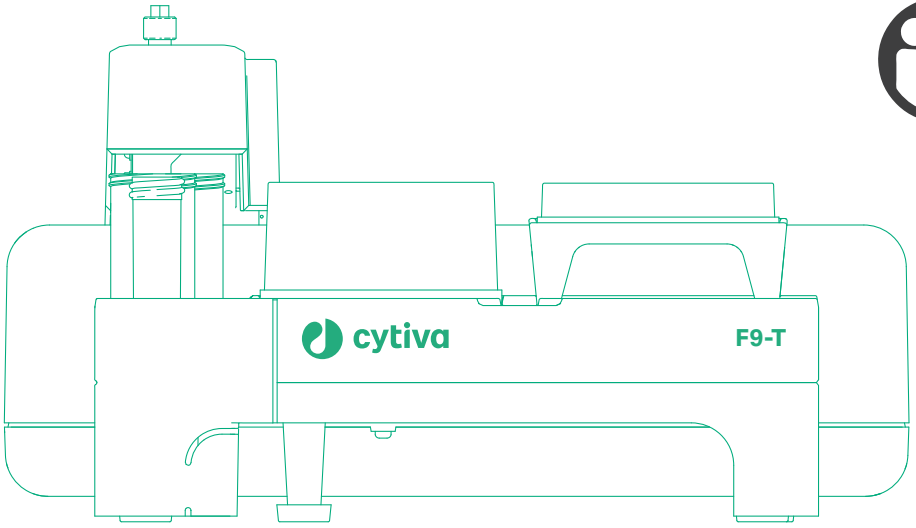
Fraction collector F9-T

Operating Instructions

Original instructions



cytiva.com

Table of Contents

1 Introduction

About this chapter

This chapter contains information about this manual and associated user documentation, important user information and intended use of the product.

In this chapter

1.1 Important user information

Read this before operating the product

All users must read the entire *Operating Instructions* before installing, operating or maintaining the product.

Always keep the *Operating Instructions* at hand when operating the product.

Do not install, operate, or perform maintenance on the product in any other way than described in the user documentation. If you do, you may be exposed or expose others to hazards that can lead to personal injury and you may cause damage to the equipment.

Intended use of the product

Fraction collector F9-T is a fraction collector intended for collection of fractions from purification runs. It is intended for research use only, and shall not be used in clinical procedures, or for diagnostic purposes.

Prerequisites

In order to operate Fraction collector F9-T in the way it is intended:

- The user must know how to use a computer with Microsoft® Windows®.
- The user should understand the concepts of liquid chromatography.
- The user must be familiar with the purification system and have read the *Operating Instructions* for the system.
- The user must read and understand the *Safety Instructions* chapter in the *Operating Instructions*.
- Fraction collector F9-T must be installed in accordance with the site requirements and instructions in the *Operating Instructions*.

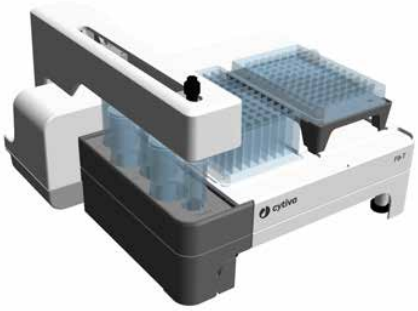
1.2 About this manual

Purpose of this manual

The *Operating Instructions* manual provides you with the information needed to install, operate and maintain the equipment in a safe way.

Scope of this manual

The *Operating Instructions* manual covers Fraction collector F9-T, in the manual also referred to as the product.



Typographical conventions

Software items are identified in the text by ***bold italic*** text.

Hardware items are identified in the text by **bold** text.

In electronic format, references in *italics* are clickable hyperlinks.

Notes and tips

Note: *A note is used to indicate information that is important for trouble-free and optimal use of the product.*

Tip: *A tip contains useful information that can improve or optimize your procedures.*

1.3 Associated documentation

Introduction

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

User documentation for Fraction collector F9-T

The user documentation is listed in the table below. The manuals are delivered on removable media together with the product, but can also be downloaded from *cytiva.com*.

Documentation	Main contents
Fraction collector F9-T Operating Instructions	Instructions needed to install and operate the Fraction collector F9-T in a correct and safe way.
Translations of *Fraction collector F9-T Operating Instructions*	Translated versions of the original instructions.

User documentation for compatible purification systems

This section lists examples of user documentation for purification systems that can be used together with this product. The manuals can be downloaded from *cytiva.com*.

Documentation	Main contents
Operating Instructions for the ÄKTA™ instrument	Instructions needed to install and operate the ÄKTA instrument in a correct and safe way. Translated versions are delivered together with the printed *Operating Instructions* and are also found on cytiva.com.
Cue Cards (if available) for the ÄKTA instrument	Condensed information on how to operate the ÄKTA instrument.
User Manual for the ÄKTA instrument	Additional information in order to get the optimal performance from the system.

Help and user documentation within the UNICORN™ software

For help regarding UNICORN, mark the area of interest in the software and press **F1**.

It is then possible to navigate further to find, for example, software manuals.

Tip: *There are specific help texts for instructions that only can be reached by marking the instruction and pressing* **F1**.

2 Safety instructions

About this chapter

This chapter contains information for personal safety.

In this chapter

Important

WARNING

Before installing, operating or maintaining the product, all users must read and understand the entire contents of this chapter to become aware of the hazards involved.

2.1 Safety precautions

Introduction

Fraction collector F9-T handles materials that can be hazardous.

Before installing, operating or maintaining the system, you must be aware of the hazards described in this manual.

Definitions

This user documentation contains safety notices (WARNING, CAUTION, and NOTICE) concerning the safe use of the product. See definitions below.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.

NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

General precautions

The following general precautions must be considered at all times. There are also context related precautions, which are written in their respective chapters.

WARNING

Do not operate the product in any other way than described in the user documentation.

WARNING

Only properly trained personnel may operate and maintain the product.

WARNING

Accessories. Use only accessories supplied or recommended by Cytiva.

WARNING

Always use appropriate Personal Protective Equipment (PPE) during operation and maintenance of this product.

WARNING

Hazardous substances and biological agents. When using hazardous chemical and biological agents, take all suitable protective measures, such as wearing protective clothing, glasses and gloves resistant to the substances used. Follow local and/or national regulations for safe operation and maintenance of this product.

WARNING

Explosive environment. The product is **not approved** for work in a potentially explosive atmosphere. The product does not fulfill the requirements of the ATEX Directive.

WARNING

A fume hood or similar ventilation system shall be installed when flammable or noxious substances are used.

CAUTION

Always disconnect power from the instrument before performing any maintenance task.

CAUTION

Be aware of moving parts during fractionation.

CAUTION

Take extra care when moving vessels with flammable liquids.

2.2 Symbols and abbreviations

Introduction

This section describes the information on the system label and other safety or regulatory labels that are attached to the product.

System label

The system label is located on the back of the Fraction collector F9-T instrument. The system label identifies the product and shows electrical data, regulatory compliance, and warning symbols.

Description of symbols on the system label

The following symbols and text may be present on the system label:

Symbol / text	Description
	**Warning!** Read the user documentation before using the system. Do not open any covers or replace parts unless specifically stated in the user documentation.
Voltage	Electrical rating: Voltage (VDC)
Max Power	Electrical rating: Maximum power consumption (VA)
Protection Class	Degree of protection provided by the enclosure
Mfg Date	Year (YYYY) and month (MM) of manufacture

2.3 Emergency procedures

Introduction

The ÄKTA instrument supplies Fraction collector F9-T with power. This section describes how to perform an emergency shutdown.

