# User Guide
## Fast (F3) Cartridge Kit (C105103/C105203/C105803)

## A. Specifications

| Specification | Description |
|---|---|
| **DNA Sizing Range** | 10-5,000 bp |
| **L.O.D** | 0.1 ng/μL |
| **Best Resolution*** | ≥ 50 bp |
| **Sample Number** | 300 runs |
| **Shelf Life** | 4 months |

* Best resolution is determined by the 15-622 DNA Size Marker (C109200).

## B. Kit Components and Storage Conditions

| Item | Storage Condition |
|---|---|
| **Fast Cartridge** (C105103/C105203/C105803) | 4-30°C (Do Not Freeze) |
| **20-1,000 bp Alignment Marker** (C109100-100A, 100 μL) | Short-Term (≤ 3 months): 4-30°C<br>Long-Term (> 3 months): -20°C |
| **Separation Buffer** (C104406, 50 mL/C104403, 250 mL) | 4-30°C |
| **Dilution Buffer** (C104405, 15 mL/C104402, 50 mL) | 4-30°C |
| **Mineral Oil** (C104404, 8 mL/C104401, 25 mL) | 4-30°C |

⚠ **Please always store cartridges in a light-proof bag, and then store in the cartridge box after analysis.**

⚠ **To maintain marker stability, avoid repeated freeze-thaw cycles.**

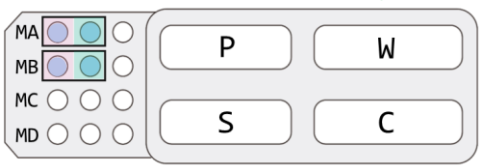
## C. Cartridge Unpacking Preparation

The new cartridge must undergo **HV check** and **calibration**. Please follow the instructions provided in the unpacking guide and calibrate using C109100 Alignment Marker.

⚠ **CAUTION: To prevent cartridge lockout after 10 failed calibration attempts, please contact your local distributor or BiOptic if the issue persists after following the troubleshooting steps in the cartridge unpacking guide.**

## D. Buffer, Marker, and Sample Preparation

**MA-1: 20-1k & MA-2: C109200 (Optional)**




*Qsep*$_{100}$

**Buffer:**
**S: Separation Buffer**
**P/W/C: $d_2H_2O$**
***Add to the groove**

**MB-1: 20-5k & MB-2: C109301 (Optional)**

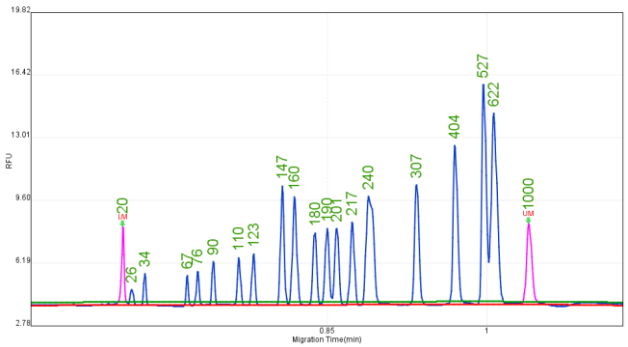
⚠ **Hold the holder steady and press the alignment marker tube firmly into the well with your thumb.**

### 1. Compatible Sample Tubes

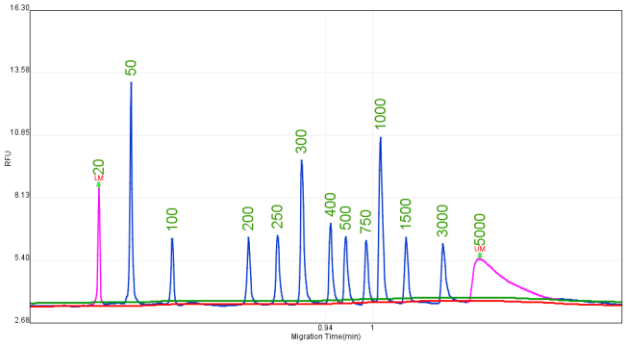
| | Name | Cat. No. | Volume | Image |
|---|---|---|---|---|
| *Qsep*$_{100}$ / 8-well Sample Tray | Micro Vial | C104250 | ≥ 2 μL | |
| | 0.1 mL PCR Tube | - | ≥ 10 μL | |
| | 0.2 mL PCR Tube | - | ≥ 20 μL | |
| **Qsep*$_{100\ 2.0}$ | 0.2 mL PCR Tube | - | ≥ 10 μL<br>☑ 10 μL Mode Only | |

