

# ROUTINE HPLC SYSTEM S 500

The **Sykam ROUTINE HPLC System S 500** is intended for all routine analysis. The system configuration is highly variable and several upgrade options make this system suitable for the whole range of analytical applications.

## ■ S 1125 HPLC Pump System

The **Sykam S 1125 HPLC Pump System** is a very flexible and powerful HPLC solvent delivery system. The system is available as Isocratic HPLC pump and Quaternary Gradient Pump with optional integrated online vacuum degasser.

## ■ Stepper Motor

The **S 1125** is driven by a high-power stepper motor. The stepper motor has a much better resolution in the low-flow range than a conventional DC motor.

## ■ Active Mixer

The **S 1125** low pressure gradient module has an active mixer to achieve highly precise and accurate gradient results.

## ■ Lubrication

The **S 1125** camshaft is constantly lubricated within a sealed chamber to guarantee long lifetime and low maintenance.

## ■ Dual-Piston Pumphead

The **S 1125** pumps use a dual-piston pumphead

for low pulsation. Together with electronic pressure compensation the **S 1125** pumps are suitable for all analytical tasks in HPLC and GPC.

## ■ Optional: Piston Backflushing

The **S 1125's** pump head incorporates an optional active piston backflushing system; this system is interchangeable with old Sykam pumps and does not require an additional motor.



**MADE IN GERMANY**

## ■ Pump Mechanic

### Stepper Motor

The S 1125 is driven by a high-power stepper motor. The stepper motor has a much better resolution in the low-flow range than a conventional DC motor.

### Lubrication

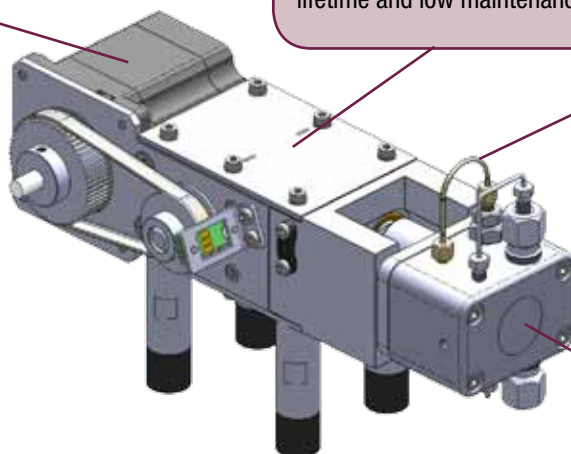
The S 1125 camshaft is constantly lubricated within a sealed chamber to guarantee long lifetime and low maintenance.

### Optional: Active Piston Backflushing

The S 1125's pump head incorporates an automatic piston backflushing system; this system is interchangeable with old Sykam pumps and does not require an additional motor.

### Dual-Piston Pumphead

The S 1125 pumps use a dual-piston pumphead for low pulsation. Together with electronic pressure compensation the S 1125 pumps are suitable for all analytical tasks in HPLC and GPC.



## ■ Technical Specifications

<b>Wetted Materials:</b>	Stainless Steel / PEEK*, Teflon AF®, PVDF, Ceramics, Sapphire, Ruby
<b>Flow Rate:</b>	Programmable Micro: 0.001 - 4.000 ml/min Analytical: 0.001 - 10.000 ml/min Semi-Preparative: 0.1 - 40.000 ml/min
<b>Flow Accuracy:</b>	± 1.0 % 1.000 ml / min
<b>Flow Precision:</b>	± 0.1 % RSD 1.000 ml/min
<b>Pressure Range:</b>	0 – 40 MPa (0 – 6000 PSI); Semi-Preparative: 20 MPa (up to 20.000 ml/min); 10 MPa (up to 40.000 ml/min)
<b>Pressure Pulsation:</b>	typical < 0.1 MPa or < 1.0 %
<b>Compressibility Compensation:</b>	user-adjustable for different solvents
<b>Dimensions: (W x H x D)</b>	310 x 165 x 478 mm
<b>Power Supply:</b>	100 - 250 ~V (47 - 63 Hz)

