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SIELC

The Alltesta™ Autosampler

the smallest universal autosampler

Introduction

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Video Links

Injection with 48 Vial Plate

Needle Wash with 96 Well Plate

Based on a proprietary alpha/beta mechanic configuration, this Miniature Autosampler offers affordable and reliable automation for many analytical- and liquid-handling settings, including HPLC. Direct and comprehensive control of this Mini Autosampler's features, as well as high-level commands for succinct automation, provide quick and easy integration. Users can customize their Mini Autosampler with various valve configurations, tray designs, and syringe volumes and pressures. A built-in shaking feature allows for sample-mixing before injection and/or simple sample extraction inside the vial. The device can be controlled directly via our custom OEM software or serial commands, or even remotely through the cloud.

The Mini Autosampler comes designed with original equipment manufacturer (OEM) customization in mind. Custom shapes, colors, vial numbers and sizes can be adapted to integrate with any system. Comprehensive software integration support is provided. Other options include metal-free sampling and reagent addition and mixing capabilities.

The Miniature Autosampler is just one component of the Alltesta™ HPLC system. The addition of our UV/Vis Detector and Liquid-Carrier Pump can convert this compact autosampler into a fully operational HPLC system or Flow Injector Analyzer (FIA).

The Mini Autosampler can be used for many liquid-handling applications that require the precision transfer of small liquid volumes under both high or low pressures.

Drivers for Serial Communication as well as our OEM software can be found on our website. For the list of serial commands, please contact us at support@sielc.com

HPLC.cloud, our custom cloud-based software, can be used for sequence storage, sequence editing, and injection method creation. The Autosampler can connect to the cloud through the Alltesta™ Power Tower. Every purchase of the Alltesta™ Power Tower includes a free subscription to HPLC.cloud.

For more information on pricing, quotes, and orders, customers can contact us either via email at sales@sielc.com or via phone at +1 (847) 229-2629.

High Pressure HPLC

Configuration:

Valve: 6x2
Syringe: 150 µL

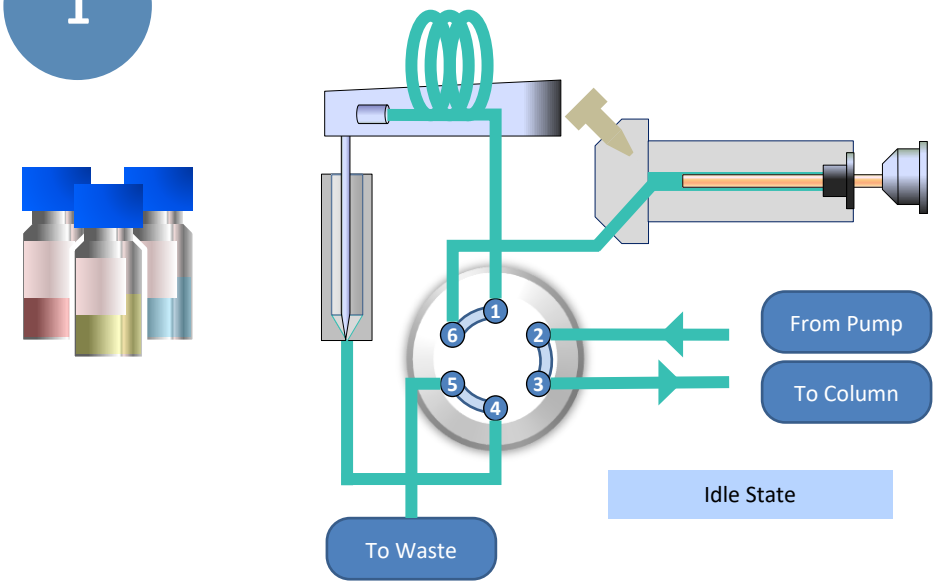
This autosampler application allows users to automate sample introduction in a high pressure line for applications such as HPLC (High Performance Liquid Chromatography). An accurate sample volume from 1 to 100 µL can be introduced into the high pressure stream without reducing the operational pressure. Additional functions include sample mixing, needle cleaning (with up to 4 solutions), and sample shaking. Sample storage capacity is 48 vials with 2 mL volume or a 96-well plate.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 2.

2) When the injection is initiated, the needle leaves the port and descends into a sample vial. The syringe pump then draws a set volume of sample into the loop behind the needle. The sample volume can be set from anywhere between 1 and 150 µL.

Schematics

1



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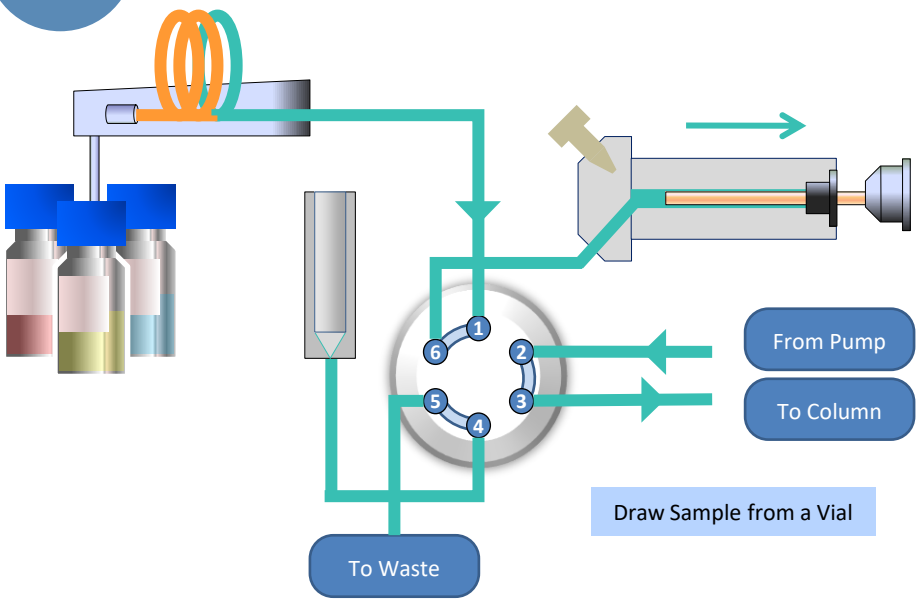


High Pressure HPLC

Configuration:

Valve: 6x2
Syringe: 150 µL

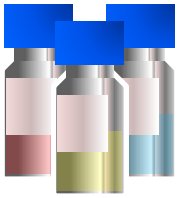
3) With the sample volume being held in the loop, the needle returns to the injection port.

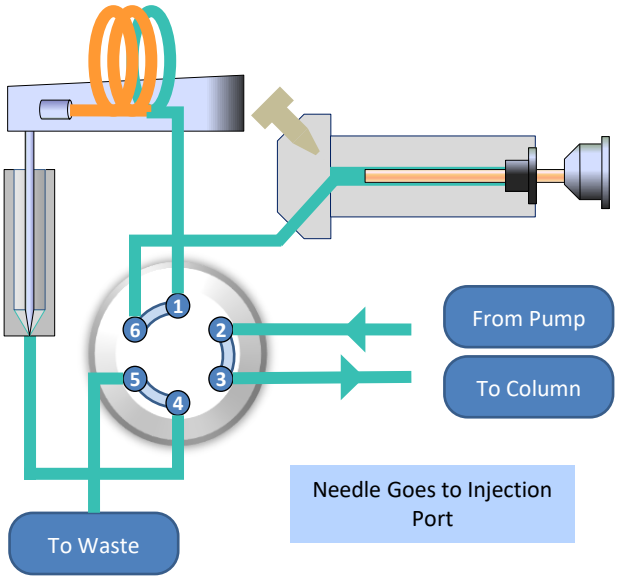
4) The valve then switches to Position 1, and then syringe pump pushes liquid out of the pump and into the pressurized flow path towards the column.

The valve then switches back to Position 2, returning the entire system to the idle, standby state.

