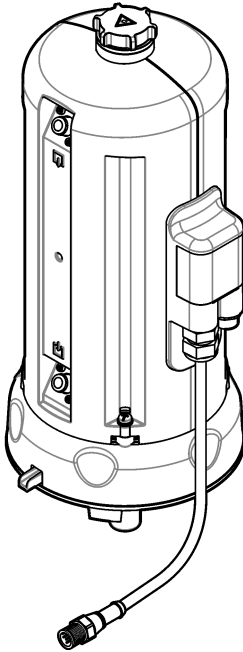




DOC273.97.90480

# TU5 Series Automatic Cleaning Module

06/2021, Edition 5



**User Instructions**  
**Instructions d'utilisation**  
**Instrucciones para el usuario**  
**Instruções do Usuário**  
使用说明  
取扱説明書  
사용 설명서  
คำแนะนำในการใช้งาน

English.....3

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## Section 1 Specifications

Specifications are subject to change without notice.

Specification	Details
IP rating	Electronic compartment IP55; process head/Automatic Cleaning Module attached to the instrument and all of the other functional units IP65 <sup>1</sup>
Power requirements	12 VDC (+2 V, -4 V), 7 VA
Protection class	III
Pollution degree	2
Overvoltage category	II
Environmental conditions	Indoor use
Operating temperature	0 to 50 °C (32 to 122 °F)
Storage temperature	-40 to 60 °C (-40 to 140 °F)
Humidity	5 to 95% relative humidity, non-condensing
Altitude	2000 m (6562 ft) maximum
Certifications	CE, UKCA
Warranty	1 year (EU: 2 years)

## Section 2 General information

In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation. Revised editions are found on the manufacturer's website.

### 2.1 Safety information

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

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<sup>1</sup> Water drops, puddles or runlets that will not damage the instrument may be in the inner of the enclosure.

## 2.1.1 Use of hazard information

<b>▲ DANGER</b>
Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.
<b>▲ WARNING</b>
Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.
<b>▲ CAUTION</b>
Indicates a potentially hazardous situation that may result in minor or moderate injury.
<b>NOTICE</b>
Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

## 2.1.2 Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.

	Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems. Return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.
	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
	This symbol indicates that a risk of electrical shock and/or electrocution exists.
	This symbol indicates the need for protective eye wear.
	This symbol indicates a laser device is used in the equipment.
	This symbol identifies a risk of chemical harm and indicates that only individuals qualified and trained to work with chemicals should handle chemicals or perform maintenance on chemical delivery systems associated with the equipment.
	This symbol indicates radio waves.
	This symbol indicates the presence of a strong magnetic field.

## 2.2 Product overview

### ⚠ WARNING

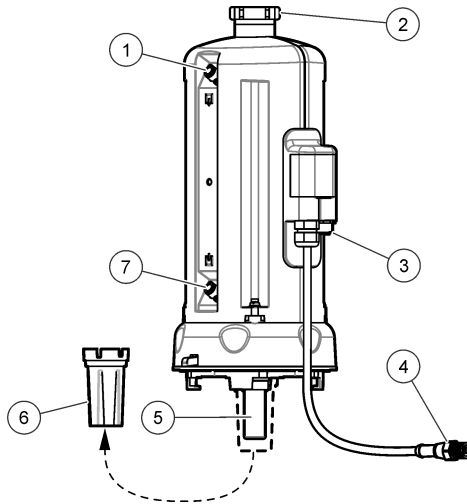


Pacemaker precautions. The instrument has an internal magnet. Keep the instrument a minimum of 5 cm (2 in.) from the user. A magnetic field can:

- Stop the stimulating pulses from the pacemaker that control the rhythm of the heart.
- Cause the pacemaker to supply the pulses irregularly.
- Cause the pacemaker to ignore the rhythm of the heart and supply pulses at a set interval.

The automatic cleaning module is an accessory for the TU5300 sc and the TU5400 sc turbidimeters. Refer to [Figure 1](#). The automatic cleaning module cleans the vial at a selected time interval or turbidity reading limit. As an alternative, start the cleaning manually or with a Modbus connection.

**Figure 1 Product overview**



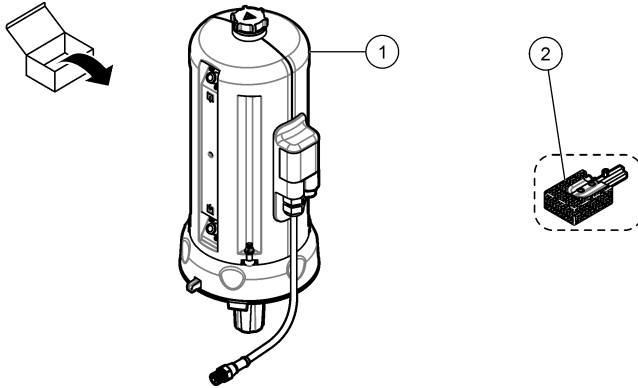
1 Sample outlet	5 Process vial
2 Service lid <sup>2</sup>	6 Vial replacement tool
3 Connector for the flow sensor or other accessories	7 Sample inlet
4 Automatic cleaning module cable	

## 2.3 Product components

Make sure that all components have been received. Refer to [Figure 2](#). If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

<sup>2</sup> For service use only

**Figure 2 Product components**



1 Automatic cleaning module (with silicone vial wiper installed)

2 Fiber vial wiper<sup>3</sup>

## Section 3 Installation

### ⚠ WARNING



Pacemaker precautions. The instrument has an internal magnet. Keep the instrument a minimum of 5 cm (2 in.) from the user. A magnetic field can:

- Stop the stimulating pulses from the pacemaker that control the rhythm of the heart.
- Cause the pacemaker to supply the pulses irregularly.
- Cause the pacemaker to ignore the rhythm of the heart and supply pulses at a set interval.

