

ÄKTA pure™ 150

Product Documentation

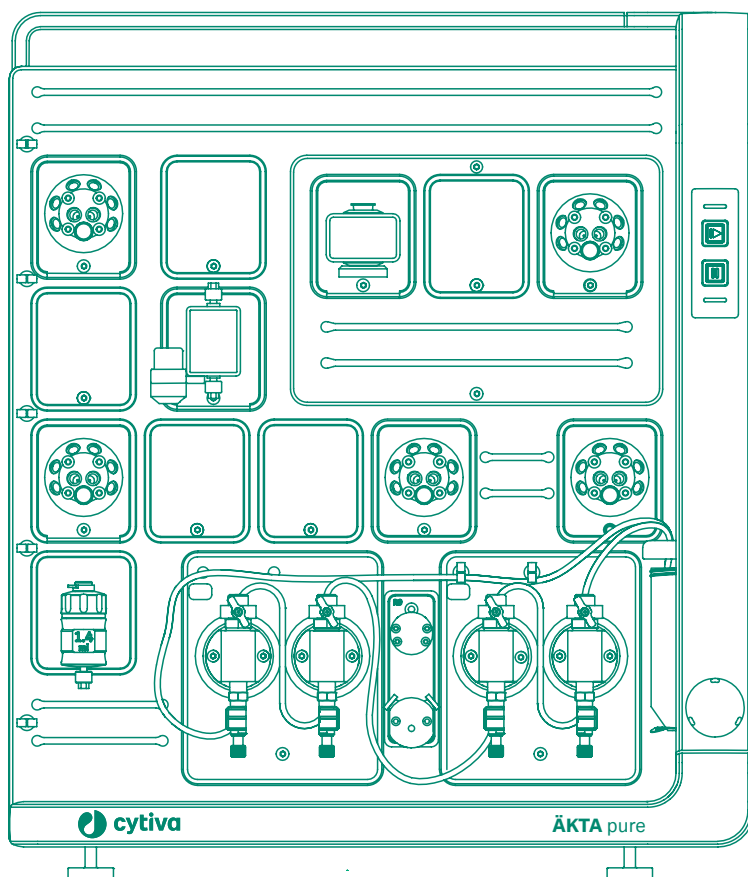


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1 Introduction

Purpose of this document

This document provides an overview of the ÄKTA pure™ 150 chromatography instrument and its general specifications. For more information about the instrument, refer to the user documentation.

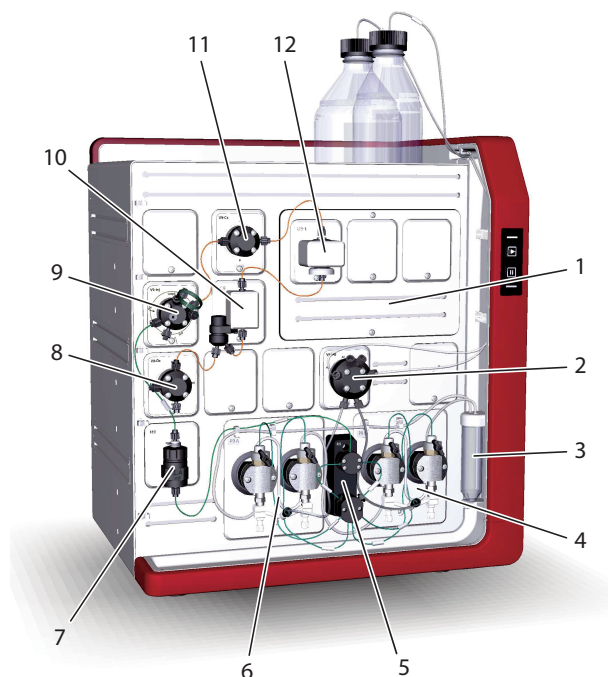
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1.1 Instrument view

Example of a typical configuration of the wet side

A typical configuration of the ÄKTA pure 150 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 150 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 P9H A	A high precision pump, which delivers buffer or sample in purification runs.
System pump P9H B	A high precision pump, which delivers buffer in purification runs.
Pressure monitor R9	Reads the system pressure after System pump A and System pump B.
Mixer M9	Mixes the buffers delivered from the system pumps to a homogeneous buffer composition. Three mixer chambers are available for the ÄKTA pure 150 instrument. Their volumes are: 1.4 mL (mounted at delivery), 5 mL (included in delivery), and 15 mL.
Injection valve V9H-Inj	Directs sample onto the column.