For more information on how to shut down and restart the instrument, refer to the *Operating Instructions* for the ÄKTA instrument.

Emergency shutdown

In an emergency situation, disconnect the ÄKTA instrument power cord from its power source. The power source can be an ordinary power outlet, or an UPS (Uninterruptible Power Supply) unit.

3 Overview

About this chapter

This chapter gives an overview of Fraction collector F9-T and suitable disposables and accessories to be used with the fraction collector.

In this chapter

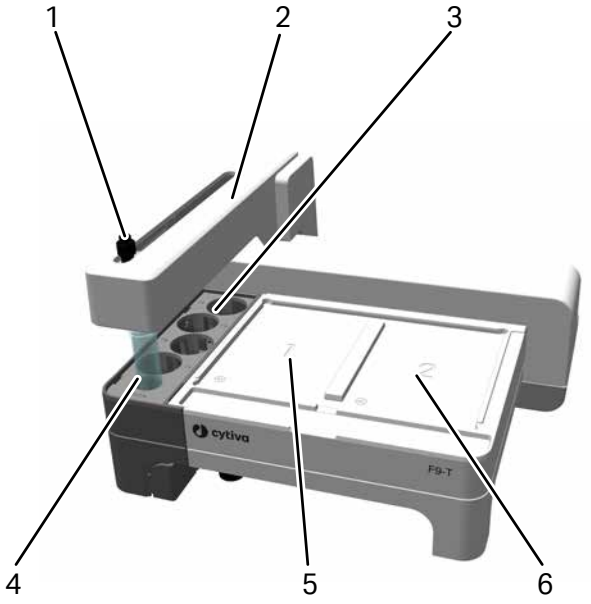
3.1 Illustrations

Introduction

This section provides illustrations of Fraction collector F9-T.

Front view

The illustration below shows the main parts of Fraction collector F9-T.

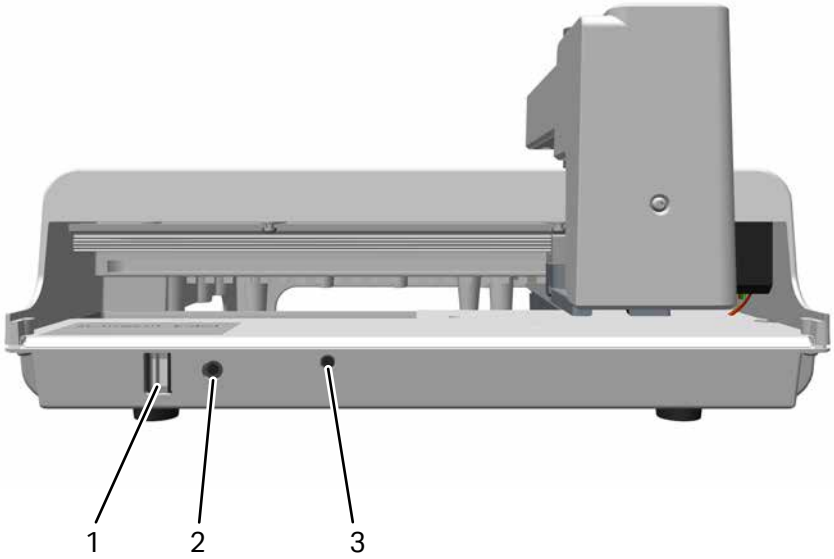


Part	Description
1	Nozzle
2	Fraction collector arm
3	Tube rack for 50 mL tubes
4	Home position
5	Plate position 1
6	Plate position 2

Back view

The illustration below shows the back view of Fraction collector F9-T.

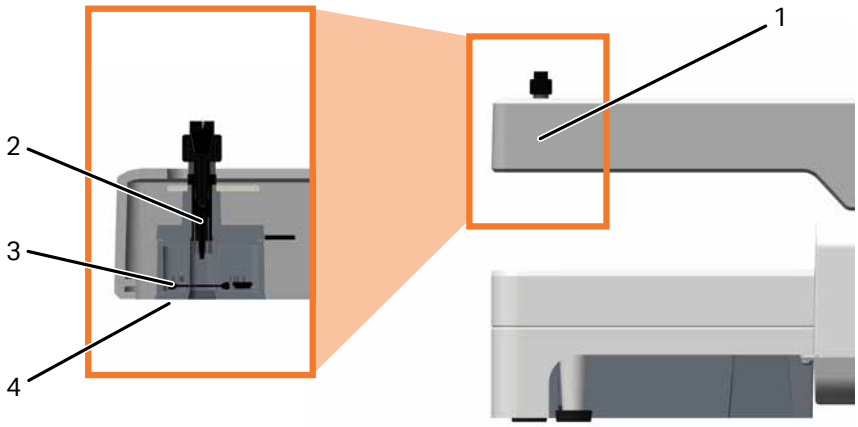
The fraction collector is connected to the ÄKTA instrument via the UniNet-9 F-type connector port, both for communication and power supply.



Part	Description
1	UniNet-9 F-type connector port
2	Node ID
3	Status LED

Dispenser head

The illustration below shows the dispenser head of Fraction collector F9-T.



Part	Description
1	Dispenser head
2	Nozzle
3	***Drop sync*** sensor
4	LED light

3.2 Function

Introduction

Fraction collector F9-T is used to collect fractions from chromatographic runs performed by ÄKTA instruments. In Fraction collector F9-T it is possible to fractionate in two plates, or small tubes placed in racks, and in four 50 mL tubes.

Ways to collect fractions

Fraction collector F9-T can be used for the following types of fractionation:

- Fixed volume fractionation
- Peak fractionation
- Combined fixed volume fractionation and peak fractionation

The fraction collector has the following function for reducing sample spill during fractionation:

- ***Drop sync***

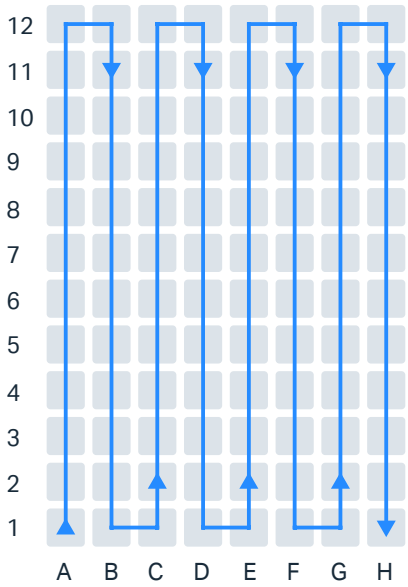
Drop sync function

The fraction collector has a ***Drop sync*** function that is used to synchronize movement after drop release. It is recommended to use drop synchronization for lower flow rates. The flow rate limit for when it is recommended depends on the properties (for example viscosity) of the liquid, of the plate type used (due to distance between wells), and type of nozzle used (due to drop size).