### ⚠ CAUTION



Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

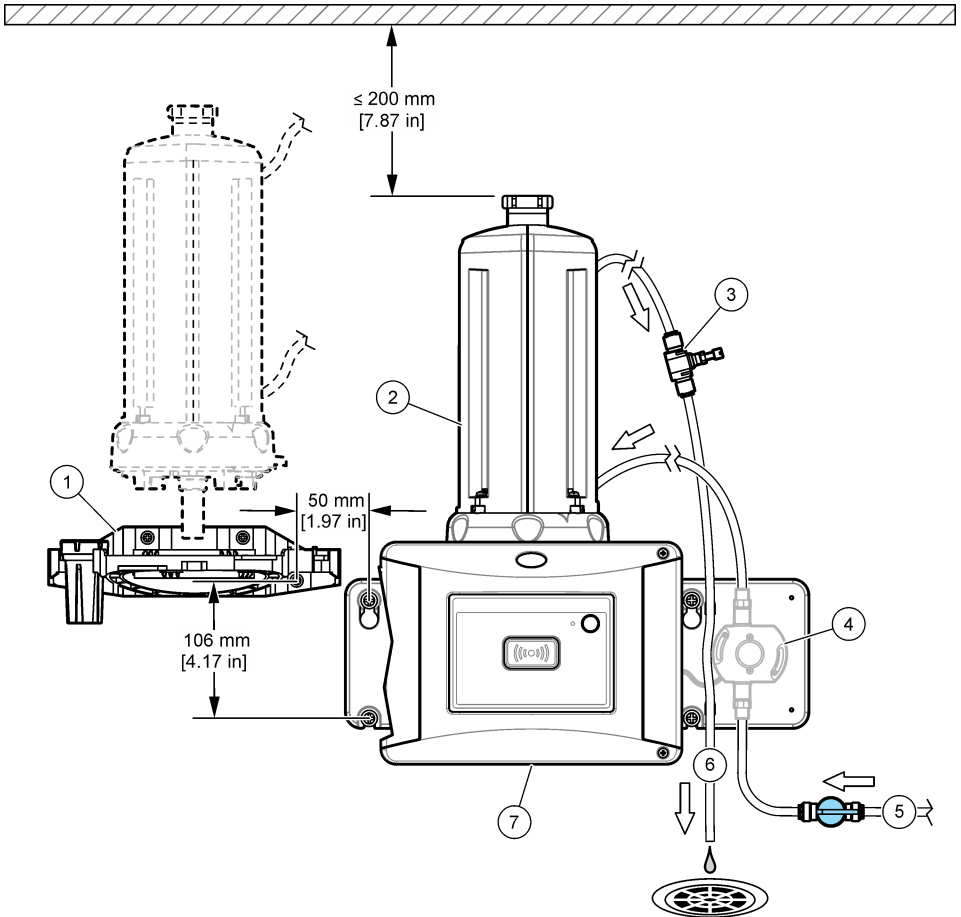
## 3.1 Installation overview

Figure 3 shows the installation overview with all of the clearances necessary.

Install the turbidimeter and do a leakage test on the system. Refer to the turbidimeter documentation. Then, install the Automatic Cleaning Module.

<sup>3</sup> Use the fiber vial wiper for more stringent cleaning requirements.

**Figure 3 Installation overview**



1 Service bracket	5 Sample inlet
2 Automatic cleaning module	6 Sample outlet
3 Flow regulator	7 TU5300 sc or TU5400 sc
4 Flow sensor (optional)	

### 3.2 Install the service bracket

Refer to the TU5300 sc/TU5400 sc documentation to install the service bracket. The service bracket is supplied with the turbidimeter.

### 3.3 Install the automatic cleaning module

#### ▲ WARNING



Explosion hazard. Make sure that the drain tube is free of all obstructions. If the drain tube has a blockage or is pinched or bent, high pressure can build up in the instrument.

## ▲ WARNING



Personal injury hazard. The sample line contains water under high water pressure that can burn skin if hot. Qualified personnel must remove the water pressure and wear personal protective equipment during this procedure.



## NOTICE

Do not let water get in the vial compartment or instrument damage will occur. Before the automatic cleaning module is installed on the instrument, make sure that there are no water leaks. Make sure that all tubing is fully seated. Make sure that the vial nut is tight.

