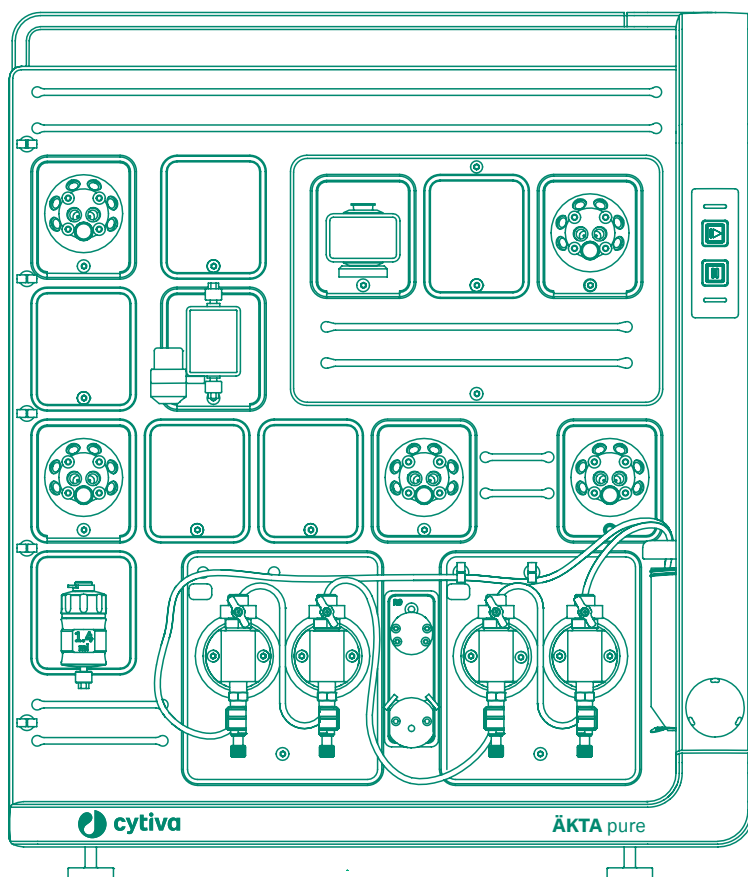


# ÄKTA pure™ 25

## Product Documentation



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# 1 Introduction

## Purpose of this document

This document provides an overview of the ÄKTA pure™ 25 chromatography instrument and its general specifications. For more information about the instrument, refer to the user documentation.

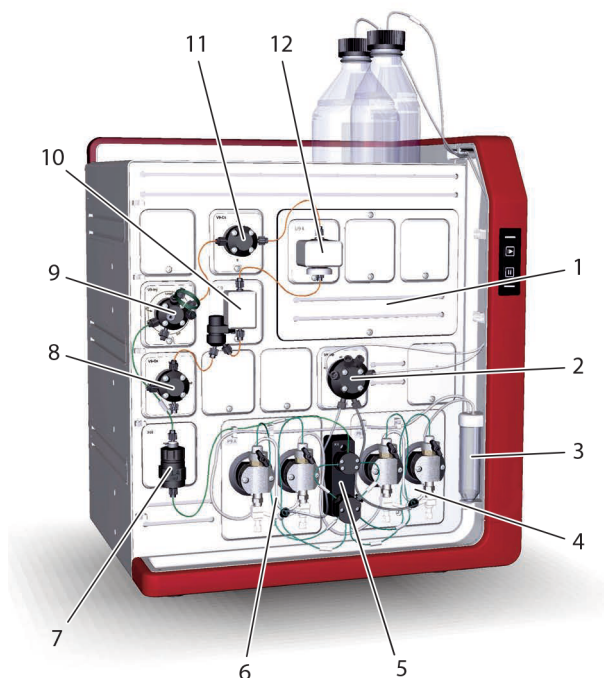
## In this chapter

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## 1.1 Instrument view

### Example of a typical configuration of the wet side

A typical configuration of the ÄKTA pure 25 instrument is illustrated below.



Part	Function
1	Multi-module panel
2	Inlet valve
3	Pump rinsing liquid tube
4	System pump B
5	Pressure monitor
6	System pump A
7	Mixer
8	Outlet valve

Part	Function
9	Injection valve
10	Conductivity monitor
11	Column valve
12	UV monitor

## Available modules

The modular design allows the user to customize the instrument in multiple ways. The ÄKTA pure 25 instrument is always delivered with the core modules, but one or more optional modules can be added to the flow path. The tables below contain information about core modules and optional modules.

### Core modules

Core module	Description
System pump <b>P9 A</b>	A high precision pump, which delivers buffer or sample in purification runs.
System pump <b>P9 B</b>	A high precision pump, which delivers buffer in purification runs.
Pressure monitor <b>R9</b>	Reads the system pressure after System pump A and System pump B.
Mixer <b>M9</b>	Mixes the buffers delivered from the system pumps to a homogeneous buffer composition.  Three mixer chambers are available for the ÄKTA pure 25 instrument, their volumes are: 0.6 mL, 1.4 mL (mounted at delivery), and 5 mL.
Injection valve <b>V9-Inj</b> or <b>V9M-J</b>	Directs sample onto the column.

### Optional modules

Module	Description
Inlet valve <b>V9-IA</b>	Inlet valve for System pump A with seven inlet ports and integrated air sensor.
Inlet valve <b>V9-IB</b>	Inlet valve for System pump B with seven inlet ports and integrated air sensor.
Inlet valve <b>V9-IAB</b>	Inlet valve with two A inlet ports and two B inlet ports. No integrated air sensor.

