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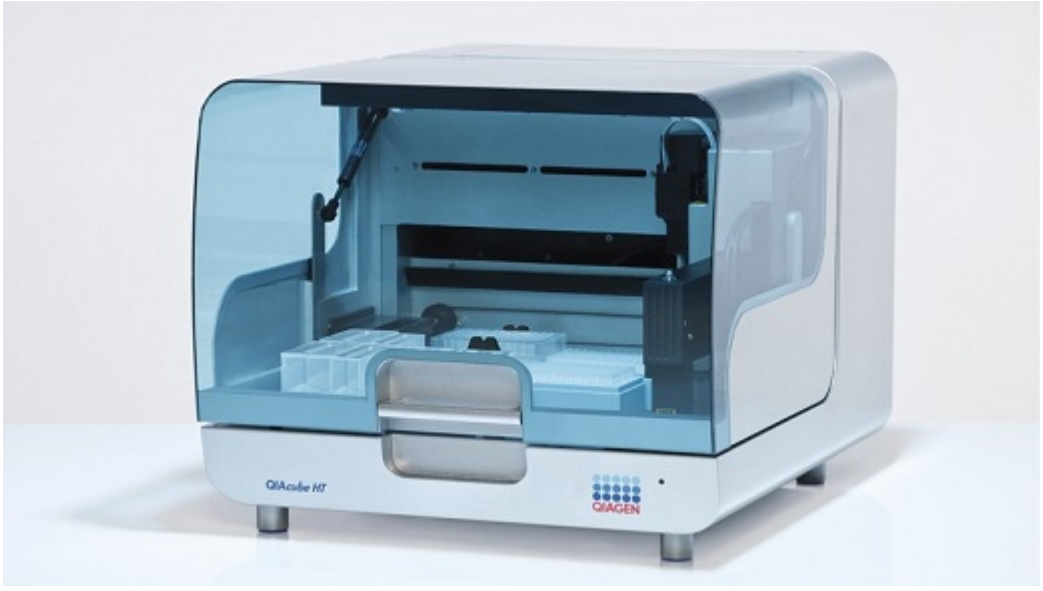
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June 2023

QIAcube HT User Manual

For use with the QIAcube HT Prep Manager Software



CE

Sample to Insight

QIAGEN

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Introduction

1 Introduction

Thank you for choosing the QIAcube® HT. We are confident it will become an integral part of your laboratory.

Before using the QIAcube HT, it is essential that you read this user manual carefully and pay particular attention to the safety information. The instructions and safety information in this user manual must be followed to ensure safe operation of the instrument and to maintain the instrument in a safe condition.

1.1 Provided user manuals

This user manual is applicable to the QIAcube HT instruments using the QIAcube HT Prep Manager Software.

This user manual is also applicable to the QIAxtractor® instruments that have been upgraded to QIAcube HT using the QIAcube HT Prep Manager Software.

1.2 About this user manual

This manual provides information about the QIAcube HT in the following sections:

1. Introduction
2. Safety information
3. General description
4. Installation procedures
5. Getting started
6. Operating procedures
7. QIAcube HT Prep Manager Software
8. Maintenance procedures
9. Troubleshooting
10. Glossary
11. Appendix

The Appendices contain the following:

Appendix A:

- Technical data
- Environmental conditions
- Waste disposal
- FCC declaration
- Declaration of conformity

Appendix B: Liability clause

Appendix C: French (FR) translation of Safety Information

Appendix D: German (DE) translation of Safety Information

Appendix E: QIAcube HT Accessories

Appendix F:

- Copyright information
- Licenses

1.3 General information

1.3.1 Technical assistance

At QIAGEN we pride ourselves on the quality and availability of our technical support. Our Technical Services Departments are staffed by experienced scientists with extensive practical and theoretical expertise in sample and assay technologies and the use of QIAGEN products. If you have any questions or experience any difficulties regarding the QIAcube HT or QIAGEN products in general, do not hesitate to contact us.

QIAGEN customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other scientists as well as to the researchers at QIAGEN. We therefore encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

For technical assistance and more information, please see our Technical Support Center at **www.support.qiagen.com**.

1.3.2 Policy statement

It is the policy of QIAGEN to improve products as new techniques and components become available. QIAGEN reserves the right to change specifications at any time.

In an effort to produce useful and appropriate documentation, we appreciate your comments on this user manual. Please contact QIAGEN Technical Services.

1.3.3 Version management

This document is the *QIAcube HT User Manual* , version 5.0.

This user manual is for the operation of the QIAcube HT instrument with the QIAcube HT Prep Manager Software.

Check **www.qiagen.com/QIAcubeHT** for a newer version of the user manual.

1.4 Intended use of the QIAcube HT

The QIAcube HT is intended to perform automated, medium- to high-throughput purification of nucleic acids.

The QIAcube HT is intended for molecular biology applications. This product is not intended for the diagnosis, prevention or treatment of a disease.

The QIAcube HT instrument is intended to be used only in combination with QIAcube HT Kits for applications described in the respective kit handbooks.

The QIAcube HT instrument is intended for use by professional users trained in molecular biological techniques and the operation of the QIAcube HT instrument.

1.5 Requirements for QIAcube HT users

This table covers the general level of competence and training necessary for transportation, installation, use, maintenance and servicing of the QIAcube HT.

Task	Personnel	Training and experience
Delivery	No special requirements	No special requirements
Installation	Laboratory technicians or equivalent	Appropriately trained and experienced personnel familiar with use of computers and automation in general
Routine use (running experiments)	Laboratory technicians or equivalent	Appropriately trained and experienced personnel familiar with use of computers and automation in general
Servicing and annual preventive maintenance	QIAGEN Field Service Specialists only	Regularly trained, certified and authorized by QIAGEN

1.6 Requirements for some kits

For more information about available kits and protocols for the QIAcube HT, please visit www.qiagen.com/QIAcubeHT or contact QIAGEN Technical Services.

Safety information

2 Safety information

Before using the QIAcube HT, it is essential that you read this user manual carefully and pay particular attention to the safety information. The instructions and safety information in the user manual must be followed to ensure safe operation of the instrument and to maintain the instrument in a safe condition.

Note: Translations of the Safety Information are available in French and German in Appendix C and Appendix D, respectively.

The following types of safety information appear throughout this manual:

WARNING 	The term **WARNING** is used to inform you about situations that could result in personal injury to you or other persons. Details about these circumstances are given in a box like this one.

CAUTION 	The term **CAUTION** is used to inform you about situations that could result in damage to the instrument or other equipment. Details about these circumstances are given in a box like this one.

The advice given in this manual is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.

2.1 Proper use

WARNING/ CAUTION 	**Risk of personal injury and material damage** [W1] Improper use of the QIAcube HT may cause personal injuries or damage to the instrument. The QIAcube HT must only be operated by qualified personnel who have been appropriately trained. Servicing of the QIAcube HT must only be performed by QIAGEN Field Service Specialists.

WARNING/ CAUTION 	**Risk of overheating** [W2] To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the QIAcube HT. Slits and openings that ensure the ventilation of the QIAcube HT must not be covered.

WARNING/ CAUTION 	**Risk of personal injury and material damage** [W3] The QIAcube HT is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone.

WARNING/ CAUTION 	**Risk of personal injury and material damage** [W4] Do not attempt to move the QIAcube HT during operation.

WARNING 	**Explosive atmosphere** [W5] The QIAcube HT is not designed for use in an explosive atmosphere.

WARNING 	**Risk of explosion** [W6] The QIAcube HT is intended for use with reagents and substances supplied with QIAGEN kits. Use of other reagents and substances may lead to fire or explosion.

CAUTION 	**Damage to the instrument** [C1] Direct sunlight may bleach parts of the instrument and cause damage to plastic parts. The QIAcube HT must be located out of direct sunlight.

CAUTION 	**Damage to the instrument** [C2] Avoid spilling water or chemicals onto the QIAcube HT. Damage caused by water or chemical spillage will void your warranty.

WARNING/ CAUTION	**Risk of personal injury** [W7] The robotic arm moves during position calibration while the instrument lid is raised. Never click any buttons while parts of your body are within the instrument workspace

In case of emergency, switch off the QIAcube HT at the power switch at the rear of the instrument and unplug the power cord from the power outlet.

2.2 Electrical safety

Disconnect the line power cord from the power outlet before servicing.

WARNING	**Electrical hazard** [W8] Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous. Intentional interruption is prohibited. **Lethal voltages inside the instrument** When the instrument is connected to line power, terminals may be live, and opening covers or removing parts is likely to expose live parts.

WARNING	**UV irradiation hazard** [W9] An electronic lid sensor ensures that the instrument lid must be closed for operation of the UV lamp. Under no circumstances should this lid sensor be disabled. If the lid sensor is not functioning correctly, contact QIAGEN Technical Services.

To ensure satisfactory and safe operation of the QIAcube HT:

- Connect the line power cord to a line power outlet that has a protective conductor (earth/ground).
- Do not adjust or replace internal parts of the instrument.
- Do not operate the instrument with any covers or parts removed.
- If liquid has spilled inside the instrument, switch off the instrument, disconnect it from the power outlet and contact QIAGEN Technical Services.

If the instrument becomes electrically unsafe, prevent other personnel from operating it, and contact QIAGEN Technical Services. The instrument may be electrically unsafe when:

- The line power cord appears to be damaged.
- It has been stored for a prolonged period of time in conditions which are outside of the "Storage Conditions" outlined in Appendix A.
- It has been subjected to severe transport stresses.

2.3 Biological safety

Specimens and reagents containing materials from humans should be treated as potentially infectious. Use safe laboratory procedures as outlined in publications such as Biosafety in Microbiological and Biomedical Laboratories, HHS (www.cdc.gov/od/ohs/biosfty/biosfty.htm).

2.3.1 Samples

Samples may contain infectious agents. You should be aware of the health hazard presented by such agents and should use, store, and dispose of such samples according to the required safety regulations.

WARNING 	**Samples containing infectious agents** [W10] Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations. Always wear safety glasses, 2 pairs of gloves, and a lab coat. The responsible body (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are not exposed to hazardous levels of infectious agents as defined in the applicable Safety Data Sheets (SDSs) or OSHA,* ACGIH† or COSHH‡ documents. Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA: Occupational Safety and Health Administration (United States of America).

† ACGIH: American Conference of Government Industrial Hygienists (United States of America).

‡ COSHH: Control of Substances Hazardous to Health (United Kingdom).

2.4 Chemicals

WARNING	**Hazardous chemicals** [W11]
	Some chemicals used with this instrument may be hazardous or may become hazardous after completion of the protocol run. Always wear safety glasses, gloves, and a lab coat. The responsible body (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Safety Data Sheets (SDSs) or OSHA,* ACGIH† or COSHH‡ documents. Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA: Occupational Safety and Health Administration (United States of America).

† ACGIH: American Conference of Government Industrial Hygienists (United States of America).

‡ COSHH: Control of Substances Hazardous to Health (United Kingdom).

2.4.1 Toxic fumes

If working with volatile solvents or toxic substances, you must provide an efficient laboratory ventilation system to remove vapors that may be produced.

2.5 Waste disposal

Used plasticware and containers may contain hazardous chemicals or contagious/biohazardous materials. Such wastes must be collected and disposed of properly according to local safety regulations.

For information on use of the tip disposal box, please see Tip disposal box.

For information about how to dispose of the QIAcube HT, see Appendix A.

2.6 Mechanical hazards

WARNING	**Moving parts** [W12]
	Avoid contact with moving parts during operation of the QIAcube HT. Under no circumstances should you place your hands under the pipetting arm when it is lowering. Do not attempt to move any plates or tubes while the instrument is operating.

WARNING	**Moving parts** [W15] To avoid contact with moving parts during operation of the QIAcube HT, the instrument must be operated with the lid closed. If the lid sensor is not functioning correctly, contact QIAGEN Technical Services.

CAUTION	**Damage to the instrument** [C3] Do not apply any manual force to the Y-arm (i.e., the pipetting head). We strongly recommend restarting the system if the Y-arm was accidentally manually moved.

To ensure satisfactory and safe operation of the QIAcube HT, follow the guidelines below:

- Only use recommended tips and tip racks.
- Keep the instrument lid closed whenever possible.
- When calibrating with the lid open, always stand clear of the instrument when making adjustments. The lid sensor is disabled during calibration. Therefore, do not click with the mouse or press any of the keys on the keyboard when looking closely at calibrations. Wait until the robotic arm has completed its movements before moving any plates or tubes.
- Do not place any items onto the robotic arm.

During a run, click on the Pause button to pause the instrument before removing plates or tubes from the worktable. Wait until the robotic arm has completed the current movement. This may take up to 10 seconds.

2.7 Maintenance safety

Perform the maintenance as described in Section Maintenance procedures. QIAGEN charges for repairs that are required due to incorrect maintenance.

WARNING	**Risk of personal injury and material damage** [W13] Only perform maintenance that is specifically described in this user manual.

WARNING 	**Risk of electric shock** [W14] Do not open any panels on the QIAcube HT. **Risk of personal injury and material damage.** Only perform maintenance that is specifically described in this user manual.

CAUTION 	**Damage to the instrument** [C4] Do not use solvents, or reagents containing acids, alkalis or abrasives to clean the QIAcube HT.

CAUTION 	**Damage to the instrument** [C9] Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAcube HT.

CAUTION 	**Damage to the QIAcube HT lid** [C5] Do not use alcohol, solvents, reagents containing acids, alkalis or abrasives to clean the instrument lid. Alcohol will damage the lid. To clean the lid, use distilled water only.

CAUTION 	**Damage to the QIAcube HT side panels** [C6] Never clean the instrument side panels with alcohol or alcohol-based solutions.

WARNING/ CAUTION 	**Risk of fire** [W16] When cleaning QIAcube HT instruments with alcohol-based disinfectant, leave the instrument hoods open to allow flammable vapors to disperse.

CAUTION	**Damage to transfer carriage** [C7] Under no circumstances should the transfer carriage for use with filter plates be autoclaved.

CAUTION	**Relocating the QIAcube HT** [C10] The most important component of the packaging is the wooden support that immobilizes the Y-arm. This support must be used when the QIAcube HT is moved. Failure to do so will void the warranty.

2.8 Symbols on the QIAcube HT

Symbol	Location	Description
	Worktable and near the type plate	Warning symbol
	Worktable and near the tip chute outlet	Biohazard symbol
	Worktable	Squeezing warning symbol
	Type plate on the back of the instrument	CE mark for European Conformity
	Type plate on the back of the instrument	UKCA mark for UK Conformity
	Type plate on the back of the instrument	CSA listing mark for Canada and the USA
	Type plate on the back of the instrument	Legal manufacturer
	Type plate on the back of the instrument	Waste Electrical and Electronic Equipment (WEEE)
	Type plate on the back of the instrument	FCC mark of the United States Federal Communications Commission
	Type plate on the back of the instrument	RCM mark for Australia and New Zealand
	Type plate on the back of the instrument	RoHS mark for China (the restriction of the use of certain hazardous substances in electrical and electronic equipment)

	Type plate on the back of the instrument	Consult instructions for use

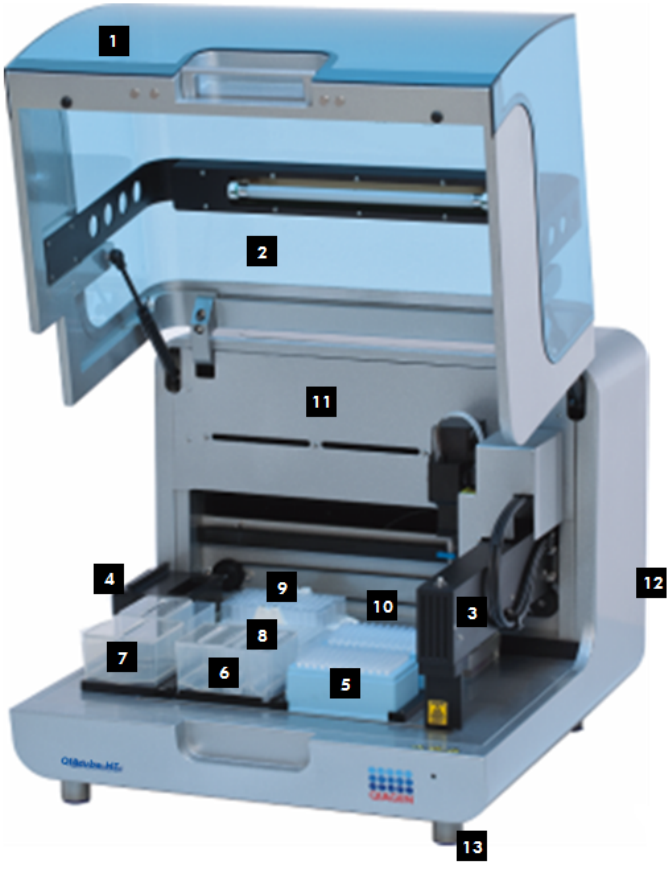
General description

3 General description

QIAcube HT enables automated mid- to high-throughput nucleic acid purification in 96-well format using silica membrane technology. Users can quickly and easily purify DNA, RNA and miRNA from almost any type of sample – including cells, tissues and food material, as well as from bacteria and viruses in animal and human samples. Automated protocols and dedicated QIAcube HT purification kits and plasticware increase reliability and convenience and save valuable time. The system provides the same high-quality results as other trusted QIAGEN purification technologies.

For more information about available kits and protocols for the QIAcube HT, please visit www.qiagen.com/QIAcubeHT or contact QIAGEN Technical Services.

3.1 QIAcube HT instrument



The QIAcube HT:

1	Lid	7	Reagent plate R1 and troughs
2	UV lamp	8	Lysis plate
3	Pipettor head (robotic arm)	9,10	Vacuum chamber with filter plate
4	Tip chute	11	HEPA filter
5	Tip racks	12	Accessory panel
6	Reagent plate SBS and troughs	13	Feet

3.1.1 Lid

CAUTION	**Damage to the QIAcube HT lid** [C5] Do not use alcohol, solvents, reagents containing acids, alkalis or abrasives to clean the instrument lid. Alcohol will damage the lid. To clean the lid, use distilled water only.

The lid of the instrument provides both an isolated enclosure for performing purification and a safety mechanism.

The instrument lid incorporates a magnetic sensor to determine whether the lid is closed or not. Under no circumstances should this sensor be bypassed.

The instrument lid must be closed for a run to proceed. Opening the instrument lid while the instrument is performing a run will cause the run to pause.

The instrument lid may remain open during calibration. Do not interfere with robotic arm movement during these calibrations and keep all body parts out of reach of the robotic arm while it is moving.

Important: Care should be taken when opening the lid during a run because it takes up to 10 seconds for the instrument to complete the current movement and for the pause to take effect. Under no circumstances should the sensor be bypassed.

3.1.2 Feet

The feet of the instrument have a non-slip base to ensure that the QIAcube HT remains securely positioned on a laboratory bench. Do not attempt to slide the instrument on a bench. Always lift the instrument to avoid damage to the base of the feet.

3.1.3 Tip chute



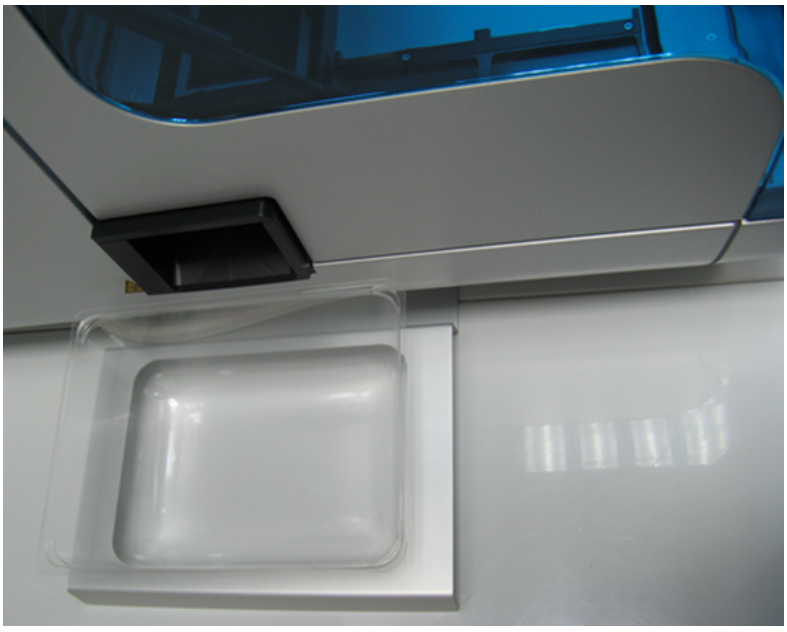
Used tips are discarded through the tip chute. Located at the left hand side of the QIAcube HT, the tip chute is held in place by a locating block, allowing easy placement and removal for cleaning.

3.1.4 Tip disposal box

Discarded tips are collected in a tip disposal box, located at the side of the QIAcube HT.

To ensure correct positioning under the tip chute, the tip disposal box is held in place by the tip disposal box holder. The tip disposal box has a capacity of approximately 350 tips. Discard the tip disposal box after each run together with the used tips according to local safety regulations.

Lock the tip disposal box holder with the instrument's feet on the left side of the instrument, and then place the tip disposal box into the tip disposal box holder.



Alignment of tip disposal box holder to the instrument and the tip disposal box.

3.1.5 HEPA filter

The HEPA filter system provides positive clean air pressure on the worktable beneath the lid. The HEPA filter system consists of two HEPA filter cartridges.



3.1.6 UV lamp

A UV lamp in the instrument lid provides efficient worktable decontamination and helps to prevent contamination.

Note: Before using the UV lamp, the tip chute must be covered with the Tip Chute Protective Cap and placed into the instrument.

For increased safety, an electronic lid sensor ensures that the UV lamp operates only when the instrument lid is closed.

Under no circumstances should the sensor be bypassed.

During UV irradiation, the robotic arm moves. All items must be removed from the instrument to ensure the worktable is fully exposed.

The UV lamp does not irradiate certain areas, including the pipettor head, due to construction constraints.

To operate the UV lamp, the UV lamp bulb needs to be connected to the UV plug. For more details, see section Using UV lamp.

3.1.7 Pipettor head and robotic arm

Liquid-handling tasks are performed by the multichannel pipettor head, which provides a motor-driven, backlash-compensated pipetting mechanism. Tips attach to the pipettor pistons of the pipettor head.

The robotic arm controls the movement of the pipettor head in the X-, Y- and Z-directions.

The Y-axis arm of the robotic arm provides support for the pipettor head. Under no circumstances should any force be applied to the Y-arm. This may misalign the arm and cause pipetting errors.

Note: To prevent accidental damage, the wooden Y-arm support should always be fixed or locked before the QIAcube HT is moved.

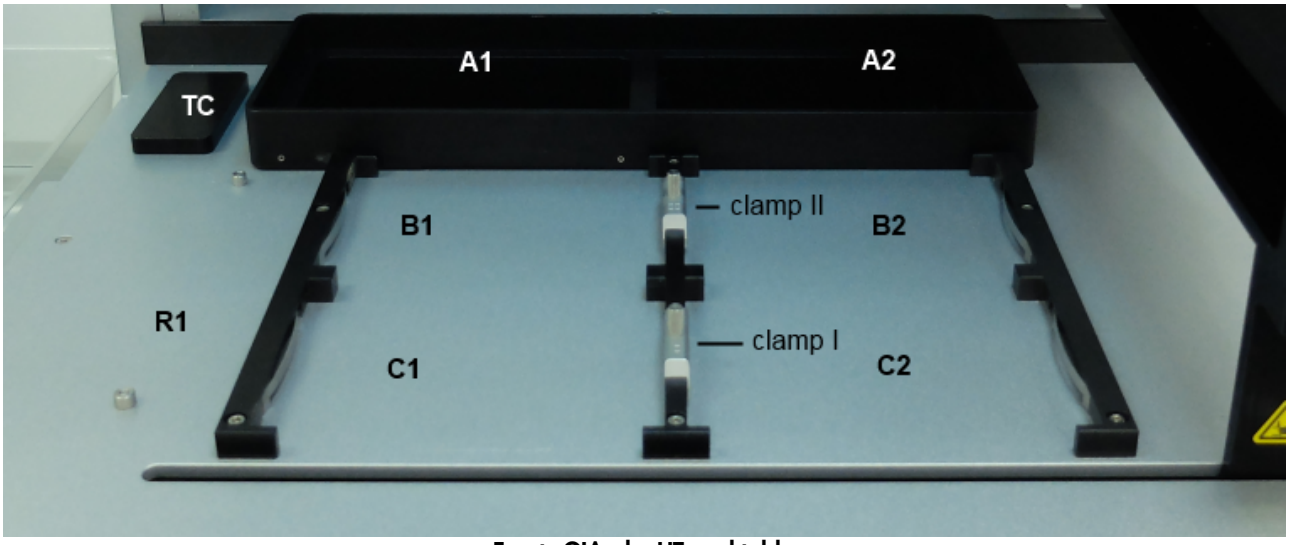
3.1.8 Worktable

The worktable is the instrument surface upon which items, such as adapters, labware and tips are placed.

The different worktable positions are named as follows:

- TC: where the tip chute is placed
- A1, A2: the positions of the vacuum chamber
- R1: where reagents can be placed using the reagent through adapter
- B1, B2, C1, C2: where tips, plates and reagents can be placed

The QIAcube HT Prep Manager automatically calculates the worktable layout before each run.



Empty QIAcube HT worktable

The QIAcube HT employs several locating mechanisms to ensure that items placed on the worktable are positioned correctly. For example, the reagent trough adapter is located by pins which serve to orientate the adapter correctly and ensure that the supported troughs are positioned correctly. Similarly, plates and tip racks are secured by a positioning mechanism and clamps on the table rails. Care must be taken with some plates to ensure that correct orientation is maintained.

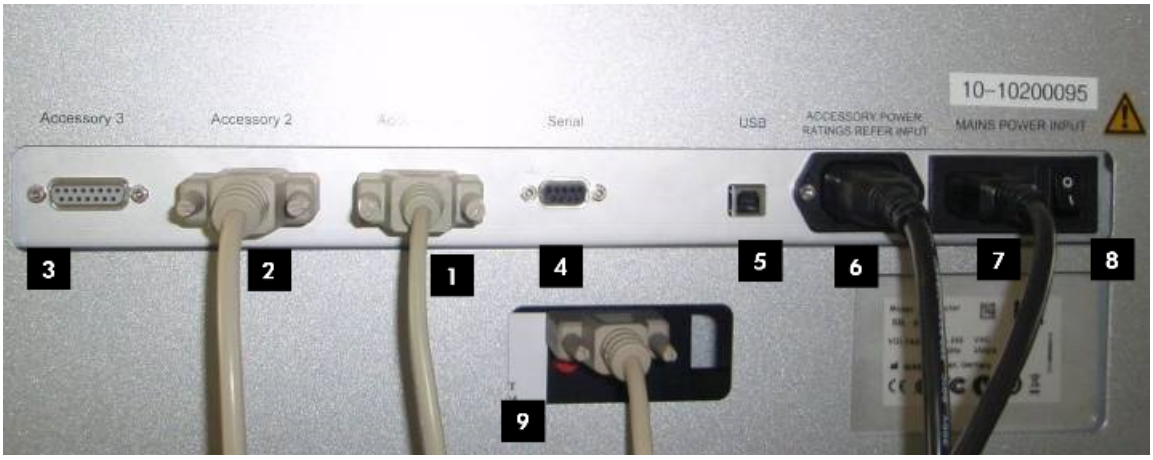
The preceding picture of the QIAcube HT worktable shows the usual positions of the clamps: clamp II between B1 and B2, and clamp I between C1 and C2 with the open side towards C1.

Note: The Reagent Plate SBS adapter needs more space than e.g. a QIAGEN S-block 96 Well or a tip rack. Therefore, it can be placed only on worktable position C1 next to the open side of a clamp I. If for a protocol the adapter needs to be placed on another position, the clamps must be adjusted. Follow the instructions in the kit handbook for the specific protocol for further information.

Note: Tip racks need always to be secured by a clamp, either a clamp II, or the closed side of a clamp I. In the picture above tip racks could be placed at B1, B2 or C2.

3.1.9 Accessory panel

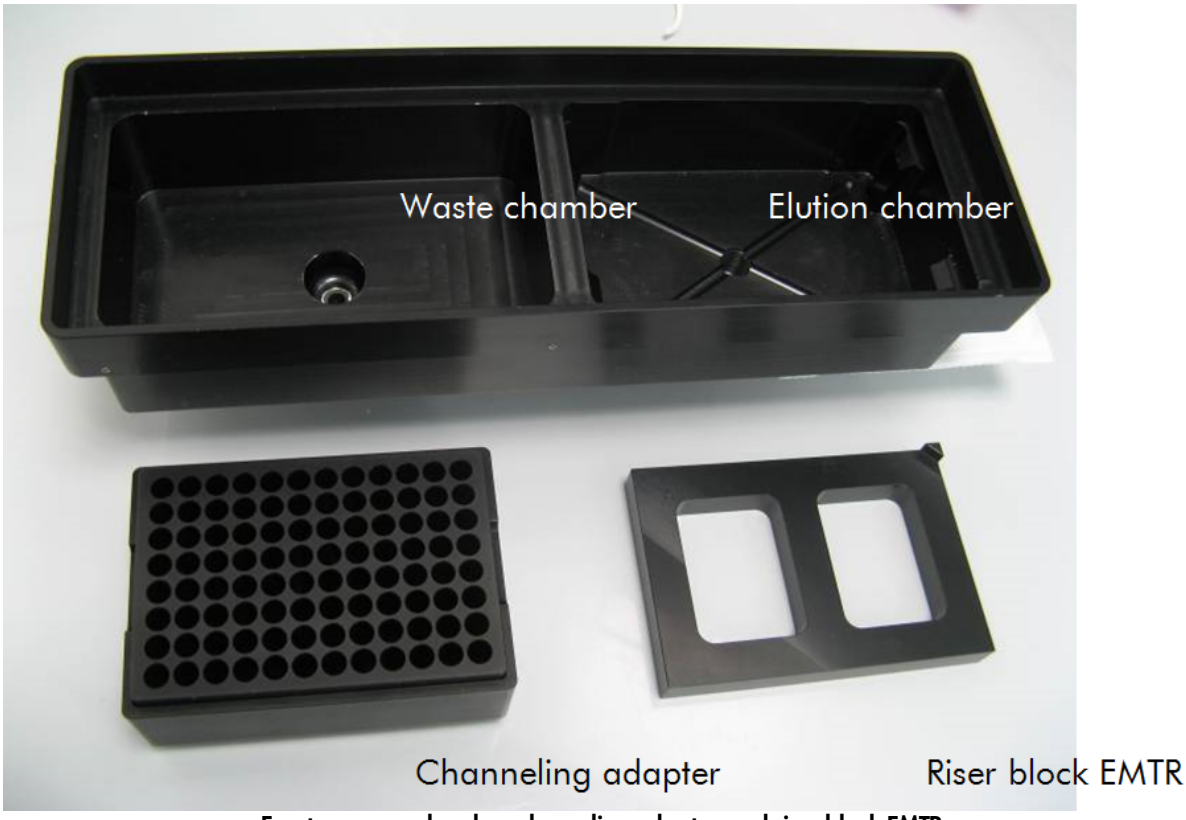
All connectors are located on the accessory panel on the rear of the QIAcube HT.



QIAcube HT accessory panel

1	Accessory 1	6	Accessory power outlet
2	Accessory 2	7	Main power input socket
3	Accessory 3	8	Power switch
4	Serial RS-232 socket	9	Access to the pinch valve
5	USB socket		(via an opening below the serial RS 232 socket)

3.1.10 Vacuum chamber



Empty vacuum chamber, channeling adapter, and riser block EMTR.

The QIAcube HT vacuum chamber is composed of two separate chambers for waste (left) and elution (right). This configuration is one of many measures to minimize sample cross-contamination during purification.

For details about the assembling of the vacuum chamber, see Section Assembling the vacuum chamber.

The waste and elution chambers of the vacuum chamber are connected to the waste bottle via silicone hoses that pass from the blue connectors underneath the vacuum chamber through the pinch valve. The vacuum chamber hoses and the Y-hose connector are fitted to the instrument before delivery. For information about installation, see Section Installation of vacuum control station.

Vacuum hoses must not be modified (e.g., shortened or lengthened).



The transfer carriage provides a platform for transporting the filter plate between the waste and elution chambers of the vacuum chamber.

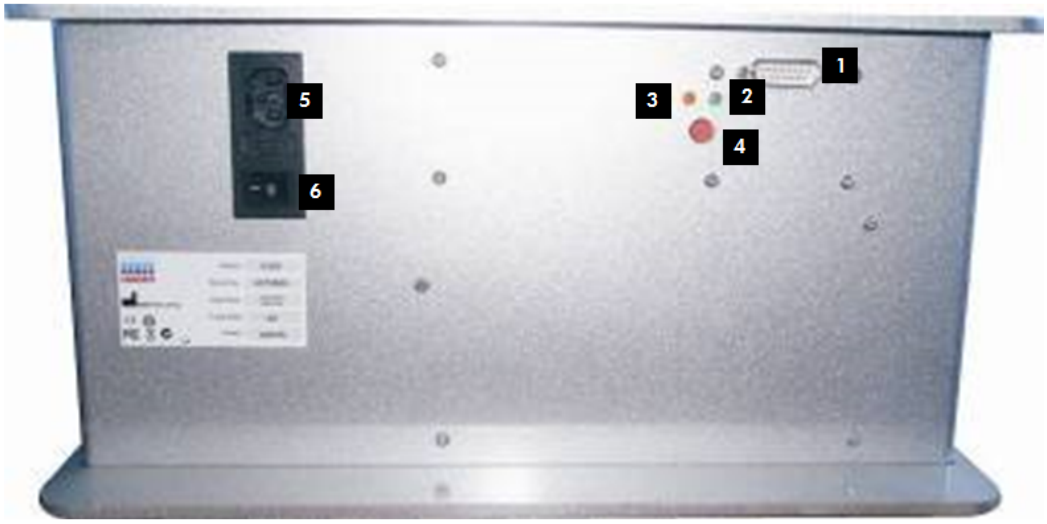


Transfer carriage for use with filter plates (e.g., QIAamp 96 plate)

3.1.11 Vacuum control station and waste bottle



Vacuum control station.



Side view of vacuum control station.

1	15-pin cable connector	4	Restart
2	Green LED (running)	5	Accessory power port
3	Red LED (standby)	6	Power switch

The vacuum control station, an integral component of the QIAcube HT, provides vacuum to the vacuum chamber for processing. Vacuum pressure is precisely controlled by the QIAcube HT Prep Manager Software.

A 4-liter waste bottle is housed in the vacuum control station. The waste bottle is connected to the vacuum chamber by a silicone hose that branches just before passing through the pinch valve.

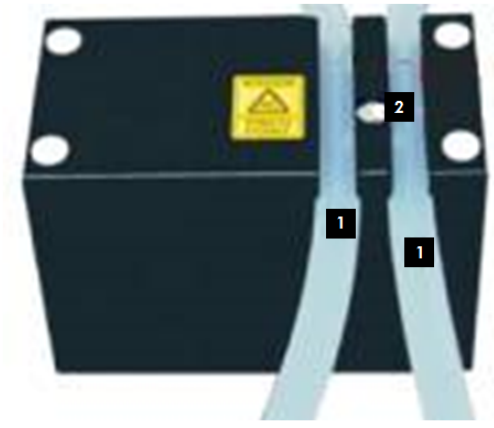
When the bottle fills with 3 liters of waste, the liquid comes into contact simultaneously with 2 Teflon® coated sensor electrodes within the waste bottle. When this occurs, the software pauses the run until the waste bottle is emptied.



The waste bottle volume is estimated by the software based on volumes of liquids dispensed to the filter plate while in the waste position during processing. Prior to each run the waste bottle volume level is indicated as one of three states in the software worktable screen. When the state is “green” or “yellow,” a run can be started. When the state is “red,” the user will be prompted to empty the waste bottle before being able to start the run.

To empty the bottle, follow the procedure described in section Emptying the waste bottle.

3.1.12 Pinch valve



Pinch valve (base) and silicone hoses.

1	Silicone hoses	2	Pinch bar



Pinch valve (front).

1	15-pin cable connector	3	Green LED
2	Manual override button	4	Recessed pressure switch

The pinch valve controls application of vacuum to the different vacuum chambers for waste and elution during processing.

The pinch valve can be set to the following positions:

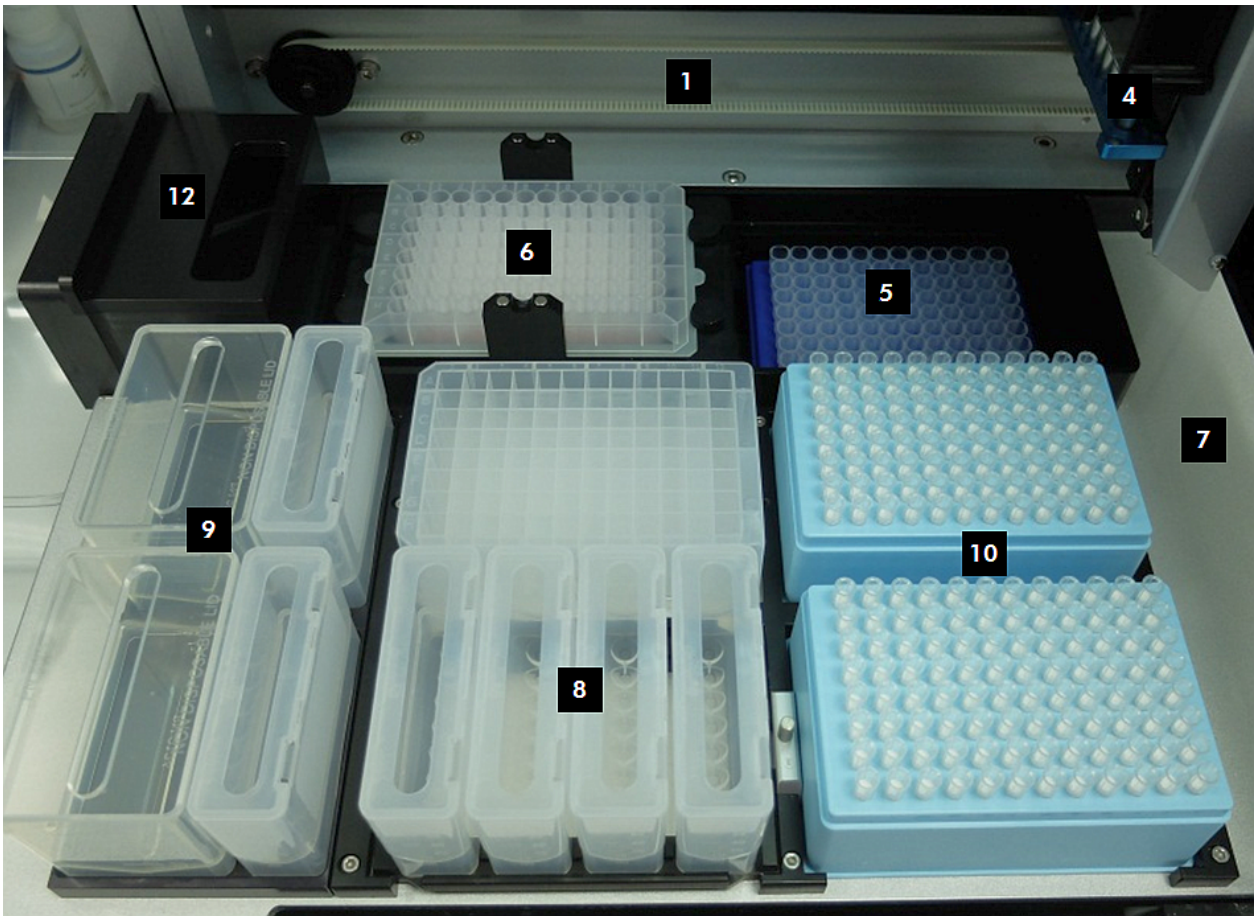
- Waste chamber open; elution chamber closed
- Elution chamber open; waste chamber closed
- Both chambers open

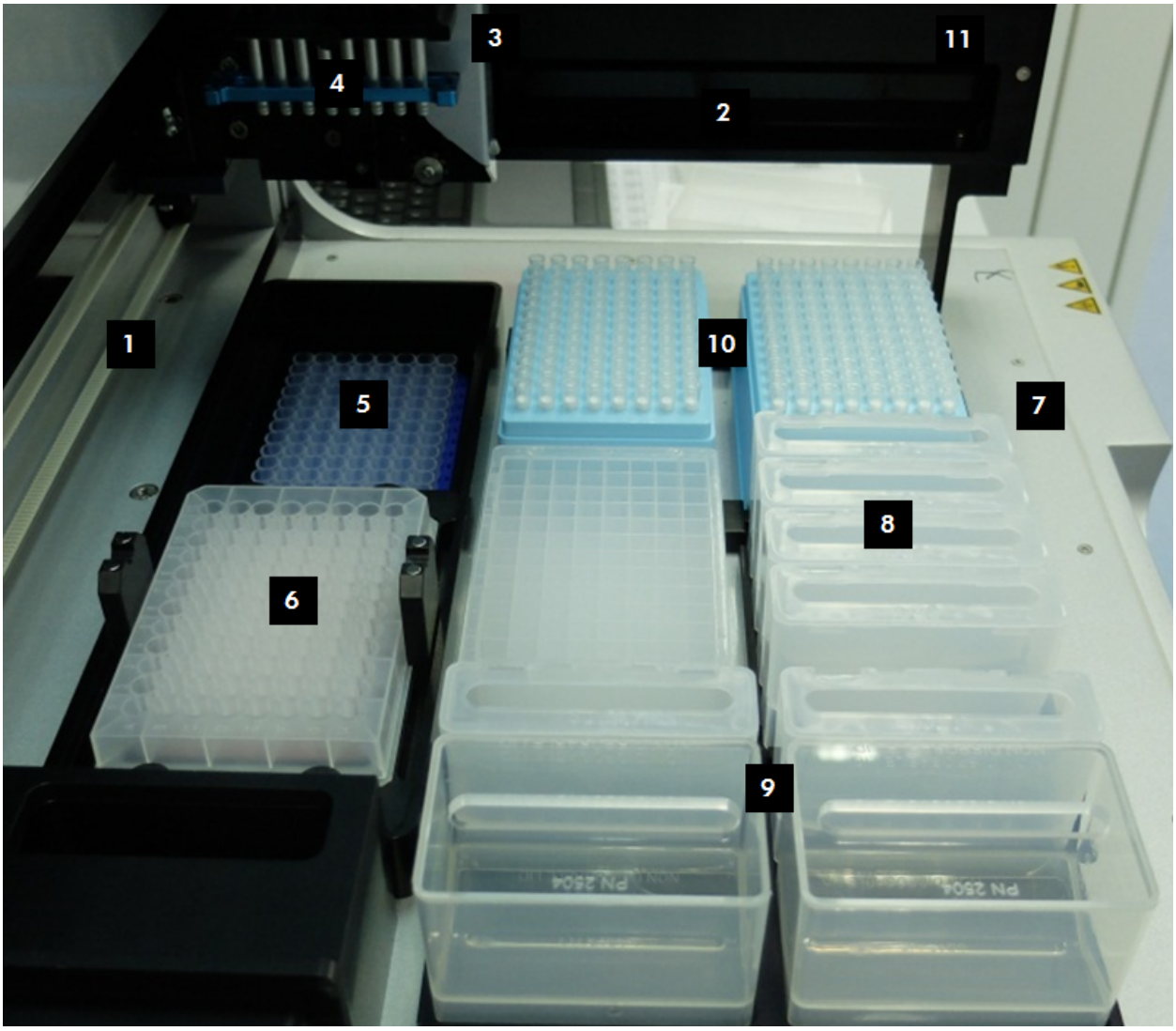
By default, both chambers of the vacuum chamber are open (automatically selected when the pinch valve is switched on). This position protects the silicone hoses controlled by the pinch valve from potential damage caused by constant pressure when the instrument is inactive or turned off.

The pinch valve is equipped with manual override buttons located below the 15-pin connector port on the front of the pinch valve. Pressing either button moves the pinch valve in the direction that the button is pushed, opening the vacuum to the opposite station. Pressing both buttons simultaneously moves the pinch valve to the center position, opening the vacuum to both stations.

IMPORTANT: In case of protocol failure, do not push override during processing.

3.1.13 Internal features of the QIAcube HT





1	X-axis	7	Worktable
2	Y-axis	8	Reagent plate SBS and troughs
3	Z-axis	9	Reagent plate R1 and troughs
4	Pipettor head	10	Tip racks and tips
5	Vacuum elution chamber	11	Y-arm
6	Vacuum waste chamber	12	Tip chute

Part	Description
X-axis	The X-axis directs the left/right movement of the pipettor head.
Y-axis	The Y-axis directs the forwards/backwards movement of the pipettor head.
Z-axis	The Z-axis directs the upwards/downwards movement of the pipettor head.
Tip chute	Through the tip chute tips are ejected into the Tip Disposal Box, to prevent waste accumulation in the clean workspace.
Pipettor head	The pipettor head is an eight channel, able to pipette 20–200 µl. The pipettor head consists of a motor driven backlash-compensated pipetting mechanism.
Y-arm	The Y-arm supports the pipetting head. Under no circumstances should the user apply force to the Y-arm. This may misalign the Y-arm and cause pipetting errors.
Worktable	The worktable has 4 SBS positions (127.76 mm x 85.48 mm) in which adapters and labware can be placed and a vacuum chamber to perform bind–wash–elute procedure during sample purification. In addition, the worktable supports a special Reagent plate for R1 position.

3.2 Computer

The QIAcube HT is operated via a computer. A laptop with the correct specification for operation of the QIAcube HT and QIAcube HT Prep Manager is supplied as part of the QIAcube HT System. However, if a different computer is used to operate the QIAcube HT or to run the QIAcube HT Prep Manager, then a computer hosting system with the following specifications is recommended.

Computer specifications

- Windows® 7 Professional (32 or 64 bit) with service pack 1 or higher; Windows 10 (64 bit) with minimum required version 1607
- At least 2.3 GHz CPU
- At least 4 GB RAM
- USB 2.0 port
- Minimum 80 GB free hard drive capacity
- At least 1360 x 768 screen resolution
- Pointer device (mouse or similar)

The computer connects to the QIAcube HT by the following interfacing option:

- USB (computer) – USB (QIAcube HT), recommended by QIAGEN

Do not connect any other device to the computer's RS-232 port (serial port) while operating the QIAcube HT.

To view reports in PDF format, a PDF reader must be installed on the computer. Adobe® Reader® can be downloaded at www.adobe.com.

Additional configuration steps:

- Turn off all automatic processes or services such as indexing or similar, which could produce a high workload.
- Ensure that energy saving options, hibernation and screen saver are deactivated during the operating times of the QIAcube HT.
- For Windows 10 only – if **UEFI Boot** is used, the **Secure Boot** option must be disabled. Otherwise, the Windows Device Driver Installation of the QIAcube HT device driver will fail during installation of the QIAcube HT Prep Manager.
- Ensure that the Federal Information Processing Standards (FIPS) policy is disabled.

Note: In case of any concern regarding the Windows configuration, please contact your local IT support.

If connecting the computer to a network, be sure to consider the following:

- Ensure that update processes are scheduled to download and install only outside the operating times of the QIAcube HT.
- Turn off auto-restart after an installation of Windows security patches to prevent automatic computer restart during the operating times of the QIAcube HT.

Note: In order to complete a security update installation, perform a manual restart later.

If virus protection software is required, ensure that the following tasks are scheduled to run outside the operating times of the QIAcube HT:

- Scans (also ensure that files that are created by the QIAcube HT Prep Manager are not scanned during creation or on access)
- All kind of updates

Note: Some virus protection software might interfere with QIAcube HT Prep Manager and cause the software to run very slowly.

Note: The QIAcube HT Prep Manager is tested by QIAGEN using the original image supplied with your laptop without connecting the laptop to the internet. Updates on your operating system might lead to unexpected behavior of the QIAcube HT Prep Manager. In such cases, please contact your local IT support.

Note: The minimal screen resolution can be used in combination with small fonts. However, medium size fonts can be used in combination with an improved resolution (e.g., the medium font size (125%) setting in Windows 7 requires a minimum screen resolution of 1680 x 1050). Larger font sizes are not supported.

Installation procedures

4 Installation procedures

This section provides instructions on unpacking and installing the QIAcube HT.

Note: For your own safety and to prevent damage to the instrument, observe the safety instructions.

4.1 System delivery

The following items are delivered:

- QIAcube HT instrument
- Vacuum control station and waste bottle
- Laptop
- QIAcube HT Prep Manager Software and user manual on on Removable Media
- Unpacking instructions (printed version)
- Accessories

Note: We recommend checking the packing list before installation.

Adapters

The QIAcube HT is supplied with the following adapters:

- 1x Transfer Carriage
- 1x Riser Block, EMTR
- 1x Channeling Adapter
- 1x Adapter, Reagent Trough R1 Position
- 1x Adapter, Reagent Trough SBS Plate

The first three adapters are intended to be used in the vacuum chamber to hold a filter plate and to ensure optimal liquid flowthrough and elution during extraction procedure.

The last two adapters are intended to hold reagent troughs. The SBS reagent trough adapter can be used on other QIAGEN instruments, such as the QIAgility®.

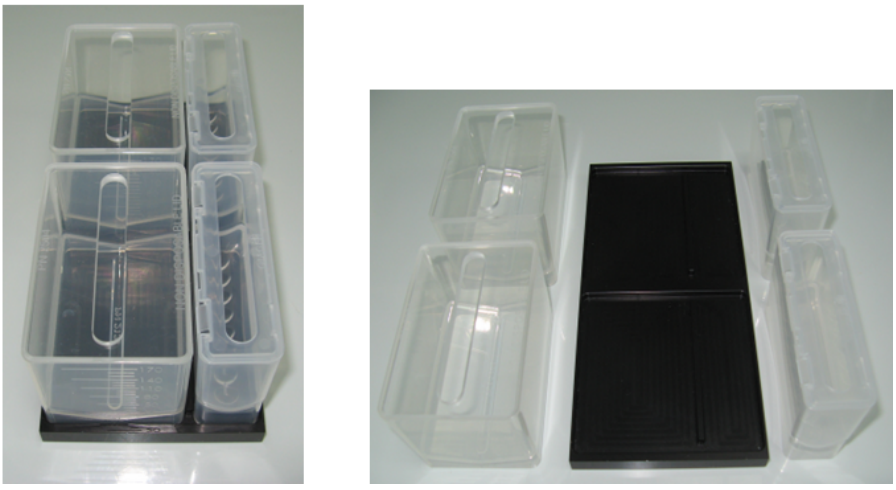
Troughs and Plates

A set of labware can be used with the QIAcube HT that is already pre-installed in the software and can be found in the Labware manager. The following labware are supplied with the instrument:

- S-Blocks
- Elution Microtubes RS (EMTR)
- Reagent Trough (with lid), 70 ml
- Reagent Trough (with lid), 170 ml

Reagent troughs are non-reusable and are made from high-quality material. Up to 8 troughs can be placed on the worktable using the reagent trough adapters: 2 x 170 ml and 6 x 70 ml.

The trough arrangement for the QIAcube HT specific reagent trough adapter is shown below.



Reagent trough layout for the QIAcube HT specific reagent trough adapter.

Tips

200 µl Filtered Tips can be used on QIAcube HT. Supplied tips are filtered and hold in single compartments in the tip rack.

Important: Do not use tips from other suppliers.

4.2 Requirements

QIAcube HT has specific requirements regarding the installation site. These requirements are explained in the following chapter.

4.2.1 Installation site

Instrument

Choose the position for the QIAcube HT carefully. A change in position necessitates a recalibration. Place the QIAcube HT in its final position.

The requirements for the QIAcube HT location and position are given below:

- The location must have sufficient space to accommodate the QIAcube HT. Refer to Appendix A for instrument dimensions and operating conditions (temperature and humidity).
- The QIAcube HT must be placed near 3 properly grounded (earthed) AC power outlets. The power lines to the instrument should be voltage regulated and surge protected.
- The QIAcube HT can be installed on any level and sturdy laboratory bench or table. There should be space below for the vacuum control station and space adjacent for the laptop.
- Ensure that the switch and the main power input socket at the rear of the instrument are easily reachable. Maintain sufficient clearance at the rear to unplug the power line from the main power input socket.
- Ensure that the instrument lid can fully open upwards without obstruction.

- The QIAcube HT must not be installed near generators of static electricity (e.g., ionizers, large-screen televisions).
- The QIAcube HT should be installed in a laboratory environment that is free of excessive airborne dust.

Vacuum control station

The vacuum control station is best placed directly under the laboratory table upon which the instrument is placed.

Note: It is mandatory that the vacuum control station is placed at a position lower than the vacuum chamber such that liquids easily flow from the vacuum chamber to the vacuum control station and not backward.

WARNING/ CAUTION 	**Risk of overheating** [W2] To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the QIAcube HT. Slits and openings that ensure the ventilation of the QIAcube HT must not be covered.

CAUTION 	**Damage to the instrument** [C1] Direct sunlight may bleach parts of the instrument and cause damage to plastic parts. The QIAcube HT must be located out of direct sunlight.

4.2.2 Power requirements

The QIAcube HT operates at these power conditions: 100–240 V, 250 VA, 50–60 Hz, T5A 250V fuse.

Make sure the voltage rating of the QIAcube HT and laptop are compatible with the AC voltage available at the installation site. Main supply voltage fluctuations should not exceed ±10% of nominal supply voltages.

4.2.3 Grounding requirements

To protect operating personnel, ensure that the QIAcube HT is correctly grounded (earthed). The instrument is equipped with a 3-conductor AC power cord that, when connected to an appropriate AC power outlet, grounds (earths) the instrument. To preserve this protection feature, do not operate the instrument from an AC power outlet that has no ground (earth) connection.

4.3 Unpacking and installation

4.3.1 Unpacking the QIAcube HT

Important: For unpacking of the QIAcube HT, refer the unpacking instructions delivered with the instrument. The unpacking instructions can also be downloaded at www.qiagen.com/QIAcubeHT.

Before unpacking the QIAcube HT, move the package to the site of installation and check whether the package is damaged. In case of damage, contact the transporter of the package.

- If you have any questions about the unpacking procedure, contact QIAGEN Technical Services or your local distributor (visit **www.qiagen.com**).
- A packing list is shipped with the instrument. After unpacking, use the packing list to ensure that all parts have been delivered.
- Follow these instructions in reverse order to pack the instrument for transport. The instrument needs to be cleaned before it can be packed for transport.

WARNING/ CAUTION	**Risk of personal injury and material damage** [W3] The QIAcube HT is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone.

1. Remove the lid from the QIAcube HT shipping container.
2. Check that the QIAcube HT is not damaged and that there are no loose parts. If anything is damaged, contact QIAGEN Technical Services.
3. Read the packing list to check that you have received all items (see System delivery). If anything is missing, contact QIAGEN Technical Services.
4. Keep the package in case you need to transport or ship the QIAcube HT in the future.
5. Carefully place the QIAcube HT onto the workbench where it will be used. For site requirements, refer to section Installation site. When lifting the QIAcube HT, slide your fingers under both sides of the instrument and keep your back straight.
6. Follow the instructions in the following sections to complete the installation.

4.3.1.1 Releasing transport locks

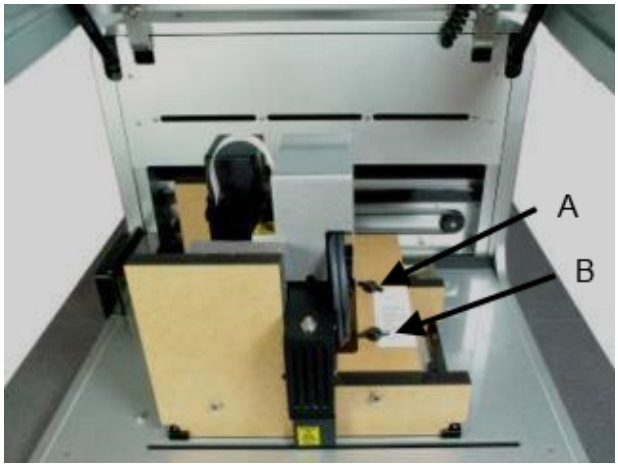
CAUTION	**Relocating the QIAcube HT** [C10] The most important component of the packaging is the wooden support that immobilizes the Y-arm. This support must be used when the QIAcube HT is moved. Failure to do so will void the warranty.

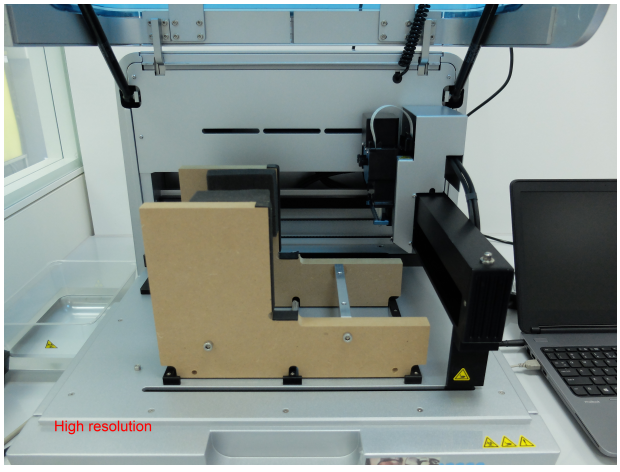
Important: The instrument packaging may be updated over time. In case the transport locks on your instrument are different from the images below, refer the unpacking instructions delivered with the instrument. The latest unpacking instructions can also be downloaded at www.qiagen.com/QIAcubeHT.

If you have any questions about this procedure, contact QIAGEN Technical Services or your local distributor.

To release the transport locks:

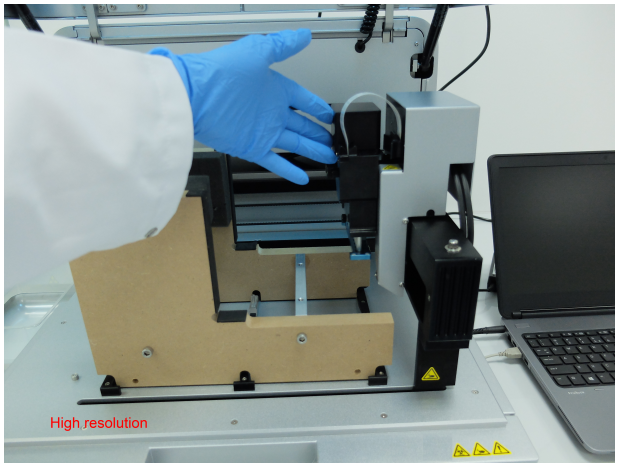
1. Open the lid.
2. Unscrew the two screws marked **A** and **B**, and remove the horizontal bar.

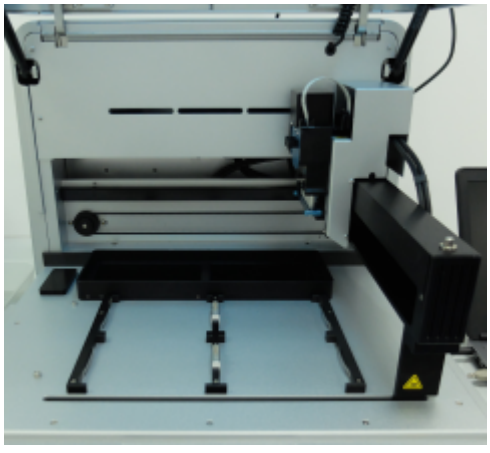




3. Move the pipettor head to the right, and remove the transport lock from the worktable.

   Note: The pipettor head may slide down while moving. Make sure the pipettor head does not crash into the Y-arm support.





Important: The wooden support must be kept and used again whenever the QIAcube HT is moved.

4.3.2 Installation of vacuum control station

The vacuum control station is best placed directly below the laboratory table upon which the instrument is placed.

