Biotage Flash Purification Systems

Pure Compounds in a Flash

Biotage®

Flash Purification Systems

CONTENTS

Pioneers of Flash Purification

Biotage, pioneers of flash purification, have a proven record of innovation that began twenty years ago with the development of the first packed flash columns and first microprocessor controlled purification systems.

The pioneering works of Biotage continues to this day with the introduction of the Isolera™ Dalton, the world's first truly automated mass-directed flash purification system, and Biotage® SNAP Ultra flash columns, capable of unparalleled sample loading options and outstanding performance compared to standard flash columns.

Your partner for purification

This brochure presents the extensive range of instrumentation for flash purification from Biotage. To complement these products Biotage also offers a complete range of flash consumables, including columns in a variety of sizes packed with irregular and spherical silica, making Biotage your one-stop partner for your flash purification needs. The extensive range of flash columns includes:

- Spherical silica – Snap Ultra and Biotage® ZIP Sphere columns containing high surface area spherical particles for increased loading, reduced solvent use and highest performance on the market
- Irregular silica – Biotage® SNAP and ZIP columns for routine purifications and robust, reliable performance.
- SNAP – Seven flexible loading options for the most versatile sample introduction capabilities on the market.
- ZIP – Simple column design for easy, no fuss purification.

Biotage Flash Purification Systems Overview

Spend Your Time Creating Compounds, Not Purifying Them

System	Description	Key Features
Isolera™ Dalton 	Top of the range chromatography system with mass-directed purification and the most powerful market leading software	» Integrates mass identification with flash purification
Isolera™ Spektra 	Advanced software upgrade for Isolera™ One, Four and LS.	» TLC-to-Step gradient calculator » Photodiode array detects simultaneously at all wavelengths » Baseline correction » 3D chromatogram
Isolera™ Spektra One 	Fully automated chromatography system	» Variable/two wavelength UV detection » Ideal for one or two users » Purifies milligrams to 75 grams
Isolera™ Spektra Four 	Four-cartridge chromatography system	» Multi-user capacity with four cartridges in a sequence » Two wavelength/ variable UV detection » Purifies milligrams to 75 grams
Isolera™ Spektra LS 	Fully automated chromatography system for automated purification of up to 500 grams	» Built in sample load pump » Purifies up to 500 g

System	Description	Key Features
Isolera™ Prime 	Entry level chromatography system	» Robust fully automated system with basic features
Isolera™ ELSD-1080 	Evaporative light scattering detector	» Highly sensitive » Useful for compounds not visible in UV » Detects compounds that don't fly by mass spectrometry methods
Biotage® Flash 75 and Flash 150 	The original semi-automated system for large scale flash purification	
Biotage® Flash 400 	Process scale flash purification for kilogram quantities of materials.	» Approved for use in cGMP » explosion proof » ATAC compliance » Normal and reversed phase or custom packing available

Flash Chromatography by Biotage

Speed, Purity and Resolution

Isolera™ Spektra flash chromatography instruments are simply the most technologically advanced flash purification systems available. They demonstrably separate more pure compounds in less time from synthesis reaction mixtures, natural product extracts and other mixes of organic compounds.

The Biotage Approach to Flash Chromatography

Our customers routinely perform the most challenging chromatographic separations typically reserved for the most expensive high pressure systems. Time for separation can be reduced by at least 50%.

How it's Done

- 2 x increase in loading capacity
- 2 x increase in flow rate
- Chromatography focused on compound of interest

Isolera™ Flash Chromatography Systems recommend appropriate cartridge size based on the sample. Solvent use is minimized with optimized gradients, and advanced compound detection makes sure that your purified compound is delivered at the end of the run.

Biotage Flash Cartridges are the highest loading, lowest back pressure cartridges available. Our silica and packing techniques minimize fines (small pieces of silica) in the cartridges. When fines are removed, solvent flows freely through the media, exerting less back pressure allowing higher flow rates. Our proprietary HP-Sphere silica has 50% higher loading capacity than standard silicas.

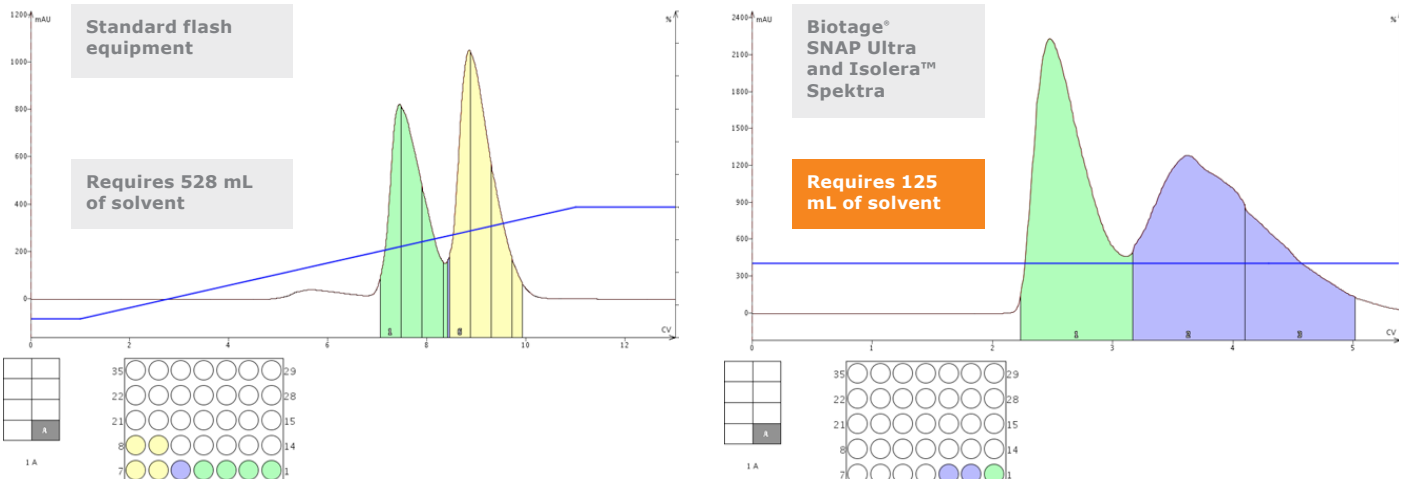


Figure 1. Methyl and butyl paraben were separated using standard equipment (left) target fractions, using 528 mL solvent – and with Biotage® SNAP Ultra with Isolera™ Spektra (right), using only 125 mL solvent.

Superior Results with Biotage Flash Cartridges

'Forget the 1% rule.' Chemists all start with the rule of thumb, "I need 100 grams of silica to purify 1 gram of material". But with Isolera and a single TLC plate result you can save time and solvent because, the right sized cartridge is recommended.

Method Editing

Isolera methods are created based on your needs. When you have 100 mg or less sample and don't want to run a TLC, you simply open a default method and press run. If you have more than 100 mg, separations can take more than 30 minutes and consume a liter or two of solvent. In that case you can prepare a single TLC and use our TLC to gradient capability to compute the ideal cartridge size and gradient slope. For larger quantities, to cut further purification time, and use the minimum amount of solvent, Isolera Spektra systems uses the data from two TLC plates.

Methods can easily be edited either on the touch screen or remotely from the comfort of your office. Edit the gradient (click & drag points and segments), flow rate, collection volume, fraction wavelengths and modes, and add more collection racks if you need to – all while the run is in progress.

Figure 2. The Isolera™ is fully compatible with Biotage® SNAP, Biotage® SNAP Ultra, ZIP® and Biotage ZIP® Sphere cartridges.

Advanced Solvent Management Options

Ever had to add a modifier to your solvents to improve solubility or alter pH to improve separations? Isolera One and Four systems allow the isocratic introduction of a third solvent, effectively blending the modifier into the mobile phase at a constant rate throughout the chromatographic separation. Say for example you need to add 5% of a base to improve your separation. With Isolera, you simply enter the solvent blend and drop a pick up tube into your base solvent. Later if you find that a 3% blend is better, just enter a new value, it's that easy.

You can also use up to four solvents in a single gradient to easily purify samples with diverse polarity. With this quattro-binary gradient capability, traditional binary gradients with limited polarity can be adjusted quickly to additionally elute very lipophilic and highly polar compounds within a single purification.

