



DOC023.52.90501

TU5300 sc/TU5400 sc

08/2016, Edition 3

Basic User Manual

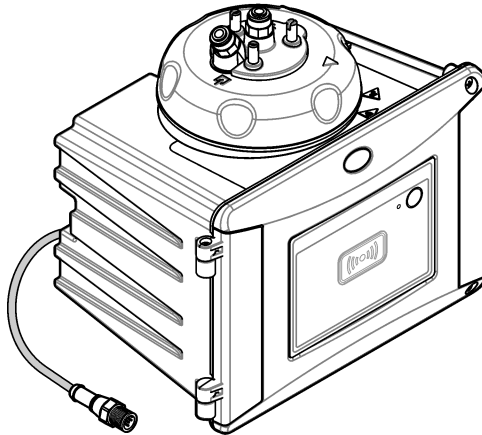


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Additional information

An expanded user manual is available on the manufacturer's website. Videos on how to install, operate and do maintenance and troubleshooting on the TU5300 sc and the TU5400 sc turbidimeters are available on the *TU5 Series Turbidimeters* playlist at

<http://www.youtube.com/user/hachcompany>.

Specifications

Specifications are subject to change without notice.

Specification	Details
Measurement method	Nephelometry with scattered light collected at a 90-degree angle to the incident light and 360 degrees around the sample vial
Primary compliance method	EPA approved Hach Method 10258
Enclosure	Material: ASA Luran S 777K / RAL7000, TPE RESIN Elastocon® STK40, Thermoplastic Elastomer TPS-SEBS (60 Shore) and stainless steel
Dimensions (W x D x H)	268 x 249 x 190 mm (10.6 x 9.8 x 7.5 in.)
Weight	Instrument with the process head: 2.7 kg (6.0 lb); Instrument with the optional automatic cleaning module: 5.0 kg (11.0 lb)
Power requirements	12 VDC, 14 VA supplied by the SC controller
Protection class	III
Pollution degree	2
Installation category	II
Mounting	Indoor on a wall
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
Sensor cable length	1.6 m (5.25 ft) ¹
Laser	Class 2 laser product: Contains a non user-serviceable class 2 laser.
Optical light source	650 nm, maximum 0.43 mW
Fittings	Sample inlet and outlet: ¼-in. OD tubing
Tubing requirements	Polyethylene, polyamide or polyurethane tubing. Calibrated ¼ in. OD, +0.03 or –0.1 mm (+0.001 or –0.004 in.)

¹ Extension cables are available. The maximum sensor cable length is 50 m (164 ft) when no accessories are connected to the instrument.

Specification	Details
Measurement units	TU5300 sc: NTU, FNU, TE/F, EBC or FTU; TU5400 sc: NTU, mNTU ² , FNU, mFNU, TE/F, EBC, FTU or mFTU.
Range	0 to 700 NTU, FNU, TE/F and FTU; 0 to 175 EBC
Method detection limit	TU5300 sc: 0.002 NTU at 25 °C (77 °F) (< 0.025 NTU range); TU5400 sc: 0.0001 NTU at 25 °C (77 °F) (< 0.025 NTU range)
Response time	T90 < 30 seconds at 100 mL/min
Accuracy	± 2% or ± 0.01 NTU (the larger value) from 0 to 40 NTU ± 10% of reading from 40 to 700 NTU based on Formazin primary standard at 25 °C (77 °F)
Linearity	Better than 1% for 0 to 40 NTU based on Formazin primary standard at 25 °C (77 °F).
Repeatability	TU5300 sc: 0.002 NTU or 1% (the larger value) at 25 °C (77 °F) (> 0.025 NTU range); TU5400 sc: 0.0006 NTU or 1% (the larger value) at 25 °C (77 °F) (> 0.025 NTU range)
Stray light	< 0.01 NTU
Resolution	0.0001 NTU (0.0001 to 0.9999/1.000 to 9.999/10.00 to 99.99/100.0 to 700 NTU) Default: TU5300 sc: 0.001 NTU and TU5400 sc: 0.0001 NTU
Air bubble compensation	Physical, mathematical
Sample requirements	Temperature: 2 to 60 °C (35.6 to 140 °F) Conductivity: 3000 µS/cm maximum at 25 °C (77 °F) Flow rate ³ : 100 to 1000 mL/min; optimal flow rate: 200 to 500 mL/min Pressure: 6 bar (87 psi) maximum compared to air, 2 to 40 °C (35.6 to 104 °F) sample; 3 bar (43.5 psi) maximum compared to air, 40 to 60 °C (104 to 140 °F) sample
Calibration options	StablCal [®] or Formazin: 1-point calibration (20 NTU) for 0 to 40 NTU measurement range, 2-point calibration (20 and 600 NTU) for 0 to 700 NTU (full) measurement range or 2- to 6-point custom calibration for a measurement range of 0 NTU to the highest calibration point.
Verification options	Glass verification rod (solid secondary standard) ≤ 0.1 NTU, StablCal or Formazin
Verification (RFID or Link2SC [®])	Verification of the measurement value by comparison of the process and lab measurements with RFID or Link2SC.
Certifications	CE compliant; US FDA accession number: 1420493-xxx. This product complies with IEC/EN 60825-1 and to 21 CFR 1040.10 in accordance with Laser Notice No. 50. Australian RCM.
Warranty	1 year (EU: 2 years)

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 mNTU = 0.001 NTU

³ For the best results, operate the instrument at a flow rate of 200 mL/min for a maximum particle size of 20 µm. For larger particles (50 µm maximum), a higher sample flow rate is necessary.

Safety information

NOTICE

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.

Use of hazard information

⚠ DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION






Indicates a potentially hazardous situation that may result in minor or moderate injury.



NOTICE

Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.




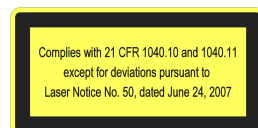

Precautionary labels

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 the need for protective eye wear.
	This symbol indicates a laser device is used in the equipment.
	This symbol indicates that the marked item can be hot and should not be touched without care.

	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.

Class 2 laser product

 DANGER	
	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.
	Class 2 laser product, IEC60825-1:2014, 650 nm, maximum 0.43 mW Location: Rear of the instrument.
	Conforms to U.S. regulations 21 CFR 1040.10 and 1040.11 in accordance with Laser Notice No. 50. Location: Rear of the instrument.
	Caution—Class 2 laser radiation when the lid is open. Do not look into the laser beam. Location: Top of the vial compartment.

This instrument is a Class 2 Laser product. There is only visible laser radiation when the instrument is defective and when the instrument lid is open. This product complies with EN 61010-1, "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use" and with IEC/EN 60825-1, "Safety of Laser Products" and with 21 CFR 1040.10 in accordance with Laser Notice No. 50. Refer to the labels on the instrument that supply laser information.

RFID module


Instruments with the optional RFID module receive and transmit information and data. The RFID module operates with a frequency of 13.56 MHz.

RFID technology is a radio application. Radio applications are subject to national conditions of authorization. The use of instruments with the optional RFID module is currently permitted in the regions that follow:


Turkey, Serbia, Macedonia, Australia, Canada, US, Chile, Ecuador, Venezuela, Mexico, Brazil, South Africa, India, Singapore, Argentina, Columbia, Peru and Panama

The use of instruments with the optional RFID module outside of the above-mentioned regions can violate national laws. The manufacturer reserves the right also to get authorization in other countries. In case of doubt, contact the manufacturer.

Safety information for RFID modules



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



Electromagnetic radiation hazard. Do not use the instrument in dangerous environments.

