

Agilent StreamSelect LC/MS System

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This guide applies to the StreamSelect LC/MS System, which includes the Agilent 6400 Series Triple Quad LC/MS.

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Agilent Technologies

What is the Agilent StreamSelect LC/MS System?

The Agilent StreamSelect LC/MS System consists of a single triple quadrupole mass spectrometer and two liquid chromatography systems running parallel, staggered analyses. The MassHunter StreamSelect software controls the entire LC/MS system from sequence submission to data acquisition resulting in a very efficient and robust handling of the LC/MS analyses.

The StreamSelect LC/MS System can increase the daily throughput of LC/MS analyses up to two-fold through highly efficient use of the analytical capabilities of the mass spectrometer, which results in higher productivity and cost effectiveness.

Where to Find More Information

You can access more information about StreamSelect LC/MS System as follows.

MassHunter StreamSelect Quick Start Guide (p/n G2709-90001)

This guide gives you an overview of the MassHunter StreamSelect software. It explains how to submit batch samples and how to use the MassHunter StreamSelect software to set up data acquisition methods.

MassHunter StreamSelect Online Help

Consult the *online Help* or tooltips available for the following components of the StreamSelect LC/MS System.

- MassHunter StreamSelect Profile Editor
- MassHunter StreamSelect Instrument Configuration
- MassHunter StreamSelect Console
- MassHunter Data Acquisition program

Agilent Web Site

To view support information for MassHunter StreamSelect and other Agilent products, see:

<http://www.chem.agilent.com>

Installation and Setup

Use these instructions to install the StreamSelect LC/MS System, both software and hardware.

Before you begin

The tasks below must be completed before installing MassHunter StreamSelect software.

- 1 Install or verify the following hardware configuration. Please refer to the installation manuals for each component.
 - Agilent 1260 Infinity Series Liquid Chromatograph module
 - Agilent HTC/HTS Sample Injector
 - Agilent 6400 Series Triple Quad LC/MS
 - Agilent Stream Selection Valve
- 2 Make all necessary electrical connections.
- 3 Set up the computer and verify that your computer hardware meets the minimum requirements to install and operate as described in the installation instructions for those products.
 - Windows 7 (64-bit)
- 4 Install the following Agilent software, according to the installation manuals for each product.
 - MassHunter Data Acquisition B.06.00 Service Pack 3
 - MassHunter Qualitative Analysis B.06.00
 - MassHunter Quantitative Analysis B.06.00
- 5 Verify that the software installed in Step 4 is operational.

NOTE

A new installation or upgrade of Data Acquisition writes a default **atunes.tune.xml**. Either run Autotune or replace **atunes.tune.xml** with a previously generated tune file in the proper tune folder.

Step 1. Install MassHunter StreamSelect software

- 1 Start Windows.
 - Log in to an account that has administrator privileges.
 - Verify that the MassHunter Data Acquisition program and all MassHunter engines are *not* running.
- 2 Insert the MassHunter StreamSelect System setup disk into the disk drive.
- 3 If Service Pack 3 for MassHunter Data Acquisition B.06.00 is not installed, click **Install MassHunter Data Acquisition B.06.00 Service Pack 3**.
- 4 Install MassHunter StreamSelect Software:
 - a Click **Install MassHunter StreamSelect Software**.
 - b When the Agilent MassHunter StreamSelect Setup dialog box appears, click **Next** to continue.
 - c Read the license agreement. Mark the check box to accept its terms and continue the setup program. Click **Next** to continue.
 - d Click **Install**. Wait for the installation to complete.
 - e Click **Finish** when the MassHunter StreamSelect installation is complete.

Step 2. Install the StreamSelect LC/MS System Hardware

NOTE

APG Remote is *not* used for any MassHunter StreamSelect installation.

- 1 For systems *without* online cleanup:
 - a Follow the layout shown in the next figure:

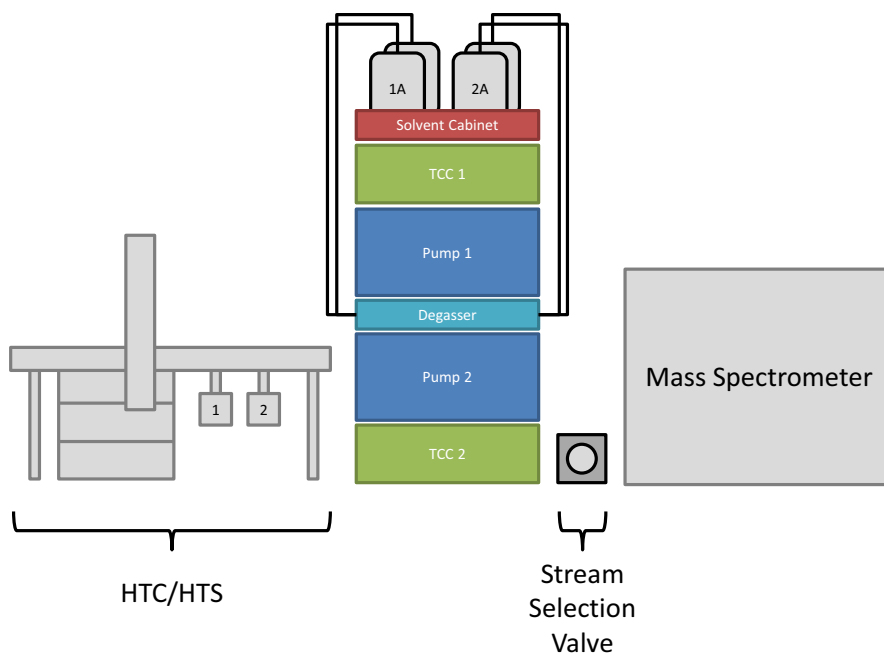


Figure 1 Recommended layout for systems *without* online sample cleanup

Installation and Setup

Step 2. Install the StreamSelect LC/MS System Hardware

- b Make the CAN and LAN connections as shown in the following wiring diagram:

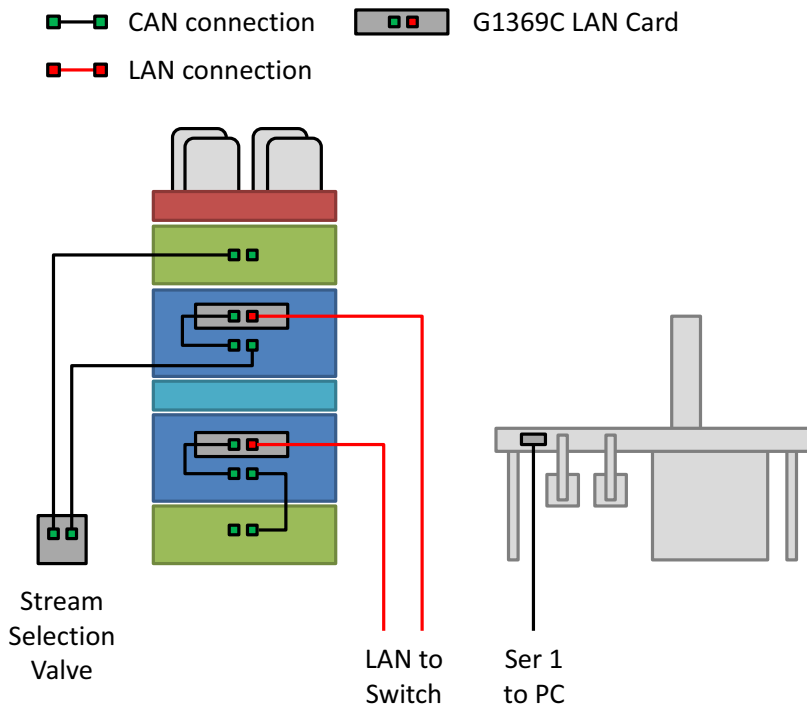


Figure 2 Recommended wiring for systems *without* online sample cleanup

c Make the LC connections according to the following LC flow path diagram.

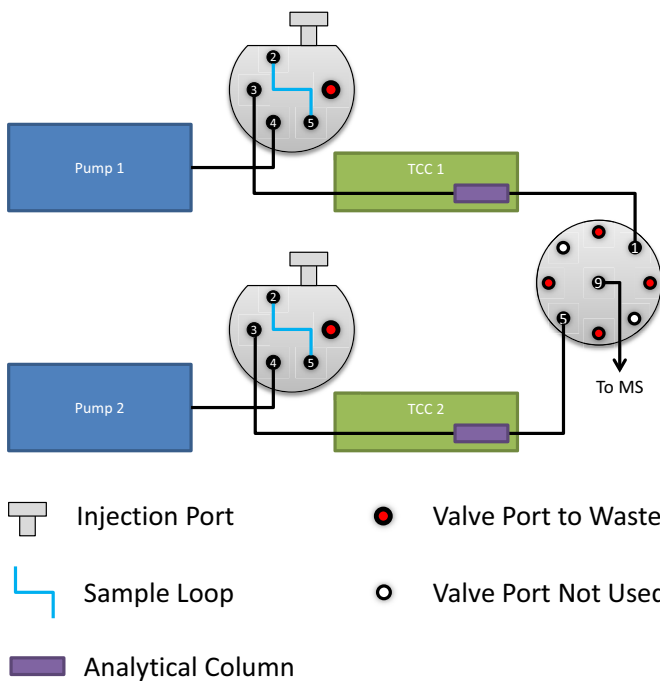


Figure 3 LC Flow Path diagram for systems *without* online sample cleanup

Installation and Setup

Step 2. Install the StreamSelect LC/MS System Hardware

- 2 For systems *with* online cleanup:
 - a Follow the layout shown below:

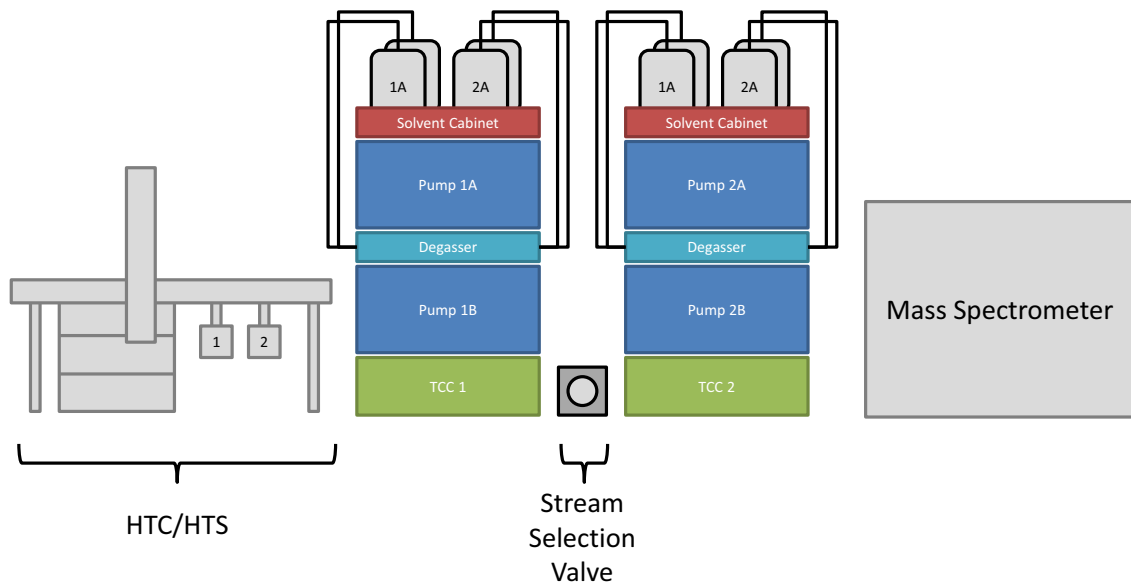


Figure 4 Recommended layout for systems *with* online sample cleanup

Step 2. Install the StreamSelect LC/MS System Hardware

b Make the CAN and LAN connections as shown in the wiring diagram that follows.

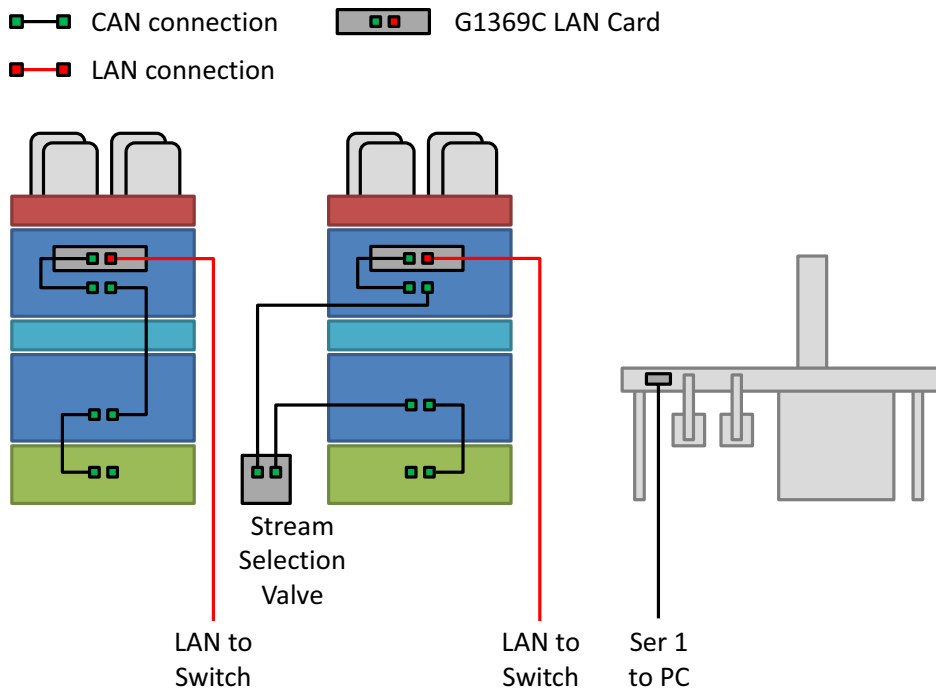


Figure 5 Recommended wiring for systems *with* online sample cleanup

Installation and Setup

Step 2. Install the StreamSelect LC/MS System Hardware

- c Make the LC connections according to the following LC flow path diagram.