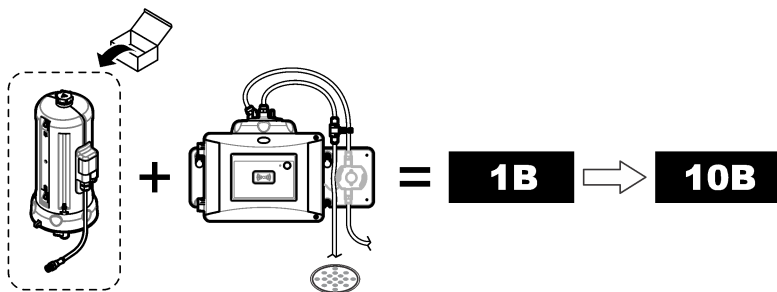
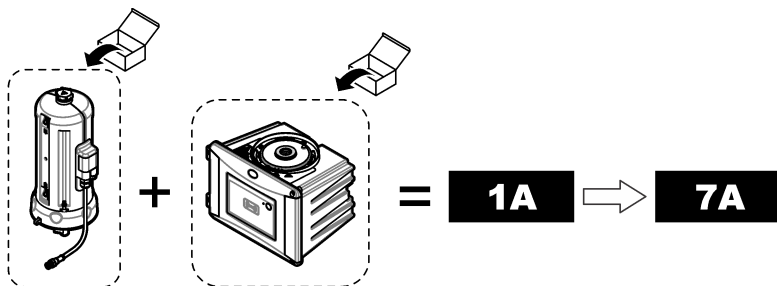
## NOTICE

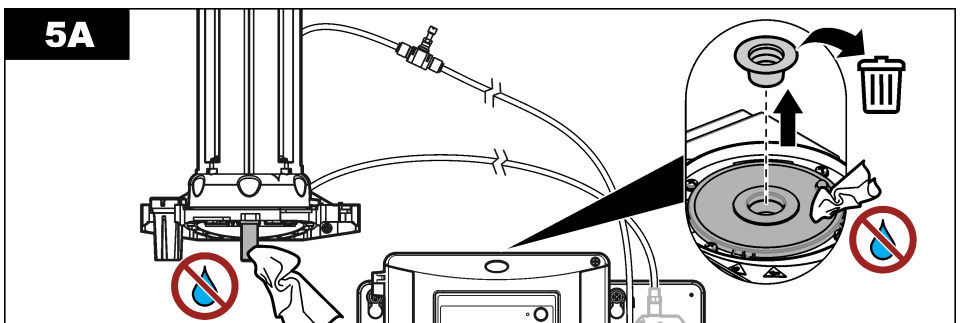
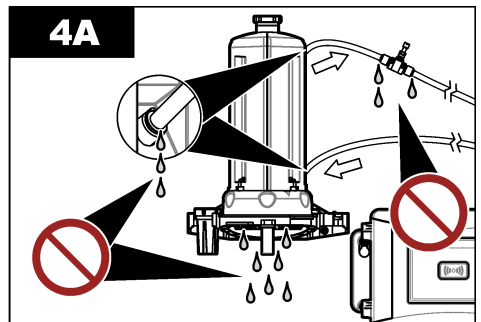
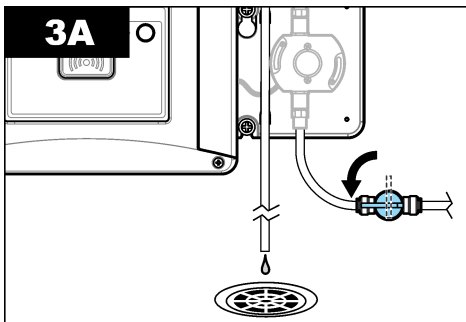
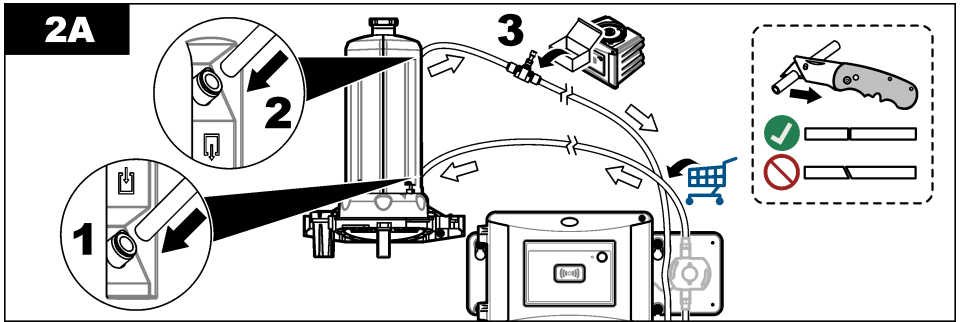
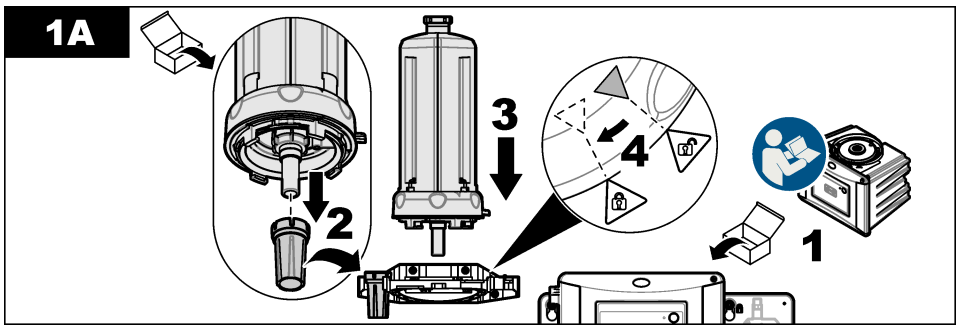
Hold the automatic cleaning module vertically when it is installed on the instrument or the vial can break. If the vial breaks, water will get in the vial compartment and instrument damage will occur.

