



Centrifuge Module

Supplemental Manual

For use with the GLP systems Track Laboratory Automation System and the Centrifuge Module
80004068-101

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INTERNAL USE ONLY

Foreword

This supplemental manual is intended for the relevant laboratory staff operating the Centrifuge Module.

Ensure that this supplemental manual is read and understood before startup is performed.

This supplemental manual contains information on the Centrifuge Module properties and handling, and instructions and measures for maintaining its operational readiness.

The GLP systems Track laboratory automation system is a modular, customer-specific design. This supplemental manual refers only to the Centrifuge Module. Ensure that the manuals relating to each single component are observed. In addition, observe the manuals for the connected analyzers.

The Centrifuge Module may not be available in all countries. Contact your local representative for more information.

The features in this supplemental manual were introduced in software 3.0.X.

NOTE: An X in the software version number represents software changes that have no impact on this manual.

Original instructions of this manual are written in English. Other languages are translations of the original instructions.

For an electronic copy of this manual, go to corelaboratory.abbott/ifu.

For laboratory professional use only.

This manual is supplemental to the GLP systems Track Operations Manual. Refer to the GLP systems Track Operations Manual for the following information:

- System security
- Customer service
- Intended use
- Disclaimers
- GLP systems Track warranty statement for USA customers only
- GLP systems Track agency approvals
- Intellectual Property statement
- Key to symbols
- Manufacturer and distributor
- Covers, hoods, and sensors
- Requirements for handling the specimens
- Operator responsibility
- Biological hazards

- Precautions
- Spill cleanup
- Requirements for decontamination
- Glossary

Only use the operating instructions in the GLP systems Track Operations Manual with an Input/Output Module with list number (LN) 04Z96-02 or higher or a Tube Assessment Module with LN 04Z99-02 or higher. If necessary, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[General safety information](#), page 7

[Proprietary statement](#), page 8

General safety information

Before operating the Centrifuge Module, read and understand the safety information in this manual.

For information about actions or conditions that can affect system performance, carefully review the operational precautions and limitations in the GLP systems Track Operations Manual.

To become familiar with safety icons on the module and in this manual that indicate potentially hazardous situations, review the hazards in the GLP systems Track Operations Manual. Comply with the hazard and safety information to minimize the potential for harm to personnel and damage to the laboratory environment.

The sections for operational precautions and limitations and for hazards in the GLP systems Track Operations Manual contain supplemental information. Do not use the supplemental information to supersede workplace safety requirements. Review any significant differences between the supplemental information and the workplace safety requirements with management or a workplace safety representative.

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

This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause unwanted operation of the device.

The Centrifuge Module is state-of-the-art. However, residual dangers exist. The safety instructions must be read and observed. The manufacturer accepts no liability for failure to observe the safety instructions.

Refer to the GLP systems Track Operations Manual for the complete listing of all safety information.

Related information...

[*Read me first*](#), page 5

[*Operational precautions and limitations*](#), page 69

[*Hazards*](#), page 71

Proprietary statement

The Centrifuge Module system documentation (© 2023 Abbott. All rights reserved.) and software programs are protected by copyright.

The software and manual were developed solely for use with the laboratory automation system as specified in the operating instructions.

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Related information...

[Read me first](#), page 5

Introduction

The GLP systems Track is a modular laboratory automation system (LAS) designed to automate pre-analytical and post-analytical processing, including sample handling, in order to automate sample processing in clinical laboratories. The system consolidates multiple analytical instruments into a unified workflow. This module includes a built-in touchscreen, a user interface that functions as a central operating and display element. The Centrifuge Module is a module of the GLP systems Track that may be included in an LAS configuration.

Related information...

[Centrifuge Module overview](#), page 10

Centrifuge Module overview

The centrifuge is located inside the Centrifuge Module. The sample robot loads sample tubes from CARs into the Buckets. The Bucket robot transports buckets with sample tubes into and out of the centrifuge through an opening in the centrifuge lid. The centrifuge can be removed from the module for maintenance or cleaning tasks.

Related information...

[Use or function](#), page 9

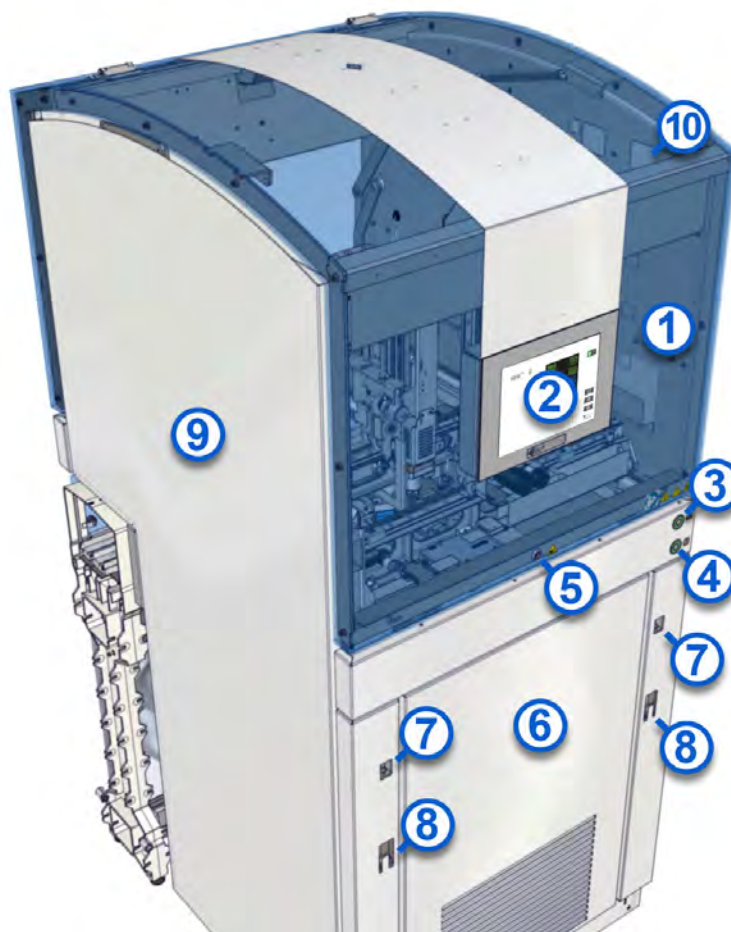
[Design and function](#), page 10

[Descriptions of module statuses](#), page 23

Design and function

The Centrifuge Module consists of the following components:

Figure 1: Exterior front view of the Centrifuge Module



Legend:

1. Front module cover: Protects the operator from injury and keeps the loading area free from dust. The module cover can be opened from the front.



CAUTION: Mind or watch your hands. The front and rear module covers can be opened **only** with the key and **only** by a trained operator. Before opening the module cover and reaching into the module, place the module offline. This action prevents the robot from moving after its initiated movement is completed. If the module is online when the module cover is opened, the robot slows down but does not stop. **Keep away from the moving robot and close the module covers as soon as possible.**

2. Monitor: Functions as the central operating and display element. The monitor is located on the front module cover.



CAUTION: Damage from sharp and hard objects. Sharp and hard objects can damage the surface of the monitor.

3. Online/Offline push button with pause function: Transitions the module status to Online, Offline, or Pause. The Online/Offline push button is located on the front of the module.
4. On/Off push button: Powers on and powers off the module. The On/Off push button is located on the front of the module.
5. Lock: Secures the front and rear module covers and the module flap. A key unlocks any module cover.
6. Hatch: Used to access the centrifuge inside the module.



CAUTION: Heavy hatch. Uncontrolled lowering of the hatch may result in crushed folding feet.

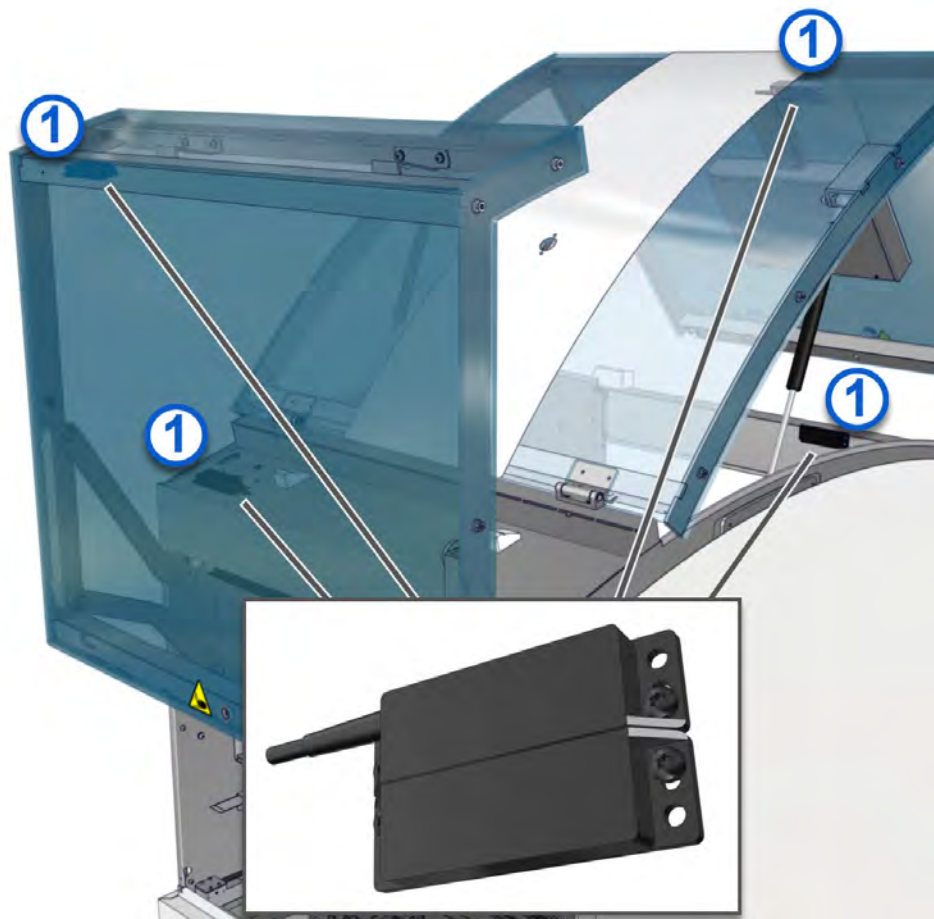
7. Folding feet lock: Unlocks the hatch and the folding feet.
8. Folding feet: Automatically fold out of the hatch when unlocked and hold the completely opened hatch in a horizontal position. In this position, the centrifuge can be pulled out for cleaning or maintenance.



CAUTION: Fully deploy folding feet. Ensure that the feet are fully deployed to 90 degrees before attempting to lower the hatch.

9. Housing: The upper part of the housing contains the loading area. The lower part of the housing contains the centrifuge.
10. Module serial number label: Located in the interior of the module.

Figure 2: Module contact sensors



Legend:

1. Module contact sensors: Opening the module covers slows down the robot movement. The module covers and track hoods provide protection against direct access.



CAUTION: To prevent operator injury, the module status must be transitioned to Offline before the module interior is accessed.

Figure 3: Exterior rear view of the Centrifuge Module



1. Rear module cover: Protects the operator from injury and keeps the loading area free from dust. The module cover can be opened from the rear.



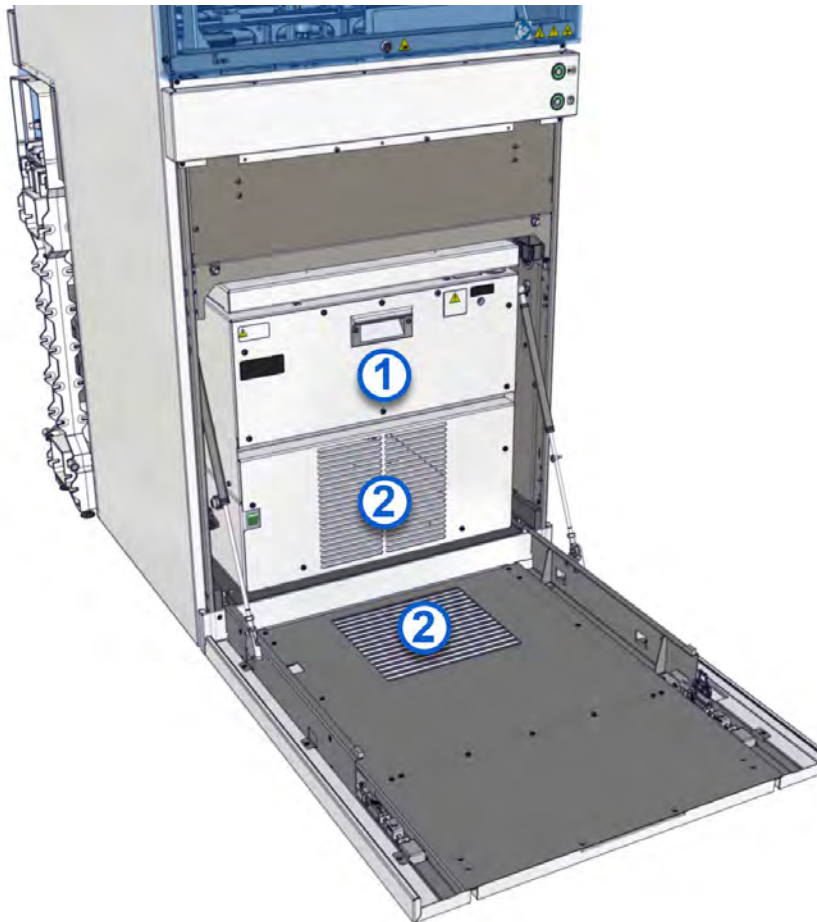
CAUTION: Mind or watch your hands. The front and rear module covers can be opened **only** with the key and **only** by a trained operator. Before opening the module cover and reaching into the module, place the module offline. This action prevents the robot from moving after its initiated movement is completed. If the module is online when the module cover is opened, the robot slows down but does not stop. **Keep away from the moving robot and close the module covers as soon as possible.**

2. Module flap: Used to access the track inside the module.
3. Power switches: Located at the rear of the module.
4. Exhaust fans: Located at the rear of the module. The exhaust fans allow air ventilation to the module.

NOTE: Do not block the exhaust fans. The module may overheat if the exhaust fans are blocked.

5. Track: Composed of lane elements and serves as the structure along which CARs move to transport samples to modules.

Figure 4: Exterior view of the centrifuge



Legend:

1. Centrifuge: Samples are centrifuged. The centrifuge can be removed from the module for service or maintenance tasks.
2. Ventilation slats: Located at the front of the centrifuge and the hatch. The slats allow air ventilation to the centrifuge.

Figure 5: Centrifuge pulled out from housing with closed lid

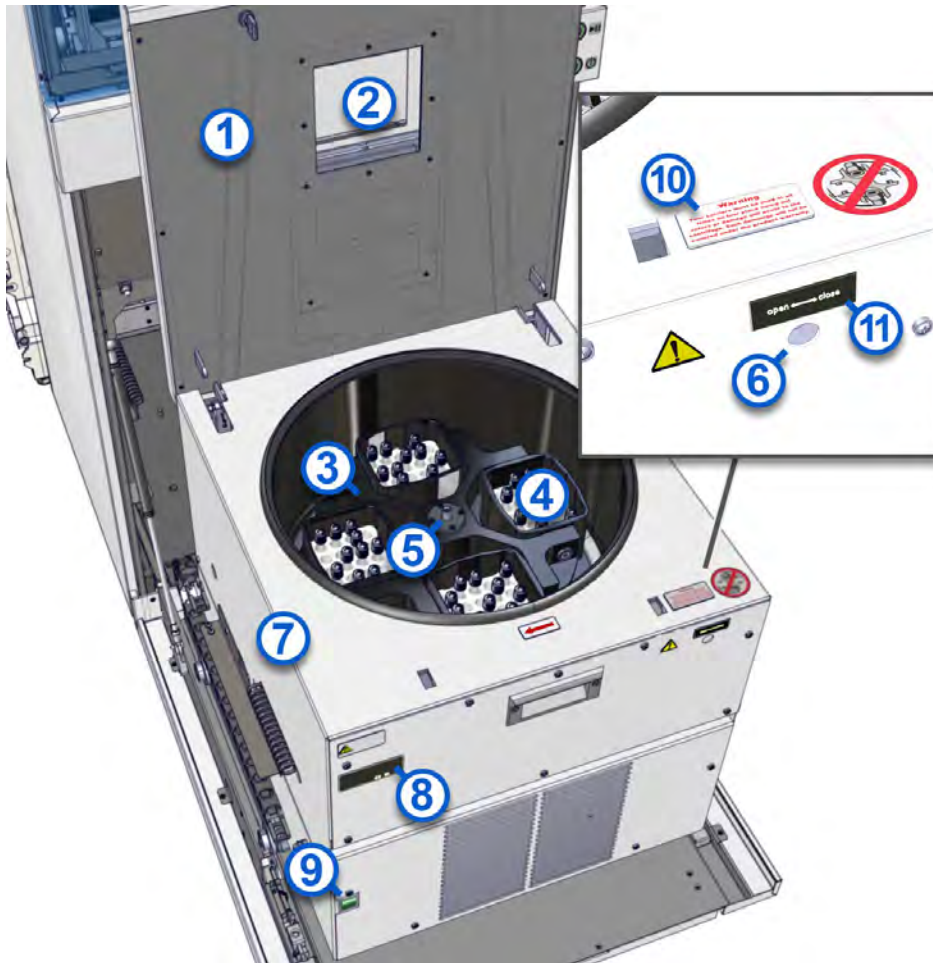
**Legend:**

1. Lid: Used to seal the centrifuge chamber. The centrifuge is loaded and unloaded through an opening in the lid.

NOTE: Do not open the lid unless the centrifuge has come to a complete stop. The centrifuge decelerates if the module is switched off while the centrifuge is rotating. The centrifuge continues to rotate for approximately 15 minutes.