\* depending on configuration

## ■ S 1125 Quaternary Gradient Pump

<b>Vacuum Degassing:</b>	<i>optional:</i> < 20% dissolved gases remaining in water @ 1.000 ml/min
<b>Gradient Range:</b>	0.0 – 100.0 %, 4 channels
<b>Gradient Accuracy:</b>	< 0.50 % (typically < 0.25 %)
<b>Gradient Mixing:</b>	Active
<b>Mixer Volume:</b>	adjustable: 10 – 500 µl

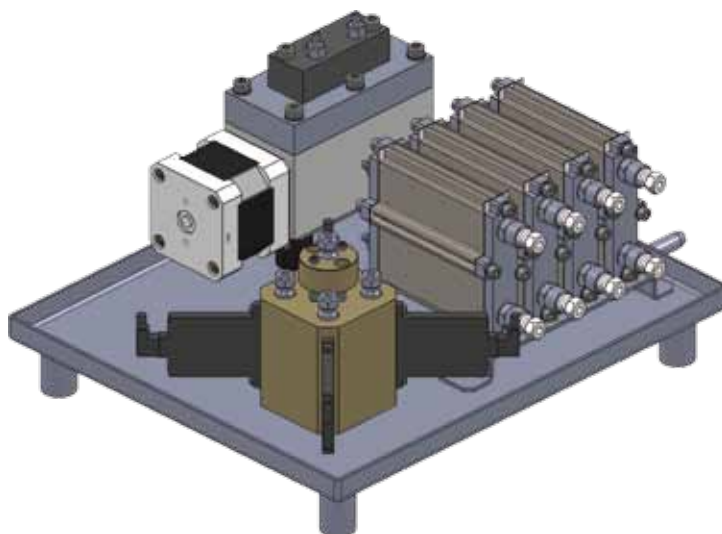
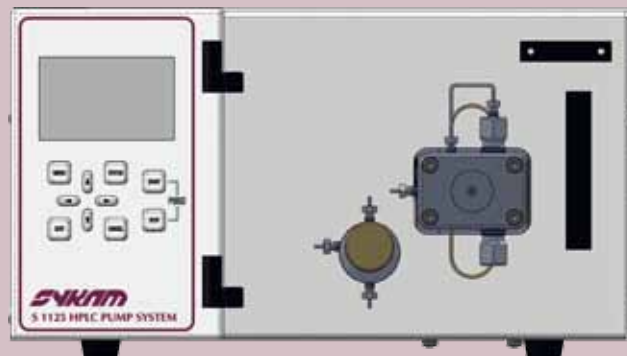


Figure: Quaternary Gradient Mixer Module with Vacuum Degasser

## ■ S 1125 Configurations

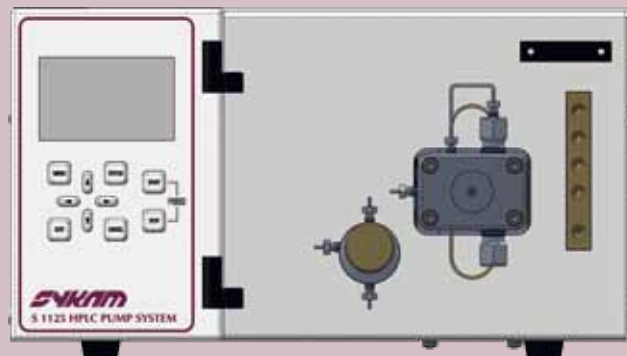
### ■ S 1125 Isocratic HPLC Pump

The **S 1125 Isocratic HPLC Pump** is a robust, low-pulsation solvent delivery system. The pumphead is easily accessible from the front panel to make routine maintenance, like changing pump seals, easy and fast. The transparent front cover makes it easy for the operator to detect any leakages. The pump is available with Micro, Analytical or Semi-Preparative pumphead in Stainless Steel or PEEK.



