



SP System

HPFC System



Safety and Quick Start

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Chapter 1

Safety

1.1 Overview

The Biotage SP system should be operated in a fume hood. The optimum operating temperature range is 15°C to 30°C (59°F to 86°F). At least 75 millimeters (three inches) of space should be maintained between the unit's rear panel and other objects to allow proper ventilation.

1.2 Safety Requirements

WARNING

You must observe all recommended safety requirements when installing and operating the Biotage SP system. Failure to install or use the equipment in a manner specified by Biotage may result in personal injury and/or equipment damage. If the equipment has been damaged or does not function properly, shut down the system and contact Biotage immediately (www.biotagedcg.com).

- This Biotage system shall be installed in accordance with the "Unpacking and Installation" document (P/N 09625).
- This Biotage system shall be used in accordance with the instructions found in the "Operator's Manual" (P/N 09628).
- Follow all generally-accepted lab safety procedures and applicable laws and regulations.
- This Biotage system uses solvents. Always use good laboratory practice when handling potentially hazardous substances. Always follow local and national safety regulations and the solvent manufacturer's safety, handling, storage, and disposal recommendations—see solvent manufacturer's MSDS sheets.
- This Biotage system operates using electricity, which can introduce additional hazards with certain solvents if not properly connected, vented, or set up with recommended manufacturer approved settings.
- Use only electrical cords supplied with your system. Electrical cords should be inspected periodically and replaced if damaged or altered. NOTE: The ground prong on the cord plugs must **not** be removed and the plugs should only be connected to grounded outlets as per local and national regulations. Use of adapters that disable the grounding connections to the SP system is dangerous and prohibited.
- Operate the Biotage system in a fume hood and utilize the fume hood's safety features.
- Personnel working with or near the Biotage system must wear protective clothing, safety gear, and eye protection that have been approved by applicable local and national safety regulations.
- Ultraviolet (UV) light can injure your eyes. Do not operate the UV Detector with any of its covers removed.
- Refer to "Safely Starting Up and Shutting Down" on page 1-2 for instructions on pausing, starting up, and shutting down the system safely.
- Lethal voltages are present inside this equipment. Do not remove the covers—there are no user serviceable parts inside. If you believe there is a problem with your system, please call Biotage 1-Point Support immediately (www.biotagedcg.com).
- Never reach into the Collection Arm slot (Figure 1-3 on page 1-4) on the left side of the FLASH Collector. Otherwise, you could be injured by lethal voltages inside the unit or by the Collection Arm motion.

- To avoid being struck by the Collection Arm, keep hands away from the Collection Arm area while the system is starting up (arm will perform homing routine) and while the system is running a purification.
- The FLASH Collector uses double pole fusing. Use only exact replacement fuses. Incorrect fuses create a potential fire hazard.
- To avoid damaging the pump system, use care to ensure that all solvents used with your system are free of particulates. The filters on the solvent inlet lines should be cleaned (sonicated) or replaced every 1000 hours of operation or every 12 months, whichever comes first.
- Follow all maintenance instructions in the "Maintenance" chapter of the "Operator's Manual" (P/N 09628) on the documentation CD (P/N 09624).
- All tubing should be connected according to the diagrams in the "Unpacking and Installation" document (P/N 09625) and checked for leaks before the system is operated.
- Do not connect any accessory to any terminal other than what is specified in the system documentation.
- Before connecting or turning the UV Detector on, set its rear-panel voltage selector switch (Figure 1-2 on page 1-4) to the AC supply voltage used at the installation site.
- To avoid arcing or other electrical hazards, and/or data loss, do not connect or disconnect electrical cords or cables (including mains, 12 VDC and 24 VDC) while the system is turned on.
- To avoid discharge of pressurized solvent from the unit, you must ensure that a compression module is properly installed.
- Never prime the system without a column mounted on the system.

1.3 Safely Starting Up and Shutting Down

This section describes the correct procedures to start up, shut down, pause/resume, and apply/remove power.