Schematics

3





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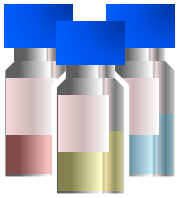
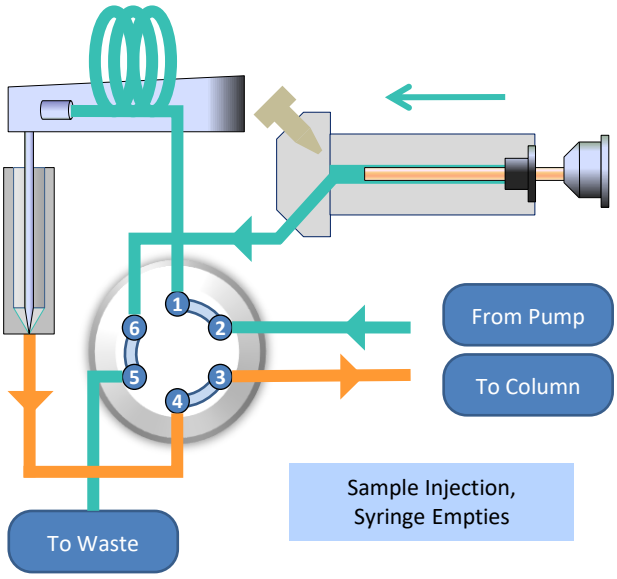




Fraction Collector

Configuration:

Valve: 6x2
Syringe: 4000 µL

This autosampler application allows users to do fraction collection during column chromatography or any other process which produces liquid flow. Fractions can be determined by a set volume or time. Several tray options are available for different fraction amounts. Additional functions include fraction dilution or mixing with a reagent, needle cleaning, and flow diverting.

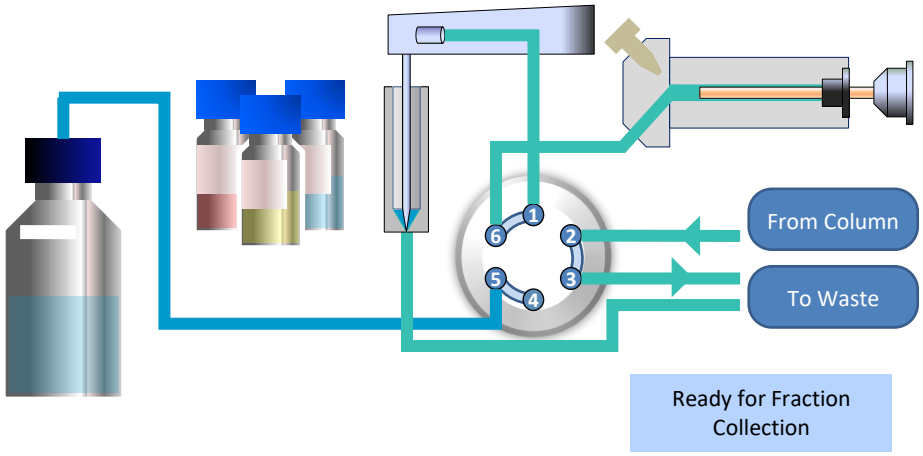
The Alltesta™ Analyzer is designed to utilize a 2-valve system in order to alternate between injection and fraction collection. Here, we will only focus on the fraction collection schema.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 2.

2) When the fraction collection is initiated, the needle descends into the first vial for collection, and the valve first switches to Position 1. The output from the column then passes through the needle and into the vial. Meanwhile, the syringe pump draws in washing solution.

Schematics

1



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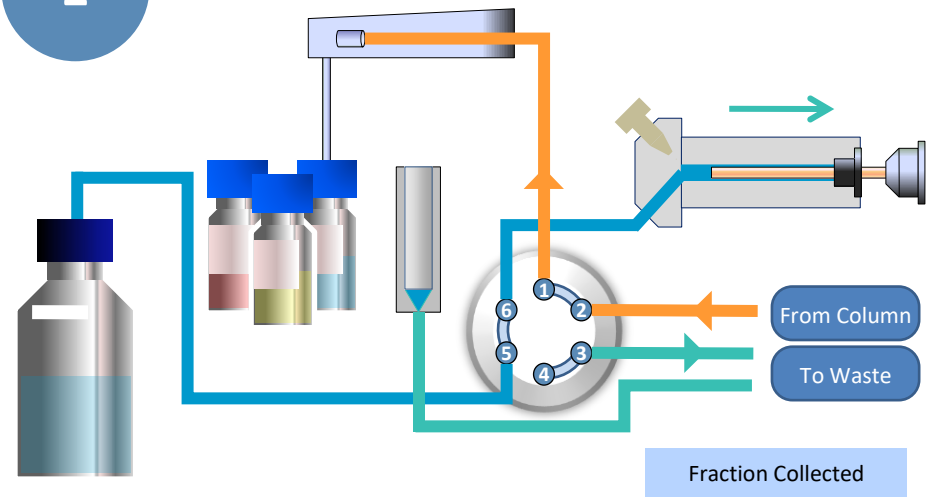


Fraction Collector

Configuration:

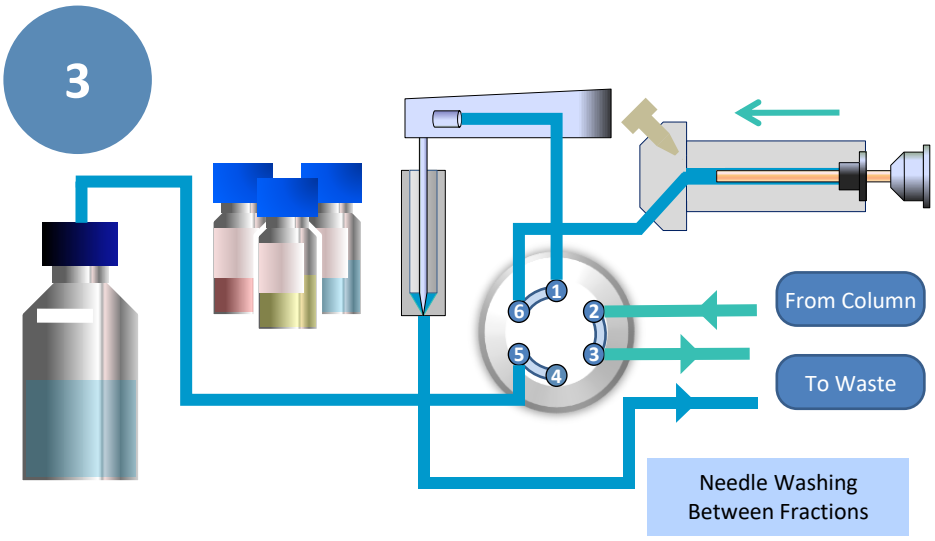
Valve: 6x2
Syringe: 4000 µL

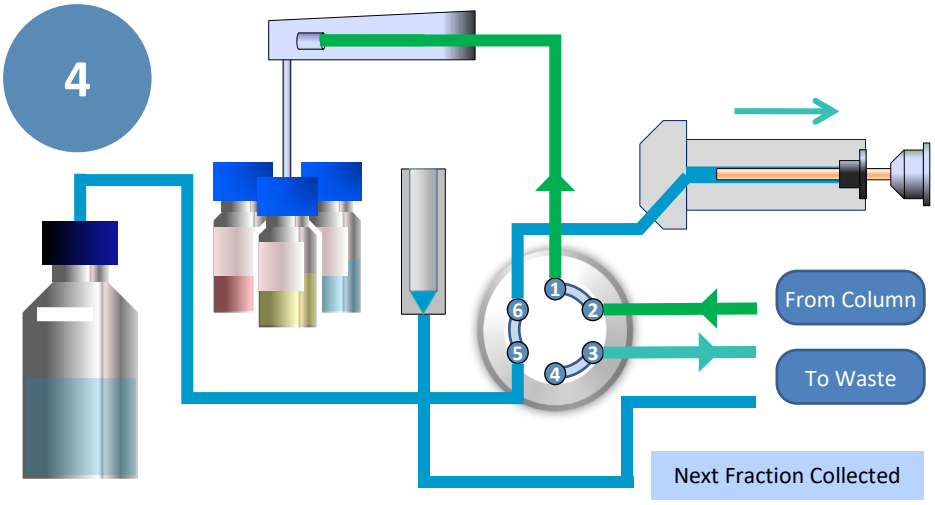
3) The needle briefly returns to the injection port while the valve switches back to Position 2. Meanwhile, the pump pushes the washing solution through the needle, which passes through the port and towards the waste bottle.

4) The needle then descends into the second vial for collection, and the valve switches back to Position 1. The output from the column again passes through the needle and into the vial. Meanwhile, the syringe pump refills with washing solution.