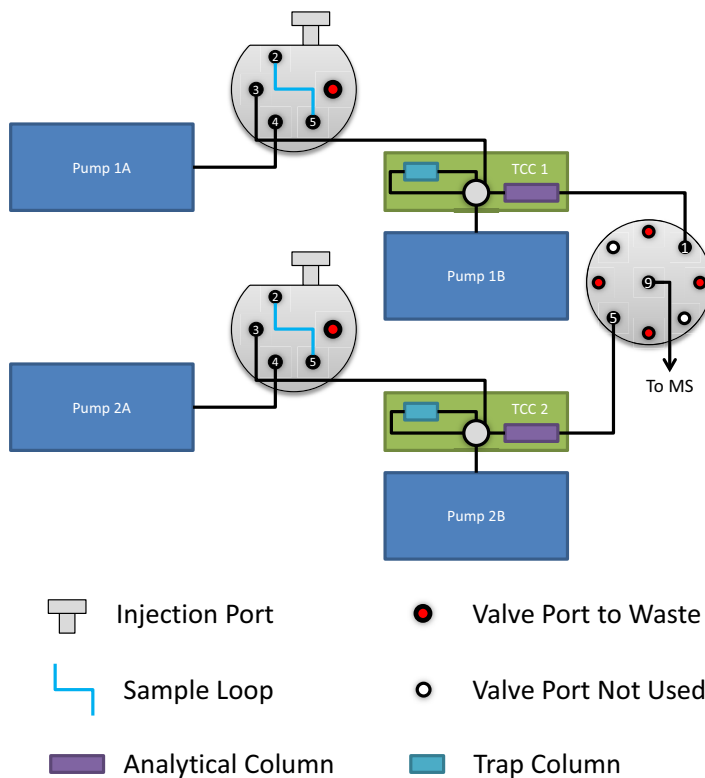


Figure 6 Recommended wiring for systems *with* online sample cleanup

d Make the TCC connections according to the following diagram.

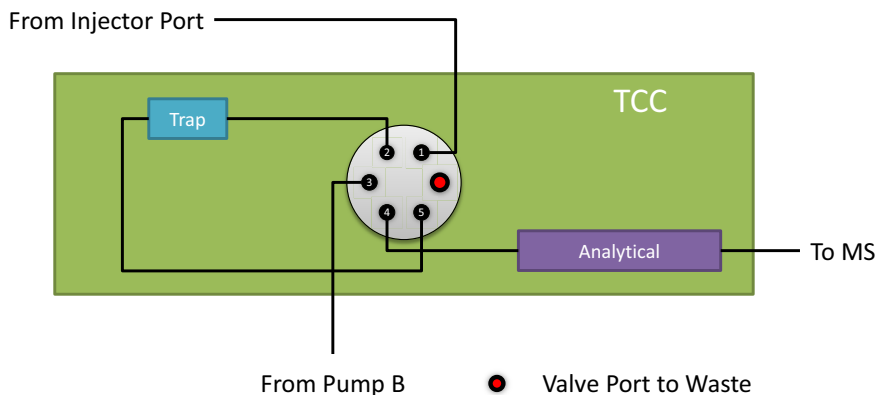
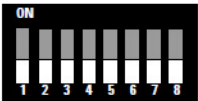


Figure 7 Detailed TCC diagram for systems *with* online sample cleanup

Step 3. Configure the Agilent G1369C LAN Interface Cards

Each LC stream must contain a G1369C LAN card. Each LAN card must be configured with a unique IP address. To change the IP address of the LAN card, do the following steps.

- 1 Verify that the Initialization Mode is set to “Using Default” using the configuration switches.