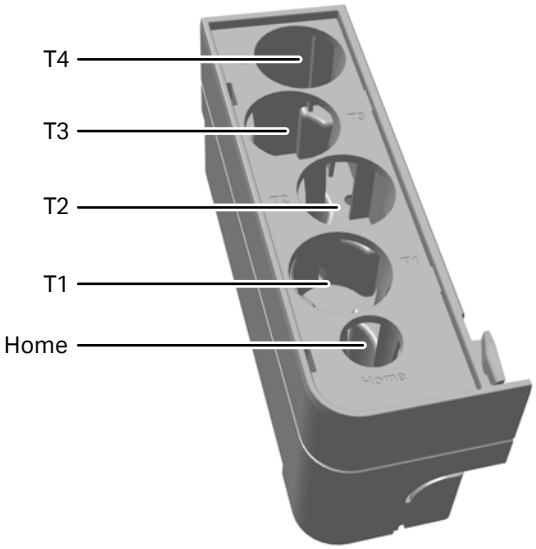
The available settings are ***On***, ***Off***, and ***Auto***. The ***Auto*** setting turns the drop synchronization on for flows below 3 mL/min, and turns it off for flows above 3 mL/min. This is done for all plate types except 96 deep well, where the limit is 5 mL/min. The ***Auto*** setting is optimized for water-based buffers fractionated with a standard nozzle, but is also suitable for a tubing nozzle with 0.5 mm inner diameter tubing that protrudes 4 mm. Do not use the ***Auto*** setting together with a micro nozzle because there are lower flow rate limits for the ***Drop sync*** functionality together with the micro nozzle than with a standard nozzle.

Collection pattern

Collection in plates, tubes in plates, and tubes in racks is done using a serpentine row pattern. See the illustration below.



Collection in 50 mL tubes starts from **T1**, see the illustration below.



Home position

The **Home** (home) position is the default position where the fraction collector nozzle is located when no fractionation is ongoing. No fractionation can be performed at the **Home** position.

This position can be used to manually clean the tubing between the outlet valve and the fraction collector, and is also used when a system CIP (Cleaning In Place) includes the fraction collector.

3.3 Plates and tubes

Introduction

This section describes suitable plates and tubes for the fraction collector. The fractions are collected in disposable plates and tubes, available in different sizes, from different manufacturers.

Plates

The tables below list available plate types and recommended plate manufacturers.

Plates from other manufacturers may be used if they are of the same quality and dimensions.

Plates	Maximum volume	Default volume
96 well microplate[1]	0.3 mL	0.1 mL
96 deep well plate[2]	2 mL	2 mL
48 deep well plate[3]	4.5 mL	4 mL
24 deep well plate[2]	9 mL	8 mL

[1] Microplate holder F9-T and F9-T micro nozzle are required.
[2] Only standard height 44 mm with square wells.
[3] Only standard height 44 mm with rectangular wells **A1** to **H6**.

Manufacturers
Whatman™
Corning™
Greiner™
Nunc™

Tubes

The table below lists tubes and suitable holders.

For tube sizes 0.5 mL, 1.5 mL, and 2 mL, the manufacturer Eppendorf™ is recommended. For 15 mL and 50 mL tube sizes, the manufacturer Falcon™ is recommended.

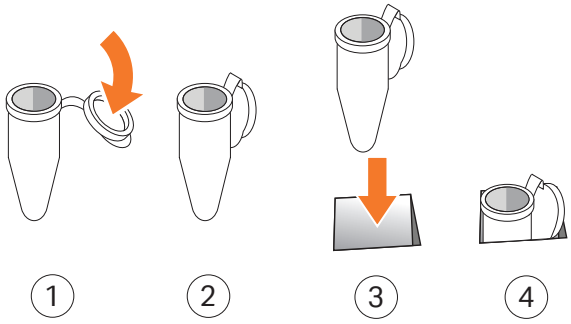
Tubes from other manufacturers may be used if they are of the same quality and dimensions.

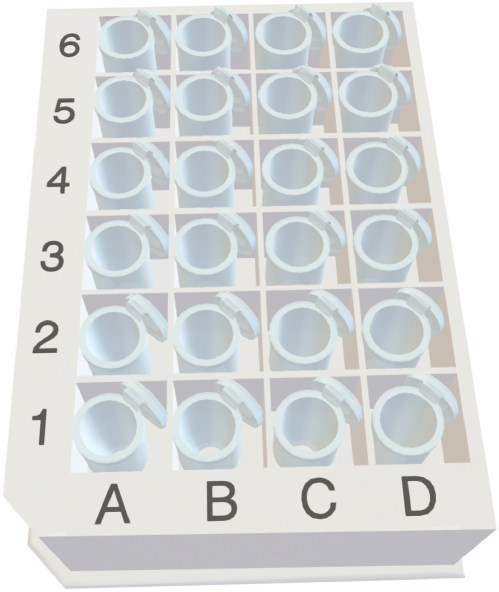
Tube size	Suitable holder
0.5 mL tubes	48 position rack 48 position cooling rack
1.5 mL tubes	24 position cooling rack 24 deep well plate[1]
2 mL tubes	24 position cooling rack 24 deep well plate[1]
15 mL tubes[2]	Tube rack for 50 mL tubes
50 mL tubes	Tube rack for 50 mL tubes

[1] Only for tubes with an attached lid.
[2] Only for the **Home** position, not for fractionation.

Correct tube position in a 24 deep well plate

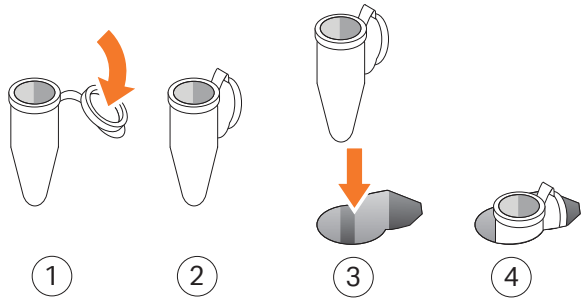
The tubes are placed in a 24 deep well plate with their lids bent backward, inserted with the lids in the upper right corners (away from **A1**), see the illustrations below.





Correct tube position in a rack

The tubes are placed in a rack with their lids bent backward. The tube is positioned in the round part of the hole, and the lid is positioned in the lid-shaped part of the hole.



Dispensing position and adjustment

For most plate and tube types the default positioning of the nozzle is not at the center of the well/tube.

Depending on the running conditions, or if non-standard plates are used, the default position might need to be adjusted. An adjustment setting is available in the software. For more information, refer to the *User Manual* for the ÄKTA instrument.

3.4 Accessories

Introduction

This section describes accessories for Fraction collector F9-T.

Accessory list

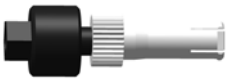
The table below lists accessories to Fraction collector F9-T. For complete and updated information, see the product home page or contact a sales representative.

Accessory		Article number
	F9-T standard nozzle	29477967 (delivered with the fraction collector)
	F9-T tubing nozzle	29510082 (delivered with the fraction collector)
	F9-T micro nozzle	29501534
	Microplate holder F9-T	29476921
	Tube rack for 0.5 mL tubes	29491085
	Cooling rack for 0.5 mL tubes	29491080
	Cooling rack for 1.5 mL and 2 mL tubes	29477224
	F9-T tunnel	29476924
	Tubing guide for nozzle	29507802 (delivered with the tunnel)
	Tubing guide for F9-T tunnel (left and right)	Spare part. Can be ordered from service if it needs to be replaced. (delivered with the tunnel)

Nozzles

For more information on nozzles, see *Section 4.2.2 Select nozzle, on page 40*.