2. Sight glass: Used to perform an independent speed measurement while the centrifuge is spinning.

Figure 6: Centrifuge pulled out from housing with opened lid



Legend:

1. Lid: Used to seal the centrifuge chamber. The centrifuge is loaded and unloaded through an opening in the lid.

NOTE: Do not open the lid unless the centrifuge has come to a complete stop. The centrifuge decelerates if the module is switched off while the centrifuge is rotating. The centrifuge continues to rotate for approximately 15 minutes.

2. Loading opening: Allows the Bucket robot to move the Buckets in or out of the centrifuge.
3. Rotor: The rotating assembly is located inside the centrifuge.
4. Bucket holders: Attached to the rotor and serve as holders for the Buckets.
5. Rotor-securing bolt: Secures the rotor inside the centrifuge.
6. Lid lock: Locks or unlocks the lid. A size 6 mm Allen wrench is required for locking and unlocking.
7. Centrifuge housing: Houses the centrifuge.
8. Nameplate: Indicates the date of the annual centrifuge maintenance performed by a service representative.
9. Power switch: Powers on or powers off the centrifuge.

10. Manufacturer warning label: Located on the exterior of the centrifuge. This label contains the following text:

WARNING

Four carriers must be used at all times on four place swing out rotors or damage will occur to the centrifuge. Such damage will not be covered under the product warranty.

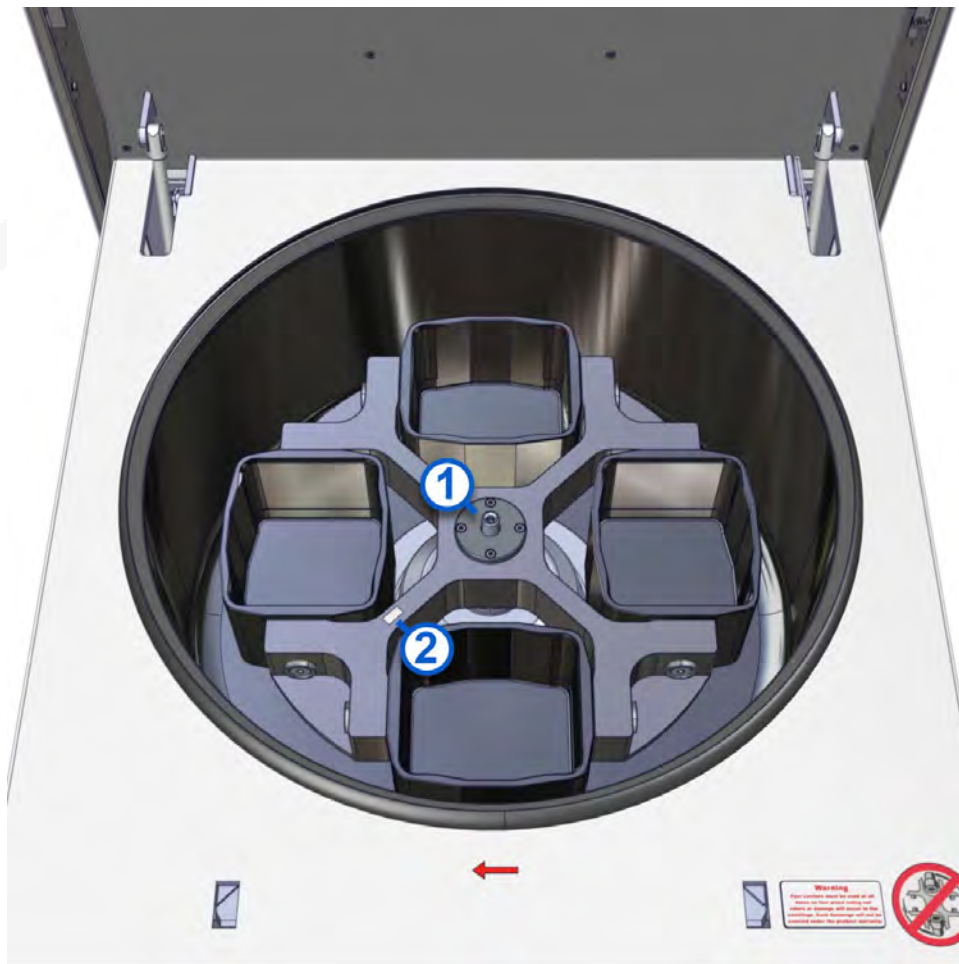
NOTE: Carriers refer to Bucket holders.



CAUTION: Damage caused by imbalance during centrifugation. Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

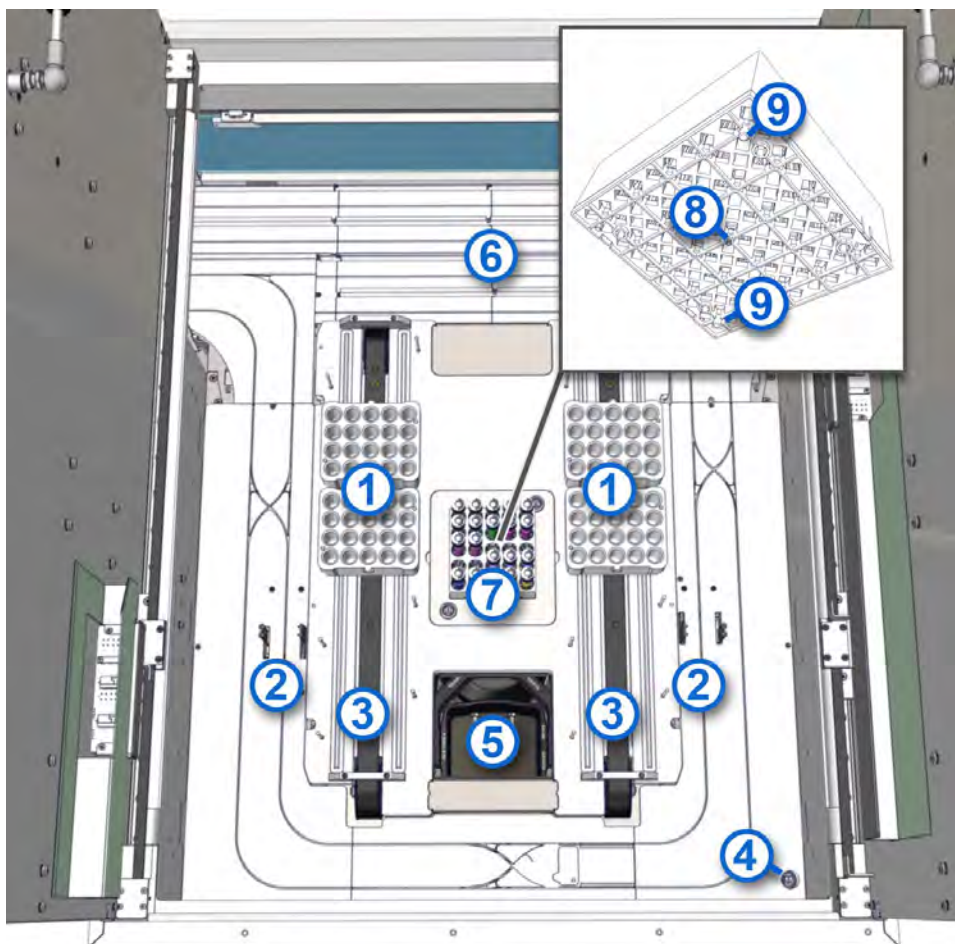
11. Manufacturer Open/Close label: Located on the exterior of the centrifuge. This label indicates the direction for turning the Allen wrench to open and close the centrifuge lid.

Figure 7: Interior view of centrifuge with opened lid

**Legend:**

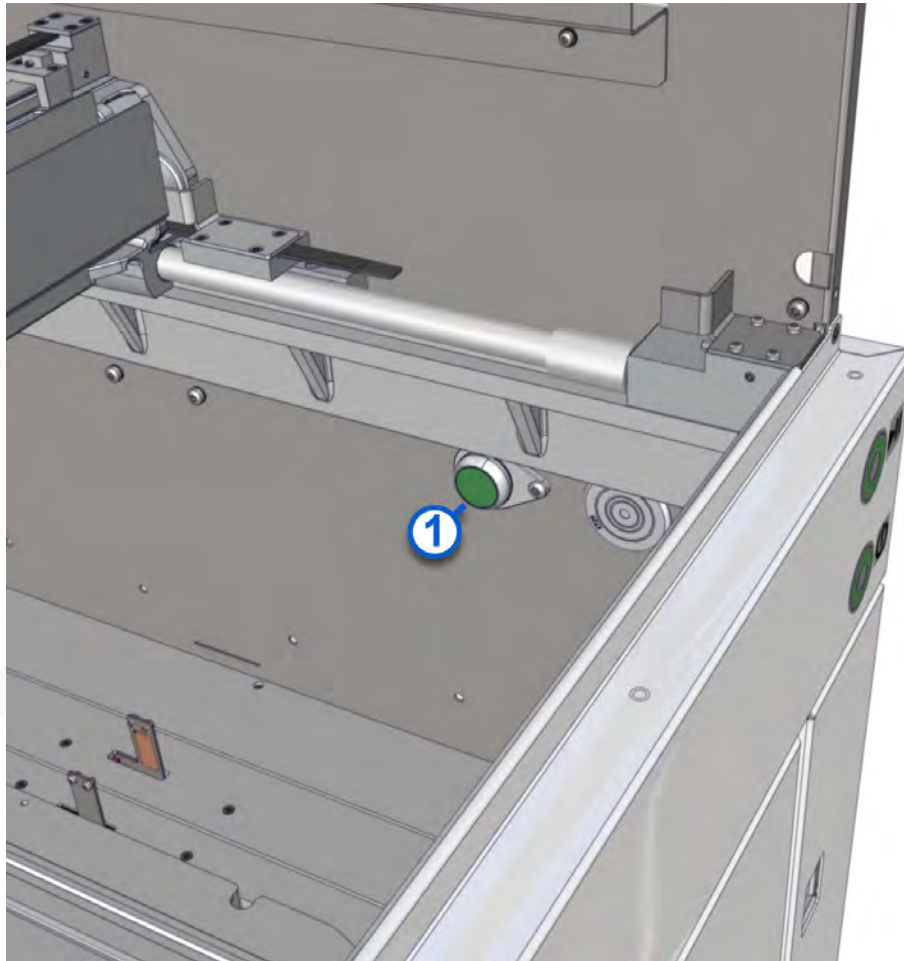
1. Rotor-securing bolt: Secures the rotor inside the centrifuge.
2. Reflective surface: Attached to the rotor. Used as a reference point to attach the tachometer reflective tape. Used to perform an independent speed measurement.

Figure 8: Interior view of the loading area



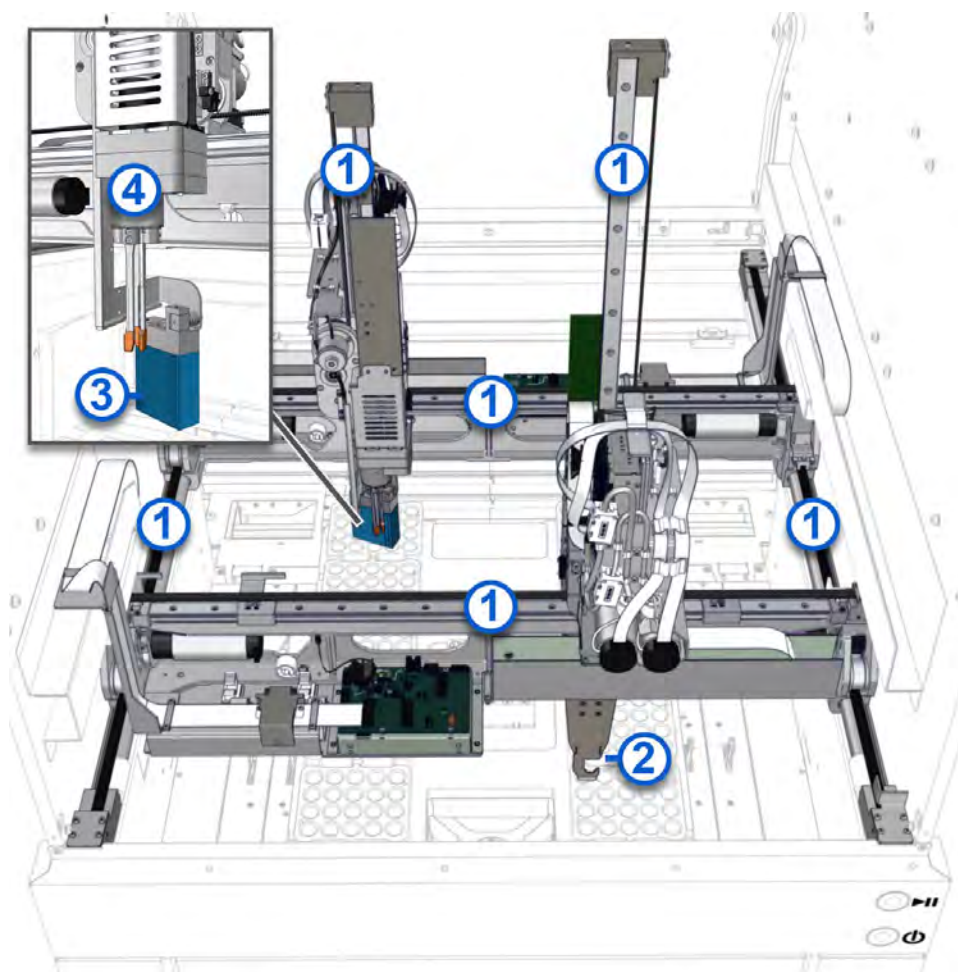
Legend:

1. Bucket pair: Holds samples specifically for centrifugation purposes. Two Buckets in line on a transport belt are called a Bucket pair.
2. AccessPoints: Stop and hold CARs for processing such as loading tubes and unloading tubes.
3. Transport belts: Transport the Buckets back and forth between the sample robot and the Bucket robot.
4. Hatch emergency lock: In an emergency situation, can be used to open the hatch.
5. Loading opening: Allows the Bucket robot to move the Buckets in or out of the centrifuge.
6. Track: Composed of lane elements and serves as the structure along which CARs move to transport samples to modules.
7. Balance tubes: Used for weight compensation when the samples are loaded in the Buckets. Sample tubes filled with different quantities of water are used as balance tubes.
8. Screw: Used to secure the FlexRack to the module. The screw is located in the middle of the FlexRack.
9. Pins: Used to position the FlexRack.

