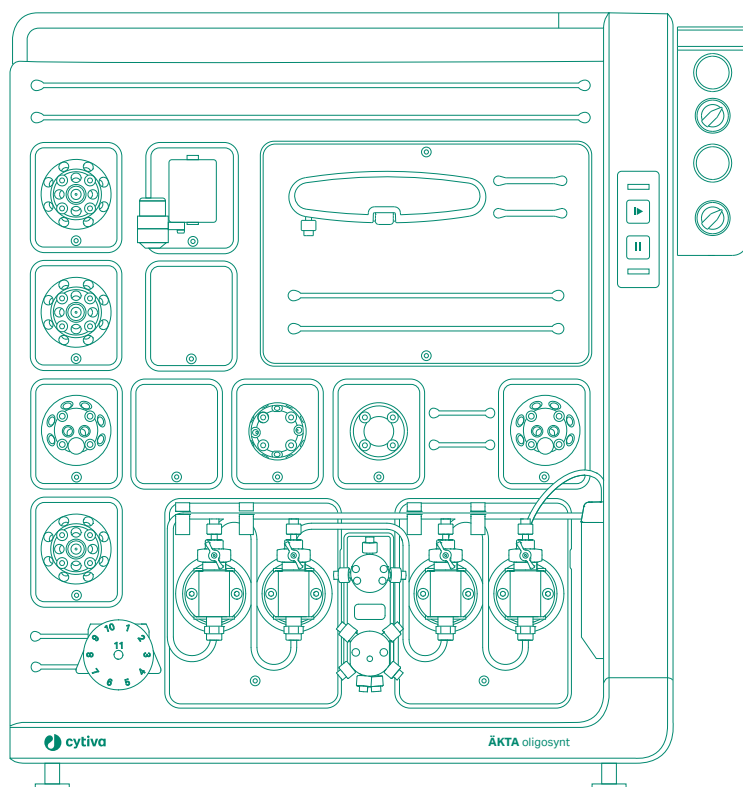


# ÄKTA oligosynt™

## Product Documentation



# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
1.1	About this document .....	4
1.2	Associated documentation .....	5
1.3	Instrument overview .....	7
1.4	System flow path .....	10
<b>2</b>	<b>General specifications .....</b>	<b>11</b>
2.1	Technical specifications .....	12
2.2	Environmental conditions .....	13
2.3	Inert gas supply requirements .....	14
2.4	Chemical resistance specifications .....	15
2.5	Component specifications .....	17
<b>3</b>	<b>Material conformity .....</b>	<b>20</b>
3.1	Material definitions .....	21
3.2	Material of construction .....	23
<b>4</b>	<b>Spare part list .....</b>	<b>26</b>

# 1 Introduction

## About this chapter

This chapter gives an overview of the ÄKTA oligosynt™ system and associated documentation.

## In this chapter

Section	See page
1.1 About this document	4
1.2 Associated documentation	5
1.3 Instrument overview	7
1.4 System flow path	10

## 1.1 About this document

### Purpose of this document

This document provides an overview of the ÄKTA oligosynt system, general specifications, material conformity and information on available spare parts. For more information about the ÄKTA oligosynt system, refer to the user documentation listed in [Section 1.2 Associated documentation, on page 5](#).

### Scope of this document

The *Product Documentation* covers the ÄKTA oligosynt instrument and available modules.

## 1.2 Associated documentation

### Introduction

This section describes the user documentation delivered with the product, and how to find related literature that can be downloaded or ordered from Cytiva.

### User documentation

The user documentation listed in the table below is available in printed format or as PDF file at [cytiva.com](https://www.cytiva.com) under **Related Documents**.