Steps 3 and 4 will repeat for each subsequent fraction that is collected. At the end of the fraction collection process, the needle will return to its idle state described in Step 1.

Schematics





Small Volume Detector Cell

Configuration:

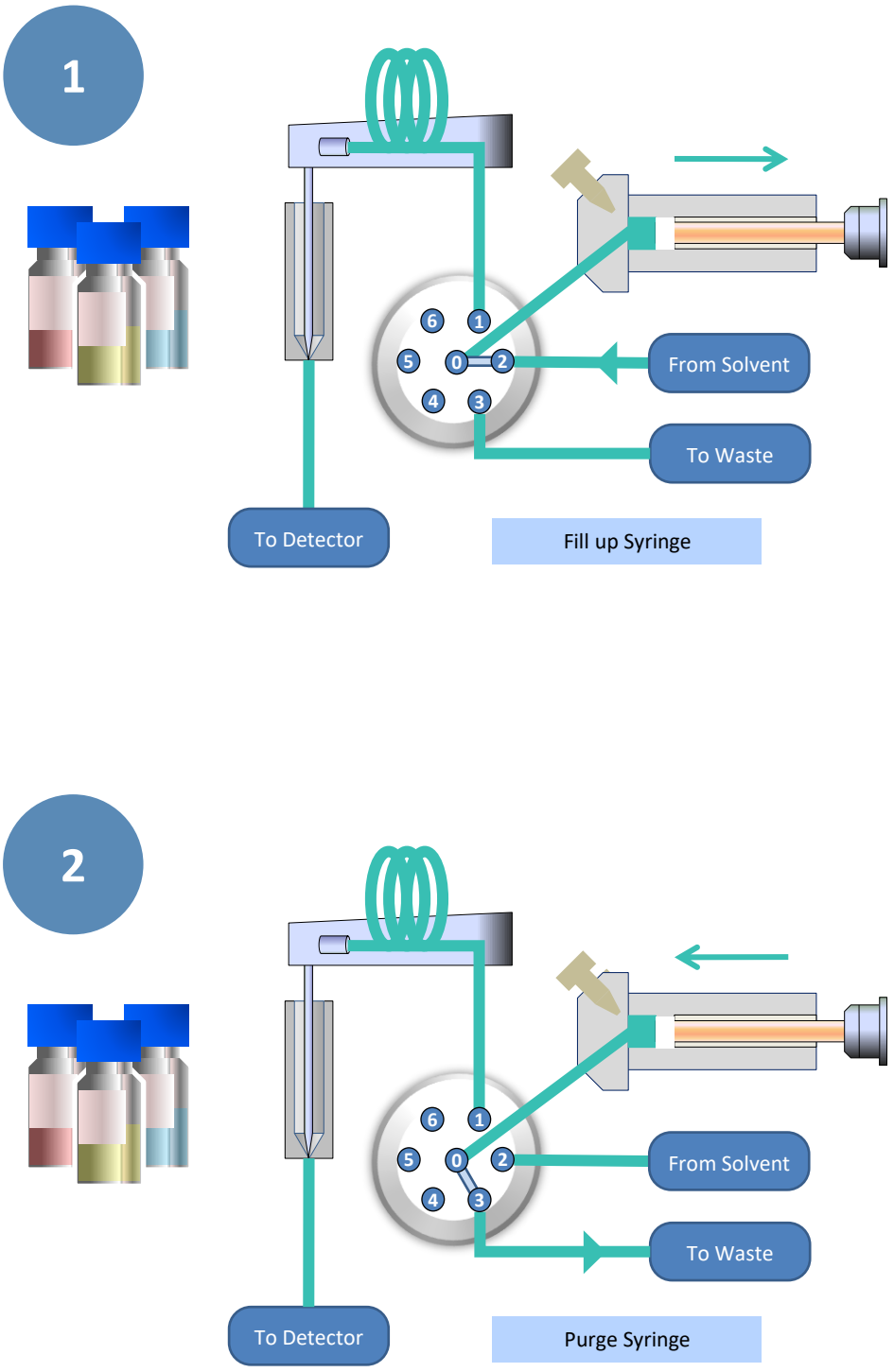
Valve: 7x6
Syringe: 4000 µL

This autosampler application allows users to automate sample storage and delivery to a detector cell such as an optical spectrometer, colorimeter, pH meter, conductivity detector or similar. An accurate sample volume that can be varied by the user can be delivered to a line connected to the detector cell. Additional functions include sample mixing, needle cleaning with up to 4 solutions, and sample shaking. Sample storage capacity is 48 vials with 2 mL volume or a 96-well plate.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 2. When the injection is initiated, the pump fills up the syringe with solvent.

2) The valve then changes to Position 3 and the pump pushes the solvent out of the syringe to purge and clean it, removing any trace impurities that may be left over from a previous injection.

Schematics



Small Volume Detector Cell

Configuration:

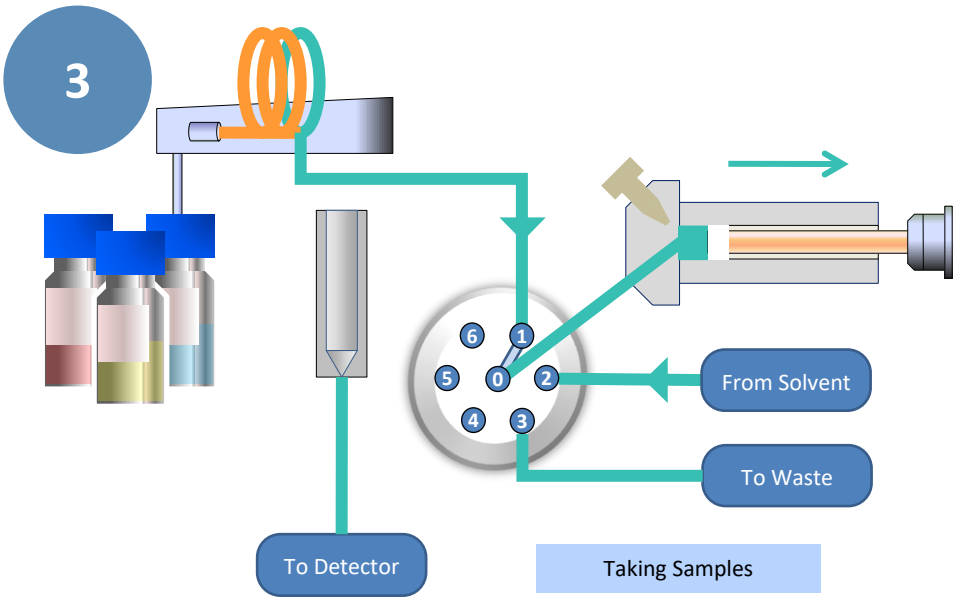
Valve: 7x6
Syringe: 4000 µL

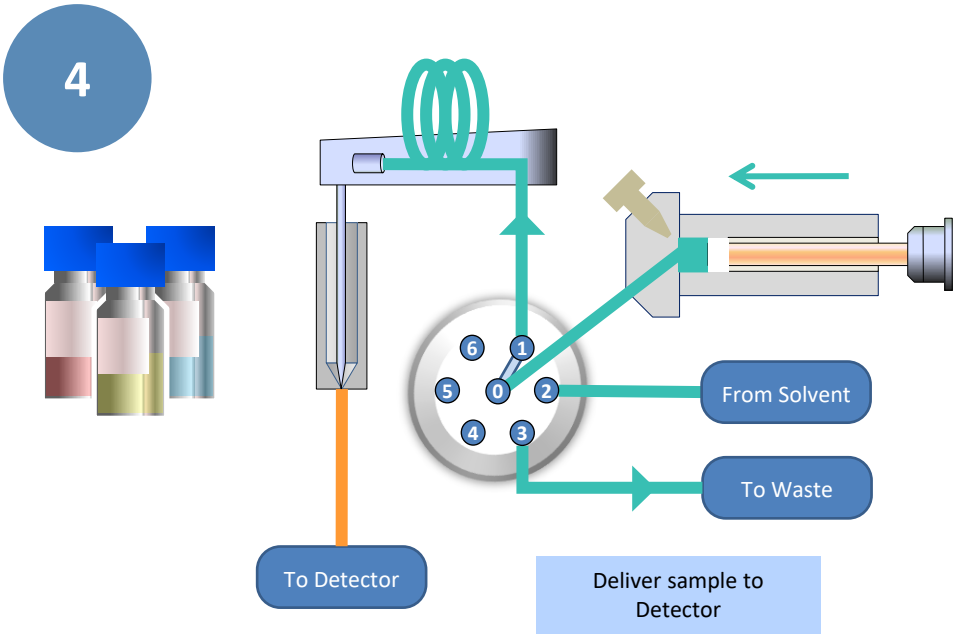
3) The needle then descends into the chosen sample while the valve switches to Position 1. Once the needle and valve are set, the syringe draws in the set volume of the sample, temporarily holding it in the loop behind the needle.