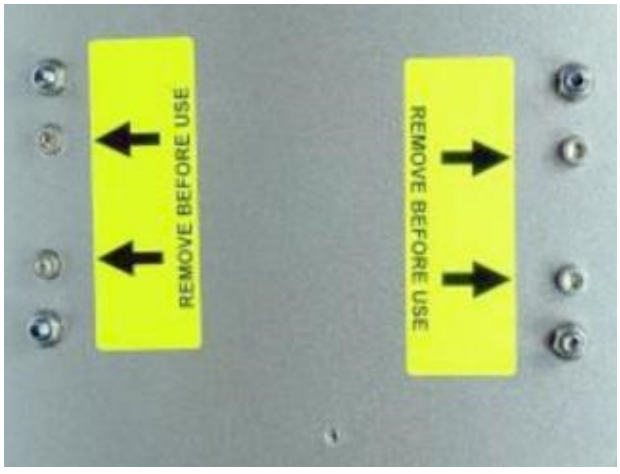
Note: The vacuum control station must be placed at a position that is lower than the vacuum chamber so that liquids easily flow from the vacuum chamber to the vacuum control station.

1. Unpack the vacuum station.

   Note: For transportation, the vacuum pump motor is locked into place within the vacuum station.

2. To unlock the vacuum pump motor, turn the vacuum station onto its side and remove the 4 indicated screws that secure the vacuum pump during transportation.





3. Unpack the waste bottle with lead assembly.
4. Place the waste bottle into the correct opening on the vacuum station.
5. Connect the vacuum waste hose between the silicone hose under the instrument cover and the lead assembly of the waste bottle.

   To protect the vacuum chamber hoses and Y-hose connector from damage, they are coiled up inside the rear cover of the instrument.



Stored hoses visible in the rear cover of the instrument.

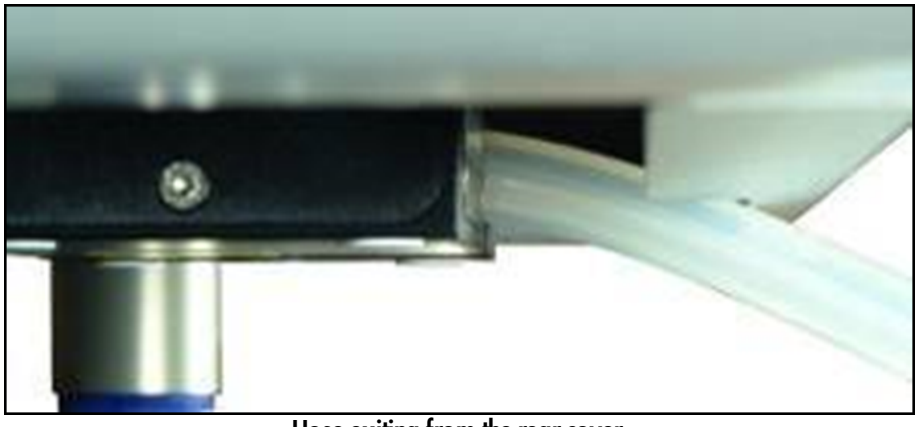
Note: If the instrument needs to be repacked for any reason, the Y-hose connector and vacuum chamber hoses should be stowed behind the rear cover to prevent damage.

To retrieve the Y-hose connector of the vacuum waste hoses, use one hand to reach under the cover to the left (when facing the back of the instrument) of the pinch valve and locate one of the hoses. While pulling the hose down, use the other hand to reach through the pinch valve opening and push the hoses down through the gap between the rear cover and the pinch valve.



Hoses visible in the gap between the rear cover and the pinch valve.

Make sure that the hoses are not twisted and that they exit from under the rear cover without kinking.



Hose exiting from the rear cover.



Hose exiting from the pinch valve.

Attach the vacuum waste hose by pushing the end that does not have an attachment onto the Y-hose connector.

6. Plug the Polycap filter into the correct opening on the vacuum station.
7. Connect the hoses between the Polycap filter, vacuum station and waste bottle cap.
8. Connect the cable between the vacuum station and waste bottle cap.



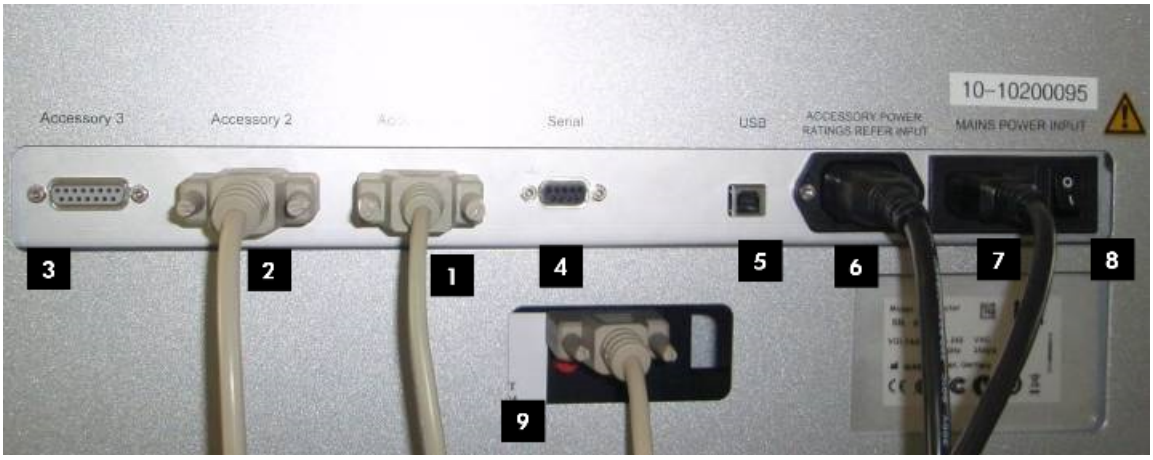
9. Plug the Carbon-Cap filter into the correct opening on the vacuum station. Be sure to position the filter with the labeling upside down.



10. Place the vacuum control station beneath the instrument.
11. Connect the one end of the 15-pin accessory cable to the accessory power port on the accessory panel of the instrument (see section Accessory panel) and the other end into the power port on the vacuum control station.
12. Connect one end of the AC power cord (standard 3-wire IEC mains cable) to the power connector of the vacuum control station, and the other end to the AC power outlet.

4.3.3 Installation of pinch valve

The pinch valve is mounted behind the instrument below the accessory panel.



QIAcube HT accessory panel

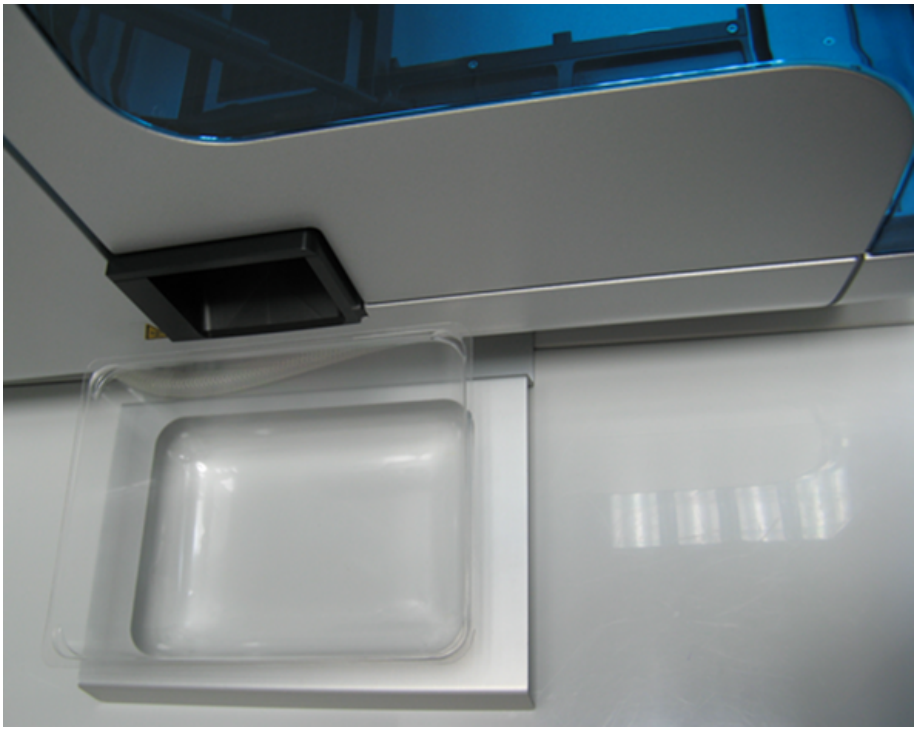
1	Accessory 1	6	Accessory power outlet
2	Accessory 2	7	Main power input socket
3	Accessory 3	8	Power switch
4	Serial RS-232 socket	9	Access to the pinch valve
5	USB socket		(via an opening below the serial RS 232 socket)

1. Connect one end of the accessory cable to an unused accessory port on the rear panel of the instrument (1–3 in the preceding figure).
2. Insert the other end through the pinch valve opening in the rear panel and connect it to the accessory port on the pinch valve unit (9 in the preceding figure).

4.3.4 Installation of tip disposal box holder

The tip disposal box is held in place by the tip disposal box holder to ensure the correct positioning of the tip disposal box under the tip chute.

Lock the tip disposal box holder with the instrument's feet on the left side of the instrument.



Alignment of tip disposal box holder to the instrument and the tip disposal box.

4.3.5 UV lamp

The UV plug is integrated within the lid. To connect the UV lamp proceed as follows:

1. Open the lid.
2. Connect the delivered UV lamp bulb into the UV plug and turn it by 90°.

Note: Hold the UV lamp bulb at both ends when fixing into the UV plug. Always wear safety gloves.

WARNING 	**UV irradiation hazard** [W9] An electronic lid sensor ensures that the instrument lid must be closed for operation of the UV lamp. Under no circumstances should this lid sensor be disabled. If the lid sensor is not functioning correctly, contact QIAGEN Technical Services.

4.3.6 Installation of AC power cord

Connect the QIAcube HT to the power outlet as follows:

1. Ensure that the power switch of the QIAcube HT is set to the "Off" position.
2. Plug the power cord into the main power input socket.
3. Plug the power cord into a grounded power outlet.

Important: The wall socket should be easily accessible.

Important: The QIAcube HT Prep Manager must be installed on the computer before the QIAcube HT is switched on (see section Software installation).

4.3.7 Connecting the computer to the QIAcube HT

Before attempting to connect the QIAcube HT to the laptop, ensure the following conditions have been met:

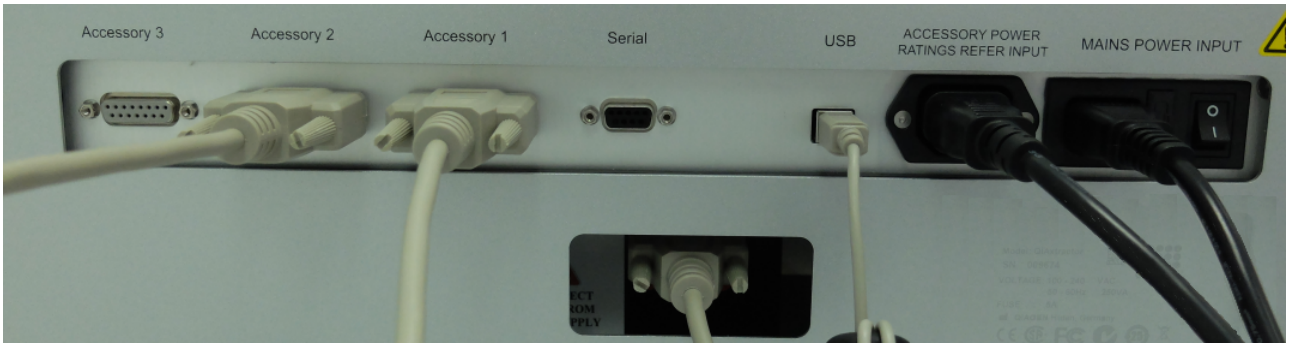
- The QIAcube HT has been properly set up and is in its final location (see section Unpacking the QIAcube HT).
- The laptop is in its final location near the instrument.

Note: Before connecting the QIAcube HT to the computer for the first time, ensure that the QIAcube HT Prep Manager has been installed (see section Software installation).

Note: The laptop that is supplied with the QIAcube HT supports USB connections. We recommend connecting the QIAcube HT to the laptop via USB.

To connect via the USB interface:

Connect the USB cable between the USB port on the instrument and the USB port on the computer.



USB cable attached to the accessory panel.

Note: The QIAcube HT Prep Manager Software recognizes connection to the QIAcube HT as a USB device even when the instrument is switched off.

4.4 Software installation

The QIAcube HT Prep Manager version 1.1 is the first version supporting Windows 10 (64 bit). The QIAcube HT Prep Manager must be installed before the QIAcube HT is connected to the laptop for the first time. The software will generally be installed on the laptop by a QIAGEN Field Service Specialist on the day of instrument installation, if the QIAcube HT was purchased with installation and startup training. A user with Windows administrator privileges is required to install the QIAcube HT Prep Manager, but such privileges are required for software installation only. If the QIAcube HT was purchased without installation and startup training, follow the steps below to install the software:

For computer system requirements, see section Computer.

1. Set up the computer as described in the computer installation instructions provided with the computer.
2. Before installing the QIAcube HT Prep Manager, shut down all other software and make sure that the QIAcube HT is not connected to the computer.
3. If a previous version of the QIAcube HT Prep Manager Software is already installed on the computer, refer to Updating QIAcube HT Prep Manager Software. Otherwise, follow the instructions in Installing QIAcube HT Prep Manager Software. If the QIAcube HT Software 4.17 or earlier is installed on the computer, refer to Upgrading from legacy QIAcube HT Software.

Note: We recommend having no other software installed on the laptop that controls the QIAcube HT other than the QIAcube HT Prep Manager. In particular, the QIAcube HT Software 4.17 or earlier must not be installed.

Note: Default settings are recommended where appropriate for all installation steps.

4.4.1 Installing QIAcube HT Prep Manager Software

Things to do before starting:

1. Ensure that the computer meets the minimum requirements (see Computer).
2. Use a Windows account with administrator privileges.

Note: Windows administrator privileges are required for software installation only.

3. Close any programs running on the computer and make sure that the QIAcube HT is not connected to the computer

(i.e., unplug the USB cable from the computer).

To install the QIAcube HT Prep Manager from the Removable Media:

4. Insert the Removable Media containing the QIAcube HT Prep Manager Software into the laptop. The setup wizard automatically opens the QIAcube HT Prep Manager setup window. Proceed to step 7.

   Note: If the setup does not start automatically, double-click the **setup.exe** file in the Removable Media drive folder. Proceed to step 7.

   Note: Depending on the Windows configuration, there may be a pop-up message asking if you want to allow the program to install. Allow the program to install.

To install the software from web download:

QIAcube HT Prep Manager is available for download at www.qiagen.com/QIAcubeHT. Before installing, read the information provided on the web page.

4. Download the installation package **.zip** file.

Note: If the computer running the QIAcube HT Prep Manager is not connected to network, download the installation package from another computer to a USB stick. Copy the installation package to the QIAcube HT Prep Manager computer.

5. Extract the installation package **.zip** file.
6. Double-click on the **setup.exe** file. Proceed to step 7.

Note: Depending on the Windows configuration, there may be a pop-up message asking you if you want to allow the program to install. Allow the program to install.

7. The appropriate version of the Microsoft .NET Framework will be installed during setup if it is not already present. In this case, another dialog opens. Click **Yes** to install the Microsoft .NET Framework. This may take some time. If you click **No**, the QIAcube HT Prep Manager will not be able to operate.
8. The appropriate version of the Microsoft SQL Server will be installed during setup if it is not already present. In this case, another dialog opens. Click **Yes** to install the Microsoft SQL Server. This may take some time. If you click **No**, the QIAcube HT Prep Manager will not be able to operate.
9. Click **Next** to start the installation.
10. Follow the instructions that appear in the setup wizard.

Note: Default settings are recommended where appropriate for all installation steps.

11. Before the installation is completed, the Device Driver Installation Wizard will open. Click Next to proceed. A Windows security confirmation message is displayed to indicate that QIAGEN GmbH is attempting to install drivers. Click Install to install the QIAcube HT driver. After driver installation, click Finish in the Device Driver Installation Wizard.

Note: If you do not install the driver software, the QIAcube HT Prep Manager will not be able to operate the QIAcube HT.

12. After installation, click **Exit Setup** in the Removable Media menu, or **Finish** in the wizard.
13. Connect the QIAcube HT to the computer.
14. The QIAcube HT Prep Manager can now be started.

Note: If the computer is connected to a network, network policy settings may prevent you from completing this procedure. For more information, contact your system administrator.

Note: In case other messages are displayed, refer to the troubleshooting section System setup.

4.4.2 Uninstalling QIAcube HT Prep Manager Software

Important: During uninstallation of the QIAcube HT Prep Manager, all experiments, templates, reports, saved output files, etc. that have been saved in any subfolders of **C:\Users\Public\QIAGEN\QIAcubeHT** will be removed too.

We recommend moving all user files to another location outside **C:\Users\Public\QIAGEN\QIAcubeHT** before uninstalling the software.

To automatically uninstall the QIAcube HT Prep Manager, follow these steps.

1. In the **Windows Start** menu, select: **All Programs** / **QIAGEN** / **QIAcubeHT** / **Uninstall QIAcube HT Prep Manager**.

2. Follow the instructions of the installer to uninstall the software.

To manually uninstall the QIAcube HT Prep Manager, follow these steps:

1. Open the **Control Panel** by clicking on the **Windows Start** menu and selecting **Control Panel**.
2. Depending on your layout settings either click **Programs and Features** or **Programs / Uninstall Programs**.
3. Select QIAcube HT Prep Manager to be uninstalled and click **Uninstall/Change**.

   Note: Depending on the Windows configuration, there may be a pop-up message asking if you want to allow the program to install. Allow the program to install.
4. Follow the instructions of the installer to uninstall.

4.4.3 Updating QIAcube HT Prep Manager Software

If a previous version of the QIAcube HT Prep Manager is already installed, it can be updated using the software package that is available at **www.qiagen.com/QIAcubeHT**. Before updating, read the information provided on the web page. Experiments and user settings will be preserved.

Things to do before starting:

1. Ensure that the computer meets the minimum requirements (see Computer).
2. Use a Windows account with administrator privileges.

Note: Windows administrator privileges are required for software installation only.

3. Close any programs running on the computer and make sure that the QIAcube HT is not connected to the computer (i.e., unplug the USB cable from the computer).

To install the software from web download:

QIAcube HT Prep Manager is available for download at www.qiagen.com/QIAcubeHT. Before installing, read the information provided on the web page.

4. Download the installation package **.zip** file.

Note: If the computer running the QIAcube HT Prep Manager is not connected to network, download the installation package from another computer to a USB stick. Copy the installation package to the QIAcube HT Prep Manager computer.

5. Extract the installation package **.zip** file.

6. Double-click on the **setup.exe** file. Proceed to step 7.

Note: Depending on the Windows configuration, there may be a pop-up message asking you if you want to allow the program to install. Allow the program to install.

7. The appropriate version of the Microsoft .NET Framework will be installed during setup if it is not already present. In this case, another dialog opens. Click **Yes** to install the Microsoft .NET Framework. This may take some time. If you click **No**, the QIAcube HT Prep Manager will not be able to operate.

8. Click **Next** to start the installation.

9. If you are updating from QIAcube HT Prep Manager version 1.0, a message will appear to inform you that a wrong SiLabs USB driver version has been detected and will be replaced during installation by the new driver version. This new driver version is required to operate the QIAcube HT Prep Manager. Click **OK** to proceed with the installation.

10. Follow the instructions that appear in the setup wizard.

All new software components will be installed. User profiles, labware settings and calibrations created before the update will be available after the update. Experiments, reports and sample files will also be available.

Note: Default settings are recommended where appropriate for all installation steps.

Note: A message will appear to inform you that some files that need to be updated by the setup are still in use by the QIAcube HT Core Engine Service. The QIAcube HT Core Engine Service is a service of the QIAcube HT Prep Manager that always runs on the computer. Select the option Close the applications and attempt to restart them. The setup will stop and restart the QIAcube HT Core Engine Service during installation. If you select the option Do not close applications. A reboot will be required, the installation will continue, but it will only be completed after the computer is rebooted.

Note: If you are updating from version 1.0, a message may appear to inform you that during uninstallation of the QIAcube HT Prep Manager, all experiments, templates, reports, saved output files, etc. that have been saved in any subfolders of C:\Users\Public\QIAGEN\QIAcubeHT will be removed. Click OK to acknowledge the message. Despite the message, these items will still be available after the setup.

11. If the message appeared at the beginning of installation to inform you that the SiLabs USB driver will be replaced by a new driver version, the Device Driver Installation Wizard will open. Click Next to proceed. A security confirmation message is shown that QIAGEN GmbH drivers attempt to be installed. Click Install to install the driver. After driver installation click Finish in the Device Driver Installation Wizard.

Note: If you do not install the new driver version, the QIAcube HT Prep Manager might not be able to operate the QIAcube HT properly.

12. After installation, click Finish in the wizard.

Note: If you selected the option **Do not close applications** during installation, a reboot will be required. You must restart the computer before the QIAcube HT Prep Manager is ready to operate.

13. Connect the QIAcube HT to the computer.
14. The QIAcube HT Prep Manager can now be started.
15. Use one of the previously created user IDs for login.

Note: If the computer is connected to a network, network policy settings may prevent you from completing this procedure. For more information, contact your system administrator.

Note: In case of other messages displayed, refer to the troubleshooting section System setup.

4.4.4 Upgrading from legacy QIAcube HT Software

Before upgrading from old versions of the QIAcube HT Software (version 4.17 or earlier) to the QIAcube HT Prep Manager, you must first uninstall version 4.17 or earlier. It is not possible to have both the legacy version of the QIAcube HT Software and the QIAcube HT Prep Manager installed on the same computer. Data migration of protocols from old to new software is not possible and not provided.

After the successful uninstallation, install the QIAcube HT Prep Manager as described in section Installing QIAcubeHT Prep Manager Software.

Note: When installing the QIAcube HT Prep Manager Software after uninstalling the legacy QIAcube HT Software, a message will show up that a wrong SiLabs USB driver version has been detected on the computer. Allow the installer to update the driver to the version needed by the QIAcube HT Prep Manager.

4.4.5 Installing additional kits

More kits will be made available over time. Please check the QIAcube HT website at **www.qiagen.com/QIAcubeHT** for additional information.

Note: Follow the compatibility instructions.

1. Download the kit installation package **.zip** file.

   Note: If the computer running the QIAcube HT Prep Manager is not connected to the internet, download the installation package from another computer to a USB stick. Copy the installation package to the QIAcube HT Prep Manager computer.
2. Use a Windows account with administrator privileges.
3. Close any programs running on the computer and make sure that the QIAcube HT is not connected to the computer.
4. Extract the kit installation package **.zip** file.
5. Double-click on the **ConfigurationInstaller.exe** file, and follow the instructions in the setup wizard.

   Note: Depending on the Windows configuration, there may be a pop-up message asking if you want to allow the program to install. Allow the program to install.
6. After the installation has finished, reconnect the QIAcube HT to the computer.

After the kit has been installed, the kit's wizard will be available in the **Home** environment.

Note: One kit installation package may provide more than one kit.

Getting started

5 Getting started

This chapter provides information about basic configuration that needs to be completed before the QIAcube HT can be used for runs.

Some of the tasks need to be repeated occasionally, such as instrument calibration after servicing of the QIAcube HT or labware management and labware calibration when changing labware or supplier.

5.1 Start the software

The QIAcube HT Prep Manager can always be started without having the instrument connected or switched on, for example, to prepare experiments for the next day. However, in this case, certain areas of the software that require the instrument to be switched on will not be available, such as worktable and run step for experiments, calibration or system checks.

The order in which you should switch on the QIAcube HT and the QIAcube HT Prep Manager depends on how the instrument is connected to the computer:

- If the QIAcube HT is connected to the computer via USB, you can switch on the QIAcube HT later after the software has already started. The QIAcube HT automatically connects to the QIAcube HT Prep Manager. This may take around 5 to 10 seconds.

To start the QIAcube HT Prep Manager, proceed as follows:

1. Double-click on the **PrepM** desktop icon, or open the **Windows Start** menu and select: **All Programs** / **QIAGEN** / **QIAcube HT** / QIAcube HT Prep Manager.

   PrepM

2. The software starts and displays the login dialog.

   Note: Authentication is always required.

3. If you are starting the software for the first time after installation, log in by entering the user name admin into the **User ID** field and entering the password admin into the **Password** field. Click **OK**.

   Otherwise, log in with your user ID and password.

4. The software opens in the **Home** environment.

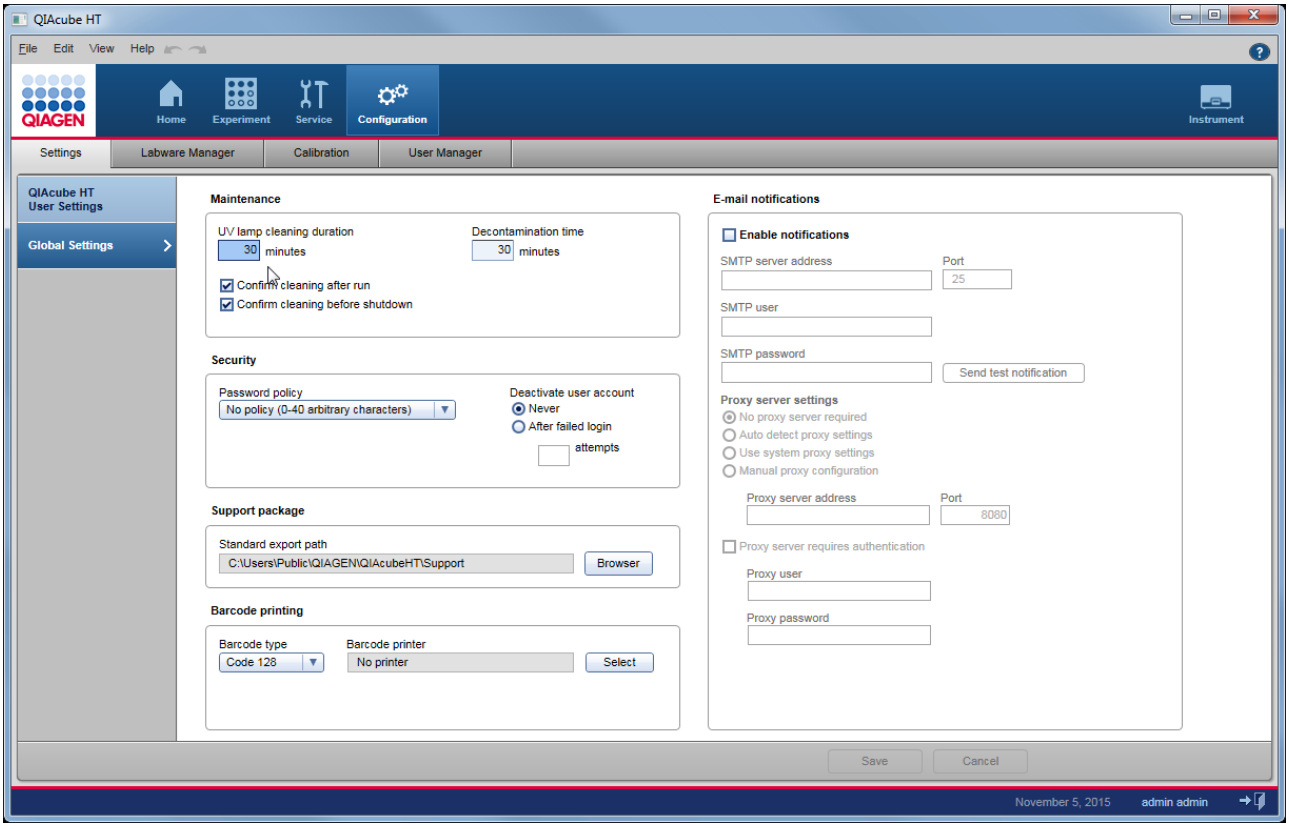
5. If you are starting the software for the first time, continue with Customizing settings.

Note: The QIAcube HT will not initialize when the software is started; however, it will initialize when someone attempts to use the instrument.

The *QIAcube HT User Manual* (this publication) can be accessed at any time from within the software by pressing the **F1** key or by clicking the **Help** button located above the main toolbar.

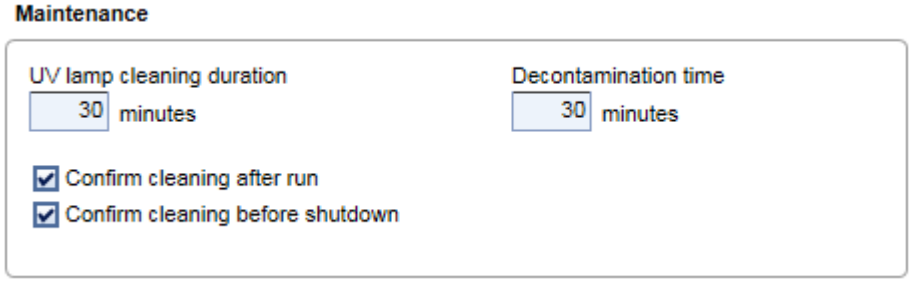
5.2 Customizing global settings

The **Global Settings** tab of the **Configuration** screen enables users to define general settings such as default directories, e-mail server details (for e-mail notifications), printing and password options and more.



Maintenance options

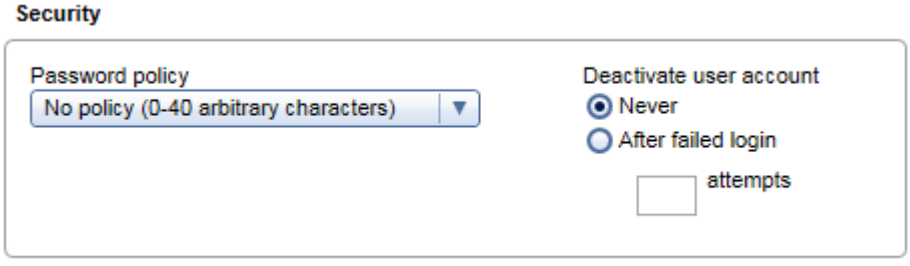
Specify the settings for the cleaning procedures.



Option	Description
UV lamp cleaning duration	Enter the time duration for the UV lamp cleaning procedure. QIAGEN recommends a duration of 30 minutes. The UV lamp cleaning procedure can be initiated from the **Cleaning Procedure** tab of the **Service** environment.
Decontamination time	Enter the time duration for decontamination of the worktable during the daily cleaning procedure. Follow the manufacturer's instructions for disinfectant. The cleaning procedure can be initiated from the **Cleaning Procedure** tab of the **Service** environment.
Confirm cleaning after run	If this option is checked the software displays a message after each run which reminds to start the procedure **Cleaning after run** from the **Cleaning Procedure** tab of the **Service** environment.
Confirm cleaning before shut down	If this option is checked, the software switches to the **Daily cleaning procedure** wizard when the software shall be closed.

Security options

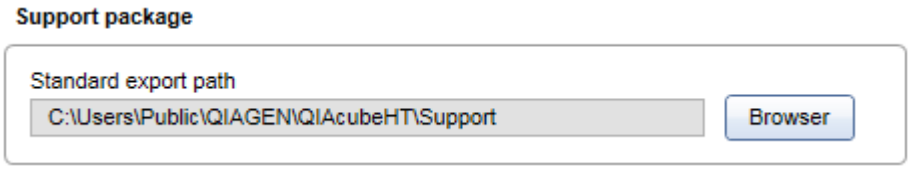
Specify the security and authentication settings in the **Security** section of the window.



Option	Description
Password policy	There are two different options for the password policy: • Standard policy (8–40 arbitrary characters): select this option if authentication is required. • No policy (0–40 characters): select this option if no authentication is required. This policy allows you to use short passwords or even to use an empty password.
Deactivate user account	Specify whether the user account should be deactivated after failed login attempts: • Never: select this option if an account should never be deactivated. • After failed login: select this option if a user account should be deactivated after a certain number of failed login attempts. Enter the number in the field below.

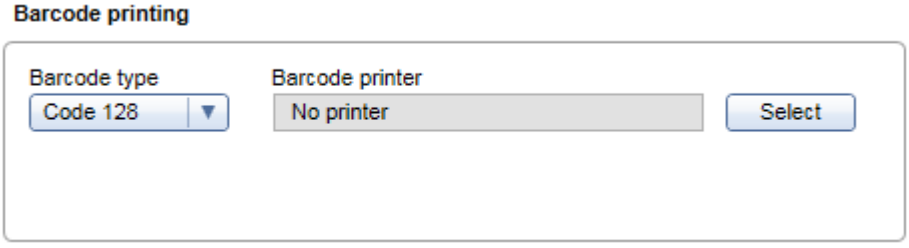
Support package

Set the standard export path for the support package by clicking the **Browse** button. This path will be used as the initial path when a support package is created from the **Support package** tab of the **Service** environment.



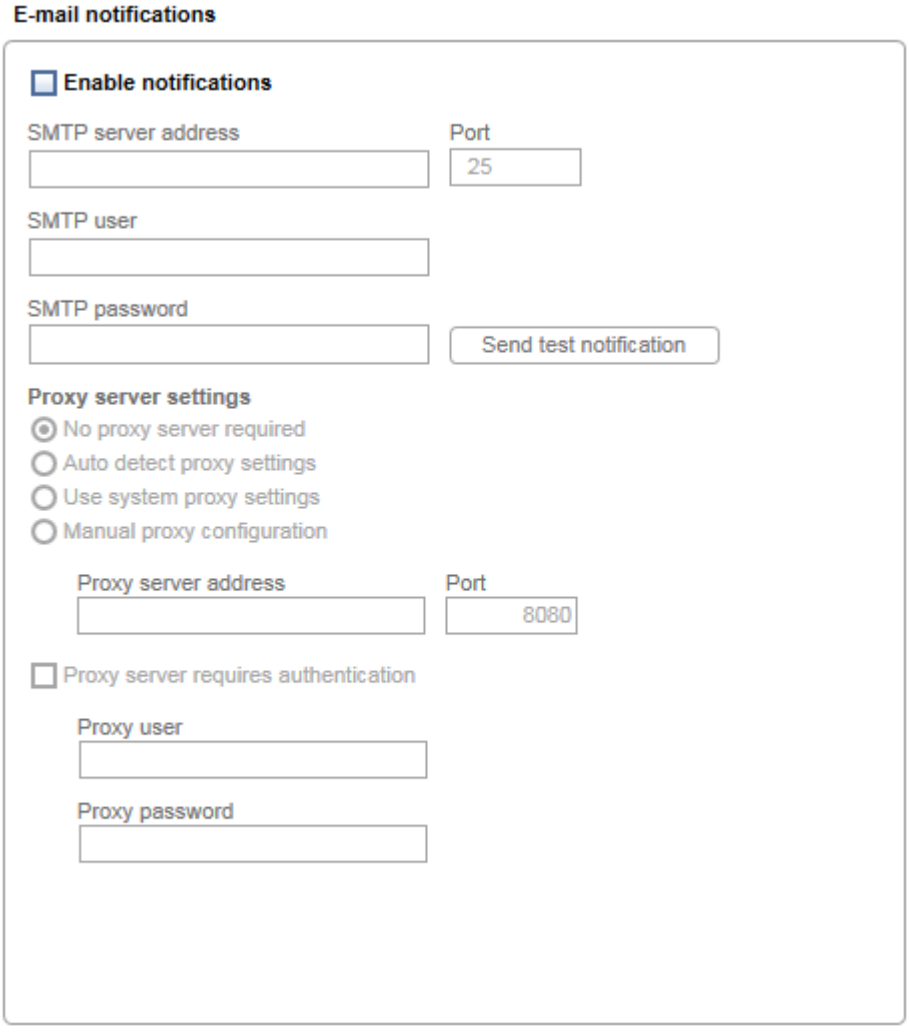
Bar code printing

Use this option if you intend to print a bar code for output labware. Select the bar code type that fits your needs. Select the bar code printer by clicking **Select...**. A dialog offers a list of printers that are available from the computer, i.e., all printers which have been configured in Windows. Select **No printer** if you do not want to use this option. Bar code printing is then not available.



E-mail notifications

If you would like to be informed via e-mail about certain instrument events, such as errors or finish of a run, activate the **Enable notifications** option. The actual notification options can be found in the **User Settings** of the individual plug-ins. The general network settings for the mail server and an optional proxy server must to be entered in order for the e-mail notification to function. In case you do not know these details, contact your network administrator.



5.3 Customize user settings

The **Configuration** environment provides settings that are specific for a user.

Report / Export

Option	Description
Display report after saving	Check this option to automatically open the report after it has been created. **Note**: The report will always be saved first and then opened. **Note**: To view reports, a PDF reader must be installed on the computer.
Report type	The QIAcube HT Prep Manager provides a **Basic** report and an **Advanced** report. For details, refer to section Report.
Report format	Select the paper format: A4 or US Letter.
Report path	Select **Save to origin experiment directory** if you want to save the report side by side with the experiment file. Select **Save to standard directory** if you want to save all reports together in a defined directory. See below for directory configuration. **Note**: This selection serves as a starting point for the file dialog that opens when you create a report.
Sample output file path	Select **Save to origin experiment directory** if you want to save the output file side by side with the experiment file. Select **Save to standard directory** if you want to save all output files together in a defined directory. See below for directory configuration. **Note**: This selection serves as a starting point for the file dialog that opens, when you save the output file.
Select XSLT file	If you need the output file in another format than the QDEF format, an **.xslt** file can be selected that defines a transformation from the QDEF format to another format. If an **.xslt** file has been selected, every time you save an output file from the **Run** screen (see Run completion), automatically the transformation will be started based on the created QDEF file using the selected **.xslt** file. As a result, two output files will be created: one in QDEF format, and one in the format defined by the **.xslt** file. The file created by the .**xslt** will have the same file name as the QDEF file, but with extension **.csv**. It will be saved side by side with the QDEF file. As an example, the QIAcube HT Prep Manager provides one .**xslt** file that transforms the output file in a **.csv** file: C:\Users\Public\QIAGEN\QIAcubeHT \QIAcubeHTData\KitConfiguration\QCHT_SampleInformationFile.xslt

Standard directories

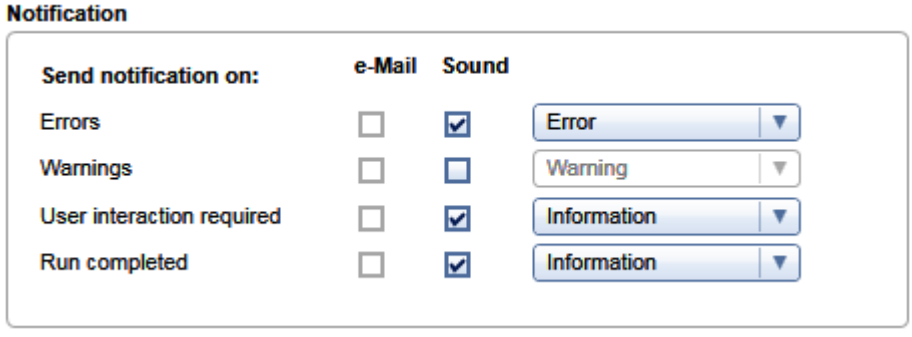
To change a standard directory, press the **Browse** button in the appropriate row.

Subject	Description
Experiment	The selected directory serves as a starting point for the file dialog when you save an experiment. **Note**: When opening an experiment from **Home** environment with the **Open other experiment** button, for the first time after software start the starting point is **C:**.
Template	The selected directory serves as a starting point for the file dialog when creating an experiment from a template from **Home** environment with the **Create from other template** button.
Reports	The selected directory serves as a starting point for the file dialog that opens when you create a report, if the **Save to standard directory** option has been selected for the report path (see above).
Sample input files	The selected directory serves as a starting point for the file dialog that opens when you load a sample input file or an output file in the **Labware Selection** step. Also, when you scan the input or output labware bar code, the software will search in this directory for a file to load.
Sample output files	The selected directory serves as a starting point for the file dialog that opens when you save an output file after the run.

Initially, the standard directories are defined to be subfolders of C:\Users\Public\QIAGEN\QIAcubeHT.

Notification

Two kinds of notifications can be configured: a sound notification or a notification via e-mail, for various kinds of events.



A sound will be played when the run is complete, or during the run to indicate errors and situations that require user interaction (e.g., refill tips).

Note: E-mail notification options are only enabled if the following have been performed by the software administrator in the **Global Settings** (see chapter Customizing global settings):

- The e-mail notifications have been enabled and configured, and
- An e-mail address for the user account has been configured.

Option	Description
E-mail notification	To enable e-mail notification for a certain event, check the corresponding checkbox in the **E-mail** column.
Sound notification	To enable sound notification for a certain event, check the corresponding checkbox in the **Sound** column. If the checkbox is checked, a drop-down menu becomes available, allowing you to select different sounds.

HEPA filter

Option	Description
Switch on HEPA filter during run	Select this option if you want to use the HEPA filter for runs. The HEPA filter will be used for every run as long as this option is selected. **Note**: Consider that all options are user specific. If another user also wants to use the HEPA filter during runs, that use also needs to select this option.
Switch off after run	Enabled only if the option **Switch on HEPA filter during run** has been selected. Select **Immediately** to switch off the HEPA just after the last run action of the QIAcube HT. Select **When the lid is opened for the first time**, if you want to continue the HEPA filter until you open the lid for the first time after the run.

5.4 Managing users

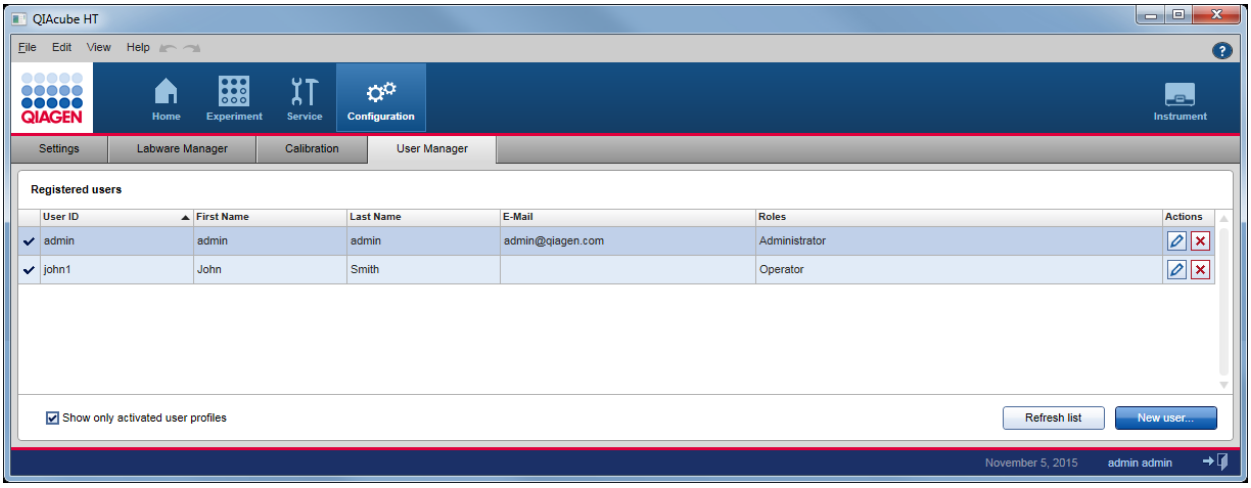
When starting the QIAcube HT Prep Manager for the first time, we recommend that you change the password from the default **admin**, and create user profiles to suit your needs.

Users assigned the administrator role are able to add new user profiles or activate, deactivate and modify existing user profiles. User profiles can be deleted, if necessary.

Manage users in the **User Manager** tab of the **Configuration** environment.

1. Click **Configuration** in the main toolbar.
2. Click the **User Manager** tab.

3. The **User Manager** screen is displayed.



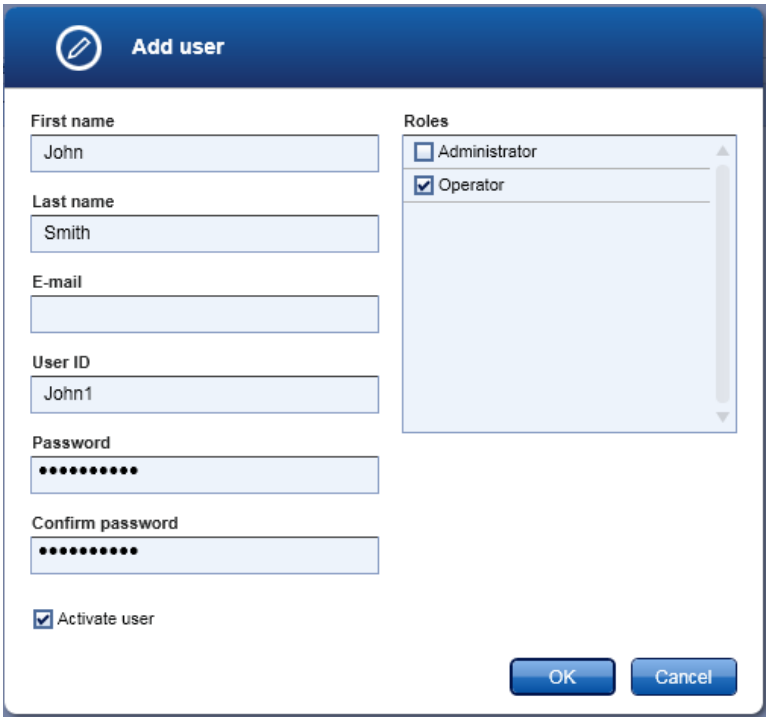
Users table in the User Manager

Creating a user

Note: To configure the QIAcube HT Prep Manager, a user profile with administrator role is required. To operate the QIAcube HT Prep Manager, the user role operator is sufficient. The initially provided user admin has the user role administrator and is sufficient to configure and operate the QIAcube HT Prep Manager. For details refer to the user roles concept.

Note: If an audit trail is required, create individual user profiles with user role operator for each person working with the QIAcube HT Prep Manager. Additionally, ensure that the standard password policy has been configured in the **Global Settings**. We recommend to create two user profiles with role administrator.

1. Click the **New user** button on the bottom right.
2. The **Add user** dialog is shown:



3. Enter the first name, last name, e-mail and a user ID in the corresponding fields.

Note: E-mail is mandatory for administrators, but optional for operators.

Note: The following restrictions apply to the **User ID** and the **First name** and **Last name** fields:

Field	Restriction
User ID	Must be unique for each user
	May not be empty
	May not contain more than 40 characters
	Numerical and non-numerical characters are allowed
	Must contain at least one non-numerical character
	Spaces are not allowed (in general, blank spaces are not allowed)
	Once the user profile has been created, the field can no longer be changed
First/Last name	May not contain more than 50 characters
	Numerical and non-numerical characters are allowed
	May not be empty

4. Enter a password in the **Password** field, and enter it again in the **Confirm password** field.

   Note: As long as the entered password does not meet the configured password policy, the field will remain yellow and a hint will be shown in a tooltip. The **Confirm password** field will remain yellow if it differs from the **Password** field.

5. The **Activate user** check box (Activate user) is checked by default. This means that the created user profile may be used for the next login.

   Note: To prepare a user profile for later use, create a deactivated user profile by removing the check from this check box. To activate it later, follow the steps below for activating/deactivating a user.

6. Activate the check box in the **Roles** table that should be assigned to the user.

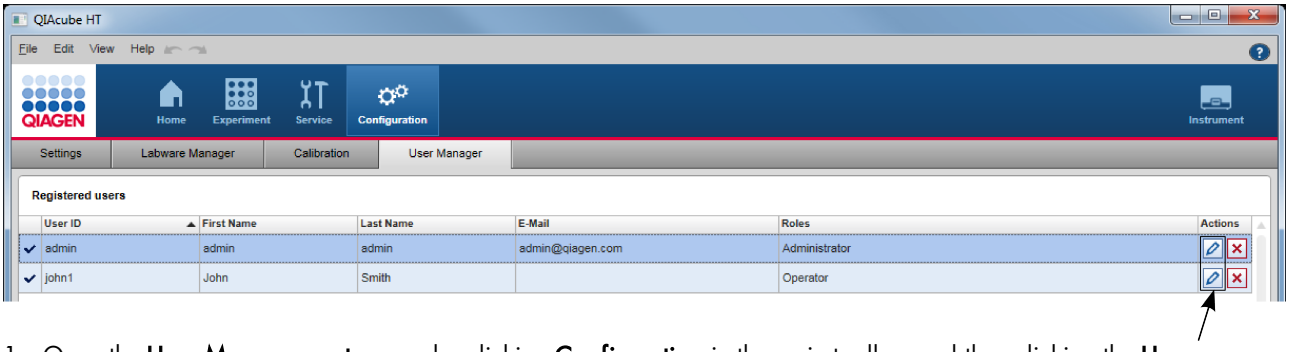
   Note: At least one role must be assigned.

7. Click **OK.**

8. The **Add user** dialog closes and the new user is added to the **Registered users** table.

Modifying a user

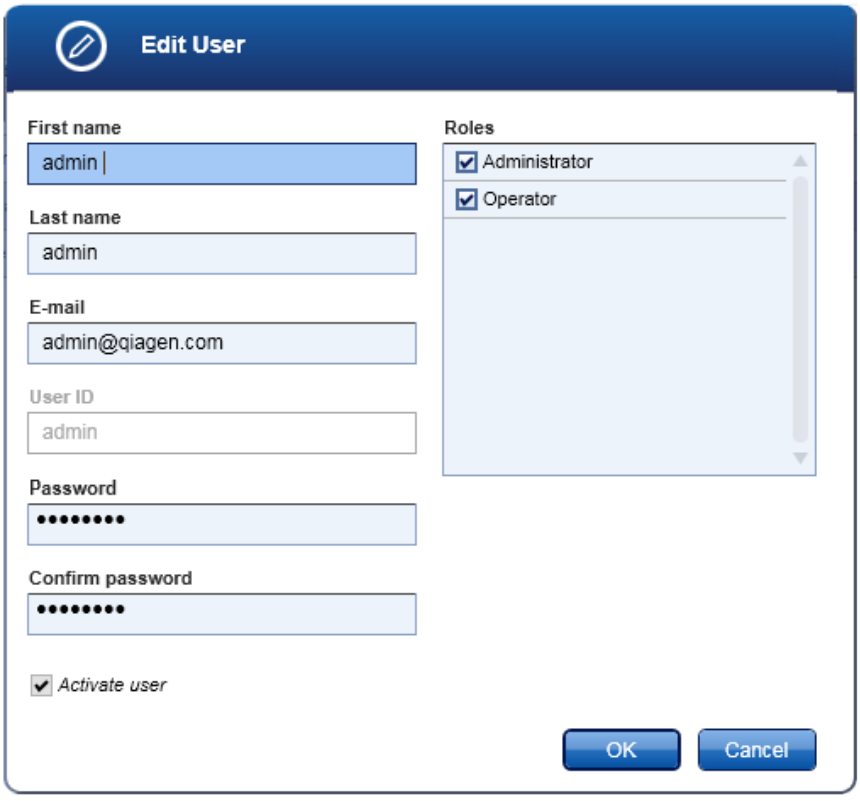
The data, password and roles of a user can be modified using the **Edit user** icon in the **Actions** row of the **Registered users** table.



1. Open the **User Management** screen by clicking **Configuration** in the main toolbar and then clicking the **User Manager** tab.

2. Click the **Edit user** icon ( ) in the **Actions** row for the user you want to change.

3. The **Edit User** dialog is opened:



4. Modify the user data as needed.

   Note: The **User ID** can no longer be modified.

   Note: The password fields show 8 bullets and not the actual password. If you click in the password field, both fields will become empty and you will need to enter and confirm a new password that meets the configured password policy.
   In case you clicked in the password field and do not want to change the password, click **Cancel**.

5. Click **OK**.

6. The changes to the user's data are saved.

Deleting a user

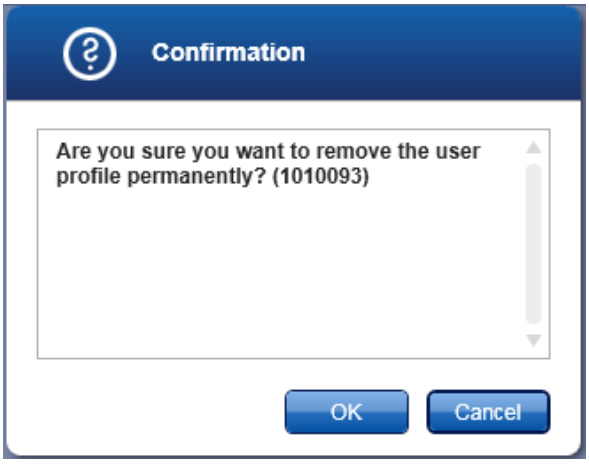
This will permanently delete a user. As an alternative to the permanent deletion, you can temporarily deactivate a user.

1. Open the **User Management** screen by clicking **Configuration** in the main toolbar and then clicking the **User Manager** tab.

2. Click the **Delete user** icon in the **Actions** row for the user you want to delete.

3. The following confirmation dialog is opened:



4. Click **OK** to permanently delete the user.

Activating/deactivating a user

A user profile can temporarily be deactivated and be activated later.

1. Open the **User Management** screen by clicking **Configuration** in the main toolbar and then clicking the **User Manager** tab.
2. Click the **Edit user** icon ( ) in the **Actions** row for the user you want to change.
3. The **Edit User** dialog is opened.
4. Use the **Activate user** check box (Activate user) to activate or deactivate a user:

To activate a user:	Add a check to the check box	☑
To deactivate a user:	Remove the check from the check box	☐

5. Click **OK**.
6. The user will be activated or deactivated according to your changes.

There is an option on the **User Manager** screen to show only activated user profiles. Add or remove the check from the check box to activate or deactivate the option, respectively:

☑ Show only activated user profiles

Note: If you deactivate a user profile while this option is activated, the user profile will not be listed in the **Registered users** table. To show the deactivated user, you must first remove the check from this box to deactivate this option.

5.4.1 Changing password

User passwords may be changed by following the steps below. Each user may change his or her own password.

1. From the **File** menu select **Change password**.
2. The **Change password** dialogs opens.



Change password dialog

3. Enter the current password into the **Old password** field.
4. Enter a new password into the **New password** field, and enter it again in the **Confirm new password** field.

   Note: As long as the entered password does not meet the configured password policy, the **New password** field will remain yellow and a hint will be shown in a tooltip. The **Confirm new password** field will remain yellow if the contents differ from the **New password** field.

   Note: The **No policy** option allows users to set and save an empty password. To set an empty password, leave the **New password** and **Confirm new password** fields empty. However, if the **New password** field remains yellow, this indicates that the **Standard policy** is configured and an empty password is not allowed.

5. Click **OK** to save the new password.

Use the new password for the next login.

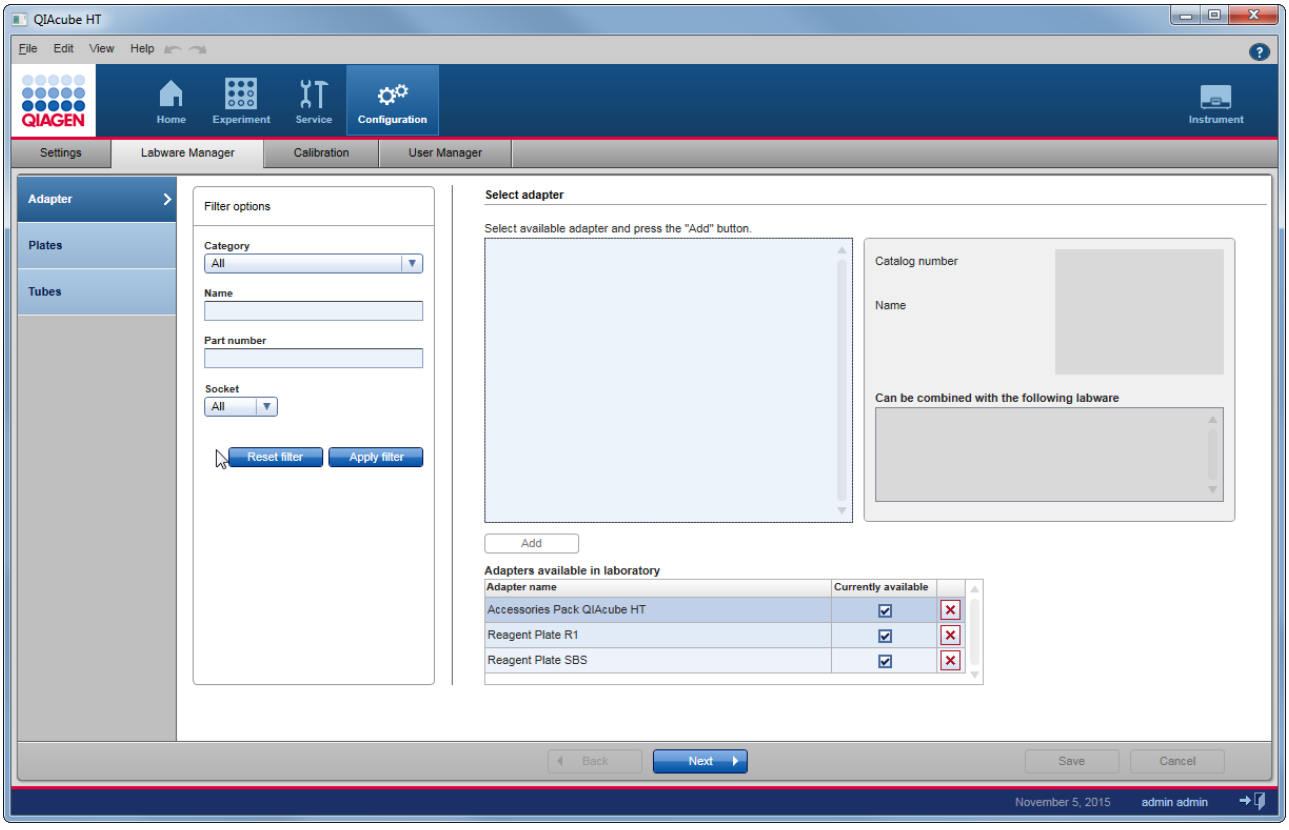
If an empty password has been set, leave the **Password** field empty during login.

5.5 Managing labware

The QIAcube HT Prep Manager contains a labware library that includes all labware supported by the QIAcube HT.

During run setup, the software automatically plans the worktable for the run. As the basis for this plan, you must first indicate which labware (e.g., plates, troughs) is available in your laboratory. This information is managed in the **Labware Manager**.

Access the **Labware Manager** by clicking the **Labware Manager** tab in the **Configuration** environment.



The **Labware Manager** screen contains a step marker with three steps (Adapter, Plates, Tubes) on the left. The software distinguishes between the different labware types, because they must be treated differently during worktable planning:

- Adapter: An adapter is placed on the worktable in order to hold other labware.
- Plates: For example, 96-well plates, 96-well filter plates. Plates occupy an entire worktable position.
- Tubes: 170 ml and 70 ml reagent troughs. Troughs always need an adapter to be placed on the worktable.

The **Filter options** area in the middle is used to search for a specific labware.

The **Select adapter**, **Select plates** or **Select tubes** area on the right shows the search results together with a picture and further details.

Use the **Add** button to confirm and add the selected labware to the **Available in laboratory** list. The **Next** and **Back** buttons in the button bar allow you to advance or move backwards one screen.

Defining a specific labware as available

1. Click **Configuration** to change to the **Configuration** screen.
2. Click the **Labware Manager** tab.
3. The **Labware Manager** screen will be displayed and the **Adapter** step will be active. However, since all adapters that can be used with the QIAcube HT are by default present in the **Available in laboratory** list, this step can be skipped.
4. To proceed to the **Plates step** click **Next** in the button bar or click directly on the **Plates** step.
5. Click **Apply filter** to list all supported plates or use the options in the **Filter options** area to filter for a specific plate.

The available filter options are:

Option	Description
Category	Labware category, such as Standard 96-well, filter plate
Name	Labware name
Part number	Catalog number of the labware
Socket (available in Adapter step only)	Labware suitable for a specific position on the worktable
Manufacturer (not available in Adapter step)	List of labware manufacturers
Tube/Well size (not available in Adapter step)	Always use the default option **All**

Click **Apply filter** to commit your filter query.

6. All plates matching your query are listed in the **Select plate** area.
7. Click on the desired plate and then click **Add** to add it to your **Available in laboratory** list.
8. The selected plate is added to the **Plates available in laboratory** list at the bottom.
9. Click **Save** to save the list of available plates.