Figure 9: Unlock button**Legend:**

1. Unlock button: Used to unlock the folding feet locks and to open the hatch.

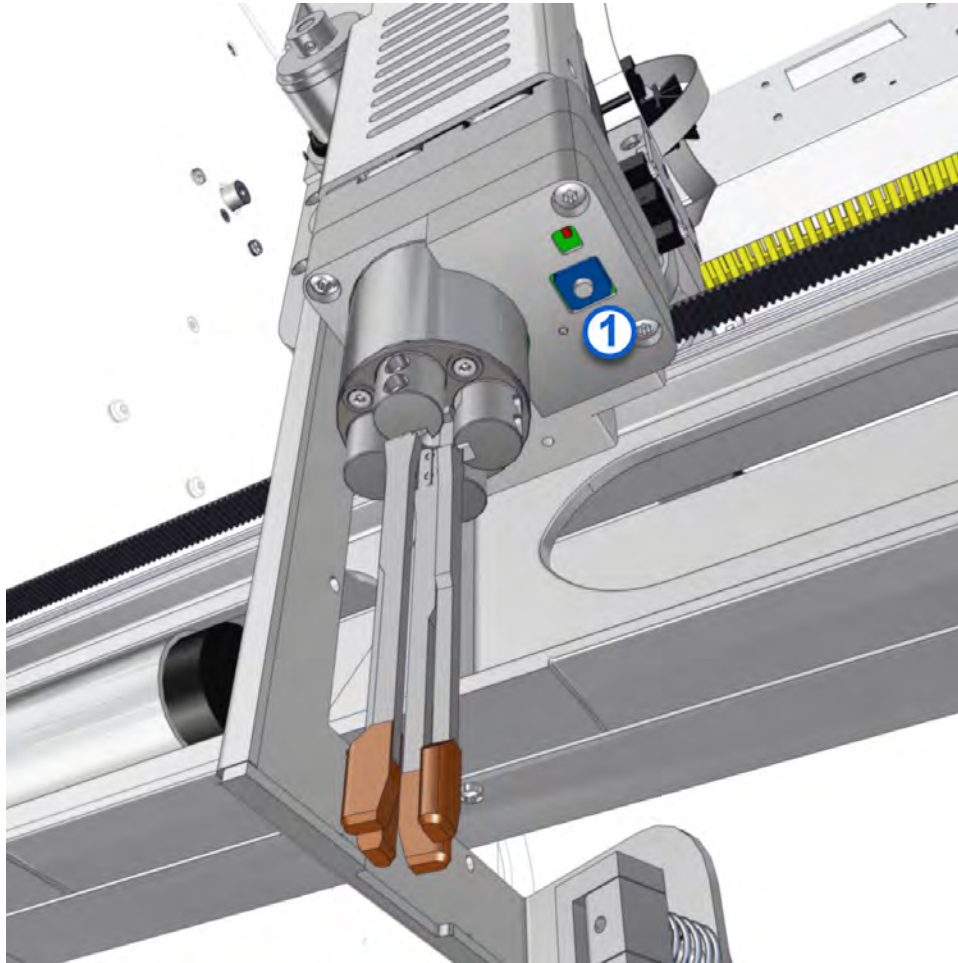
Figure 10: Interior view of the Centrifuge Module



Legend:

1. Linear axes: Enable three-dimensional movement of the robot. The linear axes are arranged at right angles to each other in the x-y-z direction.
2. Bucket robot: Loads and unloads the Buckets from the centrifuge.
3. Bar code reader: Located at the lower end of the sample robot and reads the sample bar code and forwards the information to the control system.
4. Sample robot: Loads and unloads both the CARs and the Buckets. The bottom end of the sample robot is equipped with a bar code reader and a robot gripper.

Figure 11: Release button

**Legend:**

1. Release button: Used to open the sample robot gripper manually. The release button is located on the bottom of the sample robot gripper.

Related information...

[Centrifuge Module overview](#), page 10

[Centrifugation](#), page 21

[Robots](#), page 22

[Bar code reader](#), page 22

[Replace the robot gripper fingers](#), page 100

Centrifugation

The following centrifugation functions are available:

- If a Tube Assessment Center (TAC) is used, the determined sample tube weight is sent to the Centrifuge Module by the Track Sample Manager.

- Samples are loaded into Buckets according to the previously determined tube weight provided by the TAC.
- Even weight distribution is maintained by using balance tubes where necessary.
- Buckets are transferred to the centrifuge.
- Buckets are loaded and unloaded from the centrifuge automatically.
- Samples are unloaded from the Buckets and are loaded into empty CARs.

Related information...

Design and function, page 10

Robots

The Bucket robot transports buckets with sample tubes into and out of the centrifuge.

The sample robot transports sample tubes into and out of CARs and Buckets.

Related information...

Design and function, page 10

Bar code reader

In accordance with Clinical and Laboratory Standards Institute (CLSI) document AUTO02-A2, a sample is identified by a bar code, which is read during transport to or from the CAR.

A maximum of four different bar code types can be read individually or in combination with each other:

- Codabar
- Code 39
- Code 128
- Interleaved 2 of 5



CAUTION: Incorrectly applying a bar code may constitute a health hazard for patients.

Illegible or incorrectly applied bar codes cause incorrect patient results. Bar codes with checksums are recommended for use on the laboratory automation system. For more information regarding sample bar code label technical data, refer to the GLP systems Track Operations Manual.

NOTE: Contact an Abbott Laboratories representative or an authorized service representative to configure the bar code reader for different bar code types.

Related information...

Design and function, page 10

Descriptions of module statuses

Module status refers to the operational modes of the module. The module has the following statuses:

On	The On/Off push button is illuminated steady green.
Off	The On/Off push button is illuminated blinking green.
Online	The module is in automatic mode. The Online/Offline push button is illuminated steady green and the arrow area of the Online/Offline button is green.
Offline	The module is in standby mode. The Online/Offline push button is illuminated steady yellow and the arrow area of the Online/Offline button is gray.
Pause	The module is briefly inactive. The Online/Offline push button is illuminated blinking green and the arrow area of the Online/Offline button is blinking green.
Error	An error has occurred on the module. The Online/Offline push button is illuminated steady red.

Related information...

[Centrifuge Module overview](#), page 10

NOTES


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INTERNAL USE ONLY

Introduction

For optimal system performance, the Centrifuge Module must be correctly installed. After the system has been installed, it must be configured to meet individual laboratory requirements.

Related information...

Centrifuge Module installation requirements, page 26

Main menu screen, page 28

Centrifuge Module installation requirements

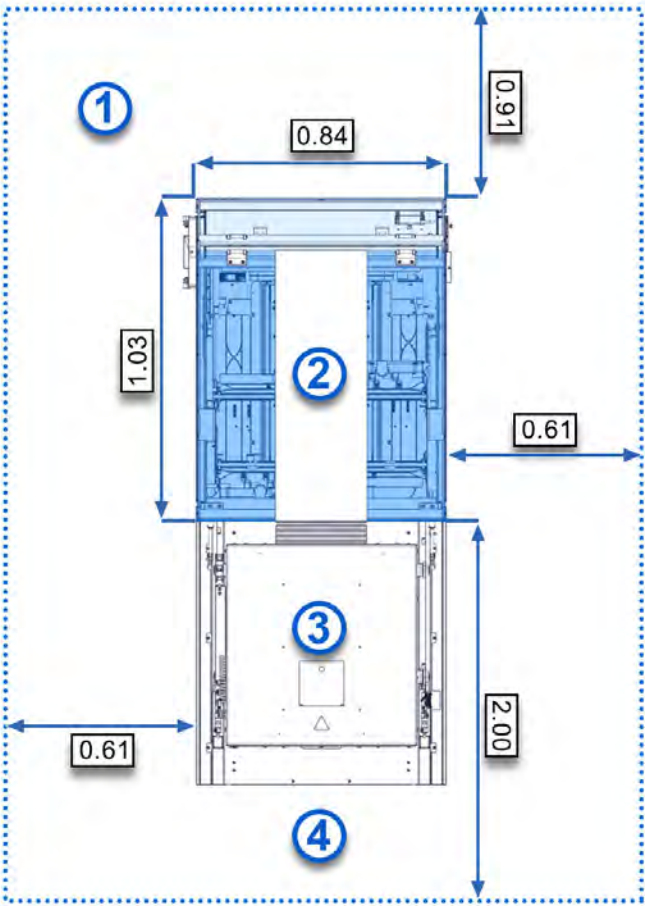
The Centrifuge Module may only be installed indoors. Water connections are not required. Contact an Abbott Laboratories representative or an authorized service representative for more information about service requirements. Facilities must fulfill the floor area and height requirements.

NOTE: The specified floor area measurements are recommendations only. Contact an Abbott Laboratories representative or an authorized service representative for more information.

Table 1: Floor area specifications

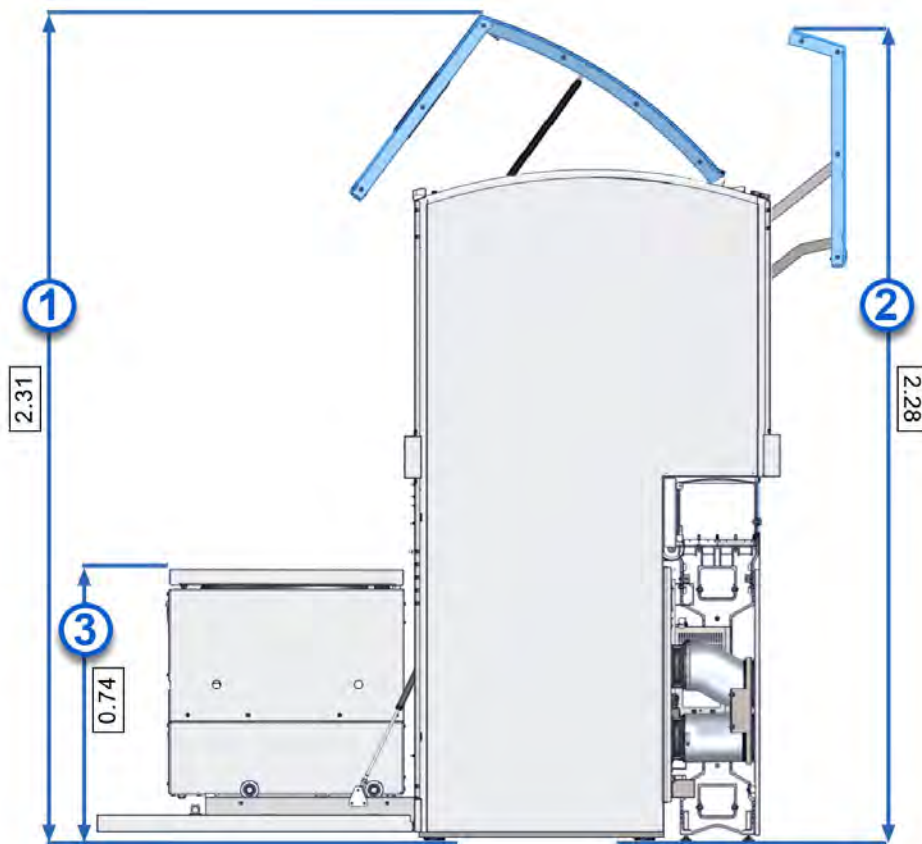
Evenness tolerance requirement	Permissible deviation: ± 5 mm over 15 m
Compensation with adjustable feet	Maximum of 10 mm
Material requirement	Incompressible material such as concrete

Figure 12: Floor area measurements in meters



Legend:

1. Service area
2. Centrifuge Module
3. Open hatch with centrifuge pulled out
4. Work area

Figure 13: Height measurements in meters**Legend:**

1. Front module cover opened
2. Rear module cover opened
3. Centrifuge pulled out

Related information...

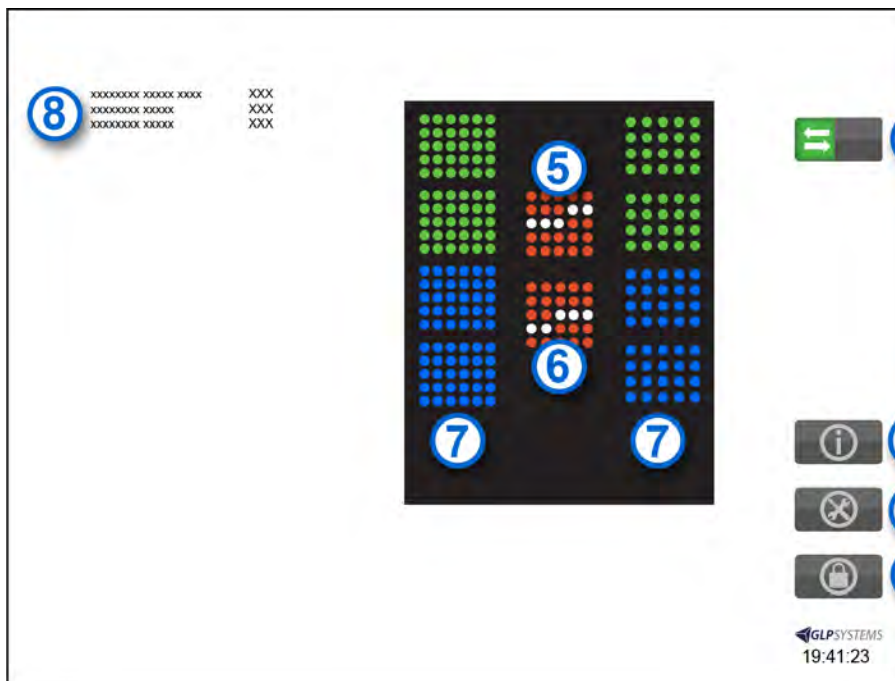
Installation procedures and special requirements, page 25

Centrifuge Module technical data, page 40

Main menu screen

After successful initialization of the Centrifuge Module, the Main menu screen is displayed with the following screen elements.

Figure 14: Main menu screen



Legend:

1. **Online/Offline** button with pause function: Places the module online and offline and pauses the module.
2. **Information** button: Navigates to the Information screen.
3. **Configuration** button: Navigates to the Configuration screen.
4. **Login** button: Navigates to the Login screen.
5. **Balance tubes**: Displays the positions of the balance tubes.
6. **Balance tubes**: Displays the positions of the balance tubes.
7. **Buckets**: Displays the Buckets in the loading area of the Centrifuge Module.
8. **Module information**: Displays module-specific information in this area.

NOTE: This screen element reflects a future feature. A second FlexRack with balance tubes is not yet available.

5. **Balance tubes**: Displays the positions of the balance tubes.
6. **Balance tubes**: Displays the positions of the balance tubes.
7. **Buckets**: Displays the Buckets in the loading area of the Centrifuge Module.
8. **Module information**: Displays module-specific information in this area.

Related information...

[Installation procedures and special requirements](#), page 25

[Login screen](#), page 29

[Information screen](#), page 30

[Configuration screen](#), page 33

[Power on the module](#), page 63

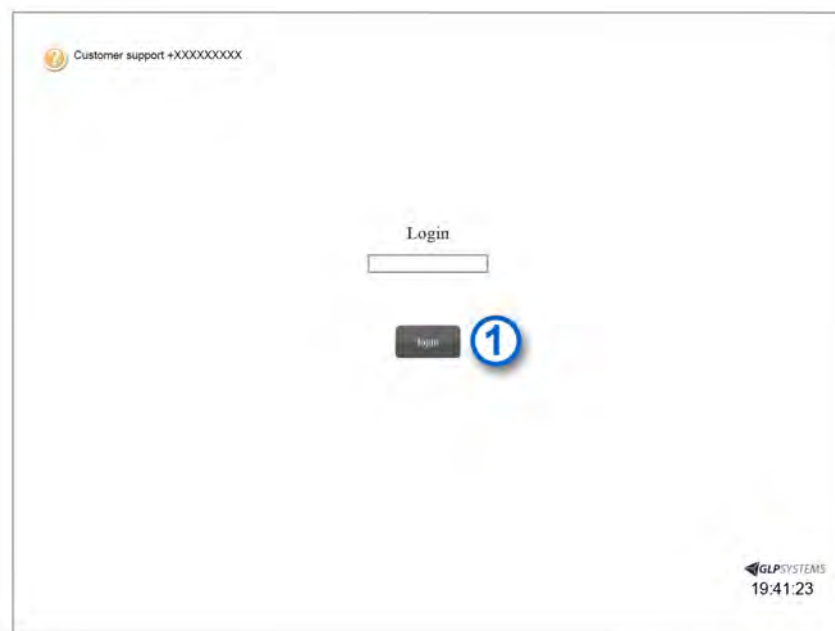
[Replace the robot gripper fingers](#), page 100

Login screen

The Login screen for the configuration manager is displayed if a login and password have been defined during installation.

NOTE: Configuration of the operator login is performed by an Abbott Laboratories representative or an authorized service representative.

Figure 15: Login screen



Legend:

1. Login button

Related information...

[Main menu screen](#), page 28

[Access the Login screen](#), page 29

Access the Login screen

Prerequisite

A password was defined during installation.

NOTE: The **Login** button is available only to an Abbott Laboratories representative or an authorized service representative.

Required module status Online or Offline

Perform this procedure to access the Login screen on the module.

NOTE: Configuration of the operator login is performed by an Abbott Laboratories representative or an authorized service representative.