Documentation	Main contents
<i>ÄKTA oligosynt Operating Instructions (29600384)</i>	Instructions needed to install, operate, and maintain the ÄKTA oligosynt system in a correct and safe way.  Translations of the original instructions are given in several languages.
<i>ÄKTA oligosynt User Manual (29600385)</i>	Additional detailed information on the system, component functions, and maintenance. Tips on how to get the most out of the system when running it.
<i>ÄKTA oligosynt Site Preparation Guide (29600390)</i>	Instructions on how to prepare the site for installation and use of ÄKTA oligosynt system.
<i>ÄKTA oligosynt Unpacking Instructions (29600388)</i>	Instructions for handling the delivery package and unpacking the ÄKTA oligosynt system.
<i>ÄKTA oligosynt Product Documentation (This document)</i>	General specifications and list of materials in the flow path.
<i>Real-Time Unit Operating Instructions (29307075)</i>	Instructions needed to install, operate, and maintain the Real-Time Unit system in a correct and safe way.
<i>Real-Time Unit Privacy and Security Manual (29323949)</i>	Privacy and security considerations of the use of the Real-Time Unit with ÄKTA™ systems, including the ÄKTA oligosynt system.
<i>Install I/O-box E9 Installation Instructions (29021463)</i>	Instructions needed to install and connect I/O-box on ÄKTA systems.

## UNICORN user documentation

The user documentation listed in the following table is available from the **Help** menu in UNICORN or from the **UNICORN Contextual Help** software accessed by pressing the **F1** key in any UNICORN module.

Documentation	Main contents
<i>UNICORN Contextual Help</i>	Descriptions of UNICORN dialog boxes (available from the <b>Help</b> menu).
<i>UNICORN Quick Installation Guide</i>	Detailed instructions on how to install UNICORN.
<i>UNICORN Administration and Technical Manual</i> <sup>1</sup>	<ul style="list-style-type: none"> <li>• Overview and detailed description of network setup and complete software installation.</li> <li>• Administration of UNICORN and the UNICORN database.</li> </ul>
<i>UNICORN Method Manual</i> <sup>1</sup>	<ul style="list-style-type: none"> <li>• Overview and detailed descriptions of the method creation features in UNICORN.</li> <li>• Workflow descriptions for common operations.</li> </ul>
<i>UNICORN System Control Manual</i> <sup>1</sup>	<ul style="list-style-type: none"> <li>• Overview and detailed description of the features in the <b>System Control</b> module.</li> <li>• Includes general operation, system settings and instructions on how to perform a run.</li> </ul>
<i>UNICORN Evaluation Manual</i> <sup>1</sup>	<ul style="list-style-type: none"> <li>• Overview and detailed descriptions of the <b>Evaluation Classic</b> module.</li> <li>• Description of the evaluation algorithms used in UNICORN.</li> </ul>
Getting started with Evaluation (accessed through help in the UNICORN Evaluation module)	<ul style="list-style-type: none"> <li>• Video clips showing common workflows in the <b>Evaluation</b> module.</li> <li>• Overview of features of the <b>Evaluation</b> module.</li> </ul>

<sup>1</sup> Current UNICORN version is added to the title of the manual.

## Data file, application notes and user documentation on the web

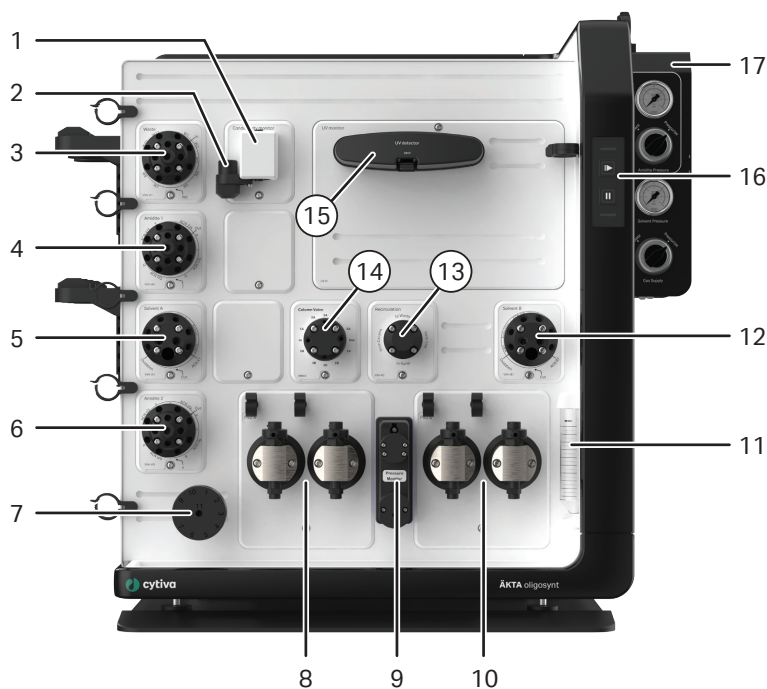
Register at [cytiva.com/rsf](https://cytiva.com/rsf) to access regulatory support files, validations guides and receive change control notifications.