Isolera™ Spektra One

System	Isolera Spektra One
Solvent Delivery	Two constant volume (3 mL) electric HPFC pumps
Flow Rate	1–200 mL/min
Pressure Limit	145 psi (10 bar)
Sample Interval	Milligrams–75 grams
UV Detection	Choice of variable wavelength (200–400 nm), fixed (254 nm), or UV-VIS (200–800 nm) detectors
Flow Cell Path Length	0.3 mm
UV Collection Modes	Single/dual/λ-All wavelengths (variable UV and UV-VIS)
Fractionation Modes	Volume, threshold, threshold with volume, low slope, medium slope, custom slope or via external detection
Collection Vessels	Test tubes (13 mm, 16 mm, 18 mm, and 25 mm) and bottles (120 mL, 240 mL, and 480 mL)
Power	100–240 VAC, 50/60 Hz, 4.0 A
System Control & Data Management	On-board computer with 10.4” capacitive touch screen interface
Dimensions (W x H x D)	355 mm (14”) x 596 mm (23.5”) x 497 mm (19.6”). Add 178 mm (7”) with EXP
Weight	30–35 kg (66–77 lbs)
Certifications	CE, cTÜVus

Isolera™ Spektra Four

Isolera Spektra Four
Two constant volume (3 mL) electric HPFC pumps
1–200 mL/min
145 psi (10 bar)
Milligrams–75 grams
Choice of variable wavelength (200–400 nm), fixed (254 nm), or UV-VIS (200–800 nm) detectors
0.3 mm
Single/dual/λ-All wavelengths (variable UV and UV-VIS)
Volume, threshold, threshold with volume, low slope, medium slope, custom slope or via external detection
Test tubes (13 mm, 16 mm, 18 mm, and 25 mm) and bottles (120 mL, 240 mL, and 480 mL)
100–240 VAC, 50/60 Hz, 4.0 A
On-board computer with 10.4” capacitive touch screen interface
355 mm (14”) x 596 mm (23.5”) x 497 mm (19.6”). Add 178 mm (7”) with EXP
30–35 kg (66–77 lbs)
CE, cTÜVus

Isolera™ Spektra LS

Isolera Spektra LS

HPFC pumps
50–500 mL/min
145 psi (10 bar)
–
Choice of variable wavelength (200-400 nm) or UV-VIS (200–800 nm) detector
0.3 mm
One, two or all wavelengths
Volume, threshold, threshold with volume, low slope, medium slope, custom slope or connect external detector
Test tubes (17.5 mm, 18 mm and 25 mm) and bottles (120 mL, 240 mL, and 480 mL)
100–240 VAC, 50/60 Hz, 4.0 A
On-board computer with 10.4” diagonal touch screen interface
577 mm (22.7”) x 596 mm (23.5”) x 497 mm (19.6”)
30–35 kg (66–77 lbs)
CE, cTÜVus

Isolera™ Prime

Isolera Prime

Constant volume electric HPFC pump
5–100 mL/min
145 psi (10 bar)
–
Choice of variable dual-wavelength (200–400 nm) or fixed (254 nm) detector
0.3 mm
Single wavelength, Dual wavelength (variable UV)
Volume, threshold, threshold with volume, low slope, medium slope, custom slope
Test tubes (13, 16, 18 and 25 mm) Bottles (120, 240 and 480 mL)
100–240 VAC, 50/60 Hz, 4.0 A
On-board computer with 10.4” diagonal touch screen interface
355 mm x 596 mm x 497 mm (14 in. x 23.5 in. x 9.6 in.)
30 kg (66 lbs.)
CE, cTÜVus

The Isolera™ Dalton Nanolink automatically handles all liquid flows between the Isolera system and the Dalton Mass Detector.

Biotage® Isolera™ Spektra are the most advanced flash chromatography systems available.

Includes syringe port for direct injection of reactor content.

Small footprint fits in a regular fume hood.

Internal vacuum pumps with 30 minute pump down time.

The Isolera™ Dalton Mass Detector contains a miniaturized mass analyzer optimized for use in flash chromatography, providing instant confirmation of the collected fraction's mass.

The mass fractions targeted by the user are collected directly on purification.

Isolera™ Dalton

Flash Chromatography with Integrated Mass Identification

Be sure you have your target compound the moment your fraction is collected. Isolera™ Dalton integrates the Biotage approach to flash chromatography with true compound identification using mass detection.

Isolera™ Dalton is the most advanced and innovative purification system available, designed by people who understand flash purification and the chemists who need it.

Streamlined Workflow

Isolera Dalton identifies compounds by mass in real time and collects fractions during flash separation, leading to greater confidence in purification, higher purity, greater recovery, and a significant saving in time. Complex off-line analytical steps are removed from the workflow, vastly increasing throughput placing control of purification and analysis in the hands of chemists.

Reaction Monitoring

Reaction aliquots can be injected directly into Isolera Dalton Nanolink to screen target masses. Data are transferred directly to the flash method for mass directed purification.

Tailored Technology

Our mass detector is scaled in an unparalleled way for flash purification, creating a system that brings these technologies together for the first time. Minimal user intervention is required making it available to chemists whose priorities lie in chemistry rather than analysis.

Specifications

Dimensions (W x D x H)	Isolera™ Dalton Mass Detector: 35.5 x 56 x 25 cm Isolera™ Dalton Nanolink: 35.4 x 52.5 x 21 cm Isolera™ Dalton system: 85 x 59 x 62 cm
Weight	Isolera™ Dalton Mass Detector: 32 kg Isolera™ Dalton Nanolink: 10 kg Isolera™: 35 kg Isolera™ Dalton system: 77 kg
Mass Analyzer	Miniaturized single quadrupole
Ionization Source	Chip based electrospray ionization
Detection Range	m/z 80–800
Mass Accuracy	± m/z 0.5 in full scan in a temperature controlled environment, ±3 °C
Mass Resolution	m/z 0.7 ±0.1 FWHM in full scan in a temperature controlled environment, ±3 °C
Sampling Adjustment	Automatic
Start-up Time	30 minutes*
Vacuum Pumps	Fully integrated
Control Interface	Isolera™ Spektra
User Serviceable Parts	Spraychip® (chip based ESI source) Vac-chip™ (micro-engineered atmospheric pressure interface)
Compatible Systems	Isolera™ Spektra flash Chromatography systems
Gas Requirement	2–6 bar N_2
Gas Consumption	2.5 L/min
Power Requirement	100–240 V AC; 50–60 Hz
Power Consumption	320 VA (Dalton Detector) 130 VA (Dalton Nanolink)
Certifications	CE, cTÜVus

*Includes pump-down to vacuum.

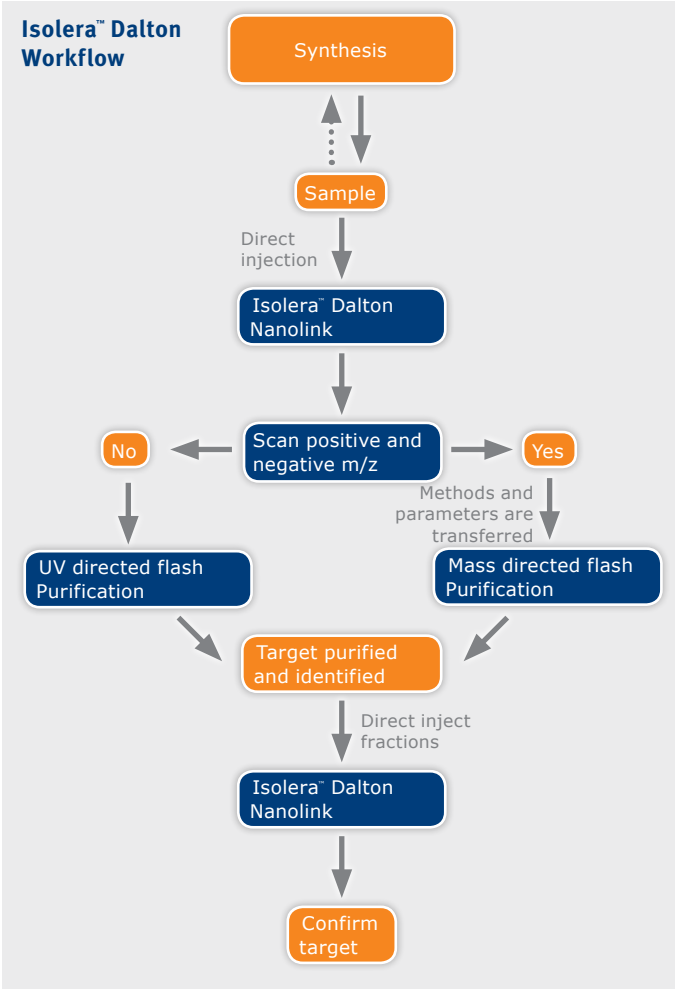


Figure 3. Isolera™ Dalton workflow model. After filtration, samples can be injected directly into the Isolera™ Dalton Nanolink for mass identification, either for m/z targeting or fraction confirmation.