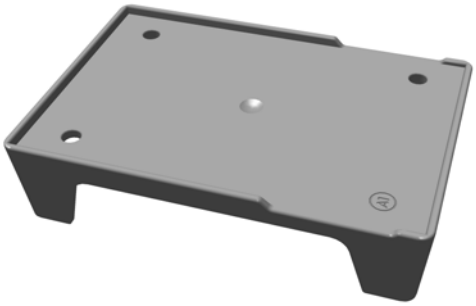
The F9-T standard nozzle is useful for most applications.



The F9-T tubing nozzle is recommended in applications where the standard nozzle is not optimal, for example, when the flow rate is high.

The F9-T micro nozzle is designed to reduce the drop size, and to increase the precision of small fraction volumes at low flow rates.

Adapters and cooling racks



Microplate holder F9-T. The holder adjusts the height of 96 well microplates. The marking **A1** provides guidance on how to place the holder on the fraction collector, and how to place the plate on the holder.

Tube rack for 0.5 mL tubes. The tubes are placed in the rack with their lids bent backward.

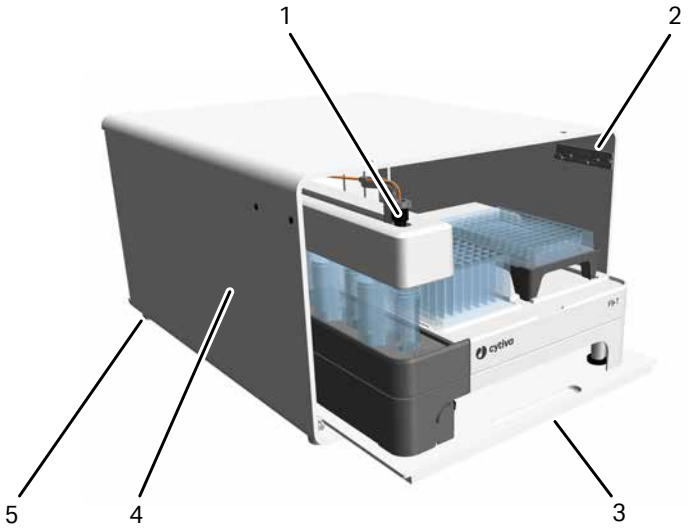
Cooling rack for 0.5 mL tubes. The cooling rack can keep fractions cold for up to three hours. It is prepared by adding water and putting it in a freezer until the water is frozen. The tubes are placed in the rack with their lids bent backward.

Cooling rack for 1.5 mL and 2 mL tubes. The cooling rack can keep fractions cold for up to three hours. It is prepared by adding water and putting it in a freezer until the water is frozen. The tubes are placed in the rack with their lids bent backward.

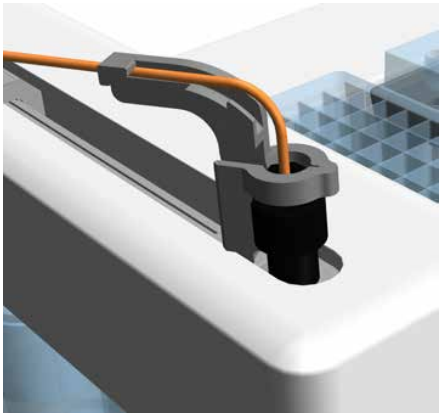
F9-T tunnel

The tunnel can be used to minimize the footprint when using Fraction collector F9-T together with an ÄKTA go instrument. The fraction collector is placed in the tunnel on a slide plate and the ÄKTA go instrument is placed on top.

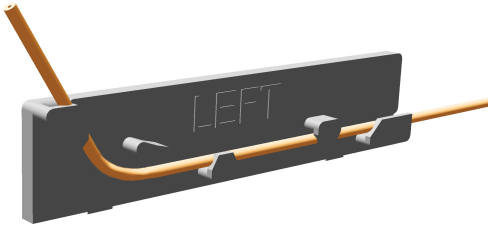
The tunnel can also be used when placing the fraction collector beside an ÄKTA instrument.



Part	Description
1	Tubing guide for nozzle
2	Tubing guide for F9-T tunnel
3	Sliding tray
4	F9-T tunnel
5	Rubber foot



Tubing guide for nozzle. This guide makes sure the tubing is guided correctly at the top of the fraction collector arm. It is used inside the tunnel together with the standard nozzle or the tubing nozzle.



Tubing guide for F9-T tunnel. This guide makes sure the tubing is guided along the inside wall of the tunnel and not hindering the movement of the fraction collector arm. The guide on the left side is used when the tunnel is placed under an ÄKTA go instrument, and the guide on the right side is used when the tunnel is placed beside the ÄKTA instrument.

4 Installation

About this chapter

This chapter provides required information on how to prepare for, and perform an installation of Fraction collector F9-T.

In this chapter

4.1 Site preparation

Introduction

This section describes the preparations necessary for the installation of Fraction collector F9-T.

The performance specifications of the fraction collector can be met only if the laboratory environment fulfills the requirements stated in this chapter.

In this section

4.1.1 Delivery and storage

Introduction

This section describes the requirements for receiving the delivery box and storing the fraction collector before installation.

When you receive the delivery

- Record on the receiving documents if there is any apparent damage on the delivery box. Inform your Cytiva representative of such damage.
- Move the delivery box to a protected location indoors.

Storage requirements

The delivery box should be stored in a protected place indoors. The following storage requirements must be fulfilled for the unopened box.

Parameter	Allowed range
Ambient temperature, storage	-25°C to 60°C for 48 h
Relative humidity	Up to 90% atmospheric humidity at 40°C

Moving the fraction collector

The fraction collector is heavier at the back. The illustration below shows the recommended way to lift Fraction collector F9-T.

Note: *Never lift Fraction collector F9-T by the fraction collector arm.*

4.1.2 Space requirements

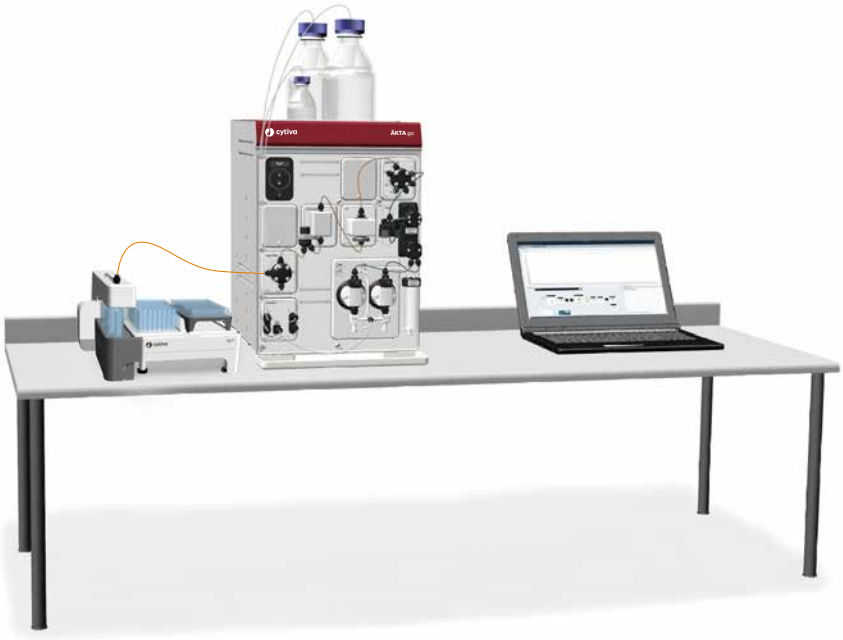
Introduction

This section describes different options of placement of Fraction collector F9-T and the space required.