To order or download data file, application notes, or user documentation, see [cytiva.com/aktaoligosynt](https://cytiva.com/aktaoligosynt).

## 1.3 Instrument overview

### Illustration of the instrument

The illustration below shows the location of the main parts of the instrument.



Part	Description	Part	Description
1	Conductivity monitor	10	System pump B
2	Flow restrictor	11	Pump rinsing liquid tube
3	Waste valve	12	Solvent B valve
4	Amidite 1 valve	13	Recirculation valve
5	Solvent A valve	14	Column valve
6	Amidite 2 valve	15	UV monitor
7	ACN Manifold	16	Instrument control panel
8	System pump A	17	Inert gas control box
9	Pressure monitor		

## Exterior design

- The liquid handling modules are placed on the front of the instrument.
- The instrument stands on an evaporation barrier, supplied with the instrument.
- The instrument is equipped with a tray to collect spillage, and adjustable feet to level the instrument.
- The inert gas control box is installed on the right side of the instrument.
- Solvent and reagent bottles are intended to be placed on the bench, at the side of the instrument.
- Amidite bottles are mounted on the left side of the system using amidite bottle holders.
- Air ventilation, power cords, and data cables are located at the rear of the instrument.

## Standard modules

The following modules are part of the standard set up of the system.

Module	Function
System pump A <b>P90 A</b>	A high precision pump that delivers reagents, solvent, and amidites for the synthesis runs.
System pump B <b>P90 B</b>	A high precision pump that delivers reagents and solvent for the synthesis runs.
System pressure monitor <b>R9</b>	Reads the system pressure after System pump A and System pump B.
Solvent A valve <b>V9-IA1</b>	An inlet valve that directs reagents, solvent and amidites onto the column via the System pump A. It has a built-in air sensor.
Solvent B valve <b>V9-IB1</b>	An inlet valve that directs reagents and solvent onto the column via the System pump B. It has a built-in air sensor.
Amidite 1 valve <b>V9H-IA2</b>	An inlet valve that directs amidites into the Solvent A valve.
Amidite 2 valve <b>V9H-IA3</b>	An inlet valve that directs amidites into the Solvent A valve.
Recirculation valve <b>V9H-RC</b>	A valve that enables the recirculation of reagents over the column or to the Waste valve.

Module	Function
Column valve <b>V9H-C</b>	Connects up to five columns to the instrument, and directs the flow onto one column at a time. The column valve has two built-in pressure sensors, one before and one after the column.
Waste valve <b>V9H-O1</b>	Directs the flow to waste.
UV monitor/detector <b>U9-M/U9-D</b>	Measures the UV/Vis absorbance at three wavelengths in the range of 190 to 700 nm.
Conductivity monitor <b>C9</b>	Measures the conductivity of solvents. It has a built-in temperature sensor.
I/O-box <b>E9</b>	Receives or transfers analog or digital signals to and from external equipment.
Real-Time Unit <b>RTU</b>	Makes sure that the run continues if the computer is rebooted or otherwise locked due to, for example, software updates. The RTU sends method instructions to the instrument and collects data during a run if the computer is temporary down. The result is uploaded from the RTU to the computer when the connection is restored.
Inert gas control box	Distributes inert gas to the reagent and amidite bottles to enable a water-free environment for the reagents.

## Optional modules

The following modules can optionally be added to the system.