Module	Description
Sample inlet valve <b>V9-IS</b>	Inlet valve with eight inlet ports (seven sample inlets and one buffer inlet) and an integrated air sensor. Sample inlet valve <b>V9-IS</b> requires the external module Sample pump <b>S9</b> .
Inlet valve <b>V9-IX</b>	Inlet valve with eight inlet ports. No integrated air sensor.
Mixer valve <b>V9-M</b>	Directs the flow to the Injection valve, bypassing the Mixer, or to the Injection valve via the Mixer.
Loop valve <b>V9-L</b>	Enables the use of up to five loops connected to the instrument.
Column valve <b>V9-C</b>	Connects up to five columns to the instrument, and directs the flow to one column at a time. The column valve features two integrated pressure sensors. Allows the user to choose flow direction through the column, or to bypass the column.
Column valve <b>V9-Cm</b>	Connects up to three columns to the instrument, and directs the flow onto one column at a time. Allows the user to choose flow direction through the column, or to bypass the column.
Column valve <b>V9-Cs</b>	Connects a single column to the instrument. Allows the user to choose flow direction through the column, or to bypass the column.
pH valve <b>V9-pH</b>	Enables the pH electrode to be included in the flow path or bypassed during a run. The pH electrode can be calibrated when installed in the pH valve.
Outlet valve <b>V9-O</b>	Directs the flow to the Fraction collector, secondary Fraction collector ( <b>Out10</b> ), any of the ten outlet ports, or waste.
Outlet valve <b>V9-Os</b> or <b>V9M-Os</b>	Directs the flow to the Fraction collector, secondary Fraction collector, the outlet port, or waste.
Versatile valve <b>V9-V</b>	A 4-port, 4-position valve, which can be used when adding extra features to the flow path.
UV monitor <b>U9-L</b>	Measures the UV absorbance at a fixed wavelength of 280 nm.
UV monitor <b>U9-T</b>	Measures the UV absorbance at the fixed wavelengths of 280 nm, or 260 nm and 280 nm.
UV monitor <b>U9-M</b>	Measures the UV/Vis absorbance at up to three wavelengths simultaneously within the range of 190 to 700 nm.
Conductivity monitor <b>C9</b> or <b>C9M</b>	Measures the conductivity of buffers and eluted proteins.

Module	Description
External air sensor <b>L9-1.5</b> or <b>L9-1.2</b>	Prevents air from being introduced into the flow path.
Fraction collector <b>F9-C</b>	Flexible fraction collector, which can collect up to 576 fractions.
Fraction collector <b>F9-R</b>	Round fraction collector, which can collect up to 175 fractions. Up to two fraction collectors can be connected at the same time. The secondary can only be Fraction collector F9-R.
Fraction collector <b>F9-T</b>	A fraction collector for small tubes or two plates.
I/O-box <b>E9</b>	Receives analog or digital signals from, or transfers analog or digital signals to, external equipment that has been incorporated in the system.
Sample pump <b>S9</b>	A high precision pump with an integrated pressure monitor. The sample pump delivers buffer or sample in purification runs.

## 1.2 Liquid flow path

### Introduction

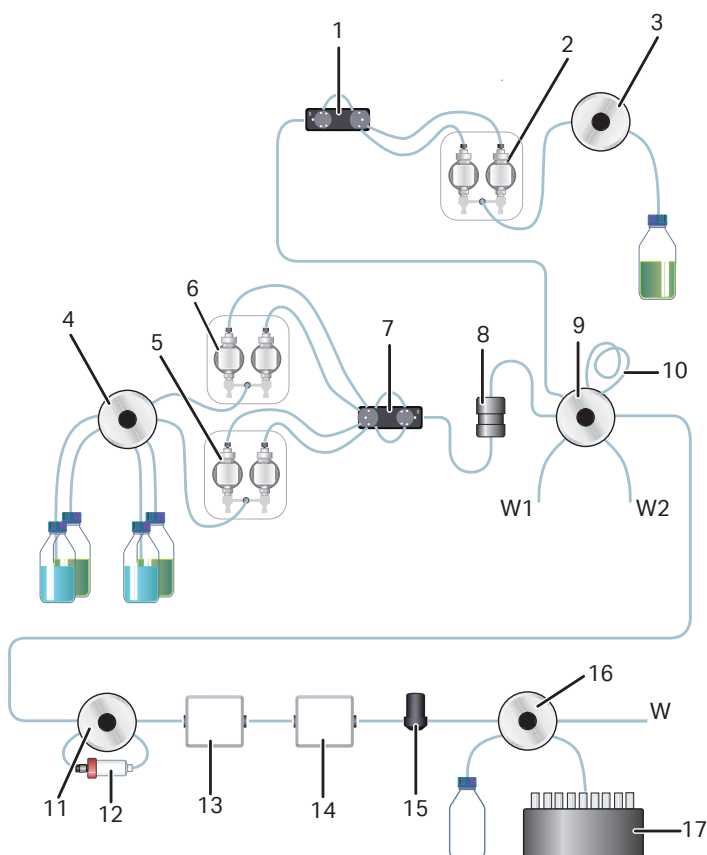
The ÄKTA pure 25 instrument is a liquid chromatography instrument with a customizable flow path.

This section provides an overview of the liquid flow path, and its possibilities.

### Example of a typical liquid flow path

The liquid flow path and system functionality can be customized in multiple ways to fit the needs of the user. One or more optional components can be added to the flow path. External equipment can also be connected to the instrument via the I/O-box **E9**.

The illustration below shows the flow path for a typical system configuration. The individual instrument modules are presented in the table below. The configuration of the system is defined by the user.