The Isolera™ Dalton Mass Detector uses a chip-based electrospray system with a miniaturized quadrupole and internal vacuum pumps, allowing the system to easily fit in a fume hood.

Intelligent Integration

Seamless interaction between a flash system and a mass detector requires advanced technology. This is all taken care of by the Isolera™ Dalton Nanolink interface, an intelligent sampling device that at any given moment provides the Dalton Mass Detector with the exact amount of material required. Dalton Nanolink automatically adjusts to changes in flow rate when different types or sizes of flash cartridge are used.

Figure 4. Isolera™ Dalton Nanolink ensures the Dalton Mass Detector gets precisely what it needs in order to monitor the masses of purified fractions in real time.

Advantages

- Works with normal phase and reversed phase solvents
- Compound identification by mass during purification and by direct injection
- Fully automated integration of flash purification and mass detection via Isolera™ Dalton Nanolink
- Automatically accommodate different flash flow rates
- Simple wizard-based approach to method development
- Compact system with miniaturized mass detector, easily fits inside a fume hood with no external pumps

Isolera™ Spektra

The Most Advanced Flash Purification Software

Isolera™ Spektra is a software upgrade package available for Isolera One, Four and LS, with advanced features that are only found on the world's most expensive high-end chromatography systems. Paired with Isolera Dalton, Isolera Spektra opens up new dimensions in automated flash systems.

Gradient Prediction

Time for purification is reduced by 20 to 50% with Isolera™ Spektra TLC-to-Step gradient function that uses in TLC data and calculates an optimal elution method. The resultant simulation can be edited on the touch screen to target a specific peak (Figure 1), shortening the purification.

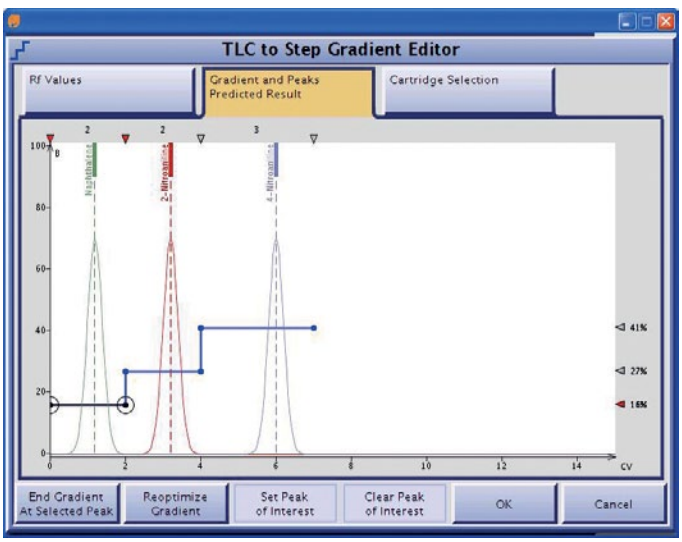


Figure 5. The Isolera Spektra estimates the first compound will elute between 1 and 2 column volumes (CV), the second between 3 and 4 CV, and the third around 6 CV with a total run time of 8 minutes and 45 seconds.

Recommends the Optimal Flash Cartridge

Once the gradient is established, the system will suggest the cartridge that best fits the conditions and sample size, considering purification speed and estimated solvent volumes.

Advanced λ-All Detection

Many compounds being purified have an unknown absorbance. The Isolera™ Spektra λ-All function (Figure 6) records all available wavelengths for compound detection and sums the responses to maximize sensitivity and minimize sample loss.

Baseline Correction

Many chromatographic solvents absorb UV light. Isolera Spektra uses advanced real gradient zeroing for baseline correction to eliminate background shifts (Figure 8). Using all wavelengths for detection with a gradient can lead to a rising baseline which will interfere with compound detection and cause inaccurate fraction collection

Digging Deeper With PDA Spectral Analysis

Biotage Isolera Spektra systems brings Photodiode Array (PDA) detection to flash chromatography for the first time. The full spectrum for each compound can be seen as it elutes from the cartridge – in real-time. This information can be used to confirm purity and compound identity.

All spectra are stored and can be reviewed in 2D to verify fraction purity. Post fraction thin layer chromatography (TLC) to determine which fractions contain pure compound can be eliminated.

3D Graphics Complete the Picture

Identify impurities by taking advantage of the PDA 3D chromatogram display (Figure 7). Chemists can view the chromatogram in terms of both elution volume and UV absorbance which provides even more purity confirmation.

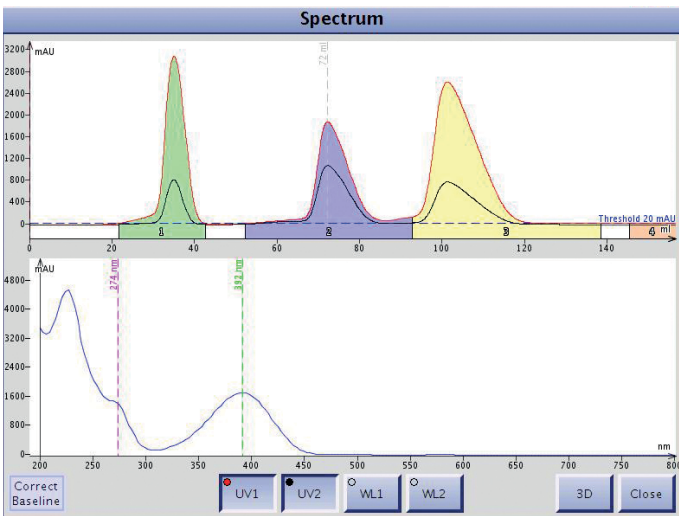


Figure 6. Peak UV maxima and purity can be verified just by moving a cursor over the peak. If the spectrum below remains consistent, the fraction is pure. This eliminates TLC to determine purity, which can save up to 1.5 hours a day.

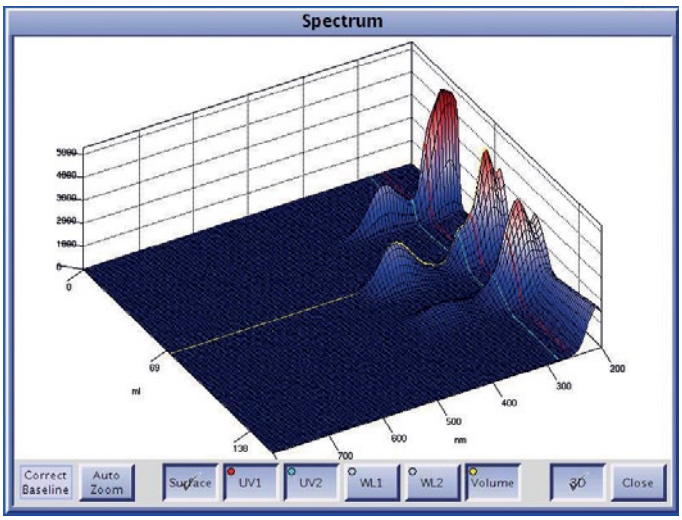


Figure 7. With Spektra, chemists can view the chromatogram in 3D, showing the UV spectra at each point during a run lined up after each other. The graph can be rotated and viewed from all angles.

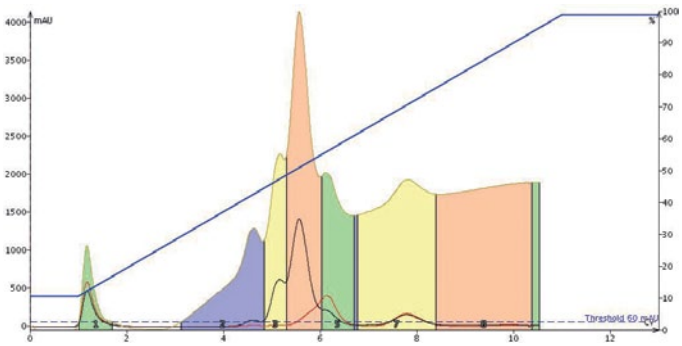


Figure 8 a). A spinach extract purified with heptane/ethyl acetate using λ-All without baseline correction. The rising baseline causes more solvent to be collected, diluting collected fractions.