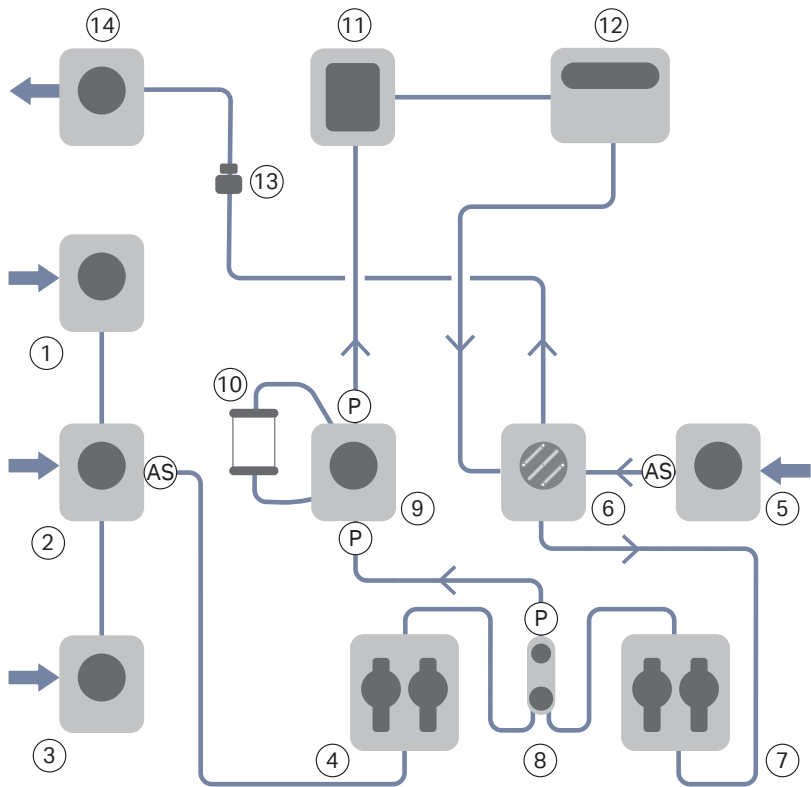
Module	Description
I/O-box 2nd <b>E9</b>	Receives or transfers analog or digital signals to/from external equipment.
Conductivity monitor 2nd <b>C9</b>	Measures the conductivity of solvents. It has a built-in temperature sensor.
Loop valve <b>V9H-L</b>	Enables the connection of multiple heat exchangers with different temperatures. It can also be used to bypass components during the synthesis.

**Note:** Adding or removing optional modules from the system will affect the available instructions in the software.

# 1.4 System flow path

## Illustration of the flow path

The following illustration shows a schematic diagram of the flow path.



Part	Description	Part	Description
1	Amidite 1 valve	8	Pressure monitor
2	Solvent A valve with air sensor (AS)	9	Column valve with pressure sensors (P)
3	Amidite 2 valve	10	Column
4	System pump A	11	Conductivity monitor
5	Solvent B valve with air sensor (AS)	12	UV monitor
6	Recirculation valve	13	Flow restrictor
7	System pump B	14	Waste valve

## 2 General specifications

### About this chapter

This chapter contains information regarding the system, environmental, operating, and technical specifications.

### In this chapter

Section		See page
2.1	Technical specifications	12
2.2	Environmental conditions	13
2.3	Inert gas supply requirements	14
2.4	Chemical resistance specifications	15
2.5	Component specifications	17

## 2.1 Technical specifications

Parameter	Specification
Supply voltage	100 to 240 V AC $\pm$ 10%
Frequency	50/60 Hz
Power consumption, operation	300 VA (typical) 25 VA (power-save) max. 1100 VA
Fuse rating	T10 A L 250 V
Dimensions (Width $\times$ Height $\times$ Depth)	53.5 $\times$ 63 $\times$ 47 cm (instrument, before installation) 70 $\times$ 63 $\times$ 54 cm (instrument, fully equipped)
Weight	54 kg (instrument, before installation) 64 kg (instrument, fully equipped)
Control system	External computer running Windows 10 operating system or a later version
Acoustic noise level	< 65 dB(A)
Enclosure protective class	IP 21

## 2.2 Environmental conditions

The following general requirements must be fulfilled:

- The room must have forced ventilation > 0.5 m/s.
- The instrument should not be exposed to direct sunlight.
- Dust in the atmosphere should be kept to a minimum.