NOTICE

This instrument is sensitive to electromagnetic and electromechanical interference. These interferences can have an effect on the analysis performance of this instrument. Do not put this instrument near equipment that can cause interference.

Obey the safety information that follows to operate the instrument in accordance with local, regional and national requirements.

- Do not operate the instrument in hospitals and equivalent establishments or near medical equipment, such as pace makers or hearing aids.
- Do not operate the instrument near highly flammable substances, such as fuels, highly flammable chemicals and explosives.
- Do not operate the instrument near combustible gases, vapors or dust.
- Keep the instrument away from strong vibration or shock.
- The instrument can cause interference in immediate proximity to televisions, radios and computers.
- The warranty does not cover improper use or wear.

FCC conformance for RFID

This instrument may contain a registered radio frequency identification device (RFID). Refer to [Table 1](#) for the Federal Communications Commission (FCC) registration information.

Table 1 Registration information

Parameter	Value
FCC identification number (FCC ID)	YCB-ZBA987
IC	5879A-ZBA987
Frequency	13.56 MHz

Certification

Canadian Radio Interference-Causing Equipment Regulation, IECS-003, Class A:

Supporting test records reside with the manufacturer.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de classe A répond à toutes les exigences de la réglementation canadienne sur les équipements provoquant des interférences.

FCC Part 15, Class "A" Limits


Supporting test records reside with the manufacturer. The device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. The equipment may not cause harmful interference.
2. The equipment must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance 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 their expense. The following techniques can be used to reduce interference problems:

1. Disconnect the equipment from its power source to verify that it is or is not the source of the interference.
2. If the equipment is connected to the same outlet as the device experiencing interference, connect the equipment to a different outlet.
3. Move the equipment away from the device receiving the interference.
4. Reposition the receiving antenna for the device receiving the interference.
5. Try combinations of the above.

Product overview

⚠ DANGER	
	<p>Chemical or biological hazards. If this instrument is used to monitor a treatment process and/or chemical feed system for which there are regulatory limits and monitoring requirements related to public health, public safety, food or beverage manufacture or processing, it is the responsibility of the user of this instrument to know and abide by any applicable regulation and to have sufficient and appropriate mechanisms in place for compliance with applicable regulations in the event of malfunction of the instrument.</p>

The TU5300 sc and the TU5400 sc turbidimeters are used with an SC controller to measure low-range turbidity mostly in finished drinking water applications. Refer to [Figure 1](#).

The TU5300 sc and the TU5400 sc turbidimeters measure scattered light at an angle of 90° in a 360° radius around the axis of the incident light beam.

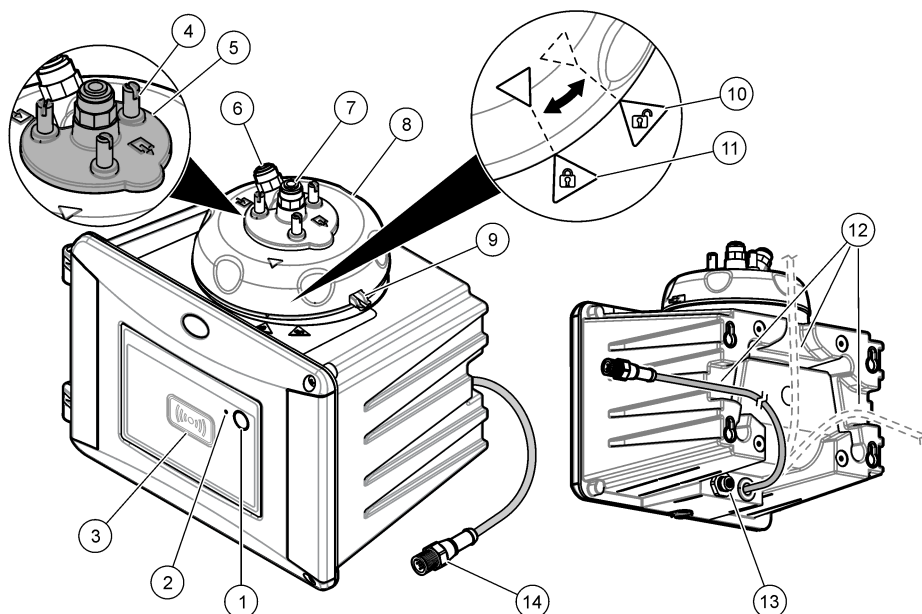
An optional RFID module and an automatic system check option are available. The RFID module is shown in [Figure 1](#). The RFID module lets process and laboratory turbidity measurements be easily compared. A description of the automatic system check option is given in the expanded user manual on the manufacturer's website.

PROGNOSYS predictive diagnostic software is available for the TU5300 sc and TU5400 sc turbidimeters. To use PROGNOSYS, connect the turbidimeter to an SC controller with PROGNOSYS.

Videos on how to install, operate and do maintenance and troubleshooting on the TU5300 sc and the TU5400 sc turbidimeters are available on the *TU5 Series Turbidimeters* playlist at <http://www.youtube.com/user/hachcompany>.

For the accessories, refer to the expanded user manual on the manufacturer's website.

Figure 1 Product overview



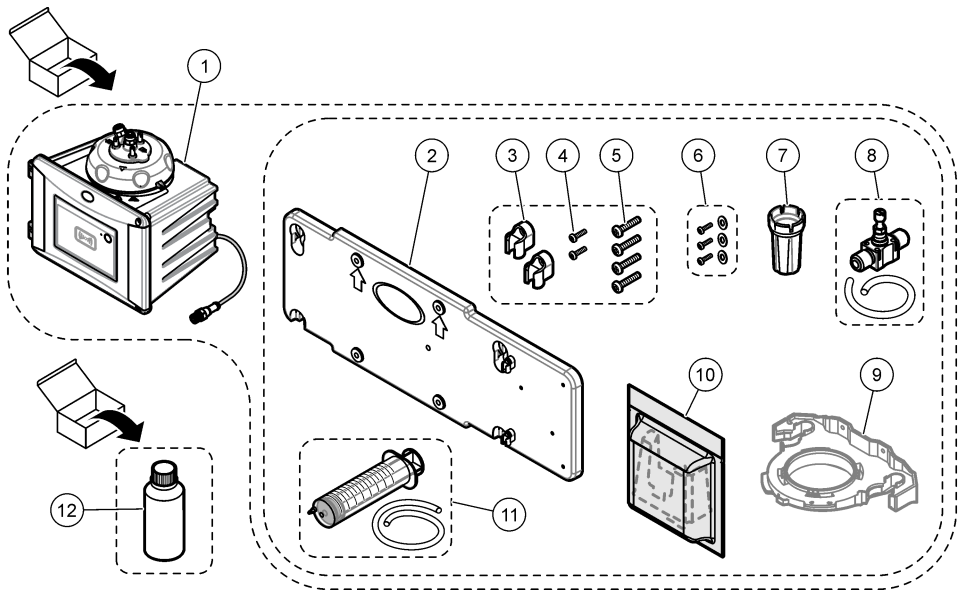
1 Programmable button	8 Process head
2 Status indicator light ⁴	9 Overflow drain
3 RFID module indicator (optional)	10 Process head (open)
4 Cleaning lid screws (3x)	11 Process head (closed)
5 Cleaning lid	12 Channels for cables
6 Sample inlet	13 Extension connector for accessories
7 Sample outlet	14 Sensor cable

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.

⁴ Shows the instrument status. Refer to the expanded user manual on the manufacturer's website for more information.

