Sentino™ microbiology pump

Product number: 13186

Operating Instructions

Original instructions



DOMINIQUE DUTSCHER SAS

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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

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1.1 Important user information

Introduction

This section contains important user information about the product and this manual.

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 can be exposed or expose others to hazards that can lead to personal injury and you can cause damage to the equipment.

Intended use of the product

Sentino™ microbiology pump is intended for microbiological evaluations of aqueous samples by membrane filter (MF) technique.

For laboratory use only. Not for use in a manner other than indicated.

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1.2 About this manual

Introduction

This section contains information about the purpose and scope of this manual, notes and tips, and typographical conventions.

Purpose of this manual

This manual provides information needed to install, operate, and perform maintenance in a safe way.

Scope of this manual

This manual is valid for Sentino microbiology pump.

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.*

Typographical conventions

The text on a graphical user interface is identified in this manual by ***bold italic*** text.

The text on the label of a hardware item is identified in this manual by **bold** text.

Tip: *The text can include clickable hyperlinks to reference information.*

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1.3 Associated documentation

Access user documentation online

Scan the QR code or visit *cytiva.com/instructions*. Enter the title or the document number to access the file.

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2 Safety instructions

About this chapter

This chapter describes safety precautions, labels, and symbols.

In this chapter

Section		See page
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Important



WARNING

All users must read and understand the entire contents of this general safety chapter, and the specific safety precautions information in each subsequent chapter of this manual to become aware of the hazards involved.

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2.1 Safety precautions

Introduction

This section describes the general hazards you must be aware of before performing installation, operation, or maintenance.

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

Appropriate care must always be taken when using electrical equipment around aqueous solutions in the laboratory.

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WARNING
Use of personal protective equipment, such as gloves, gowns, laboratory coats, and protective eyewear, help to reduce risk of exposure and is recommended.



WARNING
Proper disposal of fluid paths in accordance with biohazard safety procedures is recommended where applicable.



WARNING
Opening or disassembly of product enclosure can involve electrical shock.



WARNING
Only authorized personnel are allowed to disassemble the product.



WARNING
Do not immerse.



WARNING
Only use parts approved by the manufacturer.



WARNING
For laboratory use only.



WARNING
Prolonged use in environments exceeding 30°C (86 °F) can cause overheating.



CAUTION
The device utilizes a peristaltic pump drive which can cause a pinch point if operated with the loading door open.

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NOTICE
Sanitization of equipment as directed in this manual is essential for maintaining optimum performance.



NOTICE
Keypad buttons on this product intended for finger touch only.



NOTICE
Only use recommended solutions for cleaning and sanitization.



NOTICE
The unit is always on standby with battery power. Avoid pressing power or pulse buttons while cleaning pump head or loading fluid path.

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2.2 Labels and symbols

Introduction

This section describes the nameplate, labels, and other safety and regulatory labels and symbols.

Nameplate

The nameplate provides information about the model, manufacturer, and technical data.

Description of symbols and text

The following symbols and text can be present on the nameplate:

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.
	**Pinch hazard**

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3 System description

About this chapter

This chapter gives an overview of Sentino microbiology pump and a brief description of its function.

In this chapter

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3.1 Product overview

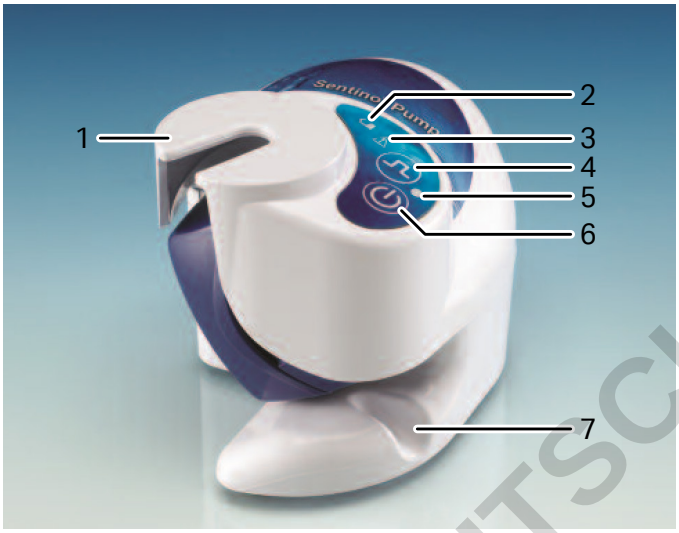
The membrane filtration (MF) technique is a method of analyzing aqueous samples for microbial contamination. A fluid sample is pulled through a membrane filter and the filter is placed on growth media and incubated. After the prescribed incubation period, colonies are counted and reviewed for appropriate morphology.