Location

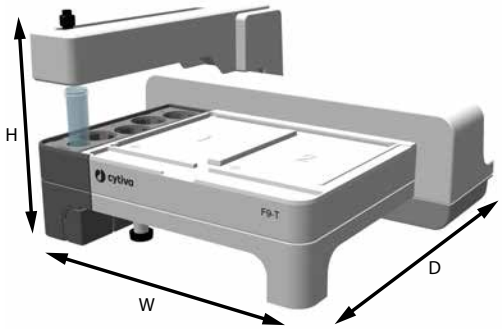
The Fraction collector F9-T must be placed on a clean, flat and stable surface which can support the weight of the fraction collector. It is recommended to place the Fraction collector F9-T on the bench to the left of the ÄKTA instrument, or below an ÄKTA go instrument by using an F9-T tunnel.

Note: *Longer tubing length increases back pressure and band broadening in the chromatographic process. Place the fraction collector as close as possible to the outlet valve so that the total tubing length is minimized.*



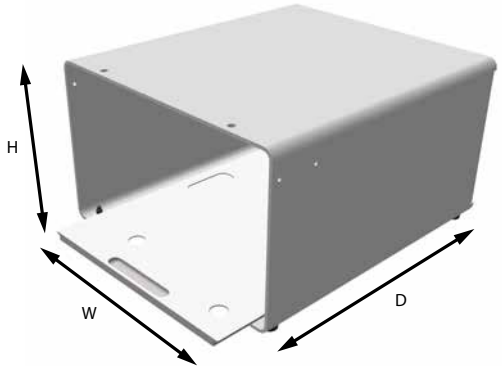
Size and weight

The size and the weight of the fraction collector is stated in the table below.



Parameter	Value
W (width)	320 mm
H (height)	190 mm
D (depth)	270 mm
Weight	4 kg

The size and the weight of the tunnel is stated in the table below.



Parameter	Value
W (width)	335 mm
H (height)	223 mm
D (depth)	380 mm
Weight	6 kg

4.1.3 Site requirements

Introduction

This section describes the site requirements for installation of the fraction collector.

Environmental requirements

If flammable liquids are fractionated, make sure that the ventilation meets the local requirements.

For other environmental requirements, refer to the *Operating Instructions* for the ÄKTA instrument.

4.2 Connections to the ÄKTA instrument

Introduction

This section contains information on how to connect tubing, power, and communication between Fraction collector F9-T and the ÄKTA instrument.

In this section

4.2.1 Connect power and enable communication

Introduction

This section describes how to set up the power and communication connection between Fraction collector F9-T and an ÄKTA instrument.

Connect Fraction collector F9-T

The fraction collector is connected to the ÄKTA instrument using UniNet-9 cable, F-type.

WARNING
UniNet-9 cable. Only use UniNet-9 cables delivered or approved by Cytiva.

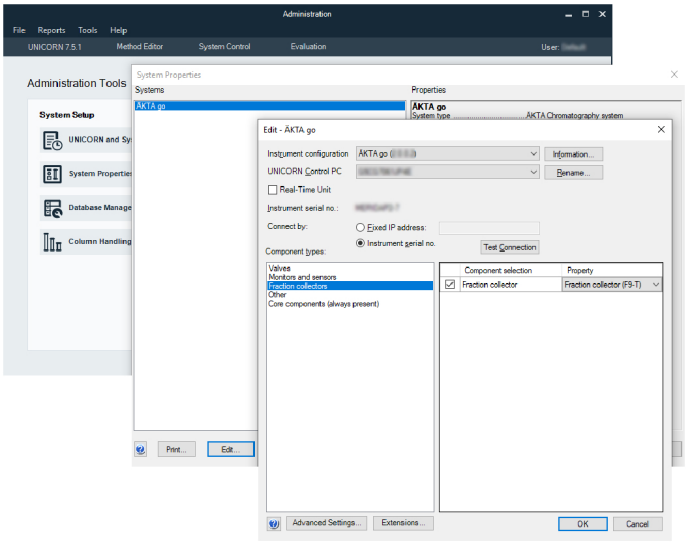
Step	Action
1	Disconnect the ÄKTA instrument in the UNICORN ***System Control*** module, and turn off the ÄKTA instrument.
2	On the back of the ÄKTA instrument, remove the jumper from the UniNet-9 port to be used. ***Note:*** *Keep the removed jumper safely. All contacts must have a connected module or jumper.*

Step	Action
3	Connect the UniNet-9 cable between the UniNet-9 ports on the back of Fraction collector F9-T and on the back of the ÄKTA instrument. ***Tip:*** The rounded side of the connector is facing the ÄKTA instrument.
4	Make sure that all unused UniNet-9 ports on the ÄKTA instrument are plugged with jumpers.

Software configuration

When the fraction collector has been connected, ***System Properties*** need to be updated in the UNICORN software to enable communication.

Follow the steps below to enable communication.

Step	Action
1	In the ***Administration*** module, click ***System Properties***. Select a system and click the ***Edit*** button.
2	In the ***Edit*** dialog, select ***Fraction collectors*** on the ***Component types*** list. Click the fraction collector check box and choose ***Fraction collector F9-T*** on the drop-down list. 
3	Click ***OK*** to apply changes.

The system restarts automatically when the configuration has been updated and the system can be reconnected.

4.2.2 Select nozzle

Introduction

The nozzle is the drop forming part of the fraction collector. It is placed in the fraction collector arm and its upper part is connected to the tubing from the outlet valve of the ÄKTA instrument. Depending on running conditions, different nozzles can be used.

Standard nozzle

The standard nozzle (black) is useful for most applications. It forms drops of 25 to 30 µL with water-based buffers at room temperature. Discrete drops are formed up to 10 mL/min. The tubing is attached with a standard fingertight connector. This nozzle can use the ***Drop sync*** function for flow rates up to 5 mL/min for 96 deep well plates, and up to 3 mL/min for other plates. The ***Auto*** setting uses these two flow rate limits.

Tubing nozzle

The tubing nozzle (black and white) is recommended in applications where the standard nozzle is not optimal, for example, when the flow rate is high. The tubing is attached directly to the nozzle and tightened with a standard fingertight connector. With the tubing nozzle installed, the drops are formed directly from the tubing, and are normally of the same size as with the standard nozzle. The flow rates that give discrete drops are dependent on the inner diameter of the tubing. Fused silica tubing can be used together with this nozzle if inserted into a PEEK tubing. If the ***Drop sync*** function is used, the tubing must protrude approximately 4 mm from the tubing nozzle. If the inner diameter of the tubing is 0.5 mm and the protrusion is 4 mm, the ***Auto*** setting can be used. If the ***Drop sync*** function is not used, the protrusion can be longer to reduce the distance between the tubing and the plates or tubes. In that case, the recommended protrusion is 14 mm.