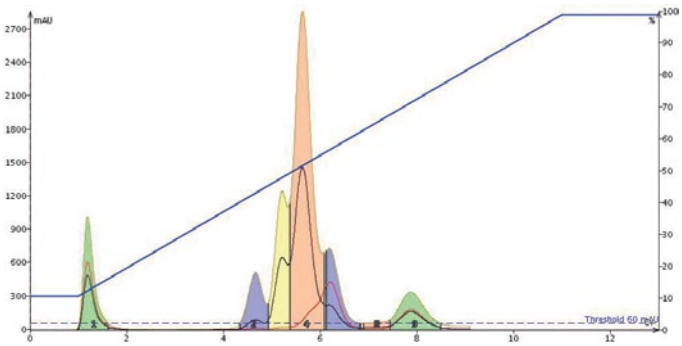


Figure 8 b). The same spinach extract using λ-All with baseline correction provides maximum concentration fractions and uses fewer test tubes.

Use the TLC-to-gradient feature for optimal purification.

High-capacitive screen with fast and accurate response.

A wide range of removable racks accommodates all lab needs.

Convenient solvent bottle rack utilizes up to four 4 L bottles.

The built-in UV detector provides targeted fraction collection.

Quatro-binary gradient capability resolves complex sample mixtures.

Isolera™ Spektra One and Four

Advanced Purification in Compact Systems

The Isolera™ flash purification family is designed to help purify synthetic reaction mixtures, natural product extracts and other mixes of organic compounds. Isolera One is a single cartridge system, and the 4-cartridge system of Isolera Four is ideal for multi-user or high-throughput laboratories.

Isolera™ methods can easily be edited either on the touch screen or remotely from the comfort of your office. Edit the gradient (click & drag points and segments), flow rate, collection volume, fraction wavelengths and modes, add more collection racks if you need to – all while the run is in progress.

Combined with the powerful features in the Isolera Spektra software (see page 8), Isolera One and Four can perform advanced chromatography typically reserved for the most expensive or bespoke customized systems on the market.

For example: PDA scanning and λ-All technology detects any UV absorbing compound eluting from a flash cartridge while measuring and displaying each eluting compound's full UV spectrum. With the novel baseline correction, yield losses to sub-optimal wavelength selection and large fraction volumes are no longer a concern. The PDA spectrum can also be reviewed and used to determine fraction purity eliminating the need for post-flash purity analysis.

Quattro-Binary Gradient / Powerful Solvent Modifier

Use up to four solvents in a single gradient to easily purify samples with diverse polarity. With this quattro-binary gradient capability, traditional binary gradients with a limited polarity range can be adjusted to elute very lipophilic and highly polar compounds within a single purification.

Specifications

Solvent Delivery	Two constant volume (3 mL) electric HPFC pumps
Flow Rate	1–200 mL/min
Pressure Limit	145 psi (10 bar)
Sample Interval	Milligrams–75 grams
UV Detection	Choice of variable wavelength (200–400 nm), fixed (254 nm), or UV-VIS (200–800 nm) detectors
Flow Cell Path Length	0.3 mm
UV Collection Modes	Single/dual/λ-All wavelengths (variable UV and UV-VIS)
Fractionation Modes	Volume, threshold, threshold with volume, low slope, medium slope, custom slope or via external detection
Collection Vessels	Test tubes (13 mm, 16 mm, 18 mm, and 25 mm) and bottles (120 mL, 240 mL, and 480 mL)
Power	100–240 VAC, 50/60 Hz, 4.0 A
System Control & Data Management	On-board computer with 10.4" capacitive touch screen interface
Dimensions (W x H x D)	355 mm (14") x 596 mm (23.5") x 497 mm (19.6"). Add 178 mm (7") with EXP
Weight	30–35 kg (66–77 lbs)
Certifications	CE, cTÜVus

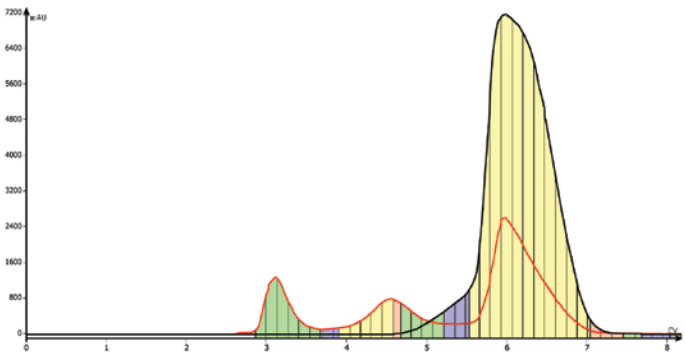


Figure 9. Fractionation using two wavelengths ensures collection of UV absorbing compounds at both wavelengths avoiding needlessly filling all fraction tubes with product and solvents.

Ternary Co-Solvent

Isocratically pump a third solvent into any binary gradient to help maintain compound solubility and eliminate potential overpressure from precipitating compounds.

Superior Results With Biotage Flash Cartridges

The Isolera™ Spektra One and Isolera Spektra Four systems are compatible with SNAP, SNAP Ultra, ZIP and ZIP Sphere cartridges, from 5 g to 750 g sizes (1500 g for Isolera LS).

Key Features

- TLC-to-Step gradient
- Gradient Optimization reduces solvent by up to 60%
- Real-time PDA scanning
- 2D and 3D spectral analysis
- Optimized for Biotage® SNAP Ultra cartridges
- λ-All detection
- Baseline correction
- Run counter

Other Advantages

- Flow rates of 1–200 mL/min
- Method evaluation and scale-up on one system
- Fraction capacity up to 9.6 L
- Biotage® Isolera™ Spektra Four allows sequential purification of multiple samples
- Transfer methods to other Isolera systems

Gradient Optimization reduces solvent consumption up to 60%.

Built-in sample load pump.

Utilizes cartridges from 50 to 1500 g.

Direct scale-up from milligrams to >150 g.

Removable fraction collection racks and trays.

Leak detector adds safety.

Isolera™ Spektra LS (Large Scale)

From Research to Development and Scale Up, Purify up to 150 g in One Step

Isolera™ LS is a fully automated development scale flash purification system that dramatically reduces large scale purification times. Simply select or create a method, load your sample and purify – it's that easy.

Isolera™ Spektra LS is a large scale flash chromatography system with a standard fraction capacity of up to 9.6 L. For additional fraction capacity (up to 320 L) a funnel rack kit is available. The funnel rack kit comes with two racks (16 funnels each) a cart with wheels that holds the system, collection vessels, and a leak detector for truly large scale and professional use.

Advanced features include the solvent-saving Gradient Optimization, fraction collector bypass, isocratic hold, remote editing, the ability to collect fractions on two separate wavelengths, use of up to four solvents in a single gradient and add a third isocratic co-solvent. A UV-VIS detector can increase detection to 200–800 nm.

Isolera Spektra LS runs the same Isolera Spektra software as research scale models (see page 8), bringing even more advanced time and money saving features to large scale purification labs.

Accelerated Purification

The flow rate capability (of 50–500 mL/min) and gradient optimization dramatically shorten purification runs. When used with Biotage® SNAP 1500 g cartridges, the Isolera LS can rapidly purify samples of 150 g or more, dramatically improving chemists' productivity in a matter of a few column volumes (Figure 10).

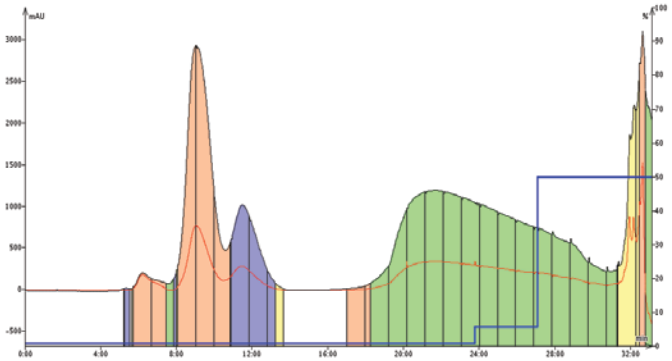


Figure 10. 30 g of a lipophillic oil mixture was purified in only 32 minutes using a Biotage® SNAP 1500 g cartridge at a flow rate of 500 mL/min.