Part	Description
1	Pressure monitor
2	Sample pump
3	Sample inlet valve
4	Inlet valve
5	System pump B
6	System pump A
7	Pressure monitor
8	Mixer
9	Injection valve
10	Sample loop or Superloop™
11	Column valve
12	Column
13	UV monitor
14	Conductivity monitor
15	Flow restrictor
16	Outlet valve
17	Fraction collector
W, W1, W2	Waste

## 2 General specifications

### In this chapter

Section		See page
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2.3	Operating range	13
2.4	Module specifications	14

## 2.1 System specifications

Parameter	Data
System configuration	Benchtop system, external computer
Control system	For information about the UNICORN™ control software, refer to <a href="https://www.cytiva.com/unicorncompatibility">cytiva.com/unicorncompatibility</a>
Connection between PC and instrument	Ethernet
Dimensions (W × D × H)	535 × 470 × 630 mm
Weight (excluding computer)	Up to 53 kg
Power supply	100 to 240 VAC, 50 to 60 Hz
Power consumption	300 VA (typical) 25 VA (power-save)
Enclosure protective class	IP 21
Tubing and connectors	<ul style="list-style-type: none"> <li>• Inlet: FEP tubing, i.d. 1.6 mm, 5/16 to 24 UNF connections</li> <li>• Pump to injection valve: PEEK tubing, i.d. 0.75 mm (ÄKTA pure micro: i.d. 0.25 mm), 10-32 UNF connections</li> <li>• After Injection valve: PEEK tubing, i.d. 0.50 mm (ÄKTA pure micro: i.d. 0.13 mm), 10 to 32 UNF connections</li> <li>• Outlet and waste: ETFE tubing, i.d. 1.0 mm, Fingertight connector, 1/16"</li> <li>• Optional tubing kits: i.d. 0.25 mm, i.d. 0.75 mm, i.d. 1.0 mm</li> </ul>

## 2.2 Environmental ranges

Parameter	Data
Storage and transport temperature range	-25°C to +60°C
Chemical environment	Refer to the <i>ÄKTA pure User Manual</i> 29119969.

## 2.3 Operating range

Parameter	Data
Operating temperature range	4°C to 35°C
Relative humidity	20% to 95%, non-condensing

## 2.4 Module specifications

### System pumps

Parameter	Data
Pump type	Piston pump, metering type
Flow rate range	0.001 to 25 mL/min (up to 50 mL/min column packing flow)
Pressure range	0 to 20 MPa
Viscosity range	0.35 to 10 cP (5 cP above 12.5 mL/min)
Flow rate specifications	<ul style="list-style-type: none"> <li>Accuracy: <math>\pm 1.2\%</math></li> <li>Precision: RSD &lt; 0.5%</li> </ul> (Conditions: 0.25 to 25 mL/min, < 3 MPa, 0.8 to 2 cP)

### Sample pump

Parameter	Data
Pump type	Piston pump, metering type
Dimensions (W x D x H)	215 × 370 × 210 mm
Weight	11 kg
Flow rate range	0.001 to 50 mL/min
Pressure range	0 to 10 MPa
Viscosity range	0.7 to 10 cP
Flow rate specifications	<ul style="list-style-type: none"> <li>Accuracy: <math>\pm 2\%</math></li> <li>Precision: RSD &lt; 0.5%</li> </ul> (Conditions: 0.25 to 50 mL/min, < 3 MPa, 0.8 to 3 cP)

### Valves

Parameter	Data
Type	Rotary valves

Parameter	Data
Number of valves	Up to 12
Functions	Standard: Injection Options: Inlet A, Inlet B, Sample inlet, Extra inlet, Mixer by-pass, Loop selection, Column selection, pH, Outlet, Versatile

## Inlet options

Parameter	Data
Inlet A	1, 2 or 7 inlets
Inlet B	1, 2 or 7 inlets
Sample inlet	Up to 7 sample inlets and 1 buffer inlet

## Outlet options

Parameter	Data
Number of outlets	1 or 10 outlets

## Mixer

Parameter	Data
Mixing principle	Chamber with magnetic stirrer
Mixer volume	0.6, 1.4 or 5 mL

## Gradient formation

Parameter	Data
Gradient flow rate range	0.1 to 25 mL/min for ÄKTA pure 25 0.05 to 2 mL/min for ÄKTA pure micro/Microkit
Gradient composition accuracy	± 0.6% (Conditions 5% to 95% B. 0.5 to 25 mL/min, 0.2 to 2 MPa, 0.8 to 2 cP)

## Pressure monitors

Parameter	Data
Number of sensors	Up to 4
Placement of sensors	<p>Standard: The system pressure monitor is located after the system pump</p> <p>Options:</p> <ul style="list-style-type: none"> <li>The pre-column pressure monitor and the post-column pressure monitor are integrated in Column valve <b>V9-C</b>.</li> <li>The sample pressure monitor is located after the sample pump.</li> </ul>
Pressure range	0 to 20 MPa
Accuracy	± 0.02 MPa or ± 2%, whichever is greater

## External air sensor options

Parameter	Data
Number of sensors	Up to 7
Placement	<ul style="list-style-type: none"> <li>Integrated in inlet valve A, inlet valve B and sample inlet valve</li> <li>After the injection valve</li> <li>Before the system pumps</li> <li>Before the sample pump</li> </ul>
Sensing principle	Ultrasonic

## UV monitor options

Parameter	Data
Number of monitors	Up to 2
Wavelength range	<p><b>U9-L:</b> 280 nm</p> <p><b>U9-T:</b> 280 nm, or 260 nm and 280 nm</p> <p><b>U9-M:</b> Up to three wavelengths within the range of 190 to 700 nm</p>
Absorbance range	-6 to 6 AU