Micro nozzle (accessory)

The micro nozzle (beige) is designed to reduce the drop size, and to increase the precision of small fraction volumes at low flow rates. It is the only recommended nozzle for 96 well microplates. This nozzle is recommended for flow rates up to 1 mL/min for 96 well microplates and 96 deep well plates, and up to 0.5 mL/min for 0.5 mL tubes. It forms drops of ~8 µL with water-based buffers at room temperature. Higher flow rates are not recommended. The tubing is attached with the special connector delivered with the nozzle. Do not use a normal fingertight connector because it creates a large dead volume and decreases fractionation accuracy. Do not use this nozzle inside F9-T tunnel. If the ***Drop sync*** function is used, use the ***On*** setting, because the ***Auto*** setting has flow rate limits outside the range of the micro nozzle.

4.2.3 Connect tubing

Introduction

This section contains information on how to connect tubing from an ÄKTA instrument to Fraction collector F9-T.

The fraction collector can be placed in a tunnel below an ÄKTA go instrument or beside the ÄKTA instrument. Different tubing length is recommended depending on placement.

Note: *Longer tubing length increases back pressure and band broadening in the chromatographic process.*

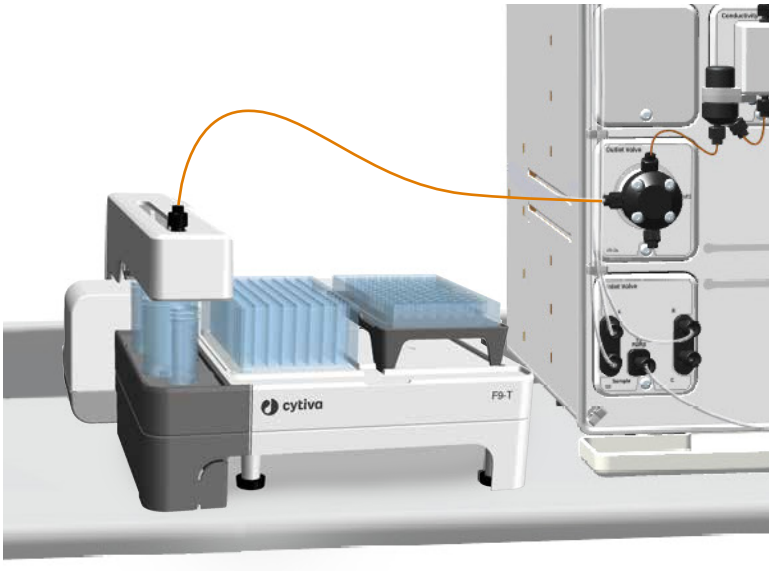
Placement	Recommended length
Without tunnel	40 cm
Inside tunnel	80 cm

Placement without tunnel

Follow the steps below to connect the tubing from the ÄKTA instrument to Fraction collector F9-T.

Step	Action
1	Connect one end of the tubing to the **Frac** port on the outlet valve on the ÄKTA instrument using a fingertight connector.
2	Connect the other end to the selected nozzle.

Step	Action
3	Insert the nozzle into the fraction collector arm.

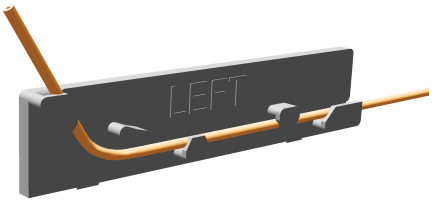
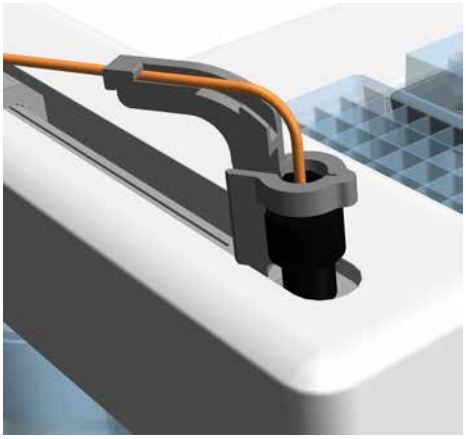


4	Adjust the delay volume setting in the UNICORN software. ***Tip:*** The last step is not necessary if a standard nozzle and a 40 cm tubing with inner diameter 0.5 mm are used.

Placement inside tunnel

Follow the steps below to connect the tubing from the ÄKTA instrument to Fraction collector F9-T inside an F9-T tunnel.

Step	Action
1	Connect one end of the tubing to the **Frac** port on the outlet valve on the ÄKTA instrument using a fingertight connector.

Step	Action
2	Lead the tubing into the tunnel and attach it along the inner wall of the tunnel. There are tubing guides on both left and right side of the tunnel, see the illustration below. Use the tubing guide closest to the outlet valve. 
3	Connect the other end of the tubing to the nozzle using the fingertight connector and the tubing guide for nozzle. See the illustration below. 
4	Insert the nozzle into the fraction collector arm.
5	Adjust the delay volume setting in the UNICORN software.

4.2.4 Set delay volume

Introduction

The delay volume settings are used to make sure that the collected fractions correspond to the fractions indicated in the chromatogram. Therefore, it is important to update the delay volume setting when changing tubing or nozzle.

Delay volume examples

The delay volume is the volume in the tubing between the UV detector and the fraction collector, including the internal volume of the nozzle.

The table below lists two examples of delay volumes for ÄKTA go using standard tubing with inner diameter 0.5 mm and standard modules. The tubing lengths in the table are measured between **Outlet Valve** on ÄKTA go, and the fraction collector. The delay volumes in the table have the internal volume of a standard nozzle (10 µL) included.

Tubing length	Delay volume
40 cm	233 µL
80 cm	312 µL

The table below lists the internal volumes of the nozzles.

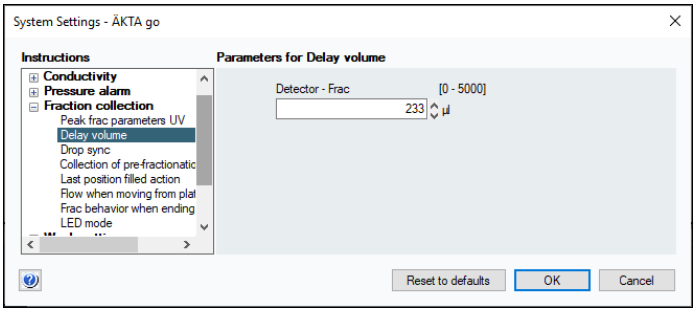
Nozzle	Internal volume
Standard nozzle	10 µL
Tubing nozzle	N/A
Micro nozzle	1 µL

Note: *For more information on delay volumes and data on other configurations than standard, refer to the User Manual for the ÄKTA instrument.*

Procedure

Follow the steps below to set the delay volume in the software.

Step	Action
1	Open the ***System settings*** dialog by selecting ***System*** →***Settings*** in the ***System Control*** module.

Step	Action
2	Select ***Fraction collection*** →***Delay volume*** and type the delay volume in field ***Detector – Frac***. 
3	Click ***OK*** to save the new delay volume.

4.3 Performance test

Before taking Fraction collector F9-T into use, run a performance test to check the function of the fraction collector. For information on how to run a performance test, refer to the *Operating Instructions* for the connected ÄKTA instrument.

5 Preparation

About this chapter

This chapter describes how to prepare Fraction collector F9-T before a run.

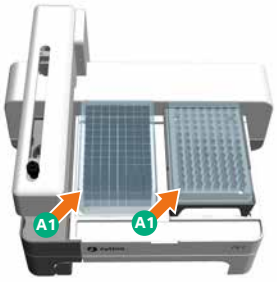
Prepare the fraction collector

Follow the steps below to prepare the fraction collector.