Sentino microbiology pump is intended for microbiological evaluations of aqueous samples by MF technique. This simple, compact unit will optimize and maximize your workspace environment by eliminating the need for separate manifold, pump, and excess tubing. The Sentino microbiology pump is designed to use peristaltic action to draw the sample through the filter and send filtrate directly to drain or waste collection. Operating parameters are preset and fixed to best satisfy requirements for MF technique described in EPA, ISO, and ASTM methods; thereby providing conditions comparable to a standard manifold set-up.

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3.2 Product description

Front of the product and keypad



Part	Description
1	Stage with adapter guide
2	Battery status indicator
3	Fault indicator
4	Pulse button
5	Main power indicator
6	Power On/Off button
7	Drive tube guide

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Back of the product



Part	Description
8	Power socket
9	Nameplate

Pump head and fluid path



Part	Description
10	Filter funnel adapter
11	Loading door
12	Slot for drive tube
13	Drive tube

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Power cords



Part	Description
14	Transformer power plug
15	Power cord
16	Transformer input interface

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3.3 Keypad and symbols

Symbol	Description	Function
	Main power indicator	A green LED illuminates when the pump is plugged into the power transformer and VAC power source. This LED is not illuminated when operating on battery power.
	Power On/Off	Press the Power On/Off button to turn on the pump. Press the Power On/Off a second time to turn off the pump.
	Pulse operation	The pump operates only while the pulse operation button is pressed. This feature is ideal for small fluid volumes that require momentary filtration intervals.
	Fault indicator	This symbol illuminates yellow upon detection of a fault in the system operation. Flashing indicates that the battery is running low and continuous illumination indicates that other faults are detected. See *Chapter 7 Troubleshooting, on page 27*.
	Battery indicator	When plugged into the power transformer and VAC power source, this symbol indicates that the battery is charging by an illuminated blue LED. When the battery is fully charged, the blue LED turns off.

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4 Preparation

About this chapter

This chapter gives the required information to set up and prepare Sentino microbiology pump for operation.

In this chapter

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4.1	Connecting power supply and charging	19
4.2	Fluid path installation	20

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4.1 Connecting power supply and charging

Step	Action
1	Position the Sentino microbiology pump on a laboratory bench.
2	Attach power plug from power transformer into the power socket, as shown in the image below. 
3	Connect the power cord to the input interface on the power transformer, then plug power cord into appropriate electrical outlet having 100 to 240 VAC supply.
4	Confirm that the main power indicator is illuminated. Battery status indicator must be illuminated blue to indicate that battery is charging. ***Tip:*** *The pump can be used while on the power transformer as battery is charging.*
5	Upon initial use or when device has been in storage for a long period of time, completely charge battery (typically 4 to 5 hours). When not in use, pump is recommended to remain connected to main power to make sure that full battery charge is available at time of use. ***Note:*** *If the battery has been fully discharged, the pump will turn on when initially connected to power source. Press power On/Off button to turn off pump and continue to use or charge.*

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4.2 Fluid path installation

The Sentino microbiology pump is designed to interface with disposable fluid path from Cytiva. The fluid path remains secure during filter funnel loading and unloading. A guide on the pump housing helps position the tubing correctly inside the device without the use of any tools.

CAUTION
The device utilizes a peristaltic pump drive which can cause a pinch point if operated with the loading door open.

NOTICE
The device is designed for use with fluid path from Cytiva only.

NOTICE
The unit is always on standby with battery power. Do not press the power or pulse buttons while loading fluid path.

NOTICE
Use of tubing not recommended by Cytiva can cause damage to pumping mechanism, reduce performance, or cause tube breakage. This will void all manufacturer warranties.

Loading

Step	Action
1	With unit positioned on benchtop, open pump loading door fully.

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Step	Action
2	Slide adapter into the guide on the pump housing, as shown in the image below, until the adapter is firmly seated. 
3	Tuck the tubing into the slot in the pump head and position the tube into the guide slot in the base, as shown in the image below. 
4	Remove tubing slack by firmly pulling the tubing against the rollers as you close the pump loading door to a snap-closed position.
5	Sanitize fluid path before use. See *Sanitizing the fluid path, on page 26*.