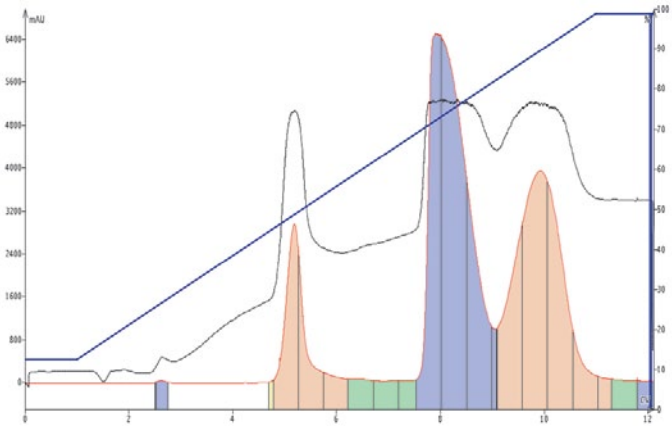


Figure 11. 80 g (>10% load) of a crude reaction mixture with a TLC ΔCV<1 was separated using a Biotage® SNAP 750 g cartridge at 200 mL/min.

Specifications

Solvent Delivery	2x HPFC pumps
Flow Rate	50–500 mL/min
Pressure Limit	145 psi (10 bar)
UV Detection	Choice of variable wavelength (200-400 nm) or UV-VIS (200–800 nm) detector
Flow Cell Path Length	0.3 mm
UV Collection Modes	One, two or all wavelengths
Fractionation Modes	Volume, threshold, threshold with volume, low slope, medium slope, custom slope or connect external detector
Collection Vessels	Test tubes (17.5 mm, 18 mm and 25 mm) and bottles (120 mL, 240 mL, and 480 mL)
Power	100–240 VAC, 50/60 Hz, 4.0 A
System Control & Data Management	On-board computer with 10.4" diagonal touch screen interface
Dimensions (W x H x D)	577 mm (22.7") x 596 mm (23.5") x 497 mm (19.6")
Weight	30–35 kg (66–77 lbs)
Certifications	CE, cTÜVus
Funnel Rack Kit Dimensions (W x H x D)	960 mm (37.8") x 1060 mm (41.7") x 660 mm (26.0")
Weight	40 kg (88 lbs)

Biotage® SNAP 750 g and SNAP 1500 g cartridges maximize productivity by providing the highest sample loading capacity, fastest throughput and superior large-scale separations as shown in Figure 11.

Safely Inject Large Volumes

The unique built in sample load pump avoids manual injection issues such as leaks or spills. Made with flexible fluoropolymer tubing, this pump enables liquid samples to be efficiently pumped directly into your Biotage SNAP 750 g or 1500 g flash cartridge.

For samples requiring pre-adsorption onto a solid support, a 500 g capacity dry load vessel accessory is available. The dry load vessel has an adjustable bed for samples as low as 100 g and mounts directly onto the Isolera LS, saving fume cupboard space.

Key Features

» Refer to page 11 for main key features of Isolera™ Spektra

Other Advantages

» Flow rates of 50–500 mL/min
» Method evaluation and scale-up on one system
» Unique sample loading pump
» Extended fraction capacity up to 320 L
» Use up to four solvents in a gradient
» Maximize solubility and product recovery
» Leak detector increases safety

Isolera™ Prime

Sets the Standard in Value-Priced Flash Purification Systems

Isolera™ Prime is an entry level flexible flash system with a range of key features and cost-saving process benefits. This system is upgradeable and grows with the needs of laboratories and universities where value is especially important.

Isolera™ Prime delivers more than just the basics. Together with Biotage flash cartridges, including the new high performance Biotage® SNAP Ultra and value-priced Biotage ZIP® cartridges, this system meets the demands of modern laboratories around the world.

Included is the patented TLC-to-Gradient feature that eliminates method development guesswork, and a solvent saving gradient optimization function that can reduce solvent use up to 60 %.

Performance

Flow rates up to 100 mL/min enable fast purification scale-up (Figure 12). The software is designed so that any completed method can be recalled for later use with different cartridges, racks and collection parameters, just with a few simple clicks.

Flexibility

Isolera Prime can be upgraded and customized to any laboratory's requirements with a range of accessories, including external dry-loading vessels, leak detector, fraction racks and cartridge holders.

Note that the Isolera Spektra software upgrade is not available on Isolera Prime.

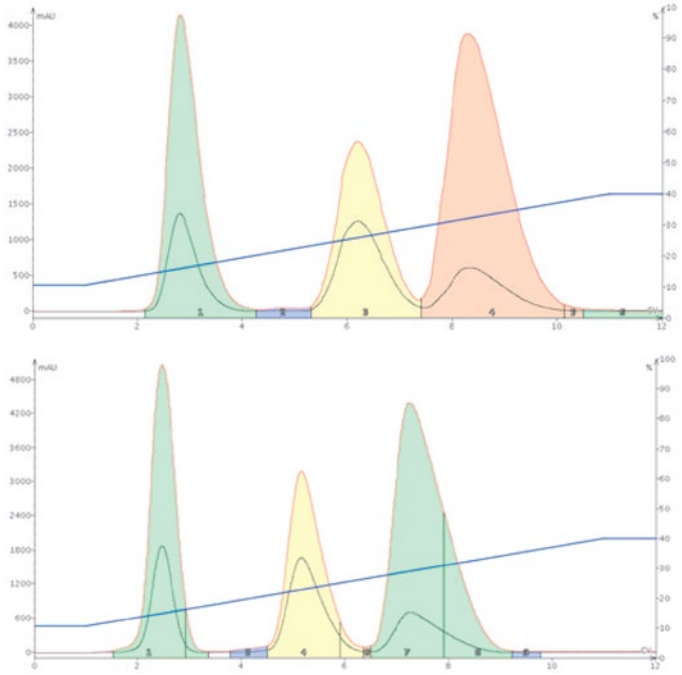


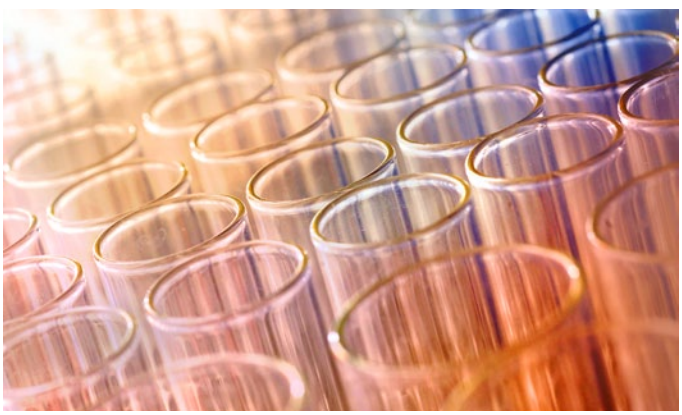
Figure 12. Isolera™ Prime provides scale-up capability with just a few clicks. In this example, a Biotage ZIP® 5 g cartridge was used to purify a 150 mg sample. This separation was then scaled 24-fold to a Biotage ZIP® 120 g cartridge by simply loading the method from the 5 g cartridge result file and changing the cartridge size; the flow rate adjusts automatically with the new cartridge selection. Simply efficient.

Specifications

Solvent Delivery	Constant volume electric HPFC pump
Flow Rate	5–100 mL/min
Pressure Limit	145 psi (10 bar)
UV Detection	Choice of variable dual-wavelength (200–400 nm) or fixed (254 nm) detector
Flow Cell Path Length	0.3 mm
UV Collection Modes	Single wavelength, Dual wavelength (variable UV)
Fractionation Modes	Volume, threshold, threshold with volume, low slope, medium slope, custom slope
Collection Vessels	Test tubes (13, 16, 18 and 25 mm) Bottles (120, 240 and 480 mL)
Power	100–240 VAC, 50/60 Hz, 4.0 A
System Control and Data Management	On-board computer with 10.4" diagonal touch screen interface
Dimensions (W x H x D)	355 mm x 596 mm x 497 mm (14 in. x 23.5 in. x 9.6 in.)
Weight	30 kg (66 lbs.)
Certifications	CE, cTÜVus

Advantages

- Gradient Optimization can reduce solvent use up to 60%
- Upgradeable and flexible
- 145 psi (10 bar) pressure capability supports both normal-phase and reversed-phase purification
- Patented TLC-to-Gradient feature eliminates method development guesswork and re-runs
- Two UV detector options to address different application needs
- Binary gradient flexibility



Isolera™ ELSD-1080

Evaporative Light-Scattering Detection for Flash Chromatography

The ELSD-1080 is a universal detector designed for use with Isolera™ flash purification systems when purifying organic compounds that are undetectable with UV or visible light or those that do not 'fly' by traditional mass spectrometry techniques.