Optional modules

Module	Description
Inlet valve V9H-IA	Inlet valve for System pump A with seven inlet ports and integrated air sensor.
Inlet valve V9H-IB	Inlet valve for System pump B with seven inlet ports and integrated air sensor.
Inlet valve V9H-IAB	Inlet valve with two A inlet ports and two B inlet ports. No integrated air sensor.

Module	Description
Sample inlet valve V9H-IS	Inlet valve with eight inlet ports (seven sample inlets and one buffer inlet) and an integrated air sensor. Sample inlet valve V9H-IS requires the external module Sample pump S9H .
Inlet valve V9H-IX	Inlet valve with eight inlet ports. No integrated air sensor.
Mixer valve V9H-M	Directs the flow to the Injection valve, bypassing the Mixer, or to the Injection valve via the Mixer.
Loop valve V9H-L	Enables the use of up to five loops connected to the instrument.
Column valve V9H-C	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 V9H-Cs	Connects a single column to the instrument. Allows the user to choose flow direction through the column, or to bypass the column.
pH valve V9H-pH	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 V9H-O	Directs the flow to the Fraction collector, secondary Fraction collector (Out10), any of the ten outlet ports, or waste.
Outlet valve V9H-Os	Directs the flow to the Fraction collector, secondary Fraction collector (Out10), the outlet port, or waste.
Versatile valve V9H-V	A 4-port, 4-position valve, which can be used when adding extra features to the flow path.
UV monitor U9-L	Measures the UV absorbance at a fixed wavelength of 280 nm.
UV monitor U9-T	Measures the UV absorbance at the fixed wavelengths of 280 nm, or 260 nm and 280 nm.
UV monitor U9-M	Measures the UV/Vis absorbance at up to three wavelengths simultaneously within the range of 190-700 nm.
Conductivity monitor C9	Measures the conductivity of buffers and eluted proteins.
External air sensor L9-1.5 or L9-1.2	Prevents air from being introduced into the flow path.
Fraction collector F9-C	Flexible fraction collector, which can collect up to 576 fractions. Up to two fraction collectors can be connected at the same time, of which only the primary can be Fraction collector F9-C .

Module	Description
Fraction collector F9-R	Round fraction collector, which can collect up to 175 fractions. Up to two fraction collectors can be connected at the same time.
I/O-box E9	Receives analog or digital signals from, or transfers analog or digital signals to, external equipment that has been incorporated in the system.
Sample pump S9H	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

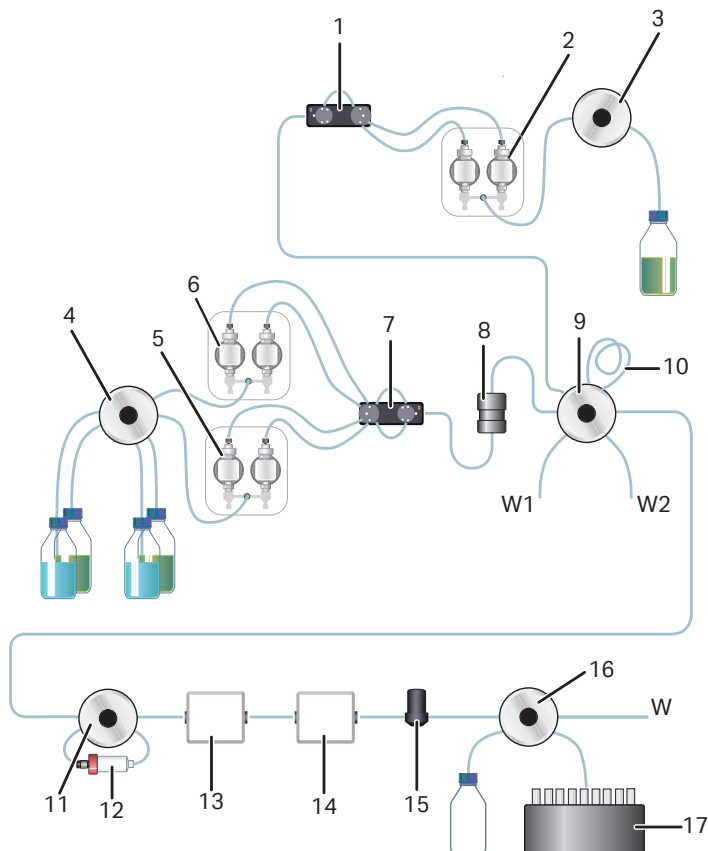
The ÄKTA pure 150 instrument is a liquid chromatography instrument with a customizable flow path.