Parameter	Data
Resolution	0.001 mAU
Linearity	<b>U9-L:</b> within $\pm 5\%$ at 0 to 2 AU <b>U9-T:</b> within $\pm 3\%$ at 0 to 2 AU <b>U9-M:</b> within $\pm 2\%$ at 0 to 2 AU
Drift	<b>U9-L</b> (2 mm cell): $\leq   0.2 \text{ mAU}   \text{ AU/h}$ <b>U9-T</b> (2mm cell at 260nm and 280 nm): $\leq   0.2 \text{ mAU}   \text{ AU/h}$ <b>U9-M</b> (2 mm cell at 280 nm): $\leq   0.2 \text{ mAU}   \text{ AU/h}$
Noise	<b>U9-L:</b> $< 0.1 \text{ mAU}$ <b>U9-T:</b> $< 0.06 \text{ mAU}$ <b>U9-M:</b> $< 0.08 \text{ mAU}$
Operating pressure	0 to 2 MPa
Lamp operating time	<b>U9-L:</b> $> 10\,000 \text{ h}$ <b>U9-T:</b> $> 4000 \text{ h}$ <b>U9-M:</b> $> 5000 \text{ h}$
Flow cells: <b>U9-L</b>	Standard: Optical path length: 2 mm Illuminated volume: 2 $\mu\text{L}$ Total volume: 30 $\mu\text{L}$  Options: Optical path length: 5 mm Illuminated volume: 6 $\mu\text{L}$ Total volume: 20 $\mu\text{L}$  Optical path length: 0.4 mm Illuminated volume: 1 $\mu\text{L}$ Total volume: 17 $\mu\text{L}$

Parameter	Data
Flow cells: <b>U9-T</b>	<p>Standard:</p> <p>Optical path length: 2 mm</p> <p>Illuminated volume: 2 <math>\mu</math>L</p> <p>Total volume: 30 <math>\mu</math>L</p> <p>Options:</p> <p>Optical path length: 5 mm</p> <p>Illuminated volume: 6 <math>\mu</math>L</p> <p>Total volume: 20 <math>\mu</math>L</p> <p>Optical path length: 0.4 mm</p> <p>Illuminated volume: 1 <math>\mu</math>L</p> <p>Total volume: 17 <math>\mu</math>L</p>
Flow cells: <b>U9-M</b>	<p>Standard:</p> <p>Optical path length: 2 mm</p> <p>Illuminated volume: 2 <math>\mu</math>L</p> <p>Total volume: 11 <math>\mu</math>L</p> <p>Micro:</p> <p>Optical path length: 2 mm</p> <p>Illuminated volume: 0.8 <math>\mu</math>L</p> <p>Total volume: 2.6 <math>\mu</math>L</p> <p>Options:</p> <p>Optical path length: 10 mm</p> <p>Illuminated volume: 8 <math>\mu</math>L</p> <p>Total volume: 12 <math>\mu</math>L</p> <p>Optical path length: 5 mm</p> <p>Illuminated volume: 7 <math>\mu</math>L</p> <p>Total volume: 12 <math>\mu</math>L</p> <p>Optical path length: 0.5 mm</p> <p>Illuminated volume: 1 <math>\mu</math>L</p> <p>Total volume: 10 <math>\mu</math>L</p>

## Conductivity monitor options

Parameter	Data
Conductivity reading range	0.01 to 999.99 mS/cm
Accuracy	± 0.01 mS/cm or ± 2%, whichever is greater, (within 0.3 to 300 mS/cm)
Operating pressure	0 to 5 MPa
Flow cell volume	Conductivity cell <b>C9n</b> 22 µL Conductivity cell <b>C9M</b> 5.4 µL
Temperature monitor range	0°C to 99°C
Temperature monitor accuracy	± 1.5°C within 4°C to 45°C

## pH monitor option

Parameter	Data
pH reading range	0 to 14
Accuracy	± 0.1 pH unit within pH 2 to 12, temperature within ± 3°C from calibration temperature
Operating pressure	0 to 0.5 MPa (72 psi)
Flow cell volume	76 µL

## Outlet valve fractionation option

Parameter	Data
Number of outlets	10
Fraction volumes	0.01 to 20 000 mL
Delay volume (UV – outlet valve)	125 µL 66 µL with optional tubing kit (i.d. 0.25 mm) 12 µL for ÄKTA pure micro / Microkit

## Fraction collector options

Parameter	Data
Number of fraction collectors	Up to two The secondary fraction collector must be Fraction collector <b>F9-R</b>
Number of fractions	<b>F9-C:</b> Up to 576 <b>F9-R:</b> Up to 175 <b>F9-T:</b> Up to 192
Vessel types	<b>F9-C:</b> <ul style="list-style-type: none"> <li>Deep well plates: 96, 48 or 24 wells</li> <li>Tubes: 3, 5, 8, 15, or 50 mL</li> <li>Bottle: 250 mL</li> </ul> <b>F9-R:</b> <ul style="list-style-type: none"> <li>Tubes: 3, 5, 8, 15, or 50 mL</li> </ul> <b>F9-T:</b> <ul style="list-style-type: none"> <li>Deep well plates: 96, 48, or 24 wells</li> <li>Microplates: 96 wells</li> <li>Tubes: 0.5, 1.5, or 2 mL</li> </ul>
Fraction volumes	<b>F9-C:</b> 0.1 to 250 mL <b>F9-R:</b> 0.1 to 50 mL <b>F9-T:</b> 0.02 to 9 mL
Spillage-free mode	<b>F9-C:</b> Automatic, Drop sync or Accumulator <b>F9-R:</b> Drop sync <b>F9-T:</b> Drop sync
Fractionation of flammable liquids	<b>F9-C:</b> no <b>F9-R:</b> yes <b>F9-T:</b> yes
Delay volume (UV – dispenser head)	<b>F9-R:</b> 205 µL, 86 µL with optional tubing kit (i.d. 0.25 mm) <b>F9-T:</b> 215 µL, 87 µL with optional tubing kit (i.d. 0.25 mm), 18 µL for ÄKTA pure micro/Microkit <b>F9-C:</b> 435 µL, 214 µL with optional tubing kit (i.d. 0.25 mm)

Parameter	Data
Dimensions (W × D × H)	<b>F9-C:</b> 390 × 585 × 320 mm <b>F9-R:</b> 320 × 400 × 250 mm <b>F9-T:</b> 320 × 270 × 190 mm
Weight	<b>F9-C:</b> 21 kg <b>F9-R:</b> 5 kg <b>F9-T:</b> 4 kg

## I/O box

Parameter	Data
Number of ports	2 analog in, 2 analog out 4 digital in, 4 digital out
Analog range	In ± 2 V Out ± 1 V

# 3 Material conformity

## In this chapter

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## 3.1 Material definitions

### Introduction

The tables below list the materials that come into contact with process fluids in the ÄKTA pure 25 instrument.