NOTICE
If pump head fails to rotate when turned on, then turn off the pump, open the pump head door, and repeat step 4 above.

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5 Operation

About this chapter

This chapter gives instructions on how to operate Sentino microbiology pump in a safe way.

In this chapter

Section		See page
5.1	Safety precautions	23
5.2	Filtration	24

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5.1 Safety precautions

CAUTION
If the loading door is open during operation, rotation of the rollers can present an accessible pinch point to the user.

Note: *If the loading door is open during operation, no filtration or pumping will occur.*

Note: *The operation is the same whether powered by the internal battery or using the power transformer and power cord.*

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5.2 Filtration

Step	Action
1	Place Cytiva filter funnel onto adapter on pump stage.
2	Pour sample into filter funnel.
3	For continuous operation:
	a. To start filtration, press and release the power On/Off button .
	b. To stop filtration, press and release the power On/Off button again .
4	For pulse or momentary operation:
	a. Press and hold the pulse button to perform momentary filtration.
	b. Release the pulse button to stop filtration.
5	Perform rinses in the same manner as sample filtration.

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6 Maintenance

About this chapter

This chapter provides information about maintenance that must be performed by users of Sentino microbiology pump.

Safety precautions



WARNING
Do not immerse.



CAUTION
The device utilizes a peristaltic pump drive which can cause a pinch point if operated with the loading door open.



NOTICE
The device is designed for use with fluid path from Cytiva only.



NOTICE
The unit is always on standby with battery power. Do not press the power or pulse buttons while loading fluid path.



NOTICE
Use of tubing not recommended by Cytiva can cause damage to pumping mechanism, reduce performance, or cause tube breakage. This will void all manufacturer warranties.

Cleaning body and pump head

The unit can be wiped down with a towel moderately soaked in the following common laboratory sanitizing solutions:

- 70% isopropyl alcohol (IPA)

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- 10% bleach

Sanitizing the fluid path

The fluid path must be changed at least once a week.

For optimal contamination control, daily replacement of fluid path is recommended.

Upon initial installation of the fluid path:

Step	Action
1	Run 70% IPA through the fluid path for 5 seconds.
2	Pump residual IPA through the tube.

If the fluid path is used for more than one day:

Step	Action
1	At the end of the filtration session, run 70% IPA through the fluid path for 5 seconds.
2	Pump residual IPA through the tube.
3	Open the pump head loading door to relieve the pinch of the rollers on the drive tube.

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7 Troubleshooting

About this chapter

This chapter provides information to assist users and service personnel to identify and correct problems if they occur.

If the suggested actions in this guide do not solve the problem, or if the problem is not covered by this guide, contact your Cytiva representative for advice.

Troubleshooting guide


When this symbol on the unit is backed with a yellow LED, the device has sensed a condition in which performance has been impacted and the user must consult the *Operating Instructions* for troubleshooting.

Problem	Cause	Corrective action
Plugged into main power source but green main power indicator is not illuminated.	Incorrect power transformer.	Use power transformer supplied with pump.
	Incorrect power source.	Check that power source supplies 100 to 240 VAC.
Pump plugged into main power but green main power indicator is not illuminated and yellow fault indicator is illuminated.	Obstruction in pump head.	• Check that drive tube slot in pump head is free of foreign objects. • Verify fluid path is properly loaded. See: - *Section 4.1 Connecting power supply and charging, on page 19* - *Section 4.2 Fluid path installation, on page 20* - *Loading, on page 20*
	Pump over temperature limit.	Check the temperature of the operating environment and allow pump to cool.
Pump slowing down with or without yellow fault indicator flashing.	Battery discharging.	Continue filtration using power transformer plugged into main power source until battery is fully charged.
Yellow fault indicator flashing and unit not operating.	Battery is discharged.	Continue filtration using power transformer plugged into main power source until battery is fully charged.
Pump will not turn on, no yellow fault indicator.	Battery is discharged.	Recharge battery. If problem is not corrected, contact Cytiva.