Figure 2 Product components



1 TU5300 sc or TU5400 sc	7 Vial replacement tool
2 Wall mount bracket (two tubing clips on bracket)	8 Flow regulator
3 Tubing clips	9 Service bracket ⁵
4 Tubing clip screws, 2.2 x 6 mm	10 Desiccant cartridge
5 Mounting screws, 4 x 16 mm	11 Syringe and tubing for calibration and verification
6 Cleaning lid screws and washers for hot water applications	12 StablCal solution, 20 NTU, 500 mL

Installation

⚠ CAUTION

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

Installation guidelines

NOTICE

Make sure that there is a floor drain near the instrument. Examine the instrument daily for leaks.

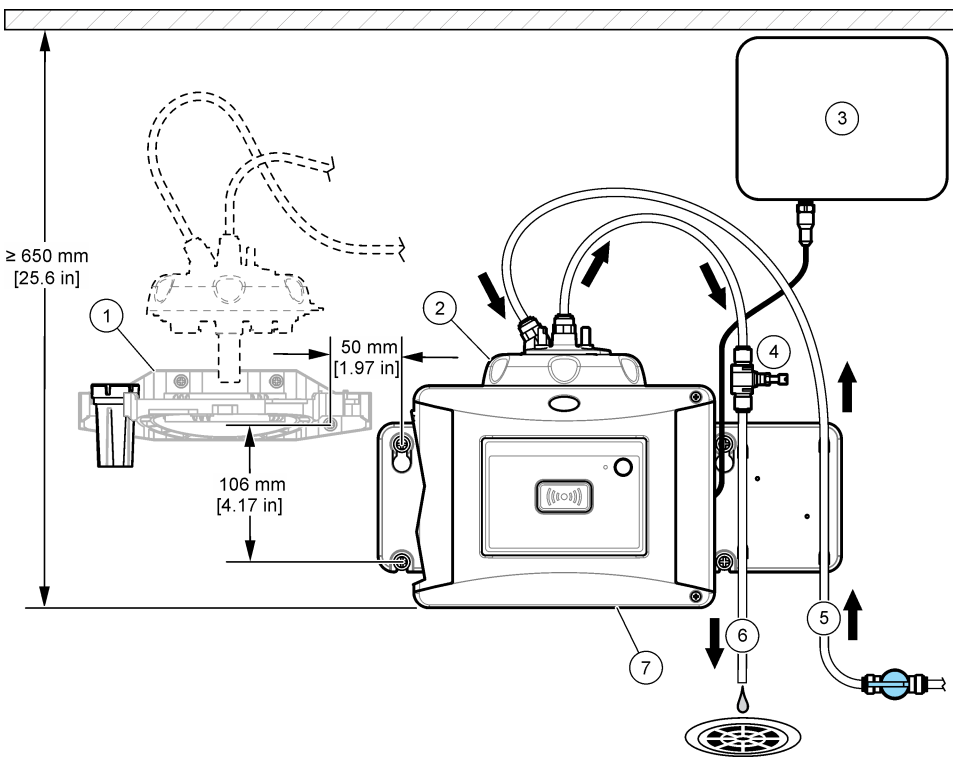
This instrument is rated for an altitude of 3100 m (10,710 ft) maximum. Use of this instrument at an altitude higher than 3100 m can slightly increase the potential for the electrical insulation to break down, which can result in an electric shock hazard. The manufacturer recommends that users with concerns contact technical support.

⁵ Only supplied with the TU5400 sc.

Installation overview

Figure 3 shows the installation overview with no accessories and the clearances necessary. Refer to the expanded manual on the manufacturer's website for the system overview with all of the accessories.

Figure 3 Installation overview with no accessories



1 Service bracket ⁶	5 Sample inlet
2 Process head	6 Sample outlet
3 SC controller	7 TU5300 sc or TU5400 sc
4 Flow regulator	

Wall mount

Install the instrument on a wall in a vertical position. Install the instrument so that it is level.

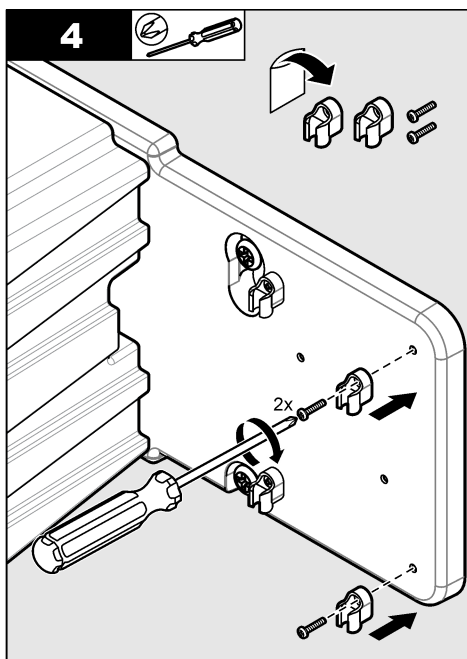
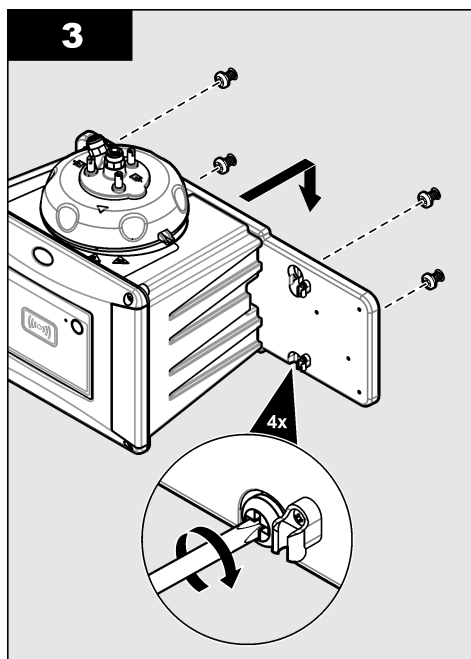
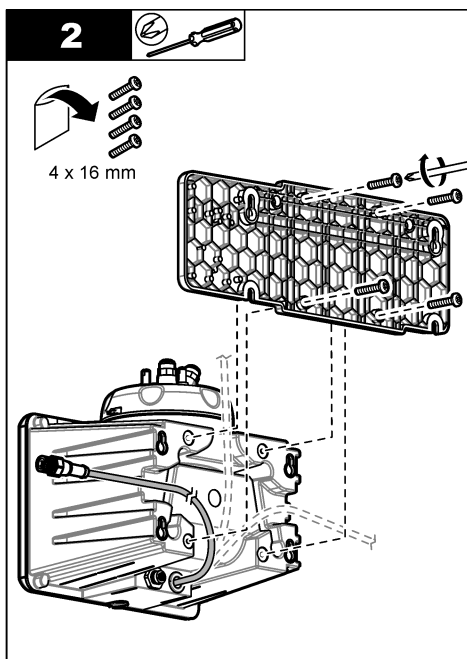
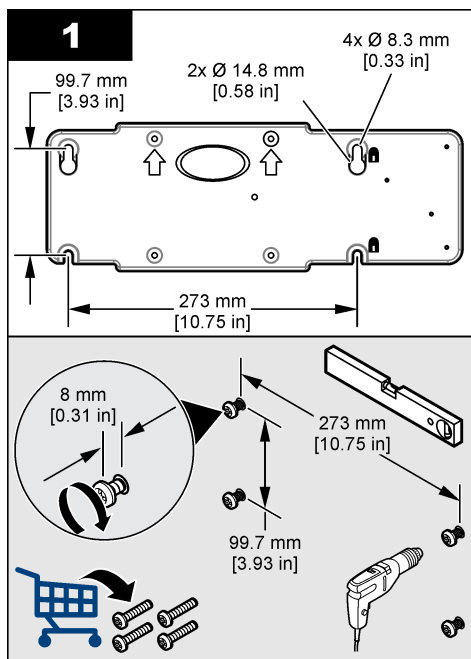
Install with the wall mount bracket

Refer to the illustrated steps that follow to install the instrument on a wall with the wall mount bracket. The mounting hardware to install the wall mount bracket on a wall is supplied by the user.