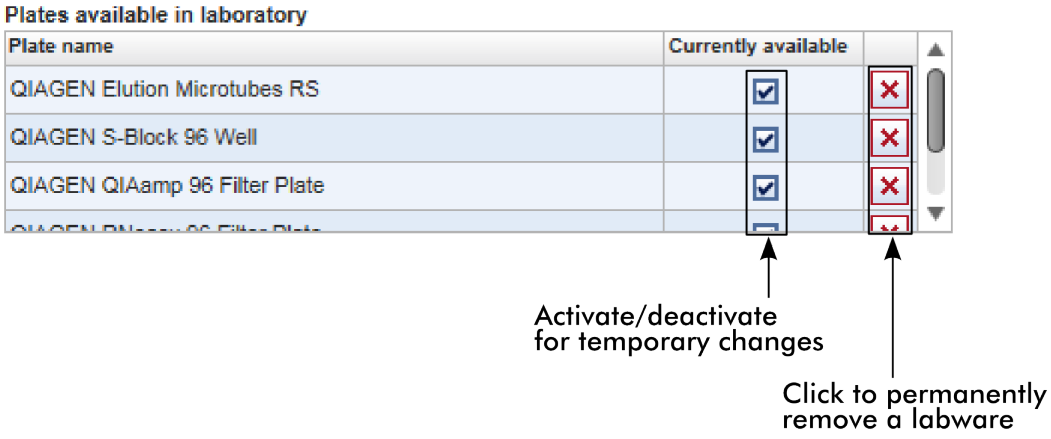
Important: Different plates may have slightly different dimensions, despite a similar appearance. Such differences can significantly affect the calibration settings. Therefore, it is important to select the correct plates. We recommend that once a particular plate type is chosen, to always purchase that consumable to avoid frequent recalibration.

The **Tubes** step can usually be skipped, since both troughs are by default present in the **Tubes available in laboratory** list.

Before the labware can be used, instrument calibration is required.

Removing labware permanently or temporarily

Use the interactive buttons in the **Available in laboratory** list to temporarily or permanently remove a labware. Use the temporary deactivation if a labware is out of stock but will be available later. Remove it permanently if you will not be using this labware in the future. If you permanently remove a labware and then change your mind, you can add the labware again.



To temporarily remove a labware

1. Deactivate the check box in the **Currently available** column.
2. The icon changes from ☑ to ☐.
3. The selected labware will be deactivated and will no longer be available in the **Experiment** environment.

To reactivate the labware, simply activate the check box again.

To permanently remove a labware

1. Click the **Remove labware** icon (✕) in the column of the labware you want to remove.
2. A confirmation dialog will be shown (the text may vary depending on whether you are removing a plate or tube).
3. Click **OK** to permanently remove the selected labware.

Important: Do not remove the adapters temporarily or permanently, because this would result in failure during worktable planning. All adapter types are delivered with instrument, and there are only a few run configurations in which the R1 adapter or the SBS adapter could be omitted. In most cases, both are required for a run to have enough positions available for placing the reagents.

Note: The worktable planning might fail if you remove the large trough. In some situations, there might be not sufficient worktable positions to place the necessary number of small troughs.

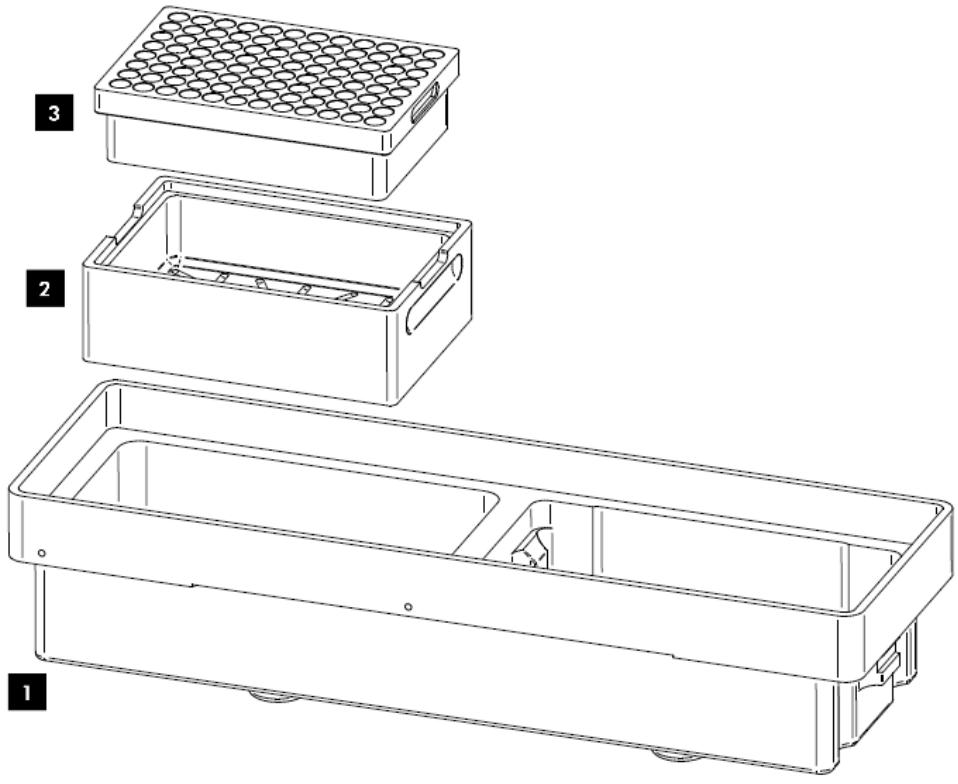
5.6 Assembling the vacuum chamber

The assembly of the vacuum chamber differs for run and calibration.

- Assembly for calibration.
- Assembly for standard purification protocols.

5.6.1 Assembly for calibration

The following figure illustrates the assembly of the vacuum chamber for calibration.



Loading worktable position A1

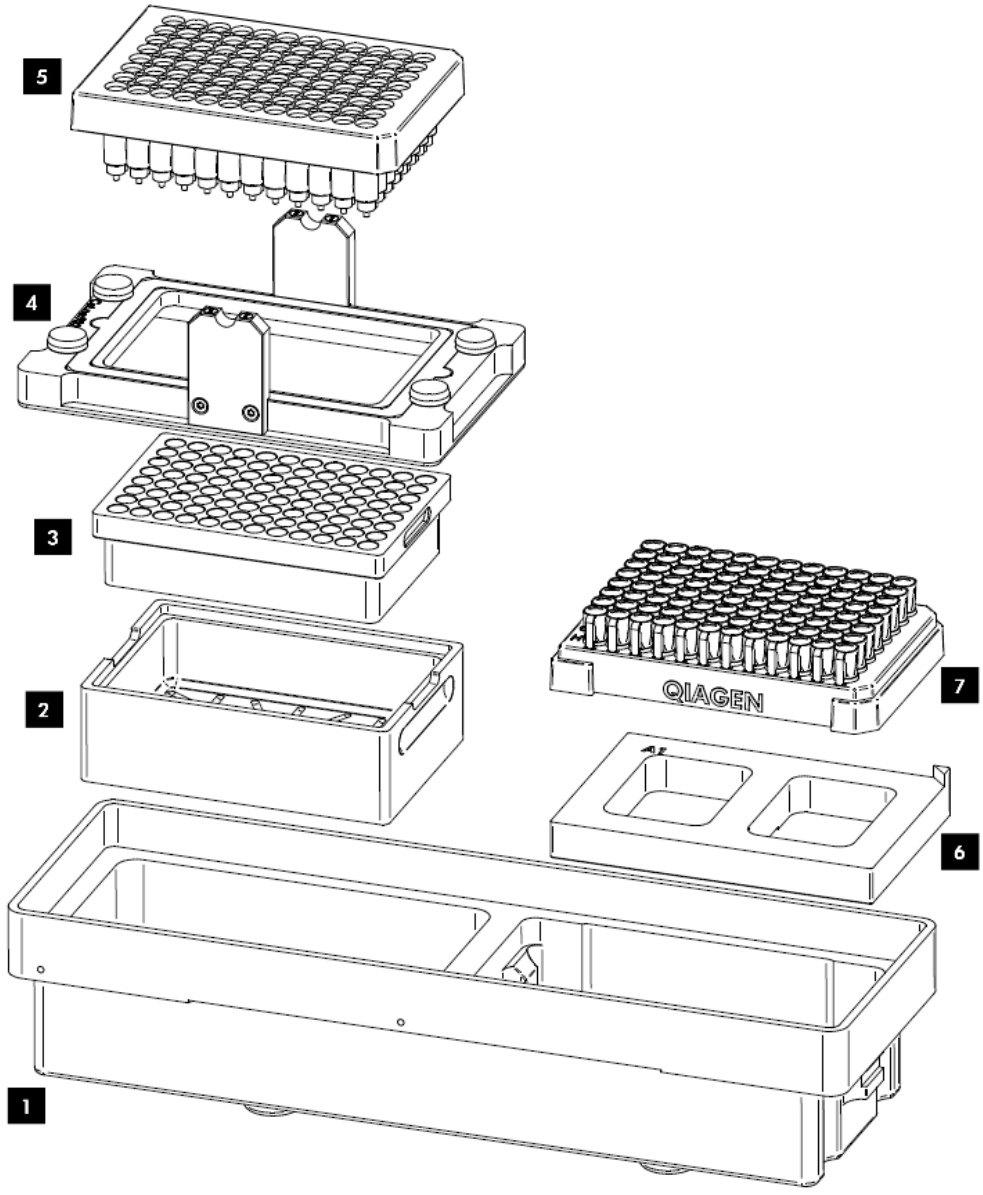
1. Insert the channeling block holder (2) into the left (waste) chamber of the vacuum chamber (1).
2. Push it firmly downwards to engage the outlet into the drain. The channeling block holder (2) is held firmly in place by a rubber O-ring on the outlet.
3. Place the channeling block (3) into the channeling block holder (2).



Note: For worktable position A1, the calibration needs to be performed into the channeling adapter only (i.e., without a filter plate) to increase calibration precision.

5.6.2 Assembly for standard purification protocols

The following figure illustrates the assembly of the vacuum chamber for standard purification protocols.



Loading worktable position A1

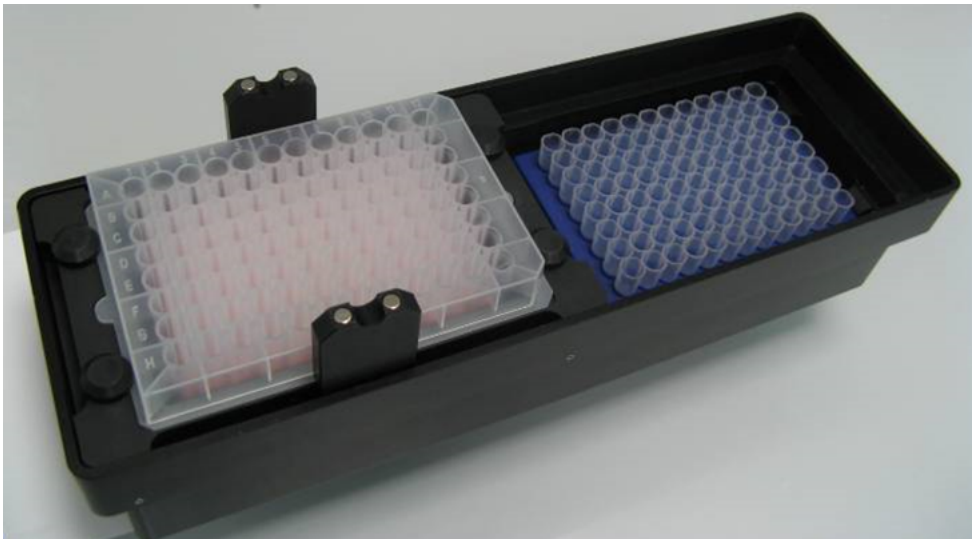
1. Insert the channeling block holder (2) into the left (waste) chamber of the vacuum chamber (1).
2. Push it firmly downwards to engage the outlet into the drain. The channeling block holder (2) is held firmly in place by a rubber O-ring on the outlet.
3. Place the channeling block (3) into the channeling block holder (2).



4. Place the transfer carriage (4) onto the left (waste) chamber of the vacuum chamber (1). Ensure that the transfer carriage is positioned to the left inside the left (waste) chamber of the vacuum chamber.
5. If not all positions will be used during the run, cover the unused wells with a tape sheet. Ensure that the unused positions are completely sealed.
6. Load the filter plate (5) into the transfer carriage (4). Ensure that the filter plate (5) is aligned to the upper left inside the transfer carriage (4) and is completely lying on the transfer carriage gasket.

Loading worktable position A2

7. Place the riser block EMTR (6) in the right (elution) side of the vacuum chamber (1) with the pin of the riser block EMTR in the right top position.
8. Remove the cap from the elution microtubes rack (EMTR) (7) and load the rack into the right (elution) chamber of the vacuum chamber (1).



5.7 Instrument calibration

An instrument calibration must be performed before the QIAcube HT can be used, to ensure precision positioning and pipetting. No runs can be started if the required calibrations have not been performed.

Calibration includes:

- **Volume calibration**

  The actual volume calibration is performed at the manufacturer's site and only requires that the user enters the measured calibration data.
  Volume calibration defines the number of units that the P-axis motor must move to accurately deliver a given volume of liquid.

- **XY- and Z-axis calibration**

  The XY- and Z-axis calibration must be performed at the user´s site and is required for the tip racks and all labware used on the QIAcube HT.

  X- and Y- axis calibration defines the distinct position of a labware on the worktable to ensure proper operation of the instrument. Z-axis calibration defines the worktable height of each labware item to ensure precision of liquid transfers. Before using any items on the worktable, XY- and Z-axis calibration must be performed for each labware item to be used at the desired worktable position.

The electronic lid sensor is disabled during calibration. The robotic arm will move during calibration even if the lid is raised.

WARNING/ CAUTION	**Risk of personal injury** [W7] The robotic arm moves during position calibration while the instrument lid is raised. Never click any buttons while parts of your body are within the instrument workspace

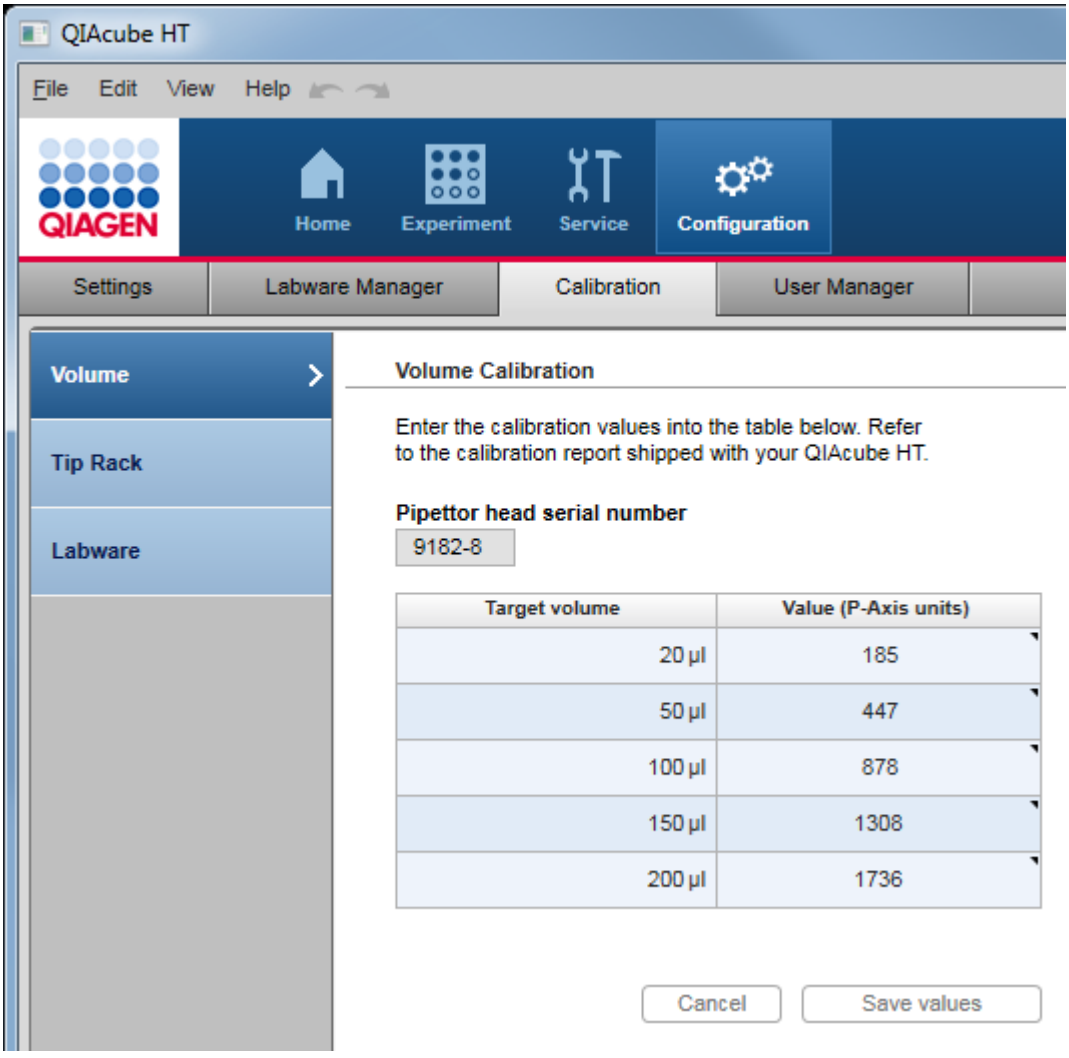
WARNING	**Moving parts** [W12] Avoid contact with moving parts during operation of the QIAcube HT. Under no circumstances should you place your hands under the pipetting arm when it is lowering. Do not attempt to move any plates or tubes while the instrument is operating.

Important: Clicking on **Perform calibration** or a positioning button will immediately move the robotic arm in the selected direction for a specific movement step.

To ensure your personal safety:

- Always stand clear of the instrument when starting calibration or making adjustments.
- Do not click any of the software buttons with the mouse or press any of the keys on the keyboard while parts of your body are within the instrument worktable or when looking closely at calibration positions.
- Wait until the robotic arm has completed its movements before moving any plates or troughs.

The calibration tasks are bundled in the **Calibration** tab of the **Configuration** environment. All calibration steps are built in a wizard-style format that allows you to move forward or backward one screen using the **Next** or **Back** button in the button bar, respectively.



The calibration comprises the following steps:

Calibration step	Description
Volume	Enter the volume calibration data that was shipped with the instrument in the calibration report. No further interaction is required. See Calibrate volumes.
Tip Rack	Perform and manually correct the XY- axis calibration of the tip rack. See Calibrate tip racks.
Labware	Perform XY- and Z-axis calibration for all labware that will be used on the QIAcube HT. See Calibrate labware. Select the labware, the corresponding adapter(s) and the worktable position for which the labware should be calibrated, and add to a calibration work list. Based on the work list, the labware calibration wizard will guide you through all XY-axis calibrations, followed by the Z-axis calibrations for each selected labware. Manually correct the XY-axis calibration for each XY-axis calibration step. It is strongly recommended to perform the Z-axis calibration automatically whenever possible. However, the software also provides the possibility to perform Z-axis calibration manually.

Note: QIAGEN recommends that you follow the steps from top to bottom starting with the **Volume calibration** and finishing with the **Labware calibration** step. For the first calibration, this order is required, and the next step will only be available after the previous step has been completed.

Note: If the QIAcube HT is moved, we recommend recalibration, starting from step **Tip Rack**. Click on the **Tip Rack** step to start there.

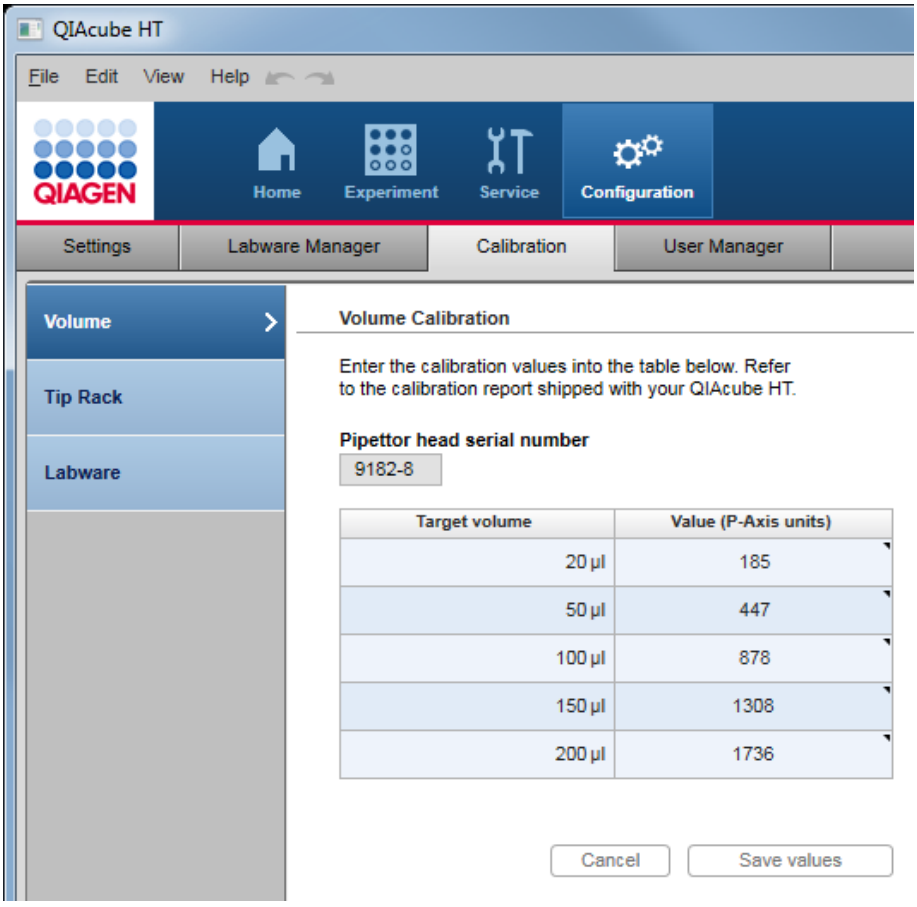
Note: After servicing the pipettor head, recalibration is required, starting from step **Volume**.

Note: Calibration data can be saved and restored for backup purposes using the **Export calibration data** and **Import** buttons at the bottom of the screen. For details, see Saving and restoring calibration data.

5.7.1 Calibrate volumes

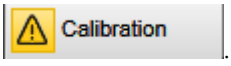
Volume calibration defines the number of units that the P-axis motor must move to accurately deliver a given volume of liquid.

The QIAcube HT is shipped with a calibration report. The data in this calibration report have been measured and adjusted by the manufacturer individually for each individual pipettor head to ensure accuracy of volumes. The data in the calibration report must be entered in the software before the QIAcube HT can be used.



Follow these steps to enter the volume calibration data:

1. Click on **Configuration** to change to the **Configuration** screen.
2. Click on the **Calibration** tab.

   Note: If the instrument is not connected, there will be a warning sign on the **Calibration** tab: 

. When you click it, a message will be displayed that the instrument needs to be connected first. The volume step will be displayed without the pipettor head serial number and with the column **Value (P-axis units)** empty. No calibration functionality will be available, because all calibration information is related to an individual pipettor head. In this case, connect the instrument and relaunch the software.
3. The **Volume** step is displayed by default.
4. Enter the pipettor head serial number from the calibration report into the **Pipettor head serial number** field. Ensure that the calibration report shows the same serial number.

   Note: If no volume calibration data has been saved yet for this pipettor head, the cells of the **Value** column are empty. They are displayed in yellow to indicate that a value is mandatory.
5. For the first target volume entry in the table (20 µl) enter the corresponding P-axis value from the calibration report to the **Value** column. Press the **Enter** key to confirm and to navigate to the next entry.

6. Repeat the previous step for all volumes from 50 µl to 200 µl.
7. Click **Save values** to save the data or click **Cancel** to cancel the volume data input and revert any values to their previous values.

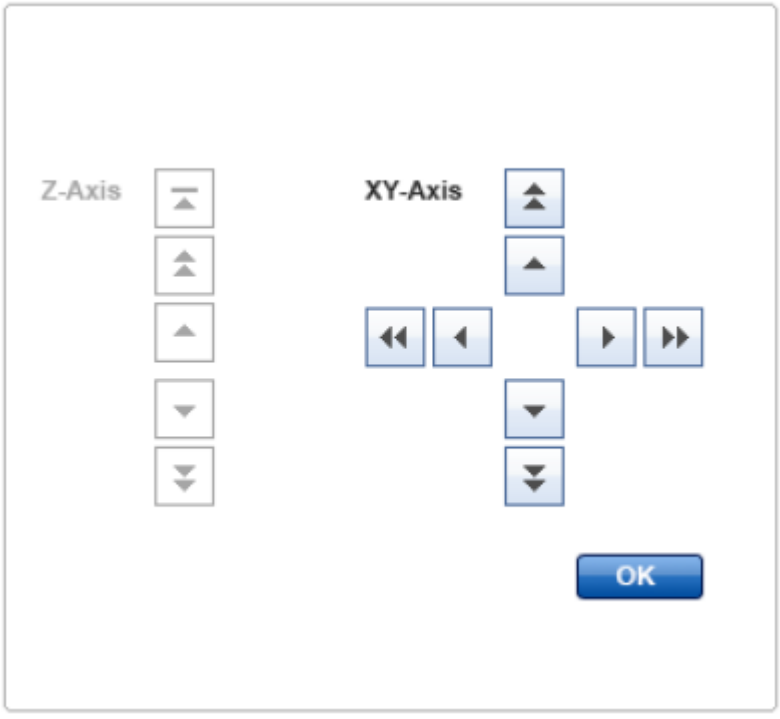
Click the **Next** button to continue with **Tip Rack** calibration.

Note: The **Next** button is available only if volume calibration data for the current pipettor head have been saved.

5.7.2 Calibration positioning buttons

For corrections to calibration positions, the software provides several positioning buttons.

The positioning buttons are arranged in two groups, one for the Z-axis and one for the XY-axis.

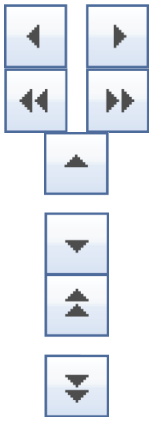


The following table shows the movement steps for the positioning buttons:

Z-axis

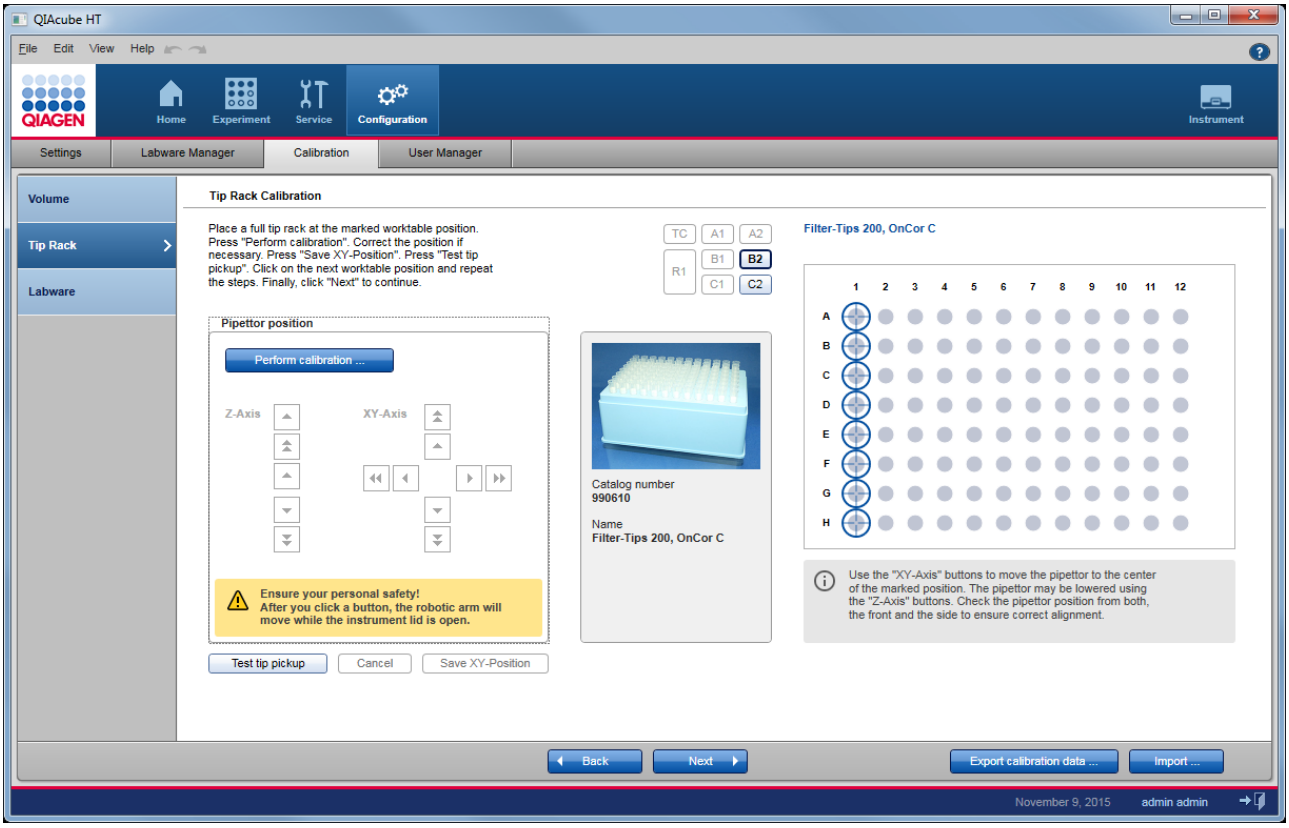
Button	Movement
	Moves up to the highest possible position (Z-home) Slow up Slow down Fast up Fast down

XY-axis

Button	Movement
	Slow left / slow right Fast left / fast right Slow forward Slow backward Fast forward Fast backward

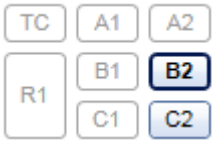
5.7.3 Calibrate tip racks

The tip rack calibration is essential to ensure a reliable pickup of tips. Tip rack calibration is available only if the volume calibration has already been performed.

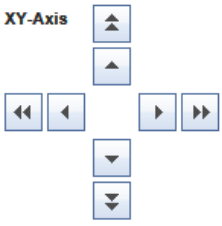


Proceed as follows:

1. Carefully place full tip racks in worktable positions B2 and C2.
2. If not activated, click **B2** from the worktable selector:



3. Keep the lid open during the calibration procedure.
4. Click **Perform calibration** to start the calibration. The pipettor head starts to move and positions itself above column 1 of the rack in worktable position B2.
5. Carefully inspect whether the pipettor head is positioned over the center of the tips in column 1. Look from the front and from the side. In case you have difficulties seeing the position, use the buttons of the Z-axis position control to lift and lower the pipettor head.
6. Adjust the XY-positioning manually. Use the buttons of the XY-axis control to position the pipettor head directly centered just above the positions of column 1. For details about the buttons, refer to Calibration positioning buttons.



7. Click **Save XY-Position** to save the calibration data for tips at worktable position B2.
8. A message pops up indicating that the pipettor will move to the home position. Confirm and stand clear of the instrument while the pipettor is moving.
9. To test if the calibration was successful, click **Test tip pickup** (see below).
10. Click the **Next** button in the button bar or **C2** from the worktable selector and repeat steps 4 to 9 for the tip rack at worktable position C2.
11. Continue with the next calibration step either by clicking **Next** in the button bar or **Labware** in the step marker.

Note: For tip racks no Z-calibration is performed.

Testing the tip rack calibration

The following procedure starts a test to determine whether the calibration of the tip rack was successful. During the test, the pipettor head moves to the tip rack, picks up a column of tips and drops them at the tip chute.

1. If not activated, click the worktable position you want to test: **B2** or **C2**.
2. Click the **Test tip pickup** button to start the test.

   Note: The button is active only if a calibration has been already performed on that worktable position.

3. The pipettor head moves to the tip chute, ejects the attached tips and picks up the next available column of tips from the tip rack at the selected worktable position.
4. Confirm the message with **OK**. If the tip pickup failed, repeat the tip rack calibration for the selected worktable position. If the instrument picked up the tips successfully, continue with the next calibration.

5.7.4 Calibrate labware

All labware and adapters must be calibrated before they can be used, to ensure that the pipettor knows their exact positions on the worktable. In addition, if a certain labware will be used on several worktable positions, it must be calibrated on all of these worktable positions.

Labware calibration is performed in the software using a convenient wizard, which guides users through all necessary steps for the set of labware to be calibrated.

The first step of labware calibration is to select the set of labware (or labware/adapter combinations) and the worktable positions on which the labware will be calibrated. This information is collected in the work list. See Select labware to calibrate. The calibration wizard will then guide the user through the following calibration steps.

The second step is the preparation of the worktable, i.e., placing required tips. See Prepare worktable for labware calibration.

In several steps, all labware and labware/adapter combinations will be XY-axis calibrated on the worktable positions as defined in the work list, one step for each labware or labware/adapter combination in a specific worktable position. The user will correct the XY-positioning manually and save the calibration data for each step, before continuing with the next step. See Calibrate X- and Y-axis.

Afterwards, in several steps, all labware and labware/adapter combinations, except for filter plates, will be Z-axis calibrated, one step for each labware and labware/adapter combination in the work list. For most labware, the software provides an automatic Z-axis calibration function, which should be used whenever possible. However, it is also possible to decide on each step individually to calibrate the Z-axis manually. Calibration data needs to be saved for each step, before continuing with the next step. See Calibrate Z-axis.

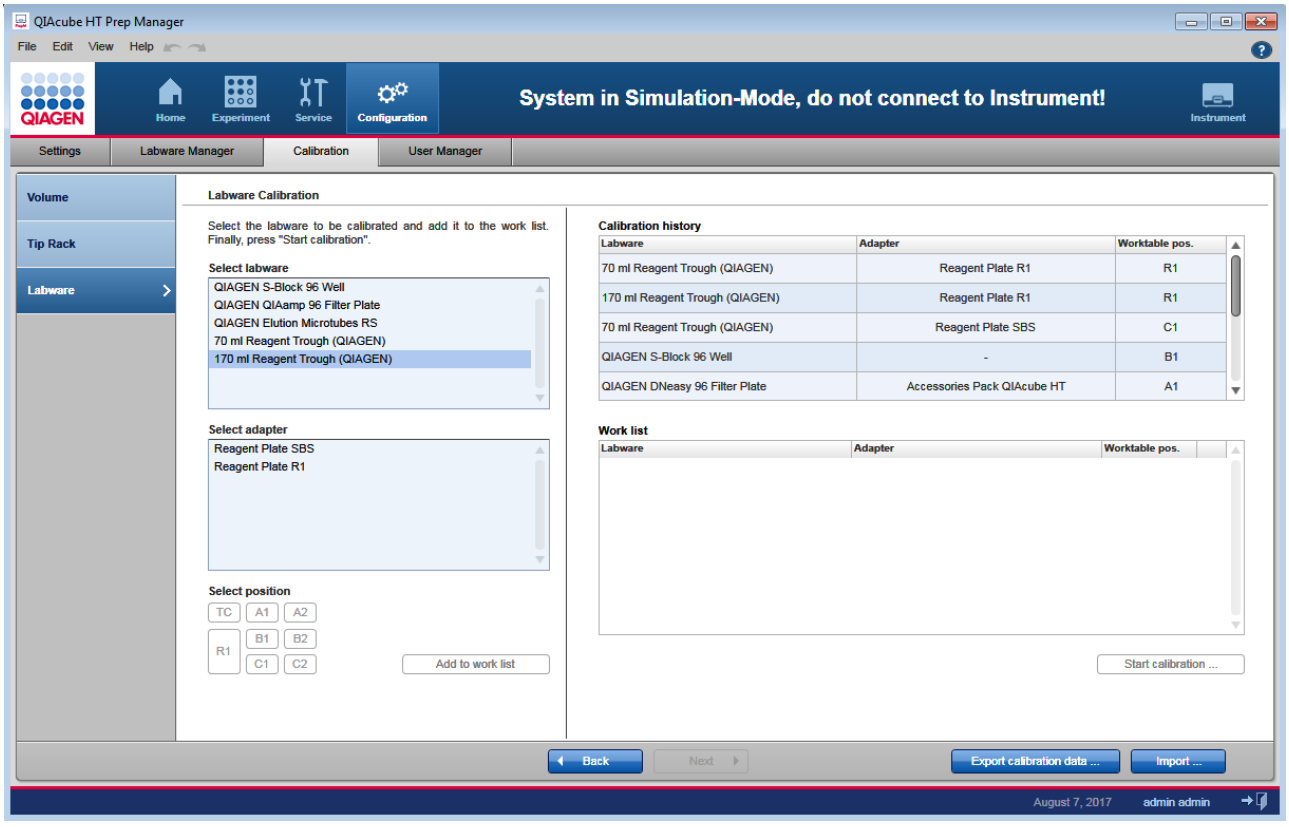
5.7.4.1 Select labware to calibrate

The first step of labware calibration is to select a set of labware along with the adapters and worktable positions on which the labware will be calibrated in the work list. Initially, the work list is empty.

The labware calibration step will only be available if all previous calibration steps have been previously performed.

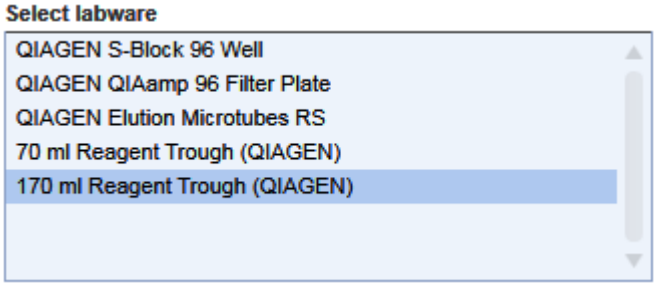
All labware that has already been calibrated for the currently connected instrument will be listed in the **Calibration history** table. Initially, the table is empty.

Note: The calibration history will also be empty after the pipettor head has been changed, because calibration data are individual for an instrument and a pipettor head.



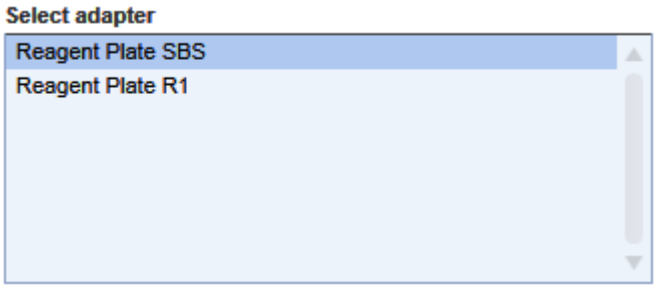
Follow these steps to define the list of labware that should be calibrated:

1. Select the desired labware from the **Select labware** list. Only one item can be selected.

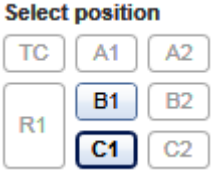


Note: The list contains all labware that has been made available in the **Labware Manager**. If a labware item is missing, make it available in the **Labware Manager** first. For details refer to chapter Managing labware.

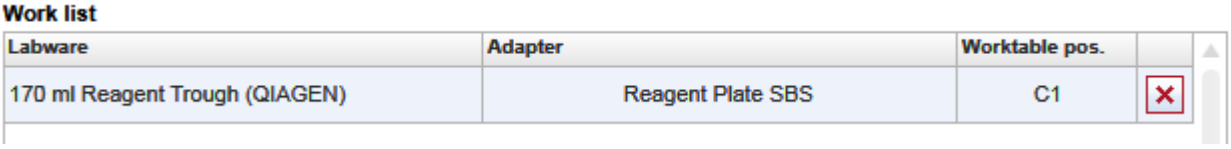
2. If the selected labware requires an adapter, select the desired adapter from the **Select adapter** list. Only one item can be selected.



3. Select the worktable position in which the selected labware will be used. Only one position can be selected.



4. Click **Add to work list** to save the selected combination of labware, adapter (optional) and position to the work list. The combination is added to the **Work list** table:



5. Repeat steps 1–4 for all labware, adapter and worktable position combinations to be calibrated together in a session.
6. Finally, click **Start calibration** to start the calibration wizard. Based on the work list, the wizard creates the necessary XY-axis and Z-axis calibrations. After all calibration steps have been performed, all items from the work list will appear in the calibration history table, and the work list will be empty.

   Note: If the calibration wizard is canceled, the work list will still contain the items that have not been completely calibrated.

Note: A labware item is correctly calibrated only if both XY- and Z-calibration have been performed. When creating the work list, take into account the time required for a complete calibration. Sometimes it is better to create a smaller work list and to calibrate the labware in subsets.

Note: Filter plates do not need Z-axis calibration.

It is not necessary to calibrate every labware on every worktable position. As a starting point, use the following recommendations as a guide:

Note: For special positioning requirements refer to the kit handbook of the kit you intend to use.

- Calibrate labware that will contain the samples (input) on worktable position B1. Most protocols use B1 as sample input position.
- Select one of the filter plates to be calibrated on A1.

  Note: Worktable position A1 needs to be XY-calibrated only once. To increase calibration precision the calibration will be performed into the channeling adapter, only (see Assembly for calibration).

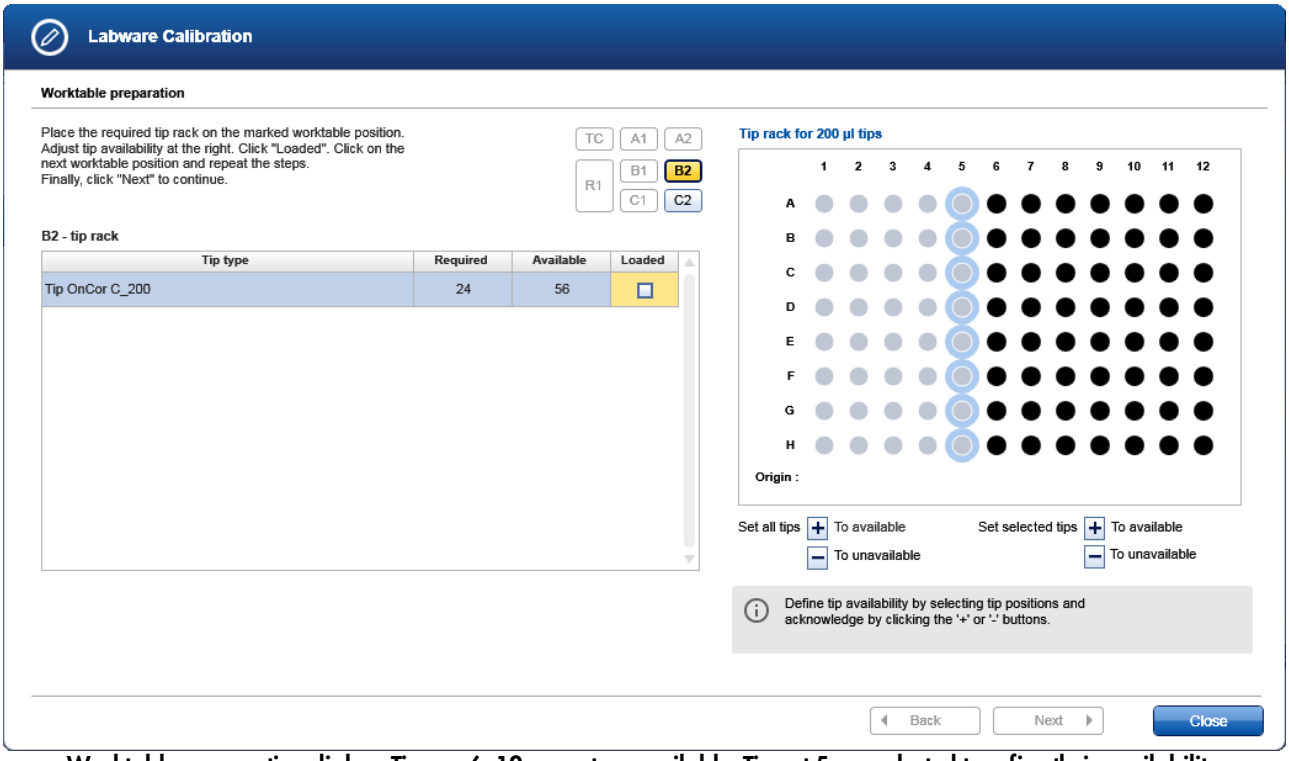
  Note: Filter plates will not be Z-calibrated to avoid damage of the filter.
- Calibrate both kinds of troughs on worktable position R1 with the Reagent Plate R1 adapter and on worktable position C1 with the Reagent Plate SBS adapter.

  Note: 170 ml troughs will not be XY-calibrated themselves, but will be replaced by 70ml troughs during XY-calibration, instead. However, during Z-calibration, again the 170 ml will be used.

Note: No labware needs to be calibrated on worktable position A2, because this is already covered by calibration of position A1.

5.7.4.2 Prepare worktable for labware calibration

The worktable must be prepared with tip racks before the labware calibration can be started. The required number of tips will be displayed in the **Required** column of the **Worktable preparation** dialog. Use the tip availability buttons at the bottom right of the dialog to define the available tip positions.



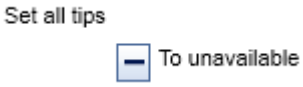
Worktable preparation dialog. Tips on 6–12 are set as available. Tips at 5 are selected to refine their availability.

Preparing the worktable

1. Place the tip rack containing a sufficient number of tips in worktable position B2.

   The dialog displays the required number of tips in the **Required** column of the table. Initially, the button B2 is displayed in yellow to indicate that the number of available tips, initially set to zero, is insufficient and that the loaded state has not yet been confirmed.

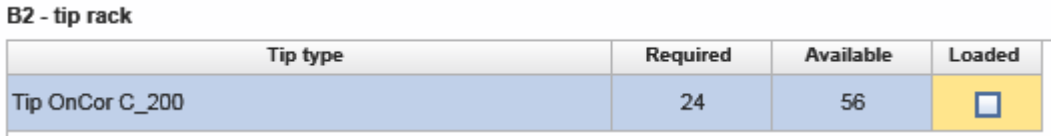
2. A visualization of the tip rack is displayed on the right. Use the tip availability buttons below the rack graphic to set the availability of the rack.

Option	Required action
To set all tips to available	Click on: 
To set all tips to unavailable	Click on: 
To set selected tips to available	Select the desired tip columns (use drag and drop and hold the **CTRL** key to select single tip columns). Then click on: 
To set the selected tips to unavailable	Click on: 

Available tip positions are displayed in dark color (columns 6–12 in the screen above), and unavailable positions are displayed in grey (columns 1–5). Selected tips are surrounded by a light blue circle (column 5).

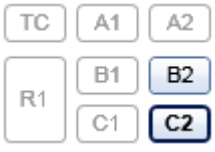
Note: Ensure that the visualization on the screen is identical to the actual tip loading of the tip rack on the worktable.

3. Click the **Loaded** check box in the last column of the tip rack table on the left to confirm that you have loaded the tip rack onto the worktable. The color changes from yellow to blue:



Note: The **Loaded** check box is enabled only, if a full tip rack or a tip rack with a sufficient number of tips has been placed.

4. If more than 96 tips are required, or if you want to load an additional tip rack, click **C2** in the worktable position:



5. Place the tip rack into worktable position C2.
6. Repeat steps 2–3 for the tip rack at position C2.
7. Once you have placed a sufficient number of available tips and have confirmed the Loaded state at least for tip rack

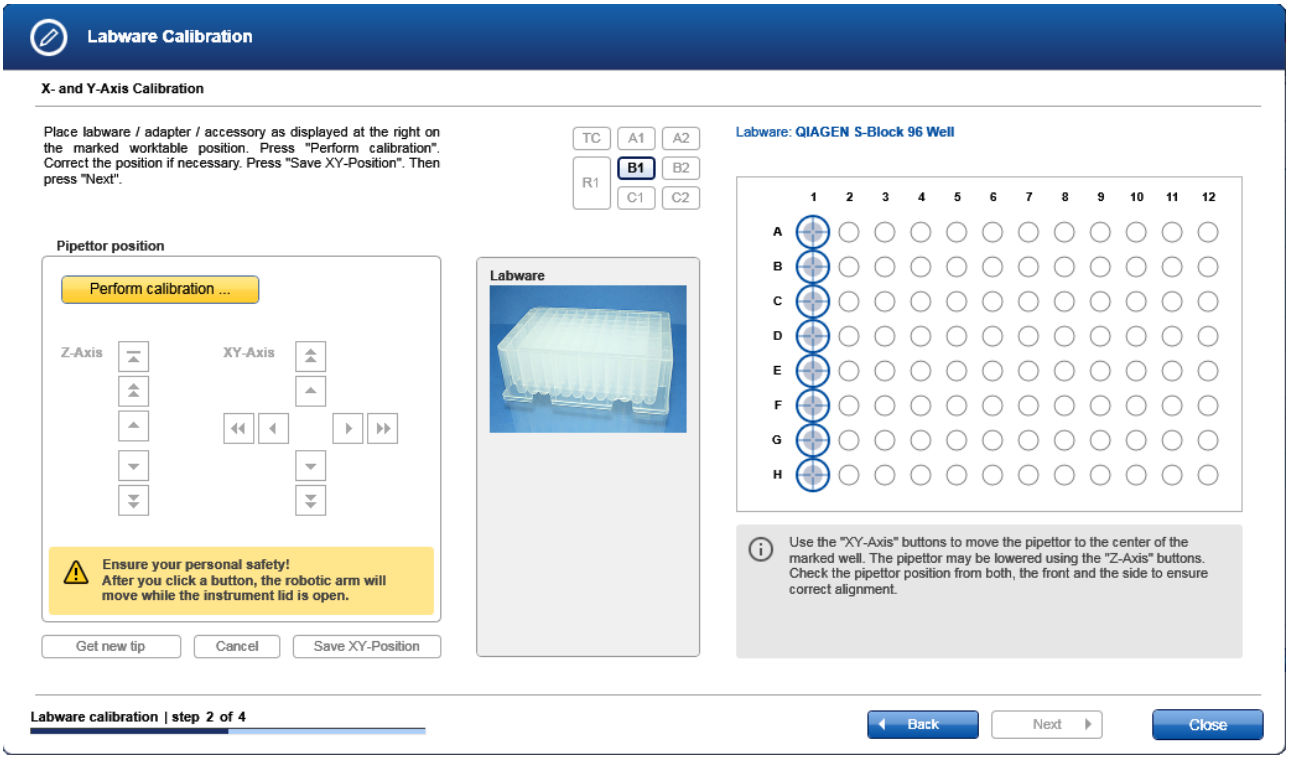
on B2, the **Next** button will be activated.

8. Click **Next** to continue to the next step, the XY-axis calibration of the labware.

5.7.4.3 Calibrate X- and Y-axis

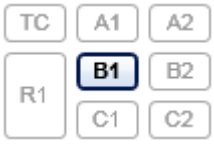
Each individual XY-axis calibration step is provided in a separate screen.

The calibration positioning buttons are displayed on the left side of the window, along with advice and notifications regarding the calibration. An image of the labware or labware/adapter combination to be calibrated in this step is displayed in the center. The name of the labware or names of the labware/adapter combination is displayed on the right side. The graphic on the right shows a schematic of the labware with the position used for the calibration marked with crosshairs. A progress bar is displayed at the bottom left indicating the number of calibration steps remaining for the actual work list.



To perform XY-axis calibration for one labware item, follow the steps below:

1. Place the labware, adapter or accessory listed at the top right onto the worktable position indicated in the worktable indicator:

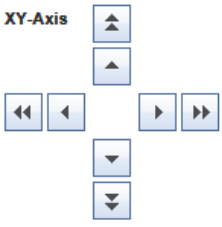


For worktable position A1, follow the loading instruction described in Assembly for calibration.

Note: For worktable position A1, the calibration needs to be performed into the channeling adapter, only (i.e., without a filter plate) to increase calibration precision.

Note: Although a 170 ml trough has been selected for calibration, the software will prompt you to place a 70 ml trough for the XY-calibration step. This is because it is easier see whether the pipettor head is centered using the smaller trough, increasing the accuracy of the calibration.

2. Click **Perform calibration** to start the XY-axis calibration.
3. The pipettor head starts moving and positions itself above the dedicated calibration position (marked with crosshairs in the schematic).
4. Optional step: If no tips are attached to the pipettor head, click **Get new tip**. The pipettor head picks up the next column of tips and returns to the dedicated calibration position.
5. Carefully inspect whether the pipettor head is positioned in the center of the marked position. Look from the front and from the side. In case you have difficulties seeing the positioning, use the buttons of the Z-axis position control to lift and lower the pipettor head. Adjust the XY-positioning manually. Use the buttons of the XY-axis control to position the pipettor head directly centered above the calibration position. For details about the buttons, refer to Calibration positioning buttons.



Note: For worktable position A1 it is important that you lower the tips to carefully center in the first column of the channeling block.

6. Click **Save XY-position** to save the XY-calibration position. A message will be displayed, and the pipettor head will move to the home position, while keeping an attached tip. Alternatively, click **Cancel** and repeat from step 2 on.

   Note: For worktable position A1, only one XY-calibration value will be saved. This means that any following XY-calibration for any labware on A1 will overwrite this calibration value.

7. Click **Next** to move forward to the next calibration step.

   Note: The **Next** button will only be activated after the **Save XY-position** button has been clicked.

   Note: If the work list contains remaining XY-calibrations for any labware, the next step will be the XY-calibration for the next labware item. The first Z-calibration step will only be displayed once all XY-calibration steps for the work list have been performed.

   Note: If the worklist contained only filter plates, no Z-calibration step will follow to avoid damage of the filters. Then after the last XY-calibration step, click the **Close** button to finish the labware calibration wizard.

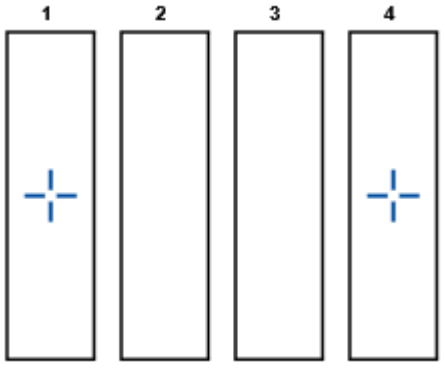
You can return to the previous calibration step by clicking the **Back** button. From the first calibration step, this will lead back to the initial screen of the labware calibration (work list).

You can stop the labware calibration by clicking the **Close** button on the bottom right. In this case, none of the labware items from the work list are completely calibrated, because all Z-calibrations must still be performed. The labware calibration wizard will be closed and the initial labware calibration screen will be shown. All labware items will remain in the work list, allowing you to start calibration again at a later time.

5.7.4.4 Calibrate Z-axis

Each individual Z-axis calibration step is provided in a separate screen. The first Z-calibration step will only be displayed after all of the XY-calibration steps for the work list have been performed.

The screen is very similar to the XY-calibration screen. The graphic on the right shows a schematic of the labware with the positions used for the calibration marked with crosshairs.

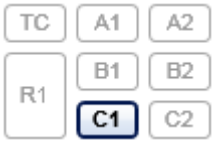


Example in which two different positions are used for Z-axis calibration.

To perform Z-axis calibration for one labware item, follow the steps below:

1. Place the labware and adapter listed at the top right onto the worktable position indicated in the worktable indicator.

   For troughs, ensure that troughs are placed in all positions marked with crosshairs in the schematic. Use the scroll bars of the schematic to scroll down, in case some labware positions are not visible.



2. You can either perform an automatic calibration by leaving the check box next to **Automatic** activated or make a manual calibration by deactivating the option. We recommend using the automatic calibration option whenever possible.



Automatic variant selected.

3. Click the **Perform calibration...** button. The pipettor head ejects the tips, picks up a new column of tips and moves to the calibration position.
4. The pipettor head automatically moves down to the bottom of the labware and repeats this procedure with a new column of tips for all calibration positions marked with crosshairs.

5. Click **Save Z-position** to save the Z-axis calibration data.
6. Click **Next** to move forward to the next Z-calibration step, or click **Close** if this was the last calibration step. To determine if this was the last calibration step, look at the progress bar in the lower left of the window.

   Note: The **Next** button will only be activated after clicking the **Save Z-position** button, if there is a following Z-calibration step. The **Next** button is not activated after the last step.

You can return to the previous calibration step by clicking the **Back** button. From the first calibration step, this will lead back to the initial screen of the labware calibration (work list).

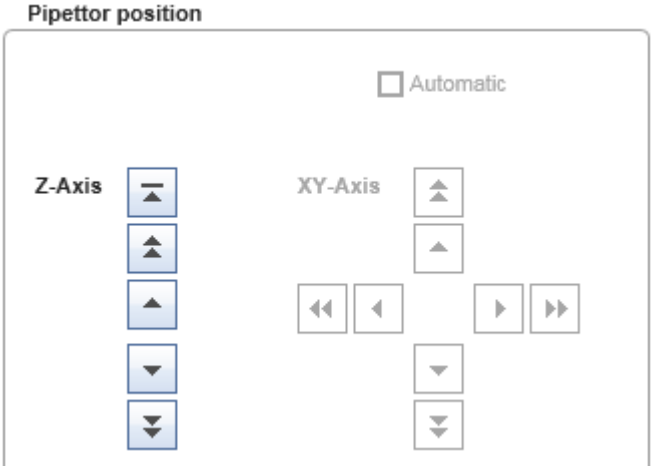
You can stop the labware calibration by clicking the **Close** button at the bottom right. Only the labware items from the work list for which both the XY- and Z-calibrations have been performed are completely calibrated. The labware calibration wizard will be closed and the initial labware calibration screen will be shown. All labware items which have not been completely calibrated will remain in the work list, allowing you to start calibration again at a later time.

Note: Filter plates will not be Z-calibrated to avoid damage of the filter.

Manual calibration

Note: We recommend using the automatic calibration option whenever possible.

1. Click the **Perform calibration…** button. The pipettor head ejects the tips and picks up a new column of tips.
2. The pipettor head moves to the calibration position. There is only one calibration position for the manual calibration procedure. The Z-axis positioning buttons become activated.
3. Click **Get new tip**. The pipettor head picks up the next column of tips and returns to the calibration position.
4. Use the Z-axis positioning buttons to carefully lower the tip so that it is close to the base of the trough or well (approximately 0.5 mm above trough or well base). The distance may be checked by carefully lifting the well from its support. In case a tip is damaged, click **Get new tip** and repeat to ensure a good calibration result.



5. Click **Save Z-Position** to save the Z-axis calibration data. Alternatively, click **Cancel** and repeat from step 3 on.
6. Click **Next** to move forward to the next Z-calibration step, or click **Close** if this was the last calibration step. To determine if this was the last calibration step, look at the progress bar in the lower left of the window.

   Note: The **Next** button will only be activated after clicking the **Save Z-position** button, if there is a following Z-calibration step. The **Next** button is not activated after the last step.

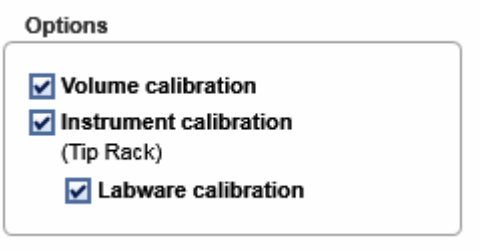
5.7.5 Saving and importing calibration data

The QIAcube HT Prep Manager includes a function to save and restore the calibration data. Use this function if for any reason another computer will be used to control the QIAcube HT, or if the QIAcube HT Prep Manager must be reinstalled.

Calibration data files have the file extension ***.xcd**.

Saving calibration data

1. Click the **Export calibration data** button in the button bar.
2. The file dialog is shown.
3. Select the target directory and enter a file name.
4. **Optional step**: Select the desired information to be saved by activating the corresponding check boxes:



Option	Description
Volume calibration	Include volume calibration data.
Instrument calibration	Include general instrument calibration data (e.g., for tip rack) **Note**: Instrument calibration data can only be saved together with volume calibration data.
Labware calibration	Include labware calibration data. **Note**: Labware calibration data can only be saved together with volume and general instrument calibration data.

Note: If you intend to change the laptop that controls the QIAcube HT or if the QIAcube HT Prep Manager needs to be reinstalled, check all options.

5. Click **OK** to confirm and close the file dialog.
6. The calibration data will be saved under the provided file name with the file extension **.xcd**.