### ■ S 1125G Low-Pressure Quaternary Gradient Pump

The **S 1125G Quaternary Gradient Pump** incorporates an active low pressure mixer with adjustable mixing volume. The mixing chamber volume can be freely adjusted. An optional integrated vacuum degasser removes dissolved gases in the eluents and prevents air bubbles in the system. The system is available with Micro, Analytical or Semi-Preparative pumphead in Stainless Steel or PEEK.



## ■ S 5250 Sample Injector System

The **Sykam S 5250 Sample Injector System** is a very flexible and powerful HPLC autosampler with excellent reproducibility and linearity properties. Variable vial racks and adaptors for microtiter plates as well as a multitude of firmware options make this system highly adaptable and suitable for any analytical application.

### ■ Robust Design

#### ■ Durable X/Y/Z-Sampling

The **S 5250 Sample Injector System** features a mechanically durable X/Y/Z-Sampling-Mechanic designed for long life operation. The self-lubricating bearings keep the routine maintenance at a minimum and avoid troubles caused by dusty environments.

High precision stepper motors drive the X/Y axis for accurate positioning. Microstepping mode enables a high resolution for the syringe dosing and vial positioning.

#### ■ Dual-Needle Design

The Dual-Needle design of the **S 5250 Sample Injector System** avoids system blockages due to septum particles injected into the system. The ventilation needle pierces the septum before the injection needle moves into the sample vial (see figure on the right).

As the more fragile injection needle does not need to pierce the vial septum, stronger vial caps or plastic vials can be used without problems.



#### ■ Accessibility

The injection valve with sample loop and injection port can be accessed directly from the instrument front without removing any protective covers. The dosing syringe can be accessed from the side of the instrument through a hinged glass panel. The exchange of the syringe can be done without the requirement of any tools.

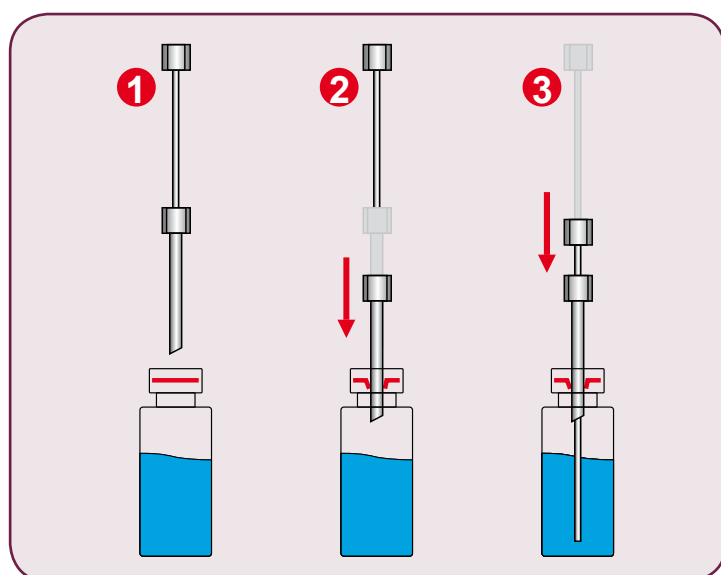


Figure: Dual-Needle Injection

## ■ Precision & Modularity

### ■ Performance

The **Sykam S 5250 Sample Injector System** offers multiple injection modes depending on application and sample needs. Besides fixed loop overfilling and variable volume injection the instrument offers a *Zero-Waste* injection mode for injecting very small sample amounts by moving the sample into the middle of the sample loop.

Linearity and injection precision can be optimized for any volume by different sample loops and syringe sizes.