Flash chromatography with detection and fractionation is possible when purifying carbohydrates, steroids, lipids, terpenes and other UV-transparent compounds (Figure 13).

Compounds eluting from a flash cartridge enter the ELSD-1080 where they are mixed with nitrogen to nebulize the sample components creating small droplets. The nebulizer is heated and begins to evaporate the solvent and the nitrogen carries the sample into the Peltier heater, where the remaining solvent is evaporated leaving small sample particles in the nitrogen stream. While migrating through the evaporator, light is shone perpendicular to the "sample flight path" and a sensor measures how many particles are present, triggering fraction collection.

Advanced Design

Organic compounds have different chemical and physical properties that may impact detection, even with an ELSD. The Biotage Isolera ELSD-1080 provides intelligent method design which enables the chemist to independently set nebulizer and evaporator temperatures for a particular compound or compound class. Independent temperature control helps ensure that all compounds are detected.

Incorporated with the independent temperature control is the ability to evaporate solvents at temperatures as low as 10 °C. This is desirable when purifying highly volatile compounds.

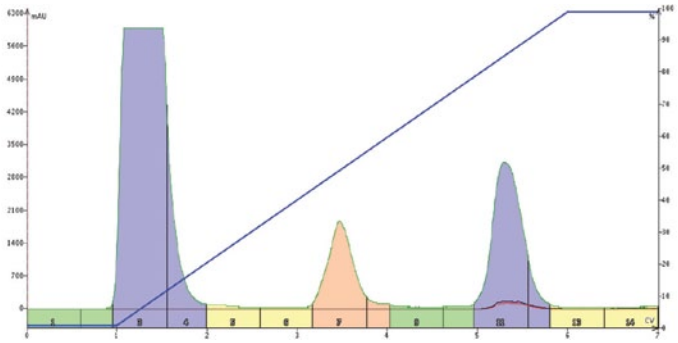


Figure 13. Purification of UV transparent carbohydrates dextrose, maltodextrin, and poorly UV-absorbent aspartame using an Biotage Isolera Four and a 12 g Biotage® SNAP KP-C18-HS cartridge. With low wavelength UV (200 nm) only aspartame is detected.

Specifications

Power	90/120V AC or 220/250V AC, 50/60 Hz 2A max
System Control and Data Management	200 mm (8”) x 415 mm (16”) x 450 mm (18”) diagonal touch screen
Dimensions (W x H x D)	200 mm (8”) x 415 mm (16”) x 450 mm (18”)
Weight	13 kg (28 lbs)
Light Source	LED 480 nm (Class 1 LED Product)
Detector	Photomultiplier tube digital signal processing
Temperature Range	Evaporator OFF, 10 – 80 °C (1 °C increments) Nebulizer OFF, 25 –
Gas Flow Rate	0.9 SLM to 3.25 SLM @ 25 °C with integrated controlled gas shut
Pressure Operating Range	60 – 100 psi (4 – 6.7 bar)
Eluent Flow Rate	0.2 – 5 mL/min
Analogue Output	0 – 5V FSD
Digital Output	24 bit digital data, 10 or 40 Hz.
Instrument Operation	Graphical vacuum fluorescent display with keypad Ten pre-defined
Detector Status	Standby, run
Safety Features	Gas shut off valve, vapor and leak detection
Certifications	CE, CSA

Advantages

- Flexibility – high sensitivity provides superb responses, able to detect virtually any compound
- Sub-ambient operation provides detection capability for highly volatile compounds with operation at temperatures as low as 10 °C up to 80 °C
- Reproducible below 2% with reliable and accurate results
- Independent temperature controls for both nebulizer and evaporator provides optimization capability for normal-phase solvent systems
- Compact size that requires minimal bench space
- Compatible and portable – operates with other Isolera™ systems as a detector to monitor or help direct fraction collection

Figure 14. A light display provides instant information on current progress.

Biotage® Flash 75/150

Fast Scale-up: Gram To Multi-Gram Quantities Of Target Organic Compounds

Purify up to 400 grams of compound at 1 L/min up to 75% faster than with traditional glass columns. Biotage® Flash 75/150 is a simple and reliable system that contains everything needed for separation scale up.

These rugged systems safely operate at 100 psi enabling fast flow rates and the use of high viscosity solvents. The proven, patented radial compression technology (Figure 12) ensures near zero "wall effects" and channeling inside each column. This maintains the bed's stability, rendering cleaner, purer fractions in less time and higher overall product yield.

Routinely operating at a flow rate of 250 mL/min (Flash 75) and 1L/min (Flash 150), these systems allow you to quickly scale-up and complete runs, saving hours or even days of purification time.

Complete Kit

The Biotage® Flash 75/150 system include an easy-to-install radial compression module, a fully integrated air manifold, solvent reservoir, sample injection module (SIM), a start-up kit with all necessary tubing, grounding kit, and a user's manual. Pre-packed cartridges are ordered separately.

Flash 150 compression modules are mounted onto robust portable bases (included in the system package), which are fitted with casters for easy mobility.

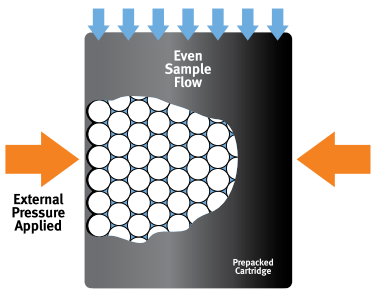


Figure 15. The patented radial compression technology keeps the bed homogenous during the run even at high pressures, resulting in higher overall yield.

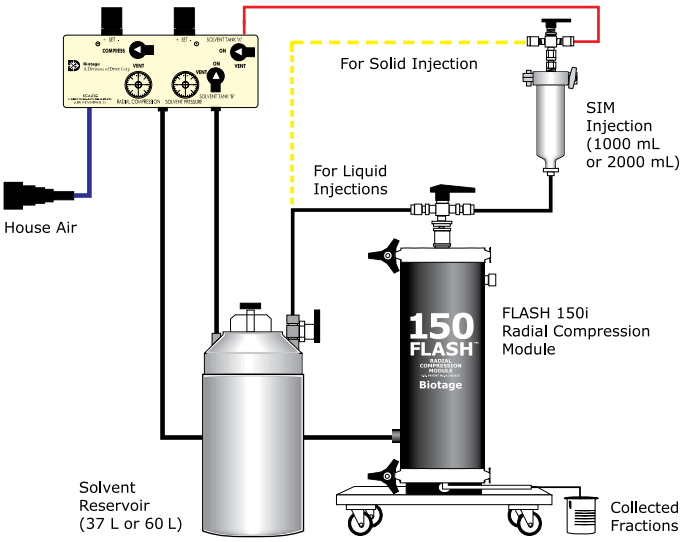


Figure 16. Biotage® Flash 75/150 systems use compression modules that hold the cartridges during purification. The different system modules for injection, solvent collection and control are connected to the laboratory's air pressure outlet.

Advantages

- Engineered for fast flows
- Radial compression technology improves separation performance
- Compression modules radially compress cartridges to maximize sample contact with silica and separation performance (higher sample load greater purity and recovery)
- Compression modules seal up to 100 psi, ensuring leak-free operation even with high flow rates and reversed-phase solvents
- Fully grounded for safety

Accessories

- Sample injection modules
- Solvent reservoirs
- Compression module barrels

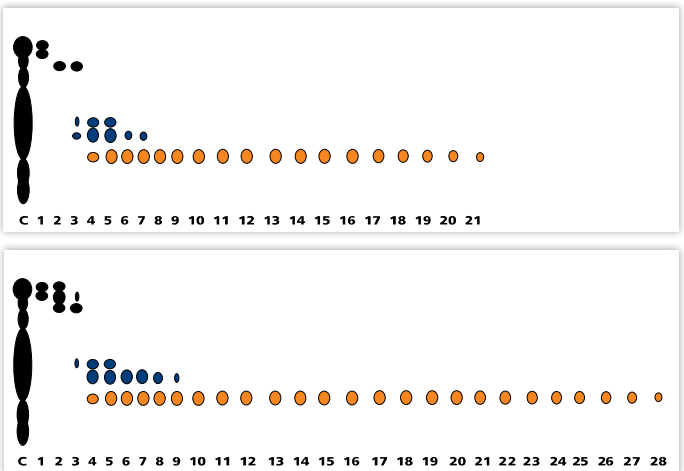


Figure 17. In this comparison between a 75 mm x 350 mm Flash 75L cartridge (top) and a 110 mm x 200 mm glass column (bottom), fractions were collected in 2.5 hours using the glass column, while the Flash 75L cartridge required only 40 minutes. In addition to the 73% reduction in purification time, there were fewer mixed fractions, resulting in greater product purity.