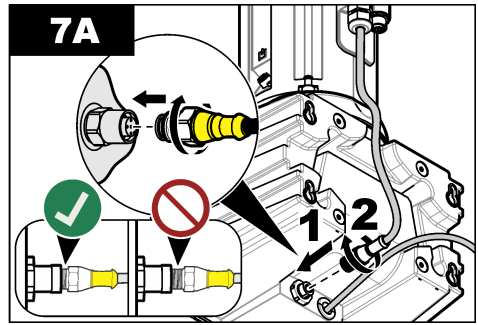
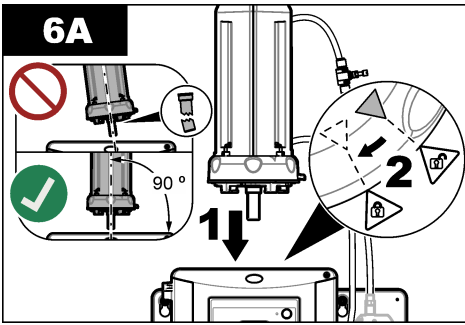
Set the controller power to off. If the turbidimeter is not plumbed, do illustrated steps 1A to 7A. If the turbidimeter is plumbed, do illustrated steps 1B to 10B. Do a leakage test after plumbing of the cleaning module. Make sure that there are no water leaks, then install the cleaning module on the turbidimeter.

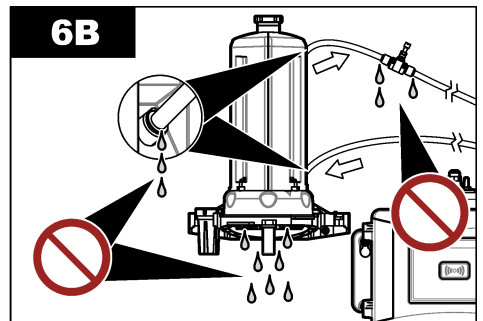
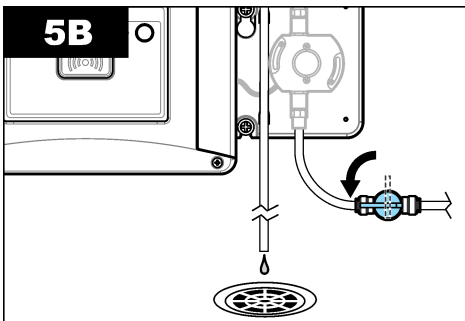
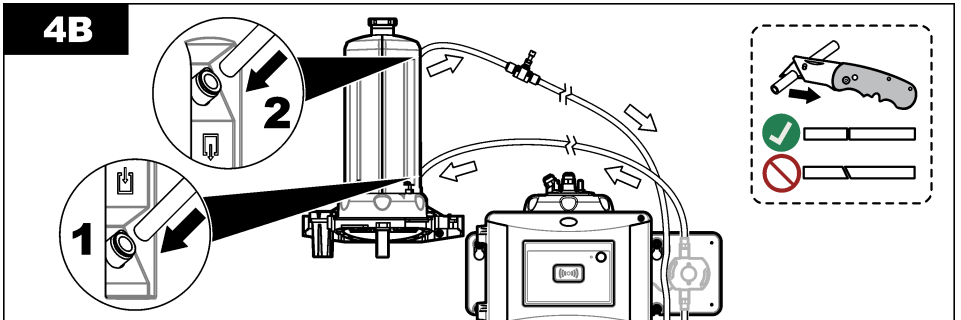
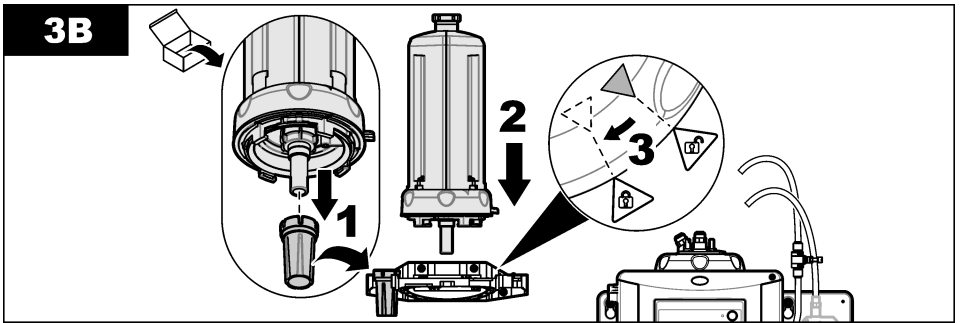
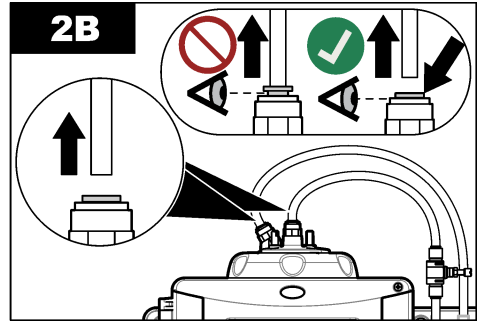
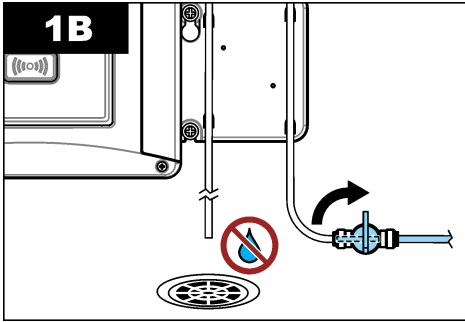
For more stringent cleaning requirements, replace the silicone vial wiper with the supplied fiber vial wiper. Refer to [Replace the wiper](#) on page 18.