### Primary flow path

Material	Abbreviation
Ethylene ChloroTriFluoroEthylene	ECTFE
Ethylene TetraFluoroEthylene	ETFE
Fluorinated Ethylene Propylene	FEP
Fluorinated Propylene Monomer	FPM/FKM
Fully Fluorinated Propylene Monomer	FFPM/FFKM
PolyChloroTriFluoroEthylene	PCTFE
PolyEtherEtherKetone	PEEK
PolyPropylene	PP
PolyTetraFluoroEthylene	PTFE
PolyVinylidene DiFluoride	PVDF
UltraHighMolecularWeightPolyEthylene	UHMWPE
Aluminum oxide	
Elgiloy	
Hastelloy® C-276	
Hastelloy C-22	
Quartz glass	
Ruby	
Sapphire	
Titanium grade 2	

## Pump rinse system

Material	Abbreviation
EthylenePropyleneDiene M-class rubber	EPDM
PolyEtherEtherKetone	PEEK
PolyPropylene	PP
PolyPhenylene Sulfide	PPS
PolyVinylidene DiFluoride	PVDF
Silicone	



## 3.2 Materials of construction

### Introduction

The following tables list the materials used in flow path and pump rinse system components.

### Primary flow path

Part	Product code	Component	Material
<b>P9 A</b> <b>P9 B</b>	-	<b>29741578 Pump P9 (primary flow path)</b>	
		56116124 Piston	Sapphire
		28945400 Y-Connector	ECTFE
		28939480 Pump Head P9	-
		20939097 Pump Head	Titanium grade 2
		28943626 Purge Valve	PEEK
		56118261 Seal	UHMWPE/Elgiloy
		<b>Check valves in/out</b>	
		28963058 Outlet Check valve	-
		28962655 Valve housing Out	PEEK
		28962657 Ball retainer	PEEK
		28962659 Washer	PEEK
		28950137 Ball and Seat	Sapphire/Ruby
		28963062 Inlet Check Valve	-
		28962653 Valve housing In	PEEK
		28962657 Ball Retainer	PEEK
		28950137 Ball and Seat	Sapphire/Ruby
		56305879 Purge Valve	PEEK
<b>R9</b> (System pumps)	-	<b>28944995 Pressure monitor R9 (System) with pump restrictor</b>	
		28951451 Pressure monitor R9 (System)	-
		28947686 Pressure connector	PEEK
		28933525 Pressure sensor	Hastelloy C-22

Part	Product code	Component	Material
		28945164 Restrictor Housing R9 (System) Assembly	-
		28977560 Compression Spring	Hastelloy C-276
		28966920 Membrane	FFPM/FFKM
		28989942 Plunger	PEEK
		28946870 Restrictor Stopper	PEEK
		28946577 Pump Restriction Housing	PEEK
<b>M9-0.6</b>	<b>28956186</b>	<b>28922334 Mixer chamber 0.6 mL</b>	
		56302238 Filter 10PP (1 µm)	PP
		56302237 Support net	PP
		28945536 Mixer top	PEEK
		28963112 Stirring magnet 9.1 mm	PTFE
		28916429 Mixer chamber 0.6 mL	PEEK
		28945544 O-ring 13.1 x 1.6	FPM/FKM
<b>M9-1.4</b>	<b>28956225</b>	<b>28924642 Mixer chamber 1.4 mL</b>	
		56302238 Filter 10PP (1 µm)	PP
		56302237 Support net	PP
		28945536 Mixer top	PEEK
		28924648 Stirring magnet 12 mm	PTFE
		28924646 Mixer chamber 1.4 mL	PEEK
		28945544 O-ring 13.1 x 1.6	FPM/FKM
<b>M9-5</b>	<b>28956246</b>	<b>28924700 Mixer chamber 5 mL</b>	
		56302238 Filter 10PP (1 µm)	PP
		56302237 Support net	PP
		28945536 Mixer top	PEEK
		56105749 Stirring magnet 12 mm	PTFE
		28924702 Mixer chamber 5 mL	PEEK
		28945544 O-ring 13.1 x 1.6	FPM/FKM
	<b>29011326</b>	<b>28948433 O-ring 13.1 x 1.6 mm</b>	FFKM

Part	Product code	Component	Material
<b>V9-Inj</b>	-	<b>28920910 Injection valve V9-Inj</b> 28943034 Valve stator injection 28943040 Valve rotor injection	PEEK PEEK + PTFE
<b>V9M-J</b>	<b>29502123</b>	<b>29450731 Injection valve V9M-J</b> 29450732 Valve stator V9M-J 29450847 Valve rotor V9M-J	PEEK PEEK + PTFE
<b>FR</b>	<b>18112135</b>	<b>56304545 Flow restrictor FR-902</b> 56302557 Housing 56303929 Diaphragm	PEEK FFPM/FFKM
<b>V9-IS</b>	<b>29027746</b>	<b>Sample Inlet Valve Kit V9-IS, 7 ports</b> 28920915 Sample Inlet Valve V9-IS 28934791 Valve stator inlet 1.5 asm. 28934276 Valve stator inlet 1.5 28934290 Valve rotor inlet 28934287 Valve inlet plug 29032923 Tubing S1 29032924 Tubing S2 29032925 Tubing S3 29032926 Tubing S4 29032927 Tubing S5 29032928 Tubing S6 29032929 Tubing S7 29032921 Tubing InS 56119885 Ferrule	- PEEK PEEK PEEK PEEK FEP FEP FEP FEP FEP FEP FEP FEP FEP
<b>V9-V</b>	<b>29011353</b>	<b>28992313 Versatile valve V9-V</b> 28987417 Stator versatile valve 28987420 Valve rotor versatile	PEEK PEEK + PTFE
<b>V9-M</b>	<b>29011354</b>	<b>Mixer valve kit V9-M</b> 28987417 Stator versatile valve	PEEK