1. On the Main menu screen, tap the **Login** button .
2. On the Login screen, enter a user name and password.
3. To return to the Main menu screen, tap **Login**.

Related information...

[Login screen](#), page 29

Information screen

The Information screen on the module displays the following module status information:

Module build	The firmware version of the module controller.
Module MAC	The MAC address of the module controller Ethernet port.
Module IP	The IP address of the module controller.
ControllerId	The ID of the module controller.
ControllerName	The name of the module controller.
Module up - time in minutes	The time elapsed since the start.
Module samples managed	The current number of samples being managed by the module.
Module input operations	The number of samples placed on the track since the start.
Module output operations	The number of samples moved from the track since the start.
Module controller status	The current internal status of the module controller.
Active Error	The message code of the currently active error.
Last active error	The message code of the last active error.

Barcode read enabled	The indicator for whether a bar code reader has been activated.
RobotBucket X Script Version	The version of the actual script of the Robot Bucket X-axis.
RobotBucket YZRG Script Version	The version of the actual script of the Robot Bucket YZRG-axes.
RobotSample X Script Version	The script version for one of the two robot controllers.
RobotSample YZRG Script Version	The script version for the other robot controller.
Hours of centrifuge operation	The counter of hours of centrifuge operational status since the last time the centrifuge was switched off.
Amount of centrifuge starts	The counter of times the centrifuge started centrifugation cycles since the last time the centrifuge was switched off.
Cent. unbalance sensor val.	The actual value of the sensor detecting the imbalance condition.
Centrifuge firmware version	The version of the actual installed firmware.
Centrifuge motor hours	The counter of hours of motor operational status since the last time the centrifuge was switched off.
Centrifuge serial number	The serial number of the centrifuge.
Centrifuge year of production	The year in which the centrifuge was produced.
Number of imbalance errors	The counter of times the centrifuge experienced an imbalance error since the last time the centrifuge was switched off.
Conveyor Script Version	The version of the actual installed script of the conveyor.
RobotBucket operations	The counter of times the bucket robot performed an operation of moving a bucket since the last time the centrifuge was switched off.
Barcode Read Errors	The number of samples with failed bar code readings since the start.

RobotSample operations	The number of movements the robot has performed since the start.
Conveyor_1 operations	The counter of times the conveyor 1 performed an operation of activating to move a bucket since the last time the centrifuge was switched off.
Conveyor_2 operations	The counter of times the conveyor 1 performed an operation of activating to move a bucket since the last time the centrifuge was switched off.
Module total operation time	The time elapsed since the start in seconds.
Display ID	The name of the display component.
Display IP address	The IP address of the display component.
Display MAC address	The MAC address of the display component Ethernet port.
Display sms4display build	The firmware version of the display component.
Display libsms4json build	The version of the JSON library of the display component.
Display Qt version executable/environment	The version of the Qt framework library used by the display component.
Display OS/Kernel	The operating system version of the display component.
CAN available	The indicator for whether the display has a CAN connection.
Display memory total/free MB	The free memory of the display component.
Exit button 	Navigates to the Main menu screen.

Related information...[Main menu screen](#), page 28[Access the Information screen](#), page 32**Access the Information screen**

Required module status	Online or Offline
-------------------------------	-------------------

Perform this procedure to access the Information screen on the module.

1. On the Main menu screen, tap the **Information** button .
2. On the Information screen, tap the **Exit** button  to return to the Main menu screen.

Related information...

[Information screen](#), page 30

Configuration screen

The Configuration screen on the module displays the following screen elements.

NOTE: Only the **AreaTypes**, **Areas**, **Load and Spin Test Mode** buttons are available to the operator. The other buttons are available only to an Abbott Laboratories representative or an authorized service representative.

Figure 16: Configuration screen



Legend:

1. **AreaTypes** button: Navigates to the Create AreaTypes screen.
2. **config barcode types** button: Navigates to the bar code type settings screen.
3. **Areas** button: Navigates to the Create and Configure Areas screen.
4. **stop CAN log** button: Stops or starts the recording of one or more log files. The button toggles between **stop CAN log** and **start CAN log**.
5. **teach** button: Navigates to the Teaching screen.
6. **Display log level** button: Navigates to the Display logfiles level settings screen.
7. **logfile** button: Navigates to the log files.
8. **Network** button: Navigates to the Network setting screen.

9. **reset sample manager** button: Resets the samples from the module.
10. **robot settings** button: Navigates to the Robot settings screen.
11. **cfg manager** button: Navigates to the Configuration settings screen.
12. **Load and Spin Test Mode** button: Allows the centrifuge speed to be measured independently.
13. **rackport config** button: No functionality is available.
14. **test barcode reader** button: Navigates to the Barcode reader test screen.
15. **Exit** button: Navigates to the Main menu screen.

Related information...

[Main menu screen](#), page 28

[Access the Configuration screen](#), page 34

[Load and Spin Test Mode screen](#), page 34

Access the Configuration screen

Required module status Online or Offline

Perform this procedure to access the Configuration screen on the module.

1. On the Main menu screen, tap the **Configuration** button .
2. On the Configuration screen, tap the **Exit** button  to return to the Main menu screen.

Related information...

[Configuration screen](#), page 33

Load and Spin Test Mode screen

The Load and Spin Test Mode screen on the module displays the following screen elements.

Figure 17: Load and Spin Test Mode screen

**Legend:**

1. **Start Procedure** button: Loads the buckets into the centrifuge.
2. **Start Spinning** button: Starts the spinning of the centrifuge.
3. **Stop Spinning** button: Stops the spinning of the centrifuge.
4. **Finish Procedure** button: Unloads the buckets from the centrifuge.
5. **Exit** button: Re-initializes the module, places the module online, and navigates to the Main menu screen.

Related information...

[Configuration screen](#), page 33

[Perform an independent centrifuge speed measurement](#), page 35

Perform an independent centrifuge speed measurement

Prerequisite No samples are present in the module.

Required materials Tachometer

NOTE: A reflective surface is already present on the rotor, but the tachometer selected by the laboratory may need its own reflective tape to be attached on the rotor. Ensure the tachometer tape is attached on the reflective surface position to ensure alignment with the inspection window on the loading opening.

Required module status Offline

Perform this procedure to measure the centrifuge speed independently. The centrifuge spins using the configured parameters.

1. On the Main menu screen, tap the **Configuration** button .
2. On the Configuration screen, tap the **Load and Spin Test Mode** button.
3. When a confirmation message is displayed, tap **Confirmed, enter Load and Spin Test Mode** to proceed.
4. Tap **Start Procedure** to allow the buckets to load into the centrifuge automatically.
NOTE: After the buckets are loaded into the centrifuge, the loading opening closes.
5. Tap **Start Spinning** (available only if **Speed in RPM: 0**).
6. Wait until the **Speed in RPM** value matches the **Defined RPM speed** value.
7. Open the front module cover.
8. Position the tachometer over the glass window on the loading opening.
9. Perform the speed measurement.
10. Close the front module cover.
11. Tap **Stop Spinning** (or wait until **Centrifugation Time** is elapsed).
12. Ensure that the **Speed in RPM** value is equal to zero.
13. If multiple measurements are needed, tap **Start Spinning** again.
14. When a confirmation message is displayed, remove the tachometer and tap **Okay**.
15. When all needed measurements have been taken, tap **Finish Procedure** to allow the buckets to be unloaded.
16. When a confirmation message is displayed, tap **OK** and wait until all buckets are unloaded.
17. Tap **Exit** .
18. When a confirmation message is displayed, tap **Yes, exit** to allow the device to re-initialize and automatically go online.

Related information...

[Load and Spin Test Mode screen](#), page 34

[Open and close the front and rear module covers](#), page 46

Introduction

The GLP systems Track routes the samples on CARs to the Centrifuge Module. The samples are then placed within the Centrifuge Module in Buckets.

In the loading area, the samples from the incoming CARs are transferred to the Buckets. To do this, the sample robot removes the sample from the CAR and places it into a Bucket selected according to the weight previously determined by the Tube Assessment Center (TAC). The bar code is read when the sample is transferred from the CAR to bucket and after centrifugation from bucket to CAR. Samples with unrecognized bar codes are routed to a designated error area.

To distribute the weight of the four Buckets evenly, balance tubes are placed in the Buckets where necessary. The transport belts transport the Buckets back and forth between the sample robot and the Bucket robot. The Bucket robot transfers the loaded Buckets to the centrifuge. After the centrifuge is loaded, the centrifugation process starts automatically.

After the centrifugation process is completed, the Bucket robot removes the Buckets from the centrifuge. The sample robot unloads the Buckets and loads empty CARs with the centrifuged samples. The bar code reader of the sample robot reads the bar code and the Centrifuge Module Controller software forwards the information to the Track Sample Manager. The samples are then transported to the next destination according to their routing information.

NOTE: If the centrifuge process is interrupted, it is recommended that these samples route to an error area so that operator may determine if samples should be re-centrifuged.

NOTES

Introduction

Before operating the Centrifuge Module, become familiar with system performance characteristics.

Related information...

Centrifuge Module technical data, page 40

Centrifuge Module technical data

Table 2: Centrifuge Module technical data

Throughput: 14 mm to 16 mm diameter sample tubes 11 mm to 13 mm diameter sample tubes	320 capped sample tubes per hour when centrifuging time is 10 minutes 320 capped sample tubes per hour when centrifuging time is 10 minutes NOTE: The specified performance of the module is based on measurements taken in a given test environment. The actual performance may vary significantly depending on the use scenario of the laboratory automation system.
Dimensions	88 cm (width) x 103 cm (depth) x 200 cm (height)
Weight	Without centrifuge and rotor: 298 kg (655.6 lb)
Altitude	30.8 m (100 ft) below sea level to 2000 m (6561 ft) above sea level
Ambient temperature	During operation: +15°C to +30°C During transport and storage: -30°C to +60°C
Relative humidity	During operation: 30% to 80% (noncondensing)
Waste heat (full capacity)	Average at full load: 5981 kJ/h
Acoustic level	Maximum of 65 dBA
Supply voltage	220 V - 230 V
Supply frequency	50 Hz / 60 Hz
Power requirement	2.92 kW
System current	11.5 A
Energy consumption	1.661 kWh at full capacity
Power	- Standby: 114 W - Average at full capacity: 1661 W - Short-time peak value at full capacity: 2394 W
Electrical safety parameters NOTE: Electrical safety parameters have no bearing on performance.	- Installation category: II (overvoltage category) - Pollution degree: 2

NOTE: Laboratory personnel have the responsibility to maintain ambient temperature in the specified range to prevent overheating and excessive evaporation of samples, primarily for uncapped sample tubes. Follow the tube, analyzer, and reagent manufacturer assay-specific documentation for detailed information about proper sample preparation, processing, and

storage. Failure to comply with manufacturer recommendations for sample handling could result in delayed or incorrect results.

Related information...

[Performance characteristics and specifications](#), page 39

[Centrifuge technical data](#), page 41

[Buckets technical data](#), page 41

[Centrifuge Module installation requirements](#), page 26

Centrifuge technical data

Table 3: Centrifuge technical data

Dimensions (housing)	61 cm (width) × 64 cm (depth) × 63 cm (height)
Weight	With rotor: 145 kg (319 lb)
Rotor	Swing-out rotor with 4 core holders Maximum radius of 200 mm
Rotational speed	Rated performance 3500 min ⁻¹ (± 0.1% or ± 10 RPM, whichever is greater) Maximum of rotational speed 3750 min ⁻¹ Configured range 200 min ⁻¹ to 3750 min ⁻¹
Kinetic energy	24,910 Nm (centrifuge rotor with load)
Sample temperature	Minimum at ambient temperature 14°C Maximum at ambient temperature 28°C
Centrifuge temperature	Temperature too high threshold at 35°C Temperature too low threshold at 1°C
Cooling unit	Fully hermetic with overpressure switch and expansion valve
Coolant	0.56 kg R 452 A
Supply voltage	220 VAC to 230 VAC, ± 10%
Supply frequency	50 Hz/60 Hz
Max Power	1.7 kW
System current	7.7 A (maximum current consumption)

Related information...

[Centrifuge Module technical data](#), page 40

Buckets technical data

Table 4: Buckets technical data

Buckets per centrifugation	4
-----------------------------------	---

Capacity of a Bucket	Tube diameter of 11 mm to 13 mm • 30 sample tubes per Bucket • Maximum of 120 sample tubes per centrifugation process Tube diameter of 14 mm to 16 mm • 20 sample tubes per Bucket • Maximum of 80 sample tubes per centrifugation process
-----------------------------	--

Figure 18: Bucket with holder



Related information...

[Centrifuge Module technical data](#), page 40

[Sample processing specifications](#), page 42

Sample processing specifications

Due to specific sample processing possibilities on the modules of the GLP systems Track and due to manufacturer specifications of the connected analyzers, there are deviations and restrictions for sample processing.

Table 5: Sample tube technical data

Tube type	Approved: Capped tubes with manufacturer caps only
Tube height	Maximum of 81 mm to 110 mm (including cap)
Tube diameter	• Maximum of 11 mm to 13 mm • Maximum of 14 mm to 16 mm
Balance tubes: • 16 mm sample tubes	• 4 x 20 g • 4 x 15 g

13 mm sample tubes	4 x 10 g 4 x 10 g 4 x 6 g
--	---

For more information regarding sample tube technical data, refer to the GLP systems Track Operations Manual.

Related information...

Buckets technical data, page 41

NOTES

Introduction

This section provides instructions on how to perform normal operating procedures on the Centrifuge Module. Before operating the system, become familiar with hardware components of the system.

Related information...

Centrifuge Module operation, page 46

Centrifuge Module operation

The module-specific function selection for the Centrifuge Module is displayed on the Main menu screen. The operator selects the corresponding function and follows the instructions. Ensure that the module covers are closed and locked before operating the module.

Related information...

- Operating instructions*, page 45
- Open and close the front and rear module covers*, page 46
- Remove samples from the Centrifuge Module*, page 49
- Remove samples using the emergency lock*, page 55
- Cycle power to the module*, page 62
- Power on the module*, page 63
- Power off the module*, page 64
- Place the module online*, page 65
- Place the module offline*, page 65
- Pause the module*, page 66
- Deactivate pause mode*, page 67

Open and close the front and rear module covers

Required materials	Key
Required module status	Offline

Perform this procedure to open and close the front and rear module covers.



CAUTION: Overhead obstruction. Operators may hit their heads on open module covers.

- Be aware that injury can occur when module covers are opened and closed.
- Protect the head when working on modules with open module covers.
- Frequently observe the functionality of the opening mechanism. Regular inspection of the covers is necessary during maintenance to ensure proper operation.

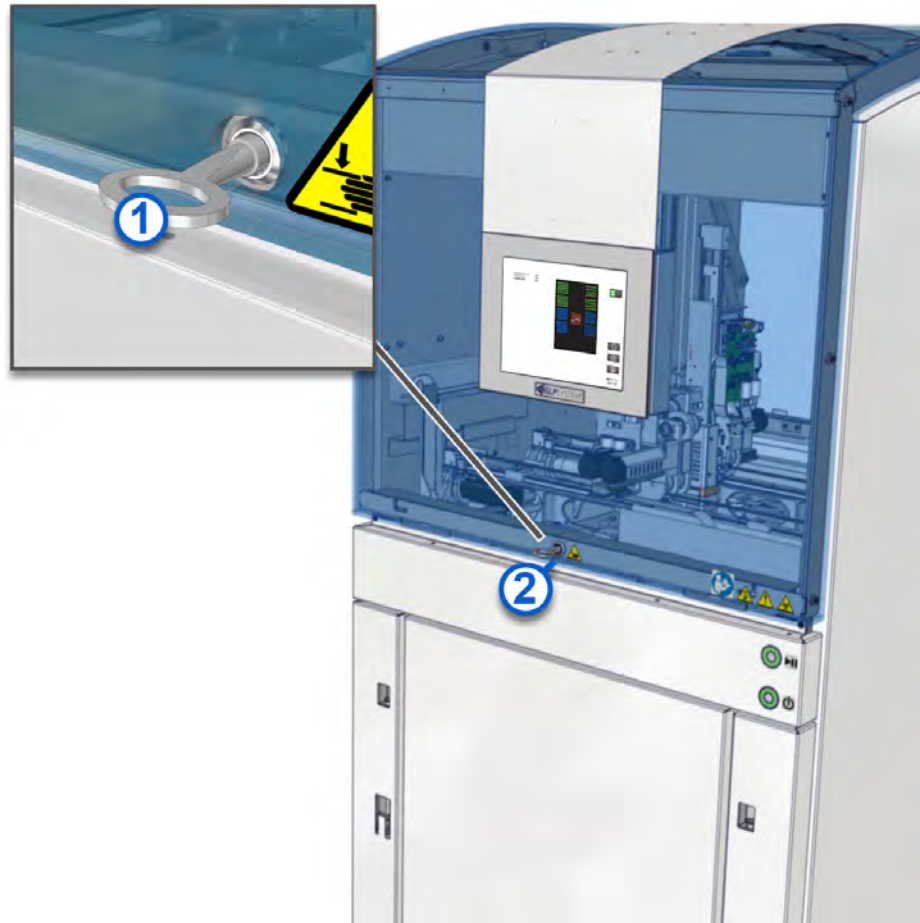


CAUTION: Mind or watch your hands. The front and rear module covers can be opened and closed **only** by a trained operator. Finger pinches can occur between two adjacent modules if module covers are closed by holding their sides. Use caution when opening and closing the front and rear module covers.