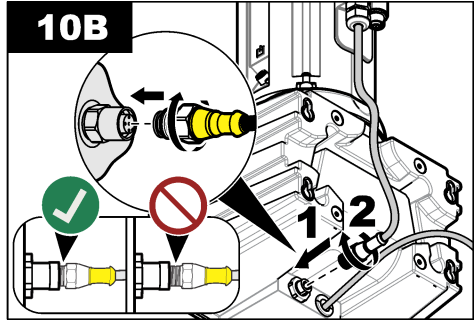
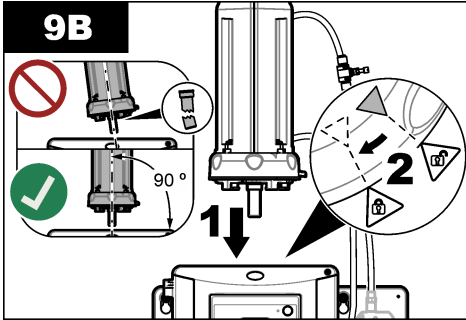
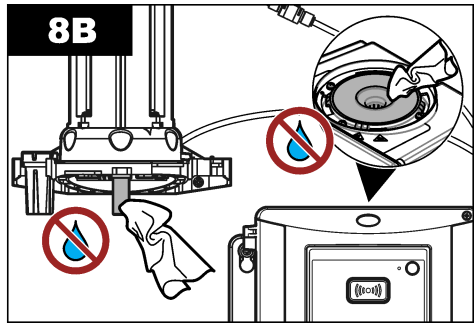
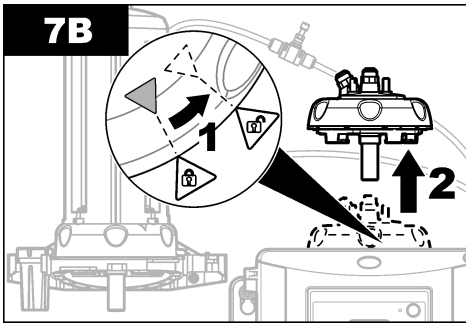
Tubing is supplied by the user. Refer to [Replacement parts and accessories](#) on page 19.











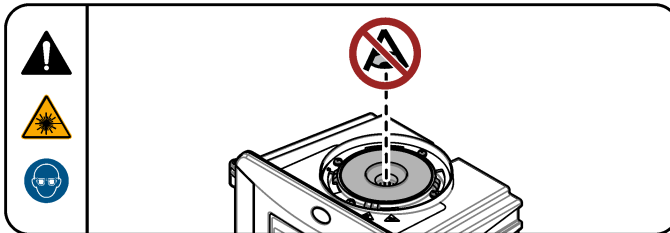
## Section 4 Startup

### 4.1 Set the power to on

#### ⚠ CAUTION



Personal injury hazard. Do not look into the vial compartment when the instrument is connected to power.



After the Automatic Cleaning Module is installed, set the controller power to on.

## Section 5 Operation

### ▲ WARNING



Chemical exposure hazard. Obey laboratory safety procedures and wear all of the personal protective equipment appropriate to the chemicals that are handled. Refer to the current safety data sheets (MSDS/SDS) for safety protocols.

### 5.1 Set the automatic cleaning options

After the automatic cleaning module is installed, set the cleaning options.

1. Push **menu**.
2. Select **SENSOR SETUP**>[select analyzer]>**CONFIGURE**>**CLEANING MODULE**.
3. Select **ON**.

The menu options for the automatic cleaning module are shown on the display.

4. Select **SENSOR SETUP**>[select analyzer]>**CONFIGURE**>**CLEANING**.
5. Select an option.

Option	Description
<b>CLEAN. INTERVAL</b>	Sets the cleaning interval. Options: 2, 6 or 12 hours (default) or 1 or 7 days. The frequency of the cleaning interval selected depends on the sample composition. <b>Note:</b> To manually start a cleaning cycle, select <b>SENSOR SETUP</b> >[select analyzer]> <b>START WIPE</b> .
<b>WIPER REMINDER</b>	When set to on, the reminder for wiper replacement shows on the display when it is time to replace the wiper (default: OFF).
<b>CLEAN. LEVEL</b>	When set to on, a cleaning cycle is done when the reading is more than the <b>THRESHOLD</b> setting (default: OFF). When set to off, a cleaning cycle is done at the time frequency of the cleaning interval.
<b>THRESHOLD</b>	Sets the threshold for a cleaning cycle. Options: 0 to 1000 NTU (or FNU). <b>Note:</b> This menu option only shows when the <b>CLEAN. LEVEL</b> setting is set to on. Use caution when the threshold is set. High turbidity levels may be the result of critical process issues where immediate attention is necessary.
<b>OUTPUT DELAY</b>	Sets the time for the hold condition of the output after the cleaning cycle. Options: 0 to 120 seconds (default: 30 seconds).
<b>SOFT VERSION</b>	Shows the software version of the cleaning module