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

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2.1 System specifications

Parameter	Data
System configuration	Benchtop system, external computer
Control system	For information about the UNICORN™ control software, refer to cytiva.com/UNICORNcompatibility
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"> • Inlet: FEP tubing, i.d. 2.9 mm, 5/16-24 UNF connections • Pump to injection valve: PEEK tubing, i.d. 1.0 mm, 10-32 UNF connections • After Injection valve: PEEK tubing, i.d. 0.75 mm, 10-32 UNF connections • Outlet and waste: FEP, i.d. 1.6 mm, 5/16-24 UNF connections • Waste: ETFE tubing, i.d. 1.0 mm, Fingertight connector, 1/16" • Optional tubing kits: i.d. 0.5 mm, i.d. 1.0 mm

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 29119969</i> .

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	0.01 to 150 mL/min (up to 300 mL/min column packing flow)
Pressure range	0 to 5 MPa
Viscosity range	0.35 to 10 cP
Flow rate specifications	<ul style="list-style-type: none"> Accuracy: $\pm 1.5\%$ Precision: RSD < 0.5% (Conditions: 1.0 to 150 mL/min, < 3 MPa, 0.8 to 2 cP)

Sample pump

Parameter	Data
Pump type	Piston pump, metering type
Dimensions (W × D × H)	215 × 370 × 210 mm
Weight	11 kg
Flow rate range	0.01 to 150 mL/min
Pressure range	0 to 5 MPa
Viscosity range	0.7 to 10 cP
Flow rate specifications	<ul style="list-style-type: none"> Accuracy: $\pm 2\%$ Precision: RSD < 0.5% (Conditions: 1.0 to 150 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	1.4, 5 or 15 mL

Gradient formation

Parameter	Data
Gradient flow rate range	0.5 to 150 mL/min
Gradient composition accuracy	± 0.8% (Conditions 5 to 95% B. 2 to 150 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"> The pre-column pressure monitor and the post-column pressure monitor are integrated in Column valve V9H-C. The sample pressure monitor is located after the sample pump.
Pressure range	0 to 5 MPa
Accuracy, pre- and post-column pressure monitors	± 0.015 MPa or $\pm 1.5\%$, whichever is greater
Accuracy, system and sample pressure monitors	± 0.02 MPa or $\pm 2\%$, whichever is greater