1. At the lower end of the front or rear module cover, insert the key [1] into the lock [2].

NOTE: Images of the rear module cover and the module flap cover are not shown.

Figure 19: Front module cover lock



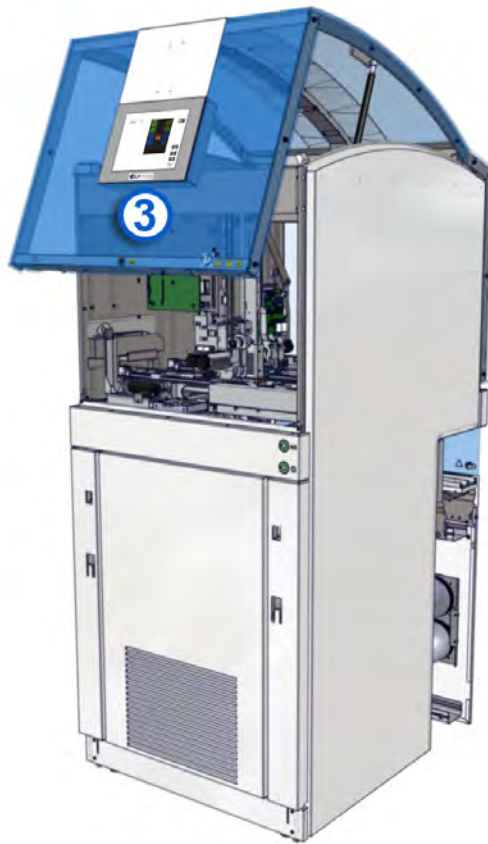
2. While turning the key [1] counterclockwise a quarter turn, begin lifting the front module cover [3] or rear module cover.

Figure 20: Key



3. Remove the key [1] from the lock [2].
4. Fully lift open the front module cover [3] or rear module cover.

Figure 21: Front module cover opened



5. To close the front module cover [3] or rear module cover, carefully pull down the cover.
6. Press lightly on the cover until it is secured.
7. Place the module online.

Related information...

Centrifuge Module operation, page 46

Replace the robot gripper fingers, page 100

Replace the Buckets, page 101

Replace the balance tubes, page 103

Clean the interior of the loading area, page 83

Clean the robot gripper, page 83

Clean the Buckets, page 84

Replace the robot gripper fingers, page 100

Clean the AccessPoint, page 90

Remove samples using the emergency lock, page 55

Clean the bar code reader, page 80

Perform an independent centrifuge speed measurement, page 35

Remove samples from the Centrifuge Module

Prerequisite The unlock button is illuminated steady green.

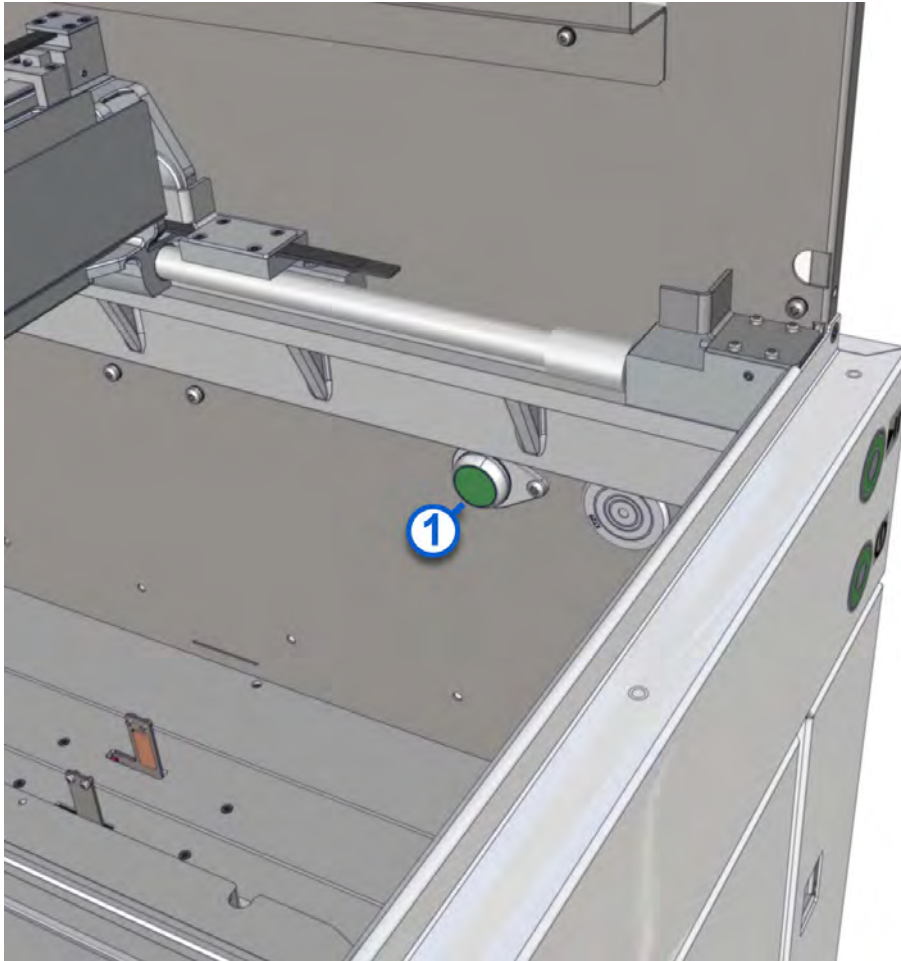
Required materials 6 mm Allen wrench

Required module status Offline, Centrifuge Error state, or Off

Perform this procedure to remove samples from the centrifuge.

1. Open the front module cover.
2. Press the unlock button [1] if it is illuminated steady green.
 - a. If the unlock button [1] is not illuminated steady green, press the front power button for 1 second to activate the unlock button.
 - b. If the unlock button does not illuminate a steady green, then perform *Remove samples using the emergency lock*, page 55.

Figure 22: Unlock button



3. After the unlock button [1] is pressed, press down on the folding foot push buttons [2] within 10 seconds. The folding feet [3] spring out.

NOTE: If the folding foot push buttons are not pressed within 10 seconds, the unlock button is illuminated steady green again and the folding foot push buttons cannot unlock the folding feet [3].



CAUTION: Fully deploy folding feet. Ensure that the folding feet are fully deployed to 90 degrees before attempting to lower the hatch.

Figure 23: Centrifuge closed



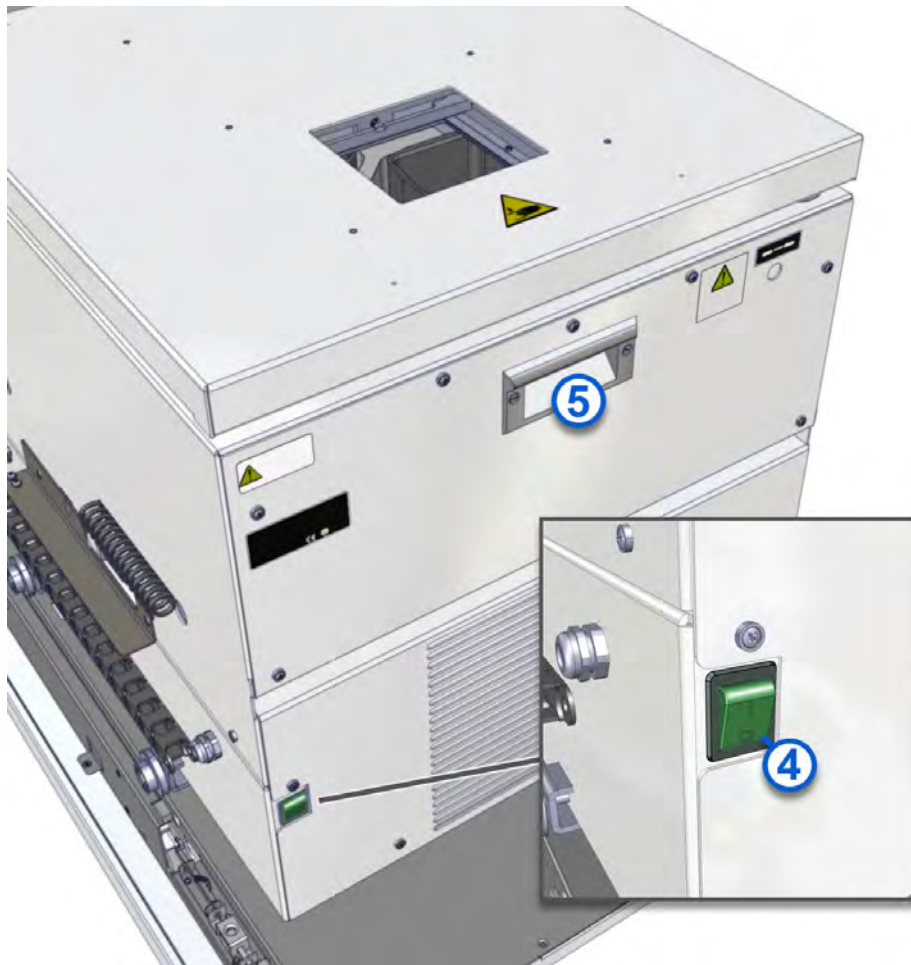
4. Lower the heavy hatch carefully, and do not drop it.



CAUTION: Heavy hatch. Uncontrolled lowering of the hatch may result in crushed folding feet.

5. Power off the centrifuge by pressing the power switch [4].

Figure 24: Power switch



6. Pull out the centrifuge by using the handle [5].



CAUTION: Crushing hazard. Slowly and carefully pull the centrifuge onto the lowered hatch. Ensure power supply cables are not crushed.



CAUTION: Centrifuge may tilt when pulling out. Danger of injury to hands and feet, including crushing. Extend the folding feet fully. Carefully pull out the centrifuge. Ensure that the centrifuge remains on the rails. If the centrifuge tilts off the rails, contact the service team.

7. Unlock the lid [7] by turning the Allen wrench [6] counterclockwise.

Figure 25: Centrifuge closed

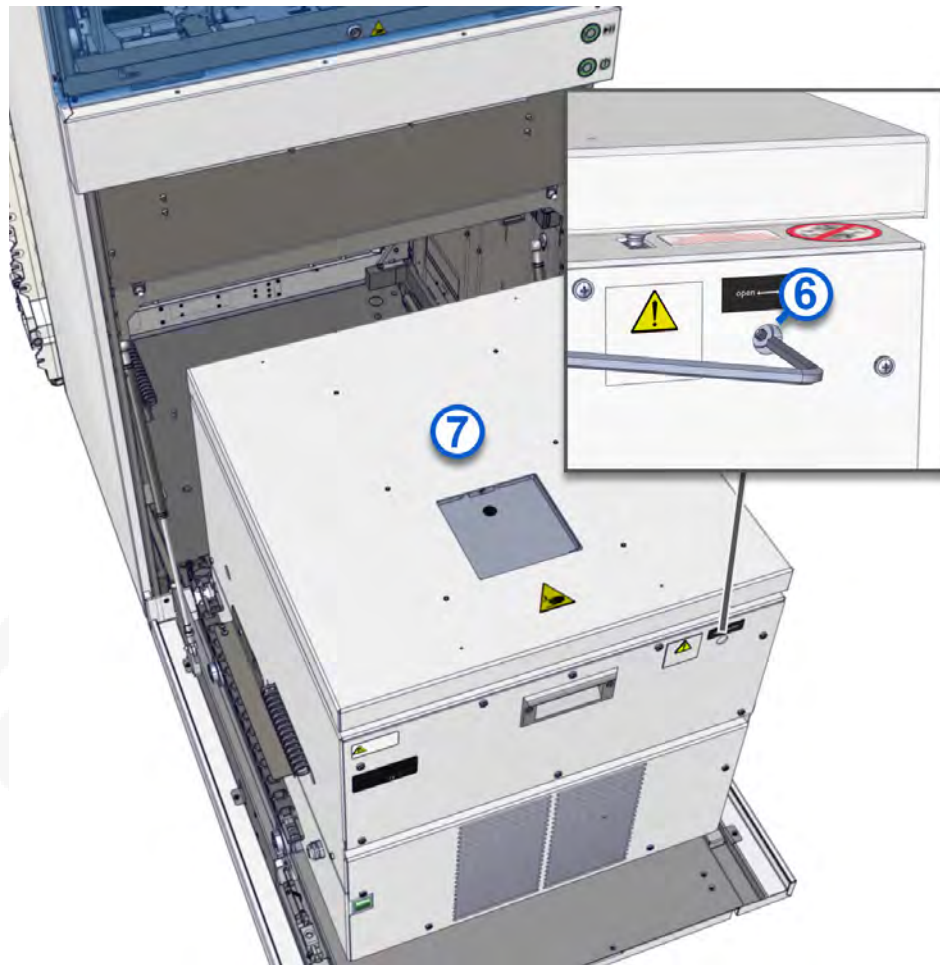
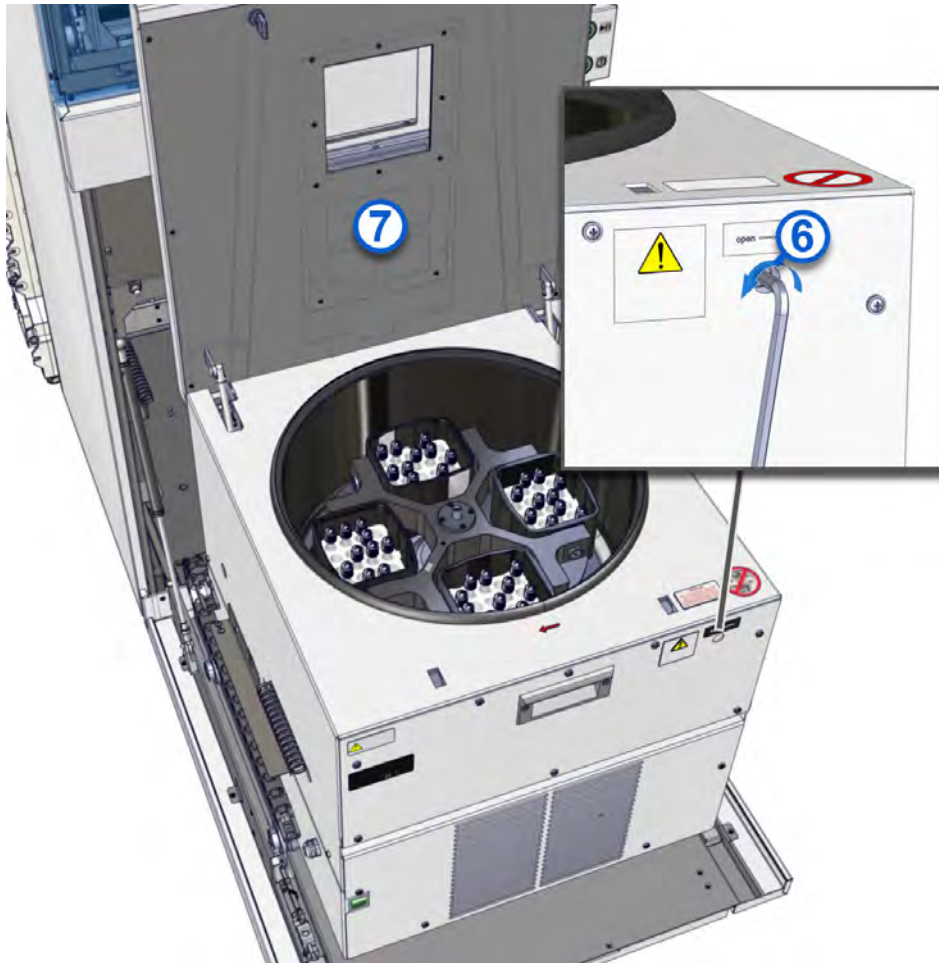


Figure 26: Centrifuge opened



8. Open the lid [7].



CAUTION: System may still be running. In situations of power loss, power failure, or power interruption to the module when the centrifuge is still running, wait 15 minutes for the rotor to stop before opening the centrifuge lid.