If a 1720D, 1720E, or FT660 instrument is replaced, remove the instrument from the wall. Then do steps 2 to 4 of the illustrated steps that follow to install the instrument on the existing hardware.

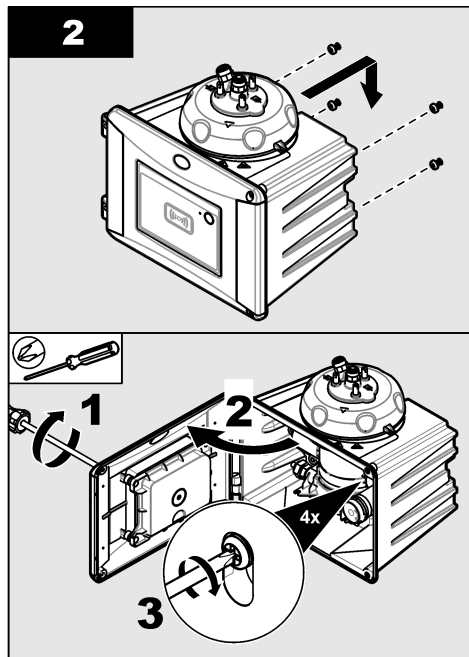
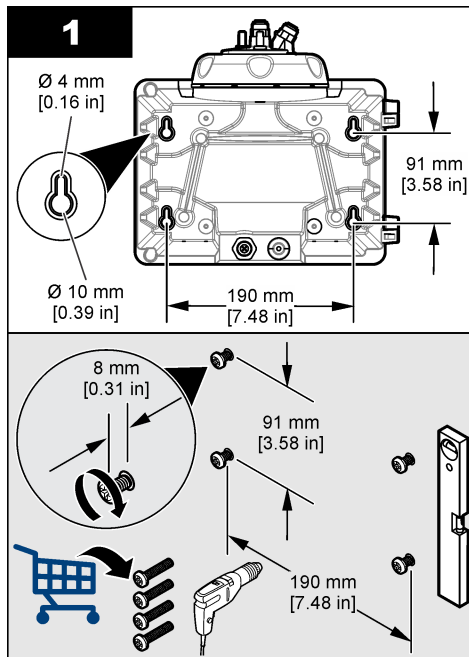
Note: When the accessories are used, the installation location of the tubing clips is different. Refer to the documentation supplied with the accessories for tubing clip installation.

⁶ The service bracket is an optional accessory for the TU5300 sc.



Install directly on a wall

As an alternative, refer to the illustrated steps that follow to install the instrument directly on a wall. The mounting hardware is supplied by the user. Remove the thin, plastic film from the mounting holes on the back of the instrument.



Install the desiccant cartridge

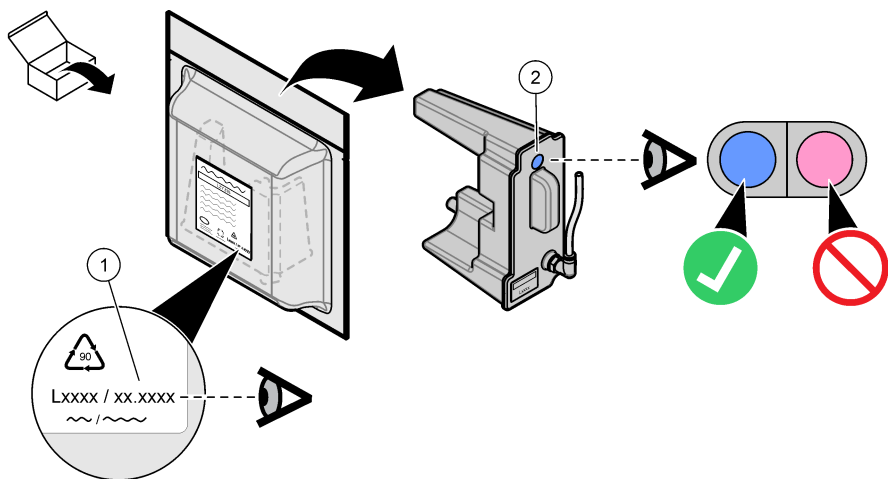
NOTICE

Make sure that the desiccant cartridge is installed or damage to the instrument will occur.

For initial installation, complete the steps below. For replacement, refer to the documentation supplied with the desiccant cartridge.

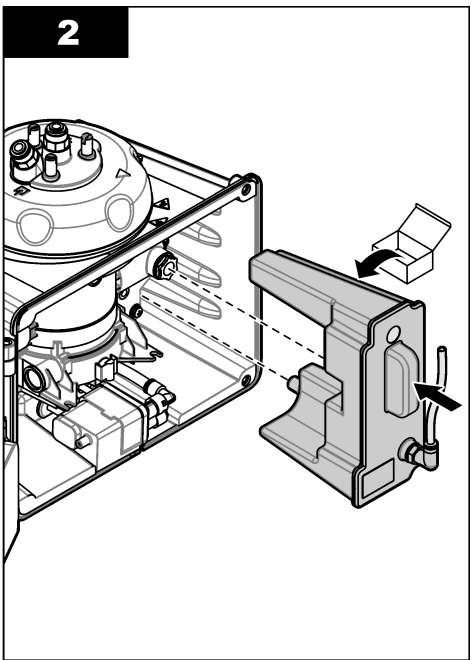
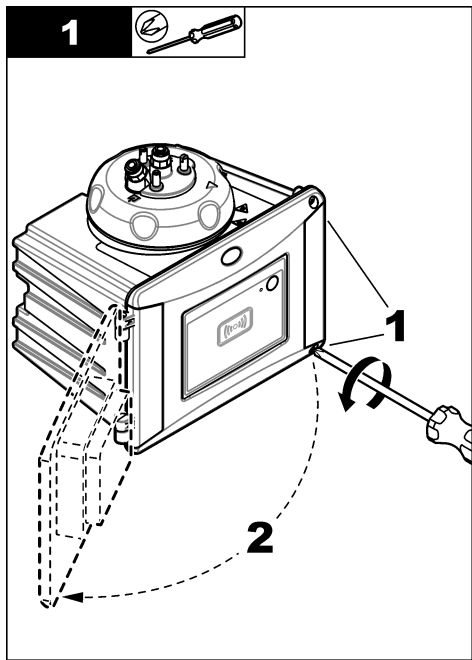
1. Look at the install by date on the packaging. Refer to [Figure 4](#). Do not use if the current date is past the install by date.
2. Make sure that the indicator on the new desiccant cartridge is blue. Refer to [Figure 4](#).
3. Install the new desiccant cartridge. Refer to the illustrated steps that follow.