### 2. Markers Required for Different Size Ranges

- For Sample Size Range from 20 bp to 1,000 bp:
  - 20 bp-1,000 bp Alignment Marker (C109100)
  - 15-622 bp Size Marker (C109200)




- For Sample Size Range from 20 bp to 5,000 bp:
  - 20 bp-5,000 bp Alignment Marker (C109102)
  - 50 bp-3,000 bp Size Marker (C109301)




### 3. Recommended Sample Concentration

Fragmented sample: 0.1-10 ng/μL

ℹ If the fragment sample concentration exceeds 10 ng/μL, dilute the sample 10X using 1X dilution buffer.

ℹ If the sample is eluted in water, add dilution buffer to achieve a sample concentration of either 0.2X or 0.1X dilution buffer condition.

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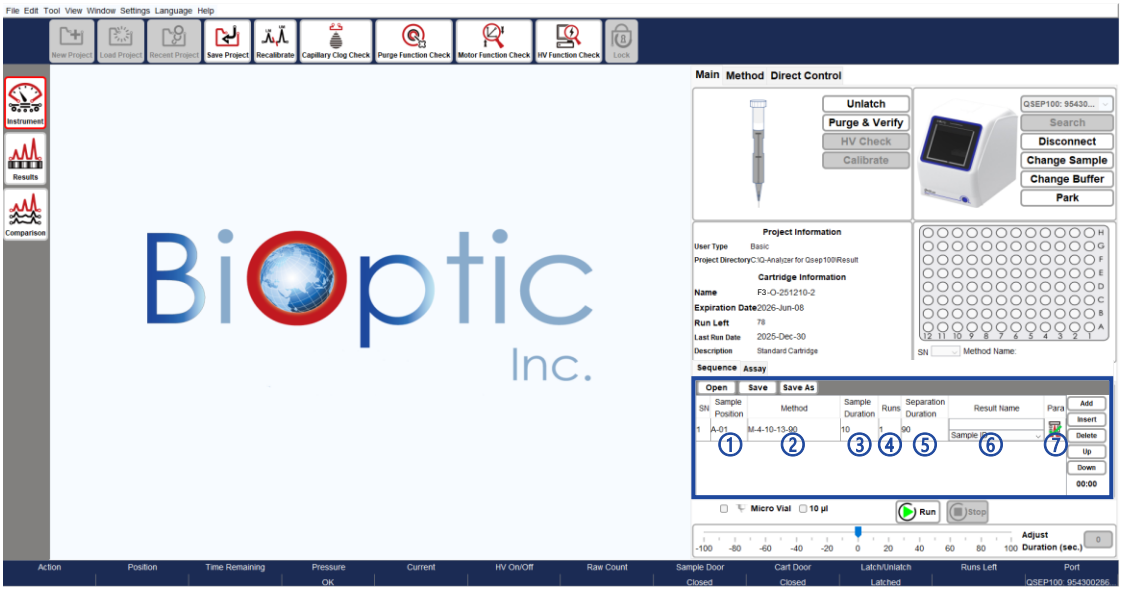
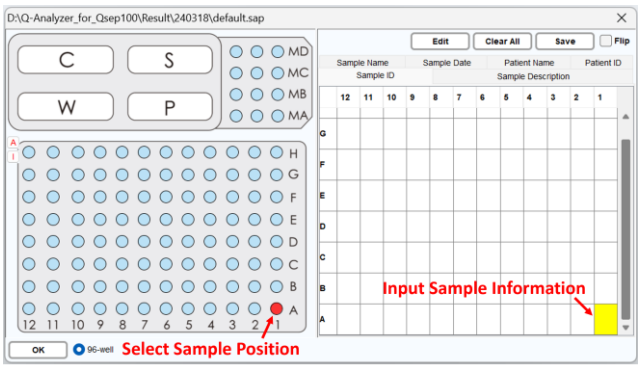
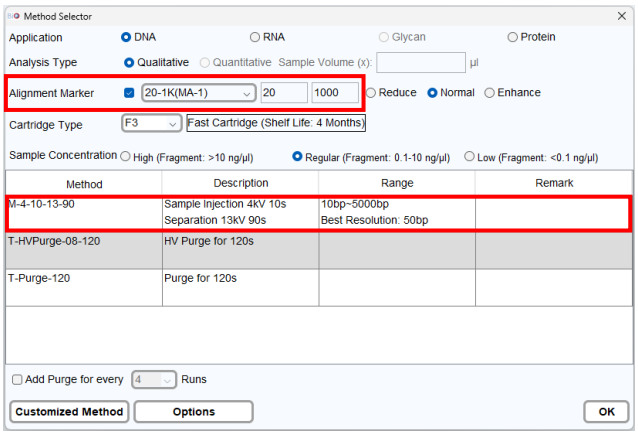
## E. Software Operation Guide