Part	Product code	Component	Material
3-1		28987420 Valve rotor versatile	PEEK + PTFE
3-2		29010289 Tubing 3-1	PEEK
3-2		29010290 Tubing 3-2	PEEK
3-2		29010292 Tubing 3-3	PEEK
<b>V9-Cs</b>	<b>29011355</b>	<b>Column valve V9-Cs</b> 28987417 Stator versatile valve 28987420 Valve rotor versatile	PEEK PEEK + PTFE
<b>V9-Cm</b>	<b>29355611</b>	<b>Column valve V9-Cm</b> 29378060 Stator column valve V9-Cm 29393033 Valve rotor and stator V9-Cm	PEEK PEEK
<b>V9-C</b>	<b>29011367</b>	<b>Column valve kit V9-C</b> 28924597 Valve rotor column 28920925 Valve stator column assembly 28931925 Valve stator column 2.0 28920897 Valve column plug 56119406 Tubing i.d. 0.5 mm, o.d. 1.58 mm 56119888 Tubing i.d. 0.75 mm, o.d. 1.58 mm	PEEK + PTFE - PEEK PEEK PEEK PEEK
<b>V9-Os</b>  Out	<b>29011356</b>	<b>Outlet Valve Kit V9-Os, 1-outlet</b> 28987417 Stator versatile valve 29021988 Valve rotor outlet 29010372 Tubing Out	PEEK PEEK ETFE
<b>V9M-Os</b>	<b>29502129</b>	<b>29460185 Outlet valve V9M-Os</b> 29460188 Valve stator V9M-Os 29460186 Valve rotor V9M-Os	PEEK PEEK + PTFE
<b>V9-IAB</b>  InA InB	<b>29011357</b>	<b>Inlet valve kit V9-IAB</b> 28995489 Valve Stator Inlet 28995500 Valve Rotor Inlet 28996724 Tubing InA 28996729 Tubing InB	PEEK PEEK FEP FEP

Part	Product code	Component	Material
A1		29009606 Tubing A1	FEP
A2		29009607 Tubing A2	FEP
B1		29009608 Tubing B1	FEP
B2		29009609 Tubing B2	FEP
		56119885 Ferrule	FEP
<b>V9-L</b>	<b>29011358</b>	<b>Loop valve kit V9-L</b>	
		28987182 Stator Loop Valve	PEEK
		28924597 Valve rotor column	PEEK + PTFE
L1		29011637 Tubing L1	PEEK
L2		29011638 Tubing L2	PEEK
<b>V9-O</b>	<b>29012261</b>	<b>Outlet Valve Kit V9-O, 10 outlets</b>	
		28920867 Valve stator out	PEEK
		28933172 Valve rotor out	PEEK + PTFE
Out1		29010374 Tubing Out1	ETFE
Out2		29010375 Tubing Out2	ETFE
Out3		29010376 Tubing Out3	ETFE
Out4		29010377 Tubing Out4	ETFE
Out5		29010378 Tubing Out5	ETFE
Out6		29010379 Tubing Out6	ETFE
Out7		29010380 Tubing Out7	ETFE
Out8		29010381 Tubing Out8	ETFE
Out9		29010382 Tubing Out9	ETFE
Out10		29010383 Tubing Out10	ETFE
<b>V9-IA</b>	<b>29012263</b>	<b>Inlet valve kit V9-IA</b>	
		28934791 Valve stator inlet 1.5 assembly	PEEK
		28934287 Valve inlet plug	PEEK
		28934276 Valve stator inlet 1.5	PEEK
		28934290 Valve rotor inlet 1.5	FEP
A1		29009606 Tubing A1	FEP

Part	Product code	Component	Material
A2		29009607 Tubing A2	FEP
A3		29011613 Tubing A3	FEP
A4		29011614 Tubing A4	FEP
A5		29011615 Tubing A5	FEP
A6		29011616 Tubing A6	FEP
A7		29011617 Tubing A7	FEP
InA		28996724 Tubing InA 56119885 Ferrule	FEP -
<b>V9-IB</b>	<b>29012370</b>	<b>Inlet valve kit V9-IB</b> 28934791 Valve stator inlet 1.5 assembly 28934287 Valve inlet plug 28934276 Valve stator inlet 1.5 28934290 Valve rotor inlet 1.5	PEEK PEEK PEEK FEP
B1		29009608 Tubing B1	FEP
B2		29009609 Tubing B2	FEP
B3		29011618 Tubing B3	FEP
B4		29011619 Tubing B4	FEP
B5		29011620 Tubing B5	FEP
B6		29011621 Tubing B6	FEP
B7		29011622 Tubing B7	FEP
InB		28996729 Tubing InB 56119885 Ferrule	FEP -
<b>V9-pH</b>	<b>29011359</b>	<b>pH valve kit V9-pH</b> 28939643 Valve stator pH 28939641 Valve rotor pH 56322802 Dummy pH 56119556 pH Electrode dummy 56119557 O-ring 5.3 x 2.4 29010303 Tubing 8pH	PEEK PEEK+PTFE - PTFE FFPM/FFKM PEEK