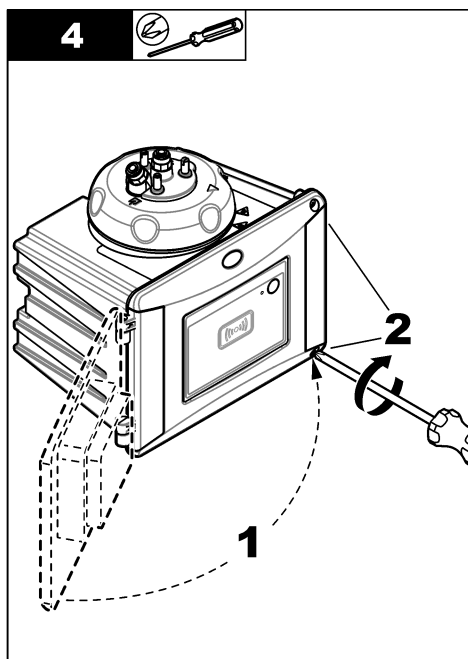
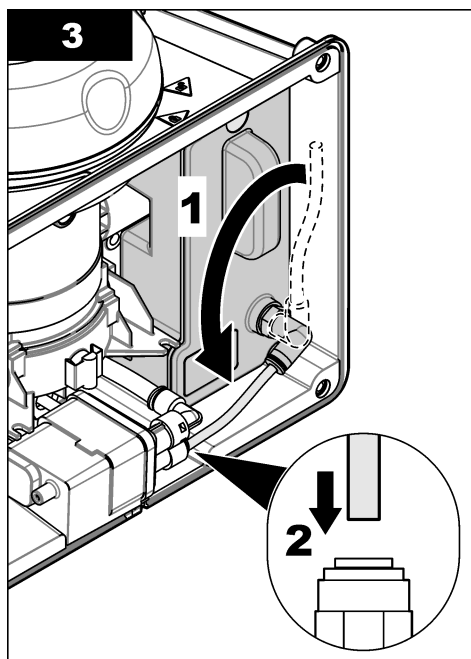
Figure 4 Examine the desiccant cartridge



1 Install by date (mm.yyyy = month and year)

2 Indicator (blue = not expired, pink = expired)





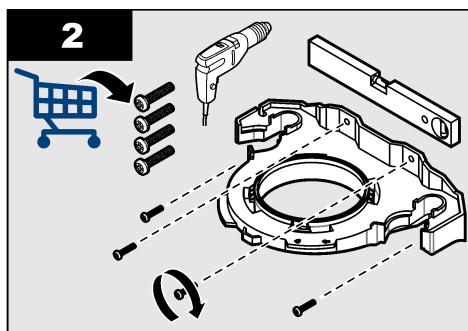
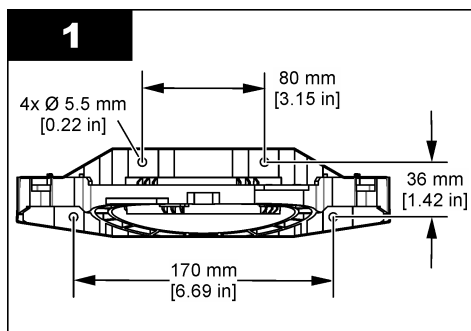
Replace the cleaning lid screws

If the sample temperature is 40 to 60 °C (104 to 140 °F), the cleaning lid screws will become hot. To prevent burns, replace the standard cleaning lid screws with the cleaning lid screws and washers for hot water. Refer to [Figure 1](#) on page 9.

Install the service bracket

The service bracket holds the process head (or the optional automatic cleaning module) when it is not installed on the instrument.

Refer to [Installation overview](#) to install the service bracket⁷ the correct distance from the instrument. Refer to the illustrated steps that follow to install the service bracket.



⁷ Only supplied with the TU5400 sc.

Install the flow sensor (optional)

The optional flow sensor identifies if the sample flow is within specifications. A warning shows on the controller display and the status indicator light when a no flow, low flow or high flow warning occurs.

Install the optional flow sensor. Refer to the documentation supplied with the optional flow sensor.

Install the automatic cleaning module (optional)

The automatic cleaning module cleans the inside of the process vial at a selected time interval. Install the optional automatic cleaning module. Refer to the documentation supplied with the automatic cleaning module.

Connect to an SC controller

⚠ CAUTION

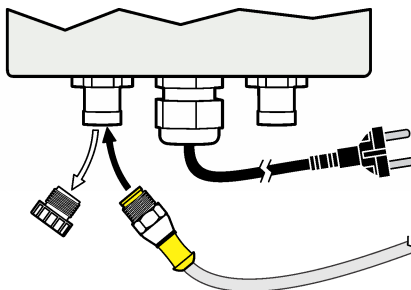


Personal injury hazard. Do not look into the vial compartment when the instrument is connected to power.



1. Install the latest software version on the SC controller before the instrument is connected to the SC controller. Get the latest software version from the manufacturer's website.
Refer to the software installation instructions supplied in the box or supplied in the software download for the SC controller.
2. Remove power to the SC controller.
3. Connect the sensor cable to the quick-connect fitting of the SC controller. Refer to [Figure 5](#). Keep the connector cap for later use.
4. Supply power to the SC controller.
The SC controller looks for the instrument.
5. When the SC controller finds the instrument, push **enter**.
On the main screen, the controller shows the turbidity value measured by the turbidimeter.

Figure 5 Connect the sensor cable to the SC controller



Plumbing

Plumb the instrument

⚠ 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 process head 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

Before the instrument is plumbed, make sure that the desiccant cartridge and vial are installed.

Items supplied by the user:

- Flow shutoff valve
- Tubing⁸
- Tubing cutter

1. Measure the flow with the flow regulator fully open. Make sure that the flow is in the middle of the flow specification. Refer to [Specifications](#) on page 3.

2. Slowly close the flow regulator until the flow decreases by 20 to 30%.

Note: The flow regulator causes back pressure in the tubing and decreases the quantity of bubbles that form.

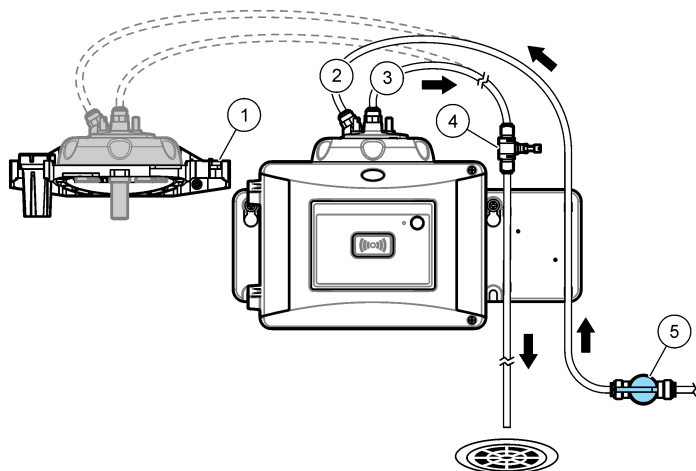
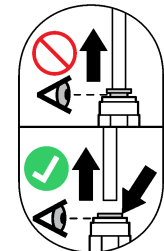
3. Plumb the instrument. Refer to the illustrated steps that follow and [Figure 6](#).

Note: To plumb the instrument with accessories, refer to the documentation supplied with the accessories.

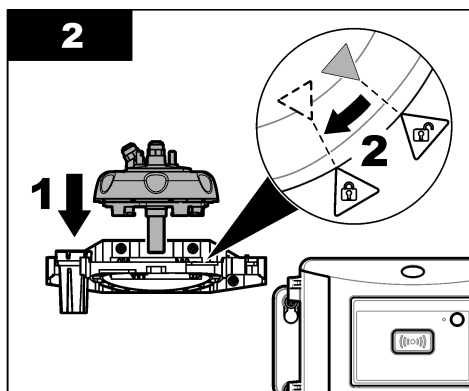
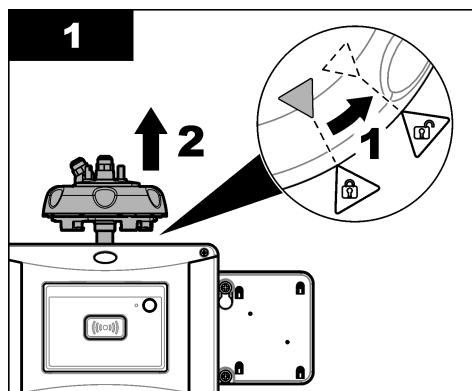
If a service bracket is not installed near the instrument, do not do illustrated steps 1 and 2. Do illustrated steps 3 and 4 with the process head on the instrument. Before the step 5, remove the process head from the instrument. Hold the process head so that it is not above from the instrument. Do illustrated steps 5 and 6. When there are no leaks from the process head or the flow regulator, install the process head on the instrument (illustrated step 8).