### Environmental requirements

The installation site must comply with the following specifications.

Parameter	Requirement
Allowed location	Indoor use only
Ambient temperature, operating	4°C to 35°C
Relative humidity	20% to 95%, non-condensing
Altitude, operating	Up to 2000 m
Pollution degree of the intended environment	Pollution degree 2



#### **NOTICE**

Do not block the air vents on the rear of the instrument.

## 2.3 Inert gas supply requirements

Inert gas is used to enable a water-free environment for the reagents. The following table describes the requirements regarding gas supply.

Parameter	Requirement
Inert gas type	Argon or nitrogen
Inert gas supply tubing type (Tubing is supplied with the instrument)	Semi-rigid polyethylene or flexible polyvinyl chloride
Tubing inside diameter (Tubing is supplied with the instrument)	6 mm (1/4")
Inert gas supply pressure	5 to 10 bar
Inert gas supply flow, maximum	90 NL/min
Inert gas supply flow, recommended	10 to 50 NL/min

**Note:** All pressure values are reported as pressure relative to ambient atmospheric pressure, i.e., gauge pressure, unless stated otherwise.

**Note:** The pressure of the instrument is affected during a high flow synthesis run if daisy chaining is used. Make sure that the pressure of the instrument is equal for all solvents.

## 2.4 Chemical resistance specifications

### Oxidation

The following chemicals are suitable for oxidation.

Chemical	Concentration	CAS no.	EC no.
Pyridine	90%	110-86-1	203-809-9

### Detritylation

The following chemicals are suitable for detritylation.

Chemical	Concentration	CAS no.	EC no.
Dichloromethane	100%	75-09-2	200-838-9
Toluene	100%	108-88-3	203-625-9
Dichloroacetic acid	10%	79-43-6	201-207-0

### Capping

The following chemicals are suitable for capping.

Chemical	Concentration	CAS no.	EC no.
1-methylimidazole	20%	616-47-7	210-484-7
Acetic anhydride	20%	108-24-7	203-564-8
<i>sym</i> -collidine	30%	108-75-8	203-613-3
Lutidine	30%	108-48-5	203-587-3

### Thiolation

The following chemicals are suitable for thiolation.

Chemical	Concentration	CAS no.	EC no.
Xanthane hydride	0.2 M	6846-35-1	N/A
Phenylacetyl disulfide (PADS)	0.2 M	15088-78-5	N/A
3-ethoxy-1,2,4-dithiazolidine-5-one (EDITH)	0.2 M	178318-21-3	N/A

## Coupling

The following chemicals are suitable for coupling.

Chemical	Concentration	CAS no.	EC no.
5-benzylthio-1H-tetrazole	0.3 M	21871-47-6	606-853-0

## Other substances

Acetonitrile is used for cleaning and as a reagent solvent.

Chemical	Concentration	CAS no.	EC no.
Acetonitrile	100%	75-05-8	200-835-2
Acetone	3%	67-64-1	200-662-2

## 2.5 Component specifications

### System pumps

Parameter	Data
Pump type	Piston pump (metering type)
Flow rate range	0.1 to 150 mL/min
Flow rate accuracy	± 2% Conditions: 1.0 to 150 mL/min, 0.35 to 1.0 cP
Double flow rate	0.1 to 300 mL/min
Double flow rate accuracy	± 5% Conditions: 2.0 to 300 mL/min, 0.35 to 1.0 cP
Pressure range	0 to 25 bar
Viscosity range	0.35 to 1.0 cP

### Pressure sensor

Parameter	Data
Number of sensors	3
Placement of sensors	The System pressure sensor is located after the pumps. The pre-column pressure sensor and the post-column pressure sensor are integrated in Column valve <b>V9H-C</b> .
Pressure reading range	0 to 25 bar
Pressure reading accuracy	± 2% or ± 0.2 bar, whichever is greater

### Valves

Parameter	Data
Type	Rotary valves
Number of valves	Up to 8

Parameter	Data
Valves included as standard	Solvent valve A and B Amidite valve 1 and 2 Recirculation valve Column valve Waste valve
Optional valves	Loop valve <b>V9H-L</b>