External air sensor options

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

UV monitor options

Parameter	Data
Number of monitors	Up to 2

Parameter	Data
Wavelength range	<p>U9-L: 280 nm</p> <p>U9-T: 280 nm, or 280 nm and 260 nm</p> <p>U9-M: Up to three wavelengths within the range of 190 to 700 nm</p>
Absorbance range	-6 to 6 AU
Resolution	0.001 mAU
Linearity	<p>U9-L: within $\pm 5\%$ at 0 to 2 AU</p> <p>U9-T: within $\pm 3\%$ at 0 to 2 AU</p> <p>U9-M: within $\pm 2\%$ at 0 to 2 AU</p>
Drift	<p>U9-L (2 mm cell): $\leq 0.2 \text{ mAU} \text{ AU/h}$</p> <p>U9-T (2mm cell at 260 nm and 280 nm): $\leq 0.2 \text{ mAU} \text{ AU/h}$</p> <p>U9-M (2 mm cell at 280 nm): $\leq 0.2 \text{ mAU} \text{ AU/h}$</p>
Noise	<p>U9-L: < 0.1 mAU</p> <p>U9-T: < 0.06 mAU</p> <p>U9-M: < 0.08 mAU</p>
Operating pressure	0 to 2 MPa
Lamp operating time	<p>U9-L: > 10 000 h</p> <p>U9-T: > 4000 h</p> <p>U9-M: > 5000 h</p>
Flow cells: U9-L	<p>Standard:</p> <p>Optical path length: 2 mm</p> <p>Illuminated volume: 2 μL</p> <p>Total volume: 30 μL</p> <p>Options:</p> <p>Optical path length: 5 mm</p> <p>Illuminated volume: 6 μL</p> <p>Total volume 20: μL</p> <p>Optical path length: 0.4 mm</p> <p>Illuminated volume: 1 μL</p> <p>Total volume: 17 μL</p>

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

Conductivity monitor options

Parameter	Data
Conductivity reading range	0.01 to 999.99 mS/cm

Parameter	Data
Accuracy	± 0.01 mS/cm or $\pm 2\%$, whichever is greater, (within 0.3 to 300 mS/cm)
Operating pressure	0 to 5 MPa
Flow cell volume	Conductivity cell C9n 22 μ L
Temperature monitor range	0°C to 99°C
Temperature monitor accuracy	$\pm 1.5^\circ\text{C}$ 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 $\pm 3^\circ\text{C}$ from calibration temperature
Operating pressure	0 to 0.5 MPa (72 psi)
Flow cell volume	129 μ L

Outlet valve fractionation option

Parameter	Data
Number of outlets	10
Fraction volumes	0.01 to 20 000 mL
Delay volume (UV – outlet valve)	296 μ L 245 μ L with optional tubing kit (i.d. 0.5 mm)

Fraction collector options

Parameter	Data
Number of fraction collectors	Up to two The secondary fraction collector must be Fraction collector F9-R

Parameter	Data
Number of fractions	F9-C: Up to 576 F9-R: Up to 175
Vessel types	F9-C: <ul style="list-style-type: none"> • Deep well plates: 96, 48 or 24 wells • Tubes: 3, 5, 8, 15, or 50 mL • Bottle: 250 mL F9-R: <ul style="list-style-type: none"> • Tubes: 3, 5, 8, 15 or 50 mL
Fraction volumes	F9-C: 0.1 to 250 mL F9-R: 0.1 to 50 mL
Spillage-free mode	F9-C: Automatic, Drop sync or Accumulator F9-R: Drop sync
Fractionation of flammable liquids	F9-C: no F9-R: yes
Delay volume (UV – dispenser head)	F9-R: 473 µL, 278 µL with optional tubing kit (i.d. 0.5 mm) F9-C: 876 µL, 508 µL with optional tubing kit (i.d. 0.5 mm)
Dimensions (W x D x H)	F9-C: 390 × 585 × 320 mm F9-R: 320 × 400 × 250 mm
Weight	F9-C: 21 kg F9-R: 5 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

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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 150 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
P9H A P9H B P9H S	-	29741579 Pump P9H (primary flow path)	
		28955266 Piston	Aluminum oxide
		56117787 Y-Connector	ECTFE
		28960825 Membrane	EPDM
		28963193 Pump Head P9H	-
		28965233 Pump Head	Titanium grade 2
		28943626 Purge Valve	PEEK
		28962521 Seal	UHMWPE/Elgiloy
		Check valves in/out	
		28963058 Outlet Check valve	-
		28963062 Inlet Check Valve	-
		28962655 Valve housing Out	PEEK
		28962657 Ball retainer	PEEK
		28962659 Washer	PEEK
		28950137 Ball and Seat	Sapphire/Ruby
		28962653 Valve housing In	PEEK
		28962657 Ball Retainer	PEEK
		28950137 Ball and Seat	Sapphire/Ruby