⁸ Refer to [Specifications](#) on page 3 for the tubing requirements.

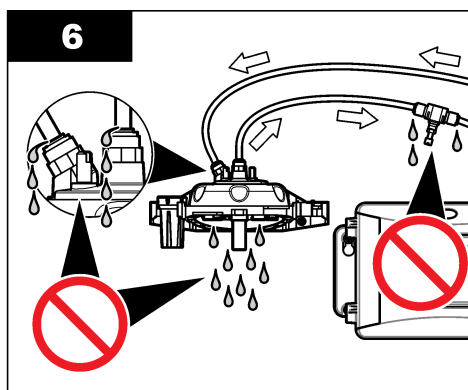
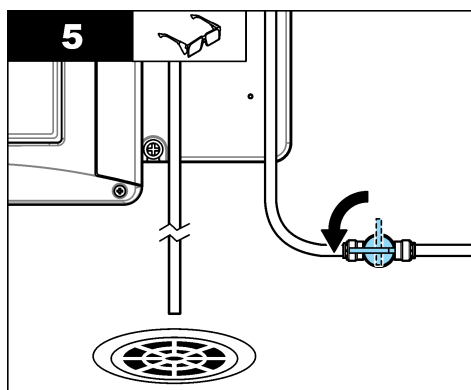
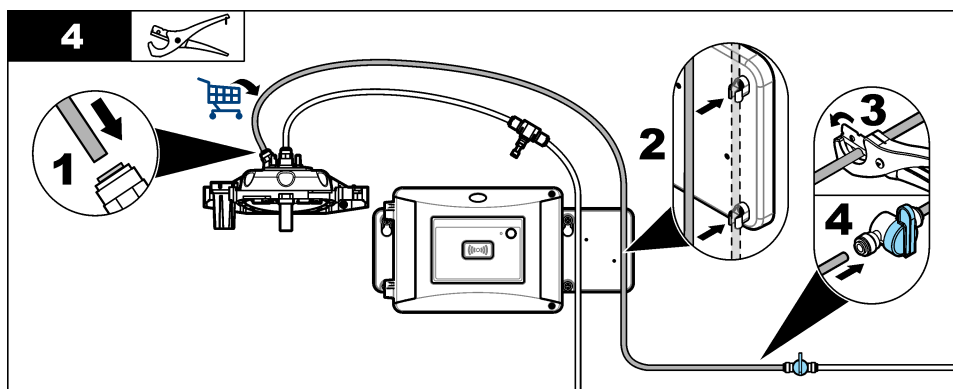
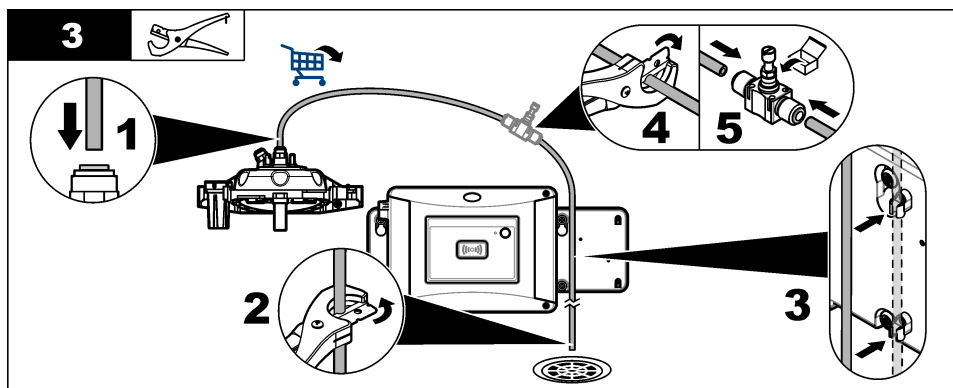
Figure 6 Plumbing overview – no accessories

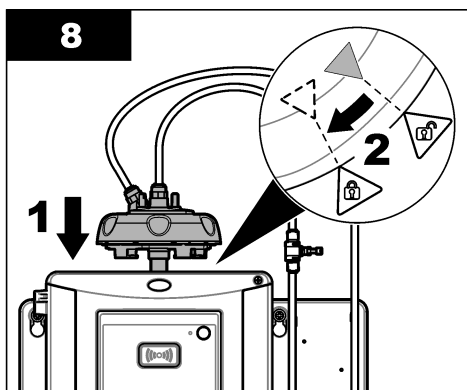
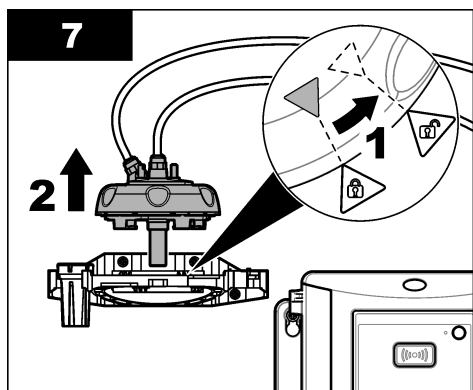


1 Service bracket ⁹	4 Flow regulator
2 Sample inlet	5 Flow shutoff valve
3 Sample outlet	



⁹ The service bracket is an optional accessory for the TU5300 sc.





User navigation

Refer to the controller documentation for keypad description and navigation information.

Operation

Refer to the expanded user manual on the manufacturer's website to configure the instrument settings and to compare process and lab measurements.

Calibration

⚠ 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.

When the instrument is used for US EPA regulatory reporting, calibrations must be done according to US EPA guidance documents and methodologies. Contact local regulating authorities for more compliance regulations.

The instrument is factory calibrated and the laser light source is stable. The manufacturer recommends that a calibration verification be done periodically to make sure that the system operates as intended. The manufacturer recommends calibration as local regulations require and after repairs or comprehensive maintenance work.

Use the supplied syringe and StabiCal standard or Formazin standard to calibrate the instrument. As an alternative, use the optional calibration lid and a vial(s) with a StabiCal standard or Formazin standard to calibrate the instrument. Refer to the documentation supplied with the calibration lid to calibrate the instrument with a vial(s).

Refer to the expanded user manual on the manufacturer's website to calibrate the instrument with a syringe and configure the calibration settings.

Verification

Use a StabiCal 10 NTU standard and the supplied syringe to do a calibration verification. As an alternative, use the optional calibration lid and the optional glass verification rod (< 0.1 NTU) or a 10-NTU StabiCal standard vial to do a calibration verification. Refer to the documentation supplied with the calibration lid to do a calibration verification with a vial or the glass verification rod.

Do a calibration verification immediately after each calibration to measure the verification standard and record the measured value to the instrument.


Do calibration verifications between calibrations according to the regulatory recommendations to identify if the instrument operates correctly and is calibrated.

When a calibration verification is done between calibrations, the verification standard is measured. The measured value is compared to the recorded value of the verification standard.


Refer to the expanded user manual on the manufacturer's website to do a verification with a syringe and configure the verification settings.

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.

