SYKAM
CHROMATOGRAPHY

AMINO ACID ANALYZER
SYSTEM **S 633**

◆ PROTEIN HYDROLYSATES
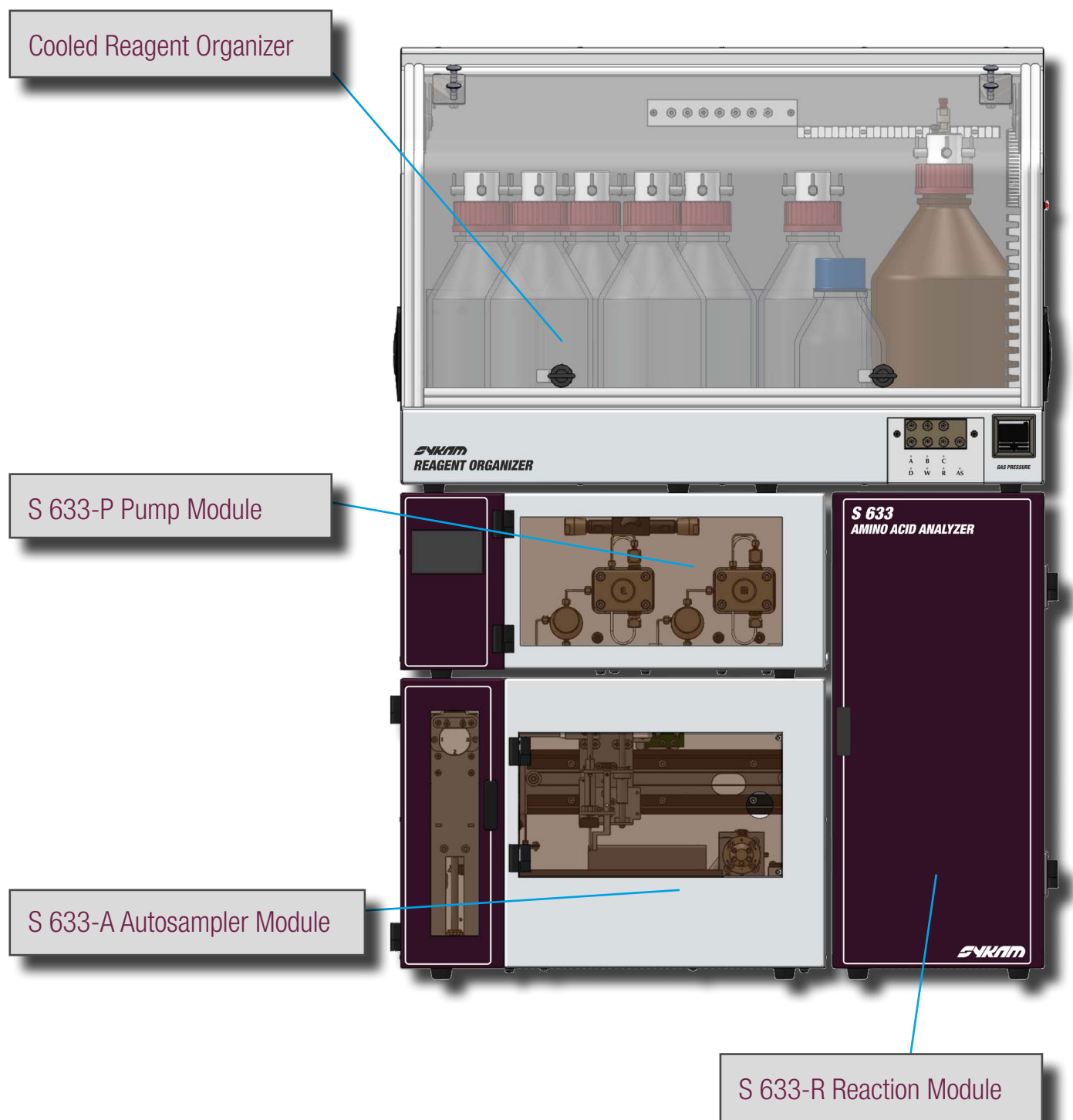
◆ PHYSIOLOGICAL FLUIDS

◆ BIOGENIC AMINES

AMINO ACID ANALYZER S 633

The **Amino Acid Analyzer S 633** is the latest generation of Amino Acid Analyzer produced by Sykam for more than 30 years.