4) The needle then returns to the injection port. Once the needle settles, the pump pushes the sample through the port and onto the path towards the detector.

The valve then switches back to Position 2, returning the entire system to the idle, standby state.

Schematics





Low Pressure, High Syringe Volume

Configuration:

Valve: 6x2
Syringe: 4000 µL

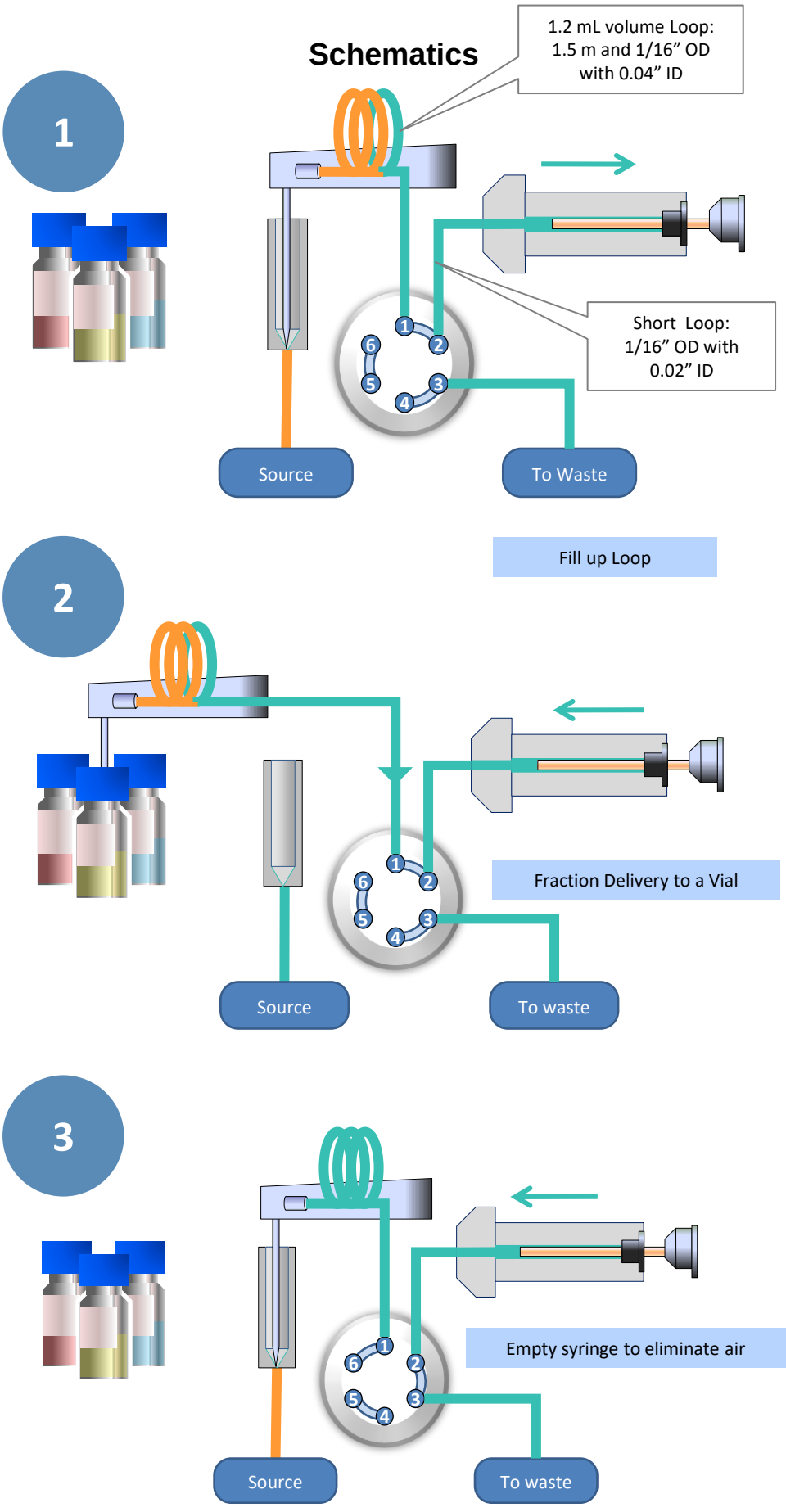
This autosampler application allows users to automate sample retraction and storage for further analysis or as a representative record. An accurate sample volume that can be varied by the user can be drawn from a source connected to the injection port via tubing. Additional functions includes sample mixing with some stabilization solutions or reagent, needle cleaning with up to 4 solutions, and sample shaking. Sample storage capacity is 48 vials with 2 mL volume or a 96-well plate. The loop and connection tubing can be customized to different lengths, IDs, and volumes.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 2. When the collection is initiated, the pump fills the loop with a set volume of sample from the source.

2) The needle into the designated sample vial, and then the pump pushes the sample out of the needle and into the vial.

3) The needle returns to the injection port. The valve then switches to Position 1, while the pump purges any remaining air down the waste line.

Schematics



Loading Fluidic Devices

Configuration:

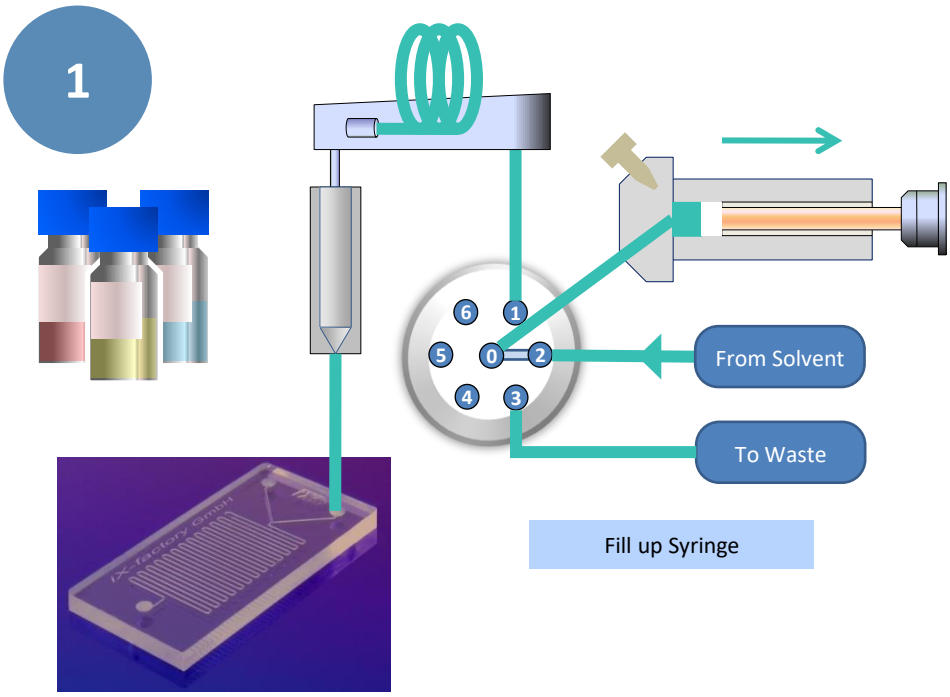
Valve: 7x6
Syringe: 150 or 4000 µL

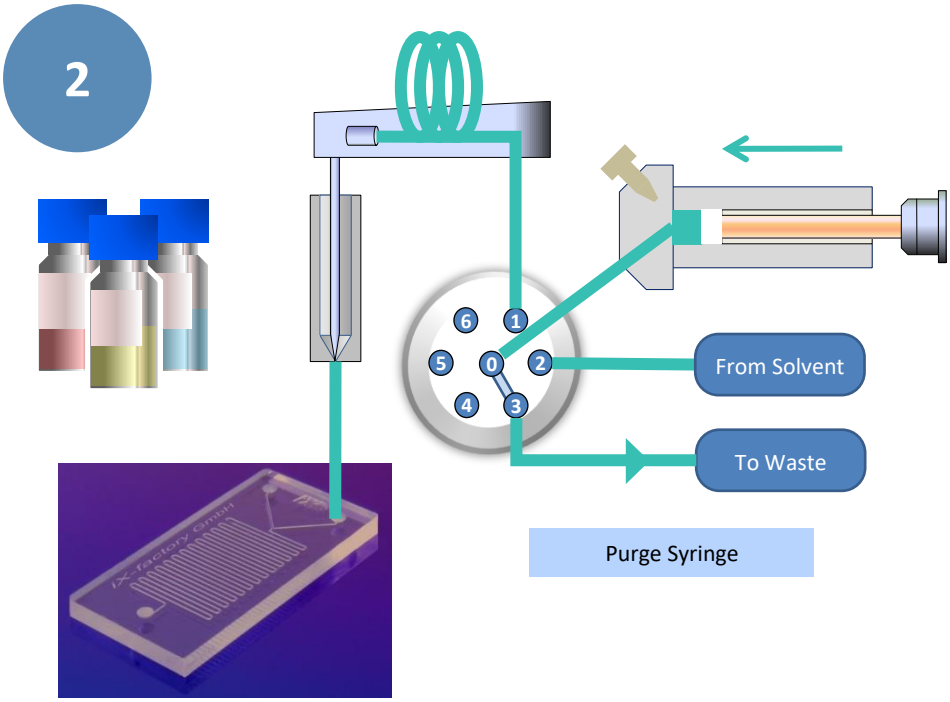
This autosampler application allows users to automate sample storage and delivery to a microfluidic device (chip). An accurate sample volume that can be varied by the user can be delivered to a line connected to the chip. Additional functions include sample mixing, needle cleaning with up to 4 solutions, and sample shaking. Sample storage capacity is 48 vials with 2 mL volume or a 96- or 384-well plate.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 2. When the injection is initiated, the pump fills up the syringe with solvent.

2) The valve then changes to Position 3 and the pump pushes the solvent out of the syringe to purge and clean it, removing any trace impurities that may be left over from a previous injection.

Schematics





Loading Fluidic Devices

Configuration:

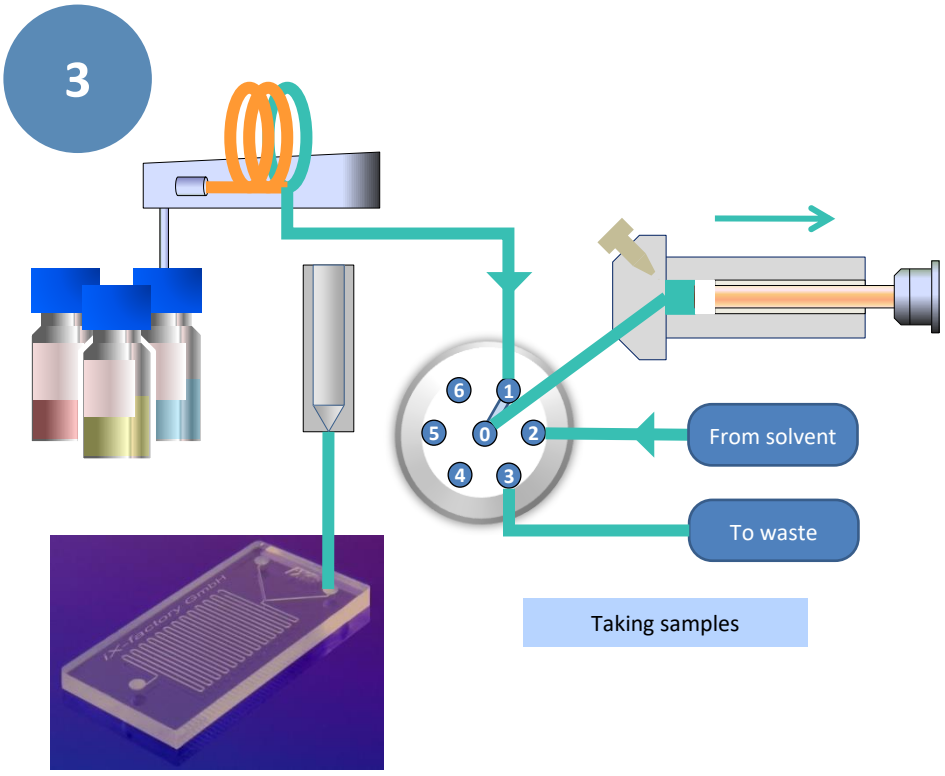
Valve: 7x6
Syringe: 150 or 4000 µL

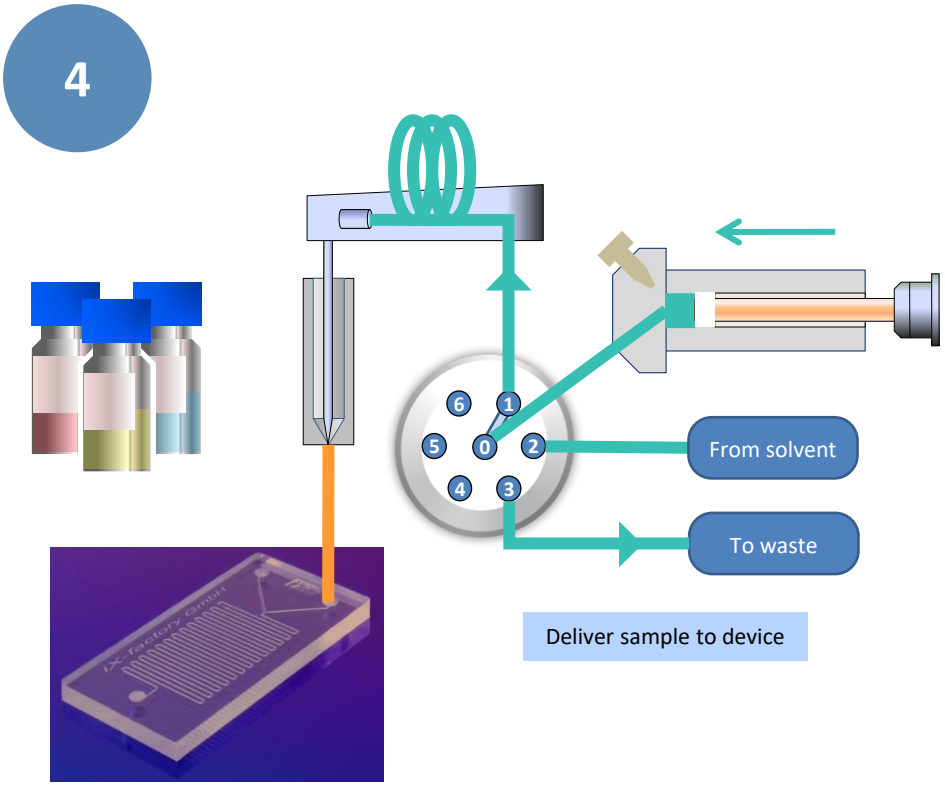
3) The needle then descends into the chosen sample while the valve switches to Position 1. Once the needle and valve are set, the syringe draws in the set volume of the sample, temporarily holding it in the loop behind the needle.

4) The needle then returns to the injection port. Once the needle settles, the pump pushes the sample through the port and onto the path towards the chip.

The valve then switches back to Position 2, returning the entire system to the idle, standby state.

