debris in sipper. **2.** Insufficient volume or bubble in sample/ladder well. **3.** Sipper height set too high.	**1.** Reprime the chip. See the assay user guide for instructions. **2.** Ensure there is sufficient volume in wells and no bubbles are present. **3.** If there may be debris in the samples, spin the sample plate down in a centrifuge (e.g. 3000 rpm for 5 minutes). Unclog the sipper by repriming the chip. See the assay user guide for instructions.
No marker peaks but sample peaks are present.	**1.** No marker added to chip well 4. **2.** If there is marker solution in chip well 4, the problem may be due to a marker channel clog.	**1.** Add or replenish the marker solution in the chip. **2.** Perform a marker channel unclogging procedure by repriming the chip. See the assay user guide for instructions.
Ladder traces show up in the lanes following the ladders (delayed sip).	**1.** Separation channel overloaded with sample. **2** Partial clog in the separation channel.	**1.** Lower the starting sample concentration. **2.** Reprime the chip. See the assay user guide for instructions.
Peaks migrating much faster or slower than expected. No Upper Marker present for DNA. ***Note:*** *Some migration time variance between chips or within a plate is considered normal. Turn off Analysis to determine migration times.* **Assay** / **Lower Marker** / **Upper Marker** ProteinEXact HR / 18-19 sec / N/A Protein Express / 11-13.5 sec / N/A Protein Clear HR / 18-19 sec / N/A ProteinEXact / 18-19 sec / N/A Pico Protein / 11-13.5 sec / N/A DNA 1K / 23-33 sec / 41-67 sec DNA 5K / 9-12 sec / 18-19 sec DNA 12K / 21-26 sec / 47-60 sec DNA HiSens / 21-25 sec / 54-64 sec DNA NGS 3K / 20-23 sec / 50-55 sec Small RNA / 25.5-30 sec / N/A	**1.** Incorrect Gel-Dye ratio. ***Note:*** *Excess dye in the separation channel will slow down migration, and less dye in the separation channel will make peaks migrate faster.* **2.** Particulates from the samples may be clogging the separation channel (this will slow down migration). **3.** Gel-Dye was not primed properly into the chip.	**1.** Prepare a fresh Gel-Dye solution. Wash and reprime the chip with the new Gel-Dye mixture. See the assay user guide for instructions. **2.** If fast or slow migration is observed repeatedly on a new chip, contact technical support to arrange return of the chip to PerkinElmer. **3.** Minimize the loading of particulates in the sample by performing a centrifuge spin of the sample plate (e.g. 3000 rpm for 5 minutes) before starting a new run. The debris may be flushed out of the chip by washing and repriming the chip. See the assay user guide for instructions. **4.** Check the O-rings on the top surface of the chip interface and clean if necessary.
The steps above did not result in a good run.		Please send a description of the issue, a 'xxx.gxd' data file showing the issue, and the results of the Instrument Diagnostics to: DxSupportAmericas@perkinelmer.com (North and South Americas) or DxSupportEMEA@perkinelmer.com (Europe, Middle East, Asia).