Biotage® Flash 400

The Industry Standard for Process-Scale Purification

Biotage® Flash 400 skid-mounted system is designed for kilogram scale separations. Built to last and engineered to perform, Flash 400 systems are the first choice of companies around the world for critical adsorption purification.

When considering larger, production scale equipment, robustness and safety are key factors for any device. Biotage® Flash 400 needs minimal maintenance and its design has proven to be extremely reliable over many years. Designed to optimize and provide operating pressures up to 100 psi, this system can run at flow rates up to 7 liters per minute, allowing operators to save hours or even days of separation time.

Built with materials that comply with FDA regulations and cGMP standards, the Flash 400 is the first choice of pharmaceutical and contract manufacturing companies around the world for critical purification applications.

Two Module Sizes

Biotage® Flash 400 uses pre-packed cartridges and radial compression. Interchangeable barrels support use with either 400 mm x 300 mm (Flash 400M) or 400 x 600 mm (Flash 400L) cartridges. A system includes one of the compression module sizes. The module of the other size can be ordered as a compatible option.

Patented Compression Technology

Proven, patented radial compression technology maintains the bed's stability for cleaner, purer fractions. Extra force from radial compression ensures near zero "wall effects" and channeling inside each column.

Figure 18. The pneumatic control panel located on the top of the flash system frame makes operation easy. The panel is divided into three sections that allow users to control the pumping system, The hydraulic hoist is used to remove the head assembly, insert a cartridge.

Specifications

Max Flow Rate	7 L/min
Max Pressure	100 psi
Max Sample Load	4 kg
Pressure Control	Pneumatic control panel
Available Cartridges	Flash 400M
	Flash 400L
Available Media	Activated carbon
	Biotage® KP-SIL
	Biotage® KP-C18-HS
	Biotage® KP-NH
	Diaion HP20
	Diaion HP20SS

Please enquire for more details.

Safety is Paramount

Safety is a design criteria on all Biotage systems. Designed for large quantities of solvents, the Flash 400 can operate in an explosion proof, no spark rated area. Air driven pump and hoists, proper grounding and pressure relief devices are some of the vital components included with every system. All systems comply with NEC Class 1, Division 1 and 2, Group C and D standards.

Scalable Results

Technologies such as crystallization and adsorption can be difficult and time consuming to scale up. With an extensive cartridge range, a test separation on a Biotage® SNAP 10 g column purifying small quantities can be transferred directly to the 40 kg Flash 400L size, a 4000x increase in scale.

Advantages

- Radial compression
- GMP compliant for production of API's
- Custom cartridge packing service available
- 7 L/min flow rate
- Designed for both chromatographic purification and adsorption processing of a variety of organic synthetic and natural products
- Minimizes exposure to highly active or toxic compounds
- Available with normal- and reversed-phase silica, activated carbon, polymeric adsorbents or custom-packed media
- Can purify over 4 kg of crude reaction mixture

Optional Accessories

- Cartridge hoist

Accessories

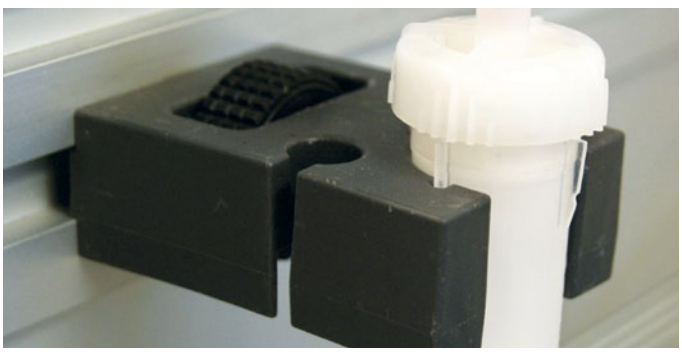
Optional Extras to Make Processing Simpler in the Lab

Dry Loading Vessels (DLV)

Biotage® SNAP and flash cartridges are designed with ability to dry load a sample within the cartridge. Sometimes, the amount of adsorbent required exceeds the cartridge's dry load capacity. When that situation arises, the Biotage DLV systems provide a convenient in-line solution.

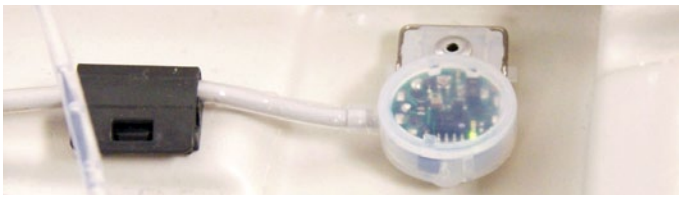
Cartridge Holders

Designed for simple attachment onto Biotage® Isolera™ systems, these cartridge holders accommodate 10 g, 25 g, 50 g, 100 g, 340 g, 750 g and 1500 g Biotage® SNAP cartridges.



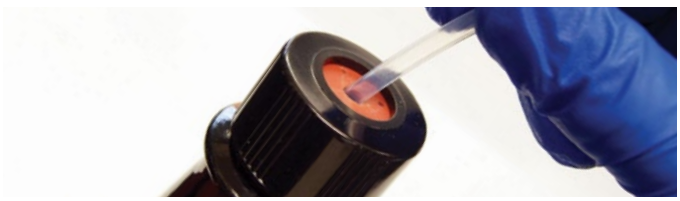
Leak Detector

The Isolera™ leak detection system is designed with safety in mind. Unlike devices with unreliable solvent vapor sensitivity (especially in fume hoods), this leak detector's refractive index monitor instantly signals the Isolera™ to stop pumping if any liquid is detected. Available for both standard and extended bed Isolera™ systems.



Bottle Caps and Septa

These 38-430 caps are modified with a hole to allow use of Biotage® Isolera™ and SP solvent line tubing. A silicone gasket reduces evaporation.



ELSD Flow Splitter Kit

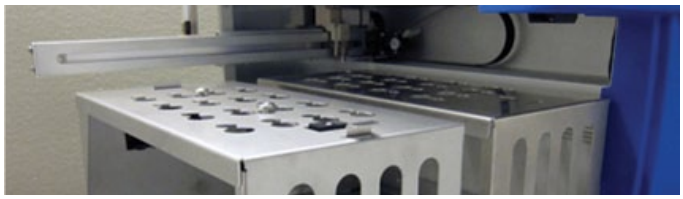
The Biotage flow splitter kit is used with flow limited external detectors such as an ELSD. Made of stainless steel, the inert splitters with fine Vernier adjustment enable flows as low as 200 uL/min into the external detector.

Liquid Sample Injection Valves and Adapters

Two 3-way injection valves are available for Biotage cartridges and compression modules. These stainless steel valves come complete with finger tight fittings and a Luer adapter for syringe injection. The straight through injection design minimizes wash volume and reduces precipitation hazard.

Funnel Rack Kit

Designed for use with the Biotage® Isolera™ Spektra LS, the funnel rack kit provides up to 320 L of fraction capacity. The kit includes two 16 position finial racks, a portable cart and grounding cables. Inert, static-resistant funnel tubes are also available.

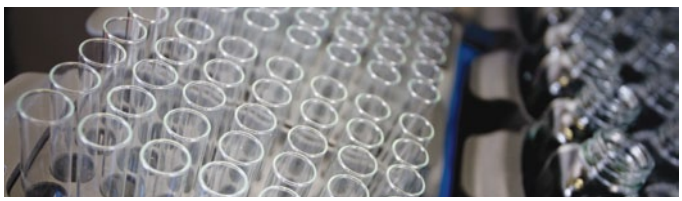


Rack Guides

These 0.5 mm thick polypropylene overlays come in four sizes for use with Biotage® Isolera™ 13, 16, 18, and 25 mm test tube racks. They are laser-etched on both sides to represent "S" and "Z" collection patterns.