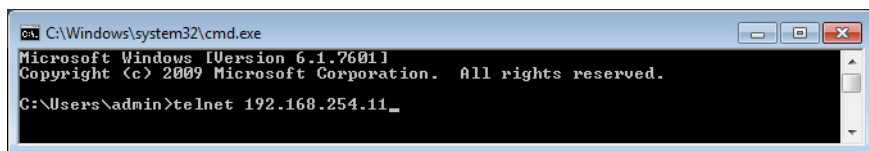
SW 4	SW 5	SW 6	SW 7	SW 8	Init Mode
OFF	OFF	OFF	OFF	OFF	Bootp
OFF	OFF	ON	OFF	OFF	Bootp & Store
OFF	ON	OFF	OFF	OFF	Using Stored
OFF	ON	ON	OFF	OFF	Using Default
ON	OFF	OFF	OFF	OFF	DHCP

NOTE

The configuration switches are set correctly for LAN cards that are ordered from Agilent as an option with the pump. If your LAN card was ordered separately, then the card is shipped with all switches in the OFF position.

- 2 Set the IP address of the card:
 - a With the LAN card installed and the device turned on, open a command prompt: Click the Windows Start button, type cmd in the **Search programs and files** box and press **Enter**.
 - b To start a telnet session, type the following and press **Enter**:

```
telnet 192.168.254.11
```



- c To change the IP address, to 192.168.254.21 for example, type the following and press **Enter**:

```
ip 192.168.254.21
```

```

C:\ Telnet 192.168.254.11
Agilent Technologies TalkToLab
>ip 192.168.254.21_

```

d To verify the change, type / and press **Enter**.

```

C:\ Telnet 192.168.254.21
Agilent Technologies TalkToLab
>/
Product ID       : G1369C
Firmware Rev.   : B.06.52 0001
MAC Address      : 0030d31ff305
-----
Init Mode        : Using Stored
-----
TCP/IP Properties
- Active -
IP Address       : 192.168.254.21
Subnet Mask      : 255.255.255.0
Default Gateway  : not specified
-----
Controller       : 192.168.254.10
>

```

e To save the changes and close the Telnet session, type quit and press **Enter**.

```

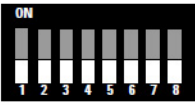
C:\ Telnet 192.168.254.21
Agilent Technologies TalkToLab
>/
Product ID       : G1369C
Firmware Rev.   : B.06.52 0001
MAC Address      : 0030d31ff305
-----
Init Mode        : Using Stored
-----
TCP/IP Properties
- Active -
IP Address       : 192.168.254.21
Subnet Mask      : 255.255.255.0
Default Gateway  : not specified
-----
Controller       : 192.168.254.10
>quit

```

- 3 Power down the module with the LAN card installed and remove the LAN card.
- 4 Change the Configuration Switches to enable the **Using Stored** Initialization Mode.

Installation and Setup

Step 3. Configure the Agilent G1369C LAN Interface Cards

	SW 4	SW 5	SW 6	SW 7	SW 8	Init Mode
	OFF	OFF	OFF	OFF	OFF	Bootp
	OFF	OFF	ON	OFF	OFF	Bootp & Store
	OFF	ON	OFF	OFF	OFF	Using Stored
	OFF	ON	ON	OFF	OFF	Using Default
	ON	OFF	OFF	OFF	OFF	DHCP

- 5 Put the LAN card back in the instrument module and turn on the LC stack.

See *Agilent 1369C LAN Interface Card User Manual (p/n G1369-90002)* for more information.

Step 4. Configure the Instrument



- 1 Click **Instrument Configuration** on the Windows Start menu or desktop.
- 2 Configure the instrument on the Instrument Configuration window.

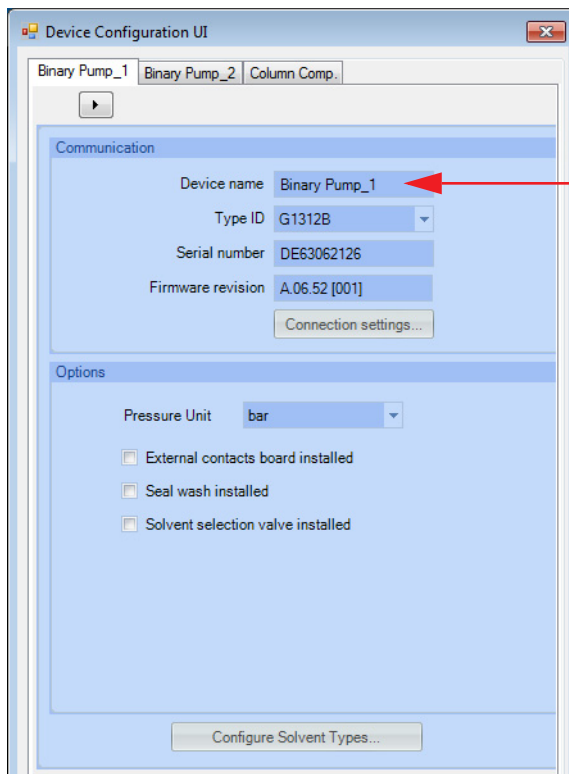
Stream No.	Default	Name	Stream IP	Valve Position	Device Config...
<input checked="" type="checkbox"/> #1	<input checked="" type="radio"/>	LC 1	192.168.254.11	1	Device Config...
<input checked="" type="checkbox"/> #2	<input type="radio"/>	LC 2	192.168.254.21	5	Device Config...