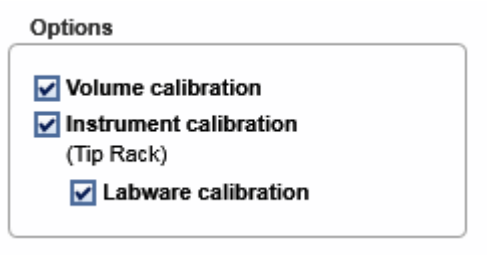
Importing calibration data

To import calibration data that was previously saved on another laptop for the currently connected QIAcube HT, proceed as follows.

Note: The import function will only be available if volume calibration has already been performed. This ensures that only

calibration data that match the current instrument and pipettor head are imported.

1. Click on **Import** in the button bar.
2. The file dialog is shown.
3. Navigate to the directory containing the calibration data file and select it.
4. From the options area of the file dialog, select the calibration data you want to import by activating the corresponding check boxes.



Option	Description
Volume calibration	Include volume calibration data
Instrument calibration	Include general instrument calibration data (e.g., for tip rack) **Note**: Instrument calibration data can only be imported together with volume calibration data.
Labware calibration	Include labware calibration data. **Note**: Labware calibration data can only be imported together with volume and general instrument calibration data. **Important**: If you have already calibrated labware using this laptop before importing, use this option cautiously. Importing the labware calibration data may result in a situation in which data for labware items that are not part of the file will be kept, and calibration data for labware items that are part of the file will be replaced.

Note: If you changed the laptop that controls the QIAcube HT or if the QIAcube HT Prep Manager has been reinstalled, check all options.

5. Click **Open** to import the selected calibration data set from the selected calibration file.

   Note: If the selected calibration data file to be imported does not correspond to the current instrument and pipettor head, the import will be declined.

   Note: During import, the selected calibration data will be read from the file, and will replace the current data as appropriate.

6. The selected calibration data will be imported and will be used for subsequent runs.

Operating procedures

6 Operating procedures

This section describes how to operate the QIAcube HT.

Before proceeding, we recommend that you familiarize yourself with the features of the QIAcube HT by referring to the sections General description and QIAcube HT Prep Manager Software.

The QIAcube HT lid must remain closed during operation of the instrument. Only open the lid when the instrument is not operating or when instructed to do so by the software.

Note: Opening the lid during operation of the QIAcube HT will cause the system to pause. The instrument will complete the current movement, which may take up to 10 seconds.

WARNING/ CAUTION 	**Risk of personal injury and material damage** [W4] Do not attempt to move the QIAcube HT during operation.

WARNING 	**Moving parts** [W12] Avoid contact with moving parts during operation of the QIAcube HT. Under no circumstances should you place your hands under the pipetting arm when it is lowering. Do not attempt to move any plates or tubes while the instrument is operating.

WARNING 	**Moving parts** [W15] To avoid contact with moving parts during operation of the QIAcube HT, the instrument must be operated with the lid closed. If the lid sensor is not functioning correctly, contact QIAGEN Technical Services.

6.1 Starting a run

Before starting a run, read the kit handbook for the kit that will be used.

To start a new run, proceed as follows:

1. Start the QIAcube HT Prep Manager (see Start the software) if it is not yet operating.

   Note: For the first steps, the instrument does not need to be switched on.

2. If the **Home** screen is not visible, click on the **Home** icon from the main tool bar.

   Note: Refer to section Working with experiments for more information how to work with the **Home** screen.

3. Create a new experiment using one of the following alternatives:

   a) Create a new empty experiment by clicking an entry in the **Create Experiment** list. For details refer to Create an empty experiment.

b) Use a template to create an experiment by clicking on it from the **Favorite Templates** list. If the desired template is not listed here, click on the **Create from other template** button at the bottom to open the file dialog. For details refer to Create an experiment using a template.

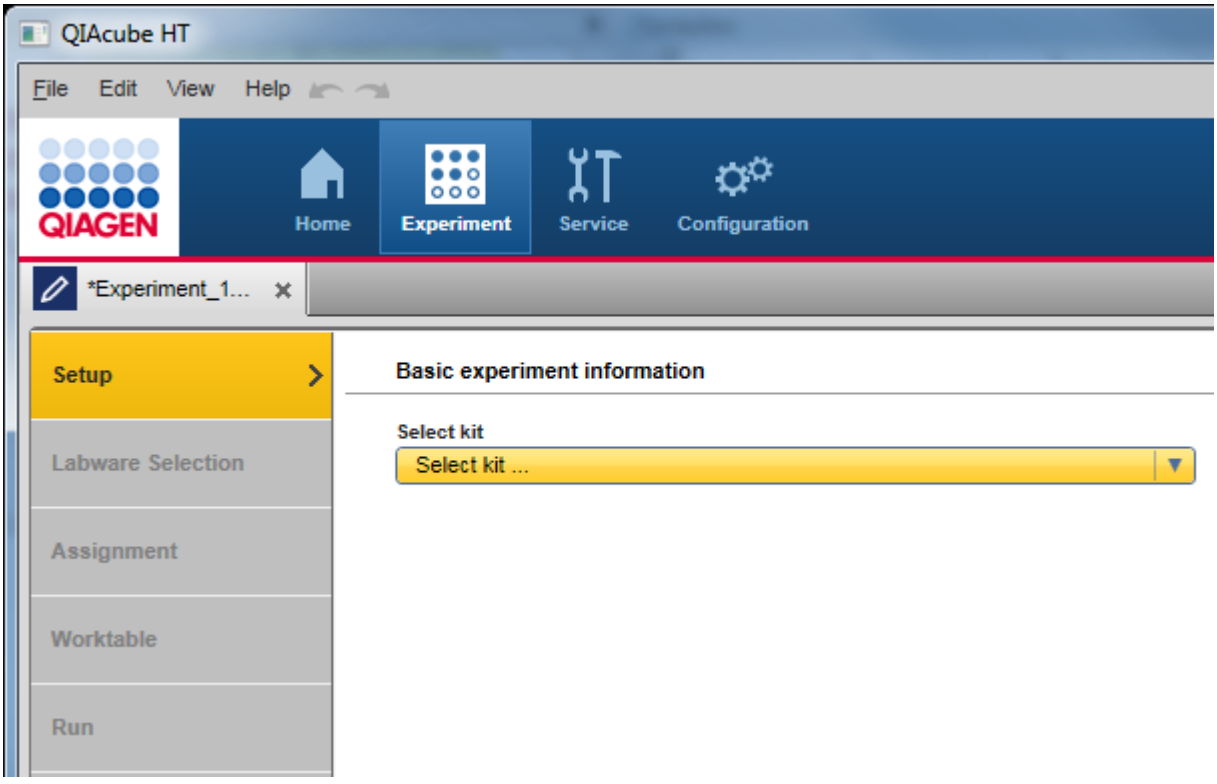
c) Use a saved experiment as the starting point for the new experiment. In the **Recent Experiments** list, position the mouse pointer over the name of the desired experiment and select the **Use as template for new experiment** option from the context menu icon that appears. For details refer to Create an experiment from an existing experiment.

The new experiment will be created and displayed in the **Experiment** environment. Refer to section Experiments for information about the screen.

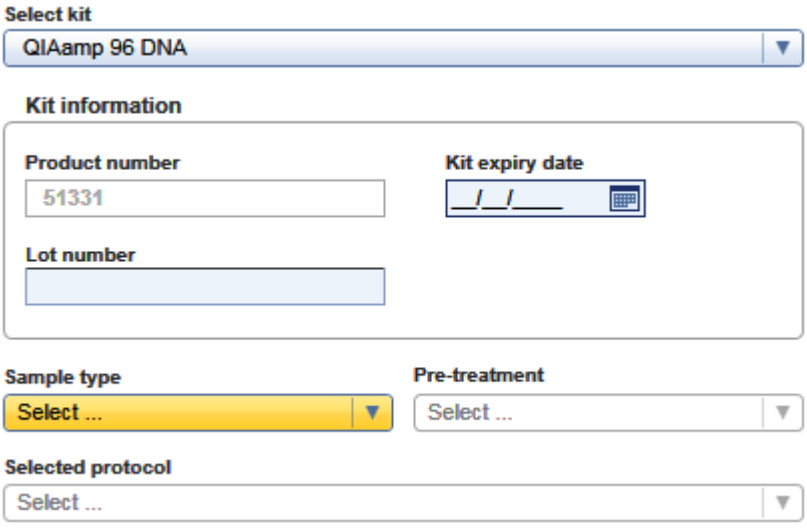
4. Proceed with the instructions described in section Setup step.

6.1.1 Setup step

The **Setup** step is used to make basic selections such as the sample type and the protocol to be used. When you create a new experiment, the **Setup** step will be the only active step.



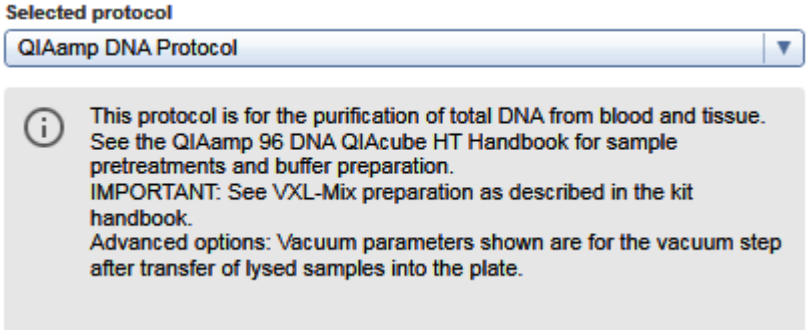
1. If not yet selected, select the kit from the **Select kit** drop-down menu.
2. The **Kit information, Sample type**, **Pre-treatment** and **Select protocol** fields are displayed.



3. Optionally, enter the **Lot number** and the **Kit expiry date** in the corresponding fields for documentation purposes.

   Note: You can use the date picker ( ) to open an interactive calendar for entering the dates.

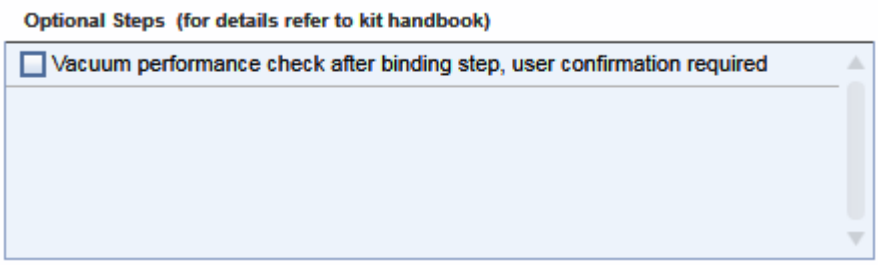
4. Select the sample type from the **Sample type** drop-down menu.
5. Select a pre-treatment from the **Pre-treatment** drop-down menu. The entries in this menu are kit-dependent. Refer to the kit handbook for more information.
6. Select a protocol from the **Select protocol** drop-down menu. The entries in this menu are kit-dependent. Refer to the kit handbook for more information.



Below, a short description about the selected protocol is displayed.

After you selected the protocol, at the right an **Optional steps** pane is shown.

7. Optionally, activate the desired options from the **Optional steps** pane. The number and type of these optional steps are kit-dependent, for details refer to the kit handbook:



For information about the vacuum performance check refer to Vacuum performance check.

8. Click **Next** to continue to the next step Labware Selection.

Advanced options

QIAGEN does not recommend to modify any of the parameters found in the "Advanced options" section. These parameters were optimized for the applied kit and only these parameters guarantee accurate and valid experiment results. QIAGEN is not responsible and does not support experiment with modified advanced options. You are acting on your own risk if you change these options.

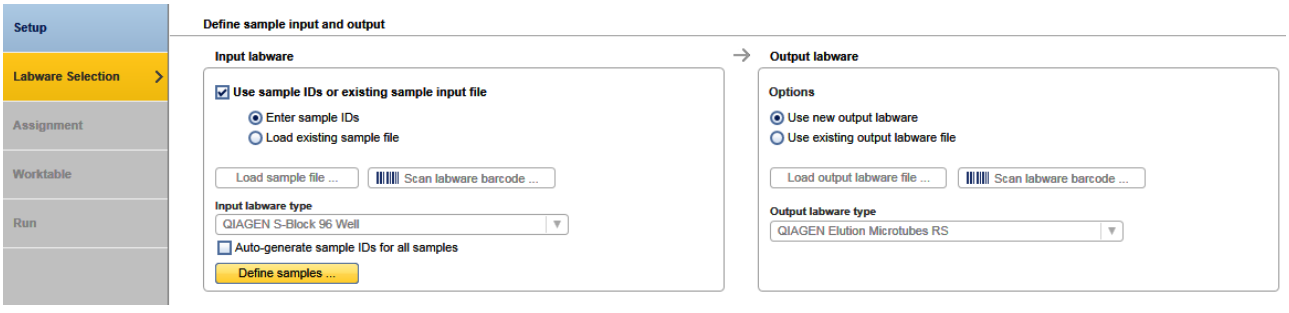
Refer to the kit handbook for information how the selected protocol makes use of the parameters.

Note: A warning icon and a corresponding warning message will be displayed if you change any parameter. The warning text contains the recommended value. If you return to the recommended value, the warning message disappears.

6.1.2 Labware selection step

Use the Labware Selection screen mainly to define the sample information (sample ID, description). Enter the sample IDs manually using the Sample editor or add the sample information by importing it from a sample input file.

The screen is split into two similar panels: define the input labware on the left side and define the output labware on the right side.



Labware Selection step

To define the samples on the input labware:

1. Check the option **Use sample IDs or existing sample input file**.

2. Select either **Enter sample IDs** to auto-generate sample IDs or to define sample IDs manually using the **Sample editor** (description starts with step 4).

   Alternatively, select **Load existing sample file** to use a sample input file (description starts with step 9).

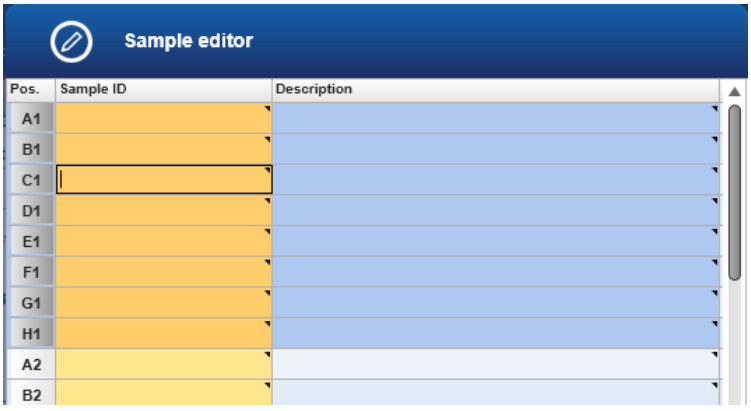
3. If the **Input labware type** menu is colored yellow, check if the labware which is mentioned in the kit handbook is available in the Labware Manager. To select another labware, follow the instructions in Select other input labware. Ensure to select a labware with the same or higher volume capacity like the input labware that is described in the kit handbook. Then proceed to step 4 or 9, respectively.

To define samples manually:

4. Check the option **Auto-generate sample IDs for all samples** if the software shall generate sample IDs automatically for all 96 positions. Sample IDs will be generated in the following way: *Sample 1* for position A1, *Sample 2* for position B1, …. If you want to view or edit the generated sample information in the **Sample editor**, proceed to step 5, otherwise proceed to step 13.

5. Alternatively, click **Define samples** to define samples individually.

6. The **Sample editor** will be opened and the **Sample ID** fields will be colored yellow to indicate that this information is required.



7. Enter each sample ID and optionally, enter a sample description. Sample names for at least one column are required.

   If you click a cell (C1 in the picture above), you can start editing in that cell. However, all cells that belong to the same plate column are automatically selected.

   Alternatively, you can automatically generate sample IDs using the context menu. Select the relevant cells of a column. Press the **SHIFT** key and left-click to select cells of multiple adjacent columns or press the **CTRL** key and left-click to select cells of multiple non-adjacent columns. Then right-click to open the context menu and click on **Auto-generate sample names**. Sample names are generated automatically for the selected cells by taking the text in the selected cell and adding an incrementing number to the text.

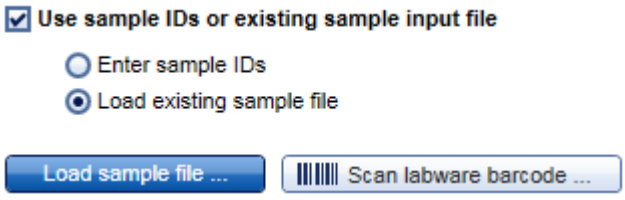
   Note: By instrument design, you can process complete plate columns, only. Therefore, you need to enter sample names for all positions of a column. The remaining positions of a column are displayed yellow and the **OK** button is disabled, until sample names for all positions of the column are entered.

   Note: For more details about the sample editor refer to the section Working with tables.

8. Click **OK** to close the **Sample editor**. Proceed to step 13.

To define samples by using a sample input file:

9. The **Load sample file** and **Scan labware barcode** buttons are enabled, if the option **Load existing sample file** had been checked.



10. Click the **Load sample file** button and select the desired sample file. For details, refer to File dialog.
11. Alternatively, if you would like to load the sample information based on the bar code on the labware, click the **Scan labware barcode** button. The **Scan plate barcode** dialog opens. Scan the labware bar code and click **OK** to confirm. The software will automatically search for a sample information file in the directory of sample input files (as defined in the user settings). For details, refer to Scan labware barcode dialog.
12. The software loads the sample information from the sample file and displays the sample editor. Optionally, edit the sample information. Then click **OK** to confirm.

    Note: If the sample file contains a labware type that is different than the labware type displayed in the **Input labware type** drop-down menu, an error message is shown and the file cannot be loaded. This is only possible for files in QDEF format.

To define the output labware:

13. The option **Use empty output labware** is initially selected and can be used for most runs. The output labware in the **Output labware type** menu on the right is determined by the protocol and cannot be changed anymore. Proceed to step 19.

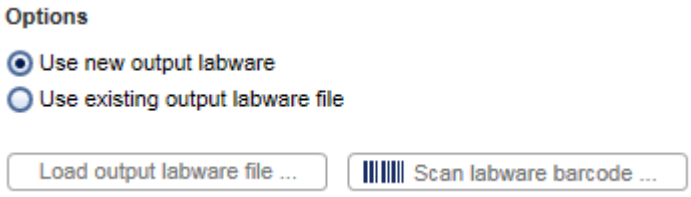
Note: The next **Assignment** step provides the possibility to manually mark output positions as blocked.

Alternatively, load a labware file for the output labware:

In some rare cases, one run might not be sufficient to completely fill an output labware. If this is required, you can perform more than one run to completely fill the output labware. When doing this, the output file needs to be saved after the first run. Then the output file from the first run can be loaded and used as a starting point for the second run. After the second run, the information from both runs can be saved in the output file.

To set up the second run properly:

14. Select the **Use existing output labware** option. The **Load output labware file** and **Scan labware barcode** buttons are enabled.



Note: It is required that you have saved the output file after the previous run of the output labware. If you have not yet saved the file, open the corresponding experiment in parallel, navigate to the **Run step** and click **Save output file**.

15. Click the **Load output labware file** button and select the desired labware file. For details, refer to File dialog. The positions that were used with this labware for a previous run will be displayed as blocked in the Assignment step.

Note: If the labware type from the loaded file does not match the output labware type as required by the protocol, the file cannot be loaded.

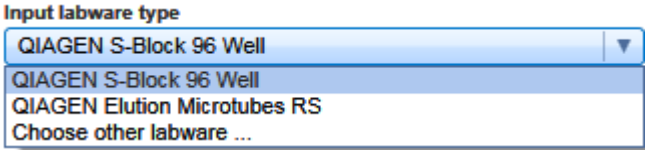
16. Alternatively, click the **Scan labware barcode** button. In the **Scan labware barcode** dialog, scan the bar code and confirm by clicking **OK**. For details, refer to Scan plate barcode dialog. The software automatically searches for a QDEF format file describing the output labware in the **Sample output files** directory (defined in the user settings). Using the information from the loaded file, the software will automatically select the **Output labware type**. In addition, the positions that were used with this labware for a previous run will be blocked.

17. Click **Next** to proceed to the next step Assignment.

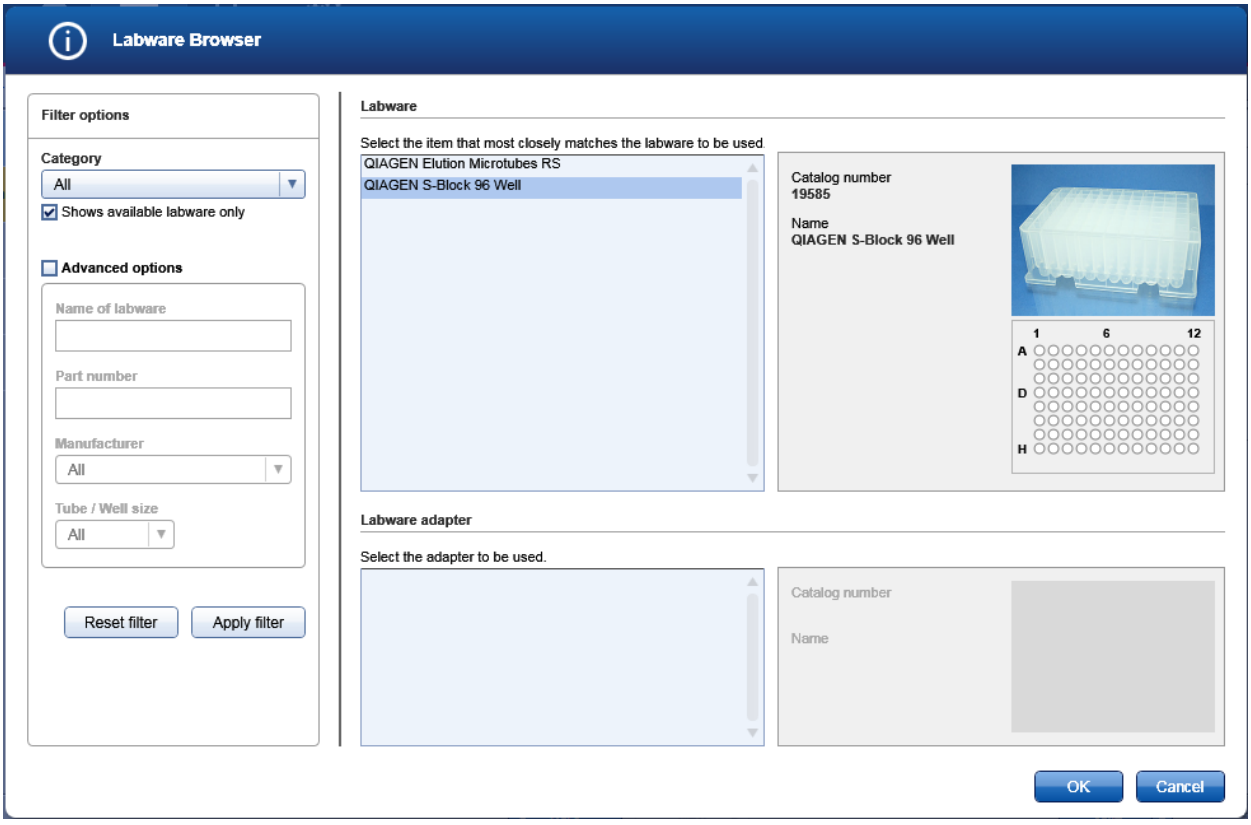
6.1.2.1 Select other input labware

The input labware type needs to be selected manually only in the case if the input labware determined in the protocol is not indicated as **Available in the laboratory** in the **Labware Manager** (see Managing labware). In this case, the **Input labware type** menu on the **Labware Selection** screen is colored yellow to indicate that this information is required.

1. Click on the **Input labware type** drop-down menu.
2. All previously selected labware types will be listed. The **Choose other labware** option will be listed last.



3. Select your input labware in the drop-down list. Ensure to select a labware with the same or higher volume capacity like the input labware that is described in the kit handbook. If it is not listed, click **Choose other labware** to open the **Labware browser**.



4. In the **Filter options** area on the left, keep the initial labware category **All** selected from the **Category** drop-down menu. Find a description of all filter options below.
5. Select the option **Shows available labware only**.

   Note: For the run, only labware that has been indicated as **Available in the laboratory** in the **Labware Manager** can be used. Refer to Managing labware for information how to indicate labware as available.
6. Click **Apply filter**. The software displays all available labware of the selected category in the **Labware and Labware adapter** area in the middle of the screen.

   Note: **Apply filter** must be clicked to populate the view in the middle of the screen.
7. In the middle of the screen, select the desired labware from the list at the top. The software displays a picture and further details about the selected labware on the right. Ensure to select a labware with the same or higher volume capacity like the input labware that is described in the kit handbook.

   If the desired labware is not listed, either select another available labware, or uncheck the **Shows available labware only** option to search it among all supported labware. You can use the **Advanced filter** options to restrict the search by other criteria.

   Note: Before you can use the labware for a run, it must be indicated as **Available in the laboratory** in the **Labware Manager**. If the labware has never been used before on the QIAcube HT, it also must be calibrated.

8. If the selected labware requires an adapter, the software will list all adapters that can be used with the selected labware in the **Labware adapter** area below. Select the adapter. The software displays a picture and further details about the selected adapter on the right.

   Note: If the option **Shows available labware only** has been checked, the software lists only adapters that have been indicated as **Available in the laboratory** in the **Labware Manager**.

   If none of the matching adapters has been indicated as **Available in the laboratory** in the **Labware Manager**, the list will be empty and the **OK** button will remain disabled. Either choose another available labware or indicate one of the adapters as **Available in the laboratory** in the **Labware Manager**.

9. Click **OK** to confirm the selection and to close the **Labware Browser**. The selected labware will be displayed and added to the **Input labware types** drop-down menu.

   Note: The **OK** button will only be enabled if a labware has been selected. In addition, if the labware requires an adapter (see the details area of the selected labware), the **OK** button will become enabled after you have selected an adapter from the **Labware adapter** area.

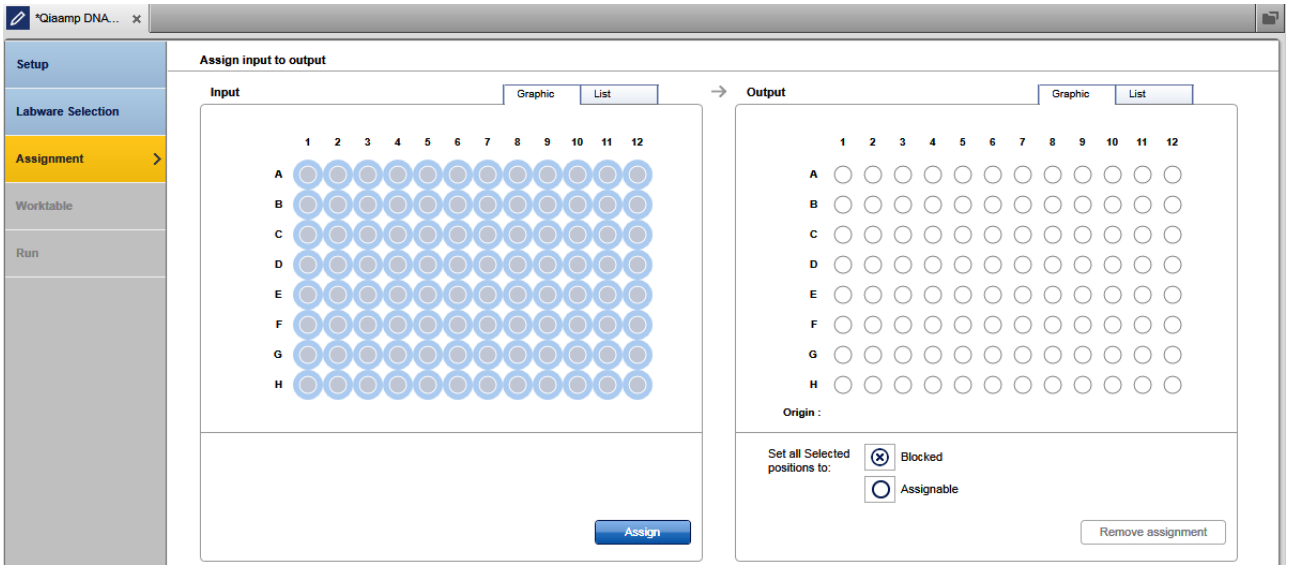
Important: Troughs or plates may have slightly different dimensions, despite a similar appearance. Such differences can significantly affect the calibration settings, in particular the height calibration (Z-axis calibration). Therefore, it is important to select the correct plates and troughs.

Filter options in the Labware browser

Option	Description
Category	Labware category, such as Standard 96-well.
Shows available labware only	If checked, the search will be restricted to labware that has been indicated as **Available in the laboratory** in the **Labware Manager**. **Note**: The option applies also to the **Labware adapter** area. Uncheck the option if a desired labware is supported in general, but does not appear in the list if the option is checked.
Advanced options	Check to enable the advanced filter options. Enter or select details only for those advanced options for that you want to restrict the search. Leave all other options empty/unselected.
Name of labware	Labware name
Part number	Catalog number of the labware
Manufacturer	List of labware manufacturers
Well size	Well size range from <0.5 ml to >2 ml
Reset filter	If you click the button, the software clears all filter options to the initial state.
Apply filter	If you click the button, the software lists all labware that matches the search criteria.

6.1.3 Assignment

The **Assignment step** screen shows a graphic visualization of the input labware on the left and the output labware on the right. It is designed to support flexible and intuitive assignment of samples to the output labware.



Assignment step. All input samples selected.

The **Graphic** tab of the **Input** panel on the left side of the screen shows all sample positions on the input labware. Use the **List** tab of the input panel to view or edit the sample definition again.

The **Graphic** tab of the **Output** panel on the right side of the screen shows all sample positions on the output labware. Initially, the output labware only displays empty positions. Columns on the output labware can be blocked to prevent specific columns from being used. If you hover the mouse pointer over an output position, the software displays the sample ID for that position. Use the **List** tab of the output panel to view the sample definitions that have been assigned.

Description of the symbols:

	Input graphic	Output graphic
	Position for which a sample ID has been defined (either using the Sample editor or from a sample file).	This symbol is not used in the output graphic.
	Position for which no sample IDs have been defined. The position cannot be used for the run.	Empty and assignable position.
	The sample has already been assigned to the output labware.	This position has been assigned and will be used in the run.
	This symbol is not used in the input graphic.	Blocked position. No input column can be assigned.
	Currently selected, empty position. It cannot be assigned.	Currently selected empty and assignable position. Before starting assignment, the position can be marked as blocked.
	Currently selected sample that has not yet been assigned.	This symbol is not used in the output graphic.
	Currently selected, already assigned sample.	Currently selected, already assigned position. The assignment can be removed.
	This symbol is not used in the input graphic.	Currently selected blocked position. Before starting assignment, the position can be marked as assignable.

6.1.3.1 Assigning samples

Proceed as follows:

1. From the **Input** panel select the sample columns you want to run.

   Note: To select multiple columns, either press **SHIFT** and left-click with the mouse to select adjacent columns, **CTRL** and left-click with the mouse to select multiple, nonadjacent columns, or drag the mouse to select adjacent columns in a rectangle. Samples are processed in columns, it is not possible to handle single sample positions.

2. Click **Assign**.
3. The software assigns the samples to the output labware. Below each assigned column of the output labware, the column number of the input labware is displayed from which the samples have been assigned.

   Note: If you assign single input columns to the output labware, they will be assigned to the next free column (from the left) on the output labware.

   Note: In case that you assigned an input column to another column on the output labware, for example assigning input column 1 to column 2 on the output labware, a warning is displayed on the **Output** panel.

   Note: It is possible to assign the same sample column multiple times to the output labware. Also in this case a warning is displayed.

4. Repeat the steps until all columns of the output side have been defined for the planned run.
5. If the QIAcube HT instrument is not yet connected, switch it on now. Wait until the instrument has connected with the

software (indicated by the instrument icon at the upper right corner of the screen).

6. Close the lid.
7. Click **Next** to proceed to the next step Worktable. If the instrument has not been used before, it will initialize.

   Note: While entering the **Worktable step**, the software automatically plans the worktable and checks the instrument calibration status. This may take some time. Worktable planning is repeated every time you enter the **Worktable step**.

6.1.3.2 Removing assignment

To remove an assigned column from the output side:

1. Select the desired column on the **Output** side. Selecting multiple columns is possible by pressing **SHIFT** and left-clicking with the mouse to select adjacent columns or **CTRL** and left-clicking with the mouse to select multiple, nonadjacent columns.
2. Click on **Remove assignment**. The assignment will be removed, and the sample position will be cleared from the output side.

6.1.3.3 Blocking output positions

To block a column on the output side:

1. Select the desired column on the **Output** side. Selecting multiple columns is possible by pressing **SHIFT** and left-clicking with the mouse to select adjacent columns or **CTRL** and left-clicking with the mouse to select multiple, nonadjacent columns.
2. Click **Blocked**. The software displays the selected columns as blocked.

To mark a blocked column again as assignable:

1. Select the blocked column on the **Output** side. Selecting multiple columns is possible by pressing **SHIFT** and left-clicking with the mouse to select adjacent columns or **CTRL** and left-clicking with the mouse to select multiple, nonadjacent columns.
2. Click **Assignable**. The software displays the selected columns as assignable.

Note: Output columns can be marked as blocked or as assignable only before starting assignment. If sample columns have been already assigned, remove the assignments first.

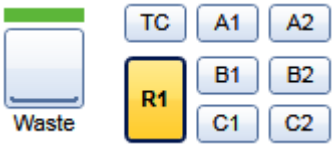
6.1.4 Worktable step

Note: The instrument must be switched on and connected to the software before entering the **Worktable** step.

While entering the **Worktable** step, the software automatically plans the worktable and checks the instrument calibration status.

The **Worktable** step supports you in loading the worktable, step-by-step, for each worktable position.

The **Worktable selector** at the top shows a visualization of the worktable positions to be loaded. To navigate, use the **Next** and **Back** buttons or just click on a position in the **Worktable** selector.



Worktable selector

- Waste bottle status (green, yellow, red). For details, refer to Checking the waste bottle status.
- Position with black border: worktable position for which the loading details are displayed. (in the example picture: R1)
- Yellow position: worktable position that still needs to be loaded. The run cannot be started if any yellow positions remain. (in the example picture: R1)
- Blue position: worktable positions that have already been loaded. (in the example picture: TC, A1, A2, B1, B2, C1, C2)
- White worktable positions are not used for the run (not pictured).

Note: The run cannot be started if any worktable positions remain yellow.

For a step-by-step instruction, refer to the following chapters, starting with Preparing the worktable.

The software displays the labware and required amount of reagents to be loaded in a table located in the middle of the screen. If several throughs need to be loaded to the worktable position, the table will display one row for each trough. You must confirm that the labware has been loaded by checking the box in the **Loaded** column.

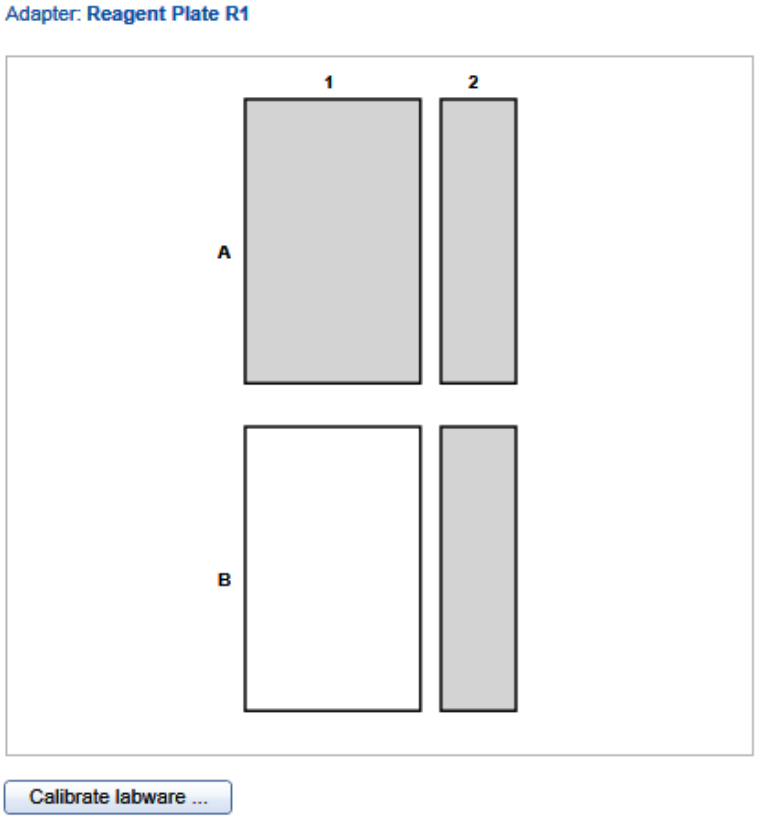
R1 - Reagent plate

Pos.	Content	Trough	Req.Vol.	Loaded
A1	Buffer AW2	170 ml Reagent Trough (QIAGEN)	67.6 ml	☑
A2	Ethanol 96 %	70 ml Reagent Trough (QIAGEN)	62.7 ml	☑
B2	Buffer AW1	70 ml Reagent Trough (QIAGEN)	60.7 ml	☑

Confirm all

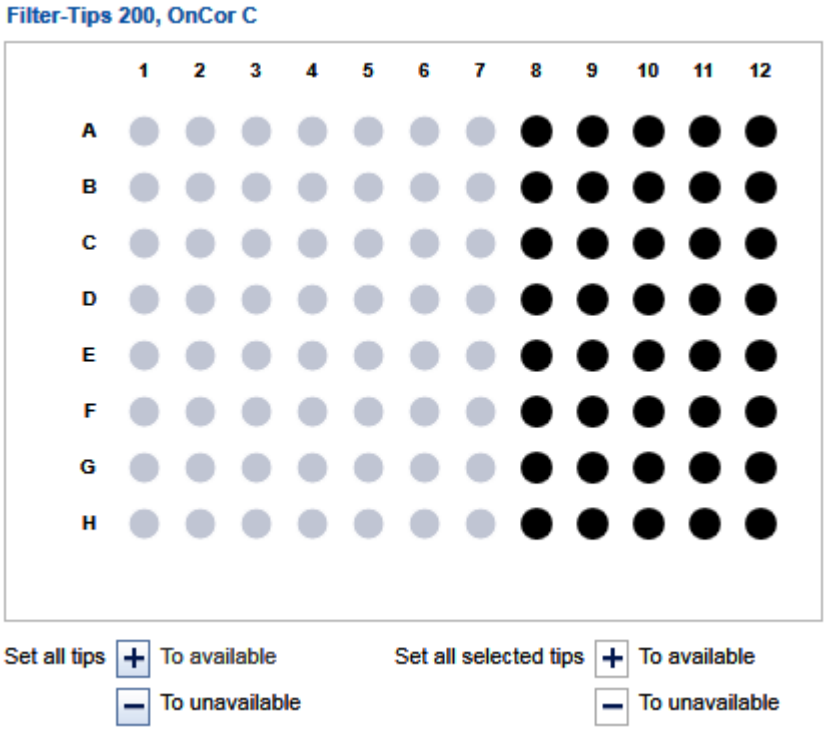
Table of troughs to be loaded to the worktable position R1.

For better orientation, a schematic graphic at the right of the screen highlights the positions to be loaded.



Schematic graphic for R1.

For tip rack positions, an interactive rack is displayed. The software tracks the tip usage during operation and displays the tip availability accordingly. However, the software cannot detect whether tip racks have been replaced or removed in the meantime. Therefore, you must set singular, multiple or all tips To available or To unavailable in the interactive tip rack according to the available tips on the tip rack on the worktable. For details, refer to Loading tips.



Interactive rack to define tip availability.

If a labware type has not yet been calibrated on the required worktable position, you must first perform a labware calibration. This will be indicated by a yellow **Calibrate labware** button.

6.1.4.1 Preparing the worktable

For general information about the worktable step, refer to chapter Worktable.

1. Open the instrument lid.
2. Depending on the worktable position for which the loading details are displayed, follow the instructions in the following chapters, accordingly:
   - For the waste bottle refer to Checking the waste bottle status.
   - For the tip chute refer to Preparing tip chute and tip disposal box.
   - For worktable positions with tips refer to Loading tips.
   - For worktable positions A1 and A2 refer to Preparing the vacuum chamber.
   - For all other positions refer to Loading reagents and samples.
3. Repeat step 2 for all worktable positions that need to be loaded. To navigate, use the **Next** and **Back** buttons, or just click on a position in the **Worktable** selector.
4. After you have confirmed that all worktable positions have been loaded, the **Start run** button and the **Run** step will be activated. Proceed with the instructions described in Starting a run.

Note: You can start the run as soon as the **Start run** button is activated, either from the **Worktable** step or from the **Run** step.

Note: If any labware has not yet been calibrated, or if the loading of any position has not yet been confirmed, the run cannot be started, and the **Start run** button and the **Run** step will remain deactivated. The software will indicate the affected worktable position with a yellow button in the worktable selector.

For information about the **Run** step, refer to Run step.

6.1.4.2 Checking the waste bottle status

The worktable preparation starts with the status of the waste bottle.

The software tracks the volume in the waste bottle during operation and displays the waste bottle status accordingly. However, the software cannot detect whether the waste bottle has been emptied in the meantime, not using the maintenance wizard. For information how to empty the waste bottle refer to chapter Emptying the waste bottle.

Note: Click the **Emptied** checkbox only if you just have emptied the waste bottle. Clicking the checkbox serves as a starting point for tracking the waste volume in the software.

The calculated volume in the waste bottle results in three possible fill states. Proceed according to the appropriate situation.



The waste bottle is empty or filled a little. There is enough remaining empty volume for the run.

1. Only if you have just emptied the waste bottle, click the **Emptied** checkbox.
2. Click **Next** to proceed to the next worktable position Tip chute.



The calculated remaining volume in the waste bottle will very likely not be sufficient for the run. If you start the run anyway, the run will be paused when the sensor detects that the waste bottle is full. We recommend that you empty the waste bottle before run.

1. Empty the waste bottle.
2. Click **Emptied**.
3. Click **Next** to proceed to the next worktable position Tip chute.



The waste bottle is full.

1. Empty the waste bottle.
2. Click **Emptied**.
3. Click **Next** to proceed to the next worktable position Tip chute.

Note: The position in the worktable selector remains invalid and the run cannot be started as long as the waste bottle has not been emptied.

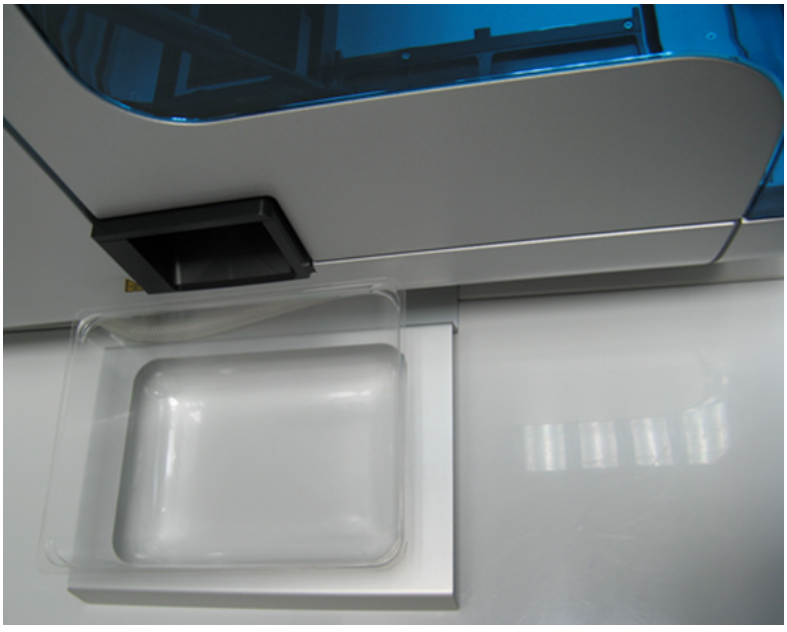
6.1.4.3 Preparing tip chute and tip disposal box

Tips used on the worktable are discarded through the tip chute into the tip disposal box. The tip chute is located at the rear-left of the QIAcube HT and held in place by a locating block. The tip disposal box is held in place by the tip disposal box holder to ensure correct positioning under the tip chute. Lock the tip disposal box holder with the instrument's feet on the left side of the instrument, then place the tip disposal box into the tip disposal box holder.

1. Place the tip chute at the rear-left of the QIAcube HT into the locating block so that the chute is over the tip disposal box. Ensure that the tip chute is open and unblocked. Remove the UV protective cap from the tip chute.
2. Ensure that the tip disposal box holder is locked with the instrument's feet on the left side of the instrument.
3. Place an empty tip disposal box into the tip disposal box holder. Make sure that the opening is aligned with the tip chute.
4. Either check the box next to **Loaded** in the table or click on **Confirm all** to confirm.
5. Click **Next** to continue with the next worktable position.



Tip chute.



Alignment of tip disposal box holder to the instrument and the tip disposal box.

6.1.4.4 Preparing the vacuum chamber

If the selected protocol includes vacuum steps, the vacuum chamber needs to be prepared (worktable positions A1 and A2). Refer to the kit handbook for information which type of vacuum chamber assembling is required for the selected protocol.

1. Assemble the vacuum chamber as described in Assembly for standard purification protocols.

   If fewer than 12 columns are to be processed, seal the unused columns of the filter plate with adhesive tape. Unused wells must be sealed to ensure proper vacuum operation. Trim any excess tape.

   Note: A yellow **Calibrate labware** button below the schematic indicates that the worktable position A1 has not yet been calibrated. The worktable position must be calibrated before the run can be started.

   Before clicking the button, remove all filled labware from the worktable position. Then click the **Calibrate labware** button. The software automatically prepares a labware calibration worklist containing all labware that is required for that worktable position for the current run and starts the labware calibration wizard. Assemble the vacuum chamber as described in Assembly for calibration. Follow the instructions of the wizard. For details, refer to the sub-chapters of section Calibrate labware.

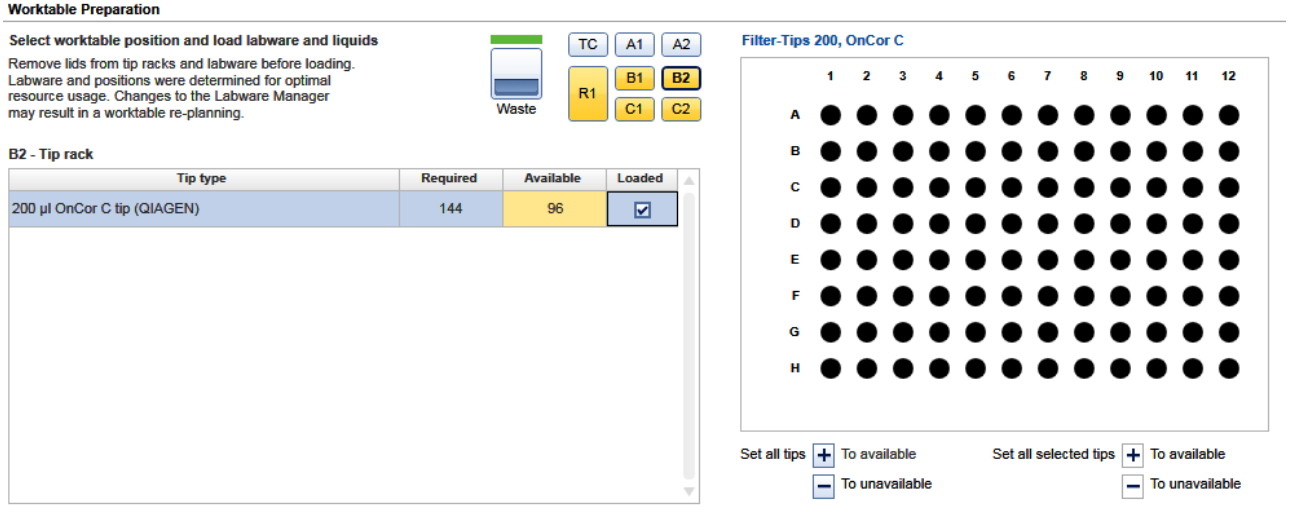
   After the calibration steps have been completed, the worktable screen will be displayed again.

2. Confirm that the position has been loaded by checking the box in the **Loaded** column or click **Confirm all** to confirm all positions.

   Note: If not all columns will be used during run, a message will pop up to remind you to seal the unused columns of the filter plate.

3. Click **Next** to continue with the next worktable position.

6.1.4.5 Loading tips



A full tip rack has been loaded on B2.

1. Check that the number of tips is sufficient. If not, load additional tips. Ensure that the lids have been removed from the

tip boxes. For detailed information about the **Required** and **Available** number of tips, see below.

2. Check that the interactive graphic on the right side of the screen shows the tips available are the same as the tips present on the tip rack on the worktable. If not, adjust the tip availability in the interactive graphic. For details about tip availability, see below.

   Note: For an accurate run, the software requires that the actual tips on the worktable are the same as those displayed in the interactive graphic.

3. Either check the box next to **Loaded** in the table or click on **Confirm all** to confirm.
4. Click **Next** to continue with the next worktable position.
5. Repeat steps 1–4 for all tip rack positions.

   Note: If the number of tips loaded in other tip racks is already sufficient, you don't need to load an additional tip rack. To indicate that no tip rack is loaded at a particular worktable position, uncheck the **Loaded** check box for the position. If the **Loaded** check box is still yellow, ensure that all tip positions on the graphic at the right have been set **To Unavailable**.

Required number of tips

The required number of tips for the run is displayed in the **Required** column. Load a tip rack containing at least the required number of tips.

Note: For some runs, more than 96 tips will be required. If possible, the software will plan an additional worktable position for tips. Note that the software always displays the total number of required tips for the run. In these cases, load a full tip rack.

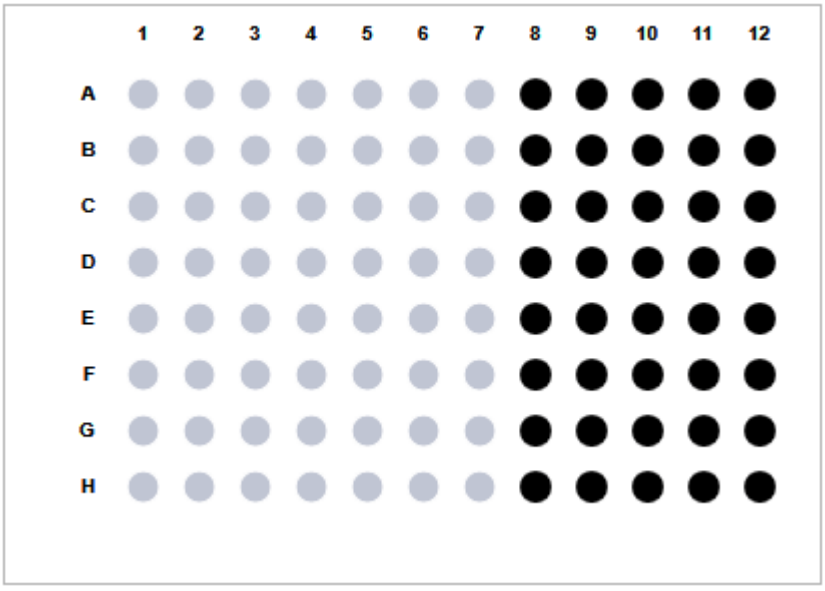
Tip availability

During operation the software tracks the tip usage. The interactive graphic on the right side of the screen shows the current tip availability according to that tracking. However, the software cannot detect if tip racks have been reloaded or removed in the mean time. For the run, the software relies on the information displayed in the graphic. Therefore, it is important to set the same tips available in the graphic as the tips that are placed on the tip rack on the worktable.

Use the tip availability buttons below the rack graphic to set the availability of the rack.

Option	Required action
To set all tips to available	Click on: Set all tips + To available
To set all tips to unavailable	Click on: Set all tips − To unavailable
To set selected tips to available	Select the desired tip positions (use drag and drop and hold the CTRL key to select single tip positions). Then click on: Set selected tips + To available
To set the selected tips to unavailable	Click on: Set selected tips − To unavailable

Available tip positions are displayed in dark color (columns 8–12) and unavailable positions are displayed in grey (columns 1–7). Selected tips are surrounded by a light blue circle.



Available number of tips

According to the settings selected in the tip rack graphic on the right, the software will display the number of available tips of that tip type in the column **Available**.

Note: Again, if more than 96 tips are required for the run, the software will display the total number of available tips, summarizing the available tips from all worktable positions.

Note: You can start the run, even if it is not possible to load enough tips. During the run, the software will prompt you to replace empty tip racks with new tip racks. However, the number of available tips must be sufficient at least up to and including the lysate transfer task. Otherwise the run cannot be started.

Confirm loading

Confirm that:

- you have loaded the tip rack, and
- you have correctly set the tip availability in the graphic on the right.

To confirm, either check the box next to **Loaded** in the table or click on **Confirm all**.

6.1.4.6 Loading reagents and samples

For worktable positions for reagents and samples proceed as follows:

1. Optional step: A yellow **Calibrate labware** button below the schematic indicates that the required labware has not yet been calibrated on the worktable position. The labware must be calibrated before the run can be started.

   Before clicking the button, remove all filled labware from the worktable position. Then click the **Calibrate labware** button. The software automatically prepares a labware calibration worklist containing all labware that is required for that worktable position for the current run and starts the labware calibration wizard. Follow the instructions of the wizard. For details, refer to the sub-chapters of section Calibrate labware.

   After the calibration steps have been completed, the worktable screen will be displayed again. Load (or reload) all positions that are displayed in the table.

   Note: Ensure that you have the empty labware available for the calibration.
2. If an adapter is required for this worktable position, the adapter name will be displayed above the graphic on the right side of the screen. Load the adapter to the worktable position.
3. Perform the following steps for each row in the table:
   - For reagents: Check that the correct amount of the listed reagent is provided in the correct trough type. Load the trough in the correct position of the adapter. For orientation, refer to the graphic on the right side of the screen.
   - For empty labware: Place the labware in the correct position. For orientation, refer to the graphic on the right side of the screen.
   - For samples: Ensure that samples are loaded using the correct labware type. Check that the samples are placed in the positions as defined in the sample list of the Labware selection
4. Confirm that the position has been loaded by checking the box in the **Loaded** column or click **Confirm all** to confirm all positions.
5. Click **Next** to continue with the next worktable position.

6.1.4.7 Starting a run

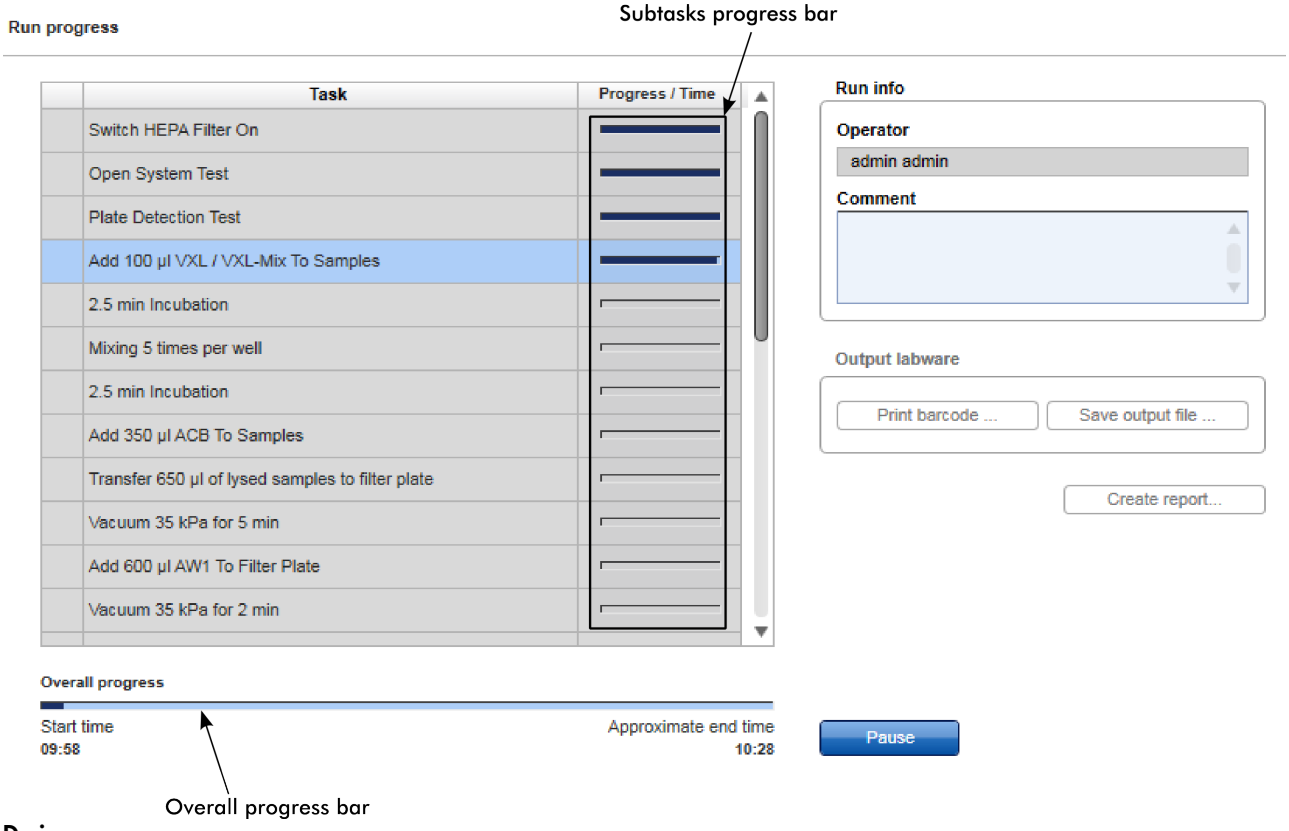
1. Close the lid.
2. Ensure that the tip disposal box is empty.
3. If the experiment has not yet been saved, save it now by clicking the **Save** button in the button bar. The file dialog opens. Select a folder and enter a name.

   Note: If an experiment has been saved before, the software will always automatically save the latest changes to the experiment when the run is started.
4. Click the **Start run** button to start the run.
5. The run will start and the progress will be displayed in the Run step.

6.1.5 Run step

The run progress can be monitored in the **Run** step of the **Experiment** environment. Single tasks and their progress are listed in a table.

The instrument icon in the main toolbar as well as the progress indicator on the run step show the overall run progress.



During run.

Actions during run:

- For every run which uses the vacuum pump, tests are performed automatically to verify correct setup of the vacuum subsystem and the vacuum chamber. The tests are listed in the task list at the beginning of the run. A message is shown, if one of the tests failed. Refer to chapters Open system test and Plate detection test for more information.
- A run can be paused or canceled at any time. For details, refer to chapter Pausing/Stopping a run.
- If in the **Setup** step the optional step **Vacuum performance check** has been selected, the software will show a **Vacuum performance check** dialog after defined vacuum steps. Refer to chapter Vacuum performance check for details.
- The name of the operator and a comment field are displayed on the right. This comment field will be part of the report. You may enter the comment during or after the run.

During a run it is possible to set up and save another experiment. However, only one experiment can be run at the same time. Therefore, the worktable screen and the run screen will not be available while the current run is still in progress. While preparing the next experiment, you can return to the run page at any time by selecting the experiment's tab in the **Experiment** environment or by clicking the instrument icon.

6.1.5.1 Open system test

For every protocol run that uses the vacuum pump, an open system test is performed automatically at the beginning of the run. The intention of this step is to verify correct setup of the vacuum subsystem, ensuring that the bottle and tubing are correctly connected. During this test, the software applies a specific vacuum pressure and monitors the achieved value.

- If the achieved pressure is too high, this implies a blockage in the filter, a kinked hose, an incorrect connection with the bottle or some other constriction of the air flow.
- If the achieved pressure is too low, this implies a leak, perhaps due to poor connections or incorrect fitting of the bottle cap.

When the test fails, a warning dialog box appears. After attempting the suggested corrections from the dialog box, if the problem persists, contact QIAGEN Technical Services for further assistance.

6.1.5.2 Plate detection test

For every protocol run that uses the vacuum pump, a plate detection test is also performed. The intention of this test is to verify the correct setup of the vacuum chamber.

During this test, the software applies a specific vacuum pressure and monitors the achieved value.

If the achieved pressure is too low, this implies incorrect assembly of the vacuum chamber. A message will be displayed and prompt you to properly align the filter plate to the left compartment of the vacuum chamber. After adjustment, click **Retry** to initiate the test again.