Maintenance schedule

Table 2 shows the recommended schedule of maintenance tasks. Facility requirements and operating conditions may increase the frequency of some tasks.


Table 2 Maintenance schedule

Task	1 to 3 months	1 to 2 years	As necessary
Clean the vial on page 22 <i>Note: The cleaning interval is dependent on the water quality.</i>	X		
Clean the vial compartment on page 24			X
Replace the vial on page 24		X	

Table 2 Maintenance schedule (continued)

Task	1 to 3 months	1 to 2 years	As necessary
Replace the desiccant cartridge on page 26 <i>Note: The replacement interval is dependent on the ambient humidity, ambient temperature and sample temperature.</i>		X ¹⁰	
Replace the tubing on page 27			X

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.

Clean the instrument

NOTICE
Do not use solvents to clean the instrument.

The instrument is maintenance free. Regular cleaning is not necessary for normal operation. If the exterior of the instrument becomes dirty, wipe the instrument surfaces with a clean, moist cloth.

Clean the vial

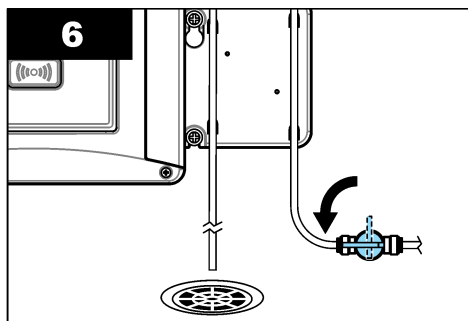
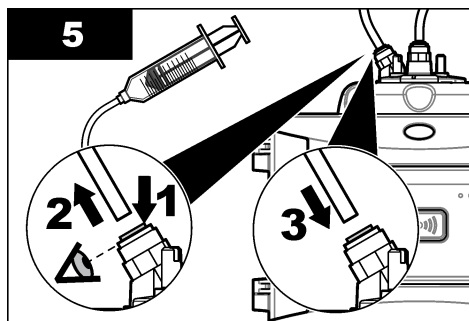
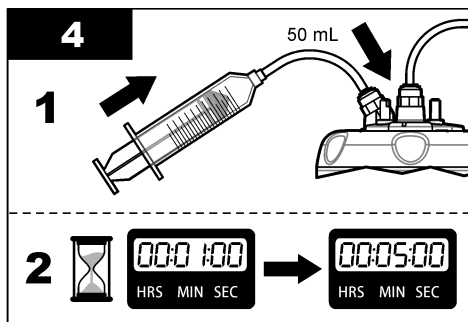
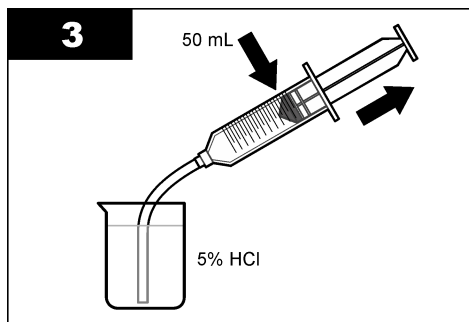
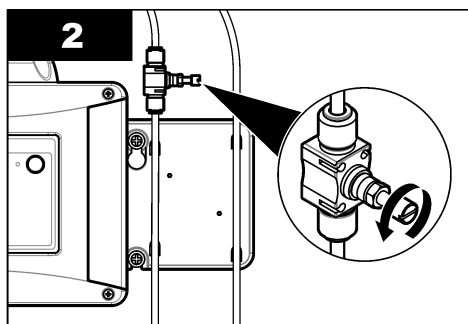
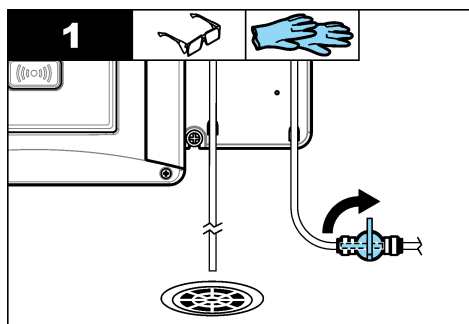
▲ WARNING	
 	Chemical exposure hazard. Obey laboratory safety procedures and wear all of the personal protective equipment appropriate to the chemicals that are handled. Refer to the current safety data sheets (MSDS/SDS) for safety protocols.

When the turbidity reading shows that there is contamination in the process vial or "VIAL CLARITY" shows on the controller display, clean the vial.

1. Push **menu**.
2. Select SENSOR SETUP>TU5x00 sc>DIAG/TEST>MAINTENANCE>VIAL CLEANING.
3. Complete the steps that show on the controller display. The date the vial was cleaned is automatically saved after the last screen shows.
4. If the optional automatic cleaning module is installed, push **menu** and select SETUP>TU5x00 sc>START WIPE to start the automatic cleaning process.
5. If the optional automatic cleaning module is not installed, clean the vial with the optional vial wiper if available. Refer to [Clean the vial with the optional wiper](#) on page 23.
6. If the turbidity readings do not go back to the original values, do the illustrated steps that follow to clean the vial.

Note: Hold the output values of the SC controller as necessary before the illustrated steps are done. Refer to the SC controller documentation to hold the outputs.

¹⁰ Two years or as identified by instrument notification.

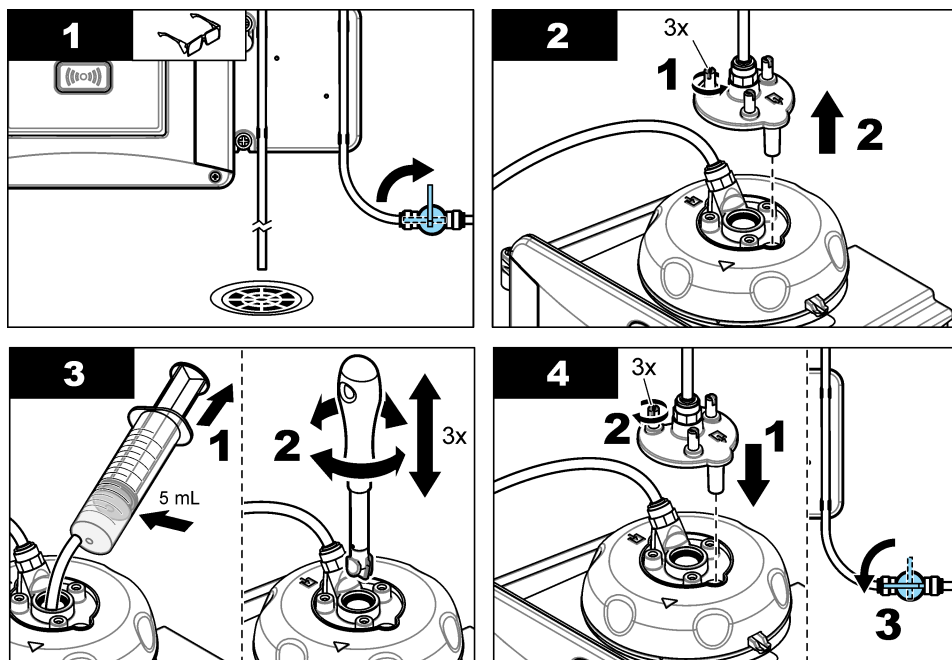


Clean the vial with the optional wiper

NOTICE

Carefully remove most of the water in the vial. Carefully put the vial wiper into the process vial so that no water spills out.

Clean the process vial with the optional vial wiper as shown in the illustrated steps that follow.



Clean the vial compartment

Clean the vial compartment only when the compartment has contamination. Make sure that the tool to clean the vial compartment has a soft surface and does not damage the instrument. [Table 3](#) shows the options on how to clean the vial compartment.