Part	Product code	Component	Material
R9 (System pumps)	-	28944995 Pressure monitor R9 (System) with pump restrictor 28951451 Pressure monitor R9 (System) 28947686 Pressure connector 28933525 Pressure sensor 28945164 Restrictor Housing R9 (System) Assembly 28977560 Compression Spring 28966920 Membrane 28989942 Plunger 28946870 Restrictor Stopper 28946577 Pump Restriction Housing	- PEEK Hastelloy C-22 - Hastelloy C-276 FFPM/FFKM PEEK PEEK PEEK
R9 (Sample pump)	-	28944998 Pressure monitor R9 (Sample) with pump restrictor 28951453 Pressure monitor R9 (Sample) 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
M9-1.4	28956225	28924642 Mixer chamber 1.4 mL 56302238 Filter 10PP (1 µm) 56302237 Support net 28945536 Mixer top 28924648 Stirring magnet 12 mm 28924646 Mixer chamber 1.4 mL 28945544 O-ring 13.1 × 1.6	PP PP PEEK PTFE PEEK FPM/FKM

Part	Product code	Component	Material
M9-5	28956246	28924700 Mixer chamber 5 mL 56302238 FILTER 10PP (1 µm) 56302237 Support net 28945536 Mixer top 56105749 Stirrer 28924702 Mixer chamber 5 mL 28945544 O-ring 13.1 × 1.6	PP PP PEEK PTFE PEEK FPM/FKM
M9-15	28980309 29011325	28960890 Mixer chamber 15 mL 56302238 FILTER 10PP (1 µm) 56302237 Support net 28960895 Mixer top 28960900 Stirrer 28960891 Mixer chamber 15 mL 28976675 O-ring 22.1 × 1.6 FPM/FKM 70 Green 28928433 O-ring 13.1 × 1.6 mm	PP PP PEEK PTFE PEEK FPM/FKM FFPM/FFKM
V9H-Inj	-	28960722 Injection valve V9H-Inj 28958378 Valve stator injection 28958577 Valve rotor injection	PEEK PEEK
FR	18112135	56304545 Flow restrictor FR-902 56302557 Housing 56303929 Diaphragm	PEEK FFPM/FFKM

Part	Product code	Component	Material
V9H-IS	29050943	Sample Inlet Valve Kit V9H-IS (7 ports)	
		28967149 Sample Inlet Valve V9H-I	
		28967151 Valve stator inlet 2.5 asm.	PEEK
		28978688 Valve stator inlet 2.5-1.5	PEEK
		28967152 Valve rotor inlet 2.5	PEEK
		28934287 Valve inlet plug	PEEK
S1		29050210 Tubing S1	FEP
S2		29050214 Tubing S2	FEP
S3		29050216 Tubing S3	FEP
S4		29050218 Tubing S4	FEP
S5		29050219 Tubing S5	FEP
S6		29050220 Tubing S6	FEP
S7		29050222 Tubing S7	FEP
InS		29050195 Tubing InS	FEP
		56119804 Ferrule blue	PCTFE
		56302582 NUT 5/16 male 3/16	PEEK
V9H-V	29090691	Versatile valve V9H-V	
		29087523 Stator versatile valve	PEEK
		29087518 Valve rotor versatile	PEEK + PTFE
V9H-M	29090692	Mixer valve kit V9H-M	
		29087523 Stator versatile valve	PEEK
		29087518 Valve rotor versatile	PEEK + PTFE
3-1		29092594 Tubing 3-1	PEEK
3-2		29092595 Tubing 3-2	PEEK
3-2		29092598 Tubing 3-3	PEEK
V9H-L	29090689	Loop valve kit V9H-L	
		29084943 Stator Loop Valve	PEEK
		28958809 Valve rotor column	PEEK + PTFE
L1		29092410 Tubing L1	PEEK
L2		29092454 Tubing L2	PEEK