Note: If not all columns will be used during run, ensure that the unused columns of the filter plate have been completely sealed.

Note: The lid sensor is disabled during the plate detection test, allowing the lid to be raised and the filter plate alignment to be manually adjusted while the vacuum pump is operating.

6.1.5.3 Pausing/Stopping a run

A run can be paused or canceled at any time from the **Run** step of the **Experiment** environment.

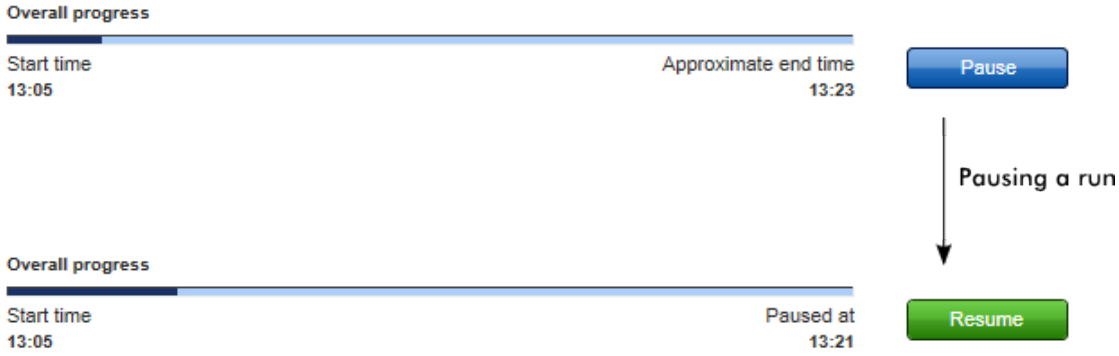
Pausing and resuming a run

Every pause of a run will be recorded and listed in the **Exceptions** section of the report.

To pause a run

1. Click the **Pause** button.
2. The instrument will complete the current movement, which may take up to 10 seconds. Before opening the lid, wait until the movement has finished!

When a run is paused, the **Pause** button will change its label to **Resume**.



To resume the run

1. Ensure that the lid is closed.
2. Click the **Resume** button.
3. The **Resume** button will change back to **Pause**. The run continues.

Stopping a run

If a run is stopped, it cannot be continued or recovered. It is not possible to restart the run from the point at which it was stopped.

To stop a run

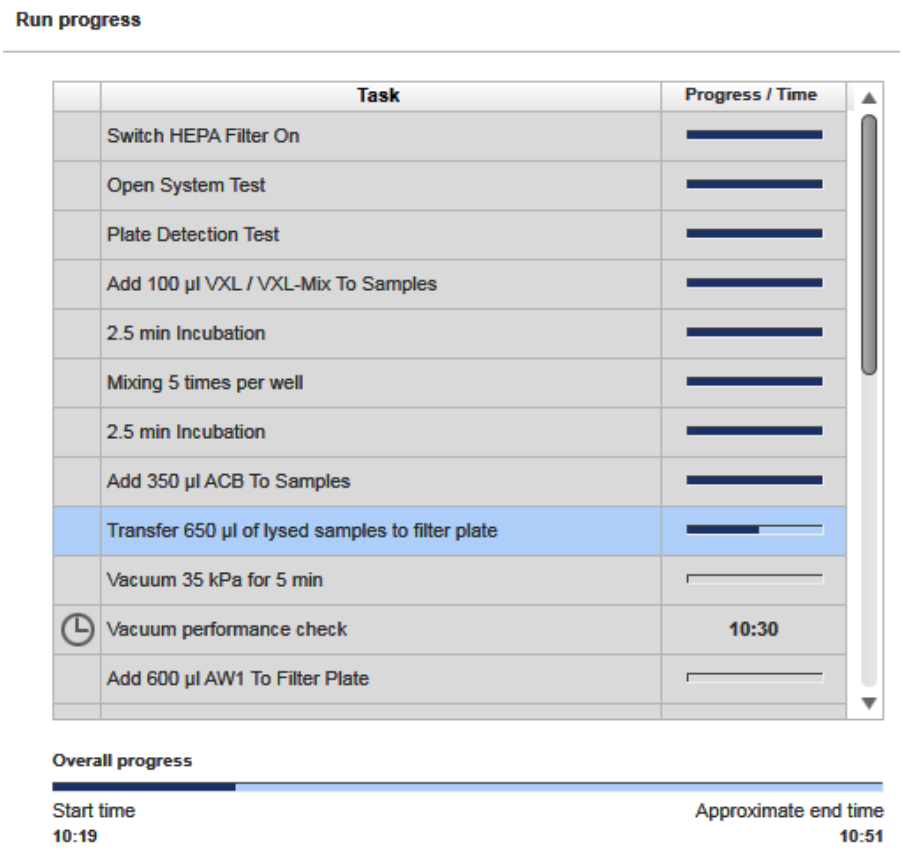
1. Click the **Stop run** button in the button bar.
2. A confirmation message will be displayed asking whether you really want to stop the run now. Click **OK** to confirm to stop the run now. Otherwise, click **Cancel** to keep the run running.

3. If you clicked **OK**, the instrument will complete the current movement, which may take up to 10 seconds. Before opening the lid, wait until the movement has finished!

   If there are used tips still parked on a tip rack, the software will ask you if the instrument should discard these used tips automatically. If you click **OK**, the instrument will discard the used tips automatically and then stop the run. If you click **Cancel**, the run will be stopped and you will need to discard the used tips manually.

6.1.5.4 Vacuum performance check

If in the **Setup** step, the optional step **Vacuum performance check, user interaction required** has been selected, a dialog box appears after defined vacuum steps. The software lists these planned user interactions in the task list with their estimated time.



Task list with task for vacuum performance check.

In the dialog that appears (see image below), positions in the filter plate can be marked, for example, if they have been clogged. The marked positions will be marked in the report as well.

To mark a single position in the filter plate:

1. Open the lid.

   Note: The lid sensor is disabled during the vacuum performance check, allowing to observe the wells during vacuum.

2. Check the wells on the filter plate.
3. If no liquid is visible in the wells after vacuum, click **Proceed** to continue the run.
4. Otherwise, refer to the kit handbook for further information. The following options are possible:
5. You can click the **Re-do vacuum** button to apply the same vacuum pressure again. The vacuum will be kept for a certain time or until you press the now present **Stop vacuum** button.
6. You may mark affected wells in the dialog. This will be part of the report.

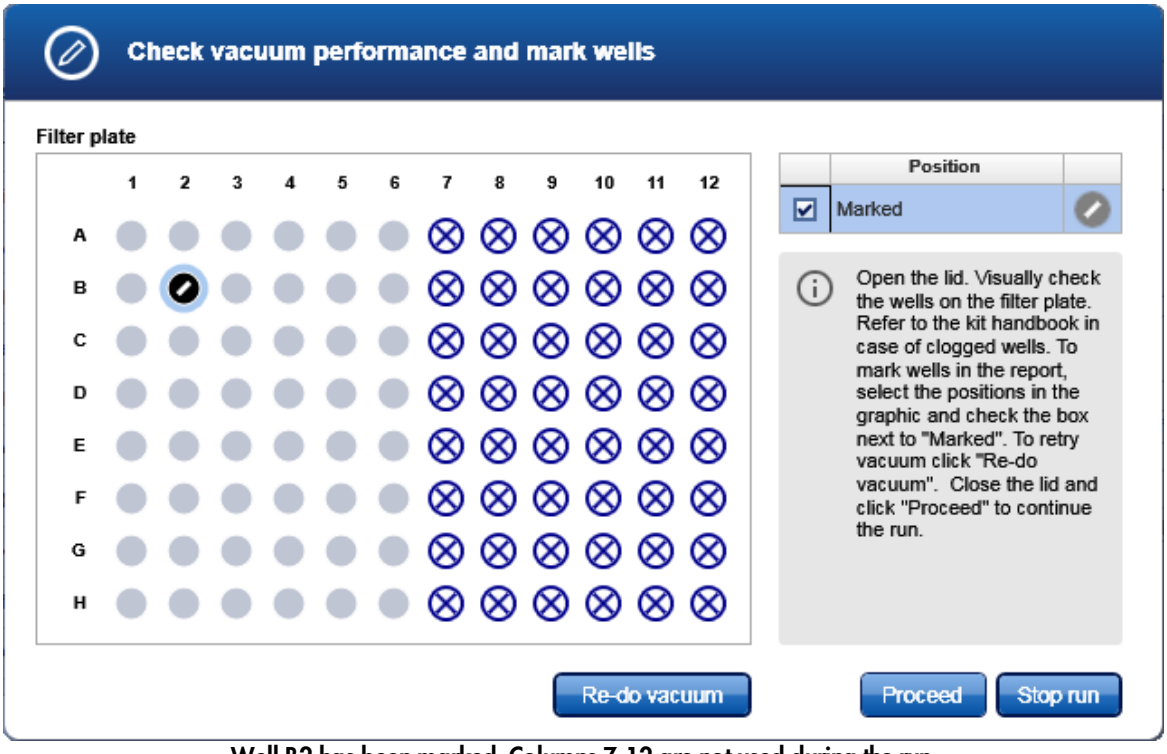
   To mark a well, select the position in the dialog.

   Note: To select multiple positions, either press **SHIFT** and left-click with the mouse to select adjacent positions, **CTRL** and left-click with the mouse to select multiple, nonadjacent positions, or drag the mouse to select adjacent samples in a rectangle.

   From the position table at the right, check the box next to **Marked**. The selected position on the filter plate will be displayed as marked (see picture below).

   Note: To undo marked positions, select the positions and uncheck the box next to **Marked**.
7. Then press either **Proceed** to continue the run, or press **Stop run** to stop the run.

   Note: If a membrane has been clogged, it might be necessary that you pause the run again later (after liquid tasks) by opening the lid and pipetting the liquid out of the clogged wells to ensure that no liquid spills over.



Well B2 has been marked. Columns 7-12 are not used during the run.

6.1.5.5 Run completion

After the run has finished, the progress indicator bar on the run screen shows the run completion time, and the progress indicator below the instrument icon and the **Stop run** button in the button bar disappear. If a notification has been configured in the user settings, a sound or e-mail notification occurs.

After the run, perform the following steps.

1. Cover the elution plate with the lid and remove from the elution compartment.
2. Optionally, enter a comment into the **Comment** field. It will be part of the report. You may enter the comment already during the run.
3. Optionally, click the **Print barcode** button to print a bar code for the output labware.

   Note: The option is available only if a printer has been selected in the **Global Settings** tab of the **Configuration** environment.
4. Optionally, click the **Save output file** button to save the result in an output file in .xml format, in particular the QDEF format, containing information about the output labware, the run and the content of each labware position (for example, the sample ID).

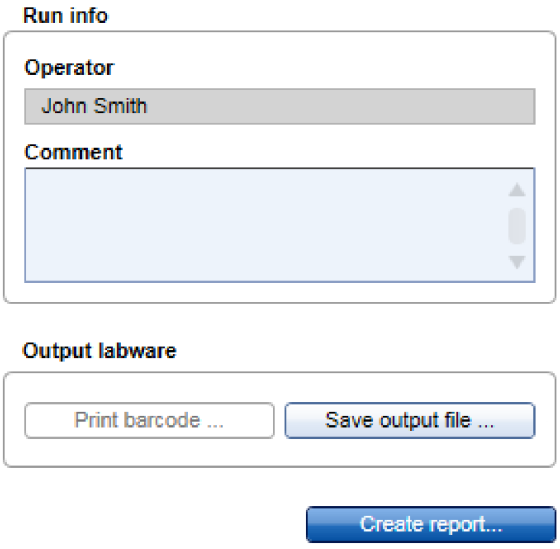
   A file dialog opens to select directory and file name of the .xml file. Refer to Customize user settings to define a standard directory.

   The file may serve as sample input file for the QIAgility operated with the QIAgility Setup Manager software. The **.xml** file can also be used by a LIMS (Laboratory Information Management System). Find examples of output files in the "Examples" folder provided with the software:
   C:\Users\Public\QIAGEN\QIAcubeHT\Examples.

   Note: Refer to Customize user settings or contact QIAGEN Technical Services if you need another file format.

   Note: Use this option also in case one run is not sufficient to completely fill the output labware. In these situations, you can perform more than one run to completely fill the output labware. Save the output file after the first run. To set up the second run properly, you must select the option that you are **Using an existing output labware** in the **Labware Selection** step, and load this file from the first run as the starting point for the output labware of the second run. After the second run, the information from both runs can be saved in an output file.
5. Optionally, click the **Create report** button to create a report in PDF format for documentation purposes. Refer to the user settings to configure the report options. For detailed information about reports refer to Report.
6. Follow the instructions of the Cleaning after run procedure. The software will display a reminding message with the option to directly switch to the **Cleaning after run task** in the **Service** screen when you attempt to leave the **Run** screen, if the option **Confirm cleaning after run** has been selected in the settings.

The options are available in the right side of the **Run step** screen.



Options after the run.

The options will still be available if you reopen the experiment later. It is still possible to create a report or to save the output file.

6.2 Finishing work and shutting down

Before closing the software, you should save your experiments.

Note: The software cannot be closed if a run is still active. In this case, the software will display an error message.

If the instrument has been used, it must be cleaned before shut down:

1. Click **Service** in the main toolbar to switch to the **Service** environment. On the **Cleaning Procedure** tab select the task **Daily cleaning procedure**.
2. Click **Start**. Follow the instructions of the software. For detailed information refer to Regular maintenance and Cleaning the QIAcube HT.
3. After the daily cleaning procedure has been completed, close the instrument lid and click on the **UV lamp** task. Start the UV lamp task with either **Start** or **Start and shut down**.

   If **Start and shut down** has been selected, the software will automatically perform steps 6-7 after the UV lamp task has been finished, but the instrument will remain switched on until you switch it off manually.

To shut down the software and the instrument:

4. Click  in the top right corner of the screen or select **Exit** from the **File** menu to close the software.
5. The software shows a confirmation message if there are any unsaved changes in experiments. If you are unsure, click

Cancel and save the changes first. Otherwise, click **OK** to confirm that the software should discard all changes and shut down.

6. If the pipettor head has not yet been moved to the home position, the instrument discards tips and completes the homing routine.
7. The software displays a message for a few seconds once it is safe to switch the instrument off. Then the software closes.
8. Switch the instrument off now.
9. The X and Y instrument axes are disengaged and can be moved freely.

Note: We recommend that you close the software at the end of the working day.

Note: Normally, you should not switch off the instrument without closing the software. If the pipettor head holds tips, they will not be discarded. However, if it is necessary to switch off the instrument without closing the software, this will not damage the instrument.

In the settings, the software provides the option **Confirm cleaning before shut down.** If it has been enabled, the software automatically switches to the **Service** environment to the **Daily Cleaning Procedure** task when you click  in the top right corner of the screen or select **Exit** from the **File** menu to close the software.

Note: To skip the cleaning procedure or the UV lamp task and shut down immediately, click  in the top right corner of the screen or select **Exit** from the **File** menu.

QIAcube HT Prep Manager Software

7 QIAcube HT Prep Manager Software

QIAcube HT Prep Manager is an easy to use application with a modern user interface to assist with your purification workflow. It has been specially developed for use with the QIAcube HT instrument and uses a modern task-focused graphical user interface (GUI) designed to facilitate your interactions with the software.

QIAcube HT Prep Manager is optimized for the use with QIAGEN purification kits.

For detailed information about supported kits and protocols for the QIAcube HT, please visit www.qiagen.com/QIAcubeHT.

7.1 Basic concepts and general software usage

The next chapters provide an insight into the underlying concepts and the general software usage.

7.1.1 Concepts

The following concepts are essential for understanding how QIAcube HT Prep Manager works and getting the most out of your workflow:

- User roles
- Experiments and templates
- Protection of files

7.1.1.1 User roles concept

User roles are an essential concept in the QIAcube HT Prep Manager. A user role defines the rights and permissions of a user. At least one user role must be assigned to every user. There are two user roles in the QIAcube HT Prep Manager:

- Operator
- Administrator

The user roles define the rights and permissions a user can have in the QIAcube HT Prep Manager. The following table describes the permissions required to enter the tabs for specific environments:

Environment / Role	Home	Experiment	Configuration				Instrument
			User Manager	Labware Manager	Calibration	Settings	
Operator	✓	✓	✗	✓	✓ (except **Volume**)	✓ (except **Global Settings**)	✓
Administrator	✓	✓	✓	✓	✓	✓	✓

Environment / Role	Service				
	Cleaning Procedure	Maintenance	System Check	Support Package	Audit Trail
Operator	✓	✓ (except **Replace HEPA Filter** and **Replace Vacuum Filter**)	✓	✓	✗
Administrator	✓	✓	✓	✓	✓

The user role is assigned when a new user is created.

Note: Multiple user roles can be assigned to a user. A specific user can have both operator and administrator user roles. However, in this case, use the administrator user role.

Note: For the initial instrument setup, it is convenient to work with a user who has the administrator user role assigned.

7.1.1.2 Experiments and templates

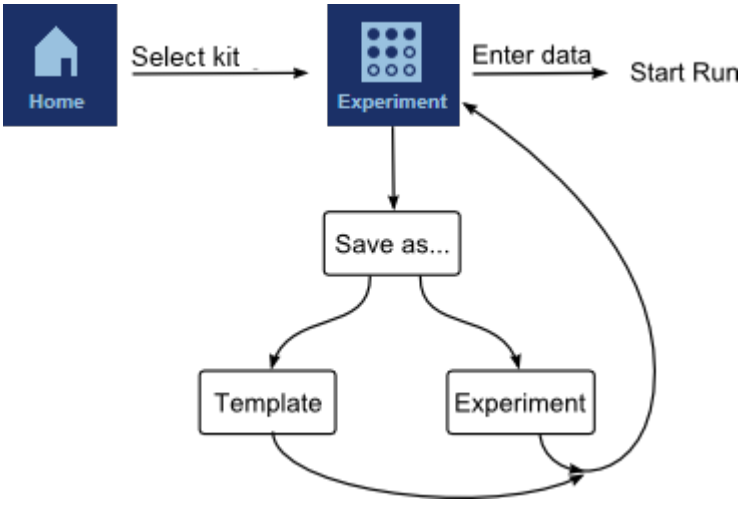
To facilitate the process of defining experiments, the QIAcube HT Prep Manager provides the option to use templates.

The general workflow is to select a kit from the **Home** environment, define the experiment in the Experiment environment and finally start the run. It is not necessary to finish the definition of an experiment in one step. A save function is available at any time, allowing you to save your progress and continue later. To facilitate the experiment definition, you can use templates or reuse previously run experiments.

- Save an experiment as a template for later reuse.
  Templates are previously saved experiments that inherit the data of the experiment but not the assignment information. The software allows you to save the experiment as template at different steps. For more details, refer to Create a template. Experiments created using a template will automatically be populated with data from the template. Use this function to facilitate frequently performed runs with the same experiment setup.
- Use a previously saved experiment to create a new experiment. Use this function if you want to repeat the same

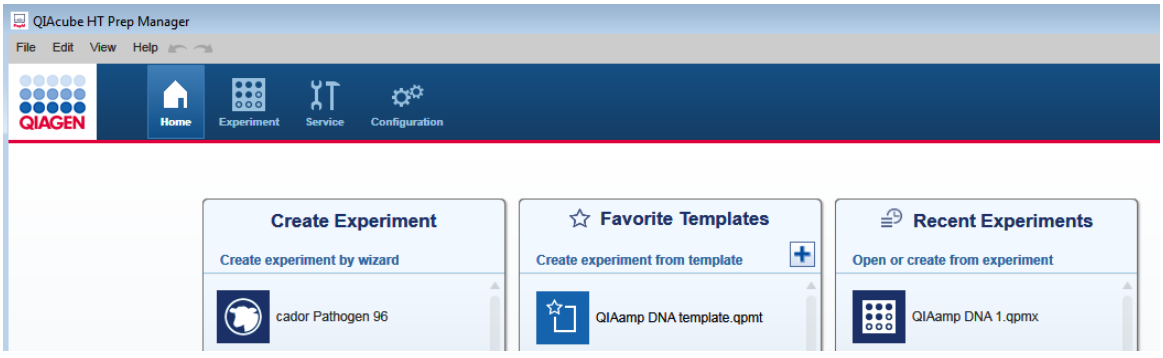
experiment again. For more details, refer to Create an experiment from an existing experiment. If you often create an experiment based on the same experiment, consider creating a template and to adding it to the favorite templates list.

The following graphic explains these functions:



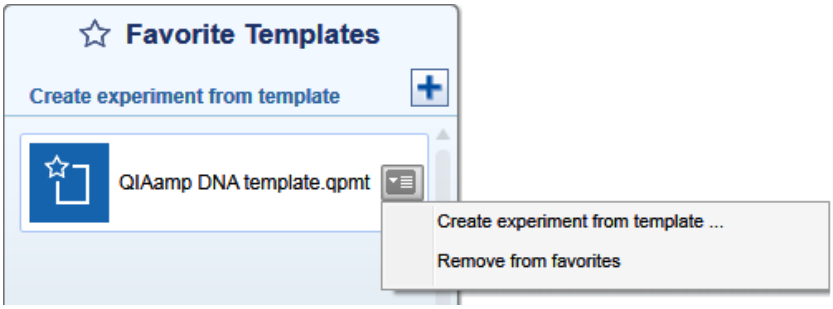
Experiments and templates have different file extensions. The file extension for experiments is ***.qpmx**, and for templates ***.qpmt** (**Q**IAcube HT **P**rep **M**anager **E**xperiment and **T**emplate, respectively).

Templates and experiments can be selected from the **Home** environment, for setting up a new experiment based on the experiment data in the selected template.



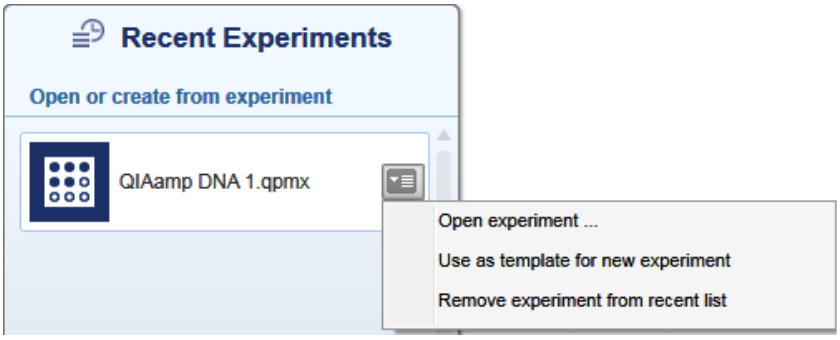
To use a template, click on the template entry in the **Favorite Templates** area or click on the context menu that appears during a mouse-over and click **Create experiment from template**.

For details, refer to Create an experiment using a template.



To use an existing experiment as the starting point for a new experiment, click on the desired experiment entry in the **Recent Experiments** area. Then, click on the context menu that appears during a mouse-over and select **Use as template for new experiment**.

For details, refer to Create an experiment from an existing experiment.



7.1.1.3 Protection of files

QIAcube HT Prep Manager guarantees the protection of records. The system ensures that no user can modify or delete any record.

Files, configuration files and experiments are protected using checksum, which enables detection of inappropriate modifications. A checksum is a numerical value assigned to a file by the QIAcube HT Prep Manager that is based on the content of the file. The file is invalid if the checksum does not match the file's content or is missing.

In the event that a file is modified outside the QIAcube HT Prep Manager, the file can no longer be used. If the modified file is a configuration file, it is possible that the software can no longer be used (in the worst case). If the modified file is an experiment, the experiment can no longer be loaded.

7.1.2 General software usage

The following section describes the GUI (graphical user interface) and the user interaction provided in the QIAcube HT Prep Manager. Fundamental topics such as entering data and working with tables are explained:

- Use of color
- Displaying errors and warnings
- Entering data
- Working with tables
- Selecting samples

7.1.2.1 Controlling the mouse

The following terms for controlling the mouse are used in this manual:

Left-click	Click with the left mouse button.
Click	Click with the left mouse button.
Right-click	Click with the right mouse button.

7.1.2.2 Use of color

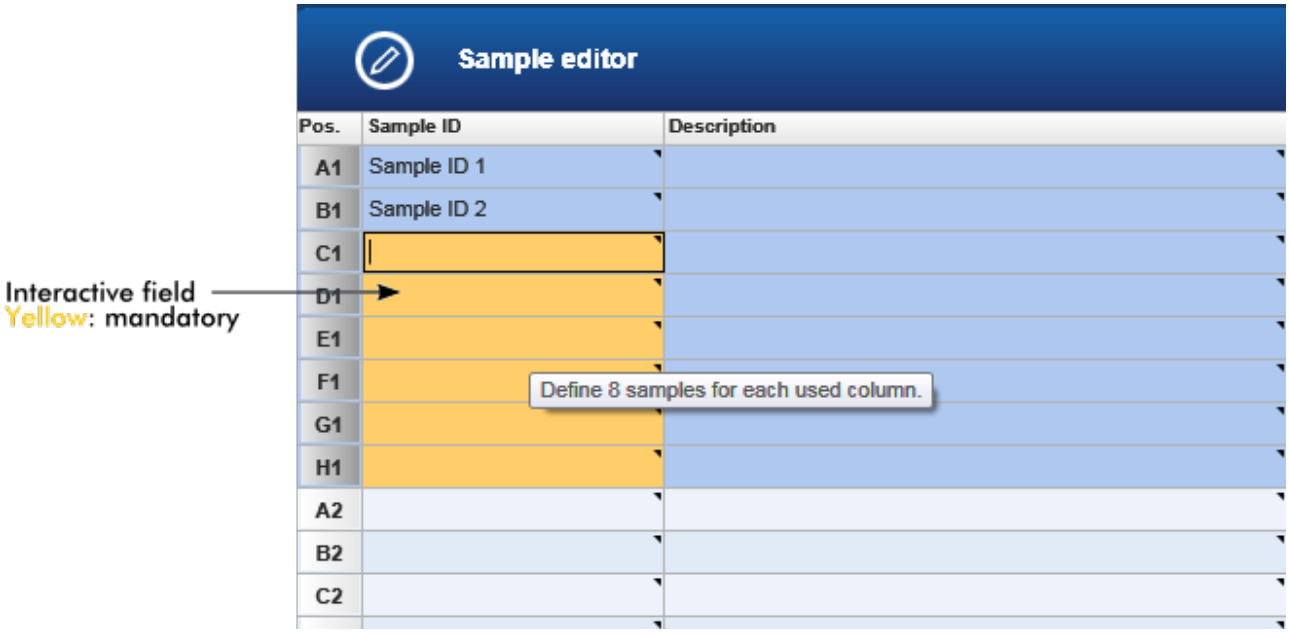
For an optimal user interaction, the QIAcube HT Prep Manager uses a dedicated color concept for presenting information. The coloring assists you in your workflow.

Following is an overview of the different colors used in the software and their meanings:

Color	Description
Light blue	The field is interactive and clickable.
Dark blue	The field is selected or focused.
Gray	The field is read-only and can neither be selected nor activated.
Yellow	The field requires input.

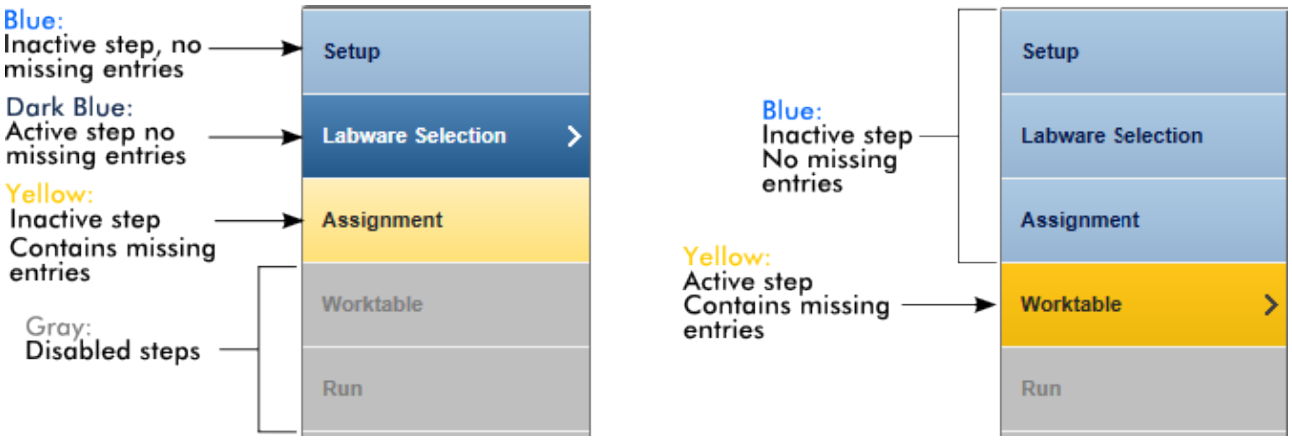
The following examples give an explanation of the color concept.

Example 1



Example 2

During experiment setup and instrument calibration, a step marker guides you through the necessary steps. The coloring concept of the step buttons is illustrated in the graphic below:



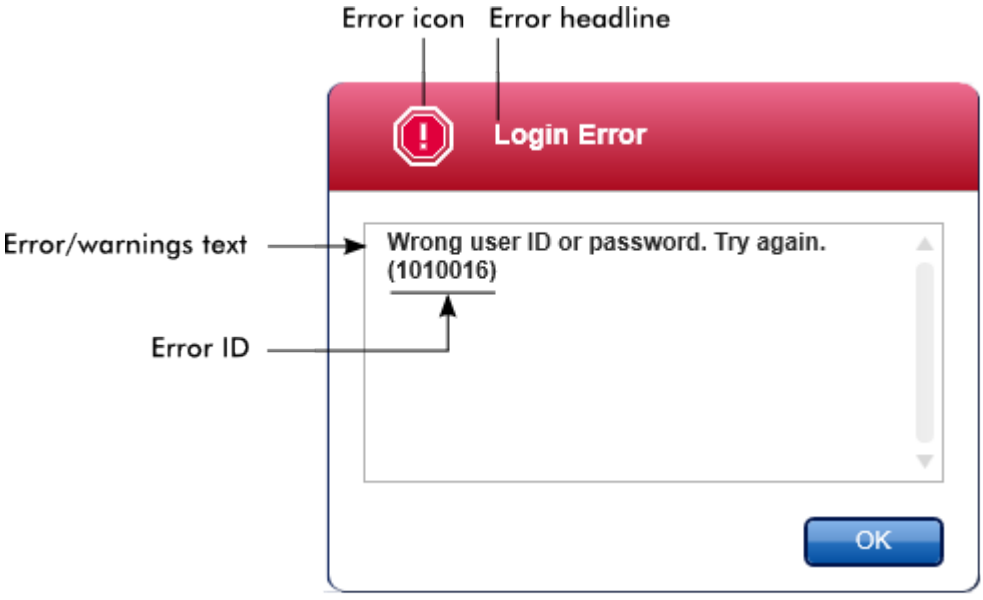
The active **Worktable** step (in the right part of the example) still requires missing values. Because the **Worktable** step is required before the run can be started, the following step **Run** is still disabled and inactive. Once the **Worktable** step contains all mandatory entries, it changes to a blue color and the next step **Run** will become available. A step will remain yellow as long as there are missing, but required entries.

7.1.2.3 Displaying errors and warnings

Errors and warnings are essential information that indicate a problem or an erroneous situation. QIAcube HT Prep Manager differentiates between 4 different problem levels:

Priority	Name	Icon	Description of the functionality	User action
1	System error		A combination of unacceptable incidents	User interaction required
2	Validation error		An error that occurs due to a missing or invalid user input	User interaction required
3	Warning		Situation could be optimized by further input	User interaction possible, but not mandatory
4	Information		A message containing additional information about the current situation	User interaction not possible

The general structure of an error message is described below. When communicating with QIAGEN Technical Services, provide the error ID, which is unique and unambiguously characterizes the error situation. If you receive a message that contains a **Help** button, click on it to get more information.



7.1.2.4 Entering data

Shortcuts

The following hot keys are available in QIAcube HT Prep Manager:

- **F1** to open the help file
- Copy and paste operations (**CTRL** + **C** and **CTRL** + **V**)
- Navigation (tab key, cursor keys)

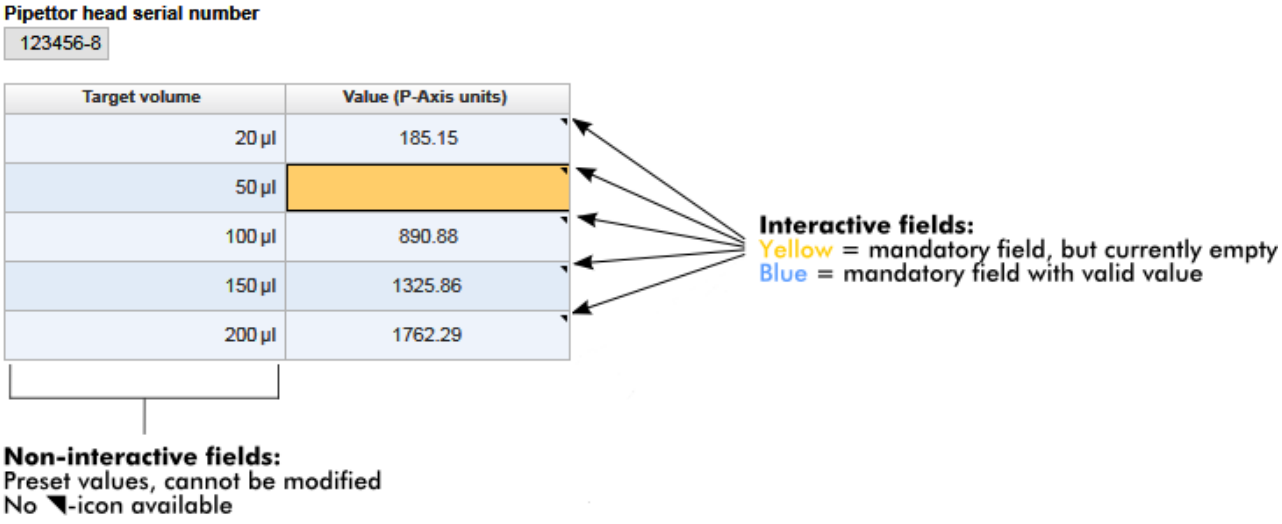
While entering data, the following keyboard shortcuts can be used:

- **Escape** to cancel the input
- **Return** to commit an input

Identifying interactive fields in tables

In tables, all interactive fields into which data can be entered are marked with a black triangle symbol (◥) in their upper right corner. Left-click in the field with the mouse and then enter data.

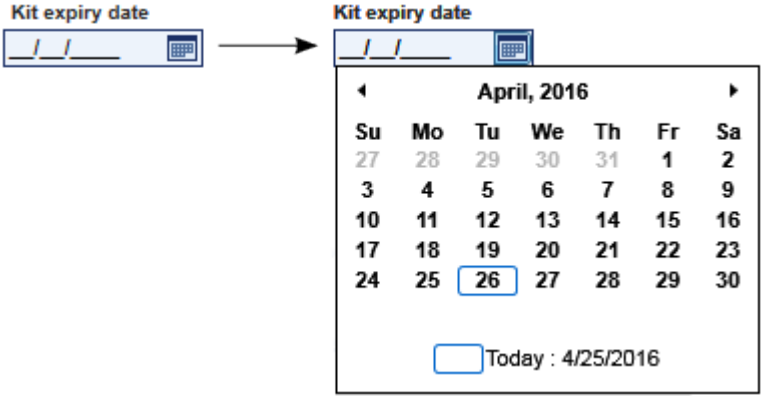
The following example is taken from the volume calibration step in the **Configuration** environment:



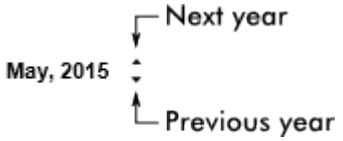
Date picker: entering date in date fields

Dates can either be entered manually into date fields using the keyboard or by using an interactive date picker in the form of a pop-up calendar ( ). A calendar icon is positioned to the right of every date field.

Clicking on the calendar icon opens the pop-up calendar.



Change to the previous or next month by clicking the arrow icons (◂ and ▸). Hovering over the year label displays additional control arrows, which can be used to quickly jump to the next (up arrow) or previous year (down arrow):



Step-by-step procedure to enter a date using the date picker

1. Click on the calendar icon ( ) next to the date field. The calendar pop-up is shown.
2. Continue using the following scheme:

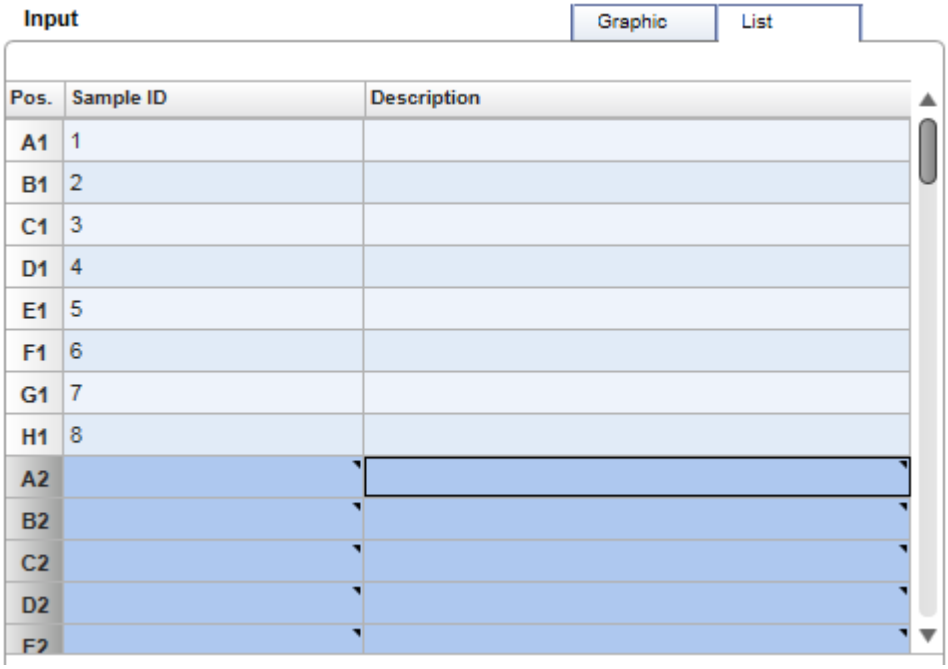
In order to:	Perform these steps:
Change the year	Hover the mouse pointer over the year.
	Date is displayed in blue. Additional control arrows are shown.
	Click the up arrow to change to the next year.
	Click the down arrow to change to the previous year.
Change the month/day	Click the left arrow to change to the previous month.
	Click the right arrow to change to the next month.
	Click the date of the desired day.

3. The date picker disappears and the date field is populated with the selected date.

7.1.2.5 Working with tables

Tables are an essential element of the QIAcube HT Prep Manager. They are widely used to display and enter data. The interactive icon ( ) marks cells in which you can enter data.

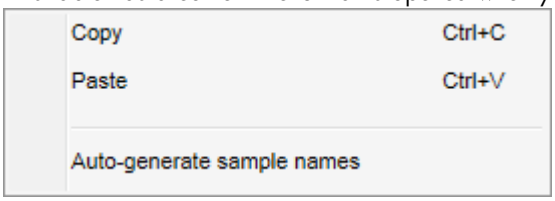
Example: Table to enter sample names



Entering data:

- To enter data into one cell, left-click in the cell and then enter the data.
- To move to the right cell, press the **Tab** key.

This table has a context menu that is opened when you right-click on a cell:



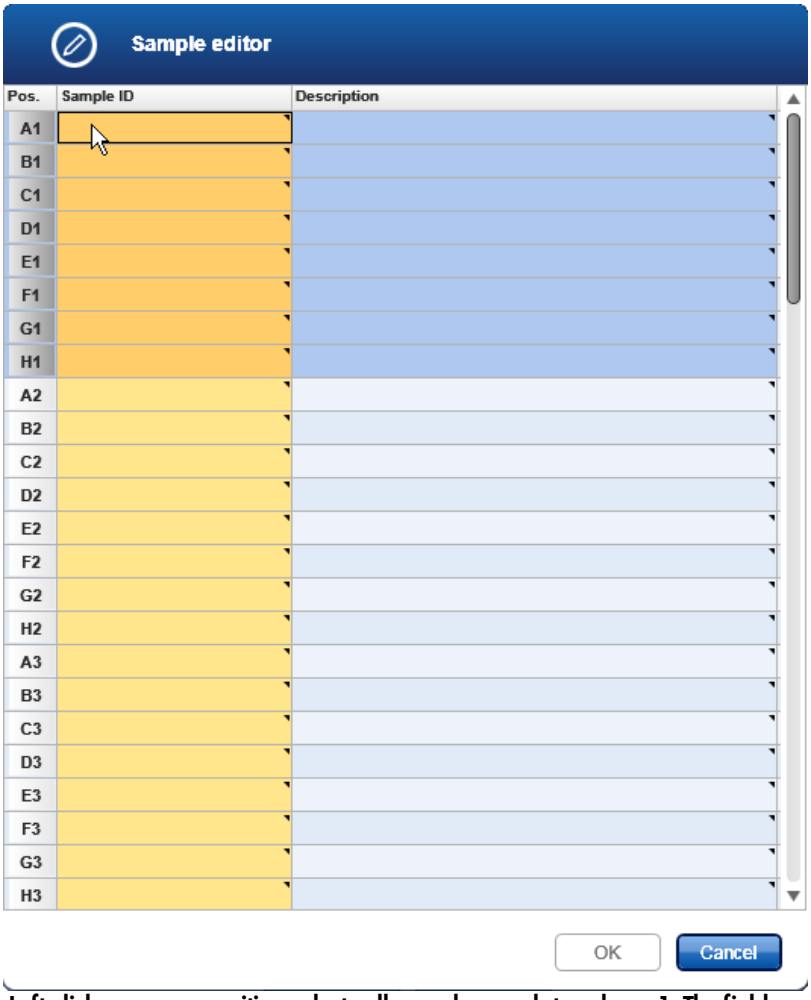
Option	**Description**
Copy	Copy the content of the selected cell(s) to the clipboard
Paste	Paste the clipboard content to active table cell(s). If the clipboard contains data from multiple cells, the table cells will be consecutively filled with the pasted data.
Auto-generate sample names	Sample names are generated automatically for the selected cells by taking the text in the selected cell and adding an incrementing number to the text. Example: If a cell contains "Sample," then the sample IDs Sample 1, Sample 2, etc. are generated.

7.1.2.6 Selecting samples

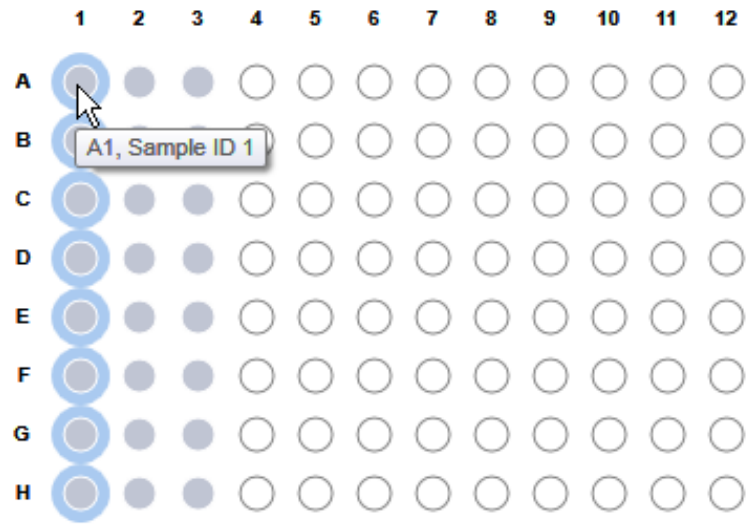
You can use left-clicking in combination with the **Shift** and the **Control** keys to make selections in a table or in a sample graphic:

Shift + Left-click	To select adjacent table cells, first click on the starting cell for the selection, hold down the **Shift** key, move the cursor to the last cell in the selection, left-click, and release the **Shift** key.
Control + Left-click	To select singular cells, hold down the **Control** key while left-clicking on the desired cells. The selected cells will be added to the selection.
Left-click and drag	To select a rectangular area of adjacent wells in a sample graphic, first click on the starting well for the selection, hold down the left mouse key and drag to the last well on the opposite site of the rectangular area to be selected.

Because the QIAcube HT always handles 8 samples in a column simultaneously, in the **Sample editor** and most sample graphics samples are selected column-wise. An exception is the **Check vacuum performance** dialog, where wells can be marked individually.



Left-click on cursor position selects all samples on plate column 1. The field on cursor position can be edited.



Left-click on A1 selects samples of the whole column.

7.1.3 General elements

QIAcube HT Prep Manager uses a modern task-focused GUI design to facilitate the user's interaction with the application. The following general user interface elements are described in this section:

Menu

Main toolbar

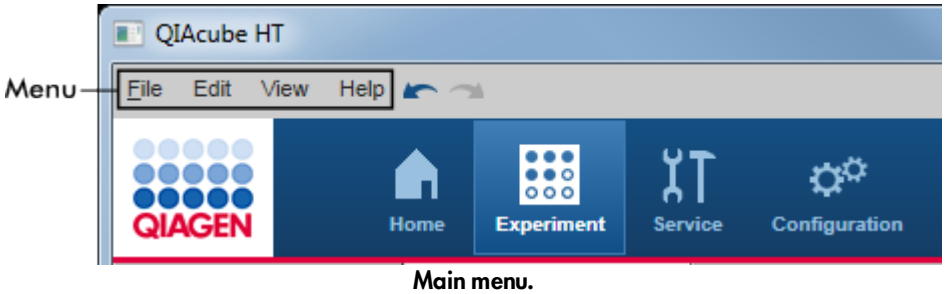
Button bar

Status bar

7.1.3.1 Menu

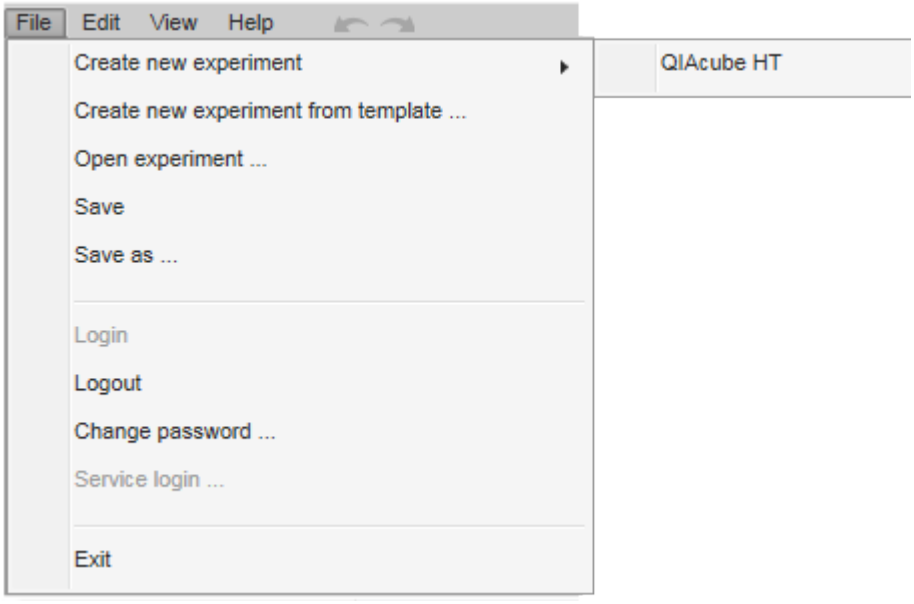
The main menu has four menu entries:

- File
- Edit
- View
- Help



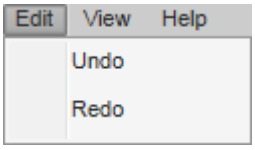
Main menu.

File menu



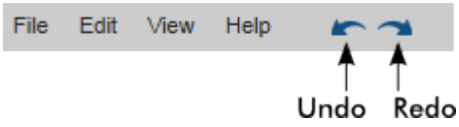
Option	Description
Create new experiment	Create a new experiment without any data. The default experiment name is set to Experiment_MM_DD_YYYY.
Create new experiment from template	Create a new experiment by selecting a previously saved template file with the file extension ***.qpmt**. The data of the new experiment will be populated with all available experiment data from the template file; sample information will not be included.
Open experiment	Open an experiment.
Save	Save the current experiment. If you have not changed the default name (Experiment_MM_DD_YYYY), the file selection dialog is displayed in which you can enter the new file name along with an optional comment.
Save as	Save the current experiment under a new file name.
Login	Log in to the application. This option is only available after software start or logout.
Logout	Log out of the application. The login screen will be shown.
Change password	Change your current password. The **Change password** dialog is shown in which you will enter your current password and the new password.
Service login	This login is used by QIAGEN service personnel only.
Exit	Close the application.

Edit menu

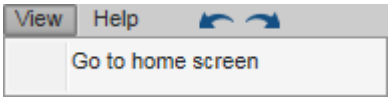


Option	Description
Undo	Undo the last operation.
Redo	Redo the last operation.

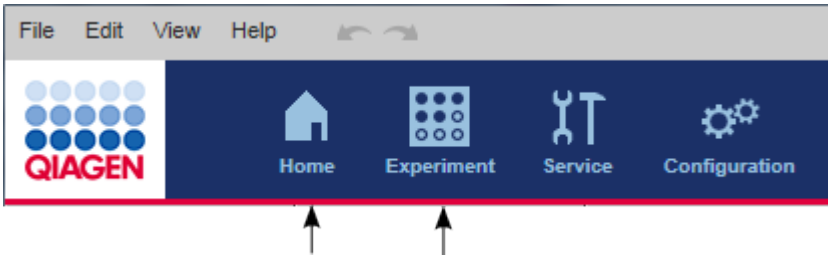
Note: As an alternative to using the **Edit** menu, you can use the undo and redo commands by clicking on the following icons in the menu:



View menu

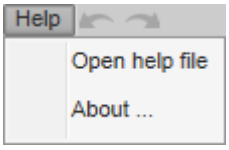


Option	Description
Go to home screen	Change to the home screen.



Note: As an alternative to using the **View** menu to change to the **Home** screen, you can also use the **Home** and **Experiment** buttons from the main toolbar to switch between these two environments.

Help menu

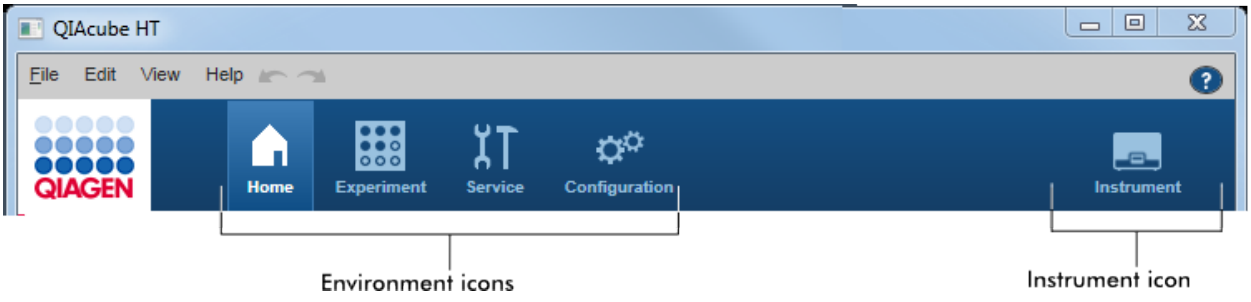


Option	Description
About	Opens the **About** dialog with the copyright notice and version number (at the top right) of the software.
Help	Opens the software help file.

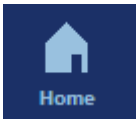
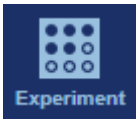
7.1.3.2 Main toolbar

The main toolbar contains two areas:

- Environment icons
- Instrument icons

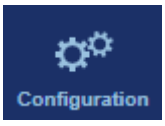


You can switch to another environment by clicking the appropriate button from the main toolbar. The icon of the currently active environment is highlighted.

Environment	Description
	Used to jump to the home screen. From here, you can create or open experiments. See Home for details.
	Used to set up experiments. See Experiments for details



Bundles tasks for maintenance, system check and support of QIAcube HT. See Service for details.



Bundles the tasks' custom settings, user and labware management, and calibration. See Configuration for details.

Instrument icons

The instrument icon is placed on the right of the toolbar. Use it to inspect the connection, running and maintenance status of the instrument.

If you click the instrument icon, the software switches to:

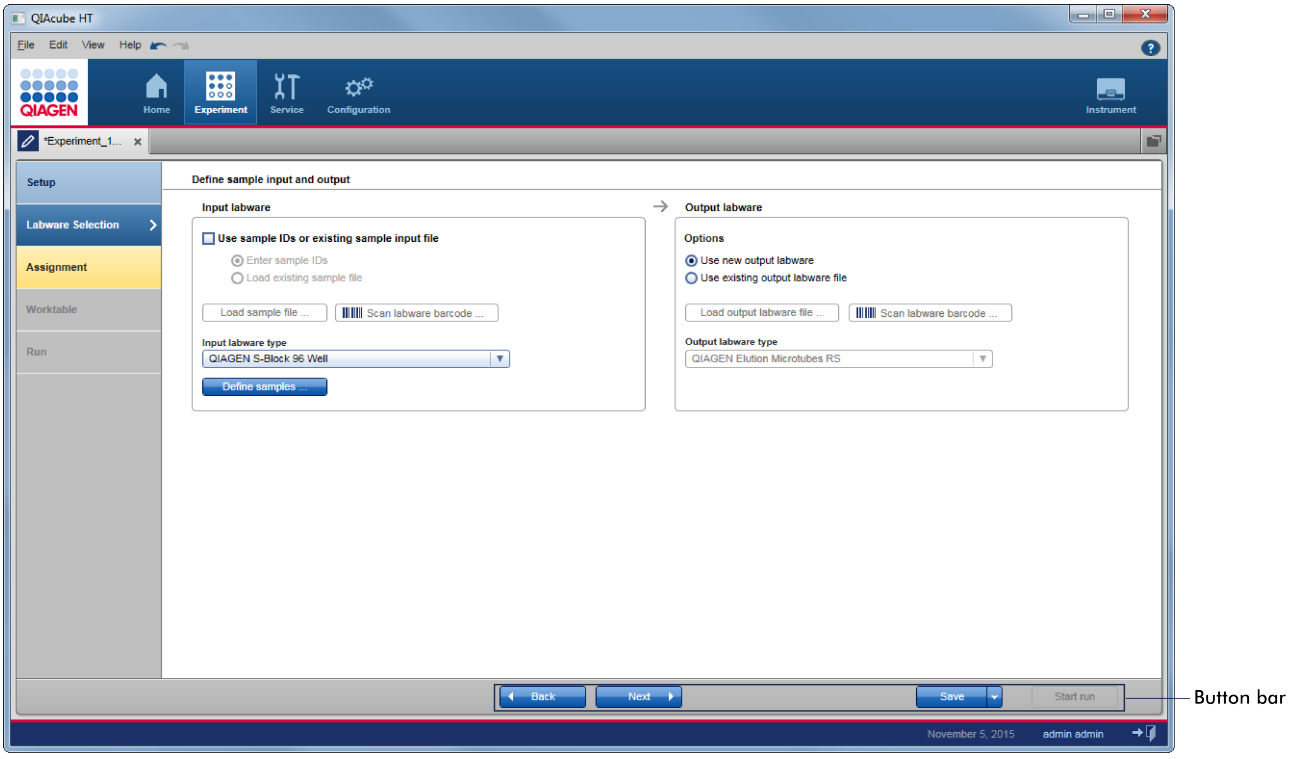
- the run screen of the running experiment, if a run is in progress
- the maintenance schedule, if no run is in progress

Symbol	Description	Action
	Instrument connected.	A run can be started.
	Instrument not connected.	Prior to starting a run, switch on the instrument. **Note**: It can take some time until the software connects to the instrument. For details refer to Start the software. **Note**: The icon cannot be clicked.
	Instrument running. The progress bar below the icon shows the overall run progress.	If you are in the process of setting up the next experiment, you can click the icon to switch to the run step of the running experiment. To return to the setup, click the experiment name of the experiment you worked on.
	Run has just finished. The progress bar shows run completion.	The same as for running instrument.
	An error occurred during the run.	Click the icon to switch to the run step of the current experiment to show the error message.

	The instrument is not fully calibrated.	Before you can start a run, instrument calibration needs to be performed or completed.
	A service task is due. After the reminder, the symbol persists until the service task has been completed successfully.	If no run is in progress, click the icon to switch to the maintenance schedule for details.

7.1.3.3 Button bar

The button bar is placed at the bottom of the screen. It contains buttons specific for the selected screen of an environment. Generally, the buttons for saving, exporting and importing can be found here.



7.1.3.4 Status bar

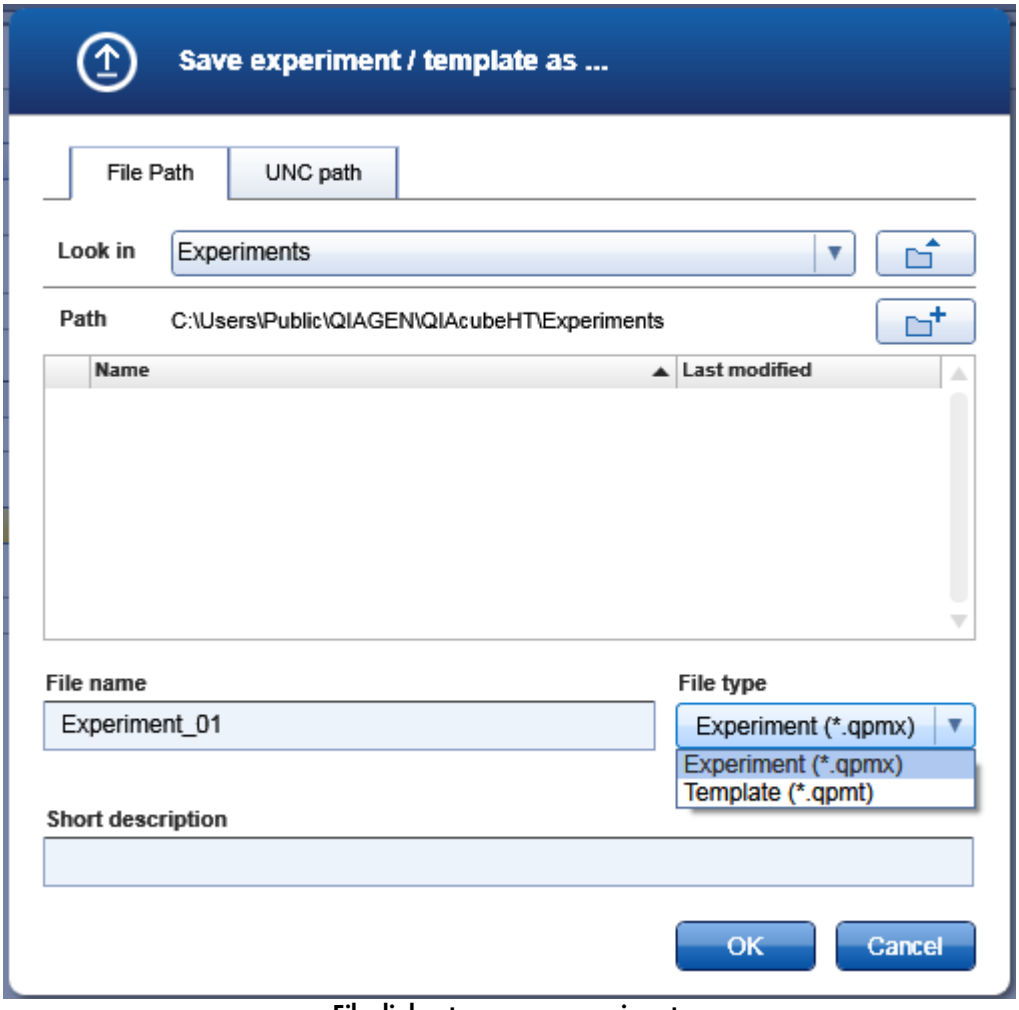
The status bar is always visible and gives an overview about the session status.



Display item	Description
Date	Shows the current date.
User name	Shows first and last name of the user who is currently logged in.
Log out button	Logs out the current user. If there are unsaved data, a warning will appear.