9. Remove the samples.

NOTE: On the Track Sample Manager (TSM) user interface, remove the sample from TSM database. For more information on removing samples from TSM, see the GLP systems Track Operations Manual.

10. Close the lid [7].
11. Lock the lid [7] by turning the Allen wrench [6] clockwise.
12. Push the centrifuge back to the stopper.
13. Power on the centrifuge by pressing the power switch [4].
14. Close the hatch.
15. Push in the folding feet [3].

16. Close the front module cover.

The unlock button [1] is illuminated steady green.

17. Place the module online.

The unlock button [1] is no longer illuminated.

Related information...

[Centrifuge Module operation](#), page 46

[Place the module online](#), page 65

[Place the module offline](#), page 65

[Clean the centrifuge chamber](#), page 87

[Clean the ventilation slats and the hatch](#), page 86

[Inspect the motor rubber sleeve](#), page 93

[Grease the Bucket holders and rotor bolts](#), page 95

[Replace the Bucket holders](#), page 98

[Remove samples using the emergency lock](#), page 55

[Remove oil spills](#), page 86

[Clean the centrifuge chamber](#), page 87

Remove samples using the emergency lock

Required materials

- Key
- 6 mm Allen wrench

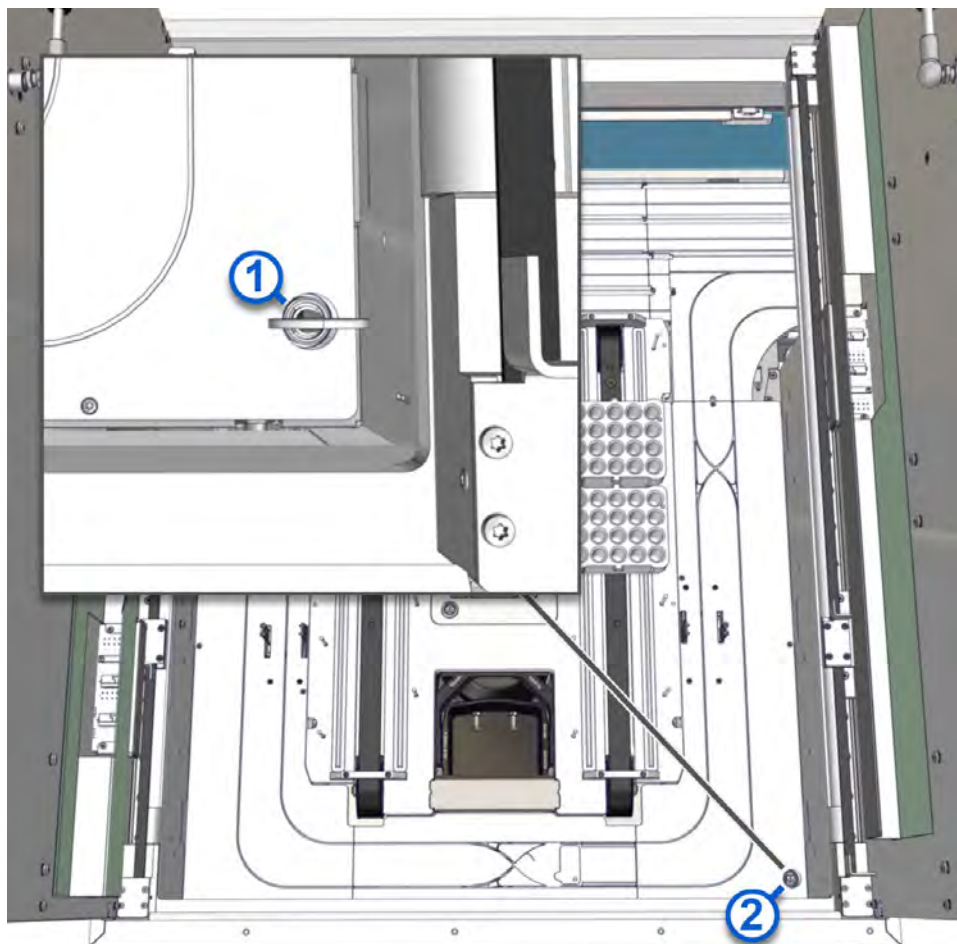
Required module status

Off

Perform this procedure to unlock the hatch emergency lock.

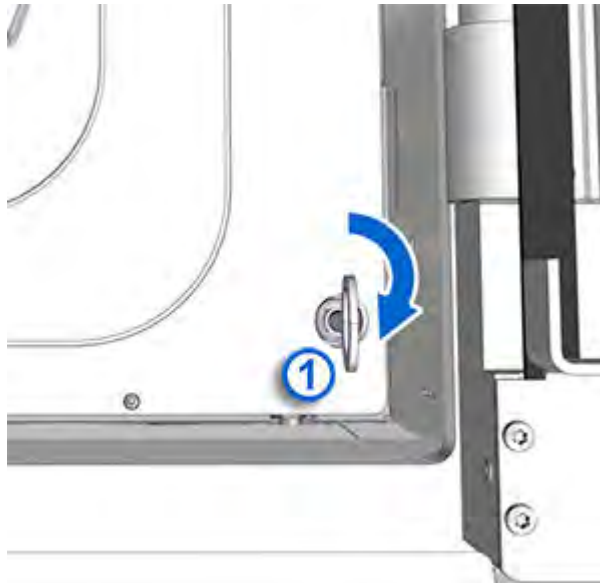
1. Open the front module cover.
2. Insert the key [1] into the hatch emergency lock [2].

Figure 27: Hatch emergency lock



3. Turn the key [1] clockwise.

Figure 28: Key



4. Remove the key [1] from the lock [2].
5. Press in the folding feet push buttons [3]. If the hatch does not unlock, press the On/Off push button and press the push buttons [3] again. The folding feet [4] spring out.



CAUTION: Fully deploy folding feet. Ensure that the folding feet are fully deployed to 90 degrees before attempting to lower the hatch.

Figure 29: Centrifuge closed



6. Lower the heavy hatch carefully, and do not drop it.



CAUTION: Heavy hatch. Uncontrolled lowering of the hatch may result in crushed folding feet.

7. Power off the centrifuge by pressing the power switch [5].

Figure 30: Power switch



8. Pull out the centrifuge by using the handle [6].



CAUTION: Crushing hazard. Slowly and carefully pull the centrifuge onto the lowered hatch. Ensure power supply cables are not crushed.



CAUTION: Centrifuge may tilt when pulling out. Danger of injury to hands and feet, including crushing. Extend the folding feet fully. Carefully pull out the centrifuge. Ensure that the centrifuge remains on the rails. If the centrifuge tilts off the rails, contact the service team.

9. Unlock the lid [7] by turning the Allen wrench [8] counterclockwise.

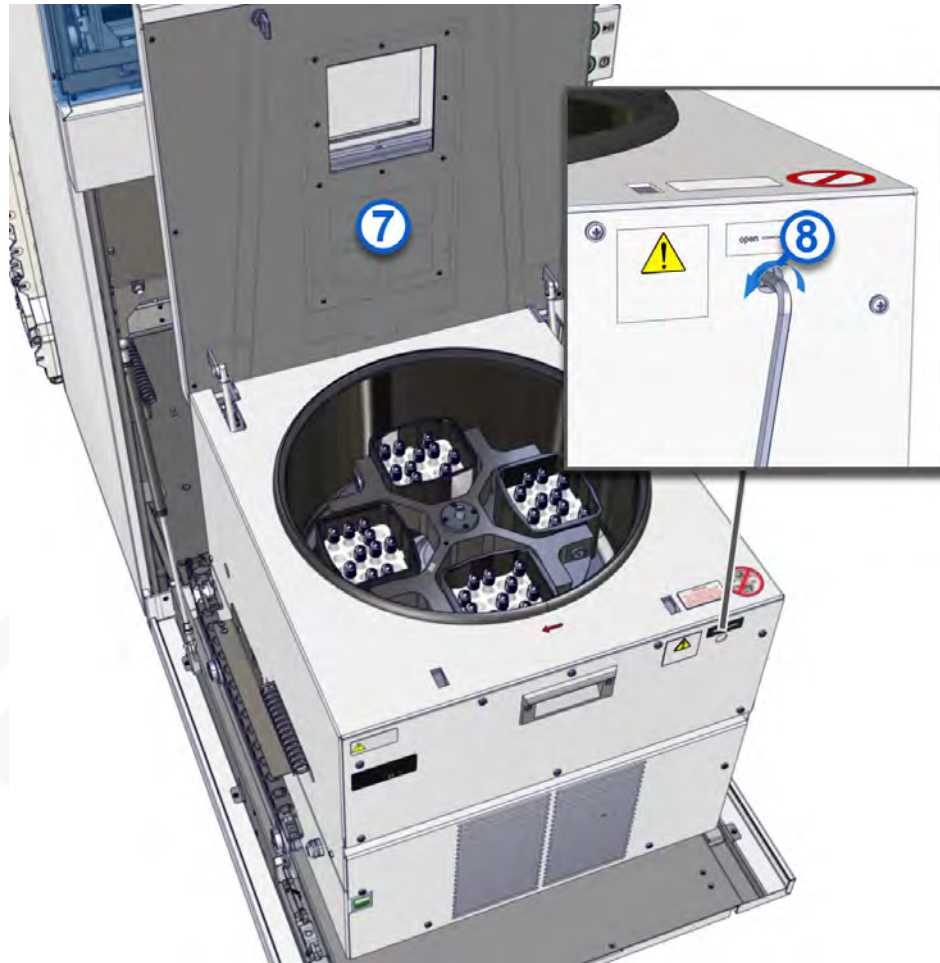


CAUTION: System may still be running. In situations of power loss, power failure, or power interruption to the module when the centrifuge is still running, wait 15 minutes for the rotor to stop before opening the centrifuge lid.

Figure 31: Centrifuge closed



Figure 32: Centrifuge opened



10. Open the lid [7].
11. Remove the samples.
NOTE: On the Track Sample Manager (TSM) user interface, remove the sample from TSM database. For more information on removing samples from TSM, see the GLP systems Track Operations Manual.
12. Remove the Buckets.
13. Place the Buckets back on the transport belts.
14. Evaluate the samples to determine whether the samples should be centrifuged again.
15. Place the samples in the correct input area of the Input/Output Module to complete analysis.
16. Close the lid [7].
17. Lock the lid [7] by turning the Allen wrench [8] clockwise.
18. Push the centrifuge back to the stopper.
19. Power on the centrifuge by pressing the power switch [5].

20. Close the hatch.
21. Push in the folding feet [4].
22. Insert the key [1] into the hatch emergency lock [2].
23. Turn the key [1] counterclockwise.
24. Remove the key [1].
25. Close the front module cover.
26. Power on the module.

Related information...

[Centrifuge Module operation](#), page 46

[Replace the Buckets](#), page 101

[Remove samples from the Centrifuge Module](#), page 49

[Power off the module](#), page 64

[Open and close the front and rear module covers](#), page 46

[Power on the module](#), page 63

Cycle power to the module

Prerequisite

The module has completed all processing and no samples are present on the module.

Perform this procedure to cycle power to the module to reestablish communication among the system components or to troubleshoot the module.

1. To power off the module, press the On/Off push button for a minimum of 3 seconds.
2. Wait for the module to power off.
3. After the module is powered off, wait for a minimum of 1 minute.
4. To power on the module, press the On/Off push button for a minimum of 3 seconds.

The On/Off push button blinks green at a higher rate and the module starts.

The Start screen is displayed. The **Start** button [1] turns from gray to green when the module is ready for initialization.

Figure 33: Start screen



5. Tap the **Start** button [1] to initialize the module.

A screen with a rotating animation is displayed. After the module is initialized, the Main menu screen is displayed.

Related information...

[Centrifuge Module operation](#), page 46

Power on the module

Prerequisite

- The module is connected to the power supply.
- The On/Off push button is illuminated blinking green.
- Front and rear module covers must be closed and locked.

Required module status

Off for more than 1 minute

Perform this procedure to power on the module.

1. Press the On/Off push button for a minimum of 3 seconds.

The On/Off push button blinks green at a higher rate and the module starts.

The Start screen is displayed. The **Start** button [1] turns from gray to green when the module is ready for initialization.

Figure 34: Start screen



2. Tap the **Start** button [1] to initialize the module.

A screen with a rotating animation is displayed. After the module is initialized, the Main menu screen is displayed.

The On/Off push button is illuminated steady green.

Related information...

[Centrifuge Module operation](#), page 46

[Remove samples using the emergency lock](#), page 55

[Replace the robot gripper fingers](#), page 100

[Main menu screen](#), page 28

Power off the module

Prerequisite

- The On/Off push button is illuminated steady green.
- The module has completed all processing and no samples are present on the module.

Required module status

On

Perform this procedure to power off the module.

1. Press the On/Off push button for a minimum of 3 seconds.

2. Wait for the module to power off.

The On/Off push button is illuminated blinking green.

Related information...

[Centrifuge Module operation](#), page 46

[Replace the robot gripper fingers](#), page 100

[Clean the monitor](#), page 78

[Remove samples using the emergency lock](#), page 55

Place the module online

Prerequisite	The Online/Offline push button is illuminated steady yellow and the arrow area of the Online/Offline button is gray.
---------------------	---

Required module status	Offline
-------------------------------	---------

Perform this procedure to place the module online.

1. Briefly press the Online/Offline push button or tap the gray arrow area of the **Online/Offline** button on the touchscreen user interface.
2. Wait for the module to transition to a status of Online.

The Online/Offline push button is illuminated steady green and the arrow area of the **Online/Offline** button is green.

Related information...

[Centrifuge Module operation](#), page 46

[Clean the centrifuge chamber](#), page 87

[Replace the Buckets](#), page 101

[Replace the balance tubes](#), page 103

[Grease the Bucket holders and rotor bolts](#), page 95

[Replace the Bucket holders](#), page 98

[Remove samples from the Centrifuge Module](#), page 49

[Inspect the motor rubber sleeve](#), page 93

Place the module offline

Prerequisite	The Online/Offline push button is illuminated steady green and the arrow area of the Online/Offline button is green.
---------------------	---

Required module status	Online
-------------------------------	--------

Perform this procedure to place the module offline. All processes running in the module stop. CARs are no longer routed to the module.

NOTE: Samples in the module are not processed until the module is transitioned back to a status of Online.

1. Press the Online/Offline push button for a minimum of 3 seconds or tap the green arrow area of the **Online/Offline** button on the touchscreen user interface.
2. Wait for the module to transition to a status of Offline.

The Online/Offline push button is illuminated steady yellow and the arrow area of the **Online/Offline** button is gray.

Related information...

- Centrifuge Module operation*, page 46
- Replace the Buckets*, page 101
- Replace the balance tubes*, page 103
- Clean the module covers*, page 79
- Clean the interior of the loading area*, page 83
- Clean the robot gripper*, page 83
- Clean the Buckets*, page 84
- Clean the ventilation slats and the hatch*, page 86
- Remove oil spills*, page 86
- Remove samples from the Centrifuge Module*, page 49
- Clean the centrifuge chamber*, page 87
- Clean the AccessPoint*, page 90
- Inspect the motor rubber sleeve*, page 93
- Grease the Bucket holders and rotor bolts*, page 95
- Replace the Bucket holders*, page 98
- Clean the bar code reader*, page 80

Pause the module

Prerequisite The Online/Offline push button is illuminated steady green and the arrow area of the **Online/Offline** button is green.

Required module status Online

Perform this procedure to pause the module. When the module is paused, all processing of new samples stop. No new samples in CARs route to the module. Empty CARs continue to route to the module for sample tubes that have completed processing in the module. The Track Sample Manager indicates that the module status is Online.

1. Briefly press the Online/Offline push button or tap the gray area of the **Online/Offline** button on the touchscreen user interface.
2. Wait for the module to transition to a status of Pause.

The Online/Offline push button is illuminated blinking green and the arrow area of the **Online/Offline** button is blinking green.

NOTE: If the module is paused for longer than 5 minutes, the module automatically transitions to a status of Offline.

Related information...