Racks and Trays

Fraction collection racks are available from 13x100 mm test tubes to 480 mL bottles. For larger collection volumes a funnel rack is available. For a complete list see page 24 of this brochure.



Ordering Information

Isolera™ Systems

Product	Part Number
Isolera Spektra	
Isolera Spektra software	ISO-SPK
Isolera Spektra license for existing Isolera systems	SER-SPKUPG

Part No.	Model	Wavelength (nm)	UV Detector	UV-Vis	Collector Bed
Isolera One					
ISO-1SF	One	254	Fixed	–	Single
ISO-1SV	One	200–400	Variable	–	Single
ISO-1SW	One	200–800	Variable	Yes	Single
ISO-1EF	One	254	Fixed	–	Expanded
ISO-1EV	One	200–400	Variable	–	Expanded
ISO-1EW	One	200–800	Variable	Yes	Expanded
Isolera Four					
ISO-4SF	Four	254	Fixed	–	Single
ISO-4SV	Four	200–400	Variable	–	Single
ISO-4SW	Four	200–800	Variable	Yes	Single
ISO-4EF	Four	254	Fixed	–	Expanded
ISO-4EV	Four	200–400	Variable	–	Expanded
ISO-4EW	Four	200–800	Variable	Yes	Expanded
Isolera LS					
ISO-1LSV	LS	200–400	Variable	–	Expanded
ISO-1LSW	LS	200–800	Variable	–	Expanded
Isolera Prime					
ISO-PSF	Prime	254	Fixed	–	Single
ISO-PSV	Prime	200–400	Variable	–	Single

Isolera™ One, Four and LS systems above are shown without the Isolera Spektra license and will not include the following features: λ-All detection, Baseline correction, PDA scanning, 3D spectral scan data, TLC-to-Step gradient. For Isolera Spektra please also add the 'SPK' part number above.

Isolera™ Dalton

Product	Part Number
Isolera™ Dalton Nanolink	ISO-DALT-NLINK
Isolera™ Dalton Mass Detector	ISO-DALT-DET
Isolera™ Dalton Installation	SER-DALT-IN
Isolera™ Dalton Service Package	SER-DALT-SAP
Isolera Spektra software	ISO-SPK
Vac-chip™ 100	413712
Spraychip® 200	413711
Masscape SW for Personal Computer	413874
Accessories	
Vac-chip™ O-ring (Pack of 4)	413872
250ul gastight syringe	413710
Microfilter for make up flow (pack of 5)	413484
Microfilter holder with 2m filter (pack of 2)	413483
Needle Port (pack of 2)	413487
Splitter maintenance kit (pack of 3)	413714
Exterior tubing kit (without SFI tubes and solvent inlet tubes)	413875
Solvent inlet tubing with filter (pack of 3)	413460

Product	Part Number
Tubes, 20x150mm, for cleaning the vac-chip™	413890
DFI, Direct Flow Interface cpl.	413743
SFI, Split Flow Interface (Includes tubing for 1ml/min split)	413741
MID 4100 Calibration kit	ISO-DALT-CALIB

Isolera™ One/Four – Accessories

Product	Part Number
Evaporative Light-Scattering Detector	
Biotage Isolera ELSD-1080	ISO-ELSD-1080
Biotage Isolera ELSD-1080 flow splitter kit	413346
Racks	
13 x 100 mm test tube rack, 4/pk*	411789
16 x 100 mm test tube rack, 4/pk*	411790
16 x 150 mm test tube rack, 4/pk*	411791

Product	Part Number
18 x 150 mm test tube rack, 4/pk	411792
25 x 150 mm test tube rack, 4/pk	411793
120 mL bottle rack, 4/pk	411794
240 mL bottle rack, 1/pk	411934
480 mL bottle rack, 1/pk	411929
* for Biotage Isolera One and Four only	
Bottles	
120 mL French square bottles, 96/case	08742
240 mL French square bottles, 84/case	08743
480 mL French square bottles, 24/case	411935
3-Way Valve	
3-way stainless steel injection valve	FIV-VLV-1000
3-way large bore stainless steel injection valve	413027
Cartridge holders	
Biotage ZIP® 5/10 g cartridge holder	413092
Biotage ZIP 30 g cartridge holder	413302
Biotage ZIP 45 g cartridge holder	413303
Biotage ZIP 80 g cartridge holder	413304
Biotage ZIP 120 g cartridge holder	413305
Biotage SNAP 10 g cartridge holder	411922
Biotage SNAP 25 g cartridge holder	411776
Biotage SNAP 50/100 g cartridge holder	411923
Biotage SNAP 340 g cartridge holder	411924
Biotage SNAP 750/1500 g cartridge holder	412422
FLASH+® cartridge holder kit	411990
Leak Detectors	
Leak detector for Biotage Isolera with single fraction bed	412019
Leak detector for Biotage Isolera with double fraction bed	412062
Dry Load Vessels	
Dry load vessel kit with holder, 1 pack dry load vessels & frits, 30 g	DLV-030
Dry load vessel kit with holder, 1 pack dry load vessels & frits, 70 g	DLV-070
Dry load vessel kit with holder, 1 pack dry load vessels & frits, 500 g	DLV-500
Dry load vessels and frits, 30 g, 20/pk	DLV-035
Dry load vessels and frits, 70 g, 20/pk	DLV-075
Dry load vessels and frits, 500 g, 4/pk	DLV-505
Bottle Caps	
Bottle caps, 38-430 with septa for 4-solvent bottles, 5/pk	413320
Rack Number Guide	
Rack number guide for 13 x 100 mm rack, 4/pk	413178
Rack number guide for 16 x 100 and 16 x 150 mm racks, 4/pk	413177
Rack number guide for 18 x 150 mm rack, 4/pk	413176
Rack number guide for 25 x 150 mm rack, 4/pk	413175
Adapters	
Injection valve mounting adapter, SNAP (for use with FIV-VLV-1000)	411081
Inlet Luer adapter for Biotage SNAP 750 g and 1500 g cartridges	412358
Outlet Luer adapter for Biotage SNAP 750 g and 1500 g cartridges	412537

Isolera™ LS – Accessories

Product	Part Number
Funnel rack kit for Biotage Isolera LS (comes with cart, two racks, grounding straps, 8 GL-45 bottle caps with septa, and leak detector)	FNRK-032
Dry load vessel kit with holder, one empty cartridge and frit	DLV-500
Replacement dry load vessels and frits, 4/pk	DLV-505
Funnel rack tubes, conductive PTFE, 8/pk	412896
Replacement Schott bottle caps with septa, 8/pk	412921
Replacement septa for 412921, 8/pk	412920
Replacement collection bottle positioning shafts, 25/pk	413002
Additional funnel rack, 16-position, with grounding strap	412919

Biotage® Flash Scale-up Systems

Product	Part Number
Flash 75	
75S compression module, air manifold, SIM 100, 4 L solvent reservoir, tubing, grounding kit, user manual	SF-022-19161
75M compression module, air manifold, SIM 500, 12 L solvent reservoir, tubing, grounding kit, user manual	SF-022-19041
75L compression module, air manifold, SIM 500, 4 L solvent reservoir, tubing, grounding kit, user manual	SF-022-19071
75L Plus compression module, interchangeable 75S barrel, air manifold, SIM 500 (including 25 frits), 12 L solvent reservoir, 10 Flash 75L cartridges (800 g, KP-Sil), 10 Flash 75S cartridges (200 g, KP-Sil), tubing, grounding kit, user manual	SF-222-19071
Flash 150	
150M compression module, air manifold, SIM 1000, 37 L solvent reservoir, tubing, user manual	SF-022-25071
150L compression module, air manifold, SIM 2000, 60 L solvent reservoir, tubing, user manual	SF-022-25151
Flash 400	
Flash 400M system with hoist	SF-511-50070
Flash 400L system with hoist	SF-511-50150
Accessories	
Solvent reservoir, 1 L	FN-001-41201
Solvent reservoir, 4 L	FN-004-41201
Solvent reservoir, 12 L	FN-012-41201
Solvent reservoir, 37 L	FN-037-41201
Solvent reservoir, 60 L	FN-060-41200
ZiF-Sim Barrels and Frits	
Replacement 10 mL barrels and frits, 20/pk	SBF-0010
Replacement 35 mL barrels and frits, 20/pk	SBF-0035
Replacement 60 mL barrels and frits, 20/pk	SBF-0060

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