Table 1-1: Switch/Button Function Summary

Switch/Button	Location	Function
FLASH Collector power switch. See Figure 1-3 on page 1-4.	On the rear of the FLASH Collector.	Applies and removes AC input power to the FLASH Collector. (In turn, the FLASH Collector supplies DC power to the Pump Module, Flow Path Module, and Touch Screen.)
UV Detector power switch. See Figure 1-2 on page 1-4.	On the rear of the UV Detector.	Applies and removes AC input power to the UV Detector.
System start-up push button. See Figure 1-1 on page 1-4.	On the front of the FLASH Collector.	Used to start up the FLASH Collector's computer. This button does not apply AC input power to the system.
Pause and resume buttons	The Pause button is found in the software's right-hand panel. When the system is paused, the Pause button is toggled to a Resume button.	The Pause button pauses a purification run in progress. The Resume button resumes a run at the point where it was paused.
Shut down button	The Shut Down button is found in the software's main menu. To go to the main menu, press the Main Menu button in the right-hand panel.	Exits to the Windows® XP desktop, which provides access to the Windows Start menu used to shut down the computer.

1.3.1 Starting Up the System

1. Ensure that all liquid lines and electrical cables between the system modules are connected correctly and securely. For details, see the "Unpacking and Installation" document (P/N 09625).
2. Plug in the FLASH Collector power cord and turn on the FLASH Collector. The power switch is located at the rear of the unit. (See Figure 1-3 on page 1-4.)
3. Plug in the UV Detector power cord and turn on the UV Detector. The power switch is located at the rear of the unit. (See Figure 1-2 on page 1-4.)

WARNING

To avoid possible injury and equipment damage, keep your hands out of range of the Collection Arm while the homing routine runs in step 4 below.

4. Press the System start-up push button on the front of the FLASH Collector (Figure 1-1 on page 1-4). The Collection Arm moves through its homing routine and the system boots to the system's main menu.

1.3.2 Pausing and Resuming a Purification Run

WARNING

Keep your hands out of range of the Collection Arm until it has stopped moving (with the Collection Arm in the inner right corner).

1. To pause a purification in progress, press **Pause** in the right-hand panel. Once the current pump stroke finishes, the Collection Arm returns to its home position (the inner right corner) and the system is paused.
2. To resume the run from the point at which it was paused, press **Resume** in the right-hand panel.

1.3.3 Orderly System Shutdown Procedure

An orderly system shutdown helps prevent data corruption. For critical applications, use of a suitable Uninterruptable Power Supply (UPS) may help avoid data loss during a power outage.

WARNING

Failure to perform an orderly system shutdown may result in user data corruption. If possible, avoid shutting down during a purification run.

1. Ensure that your purification run is finished; otherwise, it will be aborted.
2. If you are not at the main menu, press **Main Menu** in the right-hand panel.
3. Press **Shut Down**. The Windows desktop appears.
4. Press **Start** on the Windows task bar. The **Start** menu appears.
5. Press **Turn Off Computer...**. The **Turn off computer** dialog opens.
6. Press **Turn Off**.
7. If you wish to remove power from the system, wait until the Touch Screen (Figure 1-1 on page 1-4) goes blank and then turn off the FLASH Collector (Figure 1-3 on page 1-4) and the UV Detector (Figure 1-2 on page 1-4). The power switches are located at the rear of the units.
8. If desired, unplug the two power cords from their power outlets.