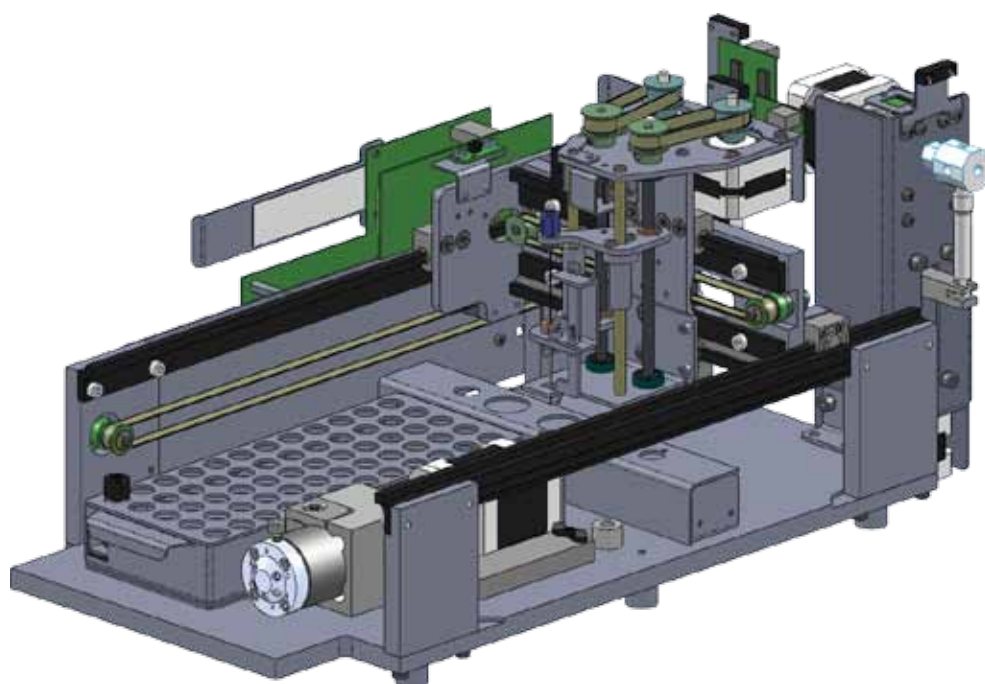
### ■ Modular Options

The modular nature of the **Sykam S 5250 Sample Injector System** offers the possibility to “*just buy what you need*”. Modular options include sample heating/cooling for any sensitive sample material and derivatization for automatized pre-column derivatization tasks from reagent derivatization to automatic sample dilution.

## ■ Technical Specifications

<b>Wetted Materials:</b>	Stainless Steel / PEEK*, PPS, PVDF
<b>Sample Capacity:</b>	60/90 (1.5 ml), 96 (microtiter plates)
<b>Injection Volume:</b>	Programmable 0.1 - 999.9 µl
<b>Injection Precision:</b>	< 0.5 % Variable Volume Injection (10 µl; typically ~0.25 %)
<b>Linearity:</b>	Correlation Factor > 0.999 (10 µl injection volume, 500 µl Syringe)
<b>Carry Over:</b>	< 0.05 % with wash program
<b>Dimensions: (W x H x D)</b>	310 x 210 x 478 mm
<b>Power Supply:</b>	100 - 250 ~V (47 - 63 Hz)

\* depending on configuration





## ■ S 3245 UV/Vis Variable Wavelength Detector

The **Sykam S 3245 UV/Vis Detector** is a variable wavelength UV/Vis detector for routine analysis and sophisticated research. The dual lamp design offers a wavelength range of 190 – 800 nm with a low baseline noise. The front-accessible flowcell can be easily exchanged, as can be the lamps which are accessible through a side panel in the instrument housing.

### ■ Integrated Wavelength Program

The **S 3245 UV/Vis Detector** features a wavelength program to change the selected wavelength over time. With this feature the optimum wavelength can be selected for each analyzed substance according to its retention time.