The modular proven design of the new Model

S 633 features the latest technological advancements in the field of analytical instruments.
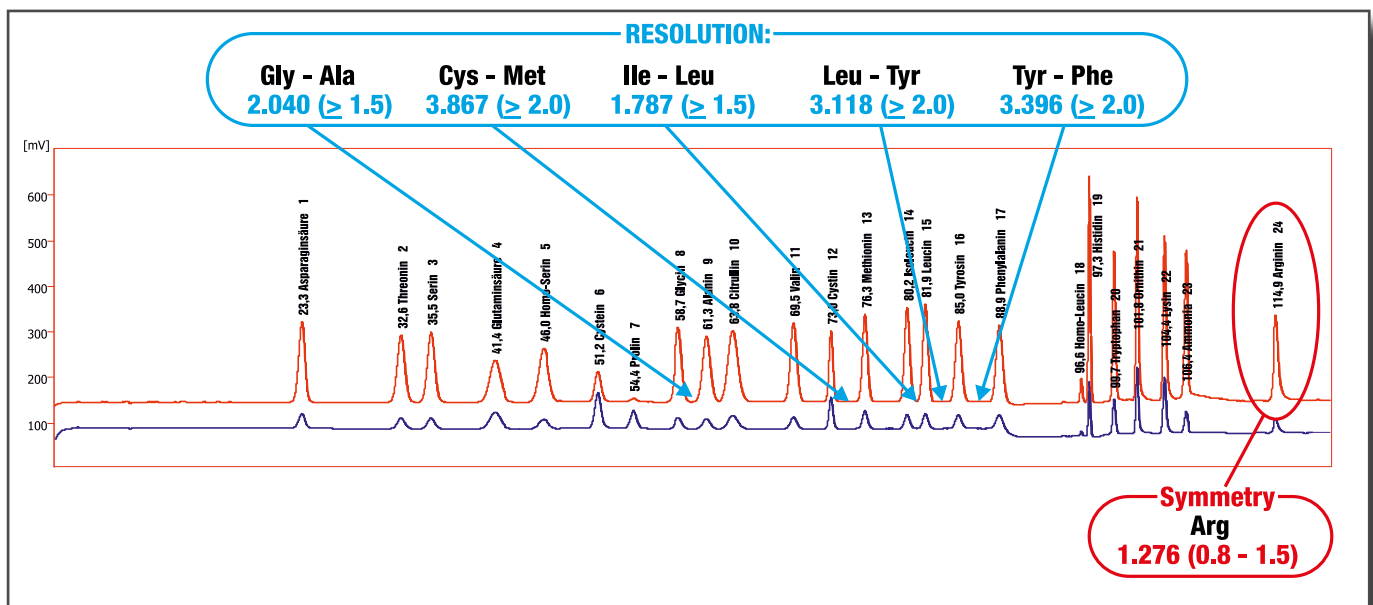
The whole system is inert and suitable for biolpgical samples.

Cooled Reagent Organizer

S 633-P Pump Module

S 633-A Autosampler Module

S 633-R Reaction Module

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CHROMATOGRAPHY

Amino Acid Applications

The Amino Acid Analyzer offers a high range of analysis profile from a variety of applications.

- Sample Matrices
  - Protein Hydrolysates
  - Physiological Fluids (Serum/Urine)
  - Pharmalogical Sample

- Applications / Features
  - Inborn Metabolism Errors
  - Feedstuff
  - Foodstuff
  - Biogenic Amines
  - Pharma Quality Control
  - Pharma Conformity (*Pharmacopoea*)

RESOLUTION:

Gly – Ala	Cys – Met	Ile – Leu	Leu – Tyr	Tyr – Phe
2.040 (≥ 1.5)	3.867 (≥ 2.0)	1.787 (≥ 1.5)	3.118 (≥ 2.0)	3.396 (≥ 2.0)

[mV]

600
500
400
300
200
100

Peaks:
23,3 Asparaginsäure 1
32,6 Threonin 2
35,5 Serin 3
41,4 Glutaminsäure 4
46,0 Homo-Serin 5
51,2 Cystein 6
54,4 Prolin 7
58,7 Glycin 8
61,3 Alanin 9
63,8 Citrullin 10
69,5 Valin 11
73,0 Cystin 12
76,3 Methionin 13
80,2 Isoleucin 14
81,9 Leucin 15
85,0 Tyrosin 16
88,9 Phenylalanin 17
96,6 Homo-Leucin 18
97,3 Histidin 19
98,7 Tryptophan 20
101,3 Ornithin 21
104,4 Lysin 22
106,7 Ammoniak 23
114,9 Arginin 24

Symmetry
Arg
1.276 (0.8 – 1.5)

Pharmacopoea Requirements for Amino Acid Analysis

PUMP MODULE S 633-P

The **Pump Module S 633-P** is a solvent delivery system consisting of three major parts:

Low Pressure Gradient Pump

The low low pressure gradient pump is a reliable HPLC-grade pump system with an active gradient mixer. The mixer volume is adjustable between 100 and 900 µl.
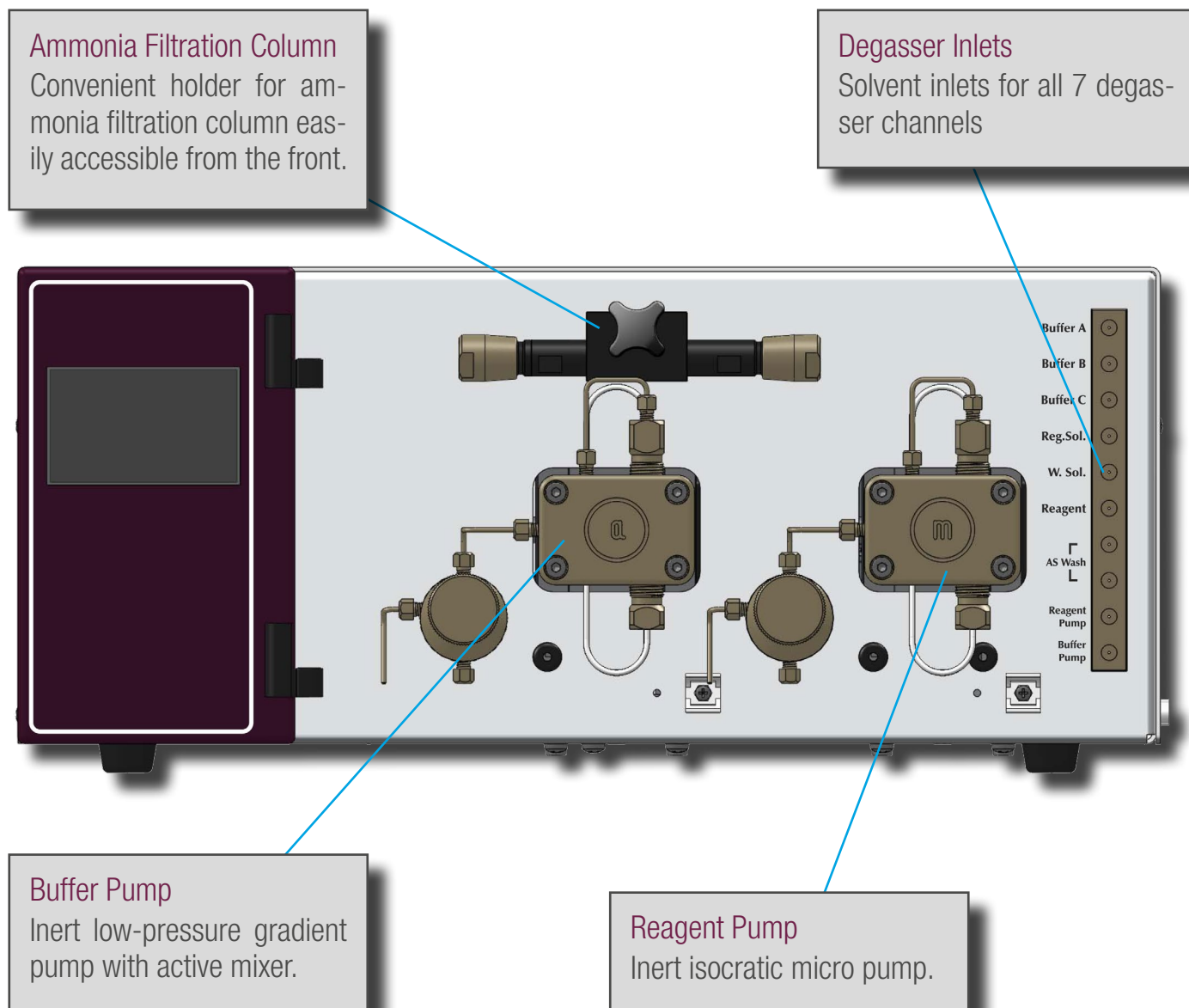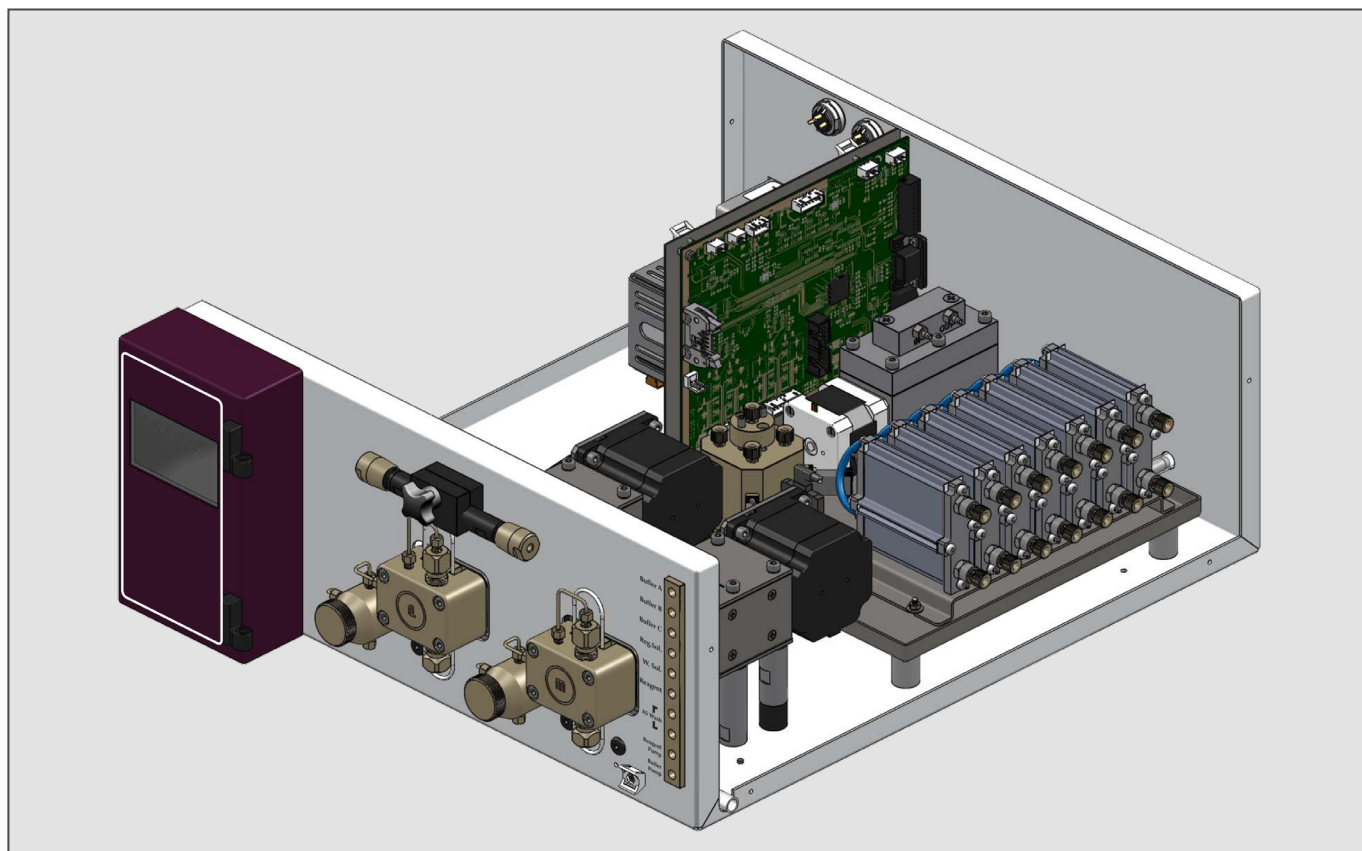
Reagent Pump