7.1.3.5 File dialog

The file dialog is used in various situations to open or save experiments or templates, to import sample information or to save a report or an output file after a run.

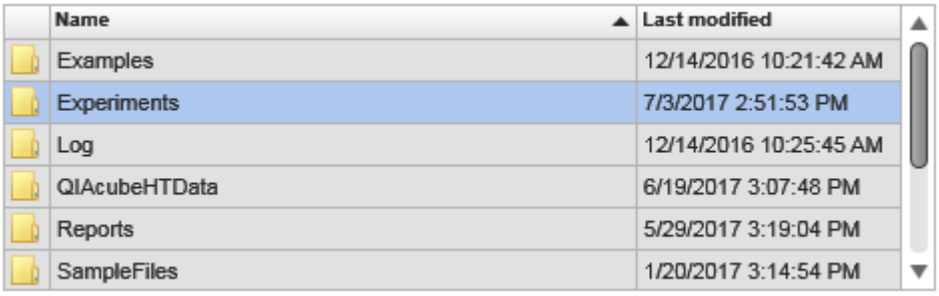


File dialog to save an experiment.

Path indicates the current path. The initial path shown when the file dialog opens can be configured in the user settings.

Note: When the file dialog opens for the first time after clicking the **Open other experiment** or **Create from other template** button from the **Home** screen, the initial path will be **C:**.

The list in the middle of the dialog shows the sub folders of the current path and all files with the extension selected in the **File type** menu.



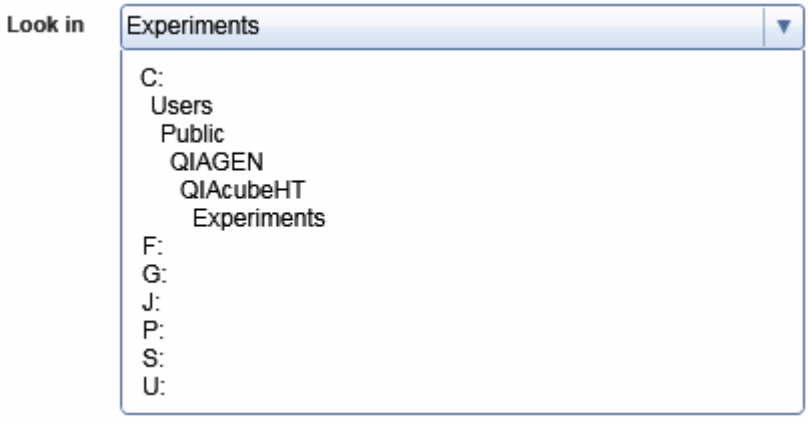
List of sub folders.

To open a file:

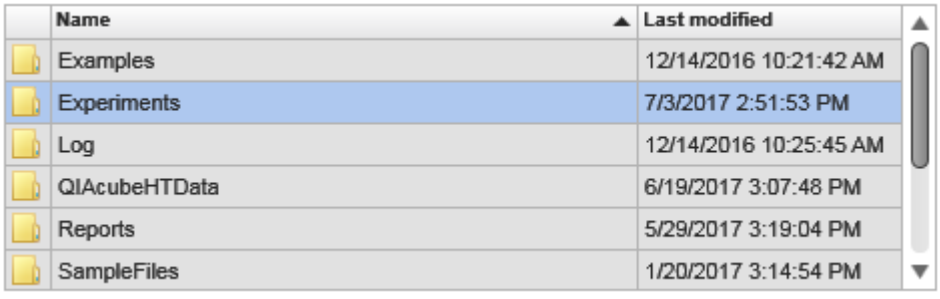
1. Navigate to the folder where the file is stored.

   Use the  button to navigate to the parent folder.

   The **Look in** menu provides the option to select another drive by clicking the drive letter or to select one of the parent folders by clicking it. The list shows all drive letters that are configured in the Windows file explorer.

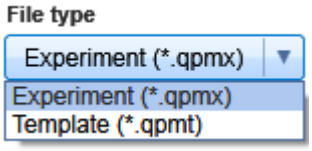


   To navigate to a sub folder, either left-click the sub folder name in the list and then click **Open** or double-click the name.



The **Path** changes to the sub folder and the list shows the content of the selected sub folder.

2. Ensure that the correct file type is selected. The **File type** menu lists all file extensions that are available for the current situation. The various file extensions are described further below.



If you change the selected file type, the list of files will be updated to show all files of the newly selected file type.

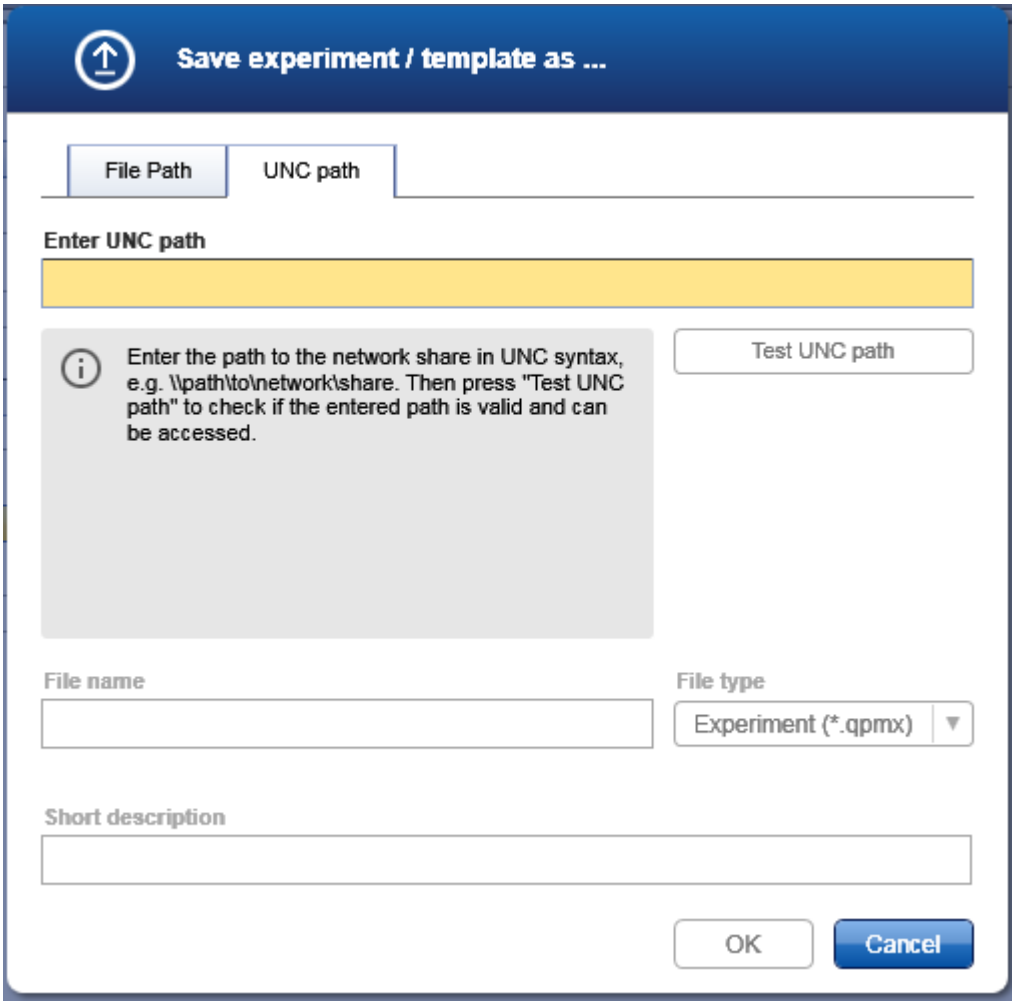
3. To open the file, either left-click the file name in the list and then click **Open** or double-click the file name to open the file.

To save a file:

1. Navigate to the folder where you want to store the file. Use the navigation options described above.
2. Ensure that the correct file type is selected.
3. Enter the file name into the **File name** field.
4. Click **OK** to save the file.

File extension	Description
*.qpmx	Experiment
*.qpmt	Template
*.xml, *.csv, *.txt	For sample input files **Note**: Find examples in the folder: <%DEFAULT_PATH_EXAMPLES%> **Note**: For *.csv and *.txt files it is important to adhere to the syntax. In general, the file represents a comma separated table (CSV), where each line in the file represents a row in the table and a comma (,) represents the cell border to the next column. Like in a table, it is possible to leave the content of a table cell empty, but you cannot omit the commas in a line.
*.xml	For saving an output file
*.pdf	For reports

The QIAcube HT Prep Manager provides the option to use **UNC** syntax to open files from and save files to network shares that are not directly known in the Windows file explorer.

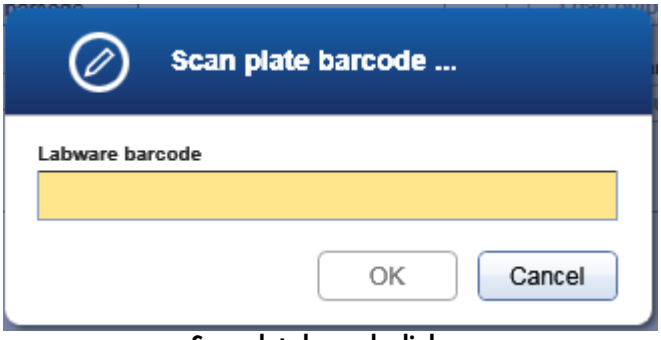


1. In the file dialog, click **UNC path**.
2. Enter the path to the network share using the UNC syntax (e.g., \\path\to\network\share).
3. Press the **Test UNC path** button to test whether the entered path is valid and can be accessed.
4. Enter the file name without the file extension into the **File name** field.
5. Select the file extension from the **File type** menu.
6. Optionally, enter a short description of the file.
7. Click **Open** or **OK** to open or save the file, respectively.

If you encounter issues accessing the network share, contact your network administrator and ensure that the path has been entered correctly and is accessible.

7.1.3.6 Scan plate barcode dialog

To define samples, the QIAcube HT Prep Manager provides the option to load the sample information based on the barcode on the labware. Click the **Scan labware barcode** button to open the **Scan plate barcode** dialog.



Scan plate barcode dialog.

1. Scan the labware barcode. Alternatively, you can enter the labware ID manually.

   Note: The software supports 1-D and 2-D barcodes. 2-D barcodes are supported if they encode a string that is used as labware ID.

2. Click **OK** to confirm.
3. For input labware, the software will automatically search for a sample information file in the **Sample input files** directory (defined in the user settings). The software loads the sample information from the sample file.

   Note: The software will first search for an ***.xml** file in QDEF format, which defines the samples for the labware. It is not required that the *.xml file has the labware barcode as its file name. The software looks into the file and compares the labware barcode with the plate ID described in the file. If no file in QDEF format is present, the software will then search for a ***.csv** file which has the labware barcode as its file name.

4. For output labware, the software automatically searches for a QDEF format file (***.xml**) describing the output labware in the **Sample output files** directory (defined in the user settings). Based on the information from the loaded file, the software will automatically select the **Output labware type**. In addition, the positions that were used with this labware for a previous run will be blocked.

7.1.4 Environments

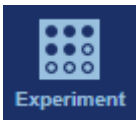
QIAcube HT Prep Manager contains 4 different environments.

You can switch to another environment by clicking the appropriate button from the main toolbar. The icon of the currently active environment is highlighted.

Environment	Description



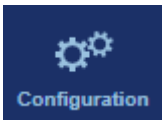
Used to jump to the home screen. From here, you can create or open experiments. See Home for details.



Used to set up experiments. See Experiments for details



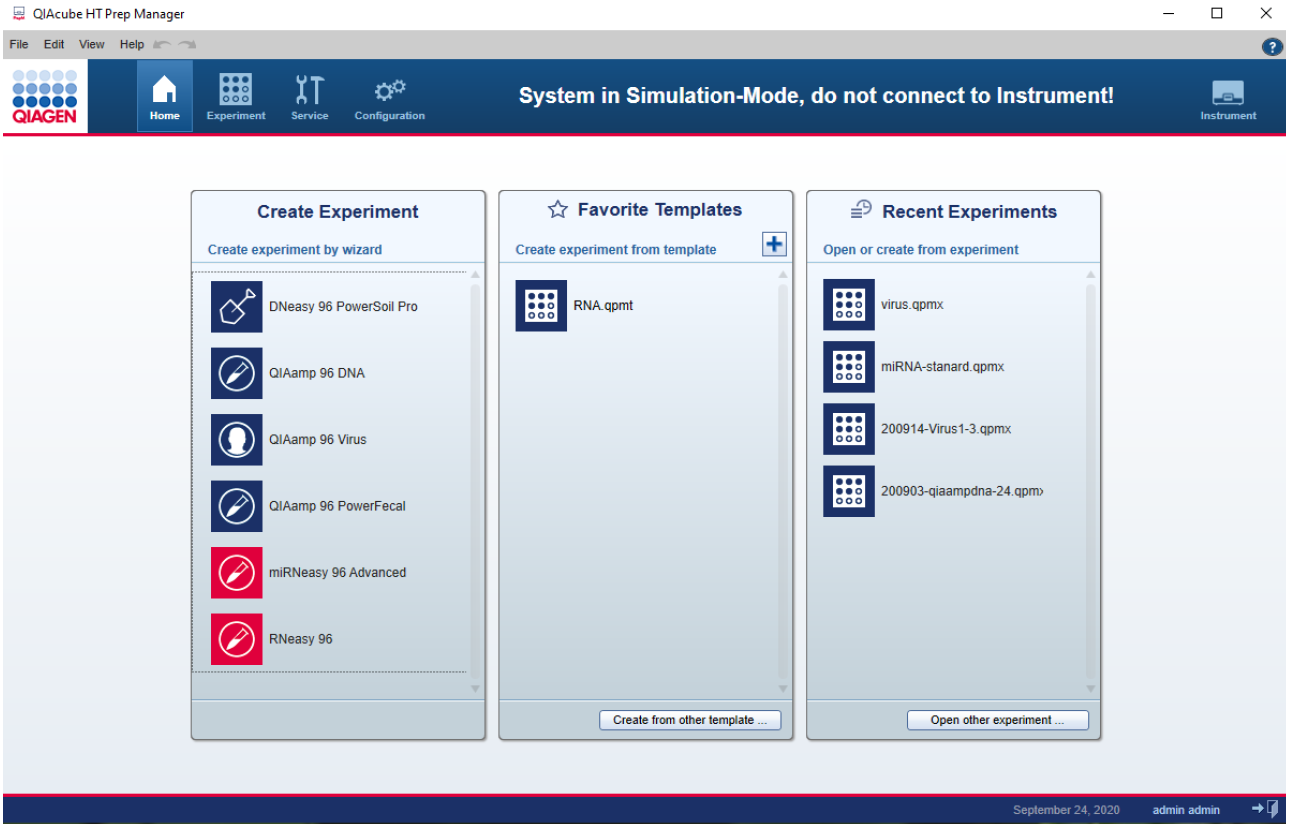
Bundles tasks for maintenance, system check and support of QIAcube HT. See Service for details.



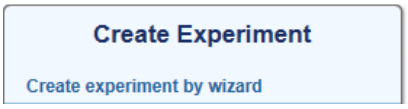
Bundles the tasks' custom settings, user and labware management, and calibration. See Configuration for details.

7.1.4.1 Home

The **Home** environment bundles all tasks for creating and opening of experiments and for working with templates.

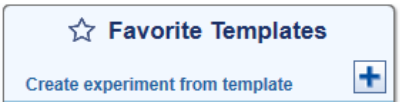


The **Home** environment is divided in three areas:



Creates an experiment using the wizard. The new experiment is empty and does not contain any data. Most data fields are empty, except those that are prefilled by the wizard.

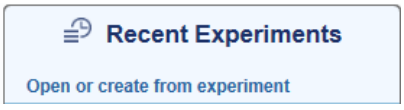
Use this to start an experiment from scratch. For details, refer to Create an empty experiment.



Creates an experiment using a previously saved template. All data fields in the new experiment are populated with existing data from the template. For details, refer to Create an experiment using a template.

All favorite templates are listed in tabular form below the headline. For information regarding how to add a template to the list, refer to Manage favorite templates.

Click the button **Create from other template** to look for a template that is not in the list using the file dialog.



Opens a previously saved experiment. Use this to modify or adapt a saved experiment or alternatively, use it to set up a new experiment that inherits the data from an old experiment. For details, refer to View recent experiments or Create an experiment from an existing experiment, respectively.

All recently saved experiments are listed in tabular form below the headline.

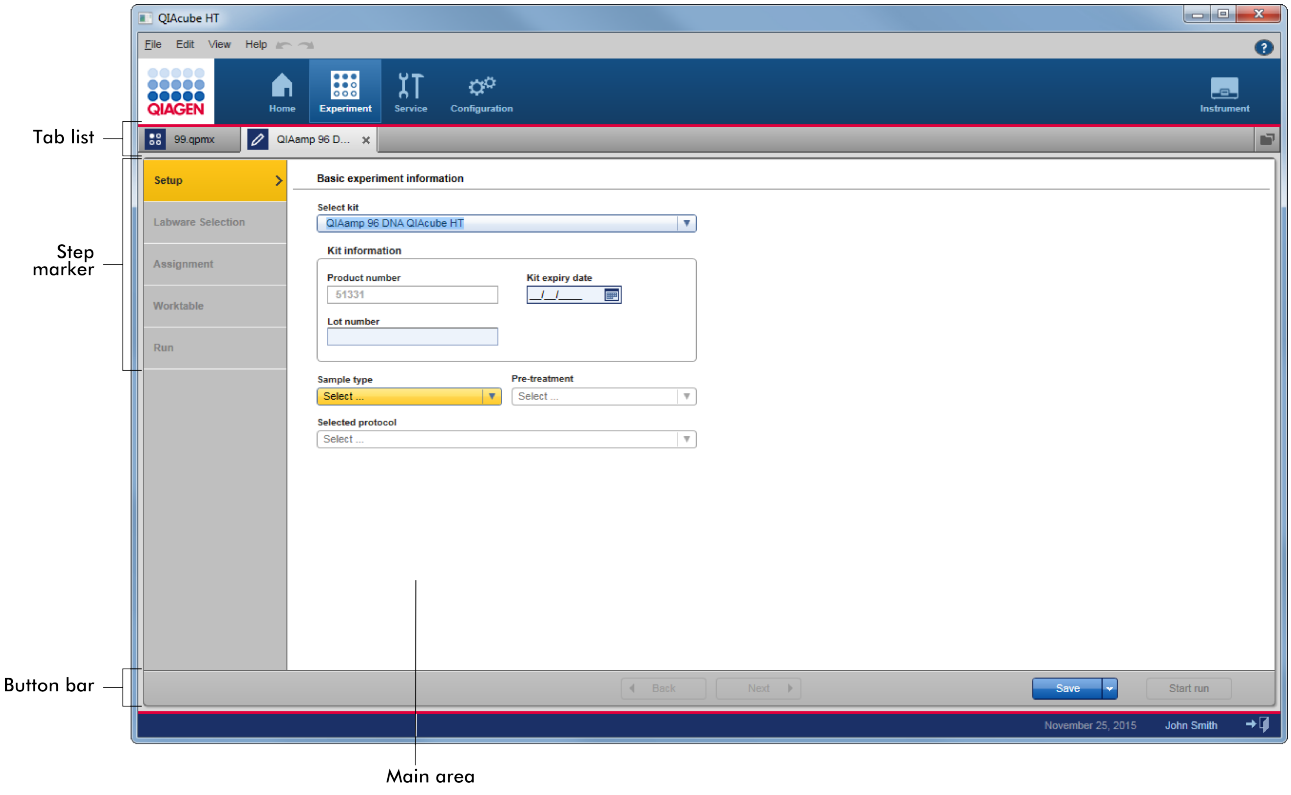
Click the button **Open other experiment** to look for an experiment that is not in the list using the file dialog.

7.1.4.2 Experiments

The **Experiment** environment is the environment in which all user interaction with experiments takes place. This is where experiments are set up and run and reports are created. In order to interact with an experiment, the experiment must be opened. If a new experiment is created, it is open by default.

All changes to an experiment are performed in the computer's memory. In order to make them permanent, it is necessary to save the experiment. Before a run is started, the corresponding experiment must be saved.

The maximum number of experiments that can be opened at a time is 8. Attempting to open more than 8 experiments will result in a warning message.



The screen of the **Experiment** environment has four main areas:

Area	Description
Experiment tab list	The experiment tab control is displayed at the top of the **Experiment** environment. It shows all currently open experiments and offers basic experiment management. A separate tab is displayed for each open experiment. If an experiment name is too long to be displayed within the available space, the displayed name will be truncated, and ellipses (...) will be shown at the end of the name. In order to display the full name, simply let the mouse pointer remain over the experiment name for a few seconds. A tooltip will display the full name of the experiment. When you make modifications in any step, an asterisk symbol (*) will be displayed in front of the experiment name. This is a visual reminder for you that there are modifications that have not yet been saved. When you save the experiment, the asterisk symbol disappears. Clicking on the cross to the right of an experiment name will close the experiment. If any modifications have not been saved, then you will be asked whether the experiment should really be closed. Closing the experiment without saving the modifications will result in loss of the modifications. The following icon appears on the far right of the tab list: . This is a shortcut to open an experiment; clicking this displays a file selection dialog that allows you to open an experiment.
Step markers	Step markers allow you to navigate between different aspects of one experiment. The step markers control the content of the main panel; each step marker is associated with a certain content of the main panel. To switch to another step, click on the step marker step or use the **Back** and **Next** buttons in the

button bar.

Note: It is not required to follow the steps in order, but it is recommended. You can jump any active step at any time.

Main panel — All experiment-specific information is shown and selected in the main panel. The content depends on the selected step marker.

Button bar — The button bar is displayed at the bottom of the **Experiment** environment. It contains buttons for experiment management functions that are not related to a specific step marker, including **Back**, **Next**, **Save** and **Start run**.

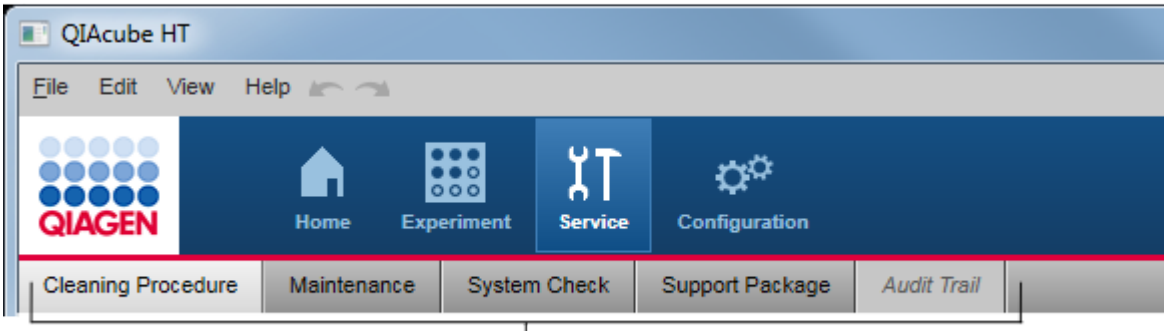
The **Start run** button is only enabled if all requirements for a new run are met (e.g., all required values have been defined during setup) and if the experiment has not already been run. For details regarding a run, refer to Starting a run.

Selecting the **Save** button will save the current experiment. If the experiment has not yet been named, a dialog will be shown, prompting you to enter a name for the experiment. If the experiment already has a name (for example, if an existing experiment was opened), the existing experiment will be overwritten.

The **Save** button also has a sub-function: **Save experiment as**. Clicking on the small arrow to the right of the button will display a menu with the additional choice. The **Save experiment/template as** file dialog allows you to enter a new experiment name and save the experiment with the new name. Use this option to also create a template from the current experiment by selecting the file extension ***.qpmt** in the file dialog.

7.1.4.3 Service

The **Service** environment bundles all tasks needed to check and maintain the QIAcube HT, along with tools to facilitate the communication with QIAGEN Technical Services for technical assistance.



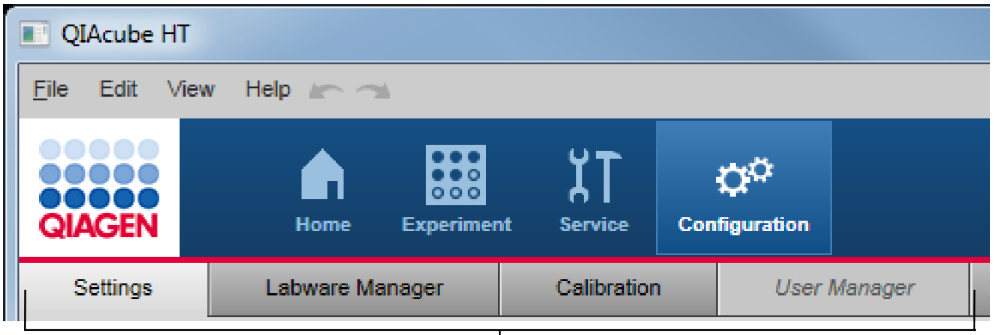
Service environment is organized in five tabls

This environment is organized in five different tabs. You can switch between these tabs by clicking on the respective button in the tab bar.

Tab	Description
Cleaning Procedure	Provides support for cleaning procedures: • Wizard for the cleaning after run procedure, to be performed after each run. • Empty waste bottle. Screen to view the waste bottle status as it is tracked by the software and to acknowledge if the user emptied the waste bottle. Set the waste bottle status to "empty" in the software after emptying to ensure correct tracking. • Wizard for the Cleaning the QIAcube HT, to be performed at the end of a working day. • Offers to start the UV lamp as the last step of the daily cleaning procedure. The UV radiation cleans possible biological contaminations on the worktable.
Maintenance	Maintenance scheduler keeps track of service tasks. Additionally, HEPA filter replacement can be managed here.
System check	Provides several self-diagnostic tools: • Checking the connection between computer and instrument and within the instrument itself • Cycling the pipettor head • Checking for movement reliability • Checking the reliability of the liquid-level sensor
Support Package	Create a support package to assist your communication with QIAGEN Technical Services, in case you have an issue.
Audit Trail	Allows you to view the system audit trail. This tab is only available for users with administrator user role.

7.1.4.4 Configuration

The **Configuration** environment bundles all tasks to customize the instrument for your needs. You can set application settings, select the labware available in your laboratory, perform the instrument calibration and manage users.



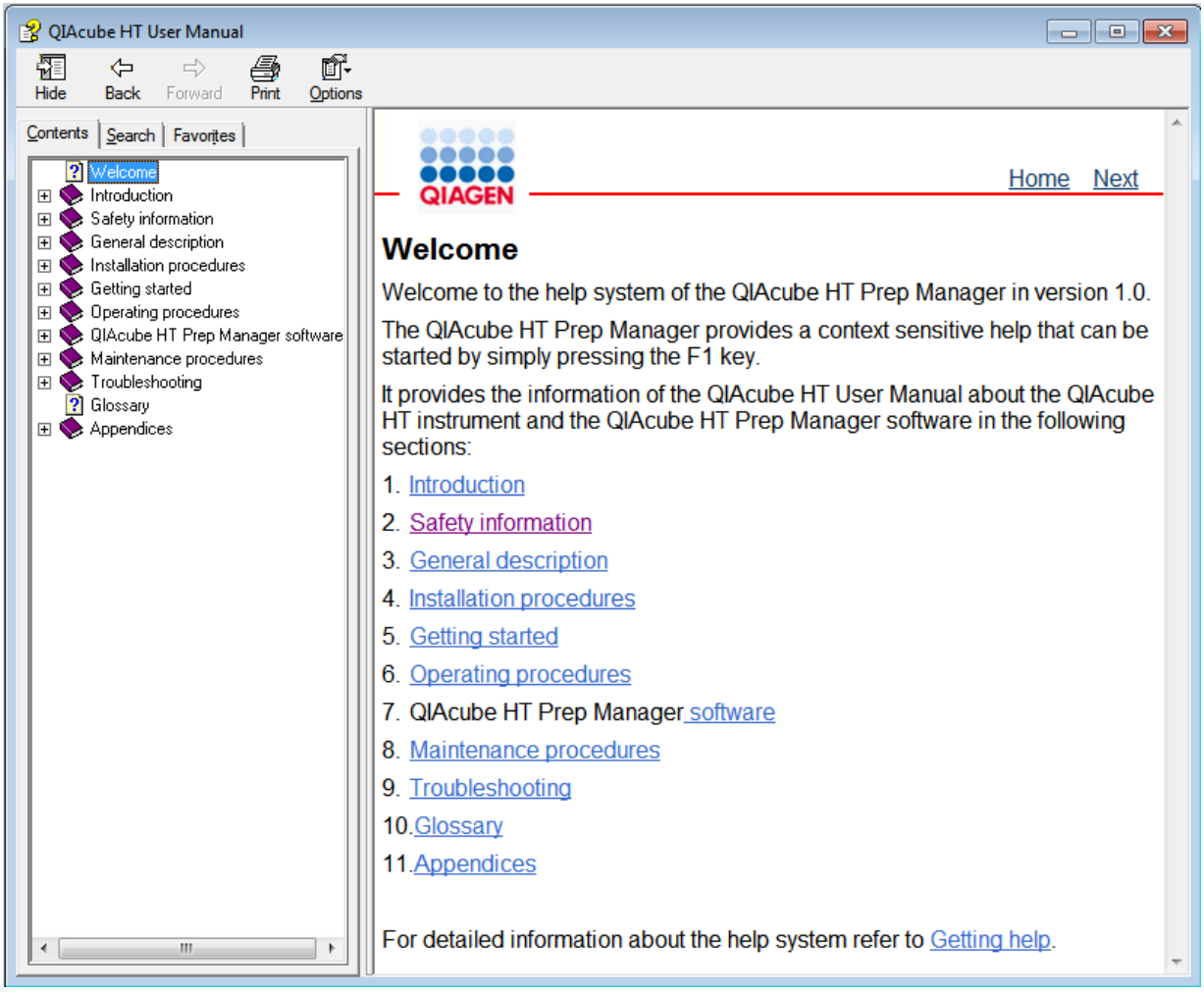
Configuration environment is organized in four tabs

This environment is organized in four different tabs. You can switch between these tabs by clicking on the respective button in the tab bar.

Tab	Description
Settings	Specify general settings including directories for experiments and report customization, set the password policy and e-mail notifications, etc.
Labware Manager	Select the labware (adapter, plates, tubes) available in your laboratory.
Calibration	Perform an instrument calibration, which is essential for accurate and reliable results.
User Manager	Manage users: • Create and modify users and their roles • Activate and deactivate users

7.1.5 Getting help

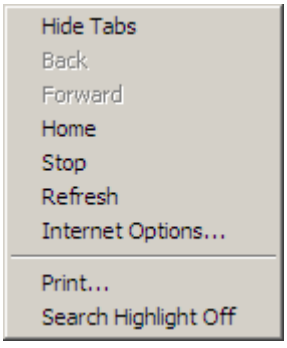
QIAcube HT Prep Manager comes with a detailed help system. The help is provided as both a user manual in PDF format and also as a context-sensitive help system. To access the context-sensitive help, click the button at the top right of the software window or press the **F1** key while you are viewing screens or dialogs.



The help file contains two functional areas:

- Toolbar
- Tabs

The toolbar contains the following buttons:

Name	Icon	Description
Hide or Show		Hides the left-hand side navigation tab. To display the navigation tab again, click **Show**. This button appears instead of **Hide**.
Back		Returns to the previous screen.
Forward		Returns to the screen displayed before using the **Back** button.
Print		Provides two options: • Print the selected topic. • Print the selected heading and all subtopics. Select one option and confirm with **OK** or select **Cancel** to go back.
Options		Opens the **Options** menu with the following entries: 

The navigation tab contains the following tabs:

Name	Description
Contents	In the **Contents** tab the help content can be browsed by topics.
Search	Specific help topics can be found by entering search terms.
Favorites	Shortcuts to individual help topics can be added and managed.

7.2 Working with experiments

The **Home** environment bundles all tasks for creating and opening experiments and for working with templates. It offers the following functions:

- Creating a new, empty experiment from the **Create Experiment** section
- Creating a new experiment from a template from the **Favorite Template** section
- Creating a new experiment from a previously run experiment from the **Recent Experiments** section

The general workflow is to select a kit from the **Home** environment, define the experiment in the Experiment environment and finally start the run. It is not necessary to finish the definition of an experiment in one step. A save function is available at any time, allowing you to save your progress and continue later. To facilitate the experiment definition, you can use templates or reuse previously run experiments.

7.2.1 Manage experiments and templates

Experiments and templates are managed in the **Home** environment. The following sections describe how to work with them:

For details about the template concept, refer to Experiments and templates.

7.2.1.1 Create a template

An experiment can be saved as a template for future reuse. Use this function if you plan to enter the same values for experiment setup for several experiments (e.g., for routinely performed experiments or for a series of runs).

Prepare an experiment as the basis for the template:

1. Create a new empty experiment. Alternatively, create an experiment from an existing experiment.
2. Enter all values in the template that should be available for reuse.

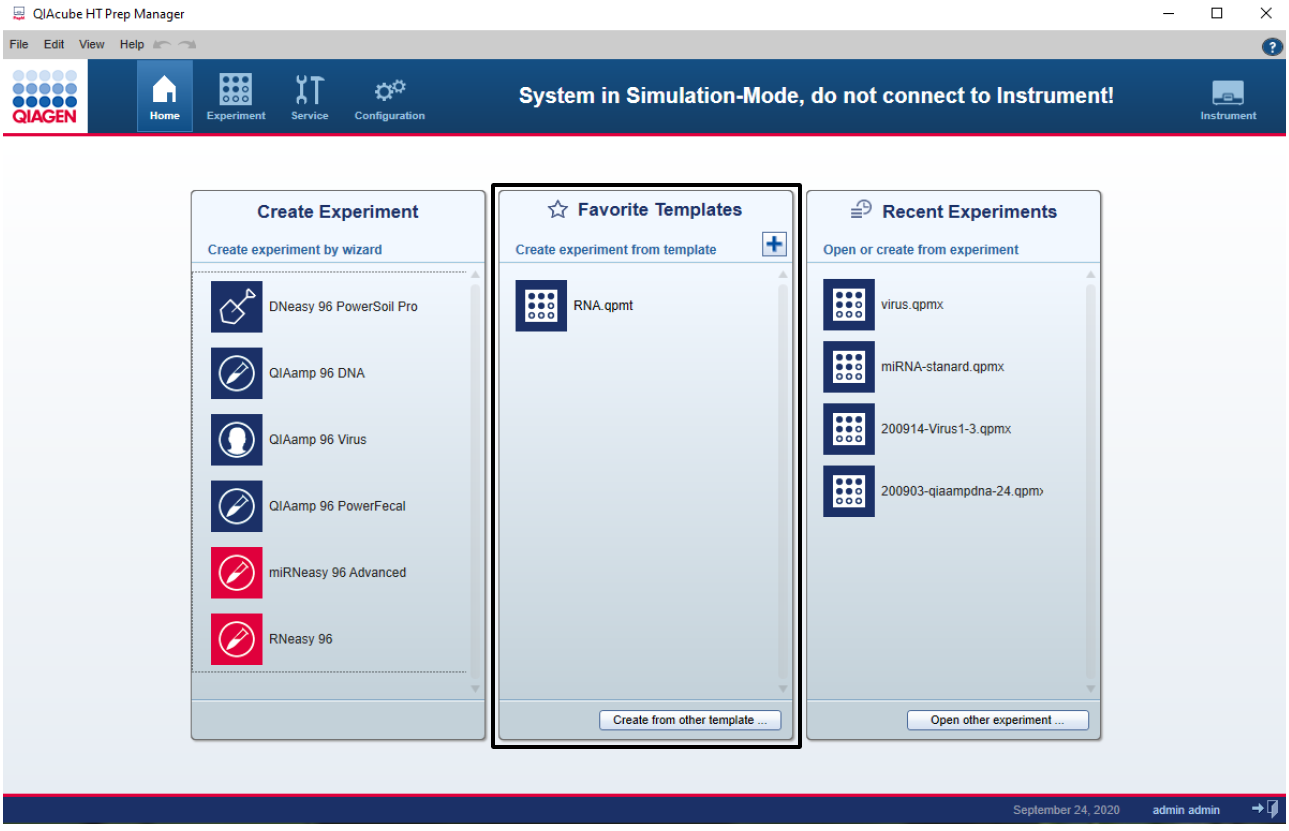
   Note: If you created the experiment from an existing experiment, remove all values that should not be reused. When using the template, it is easier to recognize that some values are still missing than to recognize that some values should be changed.

To save an open experiment as a template:

1. Click on the small arrow to the right of the **Save** button in the button bar. From the displayed menu select **Save experiment as**.
2. The **Save experiment/template as file** dialog opens.
3. Select the directory where the template should be saved.
4. Enter a name for the template.
5. Select the file extension **.qpmt** for a template.
6. Click **Save**.
7. Add the created template to the favorite templates section.

7.2.1.2 Manage favorite templates

The software offers the possibility to manage favorite templates in the **Favorite Templates** list of the **Home** environment. For information about how to create a template, refer to Create a template.



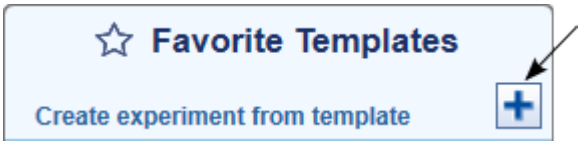
A maximum of 11 templates can be displayed. When this limit is reached, the oldest template will be removed from the list. The template name will be truncated if the available space is exceeded, and ellipses (...) will be shown at the end of the template name. To display the full name, move the mouse pointer over the experiment name, and after a few seconds, a tooltip will be displayed showing the full name.

Templates can be added or removed from this list, and new experiments can be created based on these templates. In addition, this section offers the option to create experiments based on templates that are not contained in the list of favorite templates.

Adding a template

1. Click on the **Home** icon in the main toolbar to change to the **Home** environment.
2. The **Favorite Templates** list in the middle will display all favorite templates.

3. Click on the plus icon in the list header:



4. Select the template with file extension ***.qpmt** you would like to add.
5. The selected template will be added to the **Favorite Templates** list.

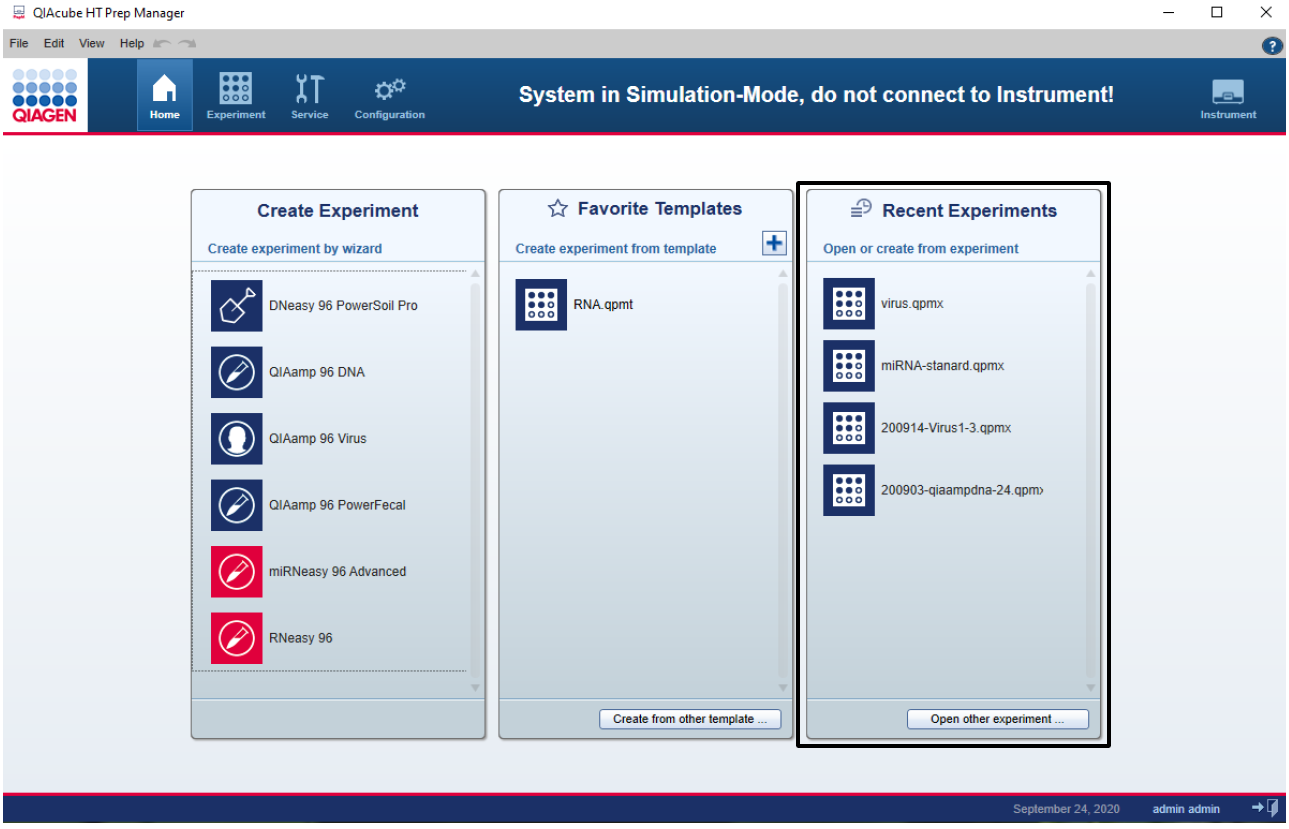
Removing a template

1. Click on the **Home** icon in the main toolbar to change to the **Home** environment.
2. The **Favorite Templates** list in the middle displays all favorite templates.
3. Move the mouse pointer over the template name.
4. The context menu icon appears ( ).
5. Click on the icon.
6. The context menu is shown.
7. Click on the **Remove from favorites** command.
8. The selected template is removed from the **Favorite Templates** list.

Note: Removing a template using the steps above will not physically delete or modify the template file. It will only be removed from the **Favorite Templates** list.

7.2.1.3 View recent experiments

When an experiment is saved or run, it is automatically added to the **Recent Experiments** table in the **Home** environment:



The most recent experiment appears at the top of the list. A maximum of 11 experiments can be displayed. When this limit is reached, the oldest experiment will be removed from the list.

The experiment name will be truncated if the available space is exceeded, and ellipses will be shown at the end of the experiment name. To display the full name, move the mouse pointer over the experiment name, and after a few seconds, a tooltip will appear with the full name.

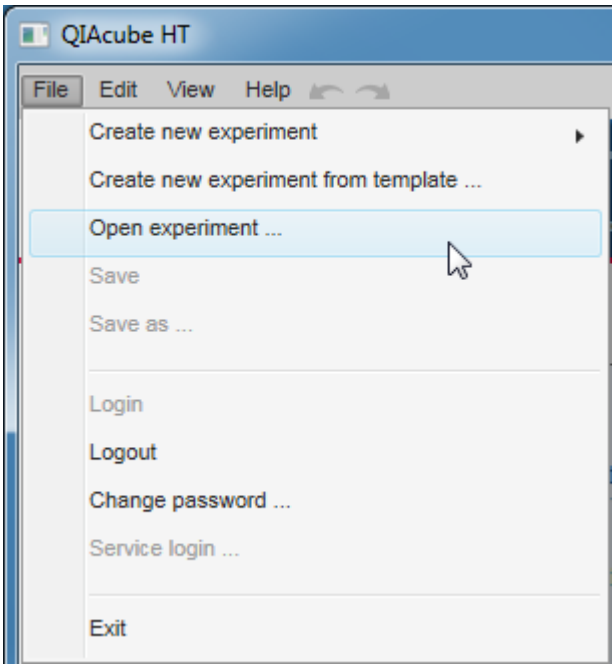
Opening an existing experiment

1. Click on the **Home** icon in the main toolbar to change to the **Home** environment.
2. The **Recent Experiments** table on the right displays all recent experiments.
3. Click on the experiment name you want to open. Alternatively, position the mouse pointer over the experiment name. Click on the context menu icon that appears ( ) and select **Open experiment**.

   Optional step: If the experiment is not listed because it has been pushed off the list by newer experiments, click on the **Open other experiment** button at the bottom and select the experiment from the file dialog.

4. The experiment is opened in the **Experiment** environment.

Note: Alternatively, you can use the **Open experiment** command from the **File** menu to open an experiment.



Removing an experiment from the list of recent experiments

Follow these instructions to remove an experiment from the **Recent Experiments** list:

1. Click on the **Home** icon in the main toolbar to change to the **Home** environment.
2. The **Recent Experiments** table on the right displays all recent experiments.
3. Move the mouse pointer over the experiment name you want to remove.
4. The context menu icon ( ) is displayed.
5. Click on the context menu icon to open the context menu.
6. Select the **Remove experiment from recent list** command.
7. The selected experiment is removed from the recent experiments list.

   Note: The experiment will still be available via the **Open other experiment** button.

7.2.2 Creating an experiment

You can create an experiment in two different ways:

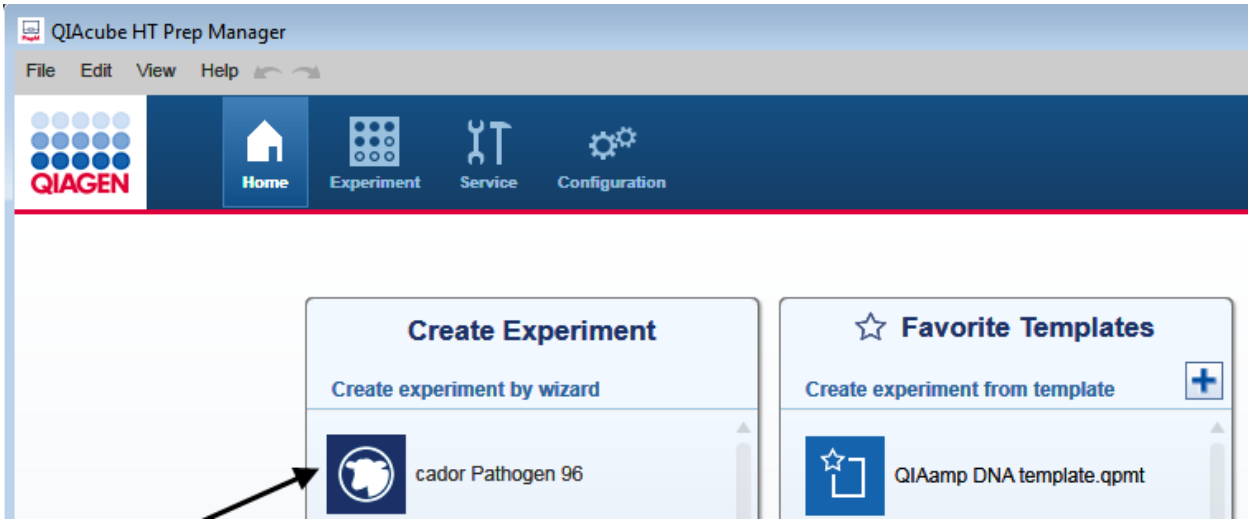
- create a new, blank experiment without any data, or
- create an experiment with data inherited from a previously saved experiment or template.

7.2.2.1 Create an empty experiment

There are two ways to create an empty experiment:

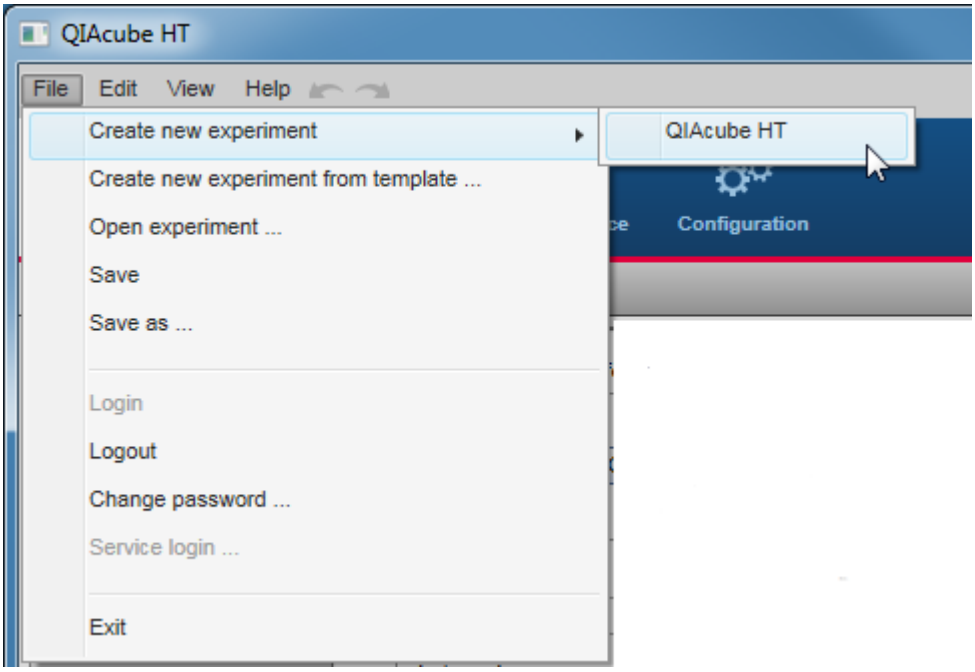
- Using the **Home** environment

  In the **Home** environment, all supported kits are listed in the **Create Experiment** list. Move the mouse pointer over one of the kit entries and click on it. The new experiment is created and displayed in the **Experiment** environment.



- Using the **File** menu

  To create a new experiment using the main menu, select **File** from the main menu and move the mouse pointer over the **Create New Experiment** command. Select QIAcube HT from the submenu to create a new, blank experiment.

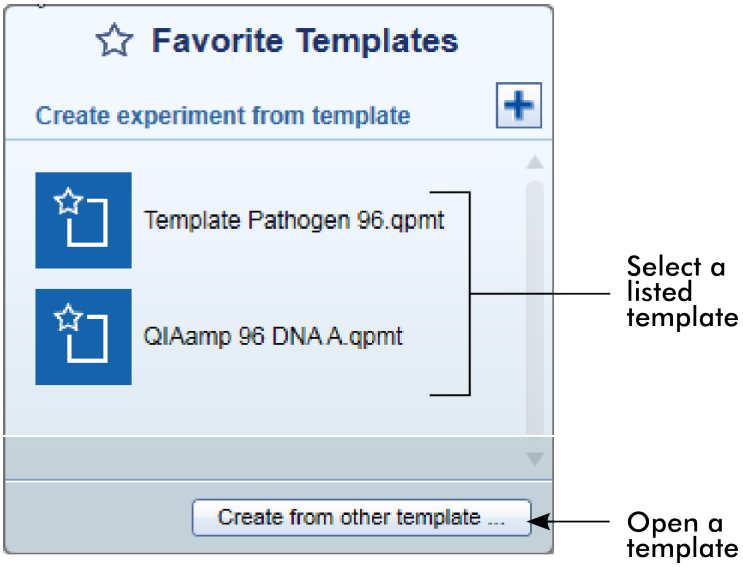


7.2.2.2 Create an experiment using a template

There are two ways to create an experiment based on a template:

- Using the **Home** environment

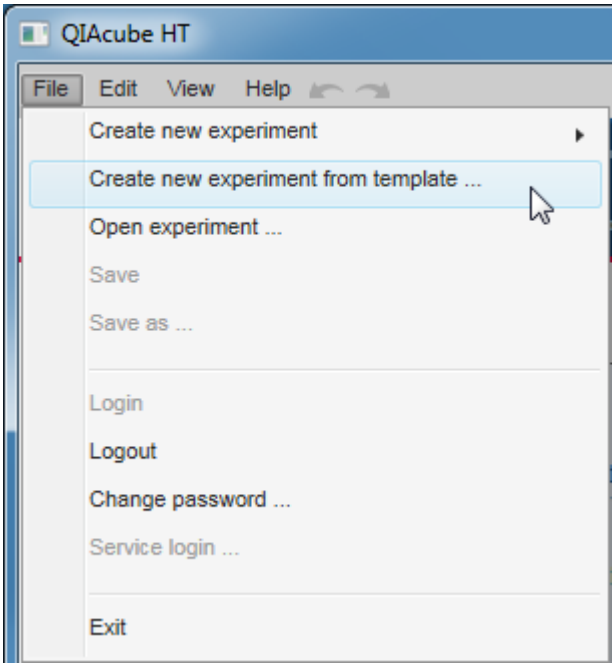
  In the **Home** environment, favorite templates are listed in the **Favorite Templates** list. You can either click on one of the listed templates, or if the desired template is not listed, click on the **Create from other template** button at the bottom. This opens the file dialog that allows you to select a template. In both cases, a new experiment will be created containing all data from the selected template.



For details on how to add a template to the favorite list, refer to Manage favorite templates.

- Using the **File** menu

  To create a new template-based experiment using the main menu, select **File** from the main menu and click on the **Create New Experiment from Template** command. The **File Open** dialog is opened, allowing you to select a template. When you confirm the file dialog, a new experiment will be created containing all data from the template.



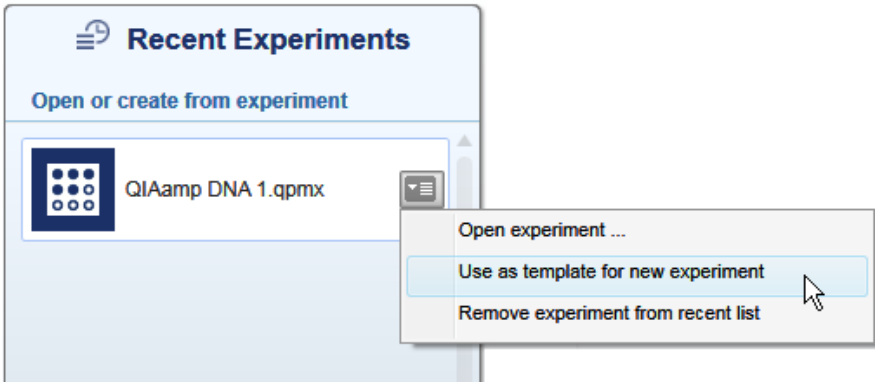
For details of the template concept, refer to Experiments and templates.

7.2.2.3 Create an experiment from an existing experiment

To use an existing experiment as a starting point to create a new experiment, follow this procedure:

1. Change to the **Home** environment.
2. Move the mouse pointer to the desired experiment in the **Recent Experiments** list.

   Note: In case the desired experiment is not listed here, click on the **Open other experiment** button at the bottom to open it once using the file dialog that appears. Now the experiment will be listed in the **Recent Experiments** list. Close it and start again with step 1.
3. Hold the mouse pointer over the desired experiment.
4. The context menu icon ( ) appears.
5. Click on it.
6. The context menu is opened.



7. Click on **Use as template for new experiment**.
8. A new experiment will be created based on the data from the selected experiment (excluding the sample information and assignment) and will be displayed in the **Experiment** environment.

7.3 Report

The QIAcube HT Prep Manager offers two types of reports: a basic report that gives a short overview and an advanced report that contains all details.

The **Basic report** contains:

- General information
- Comment
- Sample information
- Exceptions
- Detailed run information

The **Advanced report** contains:

- General information
- Comment
- Kit information
- Sample information
- Exceptions/Pauses
- Worktable information
- Detailed run information
- Advanced instrument information

Descriptions of the sections that are part of both report types are below.

General information

Some general information is provided at the beginning of the report. This includes information such as the name of the kit, the experiment file and the output file (if any has been saved), the instrument serial number and the date, time and duration of the run.

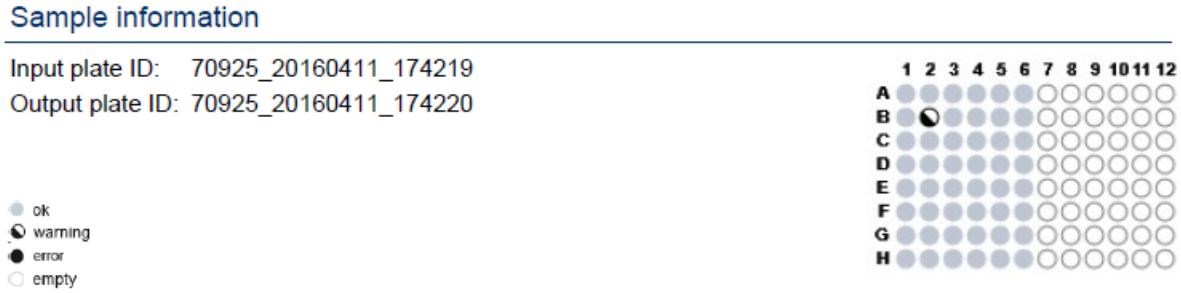
Comment

The comment that has been entered on the **Run** screen.

Sample information

The following table and an overview graphic are shown, visualizing each position on the output plate:

Symbol		Description
	ok	The position was processed without any exceptions.
	warning	The position was processed with exceptions that allowed further processing (e.g., tip failure). If the position have been marked during the run in the Vacuum performance check dialog, it will also be indicated with this symbol. The exceptions are listed in the Exceptions chapter below.
	error	The position could not be processed as required due to an exception that did not allow further processing (i.e., the run was stopped due to an error). The exception is listed in the Exceptions chapter below.
	empty	The position is empty. The position has not been used during the run.
	not used	This symbol is only used if an output file has been loaded as a starting point for the output plate (e.g., when using several runs to fill the output labware). The symbol represents a position that was not part of this run, although it is not empty.



Note: If no input or output file has been loaded, the software automatically creates identifiers for the input and output labware.

A table listing the run result for each processed position on the output labware is also shown.

Column	Description
Pos. output plate	The position on the output labware.
Identifier	Specifies the sample ID.
Flag	Shows the status of the position: either ok, warning or error, corresponding to the symbols of the graphic.

Note: The table contains only those positions on the output labware that were subject to this run. Empty or unused positions are listed for reference below the table.

Exceptions

This section lists all events, if any, in a table:

Column	Description
Exception	The event that has been displayed during run. Or **User marked well** in case that the user marked a position in the **Vacuum performance check** dialog during run.
Position/Duration	Lists the positions that were affected by the exception. First, the position is listed for which the exception occurred. After "Destination," all positions are listed that could not be completed as a result of the exception, especially all affected positions on the output plate. The @ symbol is used to address positions. Consecutive positions are listed column-wise. Examples: • "filter plate @ B2 Destination: output plate @ B2": The exception (e.g., User marked well) occurred on filter plate at position B2 which impacted the output position B2. • "filter plate Destination: output plate @ A1-H6": The exception (e.g., a vacuum problem) occurred on the filter plate which impacted all output positions A1-H6 (e.g., columns 1-6). For some exceptions the time is listed when the exception occurred, if for example, the lid has been opened during run.
User response	A short form indicating which option (button) of the message dialog was pressed.

Note: The **Basic** report does not list pauses. If you would also like to have pauses listed, use the **Advanced** report instead.

Detailed run information

This section lists all tasks of the run as they were displayed on the **Run** step.

In case of changes that are not recommended (e.g., values have been changed in the **Advanced options** section on the **Setup** screen or assignments have been made on the **Assignment** screen that are not recommended), the following message will be shown: "Changes were programmed that are not recommended or tested by QIAGEN."

Descriptions of the sections that are only included in the **Advanced** report are below.

General information

Instrument and kit information are not listed in this section in the **Advanced** report. Instead, this information is provided in more detail in separate sections.

Kit information

Kit name, lot number and expiration date are included if they were entered on the setup screen during run setup. Sample pre-treatment, sample type and run script as selected on setup screen are also included, along with comments provided with the kit.

Note: The **Advanced** report does not repeat this information in the **General information** section.

Sample information table of the Advanced report

In addition to information provided in the **Basic** report, the **Sample information** table of the **Advanced** report contains one additional column:

Column	Description
Description	Lists the sample description as entered in sample editor.

Exceptions/Pauses of the Advanced report

In contrast to the **Basic** report, this section not only lists all events but also any pauses that may have occurred during the run:

Column	Description
Exception	The event or pause that has been displayed during run.
Position/Duration	For an event: Lists the positions that were affected by the exception. First, the position is listed for which the exception occurred. After "Destination," all positions are listed that could not be completed as a result of the exception, including all affected positions on the output plate. The @ symbol is used to address positions. Consecutive positions are listed column-wise. Examples: • "filter plate @ B2 Destination: output plate @ B2": The exception (e.g., User marked well) occurred on filter plate at position B2, and this impacted the output position B2. • "filter plate Destination: output plate @ A1-H6": The exception (e.g., a vacuum problem) occurred on the filter plate and this impacted all output positions A1-H6 (e.g., columns 1-6). For some exceptions the time is listed when the exception occurred, if for example, the lid has been opened during run. For a pause: the duration of the pause.
User response	A short form indicating which option (button) of the message dialog was pressed.