## UV monitor

Parameter	Data
Wavelength range	190 to 700 nm in steps of 1 nm, up to 3 wavelengths
Absorbance range	-6 to 6 AU
Resolution	0.001 mAU
Drift	(2 mm cell at 280 nm): $\leq  0.2 \text{ mAU}  \text{ AU/h}$
Noise	< 0.08 mAU
Operating pressure	0 to 20 bar
Lamp operating time	> 5000 h
Flow cells:	Standard: Optical path length 2 mm Cell volume 2 $\mu\text{L}$ Total volume: 11 $\mu\text{L}$ Option: Optical path length 0.5 mm Cell volume 1 $\mu\text{L}$ Total volume 10 $\mu\text{L}$

## Conductivity monitor

Parameter	Data
Number of conductivity monitors	Up to 2 1 ( <b>C9n</b> ) or 2 (optional, <b>C9n</b> or <b>C9</b> ) <sup>1</sup>
Conductivity reading range	10 to 999990 $\mu\text{S/cm}$

Parameter	Data
Accuracy	$\pm 2\%$ or $10 \mu\text{S}/\text{cm}$ , whichever is greater Conditions: 30 to $20000 \mu\text{S}/\text{cm}$
Operating pressure	0 to 25 bar
Flow cell volume	$22 \mu\text{L}$
Temperature monitor range	$2^\circ\text{C}$ to $70^\circ\text{C}$
Temperature monitor accuracy	$\pm 1.5^\circ\text{C}$ within $4^\circ\text{C}$ to $45^\circ\text{C}$

<sup>1</sup> The internal type of conductivity monitor module has the product name **C9n**, whereas the external type of conductivity monitor module has the product name **C9**.

## Air Sensor

Parameter	Data
Number of sensors	2
Placement	<ul style="list-style-type: none"> <li>Integrated in the Solvent A valve</li> <li>Integrated in the Solvent B valve</li> </ul>
Sensor sensitivity	Standard: $500 \mu\text{L}$ High: $200 \mu\text{L}$
Sensing principle	Ultrasonic

## I/O-box

Parameter	Data
Number of I/O-boxes	1 or 2 (optional)
Number of ports per box	2 analog in, 2 analog out 4 digital in, 4 digital out
Analog range	In $\pm 2 \text{ V}$ Out $\pm 1 \text{ V}$
Digital range	Max $5 \text{ V}$

# 3 Material conformity

## About this chapter

This chapter defines the materials in the ÄKTA oligosynt instrument that come into contact with process fluids.

## In this chapter

Section		See page
3.1	Material definitions	21
3.2	Material of construction	23

## 3.1 Material definitions

### Introduction

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

### Flow path

Material	Abbreviation
Ethylene TetraFluoroEthylene	ETFE
Fluorinated Ethylene Propylene	FEP
Fully Fluorinated Propylene Monomer	FFPM/FFKM
PolyChloroTriFluoroEthylene	PCTFE
PolyEtherEtherKetone	PEEK
PolyTetraFluoroEthylene	PTFE
Aluminum oxide	
Elgiloy	
Hastelloy® C-276	
Quartz glass	
Ruby	
Sapphire	
Titanium grade 2	
Titanium grade 5	

## Pump rinsing system

Material	Abbreviation
EthylenePropyleneDiene M-class rubber	EPDM
PolyEtherEtherKetone	PEEK
PolyPropylene	PP
PolyPhenylene Sulfide	PPS
PolyVinylidene DiFluoride	PVDF
Fluorinated Ethylene Propylene	FEP

## 3.2 Material of construction

### Introduction

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

### Wetted parts - Tubing

Part	Material
Tubing i.d. 3.2 mm, o.d. 3/16"	FEP
Tubing i.d. 1.6 mm, o.d. 1/8"	FEP
Tubing i.d. 1.0 mm, o.d. 1/16"	ETFE
Tubing i.d. 1.0 mm, o.d. 1/16"	PEEK
System pump rinse tubing kit i.d. 2.9 mm, o.d. 3/16"	FEP