The isocratic reagent pump delivers the post-column derivatization agent. A reliable solenoid valve is used for the selection of reagent and washing solution.

Online Degasser

The integrated vacuum degasser uses 7 separate channels to degass all available solvents and reagents important for the analysis: the four gradient buffers, the reagent and washing solution of the reagent pump and an additonal channel for the autosampler washing solution.

Ammonia Filtration Column
Convenient holder for ammonia filtration column easily accessible from the front.

Degasser Inlets
Solvent inlets for all 7 degasser channels

Buffer A
Buffer B
Buffer C
Reg.Sol.
W. Sol.
Reagent
AS Wash
Reagent Pump
Buffer Pump

Buffer Pump
Inert low-pressure gradient pump with active mixer.

Reagent Pump
Inert isocratic micro pump.

TECHNICAL SPECIFICATIONS

S 633-P Pump Module

Wetted Materials:	PEEK, PTFE, Teflon AF
Dimensions:	396 x 165 x 478 mm (WxHxD)
Power Supply:	100 - 250 ~V (47 - 63 Hz)
Power Consumption:	max. 300 W

S 633-P Gradient Pump

Flow Range:	0.0001 - 10.000 ml/min
Flow Accuracy:	< 1.0% RSD at 0.45 ml/min
Flow Precision:	< 0.1% RSD at 0.45 ml/min
Max. Pressure:	350 bar (5076 psi)
Gradient:	low pressure gradient with active mixer
Gradient Mixer Volume:	100 - 950 µl; adjustable
Gradient Accuracy:	< 1.0% at 1.0 ml/min
Gradient Precision:	< 0.1% RSD at 1.0 ml/min
Propulsion:	stepper motor

S 633-P Reagent Pump

Flow Range:	0.0001 - 2.000 ml/min
Flow Accuracy:	< 1.0% RSD at 0.25 ml/min
Flow Precision:	< 0.1% RSD at 0.25 ml/min
Max. Pressure:	350 bar (5076 psi)
Propulsion:	stepper motor
Solvent Selection:	solenoid valve (closed, washing, reagent)

S 633-P Online Degasser

No. Channels:	7
Degassing Efficiency:	< 20% solved gases
Internal Volume:	< 400 µl / channel
Propusion:	stepper motor
Channel Usage:	• Buffer A • Buffer B • Buffer C • Reg.Solution • Washing Solution • Ninhydrine Reagent • Autosampler Wash

AUTOSAMPLER MODULE S 633-A

The **Autosampler Module S 633-A** 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 autosampler 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.

Sample Cooling

The sample racks can be cooled down to 5°C to handle temperature sensitive sample material.

Optional Pre-Column Derivatization

The autosampler module can optionally be equipped with an automatic pre-column derivatization feature to run high sensitive samples with fluorescence detection.