## 5.2 Show maintenance information of the cleaning module

1. Push **menu**.
2. Select **SENSOR SETUP>[select analyzer]>DIAG/TEST>COUNTERS**.
3. Select an option.

Option	Description
<b>WIPER REPLACE</b>	Shows the remaining number of wiper cycles before a wiper replacement is necessary.
<b>VIAL TIME</b>	Shows the date of the last vial installation or replacement.

## Section 6 Maintenance

### ▲ WARNING



Burn hazard. Obey safe handling protocols during contact with hot liquids.

### ▲ CAUTION



Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

### ▲ CAUTION



Personal injury hazard. Never remove covers from the instrument. This is a laser-based instrument and the user risks injury if exposed to the laser.

### ▲ CAUTION



Personal injury hazard. Glass components can break. Handle with care to prevent cuts.

### NOTICE

Do not disassemble the instrument for maintenance. If the internal components must be cleaned or repaired, contact the manufacturer.

### NOTICE

Stop the sample flow to the instrument and let the instrument become cool before maintenance is done.

To set the output behavior during maintenance, push **menu** and select **SENSOR SETUP>TU5x00 sc>DIAG/TEST>MAINTENANCE>OUTPUT MODE**.

## 6.1 Maintenance schedule

Table 1 shows the recommended schedule of maintenance tasks. Facility requirements and operating conditions may increase the frequency of some tasks.

**Table 1 Maintenance schedule**

Task	1 year	As necessary
Replace the vial on page 15	X <sup>4</sup>	
Replace the wiper on page 18		X
Replace the tubing on page 18		X

## 6.2 Clean spills

### ▲ CAUTION



Chemical exposure hazard. Dispose of chemicals and wastes in accordance with local, regional and national regulations.

1. Obey all facility safety protocols for spill control.
2. Discard the waste according to applicable regulations.

## 6.3 Clean the instrument

Clean the exterior of the instrument with a moist cloth, and then wipe the instrument dry.

## 6.4 Replace the vial

### NOTICE

Keep water out of the vial compartment or instrument damage will occur. Before the automatic cleaning module is installed on the instrument, make sure that there are no water leaks. Make sure that all tubing is fully seated. Make sure that the green O-ring is in place to seal the vial. Make sure that the vial nut is tight.

### NOTICE



Hold the automatic cleaning module vertically when it is installed on the instrument or the vial can break. If the vial breaks, water will get in the vial compartment and instrument damage will occur.

### NOTICE

Do not touch or scratch the glass of the process vial. Contamination or scratches on the glass can cause measurement errors.

### NOTICE



Based on the environmental conditions, is necessary to wait a minimum of 15 minutes to let the system become stable.

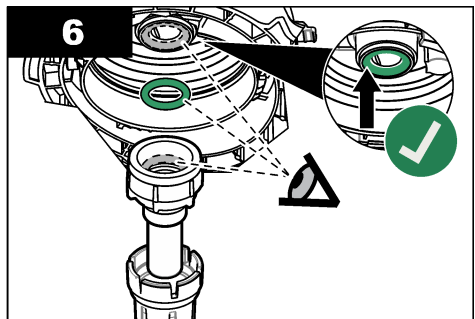
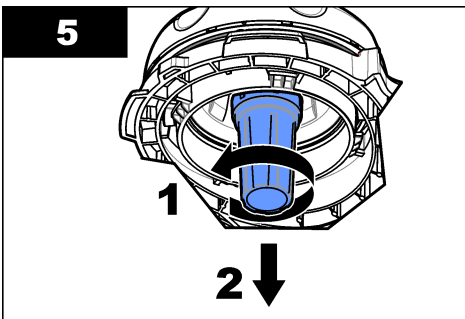
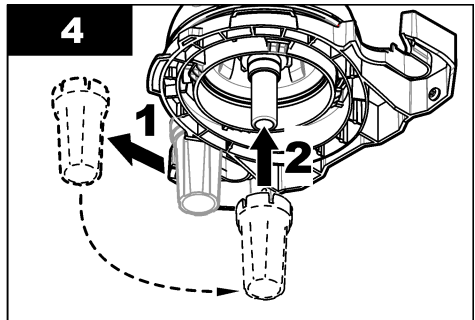
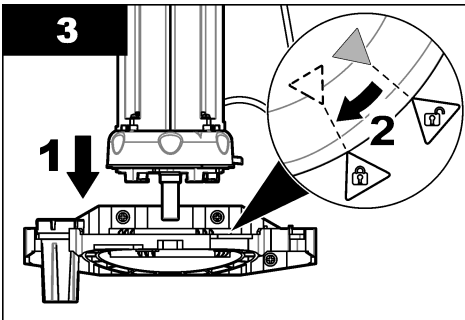
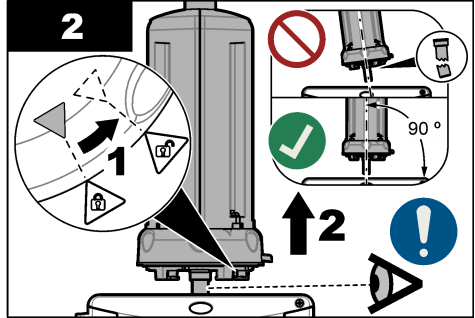
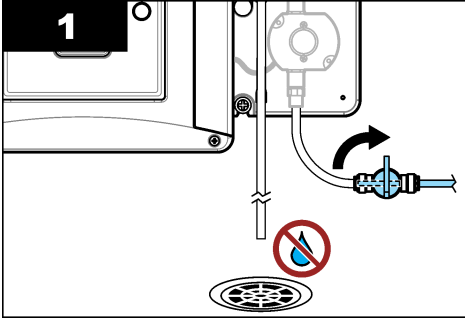
**Note:** Make sure that no particles fall into the vial compartment.