Worktable information

Lists for each worktable position the liquids that have been placed there. Additionally, lists the waste bottle status and that

the loading of the tip chute has been acknowledged.

Advanced instrument information

This section lists not only the series numbers of the QIAcube HT and the pipettor head, but also information about HEPA filter usage, service due dates and volume calibration.

7.4 Administrative tasks

This section describes various administrative tasks for the QIAcube HT.

7.4.1 Configuring QIAcube HT

To set up the QIAcube HT, follow the instructions in the following sections in the order listed below:

1. Unpacking and installation
2. Software installation
3. Managing users
4. Customizing settings
5. Labware manager
6. Instrument calibration

7.4.2 Viewing software version

When you contact QIAGEN Technical Services for support purposes, you may be asked to provide the software version number of your installation. To see the version number, click on **Help** from the main menu and select the **About** command. The **About** dialog will be displayed and the current version number will be displayed at the top right of the dialog.

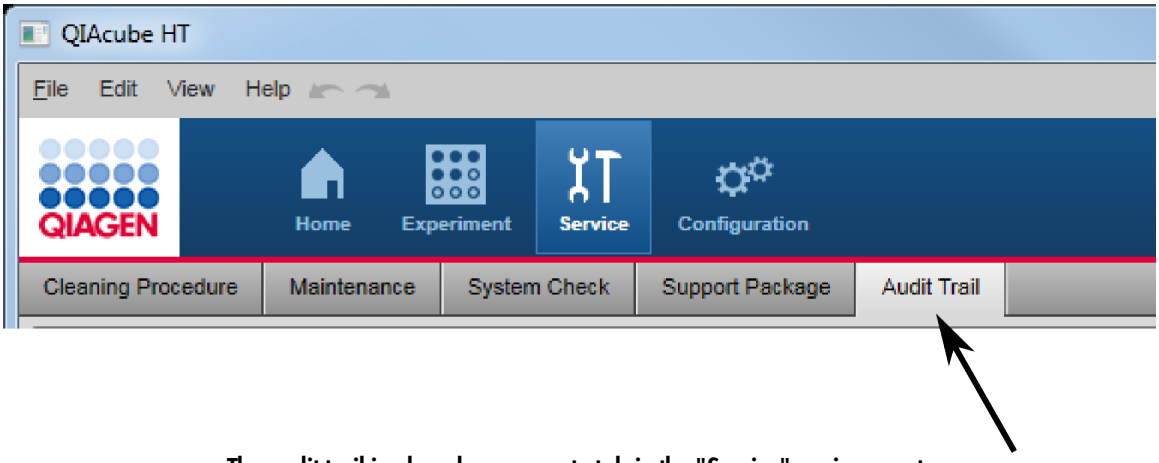
7.4.3 View system audit trail

The audit trail is a versatile tool to keep track of events that occur in the QIAcube HT Prep Manager. You can filter for specific events using the date or date ranges and user criteria. Results matching the criteria are displayed and can be exported to a PDF file.

Note: This function is only available for users with administrator user role.

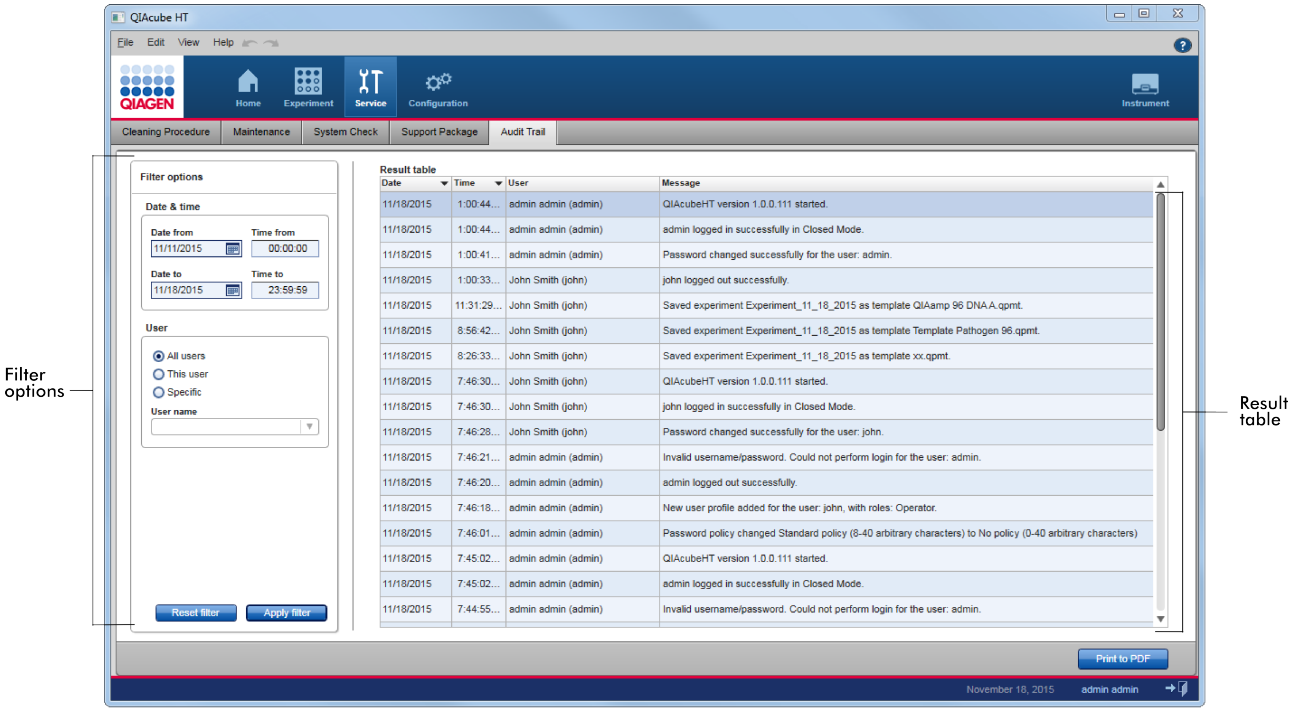
Relevant events are:

- Starting a run
- Completion of a run
- Stopping a run
- Creating a report



The audit trail is placed as separate tab in the "Service" environment.

You can apply filters from the **Filter options** group box on the left to find audit trail entries that meet specific criteria. Criteria you can use are specific dates, date ranges or specific users. All audit trail entries that meet the criteria are listed in the **Result table** on the right of the screen. You can also generate a PDF file of the results.



To filter for specific audit trail entries:

1. Click on the **Audit Trail** tab in the **Service** environment.
2. The **Audit Trail** is displayed.
3. From the **Filter options** group box on the left, select the filter criteria.

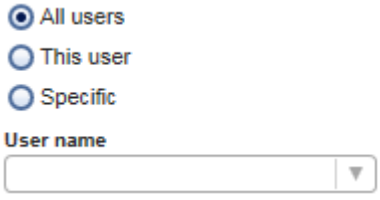
   Note: You can combine time/date filter and user filter for more advanced queries:

   Time/date filter — Enter the desired date/time to the **Date from/Time from** and **Date to/Time to** fields:

   Note: You can use the date picker ( ) to open an interactive calendar for entering the dates

   User filter — Select one of the three options to filter for all users, the current user or a specific user. In the latter case, select a user name from the **User name** drop-down menu below:

4. Click on **Apply filter** to apply the selected filter.
5. All entries in the audit trail that meet the selected filter will be displayed in the **Result table** on the right of the screen.

Exporting filter results

To export the results of a specific filter, click on the **Print to PDF** button at the bottom right. A PDF will be created and opened, displaying the current result table.

Note: To view reports generated in PDF format, a PDF reader must be installed on the computer, see Computer.

Maintenance procedures

8 Maintenance procedures

Two types of maintenance procedures are required. Follow these procedures to ensure optimum performance of your QIAcube HT instrument.

- Regular maintenance
- Periodic maintenance

Before undertaking any maintenance procedures, we recommend that you familiarize yourself with the safety information by referring to section Maintenance safety.

WARNING 	**Risk of personal injury and material damage** [W13] Only perform maintenance that is specifically described in this user manual.

WARNING 	**Risk of electric shock** [W14] Do not open any panels on the QIAcube HT. **Risk of personal injury and material damage.** Only perform maintenance that is specifically described in this user manual.

- Discard waste according to local safety regulations.
- Switch the instrument off and disconnect the line power cord of the QIAcube HT and of the vacuum station from the power outlet before maintenance and servicing.

8.1 Cleaning agents

- Follow manufacturer's safety instructions for handling cleaning agents.
- Follow manufacturer's instructions for soaking time and concentration of the cleaning agents. Immersing for longer than the recommended soak time can harm the instrument.

The following disinfectants and detergents are recommended for cleaning the QIAcube HT.

Note: If using disinfectants different from those recommended, ensure that their compositions are similar to those described below.

General cleaning of the QIAcube HT:

- Mild detergents
- 70% ethanol (except for the QIAcube HT lid, refer to Cleaning the lid)

- Mikrozid® Liquid (Schülke & Mayr GmbH)

Disinfection

- Ethanol-based disinfectants can be used for disinfection of surfaces, such as the worktable: Mikrozid Liquid, Mikrozid Wipes. Do not use ethanol-based disinfectants to clean the lid.
- Disinfectants based on glyoxal and quaternary ammonium salt can be used for submerging worktable items, such as adapters and tip ejector: Lysetol® AF (Gigasept® Instru AF in Europe, Schülke & Mayr GmbH; or DECON-QUAT® 100, Veltek Associates, Inc., in the USA)

Removal of nucleic acid contamination

- DNA-ExitusPlus™ (AppliChem) can be used for cleaning surfaces and to soak worktable items
- ANIGENE (formerly TriGene, Medichem International) can be used for soaking worktable items

CAUTION 	**Damage to the instrument** [C4] Do not use solvents, or reagents containing acids, alkalis or abrasives to clean the QIAcube HT.

CAUTION 	**Damage to the instrument** [C9] Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAcube HT.

CAUTION 	**Damage to the QIAcube HT lid** [C5] Do not use alcohol, solvents, reagents containing acids, alkalis or abrasives to clean the instrument lid. Alcohol will damage the lid. To clean the lid, use distilled water only.

CAUTION 	**Damage to the QIAcube HT side panels** [C6] Never clean the instrument side panels with alcohol or alcohol-based solutions.

WARNING/ CAUTION	**Risk of fire** [W16] When cleaning QIAcube HT instruments with alcohol-based disinfectant, leave the instrument hoods open to allow flammable vapors to disperse.

8.2 Servicing

Servicing

The QIAcube HT is supplied with a warranty that lasts for one year, beginning on the date of shipment. The warranty includes all repairs due to mechanical breakdown. Application development, software upgrades, accessories and disposable items are not included in the warranty.

QIAGEN offers comprehensive Service Support Agreements, including Warranty Extensions, Full Cover Support Agreements, and system/application training, including on-site installation and annual preventive maintenance. Service Support Agreements maximize productivity and ensure high performance from your system. In addition, service histories are fully documented and all parts are certified and guaranteed.

Contact your local QIAGEN Field Service Specialist or your local distributor for more information about flexible Service Support Agreements from QIAGEN.

8.3 Regular maintenance

8.3.1 Cleaning the instrument after completing a run

When the run has been completed:

1. Cover the output plate with the lid and remove it from the worktable.
2. Cover tip racks containing only unused tips with the lid and remove them from the worktable.
3. Cover used fractions of partly used tip racks with an adhesive tape. Cover the tip racks with the lid and remove from the worktable. Discard empty tip racks.

   If the run has been stopped and the instrument did not remove all used tips, remove them now and discard.
4. Remove all reagent troughs and discard them.

   Note: We recommend not reusing reagents in multiple runs.
5. Remove the input plate.
6. Discard the filter plate or keep partially used filter plates for reuse. In this case, cover used fractions with an adhesive tape.
7. Remove the tip chute and all adapters from the worktable. From the vacuum chamber remove the carriage, channeling adapter and riser block. Clean all parts and the reagent trough lids according to the instructions in Cleaning accessories.
8. Discard the tip disposal box.
9. Clean any reagent that may have spilled on the instrument worktable or vacuum chamber with a damp cloth.

10. Discard waste according to local safety regulations.

WARNING 	**Hazardous chemicals** [W11] Some chemicals used with this instrument may be hazardous or may become hazardous after completion of the protocol run. Always wear safety glasses, gloves, and a lab coat. The responsible body (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Safety Data Sheets (SDSs) or OSHA, ACGIH or COSHH documents. Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

8.3.2 Cleaning the instrument before shutting down

WARNING/ CAUTION 	**Risk of fire** [W16] When cleaning QIAcube HT instruments with alcohol-based disinfectant, leave the instrument hoods open to allow flammable vapors to disperse.

CAUTION 	**Damage to the instrument** [C9] Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAcube HT.

WARNING 	**Hazardous chemicals** [W11] Some chemicals used with this instrument may be hazardous or may become hazardous after completion of the protocol run. Always wear safety glasses, gloves, and a lab coat. The responsible body (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Safety Data Sheets (SDSs) or OSHA, ACGIH or COSHH documents. Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

To clean the QIAcube HT:

1. In the main toolbar click **Service** to switch to the **Service** environment. On the **Cleaning procedure** tab, select **Daily cleaning procedure**.
2. Click **Start** to start the procedure. The first wizard step is displayed:
3. If not yet done, cover the output plate with the lid and remove it from the worktable.
4. Cover tip racks containing only unused tips with the lid and remove them from the worktable.
5. Click **Next** to proceed to the next wizard step.
6. Cover used fractions of partly used tip racks with an adhesive tape. Cover the tip racks with the lid and remove from the worktable. Discard empty tip racks.

   If the run has been stopped and the instrument did not remove all used tips, remove them now and discard.
7. Remove all reagent troughs and discard them.

   Note: We recommend not reusing reagents in multiple runs.
8. Remove the input plate.
9. Discard the filter plate or keep partially used filter plates for reuse. In this case, cover used fractions with an adhesive tape.
10. Remove the tip chute and all adapters from the worktable. Remove the carriage, channeling adapter and riser block from the vacuum chamber. Clean all parts and the reagent trough lids according to the instructions in Cleaning accessories.
11. Discard the tip disposal box.
12. Click **Next** to proceed to the next wizard step.
13. Pour 20 ml water into the waste chamber (left hand side of the vacuum chamber). Click **Done**. Wait while the instrument cycles the pump and flushes the lines. Then the software automatically displays the next step of the wizard.
14. Wipe the worktable and vacuum chamber inside the instrument using a soft cloth moistened with ethanol-based disinfectant and click **Done** to leave for a certain time. This time span is configurable in the settings. When the designated time has elapsed, the software displays the next wizard step.
15. Wipe excess liquid with clean paper towels.
16. Wipe the instrument with a damp cloth only.
17. Click **Done** to complete the cleaning procedure.
18. Proceed with the UV lamp task.

Note: Do not wipe the rails. These rails support the pipettor head and allow it to slide backwards and forwards easily. Wiping the rails will remove the grease and make them more susceptible to rust.

8.3.3 Cleaning the lid

The instrument lid is manufactured from a special acrylic glass, which is an UV absorbent.

- Do not use alcohol solvents, reagents containing acids, alkalis or abrasives to clean the instrument lid as this could damage the hood and its absorbing capacity.

- If solvents or saline, acidic, or alkaline solutions are spilled on the QIAcube HT or if QIAGEN buffers splash the instrument lid, wipe the liquid away immediately.

Clean the instrument lid only with distilled water and a clean, soft cloth.

Alternatively, a cleaning product specifically designed to clean acrylic glass can be used. Any cleaning product should be tested on a small inconspicuous section of the instrument lid first.

8.3.4 Emptying the waste bottle

Every time the waste bottle is emptied, the waste volume estimated by the software needs to be reset in order to allow correct waste tracking.

You can empty the waste bottle at any time from the **Service** environment, if no run or maintenance task is in progress:

1. Click **Service** in the main toolbar to switch to the **Service** environment.
2. If not yet selected, click on the **Cleaning procedure** tab header. Select **Empty waste bottle**.
3. The waste volume as estimated by the software is displayed in the graphic.
4. Disconnect the waste bottle and discard the waste according to the local safety regulations.
5. Replace and reconnect the waste bottle.
6. Click **Bottle emptied** in order to reset the estimated waste volume in the software.

Alternatively, the waste bottle can be emptied when preparing a run on the **Waste bottle** screen of the Worktable step.

1. Disconnect the waste bottle and discard the waste according to the local safety regulations.
2. Replace and reconnect the waste bottle.
3. Check the **Emptied** check box in the table in the middle of the screen in order to reset the estimated waste volume in the software.

If the software pauses a run because the waste bottle is full, a message is displayed that prompts you to empty the waste bottle.

1. Disconnect the waste bottle and discard the waste according to the local safety regulations.
2. Replace and reconnect the waste bottle.
3. Click **OK** in order to reset the estimated waste volume in the software and to continue the run.

8.3.5 Cleaning accessories

Cleaning adapters and Tip chute

- Do not use a dishwasher to clean adapters, as this damages the anodization of the parts.
- Do not allow household bleach to come in contact with anodized parts.

1. Wash shortly in a quaternary ammonium based solution.
2. Rinse with room temperature, deionized water and allow to drain and dry.

Greasing the O-ring

A tube containing vacuum grease is provided with the instrument for this purpose. Greasing facilitates the placement and removal of the adapters from the vacuum chamber.

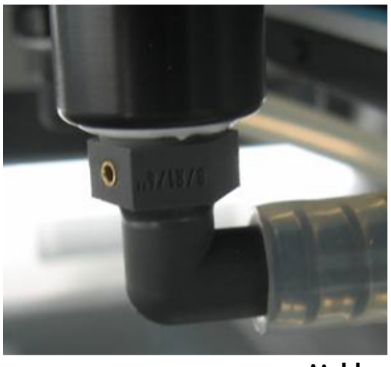
1. Apply a thin film of grease to the O-ring on the channeling block holder as indicated with a red arrow in the following figure.



Channeling block holder O-ring.

Cleaning air bleed holes

The QIAcube HT has air bleed holes positioned at strategic points on the vacuum chamber, as shown in the following figures.





Air bleed holes of the vacuum chamber.

Each of these air bleeds has a small stainless steel aperture inserted in the hole to specifically control the rate of air flow.

The air bleed holes serve two purposes:

- Provide a positive air flow towards the waste chamber

- Allow chamber to equilibrate to atmospheric pressure after the application of a vacuum

IMPORTANT: Air bleed holes should be kept clean and clear of blockages.

1. To clean air bleed holes, flush with a squirt bottle containing deionized water.

Cleaning the guide rails

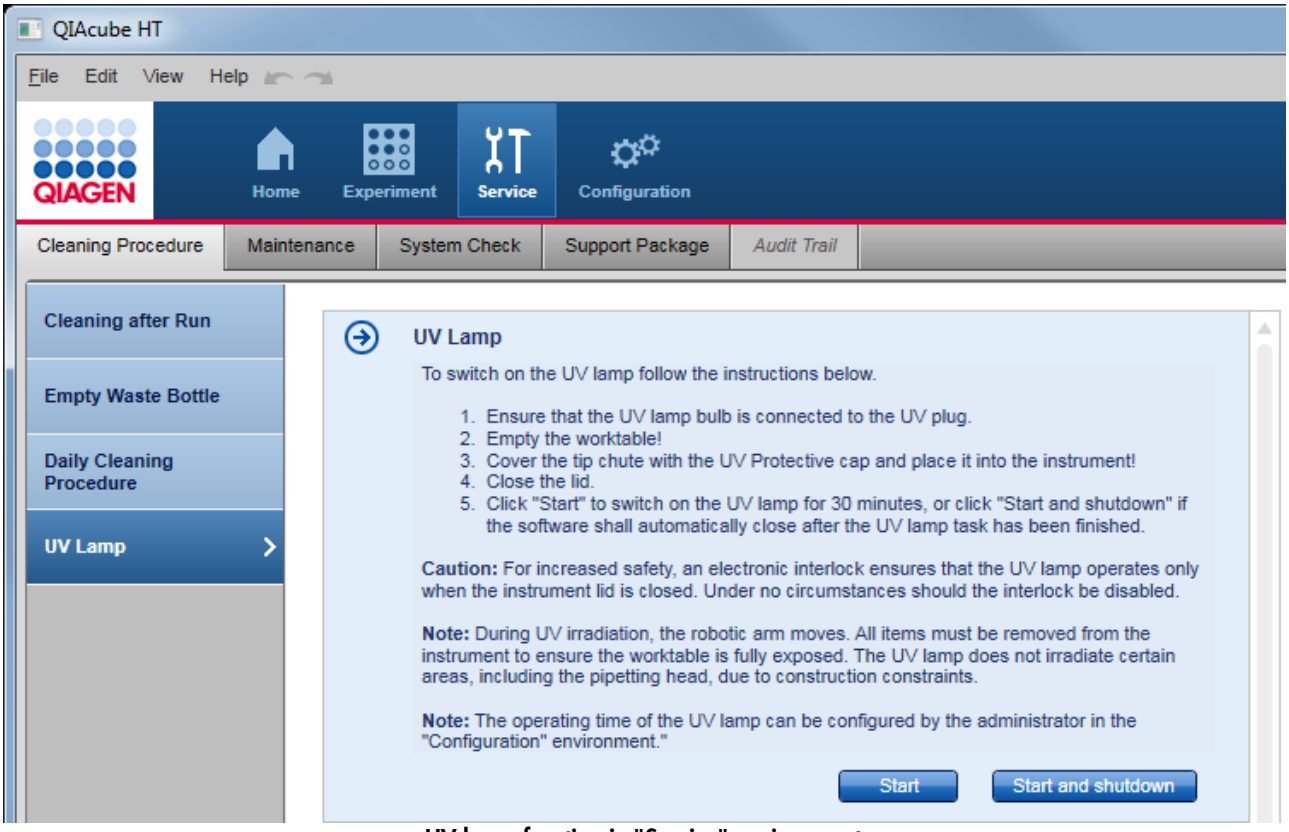
The X, Y and Z guide rails are the coated hardened steel rails that support the linear bearings that allow the robotic arm to slide back and forth easily. Do not wipe these guide rails with a cloth as doing so removes the grease.

1. Check for splashed reagents daily.
2. Wipe only the areas which have splashed reagent on them and then move the robotic arm back and forth over the axis to redistribute the grease.

The linear bearings incorporate seals to keep the bearings free of dust or grit.

8.3.6 Using UV lamp

The UV lamp function is located in the **Service** environment under the **Cleaning Procedure** tab.



UV lamp function in "Service" environment

WARNING	**UV irradiation hazard** [W9]
	An electronic lid sensor ensures that the instrument lid must be closed for operation of the UV lamp. Under no circumstances should this lid sensor be disabled. If the lid sensor is not functioning correctly, contact QIAGEN Technical Services.

To use the UV lamp, follow the instructions below.

1. Click on the **Service** environment button. If not yet selected, click on the **Cleaning Procedure** tab header. Click on **UV lamp**.
2. Empty the worktable!

   During UV irradiation, the robotic arm moves to ensure the worktable is fully exposed.
3. Place the **UV protective cap** onto the **tip chute**!

   The tip chute must be in place and covered with the UV protective cap, to prevent exposure to UV irradiation outside the instrument.
4. Close the lid.
5. There are two options to start the UV lamp operation:
   a) Click **Start** to switch on the UV lamp for the configured operation time. After the time has elapsed, the UV lamp will be switched off automatically.
   b) Click **Start and shut down**, to switch on the UV lamp for the configured operation time. After the time has elapsed, the UV lamp will be switched off automatically and the software will automatically close. The instrument itself does not automatically switch off.

Note: During UV irradiation, the pipettor head moves. All items must be removed from the worktable to ensure the worktable is fully exposed. The UV lamp does not irradiate certain areas, including the pipettor head, due to construction constraints.

Note: The operating time of the UV lamp can be configured by the administrator in the Settings.

8.4 Periodic maintenance

QIAGEN recommends that a regular preventive maintenance service is carried out on the QIAcube HT. The service should be performed by a trained QIAGEN Field Service Specialist. Contact your local QIAGEN Field Service Specialist or your local distributor for more information.

We recommend regular servicing of the pipettor. The recommendation will be displayed by the maintenance schedule. As P-axis movements and the date of pipettor installation are tracked by the software, the software will remind you with a message. In addition, the instrument icon will display a screwdriver as long as the maintenance is due.

The pipettor head maintenance task can only be acknowledged by QIAGEN Field Service Specialist.

8.4.1 Maintenance of the QIAcube HT instrument

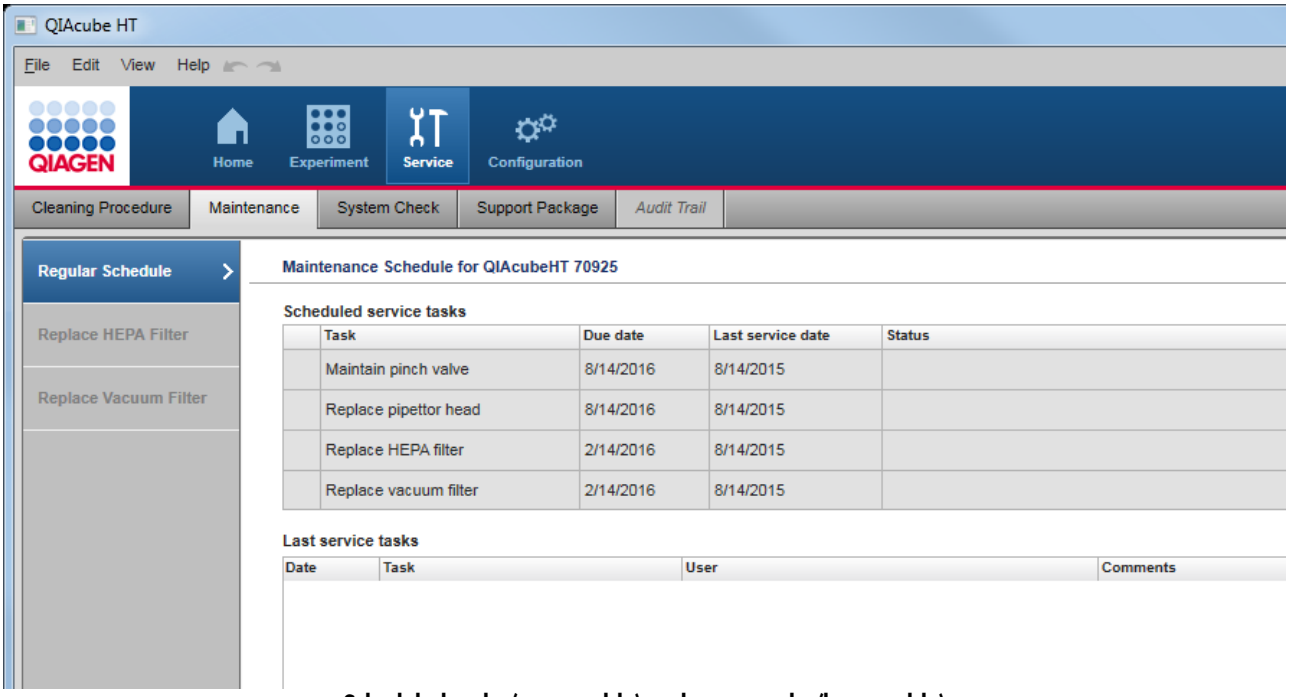
To remove DNA/RNA from the worktable and to prevent cross-contamination, the QIAcube HT must be routinely decontaminated. Proceed as follows:

1. Remove all adapters and the tip chute from the worktable. Wash the adapters in detergent and rinse with clean water.
2. Place the clean items into the quaternary ammonium based solution and soak for an appropriate time following the manufacturer's instructions.
3. Thoroughly rinse the components in nucleic acid-free water.
4. Briefly rinse with ethanol and dry with a soft paper towel.
5. Dampen the instrument worktable with one of the recommended cleaning agents and incubate as appropriate according to the manufacturer's instructions. Wipe dry with clean paper towels.
6. Dampen the worktable with nucleic acid-free water and wipe dry with clean paper towels. Repeat 3 times.
7. Return all components to the worktable and close the lid.
8. Place the tip chute UV protective cap onto the tip chute.
9. Switch on UV lamp.

Note: The operating time of the UV lamp can be configured by the administrator in the Settings.

8.4.2 Maintenance schedule

QIAcube HT Prep Manager provides a maintenance tracking tool to give you an overview of scheduled upcoming service tasks and recent tasks. You can find this tool in the **Regular Schedule** step of the **Maintenance** tab in the **Service** environment:



Scheduled tasks (upper table) and recent tasks (lower table)

The maintenance scheduler lists the periodic tasks for maintenance of the pinch valve, pipettor head, HEPA filters and vacuum filter, and consists of the two tables described below:

- Scheduled service tasks
- Last service tasks

Scheduled service tasks table

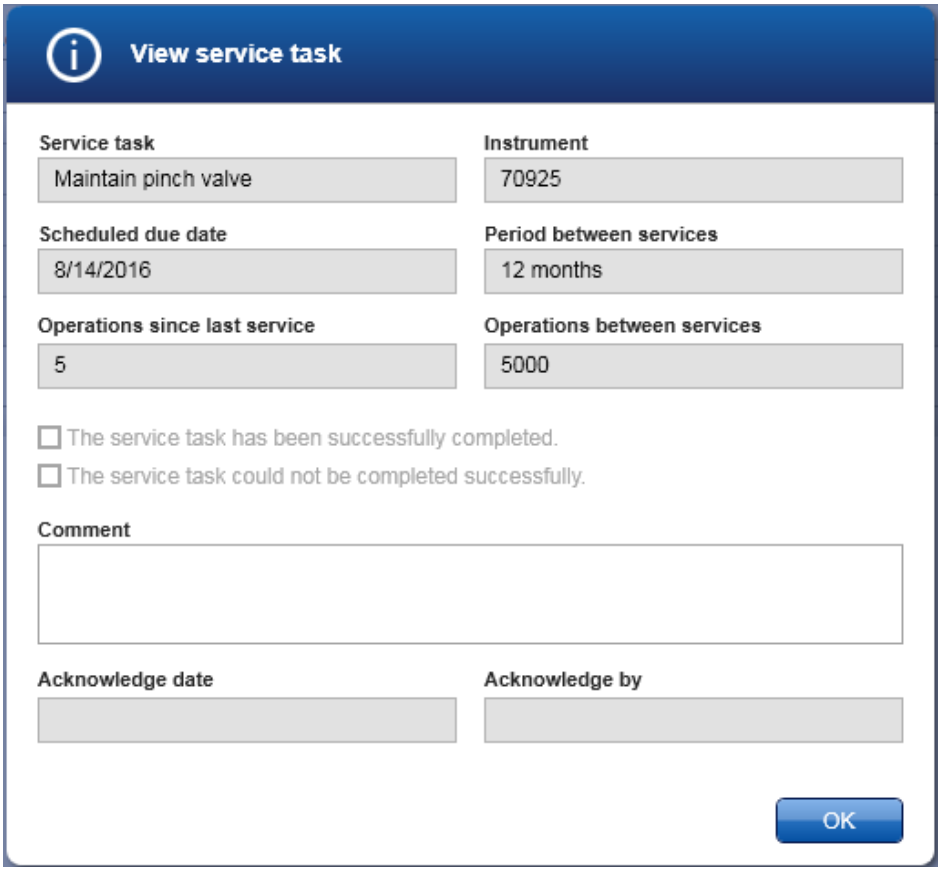
Column	Description
First column	If the task is due, a maintenance symbol is displayed. If the task is due because the service period has been reached, a screwdriver will be displayed. If the task is due because the number of operations between services has been exceeded, a part of a large screwdriver will be displayed. **Note:** The number of operations is counted for the pinch valve and the P-axis movements of the pipettor head only.
Task	Description of the task
Due date	Date the task is due
Last service date	Date the task was last performed
Status	Current status of the task. The cell is empty if the task is not due. If the task is due, the reason why the task is due will be displayed: because the service period has been exceeded or if the number of operations between services has been exceeded, or both.
View icon ( )	Opens the **View service task** dialog with detailed information; see below

Note: If one task is due, the software indicates this also with a screwdriver symbol on the instrument icon. Additionally, a message is shown if a task becomes due (the message is shown only once).

Last service tasks table

Column	Description
Date	Date the task is due
Task	Description of the task
User	Which user performed the task
Comments	Comment noted by the QIAGEN Field Service Specialist
View icon ( )	Opens the **View service task** dialog with detailed information; see below

The **View** icon ( ) has the identical functionality in both tables: it opens the **View service task** dialog with detailed information.



Field	Description
Service task	Description of the task
Schedule due date	Date the task is due
Operations since last service	Number of operations (e.g., number of P-Axis movements of the pipettor head) that have been performed since the last service **Note**: This field is only displayed for the pipettor head maintenance task. **Note**: This field is not available from the Last service tasks table.
Instrument	Serial number of the instrument
Period between services	Proposed period between two service dates
Operations between services	Recommended number of operations between two services **Note**: This field is only displayed for the pipettor head maintenance task. **Note**: This field is not available from the Last service tasks table.
	☐ The service task has been successfully completed. ☐ The service task could not be completed successfully. Result of the service task: whether or not the task has been completed successfully
Comment	Comment noted by the QIAGEN Field Service Specialist
Acknowledge date	Date the task has been performed
Acknowledge by	User ID who has acknowledged the task

8.4.3 Maintenance of the QIAcube HT pipettor

QIAGEN recommends that a regular preventive maintenance service is carried out on the QIAcube HT. The service should be performed by a trained QIAGEN Field Service Specialist. Contact your local QIAGEN Field Service Specialist or your local distributor for more information.

We recommend regular servicing of the pipettor. The recommendation will be displayed by the maintenance schedule. As P-axis movements and the date of pipettor installation are tracked by the software, the software will remind you with a message. In addition, the instrument icon will display a screwdriver as long as the maintenance is due.

The pipettor head maintenance task can only be acknowledged by QIAGEN Field Service Specialist.

8.4.4 Replacing the HEPA filters

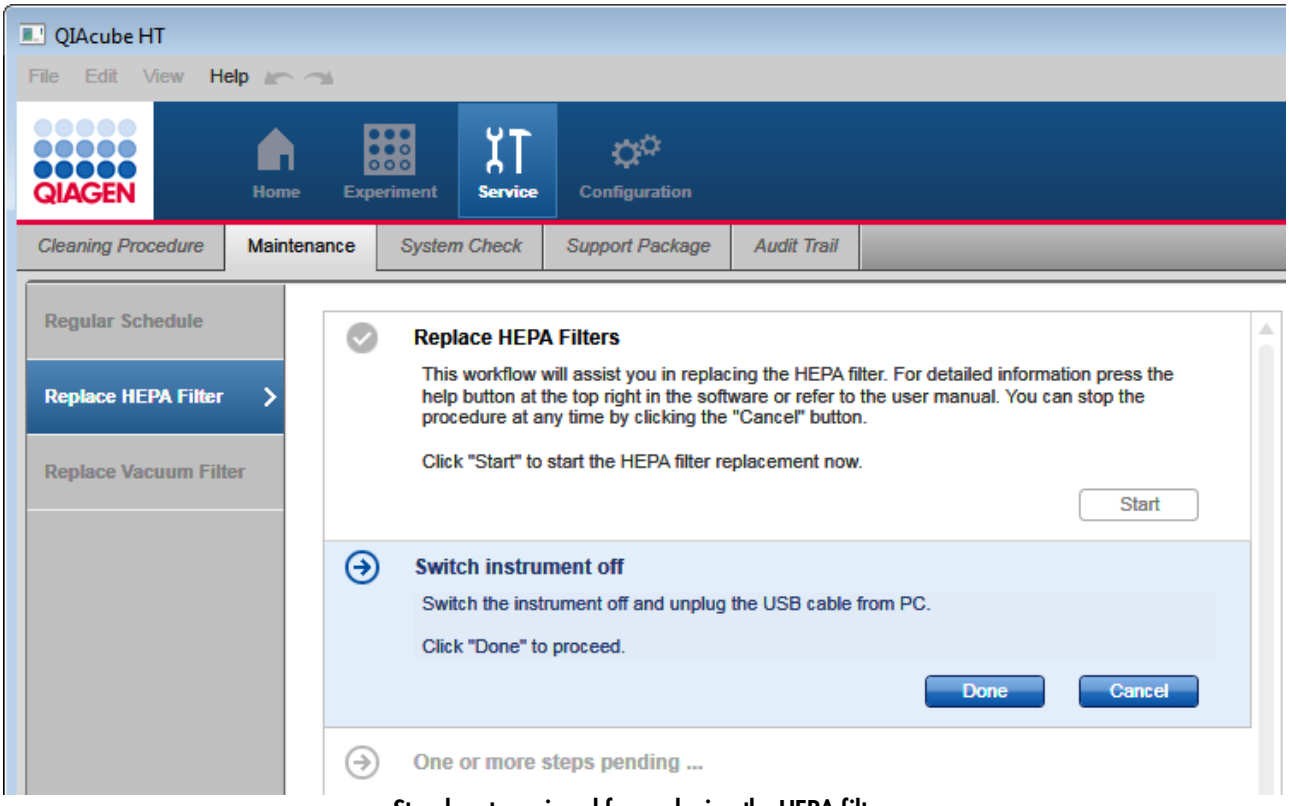
HEPA filters should be replaced on a regular basis. The QIAcube HT Prep Manager will remind you when it is time to replace the HEPA filters. Additionally, the instrument icon will display a screwdriver as long as the maintenance is due.

The software provides a step-by-step wizard to guide you through all steps to replace the HEPA filter. The wizard can be accessed by users with user role **Administrator** via the **Replace HEPA filter step** in the **Maintenance** tab of the **Service** environment.

Follow the instructions displayed in every step. After you confirm that you have completed the instructions in a step, click

Done to continue to the next step. The next step will only be displayed once you have successfully completed the instruction and no errors have occurred. While the wizard is active, all other parts of the software become unavailable.

To leave the wizard without completion, click **Cancel**.



Step-by-step wizard for replacing the HEPA filters

To exchange the HEPA filters:

1. Click the **Service** button in the main toolbar to switch to the **Service** environment. Click on the **Maintenance** tab and then click on the **Replace HEPA filter** step.

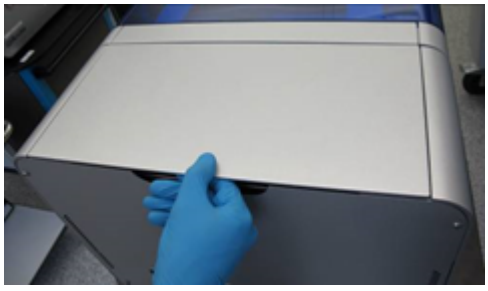
   Note: The step is available for users with user role **Administrator** only.

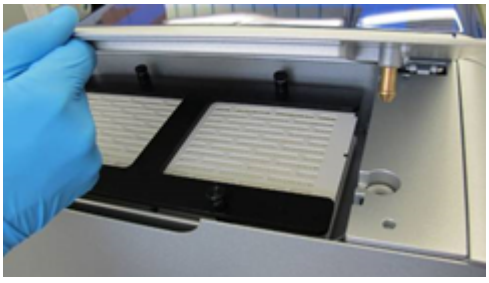
2. Click **Start** to start the procedure now. The next step will be displayed.

3. If the instrument is still switched on, you will be prompted to switch it off. Empty the worktable. If the pipettor head is holding a tip, manually remove it. Then switch off the instrument and disconnect the line power cord from the power outlet. Finally, click **Done** to proceed.

   Note: When the instrument is switched off, the pipettor head will drop approximately 70 mm.

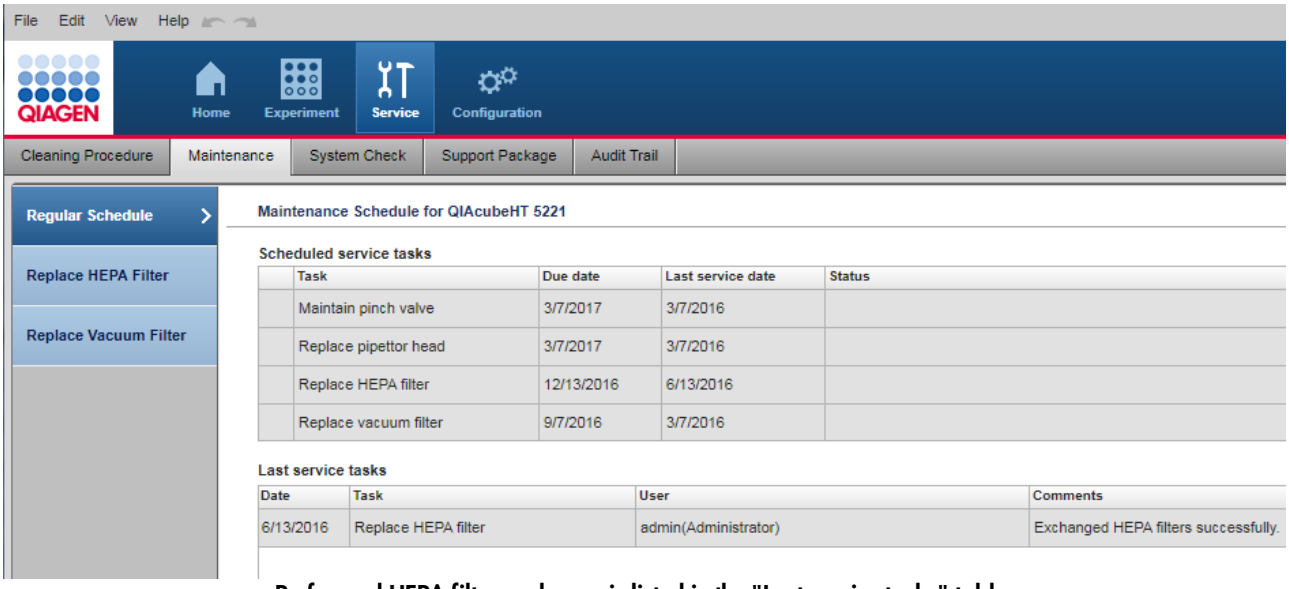
4. Lift the HEPA filter cover and remove it.





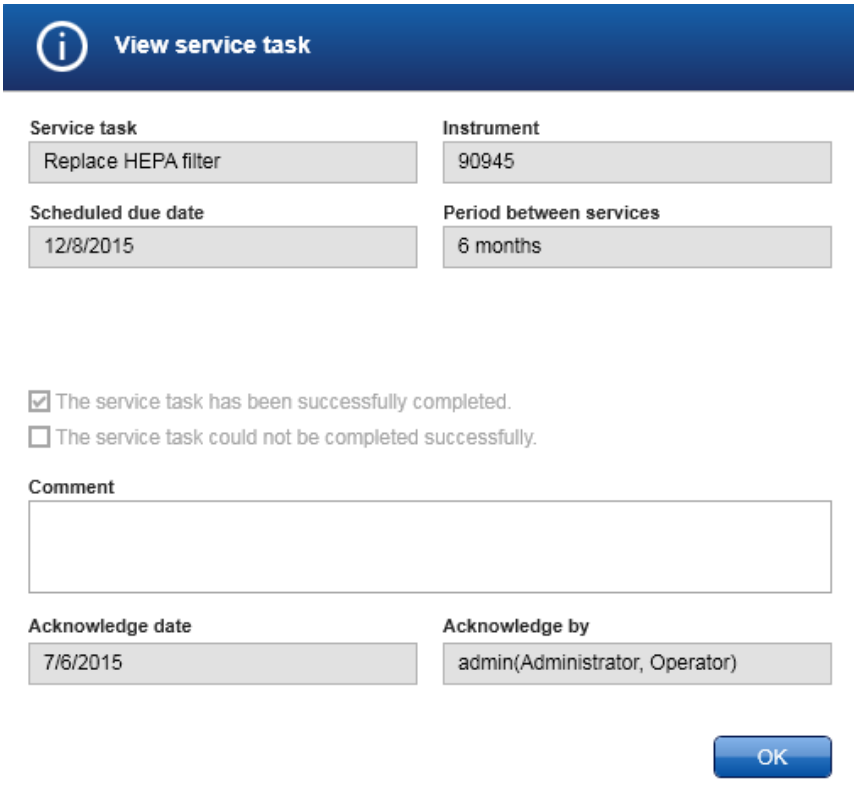
5. Unscrew the four thumb screws. See schematic in the step-by-step wizard.
6. Remove the H frame.
7. Remove the old HEPA filters.
8. Insert new HEPA filters with the arrows down.
9. Reassemble the H frame.
10. Screw the four thumb screws tight.
11. Re-assemble the cover onto the instrument.
12. Click **Done** to finish the task. The software automatically acknowledges the task as successfully completed. The task will be listed in the Last service tasks table of the Regular Schedule. In the task details the task will be marked as successfully completed.

Note: If you leave the wizard by clicking **Cancel**, the task will still be listed in the **Last service tasks** table. However, in the task details, the task will be marked as not successfully completed. The service task remains due, indicated in the **Scheduled service tasks** table and on the instrument icon.



Performed HEPA filter exchange is listed in the "Last service tasks" table.

If you click the **View** button on the right side of the task, the detailed view opens:



Details of the performed HEPA filter task.

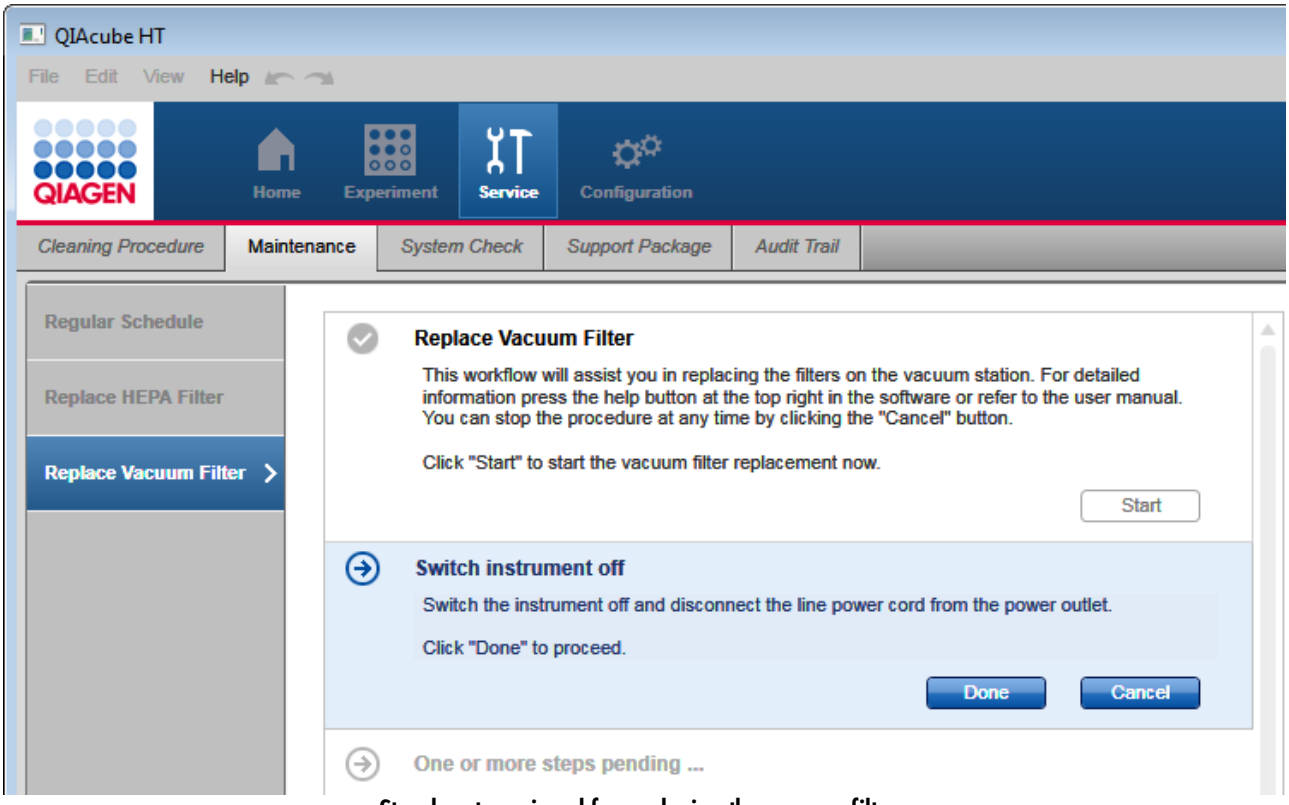
8.4.5 Replacing filters on vacuum station

Vacuum filters should be replaced on a regular basis. The QIAcube HT Prep Manager will remind you when it is time to replace the vacuum filters. Additionally, the instrument icon will display a screwdriver as long as the maintenance is due.

The software provides a step-by-step wizard to guide you through all steps to replace the vacuum filter. The wizard can be accessed by users with user role **Administrator** via the **Replace vacuum filter** step in the **Maintenance** tab of the **Service** environment.

Follow the instructions displayed in every step. After you confirm that you have completed the instructions in a step, click **Done** to continue to the next step. The next step will only be displayed once you have successfully completed the instruction and no errors have occurred. While the wizard is active, all other parts of the software become unavailable.

To leave the wizard without completion, click **Cancel**.



Step-by-step wizard for replacing the vacuum filters

To exchange the vacuum filters:

1. Click the **Service** button in the main toolbar to switch to the **Service** environment. Click on the **Maintenance** tab and then click on the **Replace HEPA filter** step.

   Note: The step is available for users with user role **Administrator** only.

2. Click **Start** to start the procedure now. The next step will be displayed.
3. If the instrument is still switched on, you will be prompted to switch it off. Then switch off the instrument and disconnect the line power cord from the power outlet. Finally, click **Done** to proceed.
4. Remove all hoses from the Polycap filter.
5. Unplug the Polycap and the Carbon-Cap filters from the vacuum station.



Vacuum station with Polycap and carbon filter.

6. Plug the new Polycap filter into the correct opening on the vacuum station.
7. Connect the hoses between the Polycap filter and waste bottle cap.
8. Plug the new Carbon-Cap filter into the correct opening on the vacuum station. Be sure to position the filter with the labeling upside down.
9. Click Done to finish the task. The software automatically acknowledges the task as successfully completed. The task will be listed in the Last service tasks table of the Regular Schedule. In the task details the task will be marked as successfully completed.

Note: If you leave the wizard by clicking Cancel, the task will still be listed in the Last service tasks table. However, in the task details, the task will be marked as not successfully completed. The service task remains due, indicated in the Scheduled service tasks table and on the instrument icon.

Note: For ordering information for the QIAcube HT vacuum filters, see Appendix E.

For waste disposal of the used filters of the vacuum station, follow procedures in accordance with your local regulations.

Troubleshooting

9 Troubleshooting

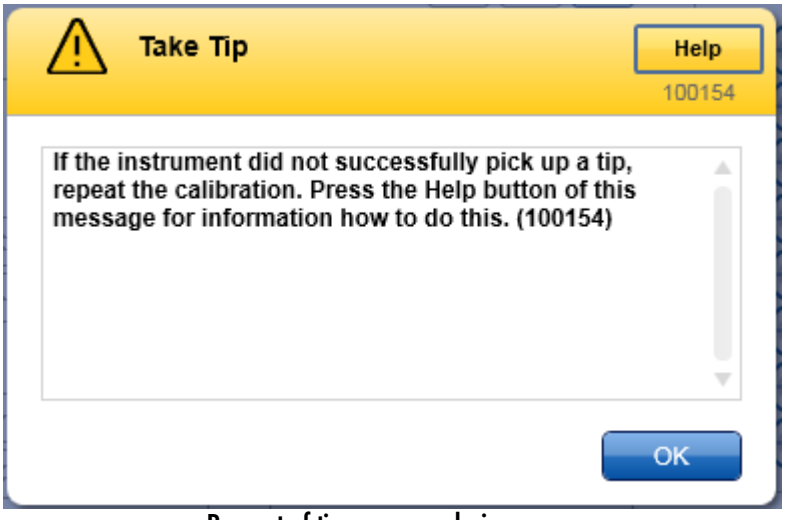
If you need to contact QIAGEN Technical Services for technical assistance, note down the steps that occurred leading up to the issue. Alternatively, save or choose the applicable support package from the run, and then send this to QIAGEN Technical Services. This will help the QIAGEN Field Service Specialist resolve the issue.

It is also possible to export support packages, even if the instrument is powered down.

A warning will be issued when an error, such as insufficient tips, is encountered during the run; the error will also be listed in the report.

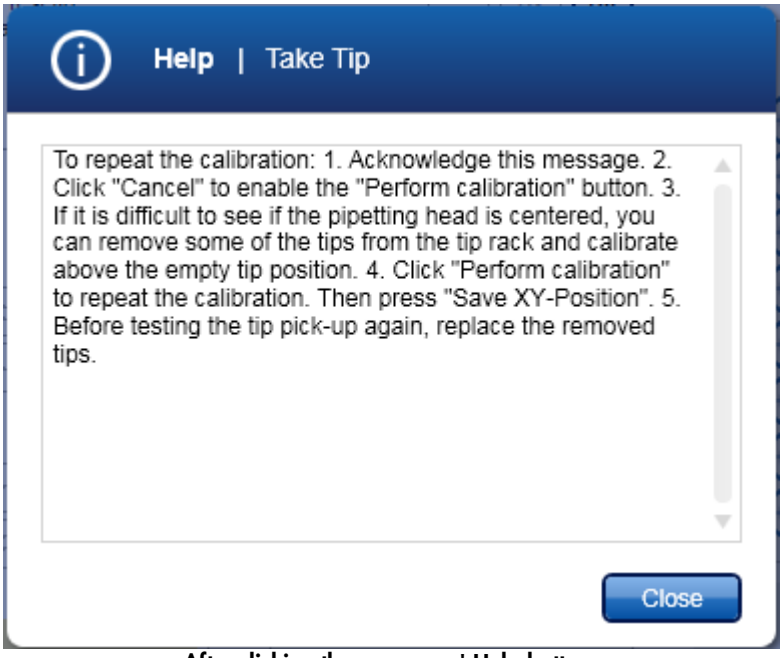
If you receive a software warning or error message that contains a **Help** button, click on it to get more information.

Example:



Run out of tip message during a run.

Click on the **Help** button in the message dialog.

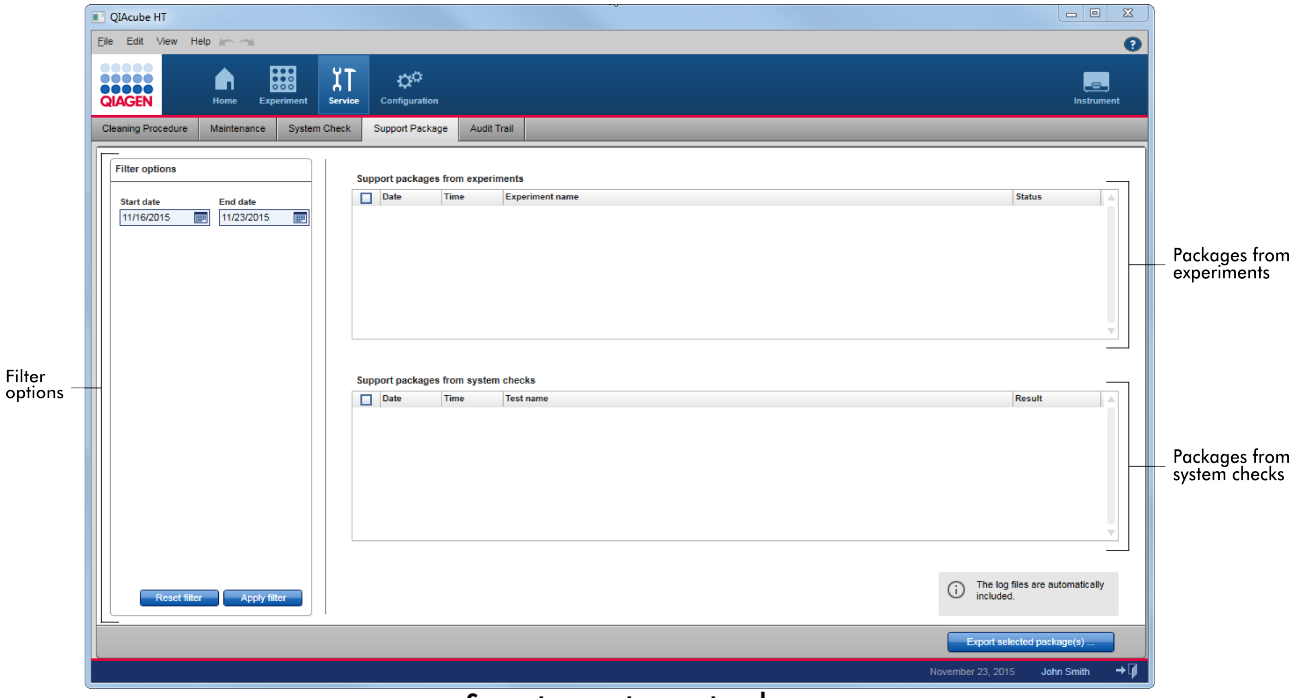


After clicking the messages' Help button.

Click the **Close** button to return to the message dialog.

9.1 Support packages

Support packages are folders containing multiple files that help QIAGEN Technical Services to analyze issues that might have been observed. The function to export support packages is located in the **Support Package** tab in the **Service** environment:



Screen to export support packages.

Use the filter options to search for support packages created between specific start and end dates. The right part of the screen consists of two tables that list support packages created from experiment runs and support packages created from performed system checks. Click on **Export selected package(s)** to export the selected support packages to a definable directory.

Support packages are exported for reporting different information, including:

- An issue during a run
- The results of performed system checks
- Instrument issues

Note: Support packages older than 90 days will be automatically deleted.

Exporting a support package

1. Click on the **Support Package** tab in the **Service** environment.
2. The **Support Package** screen will be displayed.
3. To filter for support packages created within a specific date range:

   a) Enter a start date and an end date, or use the icon to interactively select a date. Ensure that the range covers the date the run or the system test was performed.

   b) Click on **Apply filter**.
4. All available support package information created within the selected date range will be displayed in the **Support packages from experiments** table and the **Support packages from system checks** table, listing the run experiments

and the test results, respectively.

5. Activate the check boxes for the support package you want to export.

   Activate the check box of the experiment(s) if you want to report issues during run. Activate the check box of the performed system test to report the results.

   Note: If you don't select any experiment run or system test result, the support package will contain the currently available log files only.

6. Click on **Export selected package(s)**.
7. The **Select folder** file dialog is opened.
8. Select/create the target directory and click on **OK**.
9. The support package is exported to the selected directory.
10. Navigate to the newly created directory and send all files in it to QIAGEN Technical Services.

The directory contains the support packages of the selected experiments and/or system test results, including plug-in specific files, user information, settings, labware database and instrument specific data combined in a zip file. Additionally, current log files and the audit trail are copied to the destination directory (unzipped). Even if the software stops due to a program failure during a run, the support package will be completed when the software is restarted.

The file name of the support package file for an experiment run is generated from a time stamp, instrument and experiment data according to the following naming scheme:

Time stamp_Instrument type_Instrument serial number_Experiment name_Experiment status.zip

Log files are created for analysis by QIAGEN Technical Services only.