1.4 System Components

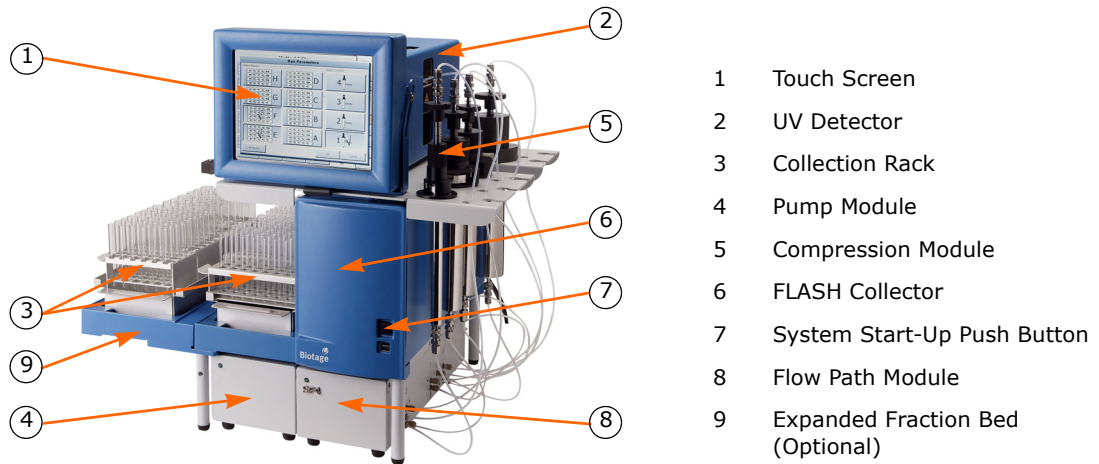


Figure 1-1. System Components

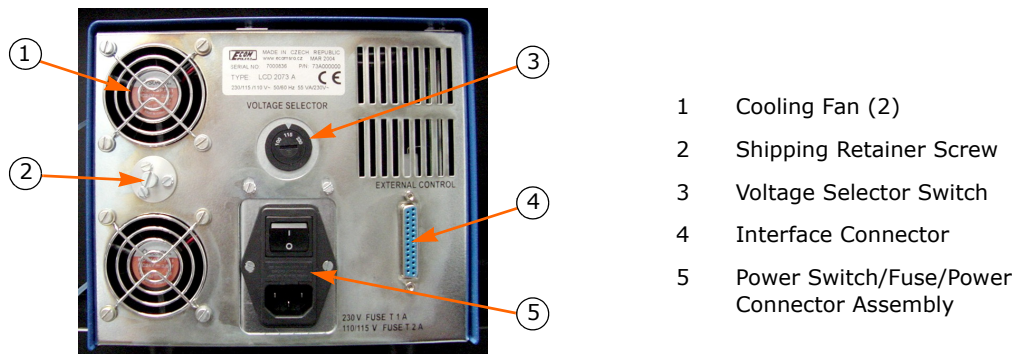


Figure 1-2. UV Detector Rear View (Variable Wavelength Model Shown)

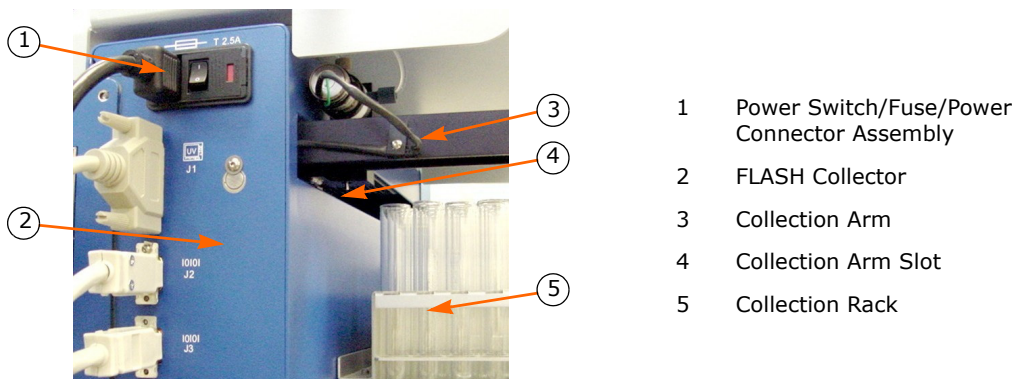


Figure 1-3. FLASH Collector Rear View

Chapter 2

Quick Start

2.1 Overview

WARNING

Before setting up and operating the SP system, please read and observe the safety requirements in the "Safety" chapter. Failure to use the equipment in a manner specified by Biotage may result in personal injury and/or equipment damage.