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Problem	Cause	Corrective action
Pump head not rotating, yellow fault indicator illuminated.	Obstruction in pump head.	• Check that drive tube slot in pump head is free of foreign objects. • Verify that fluid path is properly loaded. See: - *Section 4.1 Connecting power supply and charging, on page 19* - *Section 4.2 Fluid path installation, on page 20* - *Loading, on page 20*
	Pump over temperature limit.	Check the temperature of the operating environment and allow pump to cool.
Pump head rotating but fluid is not filtering.	Pump head loading door is open.	Verify that fluid path is properly loaded and loading door is securely closed. See: • *Section 4.1 Connecting power supply and charging, on page 19* • *Section 4.2 Fluid path installation, on page 20* • *Loading, on page 20*
	Fluid too viscous.	Consider whether sample can be diluted with sterile buffer to facilitate filtration.
	Fluid too particulate-laden.	Consider whether MF technique is the appropriate method for microbial evaluation for the heavy particulate load or process the sample in multiple aliquots to facilitate filtration.

If the above corrective actions do not remedy the problem, contact manufacturer for service.

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8 Reference information

About this chapter

This chapter lists technical specifications of Sentino microbiology pump. The chapter also includes recycling information, regulatory information, and ordering information.

In this chapter

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8.1 Specifications

Introduction

This section describes the specifications for the product.

Materials of construction

Parameter	Specification
Housing material	Polycarbonate ABS-blended polymer
Keypad and label	Polyester
Pump head	PEI with PTFE-filled PBT rollers
Fluid path adapter	Polypropylene
Hose material	Thermoplastic elastomer

Dimensions

Parameter	Specification
Length	13.6 cm (5.4 in.)
Width	9.5 cm (3.7 in.)
Height	10.4 cm (4.1 in.)
Weight	680 g (1.5 lbs.)
Hose dimensions	4.8 mm (3/16 in.) ID × 7.9 mm (5/16 in.) OD 1.6 mm (1/16 in.) wall thickness

Temperature range

Parameter	Specification
Operation	15°C to 30°C (59 to 86 °F)
Storage	-15°C to 45°C (5 to 113 °F)

Fluid path must be allowed to equilibrate to operation range before use.

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Battery

Parameter	Specification
Voltage	12.0 V
Type	NiMH (nickel metal hydride)

DC supply

Parameter	Specification
Voltage	24.0 V

AC/DC power transformer

Parameter	Specification
Power	24 VDC 1.6 Amp, 100 to 240 VAC, 47 to 63 Hz
Input interface	IEC 320 3-pin socket
Output interface (power plug)	2.5 mm barrel jack

Power cord

- IEC 320 connector and European CEE 7/7 plug
- IEC 320 connector and UK BS1363 plug
- IEC 320 connector and NEMA 5-15P grounded plug

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8.2 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.

Recycling of hazardous substances

The product contains hazardous substances. Detailed information is available from your Cytiva representative.

Disposal of electrical components



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

Disposal of batteries

Waste batteries and accumulators must not be disposed of as unsorted municipal waste and must be collected separately. Follow applicable local regulations for recycling of batteries and accumulators.

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8.3 Regulatory information

Introduction

This section lists the regulations and standards that apply to the product. Your product is marked or listed according to the applicable regulatory requirements for your region. Local language translations are only provided according to regulatory requirements.

In this section

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8.3.1 Contact information

Introduction

This section shows the contact information for support and manufacturing 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 Puerto Rico Pall Boulevard Road 194 KM 0.4 Fajardo, PR 00738

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8.3.2 European Union and European Economic Area

Introduction

This section describes the information that applies to the product in the European Union and European Economic Area.

Conformity with EU Directives

Refer to 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

CE

The CE marking and the corresponding EU Declaration of Conformity is valid for the product 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.

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8.3.3 South Korea

Introduction

This section describes the information that applies to the product in the Republic of Korea.

Compliance statement



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.



유의사항

A급 기기 (업무용 방송통신 기자재)

이 기기는 업무용환경에서 사용할 목적으로 적합성평가를 받은 기기

로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

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8.3.4 General regulatory statements

EMC emission, CISPR 11: Group 1, Class A statement

NOTICE

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

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8.4 Ordering information

Part number	Description	Pkg
13186	Sentino microbiology pump • Power transformer (1) • European power cord with CEE 7/7 plug (1) • Power cord with NEMA 5-15P plug (1) • UK power cord with BS1363 plug (1) • Fluid path (1) • User Guide CD (1)	1/pkg
4861	Fluid path, disposable, for use with MicroFunnel™ filter funnels	10/pkg

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