9.2 System setup

	Comments and suggestions
Instrument does not run	
a) Power cord not connected	Check the power connection.
b) Fuse blown	Replace the fuse according to the following procedure: 1. Switch off the QIAcube HT using the main power switch. 2. Unplug the power cord from the power outlet and from the rear of the instrument. 3. Use a small flat-bladed screwdriver to remove the fuse-carrier assembly located directly to the right of the area where the cord connector enters into the inlet. 4. Replace the fuse. Replace only with the type of fuse indicated in Appendix A or on the instrument type plate. 5. Reinsert the fuse-carrier assembly and plug in the power cord. 6. Turn on the power and check the instrument for normal operation. If the instrument does not function normally or continues to blow fuses, unplug the system and contact QIAGEN Technical Services.
c) Instrument does not initialize on software start	The instrument does not initialize on software start. It initializes just before use, e.g., before calibration or during worktable planning before a run.
Computer software cannot communicate with QIAcube HT	
a) USB cable not connected between the computer and the instrument	Check the connection of the USB cable. See section Connecting the computer to the QIAcube HT.
b) Instrument is not switched on	Switch the instrument on. If the instrument is connected to the computer via the USB cable, the software automatically connects to the instrument. This can take a few seconds.
c) A communication problem occurred	If the instructions of a) and b) have already been followed, but the software does not connect to the instrument, restart the computer. If the problem persists, collect the support package and contact QIAGEN Technical Services.
QIAcube HT Prep Manager does not launch	
a) QIAcube HT Prep Manager not installed	Install the QIAcube HT Prep Manager. See section Software installation.
b) Old version of Microsoft Windows	See section Computer.
QIAcube HT Prep Manager cannot be installed	

	Comments and suggestions
a) Message during installation: Wrong SiLabs USB driver version has been detected on the computer.	The wrong driver version may have been installed by another QIAGEN software, e.g. the old QIAcube HT Software. If the message shows up, allow the installer to update the driver to the version needed by QIAcube HT Prep Manager. Otherwise, QIAcube HT Prep Manager cannot be installed. However, the other software may become inoperable with this driver version. It is not possible to have both an old version of QIAcube HT software and the QIAcube HT Prep Manager installed on the same computer.
b) Message during installation: .NET Framework needs to be installed has been answered with No	The appropriate version of the Microsoft .NET Framework will be installed during setup if it is not already present. In this case, another dialog opens. Click **Yes** to install the Microsoft .NET Framework. This may take some time. If you click **No**, the QIAcube HT Prep Manager will not be installed.
c) Message during installation – Windows 7 only: Installation of .NET Framework failed.	On computers with Windows 7, ensure that the Windows Service Pack 1 has been installed. To check if the Service Pack 1 has been installed, click the **Windows Start** icon at the bottom left of the Windows screen. Then right-click on the entry **Computer** in the right bar and select **Properties** from the appearing context menu. Check that the Service Pack 1 is mentioned in the **Windows edition** section.
d) Message during installation: SQL Server needs to be installed has been answered with No	The appropriate version of the Microsoft SQL Server will be installed during setup if it is not already present. In this case, another dialog opens. Click **Yes** to install the Microsoft SQL Server. This may take some time. If you click **No**, the QIAcube HT Prep Manager will not be installed.
e) Policy prevents software installation from an Unknown Publisher	Contact your local IT administrator.
f) On Windows 10 only. An update installation fails at step "Stopping services."	On Windows 10 only, when updating from QIAcube HT Prep Manager 1.0. Please note that QIAcube HT Prep Manager version 1.1 is the first version that can be used on Windows 10. To get the new version installed: 1. Take a backup of your experiments, reports and output files. 2. Uninstall the previous version. 3. Install the new version.
Windows security message shown during the Device Driver Installation Wizard	
a) A Windows security confirmation message is shown during QIAcube HT Prep Manager driver installation: QIAGEN GmbH drivers attempt to be installed	Click Install to install the QIAcube HT driver. If you do not install the driver software, the QIAcube HT Prep Manager a) will not be able to operate the QIAcube HT if you install the QIAcube HT Prep Manager for the first time, or

	Comments and suggestions
	b) might not be able to operate the QIAcube HT correctly in case of an update installation because an older driver version remains active on the computer.
b) A security warning message is shown during driver installation of the QIAcube HT Prep Manager: Unknown publisher of driver software	If the message is shown in the context of an installation of the QIAcube HT Prep Manager, allow to install the driver anyway. If you do not install the driver software, the QIAcube HT Prep Manager a) will not be able to operate the QIAcube HT if you install the QIAcube HT Prep Manager for the first time, or b) might not be able to operate the QIAcube HT correctly in case of an update installation because an older driver version remains active on the computer.
c) Policy prevents driver installation from an Unknown Publisher	Contact your local IT administrator
Device Driver Installation Wizard fails	
On Windows 10, the Secure Boot option is used together with UEFI Boot	If you use UEFI Boot, the Secure Boot option must be disabled.

9.3 Operation

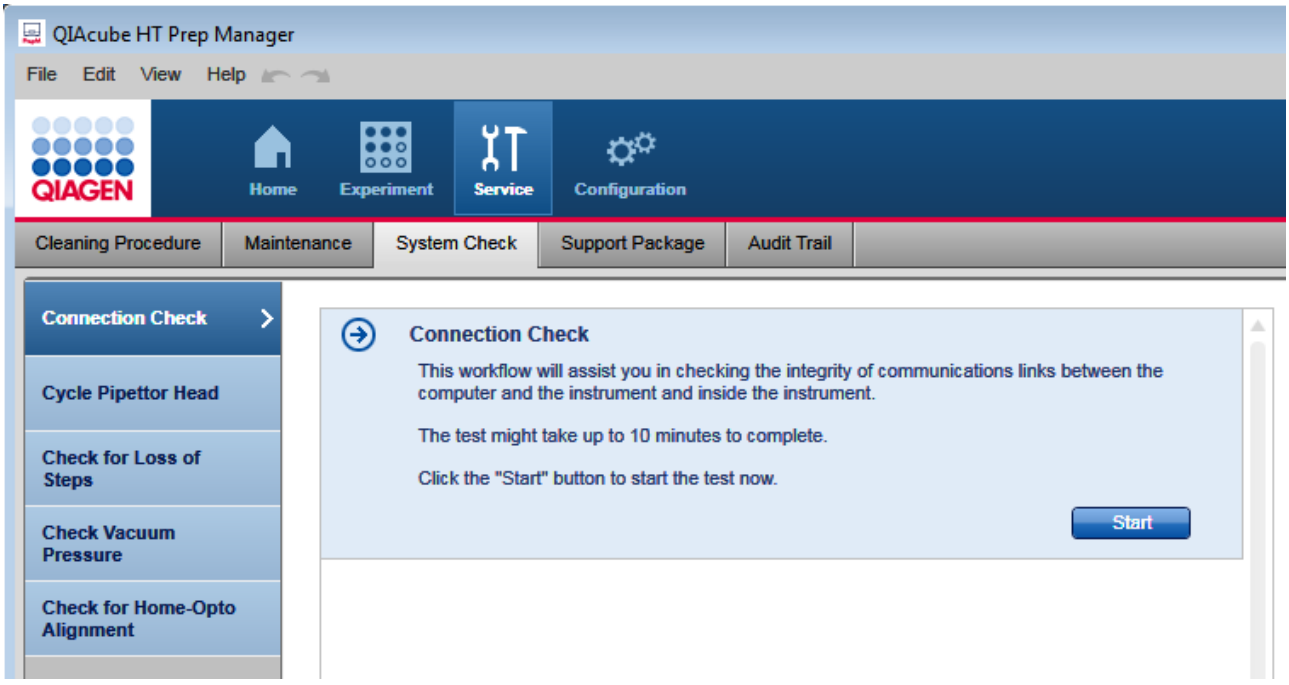
	Comments and suggestions
Tip errors	
a) Tip ejection failed	Tips may me staggered in the tip chute. Clean the tip chute and empty the waste box.
b) Tip pickup failed	If tip pickup fails repeatedly, repeat the calibration for tip racks.
Pipetting errors	
a) Y-arm has been moved	Restart the experiment.
b) Wrong calibration	Repeat the calibration.
Liquid errors	
a) Air bubbles appear in tubes or plates	Centrifuge the tubes or plates to remove air bubbles.
b) Vacuum waste bottle is full	Empty the waste bottle according to your local safety regulations.
c) Vacuum waste bottle is full, but no message is displayed	Ensure that the cable between the vacuum station and waste bottle cap is connected.
Software stops	
a) Screen savers and power save modes not disabled on the computer	Disable screen savers and power save modes on the computer.
Vacuum errors	
a) Vacuum could not be established	1) Adapters and labware used in vacuum chamber are misplaced. For instructions on correct placement refer to Assembling the vacuum chamber. 2) Unused wells on filter plate are not sealed. Seal unused wells with an adhesive tape. 3) Vacuum station is not installed correctly. For instructions on correct installation refer to Installation of vacuum control station.
b) Vacuum could not be released	Vacuum chamber air bleed holes are blocked. Clean the air bleed holes as stated in Cleaning accessories
c) Open system test failed	Vacuum system may have unrestricted air flow. Contact QIAGEN Technical Services.
d) Plate detection test failed	Adapters and labware used in vacuum chamber are misplaced. For instructions on correct placement refer to Assembling the vacuum chamber or contact QIAGEN Technical Services.

	Comments and suggestions
e) Vacuum pump does not stop if the instrument loses connection to the computer	If the instrument loses connection to the computer while the vacuum pump is working, the vacuum pump cannot be stopped. In this case, switch off the instrument. Check the connection of the USB. Restart the computer. See section Connecting the computer to the QIAcube HT.
Worktable step is not accessible	
a) Instrument is not connected	During run setup, the worktable step can only be accessed if the instrument is connected. Switch the instrument on. If the instrument is connected to the computer via USB cable, the software automatically connects to the instrument after a few seconds.
b) Mandatory calibrations missing	During run setup, the worktable step can only be accessed if the mandatory calibrations have been performed. Follow the instructions in Instrument calibration.
Software is very slow	
a) Virus scanners running on the computer	Refer to Computer.
Carriage transfer not successful	
a) Calibration on A1 not accurate enough	Repeat the calibration of A1. Select one of the filter plates to calibrate in the Labware calibration step. Ensure you follow the instructions in Assembly for calibration. Use the z-axis buttons to lower the pipetting head into the channeling block. Ensure that the tips are centered inside the wells.
Purification	
a) Wrong buffer preparation	Refer to the kit handbook.
b) Wrong pretreatment	Refer to the kit handbook. Ensure to select the correct pretreatment in the **Setup** screen.
c) Bad purification results	Refer to the kit handbook for more details.

9.4 Self-diagnostic tools

QIAcube HT Prep Manager provides several different checks to verify whether the most important instrument parts are working correctly. The tests are designed to collect information to help with troubleshooting. They are bundled in the **System Check** tab of the **Service** environment:

Note: The tests are only available if the instrument is connected.



Each check is carried out in a separate step and the steps are independent from each other, so you can start with any test you choose. The checks are built in a step-by-step wizard format. The initial step shows a description of the check, its duration and a **Start** button. Click the **Start** button to begin the check and to display the instructions for the next step. Follow the instructions on the screen. After you have finished, click **Done** to proceed to the next step. To cancel a test, click **Cancel** or **Stop**.

Check name	Description	Duration
Connection Check	Checks the connection between computer and instrument and within the instrument itself	10 min
Cycle Pipettor Head	Checks the cycling of the pipettor head	8 min
Check for Loss of Steps	Checks whether the pipettor head movement is working correctly	40 min
Check Vacuum Pressure	Checks whether the vacuum system is working correctly	5 min
Check for Home-Opto Alignment	Checks if the instrument can perform the homing routine correctly	1 min

Important: Before starting a test, read the details first by clicking the link in the table.

Note: These tests should only be performed by experienced users.

To perform a test:

1. Click the **Service** button in the main toolbar and then click the **System Check** tab to switch to the **System Check** tab of the **Service** environment.
2. Click on the step marker of the test you would like to perform. The description of the test is shown.
3. Click **Start** to start the test. The next step is displayed.

   a) Follow the instructions, if any, and then click **Done** to confirm and proceed.

   b) Alternatively, wait while the instrument performs an automatic step. The software will then proceed to the next step automatically.

   Repeat this for all steps of the test.
4. If the test finished, the software displays the test result as a last step. The test result is automatically saved.

To cancel the test, click **Cancel** or **Stop**. Wait until the instrument has finished moving before opening the lid.

If the test failed, save the Support package now. Ensure that the performed test is listed in the table **Support packages from system tests** and checked. Click **Export selected packages** and contact QIAGEN Technical Services for further assistance.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test. Or, click to another part in the software for another task.

9.4.1 Connection check

This test checks the communications links between the computer and the instrument and inside the instrument.

1. In the step marker click **Connection Check**. The description of the test is shown.
2. Click **Start** to start the test. The next step is displayed.
3. Wait while the instrument checks the connection links.
4. If the test finished, the software displays the test result as a last step. The test result is automatically saved.

To cancel the test, click **Cancel** or **Stop**.

If the test failed, save the Support package subsequently. Ensure that the performed test is listed in the table **Support packages from system tests** and checked. Click **Export selected packages** and contact QIAGEN Technical Services for further assistance.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test. Or, click to another part in the software for another task.

9.4.2 Cycle pipettor head

If the QIAcube HT has not been used for a long period of time, it is recommended to cycle the pipettor head. This helps to distribute the grease evenly.

1. In the step marker, click on **Cycle Pipettor** head. The description is shown.

2. Click **Start**. The next step is displayed.
3. Empty the worktable. Remove the tip chute, all plates, tubes, adapters, accessories and tips.

   Important: Failure to do this may result in permanent damage to the pipettor head.
4. Close the lid.
5. Click **Done** to confirm and proceed.
6. Wait while the instrument cycles the pipettor head.
7. If the task finished, the software displays the last step. The task result is automatically saved.

To cancel the task, click **Cancel** or **Stop**. Wait until the instrument has finished moving before opening the lid.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test. Click on the **Support Package** tab if you want to export the result or click to another part in the software for another task.

9.4.3 Check for loss of steps

This test establishes whether the instrument has reliable movement.

1. In the step marker click on **Check for Loss of Steps**. The description of the test is shown.
2. Click **Start** to start the test. The next step is displayed.
3. Empty the worktable. Remove the tip chute, all plates, tubes, accessories, adapters and tips racks.

   Important: Failure to do this may result in permanent damage to the pipettor head.
4. Close the lid.
5. Click **Done** to confirm and proceed.
6. Wait while the instrument moves the robotic arm to check for home-opto alignment.
7. If the test finished, the software displays the test result in the last step. The test result is automatically saved.

To cancel the test, click **Cancel** or **Stop**. Wait until the instrument has finished moving before opening the lid.

If the test failed, save the Support package now. Ensure that the performed test is listed in the table **Support packages from system tests** and checked. Click **Export selected packages** and contact QIAGEN Technical Services for further assistance.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test or click to another part in the software for another task.

9.4.4 Check vacuum pressure

This test establishes whether the pressure system is correctly working.

1. In the step marker click on **Check Vacuum Pressure**. The description of the test is shown.
2. Click **Start** to start the test. The next step is displayed with instructions to prepare the worktable.

   Note: Steps 3–7 describe the assembly of the left (waste) chamber of the vacuum chamber as for a standard protocol with a filter plate having only unused wells. Refer to Assembly for standard purification protocols for pictures and assembling details.
3. Insert the channeling block holder into the left (waste) chamber of the vacuum chamber.

4. Place the channeling block into the channeling block holder.
5. Place the transfer carriage onto the left (waste) chamber of the vacuum chamber.
6. Cover an empty filter plate with an adhesive tape. Ensure that all 96 wells are completely sealed to ensure proper vacuum operation. Trim any excess tape.
7. Place the filter plate onto the carriage. Ensure that the filter plate is aligned to the upper left inside the transfer carriage and is completely lying on the transfer carriage gasket.

   Important: Ensure that you have correctly assembled the waste chamber and completely sealed the filter plate to ensure proper vacuum operation.
8. Close the lid.
9. Click **Done** to confirm and proceed.
10. Wait while the instrument applies pressure several times to check the vacuum system.
11. If the test finished, the software displays the test result in the last step. The test result is automatically saved.

To cancel the test, click **Cancel** or **Stop**. Wait until the instrument has finished moving before opening the lid.

If the test failed, save the Support package now. Ensure that the performed test is listed in the table **Support packages from system tests** and checked. Click **Export selected packages** and contact QIAGEN Technical Services for further assistance.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test or click to another part in the software for another task.

9.4.5 Check for home-opto alignment

This test checks if the instrument can perform the homing routine correctly.

1. In the step marker click on **Check for Home-Opto Alignment**. The description of the test is shown.
2. Click **Start** to start the test. The next step is displayed.
3. Empty the worktable. Remove the tip chute, all plates, tubes, adapters, accessories and tips.

   Important: Failure to do this may result in permanent damage to the pipettor head.
4. Close the lid.
5. Click **Done** to confirm and proceed.
6. Wait while the instrument moves the robotic arm.
7. If the test finished, the software displays the test result in the last step. The test result is automatically saved.

To cancel the test, click **Cancel** or **Stop**. Wait until the instrument has finished moving before opening the lid.

If the test failed, save the Support package now. Ensure that the performed test is listed in the table **Support packages from system tests** and checked. Click **Export selected packages** and contact QIAGEN Technical Services for further assistance.

Click **Restart** if you want to repeat the task. Click on another step marker to perform another test or click to another part in the software for another task.

Glossary

10 Glossary

Glossary terms in alphabetical order

A

Accessories pack	Set of adapters used as receptacle for plates with a special function, like channeling liquid waste to the waste bottle (e.g. Channeling adapter)
Audit trail	A record of user actions.

B

C

Calibration	Before the instrument can be used, the locations of work items (e.g. labware) must be determined. This process is termed calibration.
Calibration report	The calibration report is a printed document delivered with the QIAcube HT. It defines the alignment of each pipettor head to the volume to be transferred. The values must be entered when configuring QIAcube HT.
Channeling adapter	Adapter that is part of the Accessories pack. The channeling adapter consists of the channeling block holder and the channeling block. Both parts are usually used together to enable optimal waste flowthrough to the vacuum waste bottle. See also Assembling the vacuum chamber.

D

E

Eluate	An eluate consists of purified nucleic acid in a buffered solution. Eluates are the output of a sample preparation.
Expiry date	The date after which QIAGEN can no longer guarantee that a kit performs according to its specification.
Extra volume	Additional volume that is needed for pipetting. The software automatically calculates the extra volume needed for a run.

F

Filter plate	Special labware to perform nucleic acid bind-wash-elution purification with.

G

GUI	Graphical User Interface (of a software)

H

HEPA filter	Abbreviation for High Efficiency Particulate Airfilter. Air filter to prevent airborne contamination underneath the instrument hood.
Home position	The position where the pipettor head moves to reset all axis.

I

J

K

Kit	Ready-to-use composition of reagents and consumables for a given protocol.
Kit configuration	A set of protocols describing all possible actions to be performed on the instrument based on a kit. For each kit to be used on QIAcube HT, one kit configuration is available.

L

Labware library	The labware library is delivered with the software and contains all labware to be used on QIAcube HT instrument.
Labware type	Labware is grouped into types, e.g. 96-well to enhance customer convenience while looking for a specific labware.
Lid	The instrument lid isolates the worktable, maintaining sample integrity and acting as a safety mechanism.
Lysate	Mixture of liquids that result in cell lysis.
Log file	A log file contains information about (instrument) actions that were performed.

M

N

O

P

P-Axis	The direction of pipetting piston movement.

Pinch valve	The pinch valve is part of the QIAcube HT instrument and enables to apply vacuum only to one chamber of the vacuum chamber by pressing one of the vacuum waste hoses.
Pipettor head	Part of the instrument that is directly involved in the transfer of liquid. See also Pipettor head and robotic arm
Pipetting piston	Part of the pipettor head.
Plate	Labware with wells that are connected physically and arranged in a two dimensional way. Plates can be placed in an adaptor or as standalone onto the instrument worktable.
Power switch	A button located at the back of the QIAcube HT. It allows the user to switch the QIAcube HT on and off.
Protocol	A set of instructions for the instrument describing a specific sequence of action to be performed during a run. Protocols are part of the kit configuration.

Q

R

Reagent	Reagents are dispensed to reaction wells that might contain samples. A reagent can be combined with other reagents or added individually to a reaction.
Reagent plate	Special adaptor that can be placed on position R1. The reagent plate is intended to hold two different types of troughs.
Report	A report can be generated after each run and contains information on the well contents and run settings.
Riser block, EMTR	Adapter that is part of the accessories pack. The riser block is usually used in the vacuum elution chamber to raise the elution microtubes to an optimal height.
RS-232	Name for serial communication between the computer and the instrument

S

Sample	Samples are source liquids (e.g., representing material from which DNA/RNA is to be extracted). Samples may have unique identifiers.
SBS format	Dimensional standard for labware to be used on QIAcube HT. Abbreviation for Society for Biomolecular Sciences.
Support packages	A support package contains useful information about the last run which is important when contacting QIAGEN Technical Services for technical assistance.

T

Tip	Tips are disposables that are used to pipette liquids. They are provided in tip racks.
Tip chute	Used tips are ejected through the tip chute into a tip disposal box at the side of the instrument.
Tip disposal box	The tip disposal box collects used tips at the side of the instrument.
Transfer carriage	Adapter that is part of the accessories pack. The transfer carriage usually holds a filter plate and enables transfer of this plate between vacuum waste and elution chamber.
Trough	Large liquid container. Two types of troughs are available: troughs for up to 70 ml and troughs for up to 170 ml.

U

V

Vacuum chamber	Part of the instrument worktable. The vacuum chamber consists of a waste and an elution chamber, that are both connected via hoses to the vacuum control station.
Vacuum station	The vacuum station is part of the QIAcube HT. It contains the vacuum pump, a waste bottle and vacuum filters. It is connected to the QIAcube HT bench top unit via waste hoses.
Volume Calibration	Volume calibration defines the number of units that the P-axis motor must move to accurately deliver a given volume of liquid. Refer to Instrument calibration.

W

Well	A hole in a plate that can contain liquids.
Worktable	The instrument worktable supports tips racks, adapter plates and troughs.

X

XY Calibration	The exact XY-position of each item on the worktable has to be calibrated manually. Refer to Instrument calibration.

Y

Z

Z Calibration	The exact height of the trough/well bottoms above the worktable has to be calibrated. Refer to Instrument calibration.

Appendices

11 Appendices

11.1 Appendix A

11.1.1 Technical data

QIAGEN reserves the right to change specifications at any time.

11.1.2 Environmental conditions

Operating conditions

Power	100–240 V AC, 50–60 Hz, 250 VA
	Mains supply voltage fluctuations are not to exceed
	±10% of the nominal supply voltages
Fuse	T5A 250V (instrument)
	F4A 250V (vacuum pump)
Overvoltage category	II
Air temperature	15–30°C (59–86°F)
Relative humidity*	40–70%
Altitude*	Up to 2000 m (6500 ft.)
Place of operation	For indoor use only
Pollution degree	2

*Conditions under which equipment is electrically safe to operate

Transportation conditions

Air temperature	–25°C to 60°C (–13°F to 140°F) in manufacturer's package
Relative humidity	Max. 75% (noncondensing)

Storage conditions

Air temperature	15°C to 30°C (59°F to 86°F) in manufacturer's package
Relative humidity	Max. 75% (noncondensing)

Mechanical data and hardware features

Dimensions	Width: 54 cm (21.3 in.)
	Depth: 63 cm (24.8 in.) without cables
	72 cm (28.3 in.) with cables
	Height: 45 cm (17.7 in.) lid closed
	86 cm (33.9 in) lid open
Mass	QIAcube HT instrument: 44 kg (97 lb)
	QIAcube HT vacuum control station: 17 kg (38 lb)
Capacity	Up to 96 samples per run

11.1.2.1 Waste Electrical and Electronical Equipment

This section provides information about disposal of waste electrical and electronic equipment by users.

The crossed-out wheeled bin symbol (see below) indicates that this product must not be disposed of with other waste; it must be taken to an approved treatment facility or to a designated collection point for recycling, according to local laws and regulations.

The separate collection and recycling of waste electronic equipment at the time of disposal helps to conserve natural resources and ensures that the product is recycled in a manner that protects human health and the environment.



Recycling can be provided by QIAGEN upon request at additional cost. In the European Union, in accordance with the specific WEEE recycling requirements and where a replacement product is being supplied by QIAGEN, free recycling of its WEEE-marked electronic equipment is provided.

To recycle electronic equipment, contact your local QIAGEN sales office for the required return form. Once the form is submitted, you will be contacted by QIAGEN either to request follow-up information for scheduling collection of the electronic waste or to provide you with an individual quote.

11.1.3 FCC declaration

The "United States Federal Communications Commission" (USFCC) (in 47 CRF 15. 105) declared that the users of this product must be informed of the following facts and circumstances.

This device complies with part 15 of the FCC. Operation is subject to the following two conditions: (1) This device may

not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003.

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE: 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 a in which case the user will be required to correct the interference at his own expense.

QIAGEN GmbH, Germany is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connection cables and equipment other than those specified by QIAGEN GmbH, Germany. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

11.1.4 Declaration of conformity

Name and address of the legal manufacturer:

QIAGEN GmbH

QIAGEN Strasse 1

40724 Hilden

Germany

An up-to-date Declaration of Conformity can be requested from QIAGEN Technical Services.

11.2 Appendix B

11.2.1 Liability clause

QIAGEN shall be released from all obligations under its warranty in the event repairs or modifications are made by persons other than its own personnel, except in cases where the Company has given its written consent to perform such repairs or modifications. All materials replaced under this warranty will be warranted only for the duration of the original warranty period, and in no case beyond the original expiration date of original warranty unless authorized in writing by an officer of the Company. Read-out devices, interfacing devices and associated software will be warranted only for the period offered by the original manufacturer of these products. Representations and warranties made by any person, including representatives of QIAGEN, which are inconsistent or in conflict with the conditions in this warranty shall not be binding upon the Company unless produced in writing and approved by an officer of QIAGEN.

11.3 Appendix C Consignes de sécurité

Avant d'utiliser le QIAcube HT il est impératif de lire attentivement ce manuel et de porter une attention particulière aux consignes de sécurité. Afin de garantir un fonctionnement de l'appareil en toute sécurité et de maintenir l'appareil en bon état de marche, il est impératif de suivre les instructions et consignes de sécurité fournies dans le présent manuel d'utilisation.

Les types d'informations de sécurité suivants sont fournis tout u long du manuel.

AVERTISSEMENT 	Le terme **AVERTISSEMENT** signale des situations risquant d'entraîner des accidents corporels dont l'utilisateur, ou d'autres personnes, pourraient être victime. Les détails concernant ces circonstances sont donnés dans un encadré identique à celui-ci.

ATTENTION 	Le terme **ATTENTION** signale des situations risquant d'entraîner des détériorations de l'appareil ou de tout autre matériel. Les détails concernant ces circonstances sont donnés dans un encadré identique à celui-ci.

Les conseils donnés dans ce manuel ont pour but de venir compléter les exigences de sécurité habituelles en vigueur dans le pays de l'utilisateur, et non de s'y substituer.

11.3.1 Utilisation appropriée

AVERTISSEMENT/ ATTENTION	**Risque d'accident corporel et de détérioration du matériel** [W1] L'utilisation inappropriée du QIAcube HT peut entraîner des accidents corporels ou une détérioration de l'appareil.

	L'utilisation du QIAcube HT est exclusivement réservée au personnel qualifié ayant été convenablement formé. La maintenance du QIAcube HT doit uniquement être effectuée par des spécialistes du Service Après-Vente QIAGEN.

AVERTISSEMENT/ ATTENTION 	**Risque de surchauffe** [W2] Afin de garantir une bonne ventilation, laisser un dégagement d'au moins 10 cm sur les côtés et à l'arrière du QIAcube HT. Les fentes et les ouvertures qui assurent la ventilation de l'appareil ne doivent pas être obstruées.

AVERTISSEMENT/ ATTENTION 	**Risque d'accident corporel et de détérioration du matériel** [W3] Le QIAcube HT est trop lourd pour être soulevé par une seule personne. Afin d'éviter tout accident corporel et toute détérioration du matériel, ne pas soulever l'appareil seul.

AVERTISSEMENT/ ATTENTION 	**Risque d'accident corporel et de détérioration du matériel** [W4] Ne pas essayer de déplacer le QIAcube HT pendant qu'il est en fonctionnement.

AVERTISSEMENT/ ATTENTION 	**Atmosphère explosive** [W5] Le QIAcube HT n'est pas conçu pour être utilisé dans une atmosphère explosive.

AVERTISSEMENT/ ATTENTION 	**Risque d'explosion** [W6] Le QIAcube HT a été conçu pour l'utilisation des réactifs et substances fournis par les kits QIAGEN. L'utilisation de réactifs et de substances autres que celles indiquées peut entrainer un risque d'incendie ou d'explosion.

ATTENTION 	**Détérioration de l'appareil** [C1] La lumière directe du soleil peut décolorer les pièces de l'appareil et abîmer les éléments en plastique. Tenir le QIAcube HT à l'abri de la lumière directe du soleil.

ATTENTION 	**Détérioration de l'appareil** [C2] Éviter de renverser de l'eau ou des produits chimiques sur le QIAcube HT. La détérioration de l'appareil dû au déversement de liquides annule la garantie.

AVERTISSEMENT 	**Risque d'accident corporel** [W7] Pendant les étapes de calibration des positions, le bras robotisé se déplace alors que le capot de l'appareil est relevé. Ne jamais actionner ou cliquer sur aucunes touches tant que des parties du corps se trouvent dans l'enceinte de l'appareil.

En cas d'urgence, éteindre le QIAcube HT à l'aide de l'interrupteur d'alimentation situé à l'arrière de l'appareil et débrancher le cordon d'alimentation de la prise de courant.

11.3.2 Sécurité électrique

Avant l'entretien, débrancher le cordon d'alimentation de la prise de courant.

AVERTISSEMENT/ ATTENTION 	**Danger électrique** [W8] Toute interruption du conducteur de protection (conducteur de terre/de masse) à l'intérieur ou à l'extérieur de l'appareil ou toute déconnexion de la borne du conducteur de protection est susceptible de rendre l'appareil dangereux. Toute interruption intentionnelle est interdite. **Tensions mortelles à l'intérieur de l'appareil.** Lorsque l'appareil est relié à l'alimentation, les bornes peuvent être sous tension et l'ouverture de capots de l'appareil ou le retrait de pièces risque d'exposer des éléments sous tension.

AVERTISSEMENT/ ATTENTION	**Danger d'irradiation UV** [W9]

	Un capteur de couvercle électronique empêche la lampe UV de fonctionner tant que le couvercle de l'instrument est ouvert. Ce capteur de couvercle ne doit en aucun cas être désactivé. Si le capteur de couvercle ne fonctionne pas correctement, prendre contact avec les services techniques de QIAGEN.

Afin que le QIAcube HT fonctionne de manière satisfaisante et en toute sécurité, suivre les conseils suivants:

- Le cordon d'alimentation de l'appareil doit être branché sur une prise d'alimentation munie d'un conducteur de protection (terre/masse).
- Ne pas régler ni remplacer les pièces internes à l'instrument.
- Ne pas faire fonctionner l'appareil si des capots ou des pièces ont été retirés.
- En cas de déversement de liquides à l'intérieur de l'appareil, débrancher celui-ci de la prise d'alimentation et contacter les Services techniques de QIAGEN.

Si l'appareil présente un danger électrique, empêcher le reste du personnel de s'en servir et contacter les Services Techniques de QIAGEN. L'appareil peut présenter un danger électrique dans les cas suivants:

- Le cordon d'alimentation présente des signes de détérioration.
- L'appareil a été stocké pendant une longue période dans des conditions non conformes à celles énoncées dans l'Annexe A.
- L'appareil a subi des chocs sévères durant le transport.

11.3.3 Sécurité biologique

Les spécimens et les réactifs contenant des matières provenant d'êtres humains doivent être considérés comme potentiellement infectieux. Utilisez des procédures de laboratoire sûres comme décrit dans des publications telles que Biosafety in Microbiological and Biomedical Laboratories, HHS (www.cdc.gov/od/ohs/biosfty/biosfty.htm).

11.3.3.1 Échantillons

Samples may contain infectious agents. You should be aware of the health hazard presented by such agents, and should use, store and dispose of such samples according to the required safety regulations.

AVERTISSEMENT	**Samples containing infectious agents** [W10]
	Certains échantillons utilisés avec cet appareil peuvent contenir des agents infectieux. Manipulez ces échantillons avec la plus grande précaution et conformément aux règles de sécurité nécessaires. Portez toujours des lunettes de protection, deux paires de gants et une blouse de laboratoire. La personne responsable (par exemple, le directeur du laboratoire) doit prendre les précautions nécessaires afin de garantir que l'environnement de travail est sûr, que les opérateurs de l'appareil sont convenablement formés et ne sont pas exposés à des niveaux dangereux d'agents infectieux comme cela est défini dans les fiches techniques santé-sécurité (SDS) ou dans les documents de l'OSHA*, de l'ACGIH† ou du COSHH‡ applicables. L'évacuation des vapeurs et la mise au rebut des déchets doivent s'effectuer conformément à toutes les réglementations et lois nationales, régionales et locales relatives à la santé et à la sécurité.

* OSHA : Occupational Safety and Health Administration (États-Unis d'Amérique) (Administration pour la santé et la sécurité du travail).

† ACGIH : American Conference of Government Industrial Hygienists (États-Unis d'Amérique) (Conférence américaine des hygiénistes industriels gouvernementaux).

‡ COSHH : Control of Substances Hazardous to Health (Royaume-Uni) (Contrôle des substances dangereuses pour la santé).

11.3.4 Produits chimiques

AVERTISSEMENT	**Produits chimiques** [W11]
	Certains produits chimiques utilisés avec cet appareil peuvent être dangereux ou le devenir après l'exécution du cycle du protocole. Toujours porter des lunettes de protection, des gants et une blouse de laboratoire. La personne responsable (par exemple, le directeur du laboratoire) doit prendre les précautions nécessaires afin de garantir que le lieu de travail environnant est sûr et que les opérateurs de l'appareil ne sont pas exposés à des niveaux dangereux de substances (chimiques ou biologiques) toxiques comme cela est défini dans les fiches de données de sécurité (FDS) ou dans les documents de l'OSHA*, de l'ACGIH† ou du COSHH‡ applicables. L'évacuation des vapeurs et la mise au rebut des déchets doivent s'effectuer conformément à toutes les réglementations et lois nationales, régionales et locales relatives à la santé et à la sécurité.

* OSHA : Occupational Safety and Health Administration (États-Unis d'Amérique) (Administration pour la santé et la sécurité du travail).

† ACGIH : American Conference of Government Industrial Hygienists (États-Unis d'Amérique) (Conférence américaine des hygiénistes industriels gouvernementaux).

‡ COSHH : Control of Substances Hazardous to Health (Royaume-Uni) (Contrôle des substances dangereuses pour la santé).

11.3.4.1 Vapeurs toxiques

Si vous travaillez avec des solvants volatils ou des substances toxiques, vous devez disposer d'un système de ventilation de laboratoire efficace afin d'évacuer les vapeurs qui peuvent être générées.

11.3.5 Traitement des déchets

Le matériel en plastique usagé peut contenir des produits chimiques dangereux. Ces déchets doivent être convenablement collectés et mis au rebut conformément aux réglementations de sécurité locales.

Pour plus d'informations sur le conteneur d'embouts usagés, consulter la section Tip disposal box.

Pour plus d'informations sur la mise au rebut du QIAcube HT, voir l'Annexe A.

11.3.6 Dangers mécaniques

AVERTISSEMENT 	**Pièces mobiles** [W12] Éviter le contact avec les pièces en mouvement lorsque le QIAcube HT est en marche. Ne jamais placer les mains sous le bras robotisé lorsque celui-ci s'abaisse. Ne pas tenter de déplacer des plaques ou des tubes lorsque le bras robotisé est en marche.

AVERTISSEMENT 	**Pièces mobiles** [W15] Pour éviter tout contact avec des pièces en mouvement pendant le fonctionnement du QIAcube HT, l'appareil doit être utilisé avec le couvercle fermé. Si le capteur de couvercle ne fonctionne pas correctement, prendre contact avec les services techniques de QIAGEN.

ATTENTION 	**Détérioration de l'appareil** [C3] N'appliquer aucune force manuelle sur le bras Y (c'est-à-dire la tête de pipetage). En cas de déplacement manuel accidentel du bras Y, il est fortement recommandé de redémarrer le système.

Afin que le QIAcube HT fonctionne de manière satisfaisante et en toute sécurité, suivre ces instructions :

- Utiliser uniquement les embouts et portoirs d'embouts recommandés.
- Dans la mesure du possible, maintenir le couvercle de l'instrument fermé.
- Lors de la calibration avec couvercle ouvert, toujours se tenir à l'écart de l'instrument au moment des réglages. Le capteur de couvercles est désactivé lors de la calibration. Par conséquent, ne pas cliquer avec la souris ni appuyer sur une touche du clavier lors de l'observation de la calibration. Attendre l'arrêt complet du bras robotisé avant de déplacer une plaque ou un tube.
- Ne rien poser sur le bras robotisé.

Lors d'une analyse, cliquer sur le bouton « Pause » pour mettre l'instrument en mode de pause avant de retirer des plaques ou des tubes de la table de travail. Attendre l'arrêt complet du bras robotisé. Cela peut prendre jusqu'à 10 secondes.

11.3.7 Sécurité relative à la maintenance

Procéder à la maintenance comme décrit à la Maintenance procedures. QIAGEN facture les réparations rendues nécessaires suite à une maintenance inappropriée.

AVERTISSEMENT/ ATTENTION 	**Risque d'accident corporel et de détérioration du matériel** [W13] Effectuer uniquement la maintenance spécifiquement décrite dans ce manuel.

AVERTISSEMENT/ ATTENTION 	**Risque de décharge électrique** [W14] Ne pas ouvrir les panneaux du QIAcube HT. **Risque d'accident corporel et de détérioration du matériel** Effectuer uniquement la maintenance spécifiquement décrite dans ce manuel.

ATTENTION 	**Détérioration de l'appareil** [C4] Ne pas utiliser de solvants ni de réactifs contenant des acides, des bases ou des composés abrasifs pour nettoyer le QIAcube HT.

ATTENTION 	**Détérioration de l'appareil** [C9] Ne pas employer de flacons pulvérisateurs contenant de l'alcool ou un agent désinfectant pour nettoyer les surfaces des appareils QIAcube HT.

ATTENTION 	**Détérioration du capot du QIAcube HT** [C5] Ne pas utiliser de solvants ni de réactifs contenant des acides, des bases ou des composés abrasifs pour nettoyer le capot de l'appareil. L'alcool peut endommager le capot. Employer uniquement de l'eau distillée.

ATTENTION 	**Détérioration des panneaux latéraux du QIAcube HT** [C6] Ne jamais nettoyer le capot ou les panneaux latéraux de l'appareil à l'alcool ou avec une solution à base d'alcool.

AVERTISSEMENT/ ATTENTION 	**Risque d'incendie** [W16] Lorsque les appareils QIAcube HT sont nettoyés avec un désinfectant à base d'alcool, laisser les capots de l'appareil ouverts pour permettre la dispersion des vapeurs inflammables.

ATTENTION 	**Détérioration du chariot de transfert de la plaque de capture** [C7] En aucun cas le chariot de transfert de la plaque de capture ne doit être autoclavé.

ATTENTION 	**Réinstallation du QIAcube HT** [C10] La pièce la plus importante de l'emballage est le support en bois qui immobilise le bras Y. Ce support doit être réutilisé si vous déplacez le QIAcube HT. Le non-respect de cette instruction annule la garantie.

11.3.8 Symboles sur le QIAcube HT

Symbole	Emplacement	Description
	Table de travail et près de la plaque signalétique	Symbole de mise en garde
	Table de travail et près de la sortie des tips	Symbole de danger biologique
	Table de travail	Symbole de risque d'écrasement
	Plaque signalétique à l'arrière de l'appareil	Marquage CE pour la conformité Européenne
	Plaque signalétique à l'arrière de l'appareil	Marque UKCA (certification de conformité à la réglementation britannique)
	Plaque signalétique à l'arrière de l'appareil	Label CSA pour le Canada et les États-Unis
	Plaque signalétique à l'arrière de l'appareil	Fabricant légal
	Plaque signalétique à l'arrière de l'appareil	Symbole DEEE
	Plaque signalétique à l'arrière de l'appareil	Label FCC de la Federal Communications Commission des États-Unis
	Plaque signalétique à l'arrière de l'appareil	Label RCM pour l'Australie et la Nouvelle-Zélande
	Plaque signalétique à l'arrière de l'appareil	Label RoHS pour la Chine (restriction de l'utilisation de certaines substances dangereuses dans l'équipement électrique et électronique)
	Plaque signalétique à l'arrière de l'appareil	Consulter les consignes d'utilisation.

11.4 Appendix D Sicherheitshinweise

Lesen Sie dieses Handbuch sorgfältig durch, bevor Sie den QIAcube HT benutzen. Beachten Sie dabei insbesondere die Sicherheitshinweise. Die Gebrauchsanweisungen und Sicherheitshinweise im Handbuch müssen befolgt werden, um einen sicheren Betrieb des Geräts zu gewährleisten und das Gerät in einem sicheren Zustand zu erhalten.

In diesem Handbuch werden die folgenden Kategorien von Sicherheitshinweisen verwendet:

WARNUNG 	Der Begriff **„WARNUNG"** ("WARNING") weist Sie auf Situationen hin, in denen eine Verletzungsgefahr für Sie selbst oder andere Personen besteht. Nähere Einzelheiten über diese Situationen werden in einem Textfeld wie diesem beschrieben.

ACHTUNG 	Der Begriff **„ACHTUNG"** ("CAUTION") weist Sie auf Situationen hin, in denen das Gerät oder andere Geräte beschädigt werden könnten. Nähere Einzelheiten über diese Situationen werden in einem Textfeld wie diesem beschrieben.

Die in diesem Handbuch enthaltenen Hinweise stellen eine Ergänzung und keinen Ersatz der üblichen Sicherheitsanforderungen dar, die im jeweiligen Land gelten.

11.4.1 Sachgemäße Handhabung

WARNUNG/ ACHTUNG 	**Verletzungsgefahr und Beschädigung des Geräts** [W1] Die unsachgemäße Bedienung des QIAcube HT kann zu einer Verletzung des Benutzers oder zur Beschädigung des Geräts führen. Der QIAcube HT darf nur durch qualifiziertes Personal, das entsprechend geschult wurde, bedient werden. Die Instandhaltung des QIAcube HT darf nur durch einen Außendienst-Mitarbeiter des QIAGEN Service durchgeführt werden.

WARNUNG/ ACHTUNG 	**Überhitzungsgefahr** [W2] Vergewissern Sie sich, dass zwischen Wand und QIAcube HT (Rückseite und Seitenteile) ein Mindestabstand von 10 cm eingehalten wird. Das gewährleistet eine ausreichende Belüftung des Gerätes. Die Lüftungsschlitze und Öffnungen, die für die Be- und Entlüftung des QIAcube HT bestimmt sind, dürfen nicht zugedeckt werden.

WARNUNG/ ACHTUNG 	**Verletzungsgefahr und Beschädigung des Geräts** [W3] Der QIAcube HT ist zu schwer, um von einer einzelnen Person gehoben zu werden. Zur Vermeidung einer Verletzung oder Beschädigung des Gerätes heben sie das Gerät nicht alleine an.

WARNUNG/ ACHTUNG 	**Verletzungsgefahr und Beschädigung des Geräts** [W4] Der QIAcube HT darf auf keinen Fall während des Betriebs fortbewegt werden.

WARNUNG/ ACHTUNG 	**Explosionsfähige Atmosphären** [W5] Der QIAcube HT ist nicht für den Gebrauch in explosionsfähigen Atmosphären vorgesehen.

WARNUNG/ ACHTUNG 	**Explosionsgefahr** [W6] Der QIAcube HT ist ausschließlich mit Reagenzien und Substanzen aus den QIAGEN Kits zu benutzen. Die Benutzung von anderen Reagenzien oder Substanzen kann Feuer oder eine Explosion auslösen.

ACHTUNG 	**Geräteschäden** [C1] Direktes Sonnenlicht kann zum Ausbleichen von Geräteteilen führen und Schäden an Kunststoffteilen verursachen. Der QIAcube HT darf nicht direkter Sonneneinstrahlung ausgeliefert werden.

ACHTUNG 	**Beschädigung des Geräts** [C2] Vermeiden Sie es, Wasser oder Chemikalien auf der Oberfläche des QIAcube HT zu verschütten. Durch verschüttete Chemikalien oder verschüttetes Wasser verursachte Geräteschäden sind nicht durch die Garantie abgedeckt.

WARNUNG	**Verletzungsgefahr** [W7]

	Bei der Kalibrierung der Positionen bewegt sich der Roboterarm bei geöffneter Gerätehaube. Klicken Sie nicht auf die Maus und drücken Sie nicht auf eine Taste der Tastatur, während sich Ihre Hände oder andere Körperteile im Arbeitsbereich des Roboterarms befinden.

Schalten Sie im Notfall den QIAcube HT aus (der Netzschalter befindet sich auf der Geräterückseite), und ziehen Sie den Netzstecker aus der Steckdose.

11.4.2 Elektrische Sicherheit

Ziehen Sie das Netzanschlusskabel aus der Steckdose, bevor Sie Wartungsarbeiten am Gerät vornehmen.

WARNUNG 	**Gefahr durch Stromschlag** [W8] Jede Unterbrechung des Schutzleiters (Erdungs- bzw. Masseleiter) im Gerät oder außerhalb des Geräts und jede Abtrennung des Schutzleiters am Anschluss der Netzleitung erhöht die Gefahr eines Stromschlags. Eine absichtliche Unterbrechung der Schutzleiterverbindung ist verboten. **Gefährliche Spannung im Gerät** Wenn das Gerät an die Stromversorgung angeschlossen ist, sind die Anschlussstellen spannungsführend. Durch das Öffnen der Abdeckungen oder das Entfernen von Gehäuseteilen können spannungsführende Komponenten freigelegt werden.

WARNUNG 	**Gefahr durch UV-Strahlung** [W9] Ein elektronischer Deckelsensor stellt sicher, dass die Gerätehaube geschlossen sein muss, bevor die UV-Lampe eingeschaltet werden kann. Dieser Deckelsensor sollte auf keinen Fall deaktiviert werden. Wenn der Deckelsensor nicht ordnungsgemäß funktioniert, wenden Sie sich an den Technischen Service von QIAGEN.

Um einen zufriedenstellenden und sicheren Betrieb des QIAcube HT zu gewährleisten, befolgenden Sie bitte die nachstehenden Richtlinien:

- Das Netzkabel muss an eine Wechselstrom-Steckdose mit Schutzleiter (Erdungs-/ Masseleiter) angeschlossen werden.
- Nehmen Sie im Geräteinneren keine Einstellungen an Teilen vor und wechseln Sie keine Teile aus.
- Nehmen Sie das Gerät nicht in Betrieb, wenn Abdeckungen oder Teile entfernt worden sind.
- Falls Flüssigkeit auf dem Gerät verschüttet wird und in das Gerät läuft, dann schalten Sie es sofort aus, trennen Sie es von der Netzspannung (Stecker ziehen!) und setzen Sie sich mit dem Technischen Service von QIAGEN in Verbindung.

Falls die elektrische Sicherheit bei der Bedienung des Geräts nicht mehr gewährleistet werden kann, muss das Gerät gegen unbefugte oder unabsichtliche Benutzung gesichert werden. Kontaktieren Sie anschließend den Technischen Service von QIAGEN. Die elektrische Sicherheit des Geräts ist nicht mehr gegeben, wenn:

- das Netzkabel beschädigt ist;
- das Gerät längere Zeit unter ungünstigen Bedingungen, d. h. unter anderen Bedingungen als in Anhang A angegeben, gelagert wurde;
- das Gerät unsachgemäß transportiert worden ist.

11.4.3 Biologische Sicherheit

Bei Substanzen und Reagenzien, die humanes Untersuchungsmaterial enthalten, sollte immer von einer möglichen Infektionsgefahr ausgegangen werden. Wenden Sie nur sichere Laborverfahren an, wie sie z. B. in Veröffentlichungen wie Biosafety in Microbiological and Biomedical Laboratories (HHS, www.cdc.gov/biosafety/publications) beschrieben werden.

11.4.3.1 Proben

Proben können infektiöse Erreger enthalten. Sie sollten sich der Gesundheitsgefahr bewusst sein, die von diesen Erregern ausgeht, und derartige Proben gemäß den erforderlichen Sicherheitsbestimmungen handhaben, lagern und entsorgen.

WARNUNG 	**Proben, die infektiöse Erreger enthalten** [W10] Einige Proben, die mithilfe dieses Geräts verarbeitet werden, können infektiöse Erreger enthalten. Gehen Sie beim Umgang mit diesen Proben mit der größtmöglichen Vorsicht und gemäß den erforderlichen Sicherheitsbestimmungen vor. Tragen Sie immer eine Schutzbrille, zwei Paar Laborhandschuhe und einen Laborkittel. Die verantwortliche Person (z. B. der Laborleiter) muss alle erforderlichen Vorsichtsmaßnahmen treffen, um sicherzustellen, dass die unmittelbare Umgebung des Arbeitsplatzes sicher ist und die Bediener des Geräts ausreichend geschult sind. Außerdem dürfen die Grenzwerte in Bezug auf infektiöse Erreger, die in den entsprechenden Sicherheitsdatenblättern (SDS) oder den Vorschriften der OSHA,* ACGIH† oder COSHH‡ festgelegt sind, nicht überschritten werden. Beim Betrieb des Abzugs und bei der Entsorgung von Abfallstoffen müssen alle Bestimmungen und Gesetze zu Gesundheitsschutz und Sicherheit am Arbeitsplatz auf übernationaler, nationaler und regionaler Ebene eingehalten werden.

* OSHA: Occupational Safety and Health Administration (Vereinigte Staaten von Amerika).

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‡ COSHH: Control of Substances Hazardous to Health (Vereinigtes Königreich).

11.4.4 Chemikalien

WARNUNG 	**Gefährliche Chemikalien** [W11] Einige Chemikalien, die mit diesem Gerät verwendet werden, können gefährlich sein oder nach Beendigung eines Protokolllaufs gefährlich werden.

	Tragen Sie immer eine Schutzbrille, Laborhandschuhe und einen Laborkittel. Die verantwortliche Person (z. B. der Laborleiter) muss alle erforderlichen Vorsichtsmaßnahmen treffen, um sicherzustellen, dass die unmittelbare Umgebung des Arbeitsplatzes sicher ist. Auch dürfen die Grenzwerte in Bezug auf infektiöse Erreger, die in den entsprechenden Sicherheitsdatenblättern (SDS) oder den Vorschriften der OSHA*, ACGIH† oder COSHH‡ festgelegt sind, nicht überschritten werden. Beim Betrieb des Abzugs und bei der Entsorgung von Abfallstoffen müssen alle Bestimmungen und Gesetze zu Gesundheitsschutz und Sicherheit am Arbeitsplatz auf übernationaler, nationaler und regionaler Ebene eingehalten werden.

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11.4.4.1 Giftige Dämpfe

Alle Arbeiten mit flüchtigen Lösungsmitteln oder toxischen Substanzen müssen unter einem funktionierenden Laborabzugssystem durchgeführt werden, damit die möglicherweise entstehenden Dämpfe abziehen können.

11.4.5 Abfallentsorgung

Benutzte Kunststoff-Laborartikel können gefährliche Chemikalien enthalten. Derartige Abfälle müssen gemäß den geltenden regionalen Sicherheitsbestimmungen gesammelt und entsorgt werden.

Informationen zur Verwendung des Abfallbehälters für Pipettenspitzen finden Sie im Abschnitt Tip disposal box.

Beachten Sie bei der Entsorgung des QIAcube HT die gesetzlichen Bestimmungen zur Entsorgung von Elektro- und Elektronik-Altgeräten (siehe Anhang A).

11.4.6 Gefahren durch mechanische Teile

WARNUNG 	**Sich bewegende Geräteteile** [W12] Vermeiden Sie jeglichen Kontakt mit sich bewegenden Geräteteilen, während der QIAcube HT in Betrieb ist. Auf gar keinen Fall dürfen sich Ihre Hände unter dem Roboterarm befinden, wenn dieser herunterfährt. Versuchen Sie nicht, Reaktionsgefäße oder Platten zu entnehmen oder zu bewegen, während der Roboterarm arbeitet.

WARNUNG 	**Sich bewegende Geräteteile** [W15] Um einen Kontakt mit sich bewegenden Teilen beim Betrieb des QIAcube HT zu vermeiden, darf das Gerät nur mit geschlossenem Deckel betrieben werden. Wenn der Deckelsensor nicht ordnungsgemäß funktioniert, wenden Sie sich an den Technischen Service von QIAGEN.

ACHTUNG 	**Beschädigung des Geräts** [C3] Bewegen Sie den Y-Arm (den Pipettierkopf) nicht von Hand. Wir empfehlen dringend, einen Neustart des Systems durchzuführen, falls der Y-Arm versehentlich von Hand bewegt wurde.

Um einen zufriedenstellenden und sicheren Betrieb des QIAcube HT zu gewährleisten, befolgen Sie bitte die nachstehenden Richtlinien:

- Verwenden Sie nur die empfohlenen Pipettenspitzen und -Racks.
- Halten Sie die Gerätehaube möglichst immer geschlossen.
- Wenn bei geöffneter Gerätehaube kalibriert wird, achten Sie darauf, dass Sie Abstand zum Gerät halten, wenn Sie Justierungen vornehmen. Während der Kalibrierung ist der Deckelsensor deaktiviert. Achten Sie deshalb darauf, nicht mit der Maus zu klicken oder eine der Bedienungstasten auf der Tastatur zu drücken, wenn Sie die Kalibrierungen überprüfen. Warten Sie, bis die Bewegungsabläufe des Roboterarms beendet sind, bevor Sie Reaktionsgefäße oder Platten bewegen.
- Stellen Sie keine Gegenstände auf den Roboterarm.

Wählen Sie während eines Laufs die Schaltfläche „Pause“, um das Gerät anzuhalten, bevor Sie Reaktionsgefäße oder Platten von der Arbeitsplattform entfernen. Warten Sie, bis der Roboterarm die derzeit ablaufende Bewegung beendet hat – dies kann bis zu 10 Sekunden dauern.

11.4.7 Sicherheitshinweise – Wartungsarbeiten

Führen Sie alle Wartungsarbeiten gemäß den Anweisungen in Abschnitt durch. QIAGEN stellt alle Reparaturen in Rechnung, die nachweislich auf eine inkorrekte Wartung zurückzuführen sind.

WARNUNG/ ACHTUNG 	**Verletzungsgefahr und Beschädigung des Geräts** [W13] Führen Sie nur Wartungsarbeiten durch, die ausdrücklich in dieser Gebrauchsanweisung beschrieben sind.

WARNUNG/ ACHTUNG 	**Gefahr durch Stromschlag** [W14] Öffnen Sie keine Gehäuseteile des QIAcube HT. **Verletzungsgefahr und Beschädigung des Geräts** Führen Sie nur Wartungsarbeiten durch, die ausdrücklich in dieser Gebrauchsanweisung beschrieben sind.

ACHTUNG 	**Beschädigung des Geräts** [C4] Verwenden Sie weder Lösungsmittel noch Reagenzien, die Säuren, Laugen oder Abrasivstoffe enthalten, um das QIAcube HT zu reinigen.

ACHTUNG 	**Beschädigung des Geräts** [C9] Verwenden Sie keine Sprühflaschen, die Alkohol oder Desinfektionsmittel enthalten, um die Oberflächen das QIAcube HT zu reinigen.

ACHTUNG 	**Beschädigung der QIAcube HT Gerätehaube** [C5] Verwenden Sie weder Alkohol noch Lösungsmittel oder Reagenzien, die Säuren, Laugen oder Abrasivstoffe enthalten, um die QIAcube HT Haube zu reinigen. Alkohol schädigt die Gerätehaube. Verwenden Sie zum Reinigen der Gerätehaube ausschließlich destilliertes Wasser.

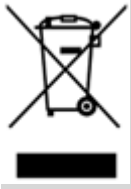
ACHTUNG 	**Beschädigung der QIAcube HT Seitenwände** [C6] Reinigung Sie niemals die Gerätehaube und Seitenwände mit Alkohol oder alkoholhaltigen Lösungen.

WARNUNG/ ACHTUNG 	**Brandgefahr** [W16] Lassen Sie nach dem Reinigen der QIAcube HT Geräte mit einem Desinfektionsmittel auf Alkoholbasis die Gerätehaube offen, damit sich entzündliche Dämpfe verflüchtigen können.

ACHTUNG 	**Beschädigung des Plattentransfer-Gestells** [C7] Das Plattentransfer-Gestell darf auf keinen Fall autoklaviert werden.

ACHTUNG	**Standortwechsel des QIAcube HT** [C10] Der wichtigste Bestandteil der Verpackung ist die Holzstütze, die den Y-Arm fixiert. Diese Stütze muss verwendet werden, wenn der QIAcube HT an einen anderen Standort verlagert wird. Anderenfalls erlischt jeglicher Garantieanspruch.

11.4.8 Symbole auf dem QIAcube HT

Symbol	Ort	Beschreibung
	Arbeitsplattform und nähe Typenschild	Symbol „Achtung“
	Auf der Arbeitsplattform und nähe „Tip ejector“ Ausgang	Symbol „Biogefährdung“
	Arbeitsplattform	Symbol „Quetschgefahr“
	Typenschild auf der Rückseite des Instruments	CE-Kennzeichnung der EU-Konformität
	Typenschild auf der Rückseite des Instruments	UKCA-Kennzeichen (Zertifizierung gemäß UK Richtlinien)
	Typenschild auf der Rückseite des Instruments	Symbol der CSA-Zertifizierung in Kanada und den USA
	Typenschild auf der Rückseite des Instruments	Hersteller i. S. d. Gesetzes
	Typenschild auf der Rückseite des Instruments	WEEE-Kennzeichnung (gemäß europäischer Richtlinien bzw. Elektround Elektronik-Altgeräte-Verordnung)
	Typenschild auf der Rückseite des Instruments	FCC-Kennzeichen der Federal Communications Commission der Vereinigten Staaten
	Typenschild auf der Rückseite des Instruments	RCM-Mark-Zeichen für Australien und Neuseeland
	Typenschild auf der Rückseite des Instruments	Markierung gemäß RoHSRichtlinie für China (Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten)

	Typenschild auf der Rückseite des Instruments	Bedienungsanleitung beachten

11.5 Appendix E

11.5.1 QIAcube HT Accessories

Product	Contents	Cat. no.
QIAcube HT System	Robotic workstation with UV lamp, HEPA filter, laptop, QIAcube HT operating software, start-up pack, installation and training, 1-year warranty on parts and labor	9001793
Plasticware and accessories		
Gasket for Transfer Carriage	Replacement flat gasket (one piece)	9022975
QIAcube HT Plasticware	Plasticware for 480 typical preps on QIAcube HT: 5 S-Blocks, 5 Elution Microtubes RS (EMTR), 120 x 8-Well Strip Caps for EMTR, 9 x 96 Filter-Tips OnCor C, TapePad	950067
Reagent Trough (with Lid), 170 ml	Box of 20 plus lid; liquid reservoirs; used with Reagent Trough R1 Position Plate and Reagent Trough SBS Plate	990556
Reagent Trough (with Lid), 70 ml	Box of 10 plus lid; liquid reservoirs; used with Reagent Trough R1 Position Plate and Reagent Trough SBS Plate	990554
Adapter, Reagent Trough SBS Plate	For holding combinations of 70 ml and 170 ml Reagent Troughs in the standard SBS plate positions	9018935
Adapter, Reagent Trough R1 Position Plate	For holding combinations of 70 ml and 170 ml Reagent Troughs in the R1 position on the instrument worktable	9019513
Filter-Tips, OnCor C, 200 µl (960)	Disposable filter-tips; for use with the QIAcube HT and QIAxtractor	990610
Tape Pads (5)	Adhesive tape sheets for sealing multiwell plates and blocks: 25 sheets per pad, 5 pads per pack	19570
S-Blocks (24)	96-well blocks with 2.2 ml wells, 24 per case	19585
Elution Microtubes RS (24 x 96)	Elution Microtubes RS (EMTR) for use with QIAcube HT: 24 x 96 Elution Microtubes in racks of 96; includes strip caps	120008
HEPA filter	Replacement cartridge (one filter)	9019486
Vacuum Filter, Polycap Filter	Replacement cartridge (one filter)	9019488

Product	Contents	Cat. no.
Vacuum Filter, Carbon Filter	Replacement cartridge (one filter)	9019483
Tip Disposal Box	Box of 10; waste collection box to fit tip ejector chute	990550
Tip Disposal Box Holder	Holds the tip disposal box in place and ensures correct positioning under the tip ejector chute; suitable for QIAcube HT, QIAxtractor and QIAgility instruments	9243592

11.6 Appendix F

11.6.1 License Terms

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Revised January 23rd, 2007

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Date	Description
R6 06/2023	Included the UKCA symbol. Removed the environmental classes.

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