This quick-start procedure outlines how to program a typical purification run using the method wizard. The wizard will step by step guide you through the setup of a run.

2.2 Prepare the Instrument for the Run

1. Install the compression module, cartridge and collection rack(s) that you want to use (see Figure 1-1 on page 1-4). For connection drawings, see the "Unpacking and Installation" document.
2. Ensure that a sufficient quantity of the correct solvent is present in each solvent reservoir and that the waste reservoir has sufficient capacity for this run.
3. On the Touch Screen, select the **Solvents** tab and ensure that the solvents are assigned accurately to the solvent inlets. To make changes, see the "Operator's Manual".
4. To turn on the UV Detector lamp in advance, select the **Status** tab and press **Lamp On**. The UV Detector lamp should be turned on approximately 7.5 minutes before operation.
5. Ensure that connections are correct and secure.

2.3 Create a Method and Run the Purification

2.3.1 Create a Method using the Method Wizard

1. Using standard TLC procedures, determine the appropriate solvents and composition for the purification.
2. Select the **Method** tab and press **Wizard...** The method wizard opens.
3. Read and follow the instructions that appear in the wizard. For help to select block type, see "Rack Selection Table" on page 2-2.)
4. If you want to save the method and reuse it in the future:
 - a. Press **Save to Editor**.
 - b. Press **Save....** The **Create Method?** dialog opens.
 - c. To confirm save, press **Yes**. If your user account is password-protected, the **Enter Password** dialog opens. Enter your password using the keypad, and then press **OK**.
5. To run a purification run using the method, press the  button.
6. In the **Run Parameters** dialog, select/press the collection block(s), and, if using an SP4 system, the column to be used. "Check mark" = the block is selected. (If the option Collect In All Blocks (SP1 systems) or Automatic Block Allocation (SP4 systems) is turned on, you will not be able to select collection block(s) to be used.)
7. To proceed, press **OK**. The **Columns** tab is selected.

Rack Selection Table

SP Systems (One Collection Rack)

Rack Type	Vessel D x L, mL	FLASH Cartridge Type (CV in mL)									
		12+S (6)	12+M (12)	25+S (24)	25+M (48)	40+S (66)	40+M (132)	75S (300)	65i (470)	75M (500)	75L (1000)
BLK-013	13 x 100 mm, 9 mL				2	3					
HRAK-013	13 x 100 mm, 9 mL			2	3	3					
BLK-016	16 x 100 mm, 12 mL				2	3					
HRAK-016	16 x 100 mm, 12 mL				2	3					
BLK-116	16 x 150 mm, 21 mL				2	2	4	8			
QRAK-016	16 x 150 mm, 21 mL				2	3					
HRAK-017	17 x 125 mm, 18 mL				2	3					
BLK-018	18 x 150 mm, 27 mL					2	3	6			
QRAK-018	18 x 150 mm, 27 mL				2	3					
BLK-025	25 x 150 mm, 51 mL					2	3	6			
QRAK-025	25 x 150 mm, 51 mL					2	3	6			
HRAK-120	120 mL					2	3	5	8	9	17
HRAK-240	240 mL						2	4	6	7	13

SP EXP Systems (Two Collection Racks)