Schematics





Sequential Fluorescence in situ Hybridization (seqFISH+)

Configuration:

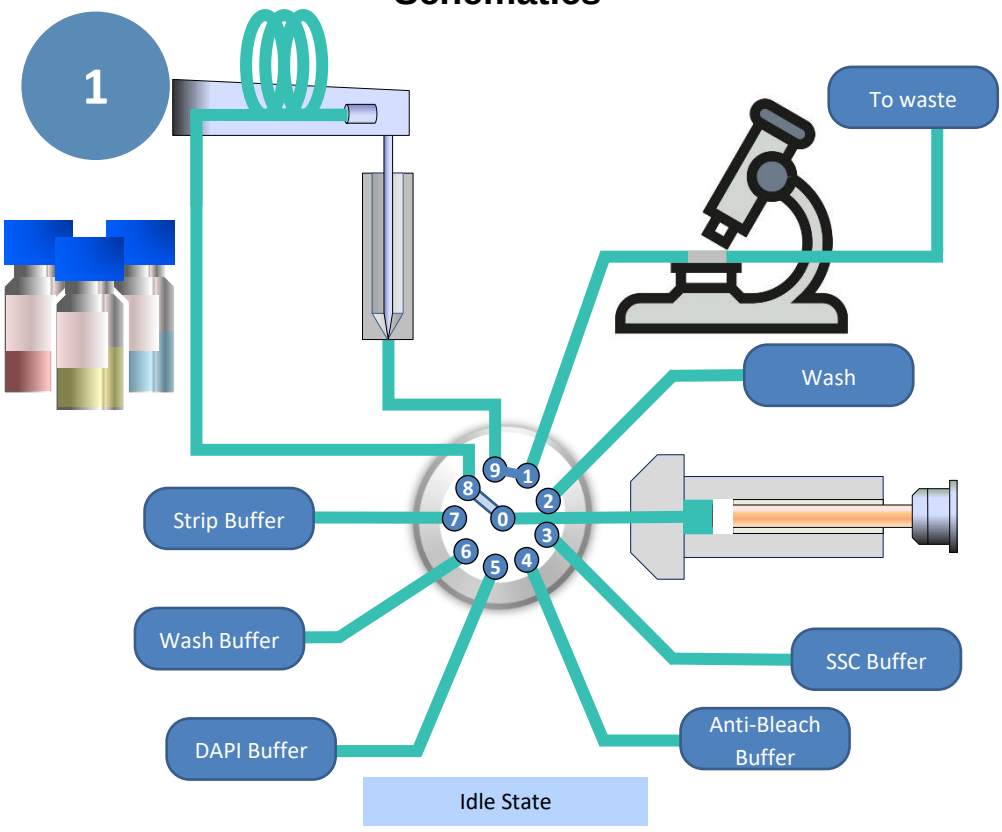
Valve: 10x9
Syringe: 4000 µL

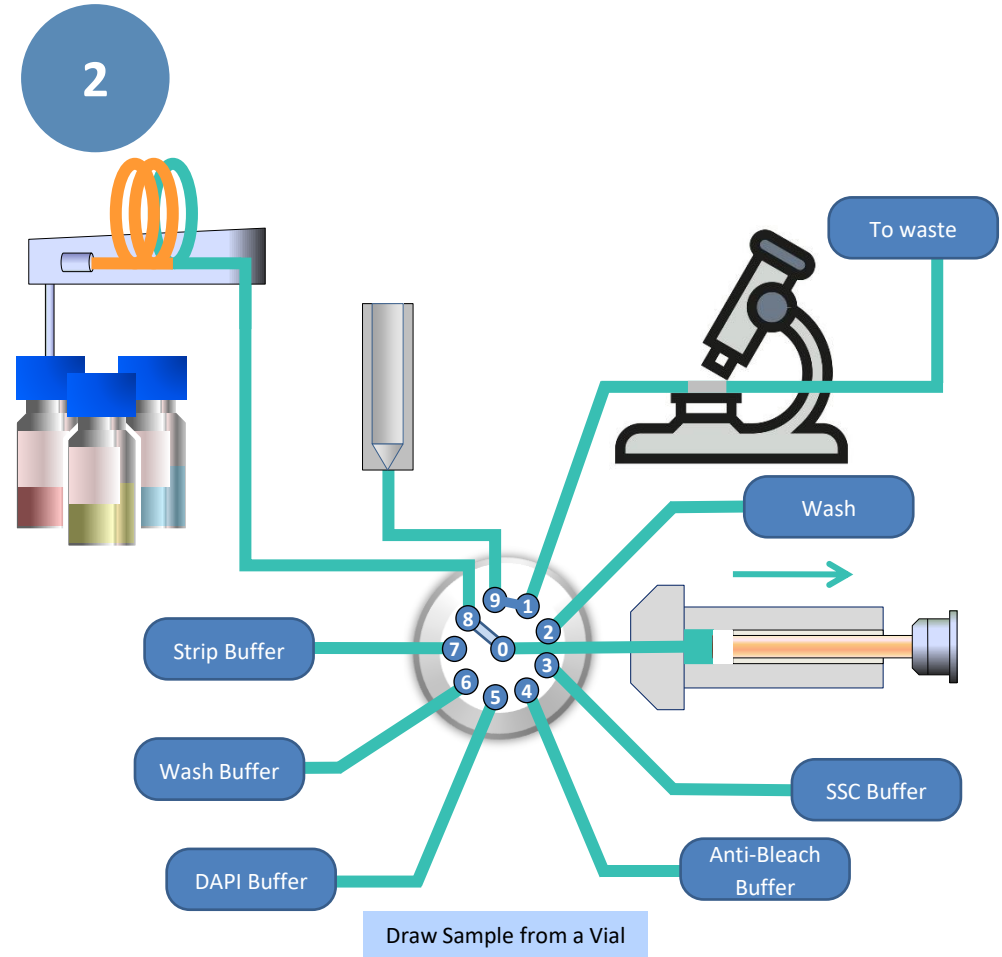
This autosampler application allows users to automate RNA fluorescent marker delivery to a Sequential Fluorescence in situ Hybridization (seqFISH+) system with access to multiple buffers to maintain accurate fluorescence and piping conditions. An accurate sample volume that can be controlled by the user will be delivered to a line connected to a microscope for seqFISH+ analysis. Additional functions include fluorescent marker mixing, needle cleaning with up to 4 solutions, and sample shaking. Fluorescent marker storage capacity is 48 vials with 2 mL volume or a 96- well plate. The stator for this application also includes a groove that connects Ports 1 and 9.

1) This application begins with the system in its idle state, with the needle in the injection port, the syringe in the 0 position, and the valve in Position 8.

2) The needle then leaves the injection port and descends into the chosen vial. Once the needle is set, the syringe draws in the desired volume of the marker, temporarily holding it in the loop behind the needle.

Schematics





Sequential Fluorescence in situ Hybridization (seqFISH+)

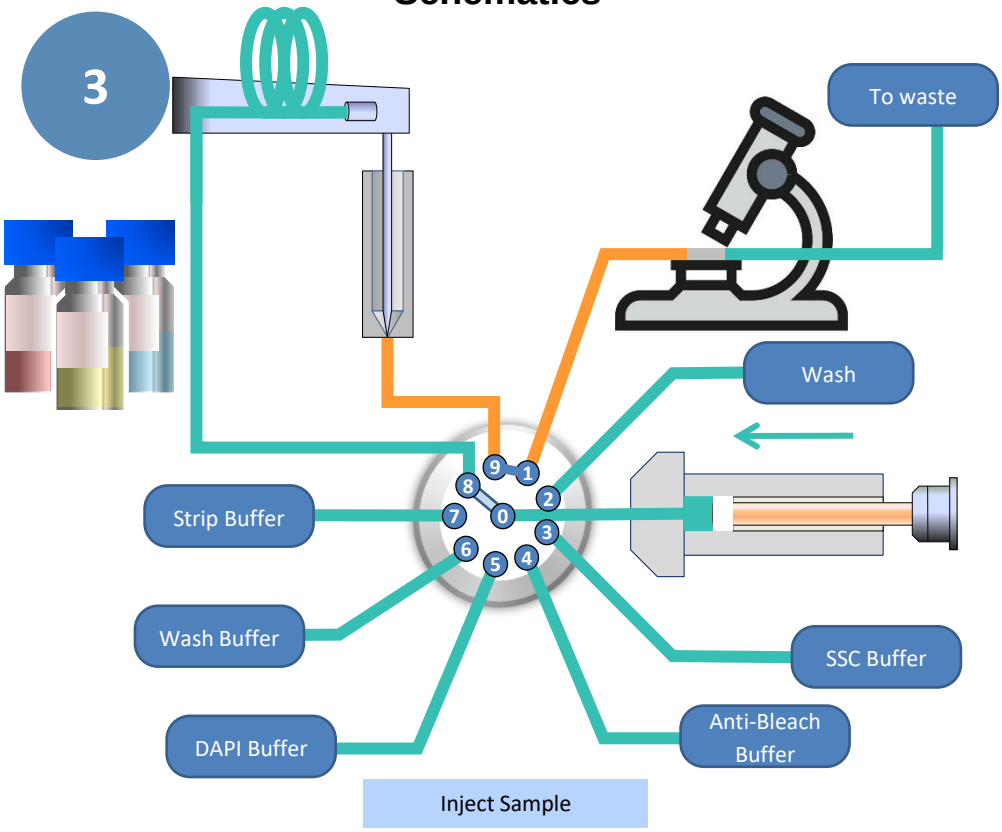
Configuration:

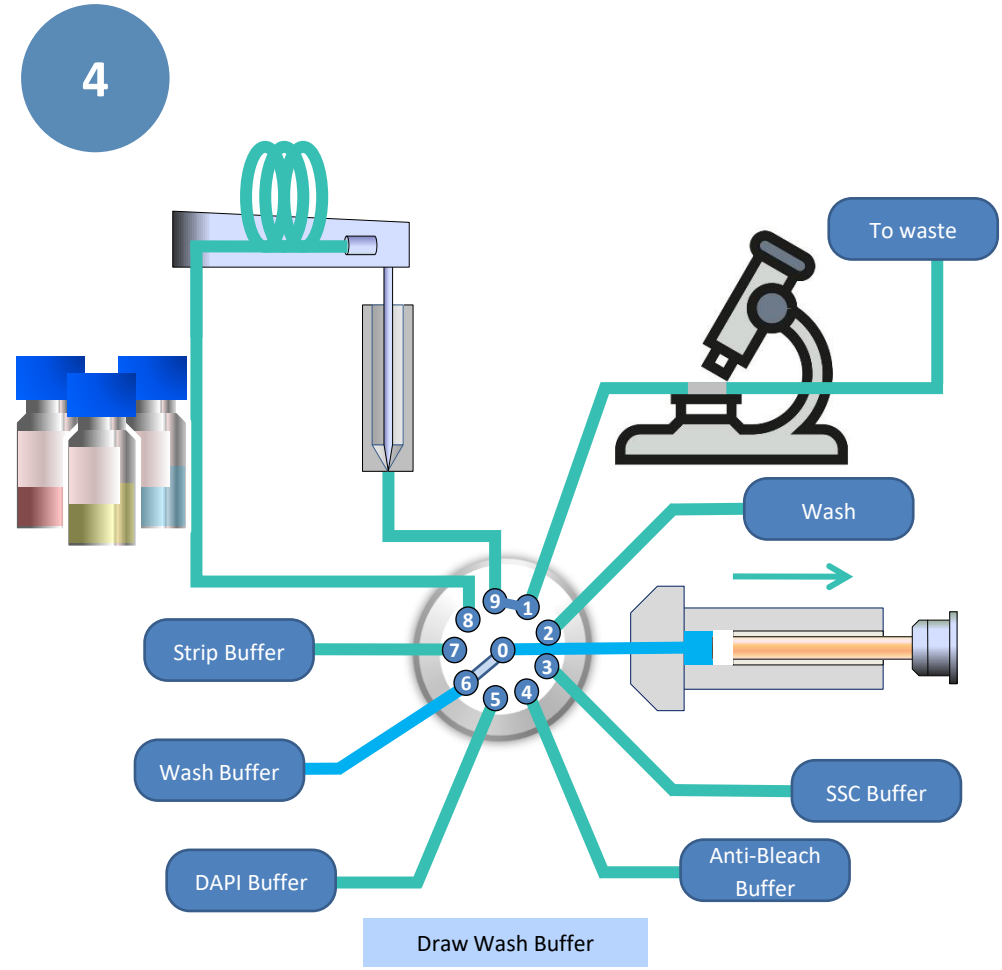
Valve: 10x9
Syringe: 4000 µL

1) The needle then returns to the injection port. Once the needle settles, the pump pushes the marker through the port and onto the path towards the microscope.

2) The valve then switches to Position 6. Once the valve is set, the syringe draws in the desired volume of wash buffer, temporarily holding it in the syringe.

Schematics





Sequential Fluorescence in situ Hybridization (seqFISH+)

Configuration:

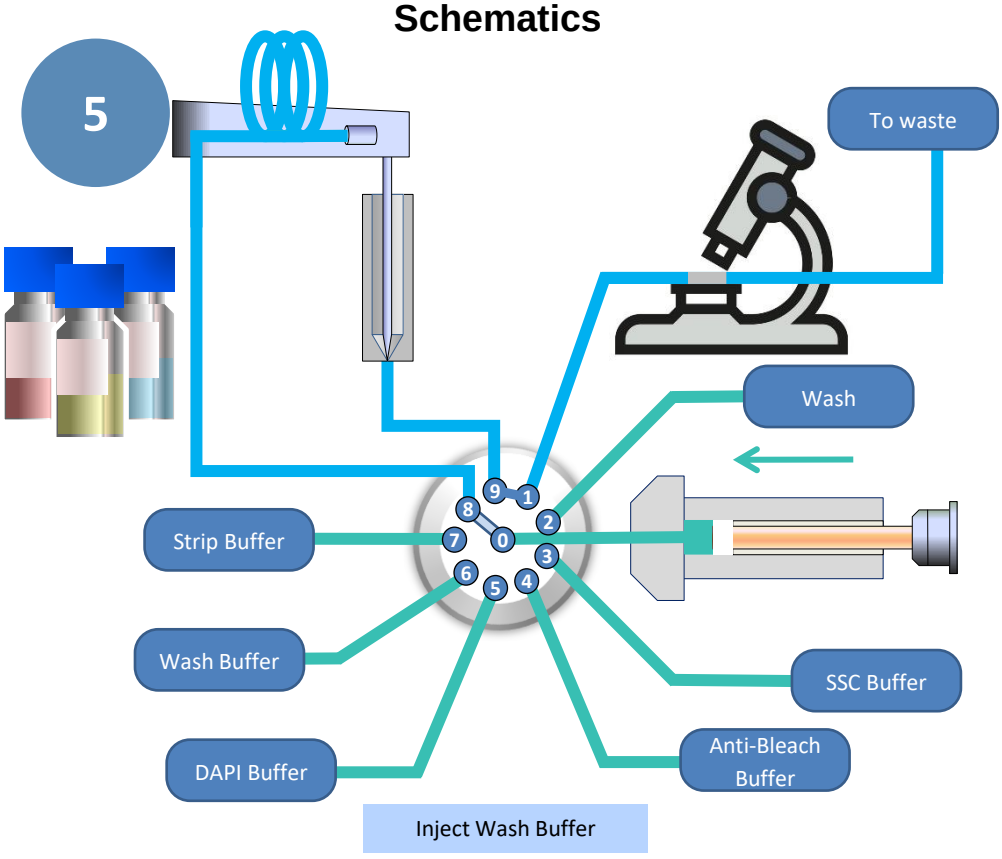
Valve: 10x9
Syringe: 4000 µL

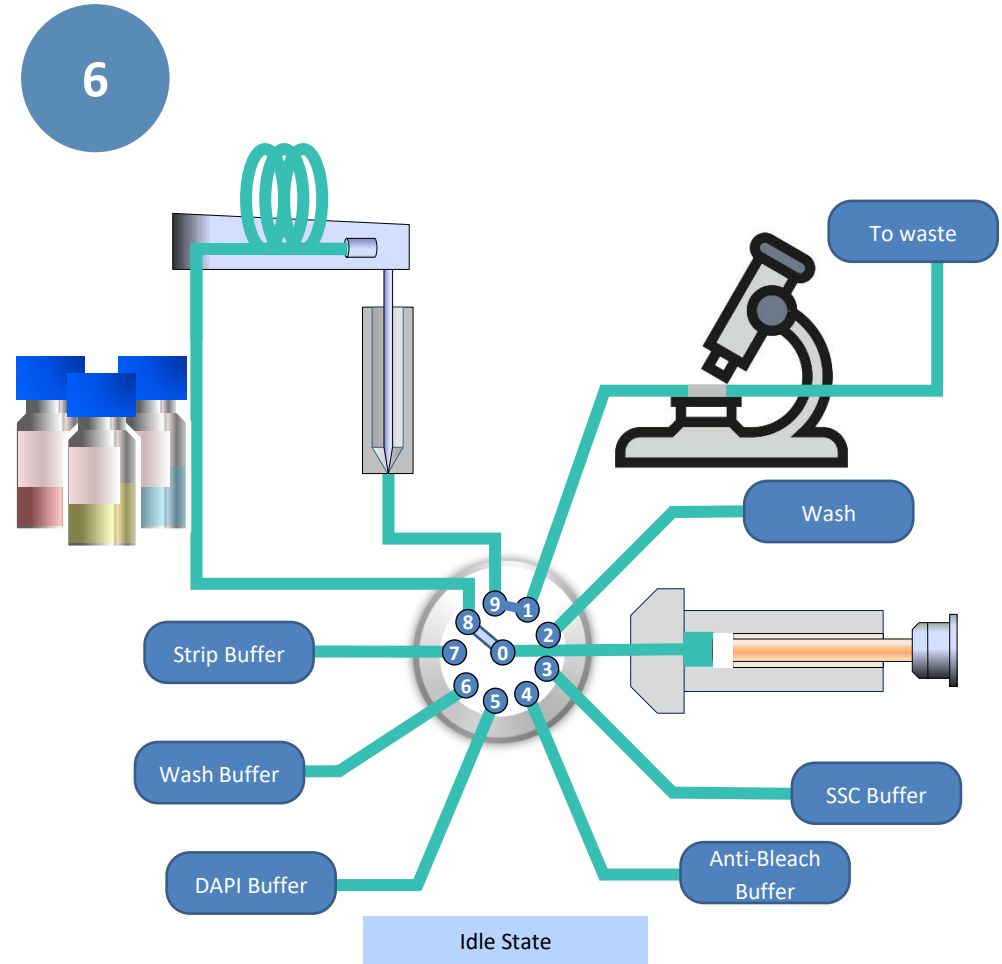
5) The valve then changes back to Position 8 and the pump pushes the solvent out of the syringe to purge and clean the line, removing any trace impurities that may be left over from the previous injection.

6) The valve then returns to Position 8, returning the entire system to the idle, standby state.

To incorporate the other buffers as necessary, Steps 4 and 5 can be repeated and modified to wash the line with each respective buffer solution.

Schematics





Software

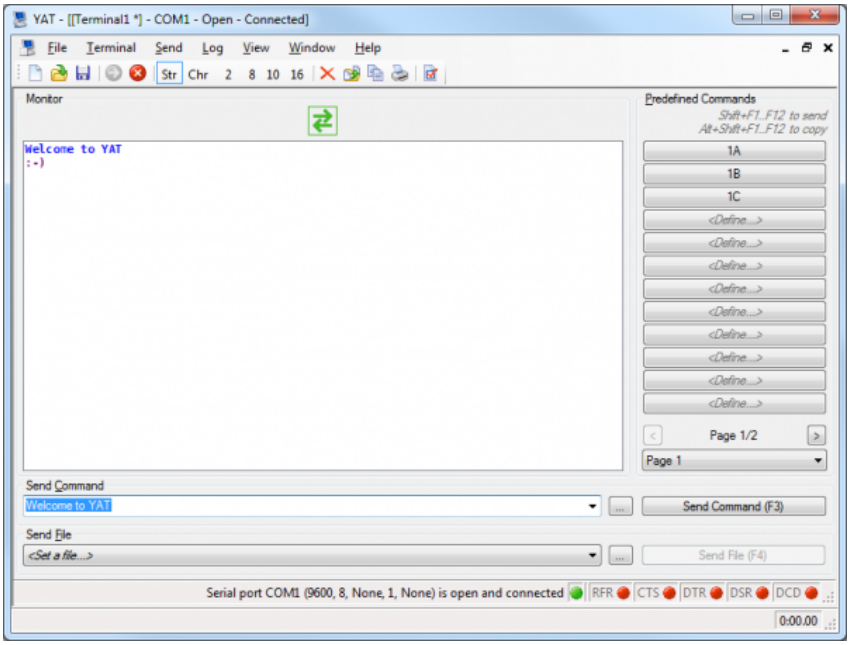
Options:

1) Serial communication allows customers to achieve maximum customization by giving them complete control over automated programs.

All Autosampler purchases will come with a copy of the Command Protocols so you can start building up your Automated Program as soon as possible.

Serial communication also has the added benefit that it is compatible with any operating system as long as you have a Serial terminal installed, have downloaded the correct drivers, and the Autosampler is connected to your computer via the included USB A – USB B cable.

1



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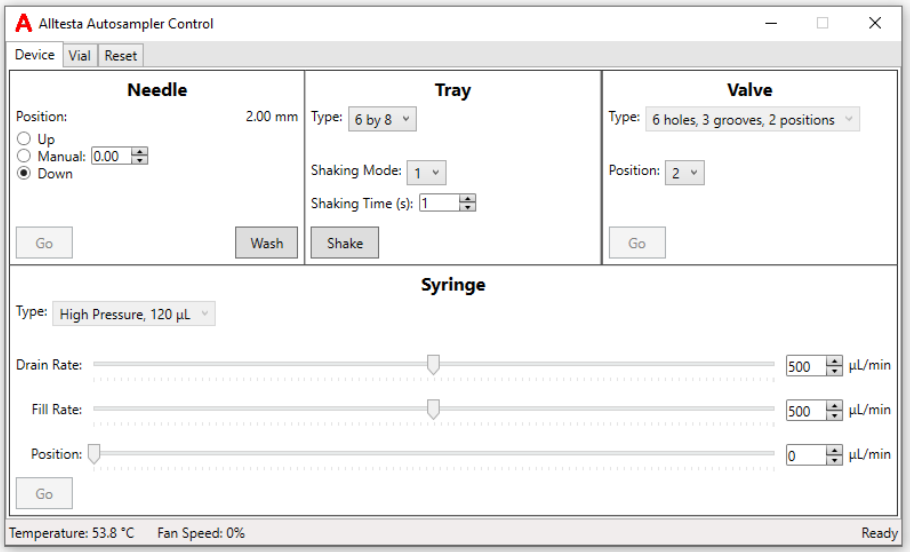


2) OEM software gives users simple manual control over each component within the Autosampler, ideal for simple tests that do not require automation.

The software can be downloaded directly from our website and is compatible with both Windows 7 and Windows 10. Once it is installed and your device is connected, you can begin controlling it immediately!

Specifications

Instrument Size:
6 x 6.5 x 7 inch
(15 x 16 x 17 cm)

Weight: *5 lb*
(2.3 kg)

Vial Capacity Options:
48 vial plate
96 well plate

Pressure Max:
5000 psi
(344 bar)

Syringe Capacity Options:
200 uL
4 mL

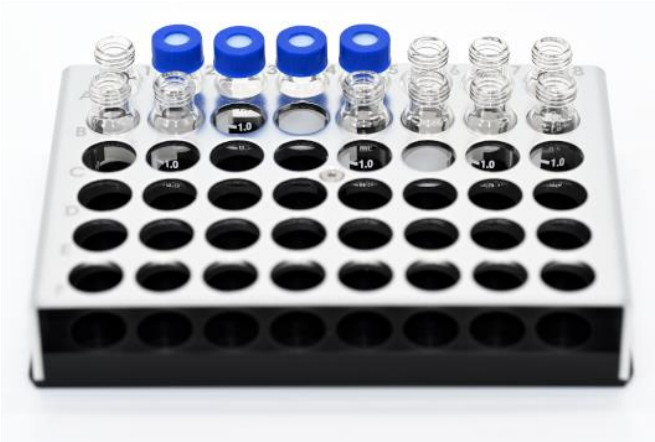
Valve Options:
6x2
7x6
10x9

Volume Accuracy:
0.1 uL

Communication:
USB-B (serial)

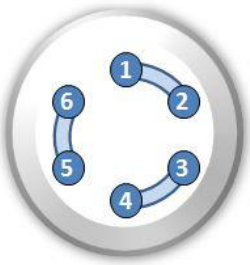
Power: *24 V*

Contact with liquid:
SS316
PEEK
PTFE
Vespel

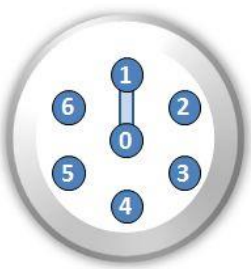


48 Vial Plate

96 Well Plate



6x2 Valve



7x6 Valve

10x9 Valve