Front Door
The sample cabinet is closed with a door for easy access and good temeparture stability.
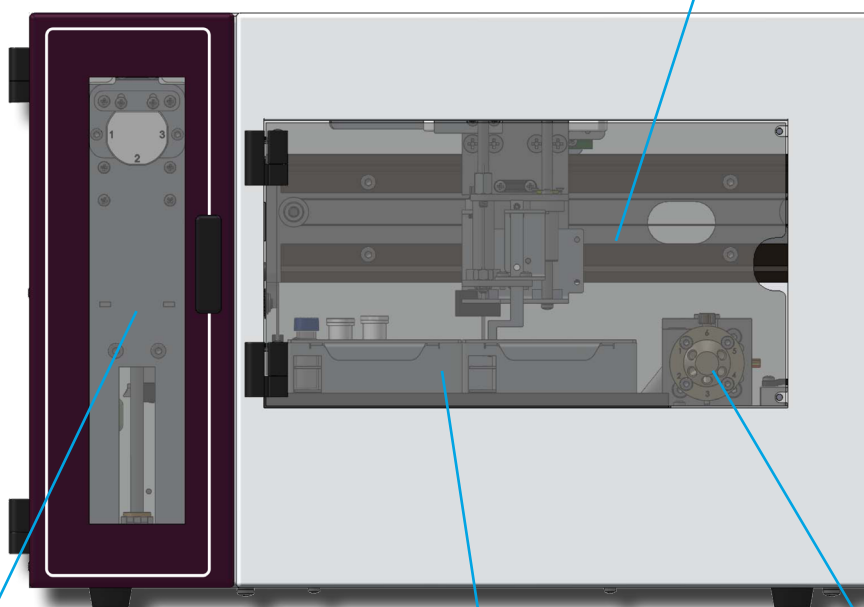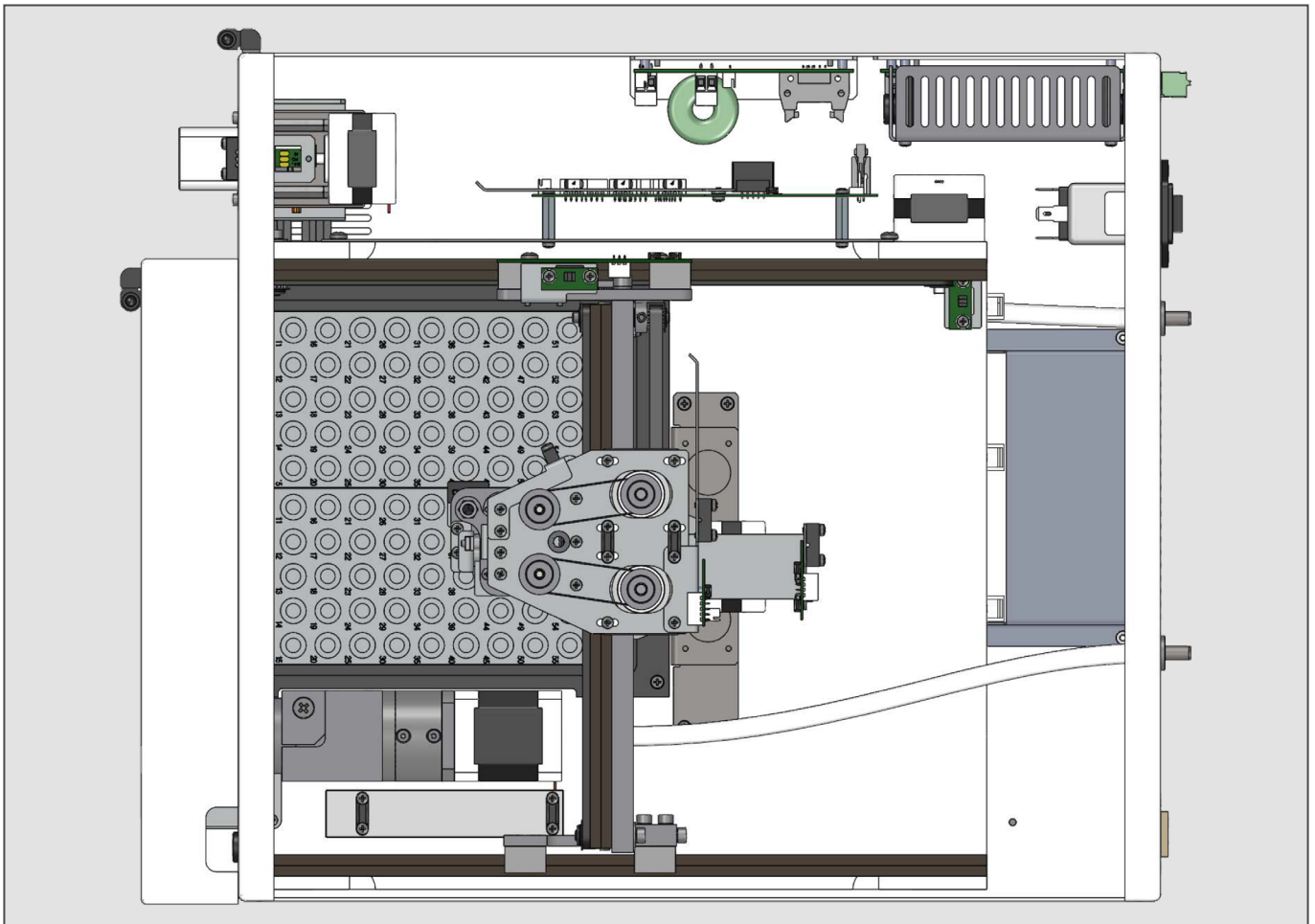

Dosing Syringe
Easy access for troubleshooting and maintenance.