[Centrifuge Module operation](#), page 46

Deactivate pause mode

Prerequisite	The Online/Offline push button is illuminated blinking green and the arrow area of the Online/Offline button is blinking green.
---------------------	--

Required module status	Pause
-------------------------------	-------

Perform this procedure to deactivate pause mode on the module.

1. Briefly press the Online/Offline push button or tap the gray area of the **Online/Offline** button on the touchscreen user interface.
2. Wait for the module to transition to a status of Online.

The Online/Offline push button is illuminated steady green and the arrow area of the **Online/Offline** button is green.

Related information...

[Centrifuge Module operation](#), page 46

NOTES

 **DRAFT**
INTERNAL USE ONLY

Introduction

For optimal operator safety and accurate test results, comply with operational requirements, precautions, and limitations. Operators must be trained before they are allowed to operate the system. Failure to comply can affect system performance, and may cause damage to the system or may adversely affect test results.

For more information regarding operational precautions and limitations, refer to the GLP systems Track Operations Manual.

Related information...

[General safety information](#), page 7

NOTES


DRAFT
INTERNAL USE ONLY

Introduction

To minimize the potential for harm to personnel and damage to the laboratory environment, comply with the hazard and safety information.

This section contains supplemental information. Do not use the supplemental information to supersede workplace safety requirements. Review any significant differences between the supplemental information and the workplace safety requirements with management or a workplace safety representative.

For more information regarding hazards, refer to the GLP systems Track Operations Manual.

Related information...

Safety icons, page 72

General safety information, page 7

Safety icons

Safety icons are used on the system and in the system documentation to identify potentially dangerous conditions. Become familiar with these icons to know the type of potential hazard.



CAUTION: Radio-frequency identification (RFID) devices. The operator should not change or modify RFID devices without approval by the party responsible for compliance. This action could void the operator's authority to operate the equipment.



CAUTION: Radio frequency exposure. The operator should be at least 20 cm from all RFID devices.

Table 6: Safety icons and descriptions

Icon	Description
	CAUTION: Biological RISKS Identifies an activity or an area where the operator may be exposed to potentially infectious material.
	CAUTION: Class 2 Laser radiation when open. Avoid eye exposure to light. Do not stare into the beam. Warns against the direct viewing of the beam or reflections from the beam.
	CAUTION: Mind or watch your hands Identifies an activity or an area where the operator may be exposed to hand injuries.
	CAUTION: Overhead obstruction Identifies an activity or an area where the operator may be exposed to overhead obstructions.
	CAUTION When used in this manual, this icon is accompanied by a description of the hazard and a related-information reference to safety content in this section. Examples include the following condition: CAUTION: Moving Parts Identifies an activity or an area where the operator may be exposed to moving parts.
	CAUTION: Possibility of electric shock Indicates the possibility of electric shock if procedural controls or engineering controls are not observed.
	CAUTION: Power off mains disconnect switch from electrical supply Indicates that the mains disconnect switch must be powered off from the electrical supply for the maintenance of electrical equipment when a malfunction occurs or when left unattended. If more than one disconnect switch is provided, power off all switches to disconnect from electrical supply.

Icon	Description
	CAUTION: Do not reach inside Identifies an activity or an area where the operator may be exposed to injury.
	CAUTION: Protective conductor terminal Identifies an area where a terminal is connected to an external conductor or the terminal of a ground electrode.
	Observe operations manual Indicates that the operations manual must be read.
	WEEE: Waste Electrical and Electronic Equipment Indicates that the item needs to be disposed of in a separate waste collection for electrical and electronic equipment and must not be disposed of in the general waste or trash.

Related information...

[Hazards](#), page 71

NOTES

Introduction

The appropriate service, maintenance, and diagnostics of the system are some of the most important aspects of a complete quality assurance program. A thorough service, maintenance, and diagnostic program:

- Minimizes downtime.
- Maintains records for inspection and accreditation.
- Maintains system performance to provide optimal test results.

NOTE: Only approved customer-replaceable components are permitted to be used.

Related information...

[Cleaning and maintenance checks](#), page 76

[Cleaning](#), page 78

[Maintenance](#), page 92

Cleaning and maintenance checks

Dust can cause system malfunctions. The following maintenance checks are required on the Centrifuge Module to maintain optimal system performance.

Table 7: Cleaning and maintenance checks

Maintenance check	Activity	Interval
Inspect the module for dust.	Carefully remove any dust as needed. If necessary, perform the following procedures: • Clean the monitor, page 78 • Clean the bar code reader, page 80 • Clean the sight glass, page 81 • Clean the rotor bolts, page 81 • Clean the interior of the loading area, page 83 • Clean the robot gripper, page 83 • Clean the ventilation slats and the hatch, page 86 • Clean the AccessPoint, page 90	Daily
Verify that there are no observed problems.	Resolve any observed problems as needed. See Centrifuge Module observed problems , page 138.	Daily
Verify that no foreign objects are present on the module.	Remove any foreign objects.	Daily
Verify that the module covers are closed and locked.	Perform Open and close the front and rear module covers , page 46 to close the module covers if applicable.	Daily
Verify that the module covers remain in position when opened.	Contact an Abbott Laboratories representative or an authorized service representative if necessary.	Daily
Verify the Buckets are not damaged or dirty.	Carefully remove any dust as needed. See Clean the Buckets , page 84.	Weekly
Verify that the centrifuge chamber is free of dust.	Carefully remove any dust as needed. See Clean the centrifuge chamber , page 87.	Weekly

Maintenance check	Activity	Interval
Verify that the weight of the balance tubes lies within the tolerance range.	See Replace the balance tubes , page 103. Replace the balance tubes if necessary.	Weekly
Inspect the motor rubber sleeve for damage, incorrect seating, or dirt.	Perform Inspect the motor rubber sleeve , page 93.	Weekly
Verify that the Bucket holders and the rotor bolts are greased.	1. Remove the old grease from the Bucket holders and the rotor bolts. 2. Grease the bearing grooves of the Bucket holder and the rotor bolts. Perform Grease the Bucket holders and rotor bolts, page 95.	Weekly
Replace the Bucket holders.	1. Remove old Bucket holders. Perform Replace the Bucket holders, page 98. 2. Clean rotor bolts. 3. Grease the bearing grooves of the new Bucket holders and rotor bolts. Perform Grease the Bucket holders and rotor bolts, page 95. 4. Insert new Bucket holders into the rotor. Perform Replace the Bucket holders, page 98.	Yearly

Related information...

[Service, maintenance, and diagnostics](#), page 75

Cleaning

Some system components may need to be cleaned because of normal use from daily system operations or because of spills.

IMPORTANT: Incorrect cleaning procedures may cause sample contamination. Inappropriate cleaning agents may cause damage to the Centrifuge Module. Only allow trained personnel to clean the Centrifuge Module. Only use the recommended cleaning agents.



CAUTION: Wear personal protective equipment while operating the laboratory automation system.



CAUTION: Biological RISKS. This activity or area may expose the operator to potentially infectious material.

NOTE: Ensure that all samples have completed processing on the module to prevent contamination of samples.

NOTE: Do not steam sterilize centrifuge components such as Buckets, Bucket holders, or rotor.



CAUTION: Overhead obstruction. Operators may hit their heads on open module covers.

- Be aware that injury can occur when module covers are opened and closed.
- Protect the head when working on modules with open module covers.
- Frequently observe the functionality of the opening mechanism. Regular inspection of the covers is necessary during maintenance to ensure proper operation.

Related information...

[Service, maintenance, and diagnostics](#), page 75

[Weekly cleaning procedures](#), page 78

[As-needed cleaning procedures](#), page 79

Weekly cleaning procedures

Weekly cleaning procedures are required on the Centrifuge Module.

Related information...

[Cleaning](#), page 78

[Clean the monitor](#), page 78

[Clean the module covers](#), page 79

Clean the monitor

Required materials

- Laboratory-grade surface disinfectant

- Lint-free cloth

Required module status Off

Perform this weekly procedure to clean the monitor.

1. Ensure that the module covers are closed and locked before the monitor is cleaned.
2. Dampen a lint-free cloth with a surface disinfectant.
3. Carefully wipe the entire surface area of the monitor to remove any dust.
4. Wait until the monitor is dry to power on the module.

Related information...

[Weekly cleaning procedures](#), page 78

[Power off the module](#), page 64

Clean the module covers

Required materials

- Antistatic plastic cleaner
- Lint-free cloth

Required module status Offline

Perform this weekly procedure to clean the module covers.

1. Ensure that the module covers are closed and locked before the module covers are cleaned.
2. Dampen a lint-free cloth with an antistatic plastic cleaner.
3. Wipe the entire surface area of the module cover.
4. Let the module cover air-dry to allow an antistatic film to form.

Related information...

[Weekly cleaning procedures](#), page 78

[Place the module offline](#), page 65

As-needed cleaning procedures

As-needed cleaning procedures are required on the Centrifuge Module.



CAUTION: Risk of contamination and injury. During operation of the laboratory automation system (LAS), sample tubes and components may be damaged due to failure to comply with safe-use instructions. Spilled sample matter may cause infections due to contact with non-intact skin or mucous membranes.

- Wear personal protective equipment while operating the LAS. Avoid direct contact with the sample matter.
- Follow all hygiene regulations applicable to laboratory work.
- Only allow trained personnel to operate the LAS.

Related information...

Cleaning, page 78

Clean the bar code reader, page 80

Clean the sight glass, page 81

Clean the rotor bolts, page 81

Clean the interior of the loading area, page 83

Clean the robot gripper, page 83

Clean the Buckets, page 84

Clean the ventilation slats and the hatch, page 86

Remove oil spills, page 86

Clean the centrifuge chamber, page 87

Clean the AccessPoint, page 90

Clean the Bucket holders, page 90

Clean the bar code reader

Required materials

- Gentle, antistatic glass cleaner
- Lint-free cloth

**Required module
status**

Offline

Perform this as-needed procedure to clean the bar code reader.

1. Open the module cover.
2. Dampen a lint-free cloth with a gentle, antistatic glass cleaner.
3. Carefully wipe the bar code reader to remove any dust.
4. Ensure that the orientation of the bar code reader is not changed so that no errors occur when the bar code is read.
5. Close the module cover.

Related information...

As-needed cleaning procedures, page 79

Place the module offline, page 65

Open and close the front and rear module covers, page 46

Clean the sight glass

Required materials

- Gentle, antistatic glass cleaner
- Lint-free cloth

Required module status

Offline

Perform this as-needed procedure to clean the sight glass.

1. Lower the heavy hatch carefully, and do not drop it.



CAUTION: Heavy hatch. Uncontrolled lowering of the hatch may result in crushed folding feet.

2. Power off the centrifuge by pressing the power switch.
3. Pull out the centrifuge by using the handle.



CAUTION: Crushing hazard. Slowly and carefully pull the centrifuge onto the lowered hatch. Ensure power supply cables are not crushed.



CAUTION: Centrifuge may tilt when pulling out. Danger of injury to hands and feet, including crushing. Extend the folding feet fully. Carefully pull out the centrifuge. Ensure that the centrifuge remains on the rails. If the centrifuge tilts off the rails, contact the service team.

4. Dampen a lint-free cloth with a gentle, antistatic glass cleaner.
5. Carefully wipe the sight glass to remove any dust.
6. Wait until the sight glass is dry to push the centrifuge back to the stopper.
7. Close the hatch.

Related information...

[As-needed cleaning procedures](#), page 79

Clean the rotor bolts

Required materials

- Gentle, antistatic glass cleaner
- Lint-free cloth

Required module status

Offline

Perform this as-needed procedure to clean the rotor bolts [1].

Figure 35: Rotor bolts



1. Lower the heavy hatch carefully, and do not drop it.



CAUTION: Heavy hatch. Uncontrolled lowering of the hatch may result in crushed folding feet.

2. Power off the centrifuge by pressing the power switch.
3. Pull out the centrifuge by using the handle.



CAUTION: Crushing hazard. Slowly and carefully pull the centrifuge onto the lowered hatch. Ensure power supply cables are not crushed.



CAUTION: Centrifuge may tilt when pulling out. Danger of injury to hands and feet, including crushing. Extend the folding feet fully. Carefully pull out the centrifuge. Ensure that the centrifuge remains on the rails. If the centrifuge tilts off the rails, contact the service team.

4. Unlock the lid by turning the Allen wrench counterclockwise.
5. Open the lid.

Section 8



CAUTION: System may still be running. In situations of power loss, power failure, or power interruption to the module when the centrifuge is still running, wait 15 minutes for the rotor to stop before opening the centrifuge lid.

6. Dampen a lint-free cloth with a gentle, antistatic glass cleaner.
7. Carefully wipe the rotor bolts [1] to remove any dust.
8. Wait until the rotor bolts [1] are dry to close the lid.
9. Push the centrifuge back to the stopper.
10. Close the hatch.

Related information...

[As-needed cleaning procedures](#), page 79

Clean the interior of the loading area

Required materials

- Handheld vacuum cleaner (recommended)
- Laboratory-grade surface disinfectant
- Lint-free cloth

Required module status

Offline

Perform this as-needed procedure to clean the interior of the loading area.

1. Open the module cover.
2. Dampen a lint-free cloth with a surface disinfectant.
3. Carefully wipe the interior of the loading area to remove any dust.
4. Remove dust from the guiding slot with the handheld vacuum cleaner.
5. Close the module cover.

Related information...

[As-needed cleaning procedures](#), page 79

[Place the module offline](#), page 65

[Open and close the front and rear module covers](#), page 46

Clean the robot gripper

Required materials

- Laboratory-grade surface disinfectant
- Lint-free cloth

Required module status

Offline

Perform this as-needed procedure to clean the robot gripper.

1. Open the module cover.
2. Dampen a lint-free cloth with a surface disinfectant.
3. Carefully wipe the robot gripper to remove any dust.
4. Close the module cover.

Related information...

[As-needed cleaning procedures](#), page 79

[Place the module offline](#), page 65

[Open and close the front and rear module covers](#), page 46

Clean the Buckets

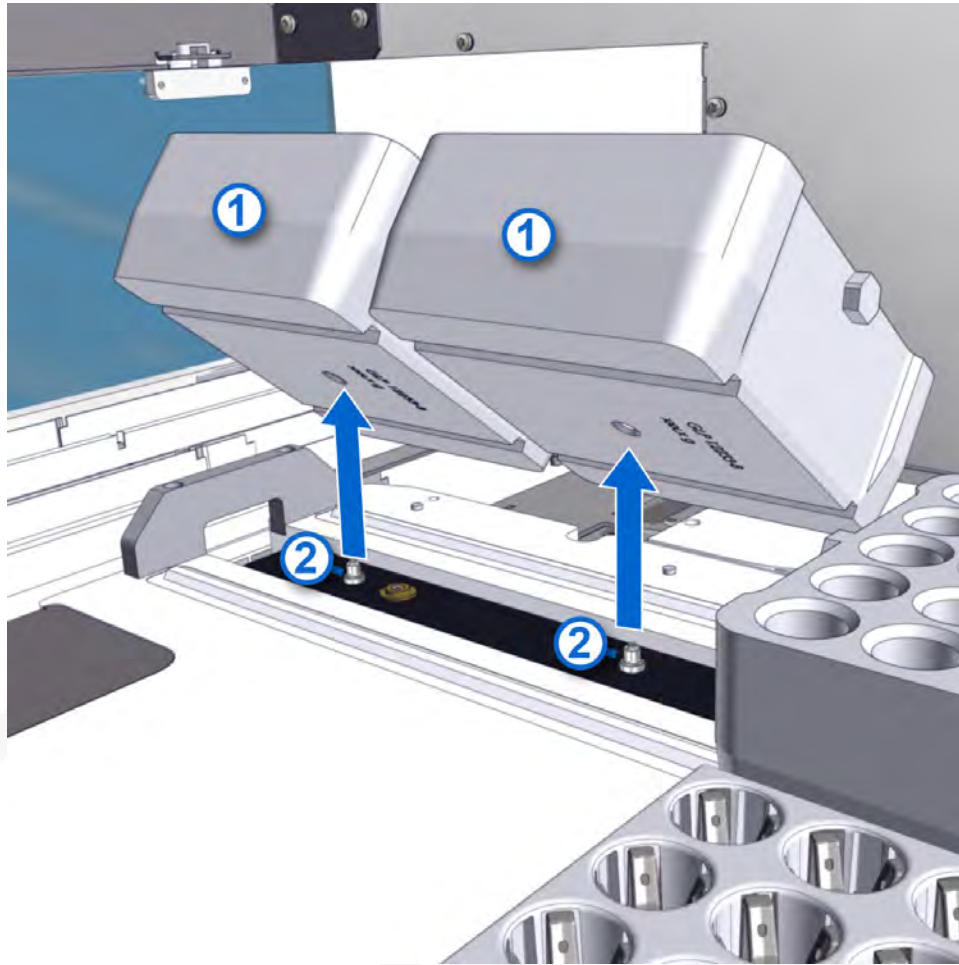
Required materials

- Laboratory-grade surface disinfectant
- Lint-free cloth

**Required module
status**

Offline

Perform this as-needed procedure to clean the Buckets.