- a You can optionally change the **Instrument name** or accept the default name of **Instrument 1**.
- b Mark the **Stream #1** and **Stream #2** check boxes to enable MassHunter StreamSelect operation.
- c You can optionally change the **Stream Names** or accept the defaults of **LC 1** and **LC 2**.
- d Make sure the Stream IP addresses are unique. See “[Step 3. Configure the Agilent G1369C LAN Interface Cards](#)” on page 12.

Installation and Setup

Step 4. Configure the Instrument

- 3 *Optional.* To rename the devices:
 - a Click the **Device Config** button, which opens the Device Configuration UI dialog box.



For example, on Stream #1, rename “Binary Pump_1” as “Loading Pump 1” and “Binary Pump_2” as “Analytical Pump 1” to make identification of devices easier while using MassHunter StreamSelect.

- b Click **OK** to close the Device Configuration dialog box and return to the Instrument Configuration window.
- 4 When you finish instrument configuration, click **OK** to close the Instrument Configuration window.

Setting Up for Analysis

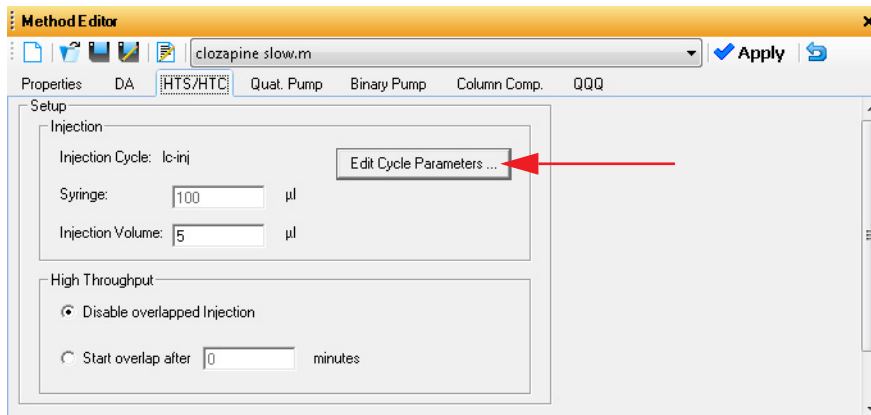
To develop an analytical method using MassHunter StreamSelect

MassHunter StreamSelect methods are developed using MassHunter Data Acquisition on a single LC stream. By default, the software uses Stream #1. To switch to Stream #2, see [step 7](#).

For more information on setting Acquisition method parameters, see the MassHunter Workstation Data Acquisition *online Help*.



- 1 Click **Data Acquisition** on the Windows Start menu or desktop.
- 2 Click the **HTS/HTC** tab in the Method Editor window, and then click **Edit Cycle Parameters**.



Setting Up for Analysis

To develop an analytical method using MassHunter StreamSelect

- 3 In HTS/HTC Edit Cycle Parameters dialog box, select from the list of **Available Cycles** a cycle that ends in “_Streamselect”, as shown in the next figure. Click **OK**.

HTS/HTC: Edit Cycle Parameters

Actual Syringe: µl Injection Volume: µl

Available Cycles:

Syringe:

Description:

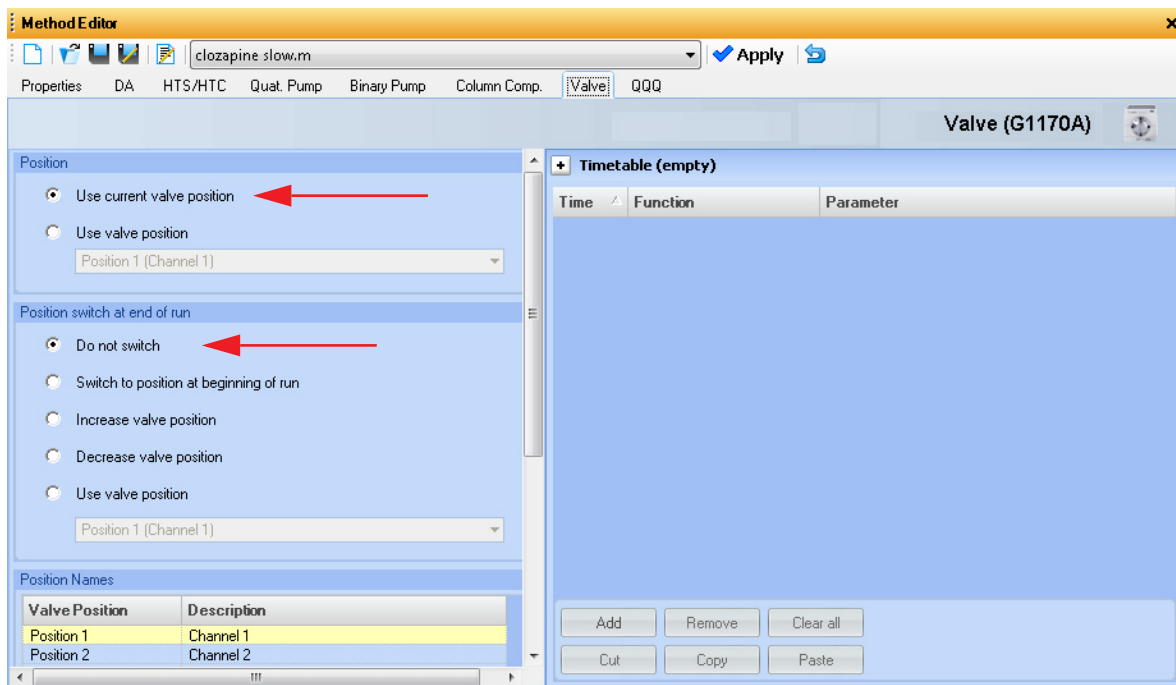
Parameter	Value
Airgap Volume (µl)	3
Front Volume (µl)	5
Rear Volume (µl)	5
Filling Speed (µl/s)	5
Pullup Delay (ms)	3000
Injection Speed (µl/s)	5
Pre Inject Delay (ms)	500
Post Inject Delay (ms)	500
Needle Gap Valve Clean (mm)	3
Valve Clean Time Solvent 2 (s)	3
Valve Clean Time Solvent 1 (s)	3
Post Clean Time Solvent 1 (s)	2

Default All

OK Cancel

4 Click the **Valve** tab in the Method Editor window.

The Valve tab can be renamed in the Device Configuration UI dialog box. If you renamed this tab in “[Step 4. Configure the Instrument](#)” on page 15, the new name is shown for this tab.

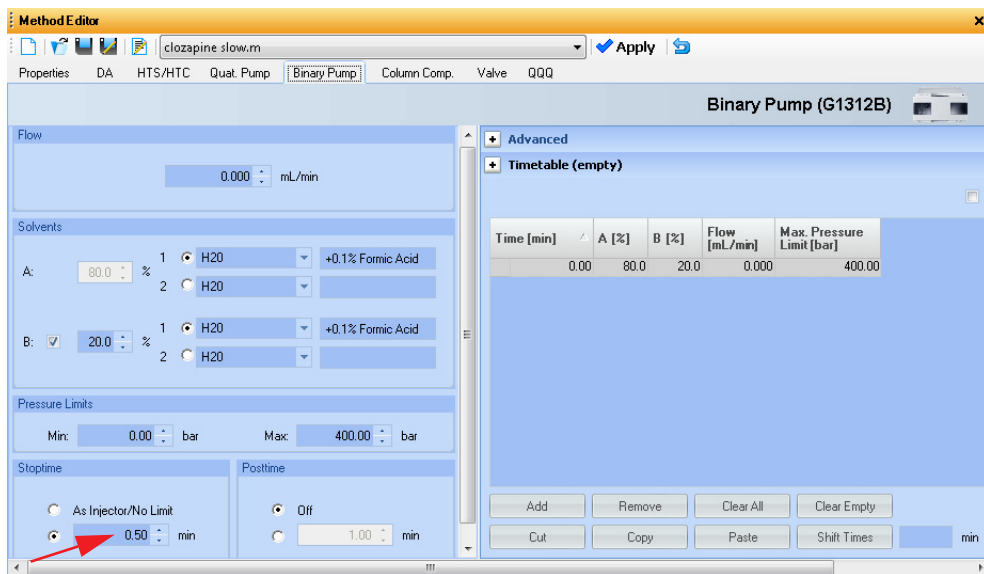


- Under **Position**, select **Use current valve position**. This setting is required so that MassHunter StreamSelect can control this valve properly. Note that the **Valve** tab is available only for LC Stream #1.
- Under **Position switch at end of run**, click **Do not switch**.