120 Vial Capacity
The standard sample racks have a capacity of 120 1.5ml vials.

Injection Valve
The injection valve is easily accessible from the front.

TECHNICAL SPECIFICATIONS

S 633-A Autosampler Module

Wetted Materials:	PEEK, PTFE, PVDF
Sample Capacity:	120 (1.5 ml), 192 (microtiter plate; optional)
Injection Volume:	0.1 - 999.9 µl
Injection Precision:	< 0.5% RSD variable volume injection
Carry Over:	< 0.05 %
Sample Cooling:	+5°C to +60°C (at 20°C ambient temperature)
Dimensions:	396 x 165 x 478 mm (WxHxD)
Power Supply:	100 - 250 ~V (47 - 63 Hz)
Power Consumption:	max. 300 W

Dual-Needle Injection
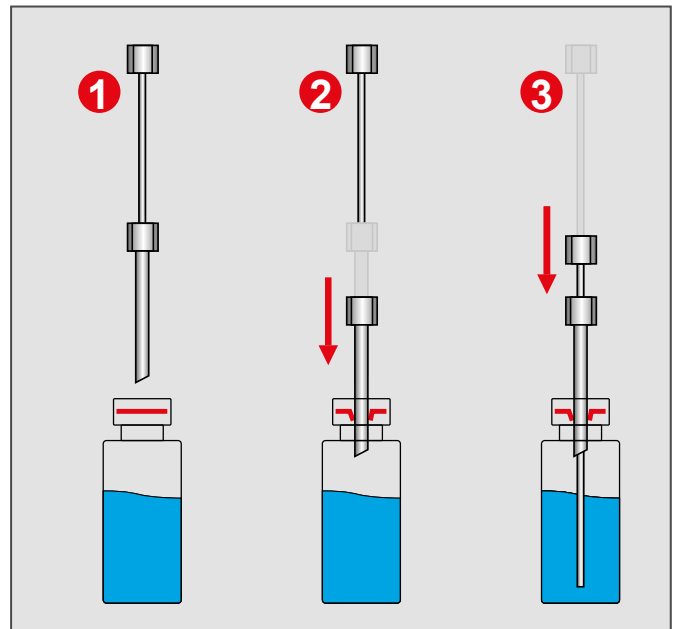
REACTION MODULE S 633-R

The *Reaction Module S 633-S* is a post-colummn derivatization module. The module consisting of three major parts:
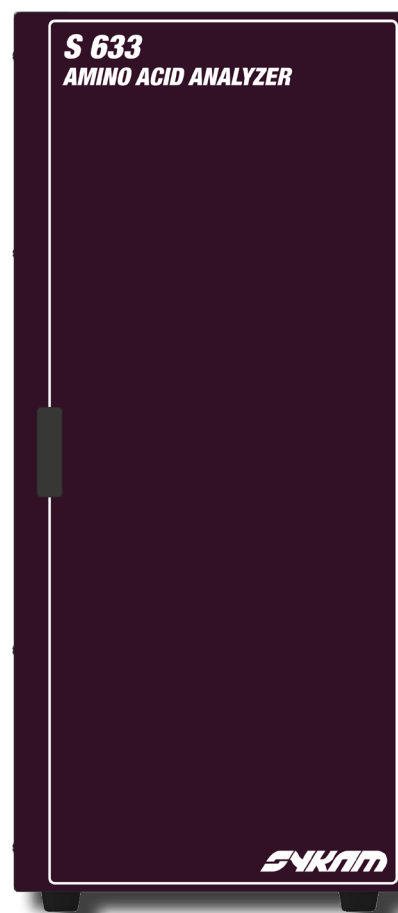
1.) Column Oven

The integrated column oven has a temperature range from +30°C to 99° C and is capable of temperature gradient programs.

2.) High Temperature Reactor

The high temperature reactor (30°C to 150 °C) guarantees a stable and fast ninhydrine reaction for consistent results.

3.) 2-Channel LED Detector

The integrated 2-Channel (440 & 570 nm) detector uses wavelength-specific LED with a narrow bandwidth. The lifetime and wavelength stability is much better then the concentionally used tungsten lamp.

S 633
AMINO ACID ANALYZER

SYKAM

TECHNICAL SPECIFICATIONS

S 633-R Reaction Module

Wetted Materials:	PEEK, PTFE, Quarz glas
Dimensions:	396 x 165 x 478 mm (WxHxD)
Power Supply:	100 - 250 ~V (47 - 63 Hz)
Power Consumption:	max. 300 W

S 633-R Column Oven

Temperature Range:	30°C to 99 °C; gradient capable
Temperature Accuracy:	< 1.0°C at 60 °C
Temperature Precision:	< 0.2°C at 60 °C
Temperature Control:	peltiers
Other Features:	column saver

S 633-R Reactor

Temperature Range:	30 °C to 150 °C
Temperature Accuracy:	< 1.0°C at 130 °C
Temperature Precision:	< 0.5°C at 130 °C
Temperature Control:	heating foil
Reactor Type:	PTFE capillary coil
Other Features:	temperature fuse