Part	Product code	Component	Material
		29010304 Tubing 9pH 29010305 Tubing 1R 29010306 Tubing 2R 29010426 Tubing W3	PEEK PEEK PEEK ETFE
<b>F9-C</b>	<b>29027743</b>	<b>Fraction collector F9-C</b>  29015434 Nozzle 29017557 Capillary connection 56119406 Tubing i.d. 0.5 mm, o.d. 1.58 mm 28902730 Piston 28921813 Glass tube	PEEK PEEK PEEK UHMWPE/Elgiloy Borosilicate
<b>F9-R</b>	<b>29011362</b>	<b>Fraction collector F9-R</b>  56119406 Tubing i.d. 0.5 mm, o.d. 1.58 mm 29501533 Micro nozzle F9-R	PEEK PEEK
<b>F9-T</b>	<b>29454032</b>	<b>Fraction collector F9-T</b>  56119406 Tubing i.d. 0.5 mm, o.d. 1.58 mm 29477967 F9-T standard nozzle 29501534 F9-T micro nozzle	PEEK PEEK PEEK
<b>S9</b>	<b>29027745</b>	<b>Sample pump S9</b>  29741580 Pump P9-S 29014378 Sample pump cabinet 28924380 Tubing 2S 28924378 Tubing 1S2 28924377 Tubing 1S1  <b>29741580 Pump P9-S (primary flow path)</b>  56116125 Piston 56117787 Y-Connector 28952471 Pump Head P9-S 56305641 Pump Head	- PEEK PEEK PEEK  Aluminium Oxide ECTFE - Titanium grade 2

Part	Product code	Component	Material
		28943626 Purge Valve 28962521 Seal <b>Check valves in/out</b> 28963058 Outlet Check valve 28962655 Valve housing Out 28962657 Ball retainer 28962659 Washer 28950137 Ball and Seat 28963062 Inlet Check Valve 28962653 Valve housing In 28962657 Ball Retainer 28950137 Ball and Seat 56305879 Purge Valve	PEEK UHMWPE/Elgiloy - PEEK PEEK PEEK Sapphire/Ruby - PEEK PEEK Sapphire/Ruby PEEK
<b>R9-1</b> (Sample pump)	-	<b>28944998 Pressure monitor R9 (Sample) with pump restrictor</b> 28947688 Pressure connector 28933525 Pressure sensor 28945174 Restrictor Housing R9 (Sample) Assembly 28977560 Compression Spring 28966920 Membrane 28989942 Plunger 28946870 Restrictor Stopper 28947779 Pump Restriction Housing	PEEK Hastelloy C-22 - Hastelloy C-276 FFPM/FFKM PEEK PEEK PEEK
<b>C9n</b>	<b>29011363</b>	<b>Conductivity monitor C9n</b> 28921084 Thread housing 28902003 Electrode 28902005 Insulator	PEEK Titanium grade 2 PCTFE
<b>C9M</b>	<b>29298326</b>	<b>Conductivity monitor C9n</b>	



Part	Product code	Component	Material
		28921084 Thread housing	PEEK
		29258110 Electrode	Titanium
		28902005 Insulator	PCTFE
<b>U9-L</b>	<b>29011325</b>	<b>56305582 UV Cell 2 mm for U9-L</b>	
		56305584 Cuvette	Titanium grade 2
		56305586 Fix bushing	Titanium grade 2
		56068200 Cuvette ANS. 2 U	Quartz glass
		56068800 Seal assembly	-
		56068900 Seal	PTFE
<b>U9-T</b>	<b>29710522</b>	<b>56305582 UV Cell 2 mm for U9-T</b>	
		56305584 Cuvette	Titanium grade 2
		56305586 Fix bushing	Titanium grade 2
		56068200 Cuvette ANS. 2 U	Quartz glass
		56068800 Seal assembly	-
		56068900 Seal	PTFE
<b>U9-2</b>	<b>28979380</b>	<b>28975936 UV flow cell 2.0 for U9-M</b>	
		28975932 Cell In 1000 assembly	-
		28975442 Cell In 1000	PEEK
		28975447 Cone 1000	PEEK
		28977556 UV Fiber 1000	Quartz glass
		28975445 Cell Shims 2.0 1000	PEEK
		28975934 Cell Out 2.0 assembly	-
		56001792 Cone 400	PEEK
		28975444 Cell Out 2.0	PEEK
	<b>29011327</b>	<b>Tubing kit i.d. 0.5 mm, standard</b>	
1A1		28924371 Tubing 1A1	PEEK
1A2		28924374 Tubing 1A2	PEEK
1B1		28924375 Tubing 1B1	PEEK
1B2		28924376 Tubing 1B2	PEEK
2A		28955484 Tubing 2A	PEEK

Part	Product code	Component	Material
2B		28955485 Tubing 2B	PEEK
3		28996745 Tubing 3	PEEK
4		28996751 Tubing 4	PEEK
5		28996768 Tubing 5	PEEK
6		28996769 Tubing 6	PEEK
7		28996764 Tubing 7	PEEK
8		28996771 Tubing 8	PEEK
9		28996772 Tubing 9	PEEK
W1		28996777 Tubing W1	ETFE
W2		29010370 Tubing W2	ETFE
W		28996779 Tubing W	ETFE
	<b>29011328</b>	<b>Tubing kit i.d. 0.25 mm</b>	
5		29010431 Tubing 5	PEEK
6		29010432 Tubing 6	PEEK
7		29010433 Tubing 7	PEEK
8pH		29010434 Tubing 8pH	PEEK
9pH		29010435 Tubing 9pH	PEEK
8		29010436 Tubing 8	PEEK
1R		29010437 Tubing 1R	PEEK
2R		29010438 Tubing 2R	PEEK
9		29010439 Tubing 9	PEEK
		56119945 Tubing i.d. 0.25 mm, o.d. 1.58 mm	PEEK
	<b>29011329</b>	<b>Tubing kit i.d. 0.75 mm</b>	
5		29010293 Tubing 5	PEEK
6		29010294 Tubing 6	PEEK
7		29010295 Tubing 7	PEEK
8pH		29010296 Tubing 8pH	PEEK
9pH		29010297 Tubing 9pH	PEEK
8		29010298 Tubing 8	PEEK
1R		29010299 Tubing 1R	PEEK