### ■ Integrated Peak Detector

The integrated Peak Detector works as a basic fraction collector. The peak detection level can be freely programmed for peak start and peak end to enhance the collection purity. An integrated 24V output for switching a solenoid valve is used for the fraction collection, which is automatically operated with a selectable time delay.

### ■ Optional – Dual-Wavelength

The **S 3245 UV/Vis Detector** is available with an optional second wavelength. This feature enhances the Wavelength Program feature that you can measure 2 different wavelengths at the same time. A second D/A converter output comes with this option to keep the system flexible to be used with any data acquisition software available.



### ■ Optional – Online-Scan

Another option for the **S 3245 UV/Vis Detector** is the Online Scan. With the Online Scan whole spectrum information can be gathered at a certain time. This scan information is stored internally and can be accessed at any time. The Online Scan is a good alternative to a full UV PDA detector.

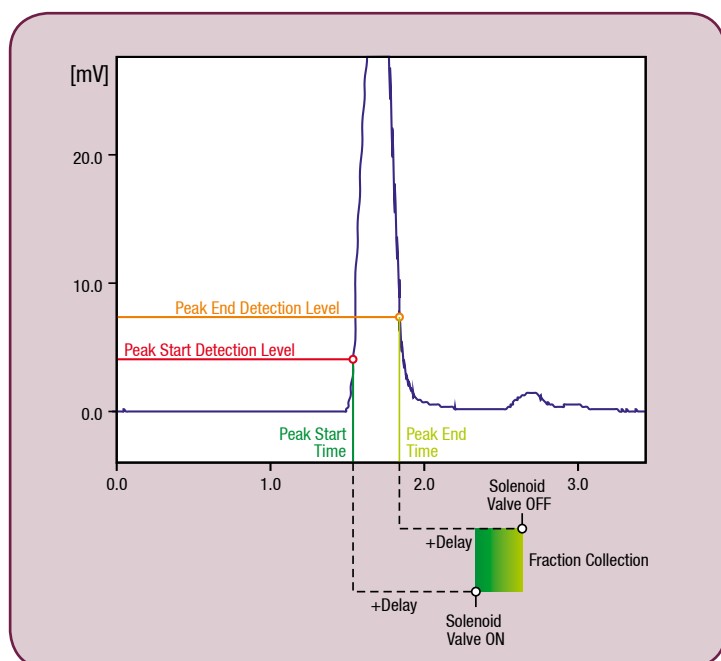


Figure: S 3245 Peak Detector

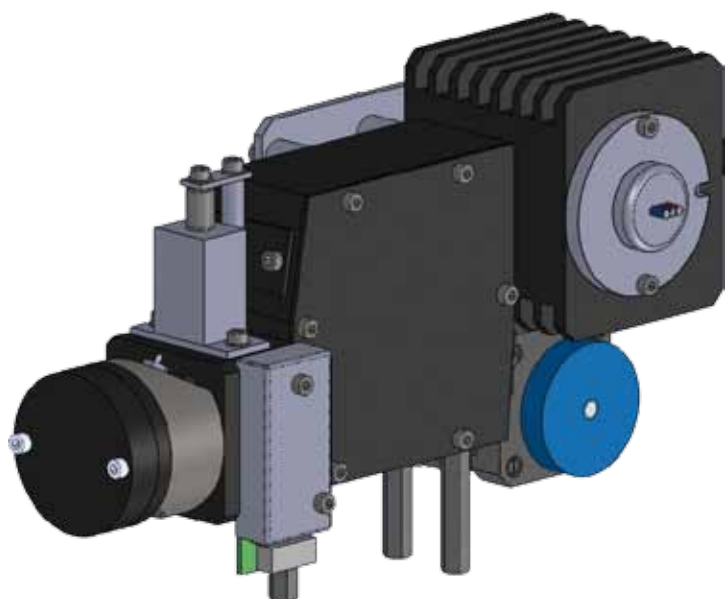


Figure: S 3245 Optical Module

## ■ Technical Specifications

<b>Wetted Materials:</b>	Stainless Steel / PEEK*
<b>Baseline Noise:</b>	$\pm 1 \times 10^{-5}$ AU (@240 nm, 2 sec. Risetime)
<b>Baseline Drift:</b>	$< 3 \times 10^{-4}$ AU/h
<b>Wavelength Range:</b>	190 – 800 nm
<b>Wavelength Accuracy:</b>	$\pm 2$ nm
<b>Linearity:</b>	$> 2.0$ AU
<b>Light Source</b>	Deuterium Lamp, Tungsten Lamp
<b>Wavelength Program:</b>	Programmable, 10 steps
<b>Analog Output:</b>	1x 1 V ( <i>optional</i> : 2x 1V)
<b>Control Features:</b>	Internal Peak Detector with +24 V solenoid switching output.
<b>Dimensions:</b> (W x H x D)	310 x 165 x 478 mm
<b>Power Supply:</b>	100 - 250 ~V (47 - 63 Hz)