Part	Product code	Component	Material
V9H-O	29050949	Outlet Valve Kit V9H-O (10 outlets)	
		28960723 Outlet valve V9H-O	-
		28920867 Valve stator out	PEEK
		28958583 Valve rotor out	PEEK
		28968867 Outlet Valve stator asm.	-
		28968865 Valve Plug Out	PEEK
Out1		29048471 Tubing Out1	FEP
Out2		29048497 Tubing Out2	FEP
Out3		29048502 Tubing Out3	FEP
Out4		29048503 Tubing Out4	FEP
Out5		29048528 Tubing Out5	FEP
Out6		29048529 Tubing Out6	FEP
Out7		29048593 Tubing Out7	FEP
Out8		29048595 Tubing Out8	FEP
Out9		29048600 Tubing Out9	FEP
Out10		29048603 Tubing Out10	FEP
		56302621 NUT 5/16 male 1/8	PEEK
		56119885 Ferrule yellow	FEP
V9H-Os	29090694	Outlet Valve Kit V9H-Os (1-outlet)	
		29087523 Stator versatile valve	PEEK
		29087644 Valve rotor outlet	PEEK
Out		29010372 Tubing Out	ETFE

Part	Product code	Component	Material
V9H-IA	29050945	Inlet valve kit V9H-IA	
		28967149 Inlet valve V9H-I	-
		28967151 Valve stator inlet 2.5 assembly	-
		28934287 Valve inlet plug	PEEK
		28978688 Valve stator inlet 2.5 -1.5	PEEK
		28967152 Valve rotor inlet 2.5	PEEK
A1		28975177 Tubing A1	FEP
A2		28975232 Tubing A2	FEP
A3		28975569 Tubing A3	FEP
A4		28975570 Tubing A4	FEP
A5		28975571 Tubing A5	FEP
A6		28975572 Tubing A6	FEP
A7		28975573 Tubing A7	FEP
InA		29050187 Tubing InA	FEP
		56119804 Ferrule blue	PCTFE
		56302582 NUT 5/16 male 3/16	PEEK
V9H-IB	29050946	Inlet valve kit V9H-IB	
		28967149 Inlet valve V9H-I	-
		28967151 Valve stator inlet 2.5 assembly	-
		28934287 Valve inlet plug	PEEK
		28978688 Valve stator inlet 2.5 -1.5	PEEK
		28967152 Valve rotor inlet 2.5	PEEK
B1		28975237 Tubing B1	FEP
B2		28975240 Tubing B2	FEP
B3		28975596 Tubing B3	FEP
B4		28975599 Tubing B4	FEP
B5		28975600 Tubing B5	FEP
B6		28975601 Tubing B6	FEP
B7		28975602 Tubing B7	FEP
InB		29050208 Tubing InB	FEP
		56119804 Ferrule blue	PCTFE
		56302582 NUT 5/16 male 3/16	PEEK

Part	Product code	Component	Material
V9H-IAB	29089652	Inlet valve kit V9H-IAB	
		29087494 Valve Stator Inlet	PEEK
		29087492 Valve Rotor Inlet	PEEK
InA		28996724 Tubing InA	FEP
InB		28996729 Tubing InB	FEP
A1		29009606 Tubing A1	FEP
A2		29009607 Tubing A2	FEP
B1		29009608 Tubing B1	FEP
B2		29009609 Tubing B2	FEP
		56119885 Ferrule	FEP
		56119804 Ferrule blue	PCTFE
		56302582 NUT 5/16 male 3/16	PEEK
V9H-pH	29051684	pH valve kit V9H-pH	
		28960674 pH valve V9H-pH	-
		28958414 Valve stator pH	PEEK
		28958807 Valve rotor pH	PEEK
		56322802 Dummy pH	-
		56119556 pH Electrode dummy	PTFE
		56119557 O-ring 5.3 × 2.4	FFPM/FFKM
8pH		29010296 Tubing 8pH	PEEK
9pH		29010297 Tubing 9pH	PEEK
1R		29010299 Tubing 1R	PEEK
2R		29010300 Tubing 2R	PEEK
W3		29010426 Tubing W3	ETFE
V9H-C	29050951	Column valve kit V9H-C	
		28960675 Column valve CV9H-C	-
		28958809 Valve rotor column	PEEK/PTFE
		28960728 Valve stator column assembly	-
		28958403 Valve stator column	PEEK
		28959783 Valve column plug	PEEK
		56119888 Tubing i.d. 0.75 mm, o.d. 1.58 mm	PEEK
		56119887 Tubing i.d. 1 mm, o.d. 1.58 mm	PEEK