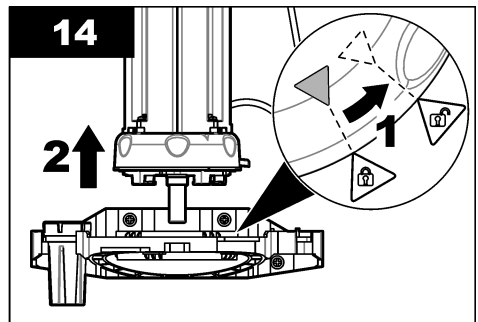
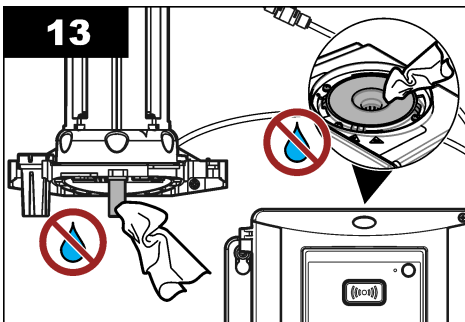
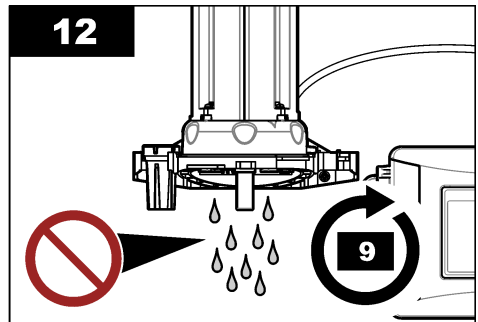
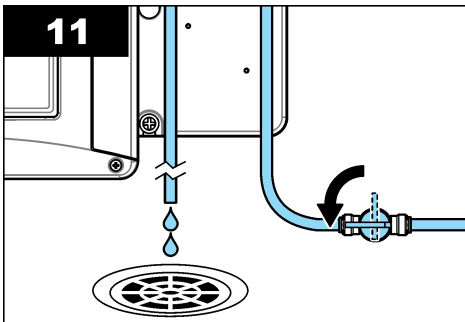
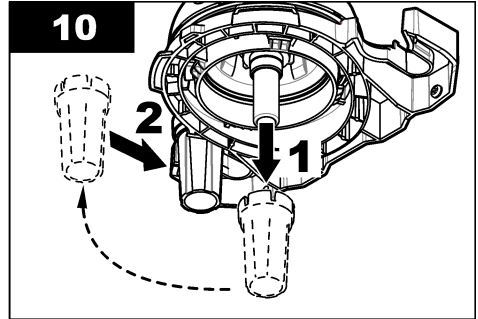
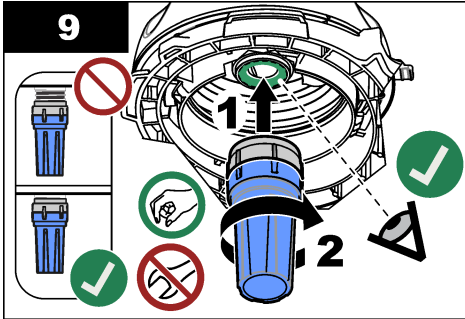
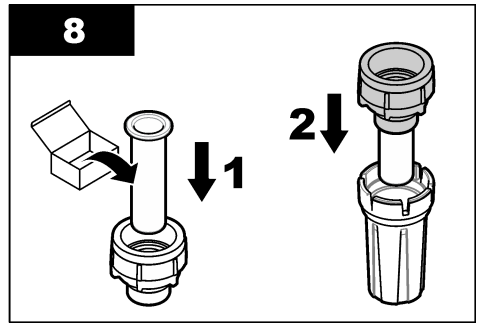
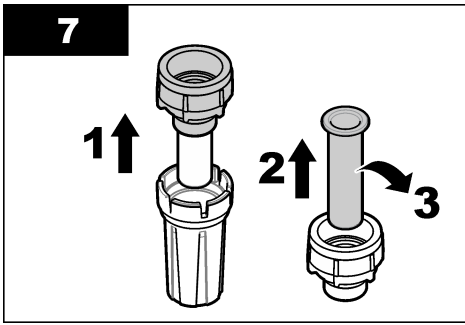
<sup>4</sup> Sample conditions can increase the frequency of vial replacement.