\* depending on configuration

## ■ Principle of Operation

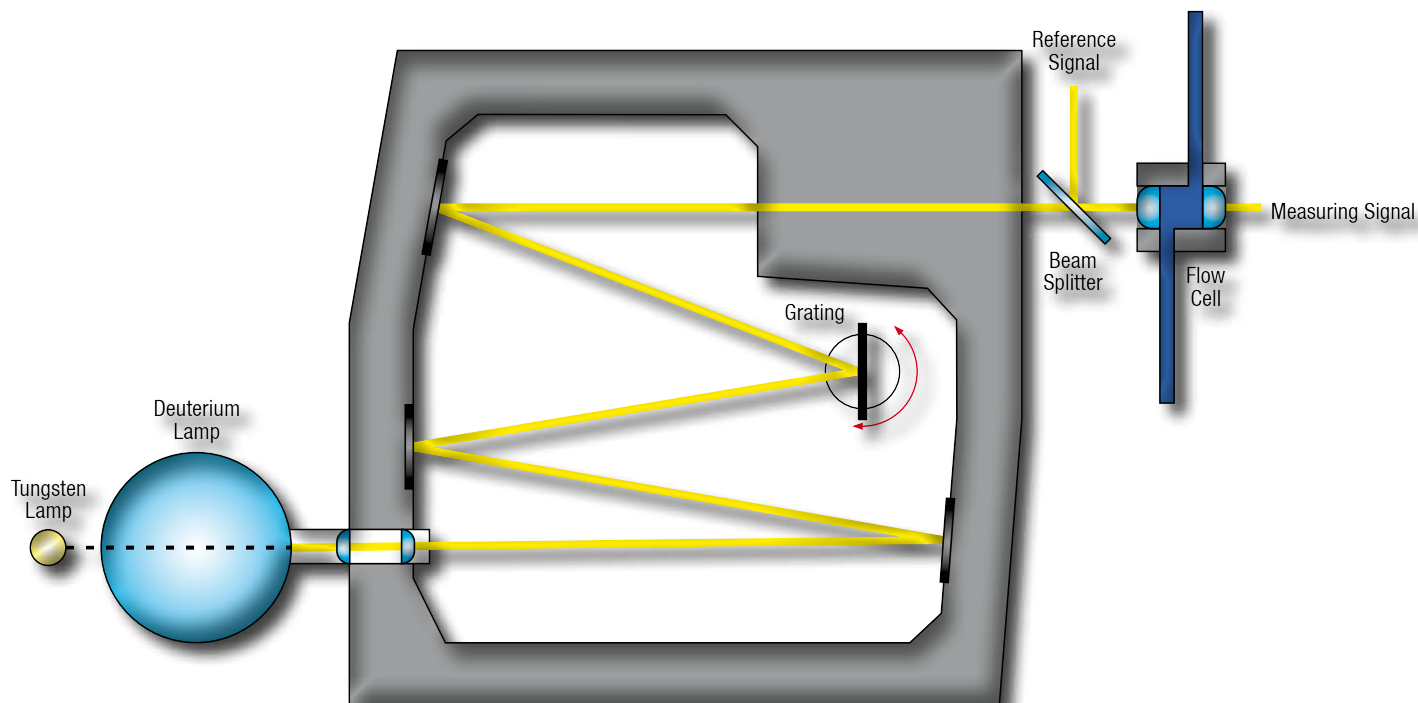


Figure: Principle of Operation

## ■ Order Information

### ■ ROUTINE Isocratic System S 501

Catalog No	Description
11 00 010	ROUTINE Isocratic System S 501-S – Analytical – SS* <ul style="list-style-type: none"> <li>• S 1125 Isocratic HPLC Pump</li> <li>• S 5250 Sample Injector System</li> <li>• S 3245 UV/Vis Detector</li> </ul>
20 20 061	<i>option: S 1125 – Active Piston Backflushing</i>
10 51 004	<i>option: S 5250 – Variable Volume upgrade</i>
10 51 005	<i>option: S 5250 – Derivatization upgrade (incl. 10 51 004)</i>
10 31 012	<i>option: S 3245 – Dual-Wavelength upgrade</i>
10 31 013	<i>option: S 3245 – Scanning upgrade (incl. 10 31 012)</i>

Catalog No	Description
11 00 011	ROUTINE Isocratic System S 501-P – Analytical – PEEK* <ul style="list-style-type: none"> <li>• S 1125 Isocratic HPLC Pump</li> <li>• S 5250 Sample Injector System</li> <li>• S 3245 UV/Vis Detector</li> </ul>
20 20 061	<i>option: S 1125 – Active Piston Backflushing</i>
10 51 004	<i>option: S 5250 – Variable Volume upgrade</i>
10 51 005	<i>option: S 5250 – Derivatization upgrade (incl. 10 51 004)</i>
10 31 012	<i>option: S 3245 – Dual-Wavelength upgrade</i>
10 31 013	<i>option: S 3245 – Scanning upgrade (incl. 10 31 012)</i>

### ■ ROUTINE Quaternary System S 504

Catalog No	Description