Part	Product code	Component	Material
2R		29010300 Tubing 2R	PEEK
9		29010301 Tubing 9	PEEK
		56119888 Tubing i.d. 0.75 mm, o.d. 1.58 mm	PEEK
5	<b>29032426</b>	<b>Tubing kit i.d. 1.00 mm</b>	
6		29034580 Tubing 5	PEEK
7		29034614 Tubing 6	PEEK
8		29034622 Tubing 7	PEEK
L1		29034624 Tubing 8	PEEK
L2		29034615 Tubing L1	PEEK
8pH		29034617 Tubing L2	PEEK
9pH		29034627 Tubing 8pH	PEEK
1R		29034621 9pH	PEEK
2R		29034628 1R	PEEK
9		29034629 2R	PEEK
		29034625 Tubing 9	PEEK
		29034630 Tubing i.d. 0.25 mm, o.d.1.58 mm	PEEK
InA	<b>29011330</b>	<b>Tubing kit for inlet valve V9-IAB</b>	
InB		28996724 Tubing InA	FEP
A1		28996729 Tubing InB	FEP
A2		29009606 Tubing A1	FEP
B1		29009607 Tubing A2	FEP
B2		29009608 Tubing B1	FEP
		29009609 Tubing B2	FEP
		56119885 Ferrule	FEP
8pH	<b>29011331</b>	<b>Tubing kit for pH valve V9-pH, standard</b>	
9pH		29010303 Tubing 8pH	PEEK
1R		29010304 Tubing 9pH	PEEK
2R		29010305 Tubing 1R	PEEK
		29010306 Tubing 2R	PEEK

Part	Product code	Component	Material
W3		29010426 Tubing W3	ETFE
A1	<b>29011332</b>	<b>Tubing kit for inlet valve V9-IA (7 ports)</b> 29009606 Tubing A1	FEP
A2		29009607 Tubing A2	FEP
A3		29011613 Tubing A3	FEP
A4		29011614 Tubing A4	FEP
A5		29011615 Tubing A5	FEP
A6		29011616 Tubing A6	FEP
A7		29011617 Tubing A7	FEP
InA		28996724 Tubing InA 56119885 Ferrule	FEP FEP
B1	<b>29011333</b>	<b>Tubing kit for inlet valve V9-IB (7 ports)</b> 29009608 Tubing B1	FEP
B2		29009609 Tubing B2	FEP
B3		29011618 Tubing B3	FEP
B4		29011619 Tubing B4	FEP
B5		29011620 Tubing B5	FEP
B6		29011621 Tubing B6	FEP
B7		29011622 Tubing B7	FEP
InB		28996729 Tubing InB 56119885 Ferrule	FEP FEP
S1	<b>29035331</b>	<b>Tubing kit for sample inlet valve V9-IS (7 ports)</b> 29032923 Tubing S1	FEP
S2		29032924 Tubing S2	FEP
S3		29032925 Tubing S3	FEP
S4		29032926 Tubing S4	FEP
S5		29032927 Tubing S5	FEP
S6		29032928 Tubing S6	FEP

Part	Product code	Component	Material
S7		29032929 Tubing S7	FEP
InS		29032921 Tubing InS	FEP
		56119885 Ferrule	FEP
Out1	<b>29011334</b>	<b>Tubing kit for outlet fractionation (10 outlets)</b>	
Out2		29010374 Tubing Out1	ETFE
Out3		29010375 Tubing Out2	ETFE
Out4		29010376 Tubing Out3	ETFE
Out5		29010377 Tubing Out4	ETFE
Out6		29010378 Tubing Out5	ETFE
Out7		29010379 Tubing Out6	ETFE
Out8		29010380 Tubing Out7	ETFE
Out9		29010381 Tubing Out8	ETFE
Out10		29010382 Tubing Out9	ETFE
		29010383 Tubing Out10	ETFE
	-	<b>56118577 Fingertight HPLC</b>	PEEK
	-	<b>29261880 Tubing kit, Micro</b>	PEEK

## Pump rinse system

Part	Product code	Component	Material
	<b>29011348</b>	<b>System Pump Rinse Tubing Kit</b>	
		59129200 Tubing i.d. 2.1 mm, o.d. 4.1 mm	Silicone
	<b>28997722</b>	<b>Accessory Kit, ÄKTA pure 25</b>	
		28959057 BD Falcon 50 mL tube	PP
<b>P9 A</b> <b>P9 B</b>	<b>28953655</b>	<b>29741578 Pump P9 (rinse system)</b>	
		29140541 Drainage Check Valve IN	PEEK/PVDF
		29186425 Drainage Check Valve OUT	PVDF
		28945852 Drainage check valve holder (black)	PVDF

Part	Product code	Component	Material
		28959717 Pump Wash House	PPS
		28959720 Pump Drainage plate	PPS
		28950435 Membrane	EPDM
<b>P9-S</b>	<b>18111203</b>	<b>29741580 Pump P9-S (Rinse system)</b>	
		29140541 Drainage Check Valve IN	PEEK/PDVF
		29186425 Drainage Check Valve OUT	PDVF
		28945852 Drainage check valve holder (black)	PVDF
		28977774 Pump Wash House	PPS
		56116470 Pump Drainage plate	PPS
		28952129 Fitting male Luer to M6	PEEK
		28978573 Membrane	EPDM

**Note:** **System Pump Rinse Tubing Kit** and **Accessory Kit** can also be used with pump **P9-S** on Sample pump **S9**.

### Material conformity: Signature

The Quality System of Cytiva is certified according to ISO9001, and is thereby in control of the product realization process. Cytiva has a controlled process for quality assurance in selection, assessment and evaluation of supplier where strict adherence to specifications for all material is the basis.



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Valid from 30 October 2018



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