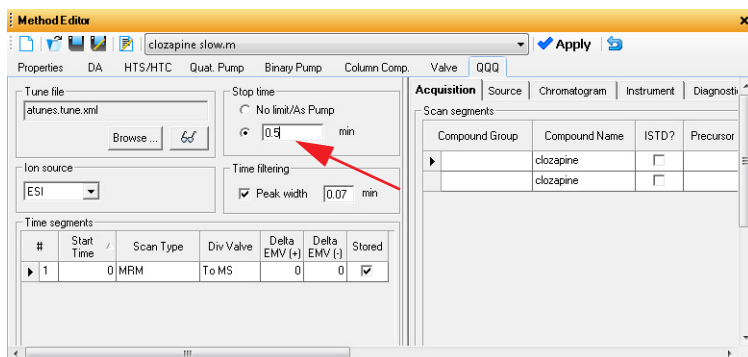
5 Click the **Binary Pump** tab in the Method Editor window.

Setting Up for Analysis

To develop an analytical method using MassHunter StreamSelect

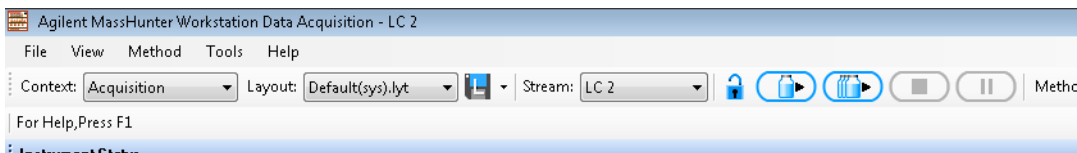


- a Specify a **Stoptime** for the pump as shown in the example above.
- b Click the **QQQ** tab and set the same **Stoptime** for the mass spectrometer. These stop times must match.

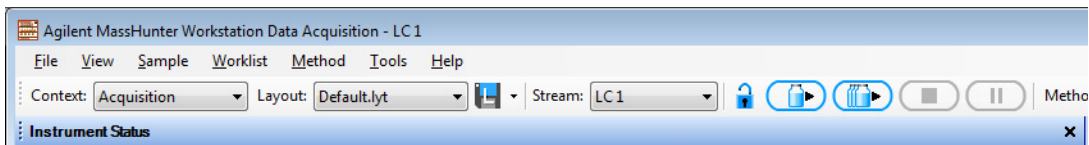


- c Set the **Stoptime** for all other components to the default value of **As Injector/No Limit**.

- 6 Run the method for the sample of interest.
 - d Modify the parameters if necessary.
 - e Save the method.
 - f Close Data Acquisition.
- 7 Confirm the method created for Stream #2:
 - a In the Data Acquisition tool bar, for **Stream**, select the name assigned to Stream #2.



- b Run the method for the sample of interest.
 - c Modify the parameters if necessary and save the method.
 - d Close Data Acquisition.
- 8 Before you start to run samples in MassHunter StreamSelect, change back to Stream #1.



Instead of running the method two times, you can create a worklist in the Worklist Execution context that includes two runs of the same sample with the same method for both streams. Select Stream #1 for one run and Stream #2 for the other. See the *Quick Start Guide* for more information.

To create a MassHunter StreamSelect profile

To simplify daily MassHunter StreamSelect operation, you can create MassHunter StreamSelect profiles for each type of analysis done in your lab. MassHunter StreamSelect profiles are based on representative data collected with MassHunter Data Acquisition as described below.



- 1 Click **StreamSelect Profile Editor** on the Windows Start menu or desktop.
- 2 Click the appropriate icon on the left side of the StreamSelect Profile Editor to display the view of interest.



- 3 Refer to the *online Help* to set method and system parameters, and to configure calibrator maps and data file naming convention.
- 4 Click the **Save** or **Save as** button on the toolbar to save the configuration profile.

The profile that was last opened in StreamSelect Profile Editor is used to acquire data for all batches in the queue in the StreamSelect Console.

To submit batches for analyses, see the StreamSelect *Quick Start Guide* or the StreamSelect Console online Help.

Quick Reference to Starting Up MassHunter StreamSelect Components



To start MassHunter StreamSelect Console

- Click **StreamSelect Console** on the Windows Start menu or desktop. This program lets you submit batches for analysis and view completed batches.



To start MassHunter StreamSelect Profile Editor

- Click **StreamSelect Profile Editor** on the Windows Start menu or desktop.



To start MassHunter Data Acquisition (for method development)

- Click **Data Acquisition** on the Windows Start menu or desktop.



To start MassHunter StreamSelect Instrument Configuration

- Click **Instrument Configuration** on the Windows Start menu or desktop.

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In this Book

The Setup Guide describes how to install and configure the StreamSelect LC/MS System.

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