Part	Product code	Component	Material
V9H-Cs	29090693	Column valve V9H-Cs 29087523 Stator versatile valve 29087518 Valve rotor versatile	PEEK PEEK+PTFE
F9-C	29027743	Fraction collector F9-C 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
F9-R	29011362	Fraction collector F9-R 56119406 Tubing i.d. 0.5 mm, o.d. 1.58 mm	PEEK
S9H	29050593	Sample pump S9H 29741579 Pump P9H 29050591 Sample pump cabinet 29050195 Tubing InS 29048465 Tubing 3S 29741579 Pump P9H 28955266 Piston 56117787 Y-Connector 28960825 Membrane 28963193 Pump Head P9H 28965233 Pump Head 28943626 Purge Valve 28962521 Seal Check valves in/out 28963058 Outlet Check valve 28963062 Inlet Check Valve 28962655 Valve housing Out 28962657 Ball retainer 28962659 Washer 28950137 Ball and Seat 28962653 Valve housing In 28962657 Ball Retainer 28950137 Ball and Seat	- FEP PEEK Aluminium oxide ECTFE EPDM - Titanium grade 2 PEEK UHMWPE/Elgiloy - - PEEK PEEK PEEK Sapphire/Ruby PEEK PEEK Sapphire/Ruby

Part	Product code	Component	Material
C9	29011363	Conductivity monitor C9 28921084 Thread housing 28902003 Electrode 28902005 Insulator	PEEK Titanium grade 2 PCTFE
U9-L	29011325	56305582 UV Cell 2 mm for U9-L 56305584 Cuvette 56305586 Fix bushing 56068200 Cuvette ANS. 2 U 56068800 Seal assembly 56068900 Seal	Titanium grade 2 Titanium grade 2 Quartz glass - PTFE
U9-T	29710522	56305582 UV Cell 2 mm for U9-T 56305584 Cuvette 56305586 Fix bushing 56068200 Cuvette ANS. 2 U 56068800 Seal assembly 56068900 Seal	Titanium grade 2 Titanium grade 2 Quartz glass - PTFE
U9-2	28979380	28975936 UV flow cell 2.0 for U9-M 28975932 Cell In 1000 assembly 28975442 Cell In 1000 28975447 Cone 1000 28977556 UV Fiber 1000 28975445 Cell Shims 2.0 1000 28975934 Cell Out 2.0 assembly 56001792 Cone 400 28975444 Cell Out 2.0	- PEEK PEEK Quartz glass PEEK - PEEK PEEK

Part	Product code	Component	Material
	29051669	Tubing kit i.d. 0.5 mm	
5		28996768 Tubing 5	PEEK
6		28996769 Tubing 6	PEEK
7		28996764 Tubing 7	PEEK
8pH		29010303 Tubing 8pH	PEEK
9pH		29010304 Tubing 9pH	PEEK
8		28996771 Tubing 8	PEEK
1R		29010305 Tubing 1R	PEEK
2R		29010306 Tubing 2R	PEEK
9		28996772 Tubing 9	PEEK
		56119406 Tubing i.d. 0.5 mm, o.d.1.58 mm	PEEK
	29048242	Tubing kit i.d. 0.75 mm, standard	
1A1		28975368 Tubing 1A1	PEEK
1A2		28975611 Tubing 1A2	PEEK
1B1		28975619 Tubing 1B1	PEEK
1B2		28975620 Tubing 1B2	PEEK
2A		28975682 Tubing 2A2	PEEK
2B		8975683 Tubing 2B2	PEEK
3		9048241 Tubing 3	PEEK
4		29048239 Tubing 4	PEEK
5		29010293 Tubing 5	PEEK
6		29010294 Tubing 6	PEEK
7		29010295 Tubing 7	PEEK
8		29010298 Tubing 8	PEEK
9		29010301 Tubing 9	PEEK
W1		28996777 Tubing W1	ETFE
W2		29010370 Tubing W2	ETFE
W		28996779 Tubing W	ETFE