S 633-R Detector

No. Channels:	2 (570 & 440 nm)
Light Source:	wavelength specific LED
Pathlength:	20 mm
Flowcell Volume:	< 80 µl
Baseline Noise:	< 200 µAu
Baseline Drift:	< 3x 10-4 AU/hr
Other Features:	channel signal addition

Column Saver
Integrated column saver feature to increase the column lifetime.
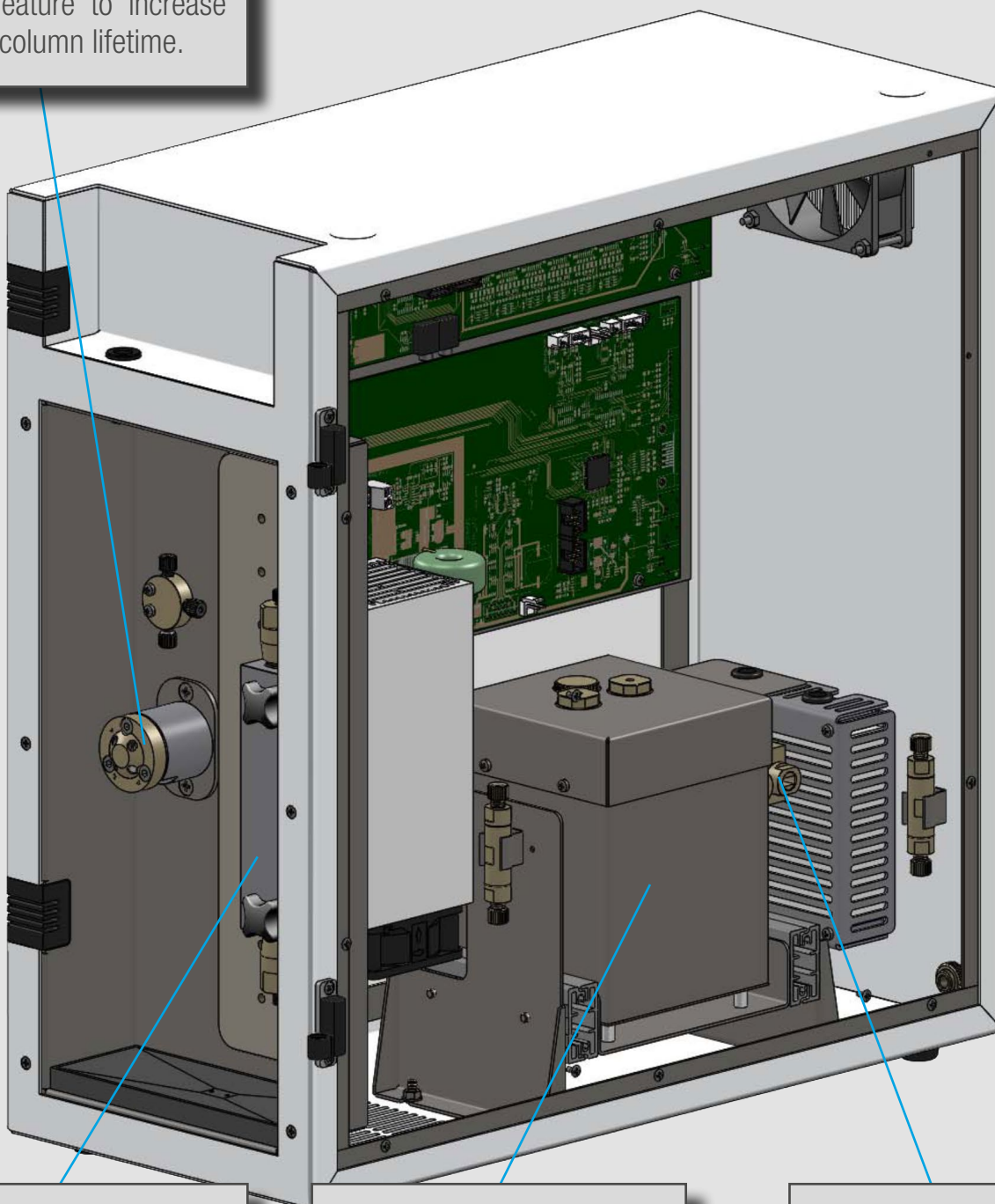
Column Oven
Integrated column oven with temperature gradient capability from 30 to 99 °C.

High-Temperature Reactor
PTFE coil reactor with a temperaure range from 30°C to 150°C.

Detector
2-Channel LED Dtecetor (440 & 470nm)

REAGENT ORGANIZER S 7135 / S 7136

The **Reagent Organizer S 7135** is an integral part of the amino acid analyzer.

The integrated cooling unit temperates the buffers and especially the ninhydrine reagent to ~ 15°C.