Step	Action
1	Make sure that Fraction collector F9-T is installed properly.
2	Check plates and tubes needed for the method run or manual run, and if cooling racks need to be prepared.

Prepare plates and small tubes

Follow the steps below to prepare plates and tubes for fractionation.

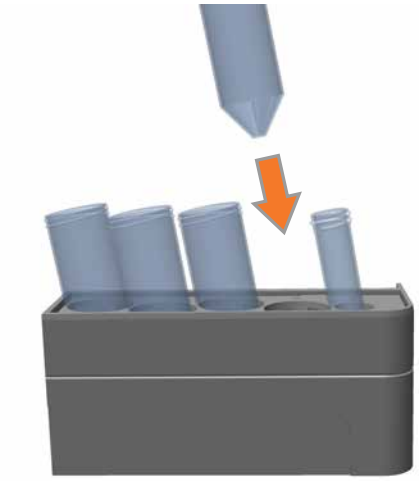
Step	Action
1	If cooling racks are to be used, add water and put them in a freezer until the water is frozen.
2	If tubes are to be used, make sure they are positioned correctly in a suitable plate or tube rack. For more information, see *Section 3.3 Plates and tubes, on page 22*.
3	Place the plates and racks on the fraction collector with the **A1** well in the front left corner as denoted on the fraction collector. 

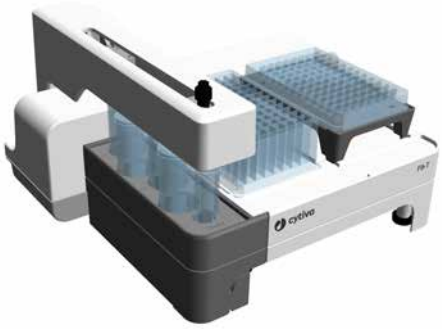
Prepare 50 mL tubes

Follow the steps below to position the 50 mL tubes, and the 15 mL **Home** position tube.

Step	Action
1	Remove the tube rack for 50 mL tubes by pressing the wedge and pulling out the rack, see the illustration below.

2	Place the tubes in the tube rack. When positioned properly, the tubes lean slightly towards the back of the fraction collector.



Step	Action
3	Put the tube rack back into position. 

6 Operation

About this chapter

This chapter describes how to handle the fraction collector during a run.

The fraction collector is connected to the ÄKTA instrument and controlled by the UNICORN software. Control of the fraction collector can be achieved automatically in a method run, or manually through the process picture or manual instructions.

Operating the fraction collector

CAUTION

Be aware of moving parts during fractionation.

The green LED light on the dispenser head indicates if a fractionation is ongoing, if the function is switched on. The function is switched on and off in the UNICORN software.

For information on how to perform a run, refer to the *Operating Instructions* for the ÄKTA instrument, available in several languages.

For more information on how to perform a fractionation, refer to the *User Manual* for the ÄKTA instrument.

7 Maintenance

About this chapter

This chapter provides information on how to perform maintenance procedures on Fraction collector F9-T.

For further information, refer to the *User Manual* for the ÄKTA instrument.

In this chapter

7.1 Clean the fraction collector externally

Maintenance interval

Clean the fraction collector externally when necessary. Do not allow spilled liquid to dry on the fraction collector.

Required material

The following materials are required:

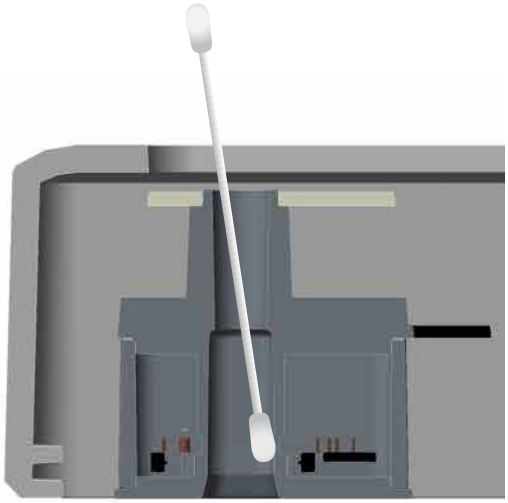
- Cloth
- Water, mild cleaning agent or 20% ethanol.

Instruction

Follow the steps below to clean the fraction collector externally.

Step	Action
1	Check that no run is in progress.
2	Turn off the ÄKTA instrument.
3	Remove the tube rack by pressing the wedge and pulling the rack out, discard any remaining tubes and wash the tube rack with mild cleaning agent or 20% ethanol.
	
4	Wipe the surface of the fraction collector with a damp cloth. Wipe off stains using a mild cleaning agent or 20% ethanol. Remember to wipe all sides, including the underside of the fraction collector arm. Wipe off any excess of liquid.

Step	Action
5	Lift out the nozzle, wet a cotton swab lightly with water and clean the hole through the fraction collector arm. Be extra thorough around the ***Drop sync*** sensor.



6	Insert the nozzle into the fraction collector arm.
7	When the tube rack is dry, add a 15 mL tube and put it back into position.
8	Let the fraction collector dry completely before restart.

7.2 Clean the fraction collector tubing

Maintenance interval

Perform system Cleaning-In-Place (CIP) when necessary, for example, between runs where different samples are used. This is important to prevent cross-contamination and bacterial growth in the instrument.

Instruction

To perform system CIP, refer to the *Operating Instructions* for the connected ÄKTA instrument. When creating the System CIP method, select the ***Fraction collector*** check box to include cleaning of the fraction collector tubing. Make sure there is room for 3 mL liquid in the 15 mL tube placed in the ***Home*** position of the fraction collector and that no column is connected in the flow path.

7.3 Replace the nozzle

Maintenance interval

Replace the nozzle when necessary.

Instruction

Follow the steps below to replace the nozzle.

Step	Action
1	Remove the nozzle from the fraction collector arm.
2	If applicable, remove the tubing guide.
3	Unscrew the two nozzle parts to detach the nozzle from the tubing.
4	Attach the new nozzle to the tubing.
5	If applicable, re-connect the tubing guide.
6	Insert the new nozzle into the fraction collector arm.

8 Reference information

About this chapter

This chapter lists the technical specifications of the fraction collector. The chapter also includes recycling information and regulatory information.

In this chapter

8.1 Specifications

Technical specification

Parameter	Specification
Flow rate range	0.01 to 25 mL/min
Drop sync [1]	Standard nozzle Up to 5 mL/min for 96 deep well plates Up to 3 mL/min for other plate types and tubes Tubing nozzle If using the tubing nozzle with tubing inner diameter 0.5 mm and protrusion 4 mm, the same is valid as for the standard nozzle.[2] Micro nozzle Up to 1 mL/min for 96 deep well plates and 96 well microplates Up to 0.5 mL/min for 0.5 mL tubes
Connection between fraction collector and ÄKTA instrument	UniNet-9 F-type
Input voltage	32 VDC
Max power	10 VA
Dimensions (W × D × H)	320 × 270 × 190 mm
Weight	4 kg
Enclosure protective class	IP 21
Acoustic noise level	< 60 dB(A)
Heat output	< 10 W

[1] Using water-based buffers at room temperature.
[2] Do not use the ***Drop sync*** function when the tubing protrudes more than 4 mm.