Rack Type	Vessel D x L, mL	FLASH Cartridge Type (CV in mL)									
		12+S (6)	12+M (12)	25+S (24)	25+M (48)	40+S (66)	40+M (132)	75S (300)	65i (470)	75M (500)	75L (1000)
BLK-013	13 x 100 mm, 9 mL				2	3	6				
HRAK-013	13 x 100 mm, 9 mL			2	3	3	6				
BLK-016	16 x 100 mm, 12 mL				2	3	5				
HRAK-016	16 x 100 mm, 12 mL				2	3	6				
BLK-116	16 x 150 mm, 21 mL				2	2	4	8			
QRAK-016	16 x 150 mm, 21 mL				2	3	5				
HRAK-017	17 x 125 mm, 18 mL				2	3	5				
BLK-018	18 x 150 mm, 27 mL					2	3	6			
QRAK-018	18 x 150 mm, 27 mL				2	3	5				
BLK-025	25 x 150 mm, 51 mL					2	3	6			
QRAK-025	25 x 150 mm, 51 mL					2	3	6			
HRAK-120	120 mL					2	3	5	8	9	17
HRAK-240	240 mL						2	4	6	7	13

	Requires 1 block of this type, based on 12 CV gradient in "Collect All" mode.
	Requires multiple blocks of this type, based on 12 CV gradient in "Collect All" mode. (See the number of blocks in the table.)
	Rack change required during the run, based on 12 CV gradient in "Collect All" mode. (See the number of blocks in the table.)
	Not recommended.

2.3.2 Start the Equilibration and/or the Run

WARNING

If you at any time during a purification run need to pause the system, press the Pause button in the right-hand panel. Once the current pump stroke finishes, the Collection Arm returns to its home position (the inner right corner) and the system is paused. To resume operation, press the Resume button.

8. To start the equilibration step (if available), press **Equilibrate** at the **Columns** tab.
9. Prepare the sample for injection.

10. When the **Load Sample** button at the **Columns** tab is enabled, introduce the sample onto the cartridge using a Samplet, a ZIF-SIM, or direct injection. To open the injection valve:
 - a. Press **Load Sample**. The **Load Sample** dialog opens.
 - b. Introduce the sample onto the cartridge through the injection valve. (The loading state will time-out after approximately 15 minutes and the **Load Sample** dialog is then closed.)
 - c. When you have finished loading the sample, press **OK** in the **Load Sample** dialog.
11. To start the purification run, press **Run Gradient**. Note that the run is not started until the UV lamp is sufficiently warmed up.
12. If you have set up a purification run with manual collection, you can at any time instruct the system to start collecting fractions by pressing **Start Collecting** at the **Status** tab. The system will fill each collection vessel according to the defined max fraction volume. To stop collecting fractions, press **Stop Collecting**.

2.3.3 Load New Blocks During the Run

If more fractions are to be collected than can fit in the allocated block(s), the system pauses, the Collection Arm returns to the home position (the inner right corner), and the **Load New Block(s)** dialog opens. Replace the block(s) according to the dialog and press the **Resume** button to resume the run. The collection is resumed in the first vessel in the lowest lettered block that you selected. For example, if you selected blocks B and C, the collection is resumed in block B in vessel 1.

2.4 Monitor the Run and Access the Result Record

2.4.1 Monitor the Run

Select the **Status** tab in the right-hand panel. While a purification is running, the graph displays the programmed gradient and a dynamic chromatogram.

By pressing the **Rack/Information/>>>** field repeatedly, you can toggle between displaying a rack image, an information view and hiding the field (to expand the chromatogram).

2.4.2 Access the Result Record

To search for a record:

1. Select the **Results** tab in the right-hand panel.
2. Press the **Result Filters** field. The **Filter Parameters Editor** opens.
3. Specify the filter parameters. (If you want to list all result records, press **Clear All**.)
4. To search, press **OK**. If there are records matching your filter parameters, they are listed in chronological order at the **Results** tab. If more records are found than can be displayed at one time, use the ▲ and ▼ buttons to scroll through the records.

To view and/or print a record:

1. At the **Results** tab, select the record that you want to view and/or print.
2. Press **Show**. A result dialog with purification details and a chromatogram for the selected record opens.
3. To print the record, press **Print**. The report is sent to the system's default printer (if installed).

2.5 More Information

For a complete list of system features and instructions, see the "Unpacking and Installation" document (P/N 09625), the "Operator's Manual" (P/N 09628) and the online help (press the **Help** button).