Table 3 Cleaning options

Contaminant	Options
Dust	Vial compartment wiper, micro fiber cloth, lint-free cloth
Liquid, oil	Cloth, water and cleaning agent

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 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

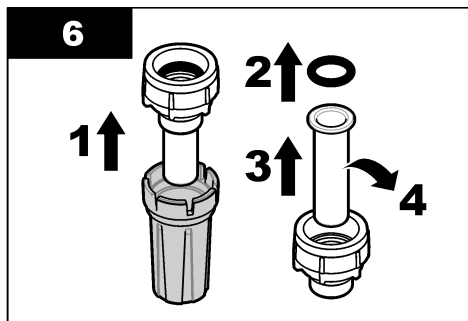
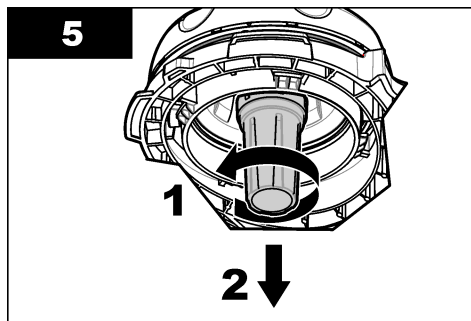
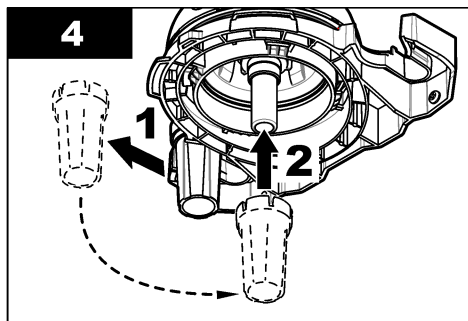
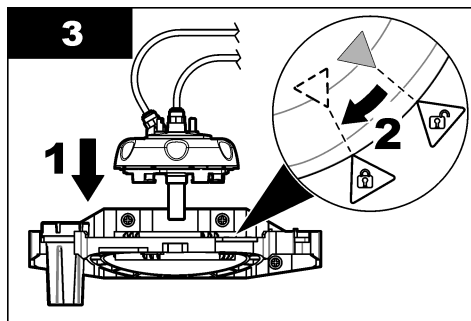
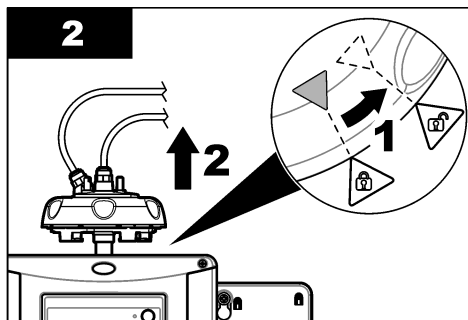
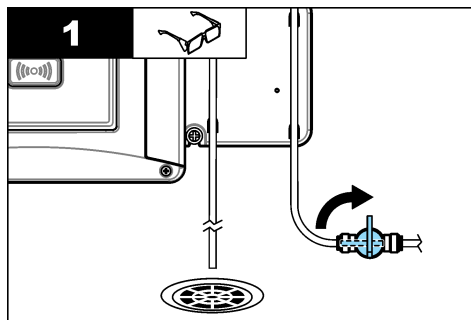
Do not touch or scratch the glass of the process vial. Contamination or scratches on the glass can cause measurement errors.

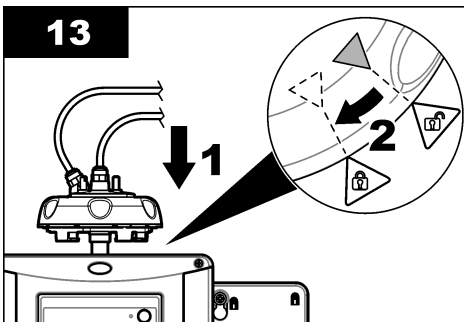
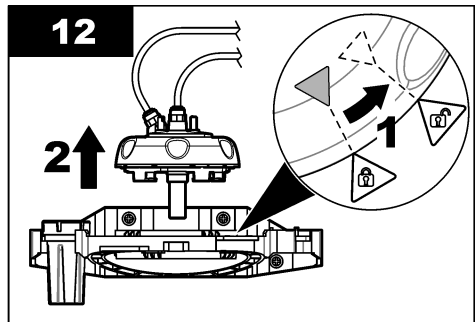
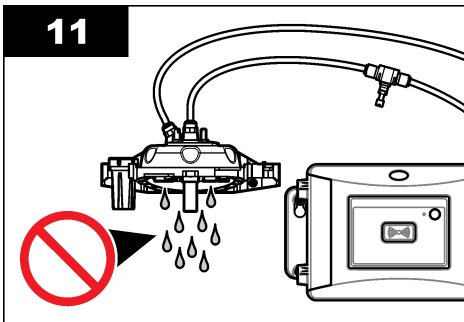
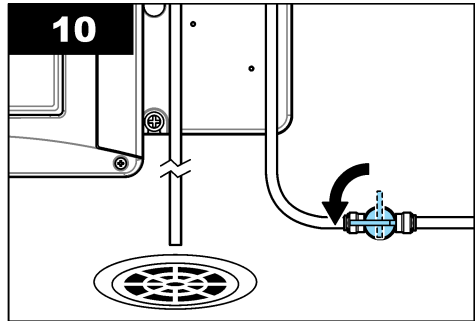
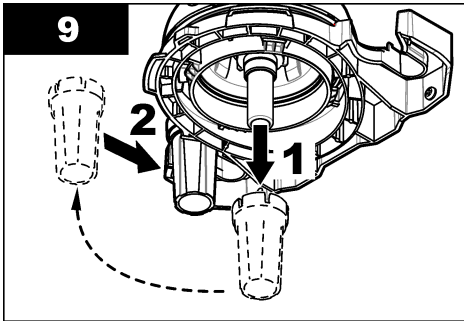
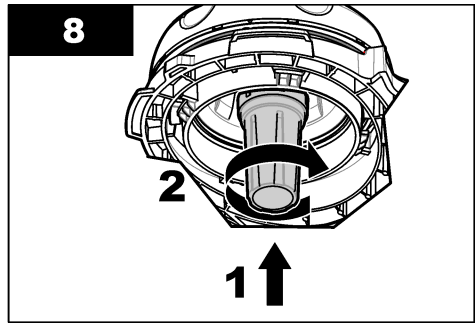
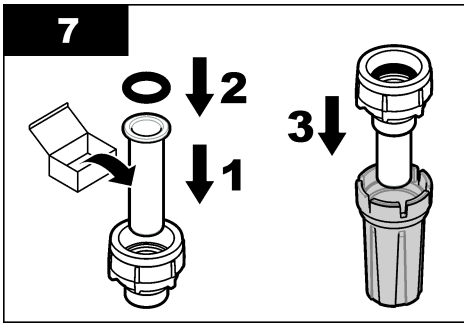
Note: Make sure that no particles fall into the vial compartment.

1. Push **menu**.
2. Select **SENSOR SETUP>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 process head on its side on a flat surface if a service bracket is not installed near the instrument.





Replace the desiccant cartridge

The controller display will show when a desiccant cartridge replacement is due. Refer to the documentation included in the desiccant cartridge bag to replace the desiccant cartridge.

Replace the tubing

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

Turn the flow shutoff valve to stop flow to the instrument. Then refer to [Plumb the instrument](#) on page 17 to replace the tubing.

Troubleshooting

Refer to the expanded user manual on the manufacturer's website for troubleshooting information.

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