Part	Product code	Component	Material
	29032426	Tubing kit i.d. 1.00 mm	
5		29034580 Tubing 5	PEEK
6		29034614 Tubing 6	PEEK
7		29034622 Tubing 7	PEEK
8		29034624 Tubing 8	PEEK
L1		29034615 Tubing L1	PEEK
L2		29034617 Tubing L2	PEEK
8pH		29034627 Tubing 8pH	PEEK
9pH		29034621 9pH	PEEK
1R		29034628 1R	PEEK
2R		29034629 2R	PEEK
9		29034625 Tubing 9	PEEK
		29034630 Tubing i.d. 1.0 mm, o.d.1.58 mm	PEEK
	29051197	Tubing kit for inlet valve V9H-IA (7 ports)	
A1		28975177 Tubing A1	FEP
A2		28975232 Tubing A2	FEP
A3		28975569 Tubing A3	FEP
A4		28975570 Tubing A4	FEP
A5		28975571 Tubing A5	FEP
A6		28975572 Tubing A6	FEP
A7		28975573 Tubing A7	FEP
InA		29050187 Tubing InA	FEP
		56119804 Ferrule	FEP
	29051189	Tubing kit for inlet valve V9H-IB (7 ports)	
B1		28975237 Tubing B1	FEP
B2		28975240 Tubing B2	FEP
B3		28975596 Tubing B3	FEP
B4		28975599 Tubing B4	FEP
B5		28975600 Tubing B5	FEP
B6		28975601 Tubing B6	FEP
B7		28975602 Tubing B7	FEP
InB		29050208 Tubing InB	FEP
		56119804 Ferrule	FEP

Part	Product code	Component	Material
S1	29051166	Tubing kit for inlet valve V9H-IS (7 ports)	
S2		29050210 Tubing S1	FEP
S3		29050214 Tubing S2	FEP
S4		29050216 Tubing S3	FEP
S5		29050218 Tubing S4	FEP
S6		29050219 Tubing S5	FEP
S7		29050220 Tubing S6	FEP
InS		29050222 Tubing S7	FEP
		29050195 Tubing InS	FEP
		56119804 Ferrule	FEP
8pH	29051674	Tubing kit for pH valve V9H-pH	
9pH		29010296 Tubing 8pH	PEEK
1R		29010297 Tubing 9pH	PEEK
2R		29010299 Tubing 1R	PEEK
W3		29010300 Tubing 2R	PEEK
		29010426 Tubing W3	ETFE
Out1	29048611	Tubing kit for outlet fractionation (10 outlets)	
Out2		29048471 Tubing Out1	-
Out3		29048497 Tubing Out2	FEP
Out4		29048502 Tubing Out3	FEP
Out5		29048503 Tubing Out4	FEP
Out6		29048528 Tubing Out5	FEP
Out7		29048529 Tubing Out6	FEP
Out8		29048593 Tubing Out7	FEP
Out9		29048595 Tubing Out8	FEP
Out10		29048600 Tubing Out9	FEP
		29048603 Tubing Out10	FEP
		56119885 Ferrule	FEP
	-	56118577 Fingertight HPLC	PEEK

Pump rinse system

Part	Product code	Component	Material
	29011348	System Pump Rinse Tubing Kit 59129200 Tubing i.d. 2.1 mm, o.d. 4.1 mm	Silicone
	28997722	Accessory Kit, ÄKTA pure 150 28959057 BD Falcon 50 mL tube	PP
P9HA P9HB P9HS	28979375	29741579 Pump P9H (rinse system) 28922118 Drainage check valve out (white) 28945852 Drainage check valve holder (black) 28959717 Pump Wash Housing 28959720 Pump Drainage Plate 28960825 Membrane	PVDF/PEEK/ Aluminum oxide PVDF PPS PPS EPDM

Note: **System Pump Rinse Tubing Kit** and **Accessory Kit** can also be used with pump **P9HS** on Sample pump **S9H**.

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.



Thomas Wallin
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