### Wetted parts - Connectors

Part	Material
Fingertight 1/16"	PEEK
Tubing connector 1/8"	PEEK
Tubing connector 1/16"	PEEK
Tubing connector 3/16"	PEEK
Tubing connector M6	PP
Ferrule 1/16"	ETFE
Ferrule 1/8" yellow	FEP
Ferrule 3/16" blue	PCTFE
Union 5/16" female 1/16" male	PEEK
Union 1/16" female M6 male	PEEK
Stop plug 1/16"	PEEK
Stop plug 5/16"	PEEK

## Wetted parts - flow path

Module	Label	Materials
System pumps	<b>P90 A</b> <b>P90 B</b>	PEEK, EPDM, Titanium, PTFE/Elgiloy, Sapphire/Ruby, Hastelloy C-276, FFPM/FFKM
Pressure monitor with pump flow restrictor	<b>R9</b>	PEEK, Titanium, Hastelloy C-276, FFPM/FFKM
Solvent valve	<b>V9-IA1</b> <b>V9-IB1</b>	PEEK
Amidite valve	<b>V9H-IA2</b> <b>V9H-IA3</b>	PEEK
Recirculation valve	<b>V9H-RC</b>	PEEK, PEEK + PTFE
Column valve	<b>V9H-C</b>	PEEK, PTFE, Titanium, PCTFE
Waste valve	<b>V9H-O1</b>	PEEK
Conductivity monitor	<b>C9n/C9</b>	PEEK, Titanium, PCTFE
UV monitor	<b>U9-M/</b> <b>U9-D</b>	PEEK, Quartz glass
Flow restrictor	<b>FR-902</b>	PEEK, FFPM/FFKM

## Wetted parts - Pump rinsing system

The system pumps are part of the pump rinsing system. For wetted part materials of the system pumps, see [Wetted parts - flow path, on page 24](#).

Part	Material
BD Falcon 50 mL tube	PP
Drainage check valve out (white)	PVDF/PEEK/Aluminumoxide
Drainage check valve holder (black)	PVDF
Pump Wash Housing	PPS
Pump Drainage Plate	PPS
Membrane	EPDM

## Optional modules

Module	Label	Material
Loop Valve	<b>V9H-L</b>	PEEK, PTFE

## 4 Spare part list

### Introduction

This chapter includes spare parts available for ÄKTA oligosynt instrument. Contact your Cytiva representative for ordering spare parts available for the instrument.

### Recommended spare parts

Spare parts that are easy to replace by users, or are subject to wear under normal use, are listed as recommended spare parts in the table below.

Product code	Description
28999393	Lamp Xenon
29302065	Membrane, spring and valve cone
29706671	<b>P90</b> Check valve kit
29706929	<b>P90</b> Rinse Tube Kit
29715797	Preventive Maintenance Kit for ÄKTA oligosynt
29706785	Solvent A valve <b>V9-IA1</b>
29706786	Solvent B valve <b>V9-IB1</b>
29713860	Tubing kit for ÄKTA oligosynt

### Columns

Product code	Description
18110110	Column reactor CPL column, 1.2 mL
18110111	Column filter, 1.2 mL
18110112	Sealing ring, 1.2 mL
18110113	Column reactor CPL column, 6.3 mL
18110114	Column filter, 6.3 mL
18110115	Sealing ring, 6.3 mL
18110116	Column reactor CPL column, 12 mL
18110117	Column filter, 12 mL
18110118	Sealing ring, 12 mL
18110119	Column reactor CPL column, 24 mL
18110120	Column filter, 24 mL
18110121	Sealing ring, 24 mL

Product code	Description
18110122	Column reactor CPL column, 48 mL
18110123	Column filter, 48 mL
18110124	Sealing ring, 48 mL
28946841	FineLINE™ 35 oligo column
18115298	FineLINE 70
29358075	AxiTide™ 50

## Tubing

Product code	Description
29274550	Tubing i.d. 3.2 mm, o.d. 3/16", FEP
18112116	Tubing i.d. 1.6 mm, o.d. 1/8", FEP
18114238	Tubing i.d. 1.0 mm, o.d. 1/16", ETFE
18111583	Tubing i.d. 1.0 mm, o.d. 1/16", PEEK
29706929	System pump rinse tubing kit i.d. 2.9 mm, o.d. 3/16", FEP