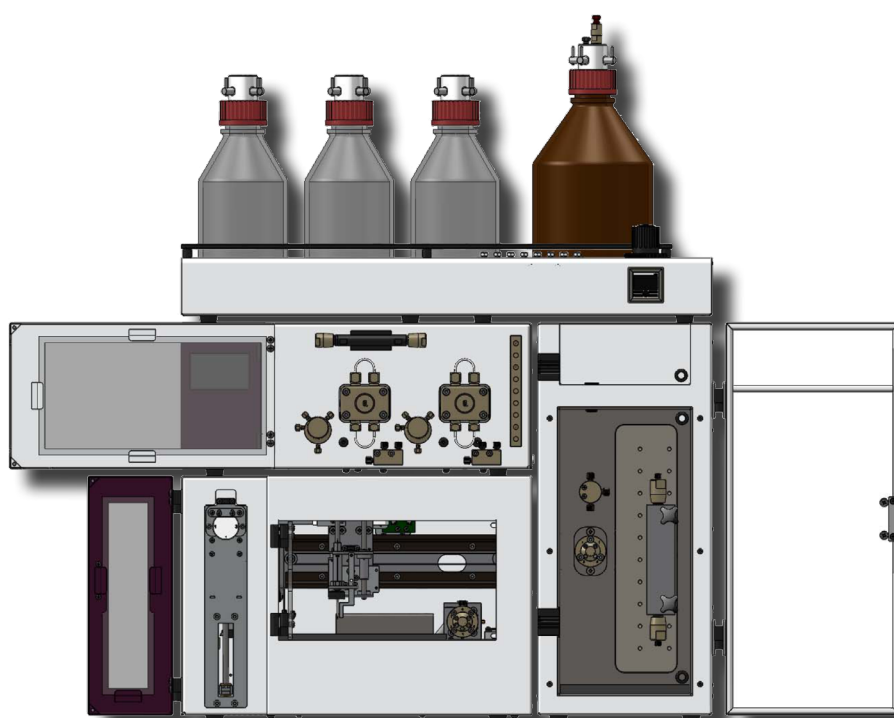This increases the stability of the ninhydrine reagent considerably.

Alternatively, the non-cooled **Reagent Organizer S 7136** is available for system with high sample throughput where the ninhydrine lifetime is not critical.

![SYKAM logo]

CHROMATOGRAPHY
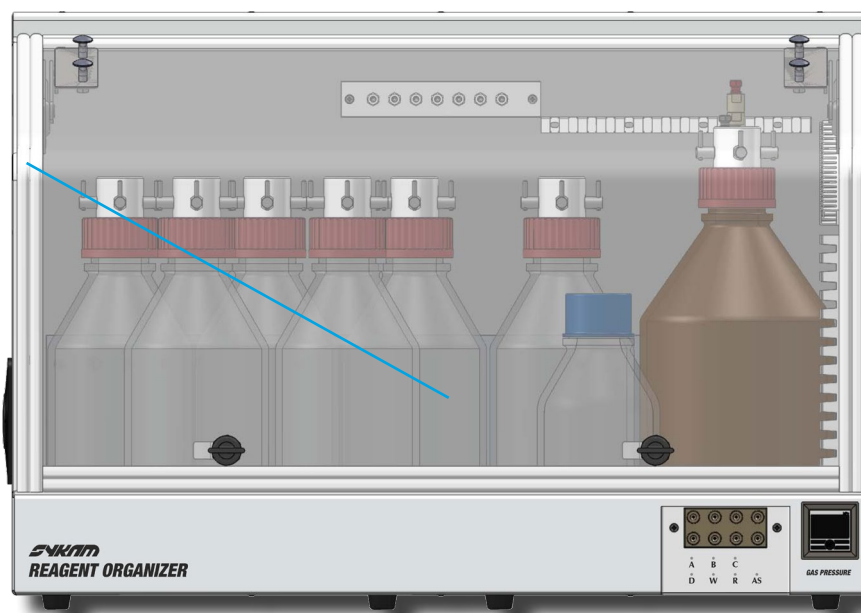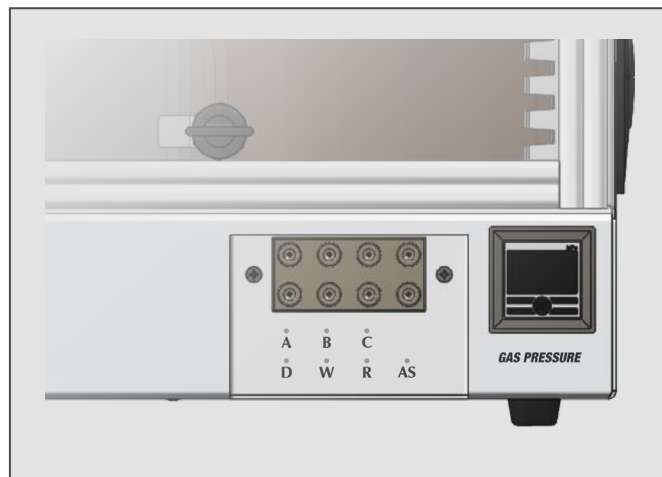
EASY MAINTENANCE

The system offers easy access to all necessary parts for routine maintenance and service.

Almost everything can be access from the front, except flowcell and reactor which can be comfortably accssed from the instrument's ride side.

ISO 9001:2015 CERTIFIED   ISO 13485:2016 CERTIFIED