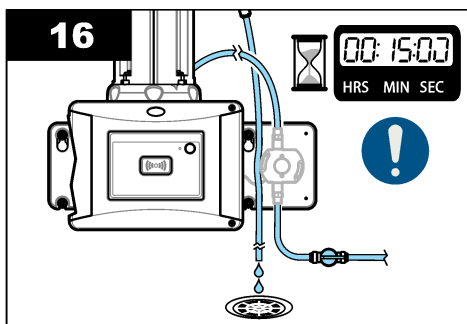
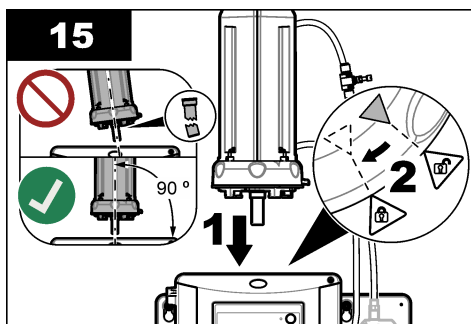
1. Push **menu**.
2. Select **SENSOR SETUP>[select analyzer]>DIAG/TEST>MAINTENANCE>VIAL REPLACEMENT**.
3. Complete the steps that show on the controller display. The date the vial was replaced is automatically saved after the last screen shows.

Refer to the illustrated steps that follow to replace the vial. To protect the new vial from contamination, use the vial replacement tool to install the vial.

At illustrated step 3, put the automatic cleaning module on its side on a flat surface if a service bracket is not installed near the instrument.







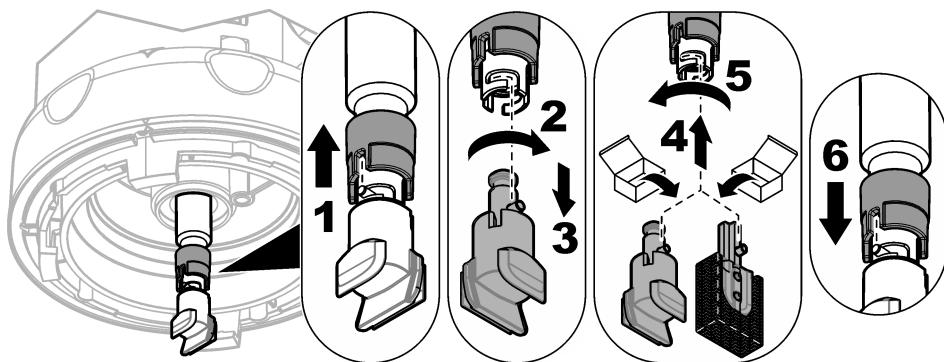
## 6.5 Replace the wiper

To make sure that the vial is cleaned fully, replace the wiper periodically.

1. Push **menu**.
2. Select **SENSOR SETUP>[select analyzer]>DIAG/TEST>MAINTENANCE>WIPER REPLACE**.
3. Stop the sample flow.
4. Remove the cleaning module.
5. Remove the vial. Refer to steps 1 to 5 of [Replace the vial](#) on page 15.
6. Complete the steps that show on the controller display. Install the vial wiper (silicone or fiber) that is applicable to the sample type. Refer to the illustrated steps that follow.

The date that the wiper was replaced is automatically saved after the last screen shows.

7. Install the vial. Refer to steps 8 to 12 of [Replace the vial](#) on page 15.



## 6.6 Replace the tubing

### NOTICE

Keep water out of the vial compartment or instrument damage will occur. Before the automatic cleaning module is installed on the instrument, make sure that there are no water leaks. Make sure that all tubing is fully seated. Make sure that the vial nut is tight.

Replace the tubing when the tubing has a blockage or has damage.

1. Set the flow shut-off valve to off. Install the automatic cleaning module on the service bracket. Refer to steps 1 to 3 of [Replace the vial](#) on page 15.
2. Replace the tubing.

3. Set the flow shut-off valve to on. Make sure that there are no water leaks. Refer to steps 5B and 6B of [Install the automatic cleaning module](#) on page 7.
4. Install the automatic cleaning module on the turbidimeter. Refer to step 8B of [Install the automatic cleaning module](#) on page 7.

## Section 7 Replacement parts and accessories

### ▲ WARNING



Personal injury hazard. Use of non-approved parts may cause personal injury, damage to the instrument or equipment malfunction. The replacement parts in this section are approved by the manufacturer.

**Note:** Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.

#### Replacement parts

Description	Item no.
Seal, process vial	LZY918
Fiber vial wiper, automatic cleaning module	LZQ176
Silicone vial wiper, automatic cleaning module	LZY915
Vial with seal, process	LZY834
Vial replacement tool	LZY906

#### Accessories

Description	Quantity	Item no.
Micro fiber cloth, vial cleaning	1	LZY945
Service bracket	1	LZY873
Tubing, inlet and outlet of TU5x00 sc, ¼ in. OD	4 m	LZY911



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