## Connectors

Product code	Description
18111255	Fingertight 1/16", PEEK
18112117	Tubing connector 1/8", PEEK
18112707	Tubing connector 1/16", PEEK
18111249	Tubing connector 3/16", PEEK
18117264	Tubing connector M6, PP
18112706	Ferrule 1/16", ETFE
18112118	Ferrule 1/8" yellow, FEP
18111248	Ferrule 3/16" blue, PCTFE
18114208	Union 5/16" female 1/16" male, PEEK
18111257	Union 1/16" female M6 male, PEEK
18111252	Stop plug 1/16", PEEK
18111250	Stop plug 5/16", PEEK

## Optional modules

Product code	Description
29090689	Loop valve kit, <b>V9H-L</b>
29011361	I/O-box, <b>E9</b>
28956495	Conductivity monitor external, <b>C9</b>
29011363	Conductivity monitor internal, <b>C9n</b>

## Additional spare parts

Spare parts that require a trained service engineer to replace, or do not experience significant wear under normal use are listed in the table below.

Product code	Description
29706931	Acetonitrile distribution block complete with tubing
29219861	Adjustable foot M8 × 40
28979386	Alternative flow cell 0.5 mm
29706780	Amidite 1 valve <b>V9H-IA2</b>
29706787	Amidite 2 valve <b>V9H-IA3</b>
29706930	Amidite bottle holder
29732148	Amidite bottle holder gasket, FFKM/FFPM
18102985	Bottle/Vial filter, 500 filters
29711676	Bottle cap complete, black PEEK, 4 × 5/16" connections
18111207	Cog belt
18113845	Column holder for 1.2 mL, 6.3 mL, 12 mL, 24 mL and 48 mL column reactors
29050951	Column valve kit, <b>V9H-C</b>
29003831	Display PCB Instrument control panel B9
29054610	Drainage in/out, holder / check valve
28979380	Flow cell 2 mm
18112135	Flow restrictor, FR-902
29706921	Gas manifold, Amidite
29706926	Gas manifold, Solvent
29706920	Inert Gas Control Box complete
18111442	Inlet filter set, 10 nets
11000407	Inlet filter holder kit
29706928	Label Kit oligosynt

Product code	Description
28934099	Lamp Holder PCB
29011417	Main PCB, <b>C9</b>
29011413	Main PCB, inlet valve
28934103	Main PCB, <b>U9-M</b>
19214501	M6 female, SRV-1 (manual shut-off valve), 1 valve
28933825	Main PCB, <b>V9-C</b>
28933809	Main PCB <b>V-9Inj, V9-I, V9P, V9-O</b>
29011412	Motor with gear box
29011414	Opto PCB, <b>V9</b>
29202138	O-ring Kit
28933811	<b>P9</b> Drive Unit
28964999	<b>P9</b> Drive board printed circuit assembly (PCA)
28964997	<b>P9</b> Main board PCA
29706622	<b>P9O</b> Seal kit 150
29403739	Pin Bolt and Screw Kit
18111214	Piston spring
29706919	Pneumatic Tubing
29118482	Pressure connector 2 in <b>R9</b>
29118480	Pressure monitor PCA, <b>R9</b>
29464528	Pressure Monitor <b>R9-2</b> complete
29128792	Pressure sensor 5 MPa
28947032	Pressure transducer
29713845	Pump head <b>P9</b> oligosynt
28992766	Pump Restrictors <b>R9-1</b> and <b>R9-2</b>
18112633	Purge valve air 900
29706783	Recirculation valve <b>V9H-RC</b>
28950749	Reference capillary 1
28948242	Small module chassis o-ring
28407902	Screw lid GL45 opener
29706918	Tube holder Kit, Black
29032786	<b>U9-M</b> Fiber assembly
28934096	UV detector <b>U9-D</b> excluding cell
28934089	UV monitor <b>U9-M</b> excluding detector or cell
29706784	Waste valve <b>V9H-O1</b> .

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29600391 AC V:4 06/2023