① Sample Position: Place the sample and select the corresponding position. Input sample information if necessary.




② Method:
(a) Select Alignment Marker.
(b) Select Analytic Method in the Method Selector.




- **Adjust injection conditions based on sample concentration.**

| Sample Concentration | High (2kV, 10s) | Regular (4kV, 10s) | Low (8kV, 10s) |
|---|---|---|---|
| Fragmented DNA | > 10 ng/µL | 0.1-10 ng/µL | 0.01-0.1 ng/µL |

③ Sample Duration: Adjust the sample injection time to increase/decrease injection amount.

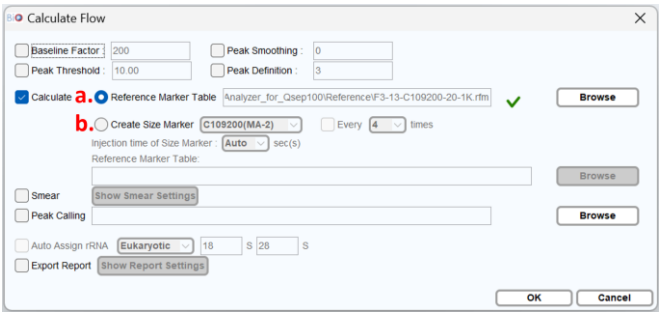
- **Modify injection conditions based on sample concentration.**

④ Runs: Set the repetition time.

⑤ Separation Duration: Adjust the duration to extend/reduce the separation time. **(Optional)**

⑥ Result Name: Input the result name for the result file.

⑦ Para: Choose between (a) Reference Marker Table and (b) Create Size Marker for calculation.




- **When using "Create Size Marker" function, select the appropriate size marker you use. For example, "20-1k" is paired with C109200, "20-5k" is paired with C109301.**

8. Click "Run" to start the sequence analysis.

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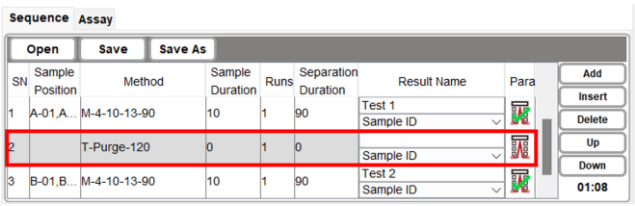
## F. Troubleshooting

Before attempting any troubleshooting, ensure that the system is functioning properly and that all operations are following the instructions.

If encountering unstable current during sample injection or separation steps, which may be caused by unknown substances in PCR reagent buffer or other kit buffers, consider the following solutions:

1. Dilute the sample using dilution buffer.
2. Centrifuge the sample for a period to allow residues to accumulate at the bottom of the tube.
3. Insert a "T-purge-120" method between several sample runs. For example, insert one run of "T-Purge-120" every 5-10 sample runs.




## G. Cartridge Disposal

Please wear gloves before discarding the cartridge.

1. Bend the cartridge tip.
2. Open the cap on the gel reservoir and remove the inner cap.
3. Pour the gel into the chemical waste container.
4. Dispose of the cartridge in the trash bin.

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