11 01 012	ROUTINE Quaternary Gradient System S 504-S – Analytical – SS* <ul style="list-style-type: none"> <li>• S 1125G Quaternary Gradient Pump</li> <li>• S 5250 Sample Injector System</li> <li>• S 3245 UV/Vis Detector</li> </ul>
20 20 061	<i>option: S 1125G – Active Piston Backflushing</i>
10 10 085	<i>option: S 1125G – Vacuum Degasser</i>
10 51 004	<i>option: S 5250 – Variable Volume upgrade</i>
10 51 005	<i>option: S 5250 – Derivatization upgrade (incl. 10 51 004)</i>
10 31 012	<i>option: S 3245 – Dual-Wavelength upgrade</i>
10 31 013	<i>option: S 3245 – Scanning upgrade (incl. 10 31 012)</i>

Catalog No	Description
11 01 013	ROUTINE Quaternary Gradient System S 504-P – Analytical – PEEK* <ul style="list-style-type: none"> <li>• S 1125G Quaternary Gradient Pump</li> <li>• S 5250 Sample Injector System</li> <li>• S 3245 UV/Vis Detector</li> </ul>
20 20 061	<i>option: S 1125G – Active Piston Backflushing</i>
10 10 085	<i>option: S 1125G – Vacuum Degasser</i>
10 51 004	<i>option: S 5250 – Variable Volume upgrade</i>
10 51 005	<i>option: S 5250 – Derivatization upgrade (incl. 10 51 004)</i>
10 31 012	<i>option: S 3245 – Dual-Wavelength upgrade</i>
10 31 013	<i>option: S 3245 – Scanning upgrade (incl. 10 31 012)</i>

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\* all systems are also available in Micro or Semi-Preparative configurations on request

All specifications are subject to  
change without notice.