Environmental requirements

Parameter	Requirement
Allowed location	Indoor use only

Parameter	Requirement
Ambient temperature, operation	4°C to 35°C
Ambient temperature, storage and transport	-25°C to 60°C during 48 h
Relative humidity	20% to 95%, non-condensing
Altitude, operating	Up to 2000 m
Pollution degree of the intended environment	Pollution degree 2
Chemical environment	Refer to the *User Manual* for the ÄKTA instrument.

8.2 Chemical resistance

Refer to the *Operating Instructions* for the ÄKTA instrument for chemical resistance specifications.

8.3 Recycling information

Introduction

This section contains information about the decommissioning of the product.

CAUTION

Always use appropriate personal protective equipment when decommissioning the equipment.

Decontamination

The product must be decontaminated before decommissioning. All local regulations must be followed with regard to scrapping of the equipment.

Disposal of the product

When taking the product out of service, the different materials must be separated and recycled according to national and local environmental regulations.

Disposal of electrical components

Waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of the equipment.

8.4 Regulatory information

Introduction

This section lists the regulations and standards that apply to the product.

In this section

8.4.1 Contact information

Contact information for support

To find local contact information for support and sending troubleshooting reports, visit *cytiva.com/contact*.

Manufacturing information

The table below summarizes the required manufacturing information.

Requirement	Information
Name and address of manufacturer	Cytiva Sweden AB Björkgatan 30 SE 751 84 Uppsala Sweden
Telephone number of manufacturer	+ 46 771 400 600

8.4.2 European Union and European Economic Area

Introduction

This section describes regulatory information for the European Union and European Economic Area that applies to the equipment.

Conformity with EU Directives

See the EU Declaration of Conformity for the directives and regulations that apply for the CE marking.

If not included with the product, a copy of the EU Declaration of Conformity is available on request.

CE marking

The CE marking and the corresponding EU Declaration of Conformity is valid for the instrument when it is:

- used according to the *Operating Instructions* or user manuals, and
- used in the same state as it was delivered, except for alterations described in the *Operating Instructions* or user manuals.

8.4.3 Eurasian Economic Union
Евразийский экономический союз

This section describes the information that applies to the product in the Eurasian Economic Union (the Russian Federation, the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, and the Kyrgyz Republic).

Introduction

This section provides information in accordance with the requirements of the Technical Regulations of the Customs Union and (or) the Eurasian Economic Union.

Введение

В данном разделе приведена информация согласно требованиям Технических регламентов Таможенного союза и (или) Евразийского экономического союза.

Manufacturer and importer information

The following table provides summary information about the manufacturer and importer, in accordance with the requirements of the Technical Regulations of the Customs Union and (or) the Eurasian Economic Union.

Requirement	Information
Name, address and telephone number of manufacturer	See *Manufacturing information*
Importer and/or company for obtaining information about importer	LLC Global Life Sciences Solutions Rus Russian Federation, 123112 Presnenskaya nab., 10, fl. 12, pr. III, room 6 Telephone: + 7 495 739 6931 Fax nr: + 7 495 739 6932 E-mail: *rucis@cytiva.com*

Информация о производителе и импортере

В следующей таблице приводится сводная информация о производителе и импортере, согласно требованиям Технических регламентов Таможенного союза и (или) Евразийского экономического союза.

Требование	Информация
Наименование, адрес и номер телефона производителя	См. *Информацию об изготовлении*

Требование	Информация
Импортер и/или лицо для получения информации об импортере	ООО "Глобал Лайф Сайэнсиз Солюшнз Рус" Российская Федерация, 123112 Пресненская наб., д. 10, эт. 12, пом. III, ком. 6 Телефон: + 7 495 739 6931 Факс: + 7 495 739 6932 Адрес электронной почты: *rucis@cytiva.com*

Description of symbol on the system label
Описание обозначения на этикетке системы

This Eurasian compliance mark indicates that the product is approved for use on the markets of the Member States of the Customs Union of the Eurasian Economic Union

Данный знак о Евразийском соответствии указывает, что изделие одобрено для использования на рынках государств-членов Таможенного союза Евразийского экономического союза

8.4.4 Regulations for North America

Introduction

This section describes the information that applies to the product in the USA and Canada.

FCC compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: *The user is cautioned that any changes or modifications not expressly approved by Cytiva could void the user's authority to operate the equipment.*

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

8.4.5 Regulatory statements

Introduction

This section shows regulatory statements that apply to regional requirements.

General statement

NOTICE

This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

South Korea

Regulatory information to comply with the Korean technical regulations.

NOTICE

Class A equipment (equipment for business use).

This equipment has been evaluated for its suitability for use in a business environment.

When used in a residential environment, there is a concern of radio interference.

주의사항

A급 기기 (업무용 방송통신 기자재)

이 기기는 업무용환경에서 사용할 목적으로 적합성평가를 받은 기기

로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

8.4.6 Declaration of Hazardous Substances (DoHS)

This section describes the information that applies to the product in China.

根据 SJ/T11364-2014《电子电气产品有害物质限制使用标识要求》特提供如下有关污染控制方面的信息。

The following product pollution control information is provided according to SJ/T11364-2014 Marking for Restriction of Hazardous Substances caused by electrical and electronic products.

电子信息产品污染控制标志说明
Explanation of Pollution Control Label

该标志表明本产品含有超过中国标准 GB/T 26572《电子电气产品中限用物质的限量要求》中限量的有害物质。标志中的数字为本产品的环保使用期，表明本产品在正常使用的条件下，有毒有害物质不会发生外泄或突变，用户使用本产品不会对环境造成严重污染或对其人身、财产造成严重损害的期限。单位为年。

为保证所申明的环保使用期限，应按产品手册中所规定的环境条件和方法进行正常使用，并严格遵守产品维修手册中规定的定期维修和保养要求。

产品中的消耗件和某些零部件可能有其单独的环保使用期限标志，并且其环保使用期限有可能比整个产品本身的环保使用期限短。应到期按产品维修程序更换那些消耗件和零部件，以保证所申明的整个产品的环保使用期限。

本产品在使用寿命结束时不可作为普通生活垃圾处理，应被单独收集妥善处理。

This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese standard GB/T 26572 Requirements of concentration limits for certain restricted substances in electrical and electronic products. The number in the symbol is the Environment-friendly Use Period (EFUP), which indicates the period during which the hazardous substances contained in electrical and electronic products will not leak or mutate under normal operating conditions so that the use of such electrical and electronic products will not result in any severe environmental pollution, any bodily injury or damage to any assets. The unit of the period is "Year".

In order to maintain the declared EFUP, the product shall be operated normally according to the instructions and environmental conditions as defined in the product manual, and periodic maintenance schedules specified in Product Maintenance Procedures shall be followed strictly.

Consumables or certain parts may have their own label with an EFUP value less than the product. Periodic replacement of those consumables or parts to maintain the declared EFUP shall be done in accordance with the Product Maintenance Procedures.

This product must not be disposed of as unsorted municipal waste, and must be collected separately and handled properly after decommissioning.

有害物质的名称及含量
Name and Concentration of Hazardous Substances

产品中有害物质的名称及含量
Table of Hazardous Substances' Name and Concentration

部件名称 Component name	有害物质 Hazardous substance					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
29418008	X	0	0	0	0	0

0: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

- 此表所列数据为发布时所能获得的最佳信息.

0: Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572.

X: Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572

- Data listed in the table represents best information available at the time of publication.

cytiva.com/akta

For local office contact information, visit cytiva.com/contact

29478336 AB V:6 06/2020