1. Open the module cover.
2. Identify the Bucket size pairs.
3. Remove the Buckets [1] from the transport belt pins [2] in pairs.
4. Dampen a lint-free cloth with surface disinfectant.
5. Carefully remove dirt on the inside and outside of the Buckets.
6. Place the cleaned Bucket pairs onto the transport belt pins [2].
7. Close the module cover.

Related information...

As-needed cleaning procedures, page 79

Place the module offline, page 65

Open and close the front and rear module covers, page 46

Clean the ventilation slats and the hatch

- Required materials**
- Handheld vacuum cleaner (recommended)
 - Laboratory-grade surface disinfectant
 - Lint-free cloth

Required module status Offline

Perform this as-needed procedure to clean the ventilation slats and the hatch.

1. Open the hatch.
2. Remove dust from the slats and the hatch with the handheld vacuum cleaner.
3. Dampen a lint-free cloth with a surface disinfectant.
4. Carefully wipe the slats and the hatch to remove any dust.
5. Close the hatch.

Related information...

[As-needed cleaning procedures](#), page 79

[Remove samples from the Centrifuge Module](#), page 49

[Place the module offline](#), page 65

Remove oil spills

Prerequisite No samples are contained in the Buckets located in the loading area.

Required materials Absorbent cloth

Required module status Offline

Perform this as-needed procedure to remove oil spills.

NOTE: Oil can leak from the heat-conducting paste of the centrifuge. This oil collects beneath the centrifuge and becomes visible when the centrifuge is pulled onto the hatch. The oil has no effect on the ability of the centrifuge to function. In this case, remove the spilled oil as needed.

1. Open the hatch.
2. Pull out the centrifuge.



CAUTION: Crushing hazard. Slowly and carefully pull the centrifuge onto the lowered hatch. Ensure power supply cables are not crushed.



CAUTION: Centrifuge may tilt when pulling out. Danger of injury to hands and feet, including crushing. Extend the folding feet fully. Carefully pull out the centrifuge. Ensure that the centrifuge remains on the rails. If the centrifuge tilts off the rails, contact the service team.

3. Wipe up any oil spill.
4. Push the centrifuge back to the stopper.



CAUTION: Crushing hazard. Slowly and carefully push the centrifuge into the centrifuge module. Ensure power supply cables are not crushed.

5. Close hatch.

Related information...

As-needed cleaning procedures, page 79

Remove samples from the Centrifuge Module, page 49

Place the module offline, page 65

Clean the centrifuge chamber

Required materials

- Lint-free cloth
- Allen wrench

Required module status

Offline

Perform this as-needed procedure to clean the centrifuge chamber.

NOTE: Check the date of production [2] that is stamped on the edge of the Bucket holders. Bucket holders expire 1 year from the date of production [2] stamped on the Bucket holders. Contact an Abbott Laboratories representative or an authorized service representative to order new Bucket holders prior to expiration.

Figure 36: Correct insertion of the Buckets



1. Open the hatch and centrifuge.
2. Remove the Bucket holders. Note the position of the Bucket holders in the centrifuge.
3. Use a lint-free cloth to clean the centrifuge chamber.
4. Carefully remove dirt on the bearing grooves [3] and rotor bolts using a lint-free cloth.

Figure 37: Bucket holders



5. Insert the Bucket holders into their original positions.



CAUTION: Damage caused by imbalance during centrifugation. Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

NOTE: Bucket holders come in pairs and share the same rating number [1]. Bucket holders with the same rating number [1] must be installed opposite each other.

6. Close the centrifuge and hatch.
7. Place the module online.

Related information...

[As-needed cleaning procedures](#), page 79

[Remove samples from the Centrifuge Module](#), page 49

[Place the module offline](#), page 65

[Remove samples from the Centrifuge Module](#), page 49

[Place the module online](#), page 65

Clean the AccessPoint

Required materials

- Laboratory-grade surface disinfectant
- Lint-free cloth

Required module status

Offline

Perform this as-needed procedure to clean the AccessPoint.

1. Open the module cover.
2. Dampen a lint-free cloth with a surface disinfectant.
3. Carefully wipe the AccessPoint to remove any dust.
4. Repeat steps [1](#) (page 90) through [5](#) (page 90) for each AccessPoint.
5. Close the module cover.

Related information...

[As-needed cleaning procedures](#), page 79

[Place the module offline](#), page 65

[Open and close the front and rear module covers](#), page 46

Clean the Bucket holders

Required materials

Bucket holders

Required module status

Offline

Perform this as-needed procedure to replace the Bucket holders.



CAUTION: Damage caused by imbalance during centrifugation.

Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

NOTE: Check the date of production [2] that is stamped on the edge of the Bucket holders. Bucket holders expire 1 year from the date of production [2] stamped on the Bucket holders. Contact an Abbott Laboratories representative or an authorized service representative to order new Bucket holders prior to expiration.

Figure 38: Correct insertion of the Bucket holders



1. Open the hatch and the centrifuge lid.
2. Note the location of the Bucket holders on the centrifuge before removing them.
NOTE: Bucket holders come in pairs and share the same rating number [1]. Bucket holders with the same rating number [1] must be installed opposite each other.
3. Remove the Bucket holders from the rotor pins in pairs.
4. Dampen a lint-free cloth with surface disinfectant.
5. Carefully remove dirt on the inside and outside of the Bucket holders.
6. Place the cleaned Bucket holder pairs fitting the sample tubes onto the rotor pins.
7. Close the centrifuge lid and the hatch.

Related information...

As-needed cleaning procedures, page 79

Maintenance

The laboratory staff may perform procedures that are included in this manual. Procedures not included in this manual may only be performed by an Abbott Laboratories representative or an authorized service representative.



CAUTION: Risk of infection. The operator may be exposed to potentially infectious materials, such as patient samples, through contact with non-intact skin or mucous membranes. Wear personal protective equipment while operating the laboratory automation system.



CAUTION: Overhead obstruction. Operators may hit their heads on open module covers.

- Be aware that injury can occur when module covers are opened and closed.
- Protect the head when working on modules with open module covers.
- Frequently observe the functionality of the opening mechanism. Regular inspection of the covers is necessary during maintenance to ensure proper operation.

NOTE: Ensure that all samples have completed processing on the module to prevent contamination of samples.

Related information...

[Service, maintenance, and diagnostics](#), page 75

[Daily maintenance procedures](#), page 92

[Weekly maintenance procedures](#), page 92

[As-needed maintenance procedures](#), page 98

Daily maintenance procedures

Daily maintenance procedures are required on the Centrifuge Module.

Related information...

[Maintenance](#), page 92

Weekly maintenance procedures

Weekly maintenance procedures are required on the Centrifuge Module.

Related information...

[Maintenance](#), page 92

[Inspect the motor rubber sleeve](#), page 93

[Grease the Bucket holders and rotor bolts](#), page 95

[Replace the balance tubes](#), page 103

Inspect the motor rubber sleeve

Required module status Offline

Perform this procedure to inspect the motor rubber sleeve.

NOTE: Bucket holders come in pairs and share the same rating number [1]. Bucket holders with the same rating number [1] must be installed opposite each other.



CAUTION: Damage caused by imbalance during centrifugation. Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

NOTE: Check the date of production [2] that is stamped on the edge of the Bucket holders. Bucket holders expire 1 year from the date of production [2] stamped on the Bucket holders. Contact an Abbott Laboratories representative or an authorized service representative to order new Bucket holders prior to expiration.

Figure 39: Correct insertion of the Buckets

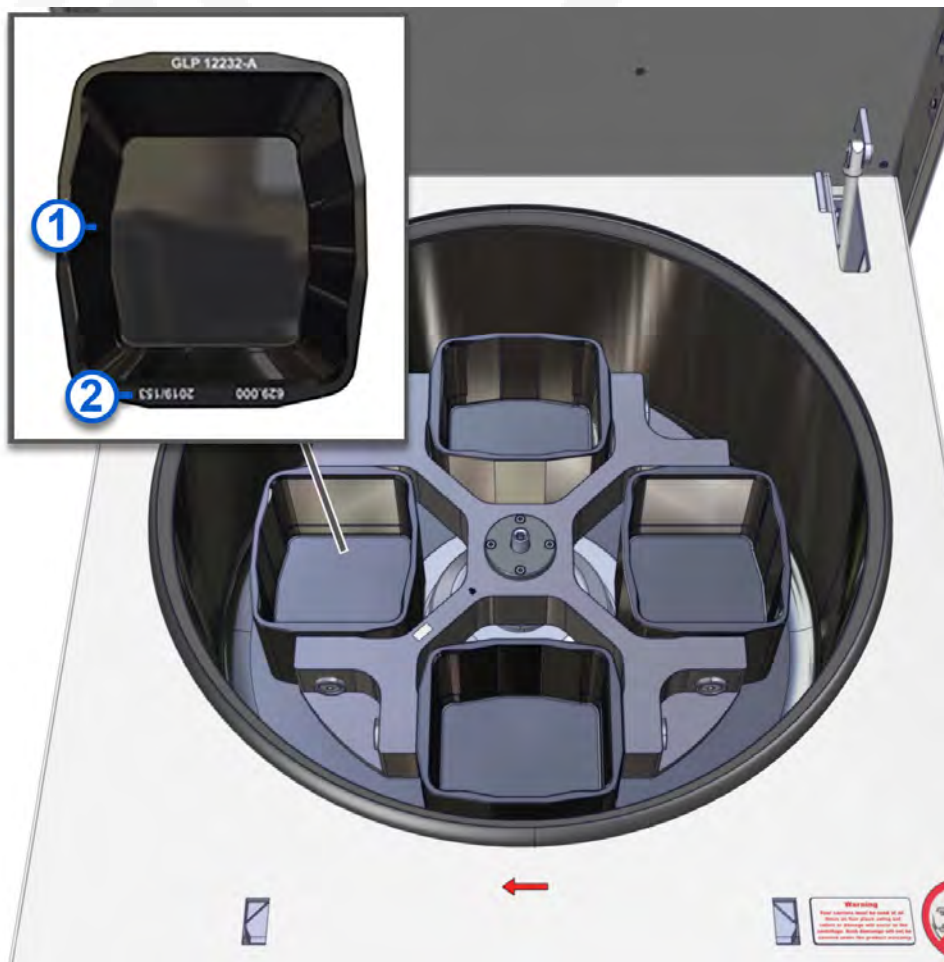


Figure 40: Inspecting motor rubber sleeve



1. Open the hatch and the centrifuge lid.
2. Note the locations of the Bucket holders on the centrifuge before removing them.
3. Remove the Bucket holders from the rotor.
4. Visually inspect the motor rubber sleeve [3] located underneath the rotor for damage and incorrect fit. Contact an Abbott Laboratories representative or an authorized service representative if necessary.
5. Insert the Bucket holders into their original positions on the supporting bolts inside the rotor.
6. Verify that the Bucket holders with the same rating number [1] are positioned opposite each other.
7. Close the centrifuge lid and the hatch.
8. Place the module online.

Related information...

Weekly maintenance procedures, page 92

Remove samples from the Centrifuge Module, page 49

Place the module online, page 65

Place the module offline, page 65

Grease the Bucket holders and rotor bolts

Required materials Petroleum jelly

Required module status Offline

Perform this procedure to grease the Bucket holders and rotor bolts [4].

NOTE: Bucket holders come in pairs and share the same rating number [1]. Bucket holders with the same rating number [1] must be installed opposite each other.

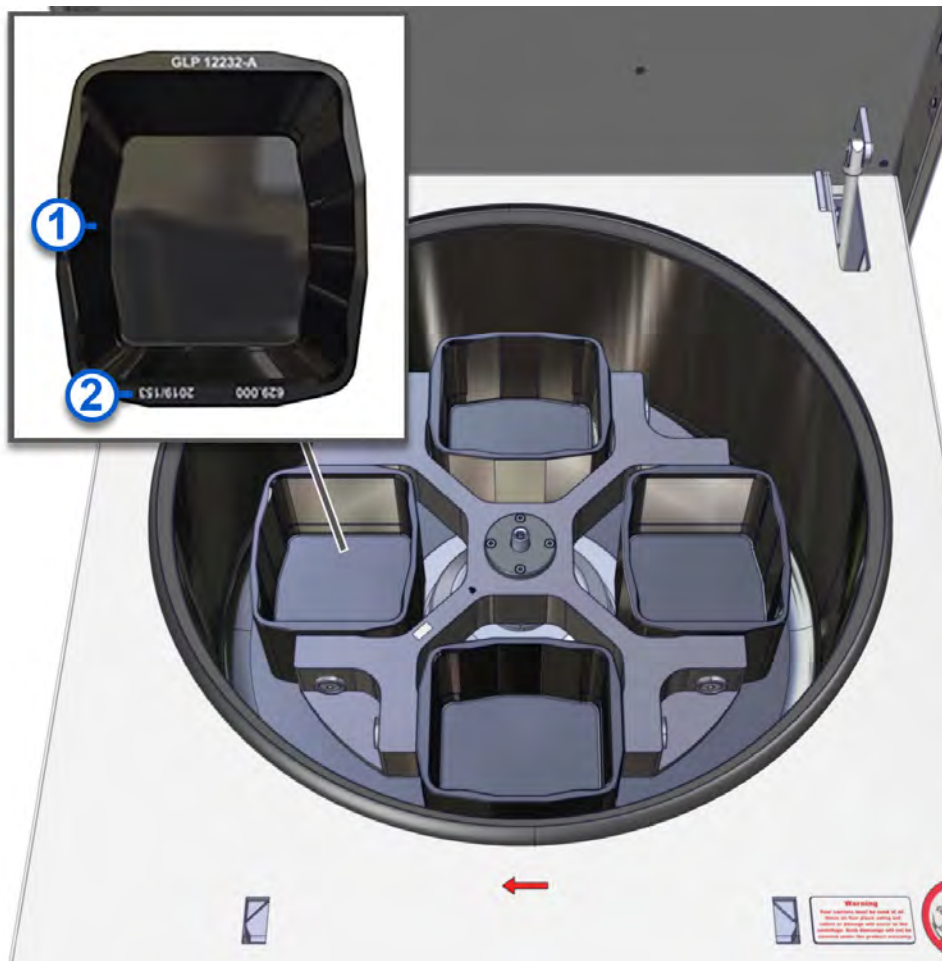


CAUTION: Damage caused by imbalance during centrifugation.

Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

NOTE: Check the date of production [2] that is stamped on the edge of the Bucket holders. Bucket holders expire 1 year from the date of production [2] stamped on the Bucket holders. Contact an Abbott Laboratories representative or an authorized service representative to order new Bucket holders prior to expiration.

Figure 41: Correct insertion of the Buckets



1. Open the hatch and the centrifuge lid.
2. Note the locations of the Bucket holders on the centrifuge before removing them.
3. Remove a Bucket holder.
4. Carefully remove dirt on the bearing grooves [3] and rotor bolts [4] using a lint-free cloth.

Figure 42: Bucket holders



5. Sparingly grease the Bucket holder bearing grooves [3] and rotor bolts [4] with petroleum jelly.
6. Insert the Bucket holder into its original position on the supporting bolts inside the rotor.
7. Verify that the Bucket holders with the same rating number [1] are positioned opposite each other.
8. Repeat steps 1 (page 96) through 7 (page 97) for each remaining Bucket holder.
9. Close the centrifuge lid and the hatch.
10. Place the module online

Related information...

Weekly maintenance procedures, page 92

Remove samples from the Centrifuge Module, page 49

Place the module online, page 65

Place the module offline, page 65

As-needed maintenance procedures

As-needed maintenance procedures are required on the Centrifuge Module.

Related information...

[Maintenance](#), page 92

[Replace the Bucket holders](#), page 98

[Replace the robot gripper fingers](#), page 100

[Replace the Buckets](#), page 101

[Replace the balance tubes](#), page 103

[Replace the FlexRack](#), page 104

Replace the Bucket holders

Required materials Bucket holders

Required module status Offline

Perform this as-needed procedure to replace the Bucket holders.



CAUTION: Damage caused by imbalance during centrifugation.

Loading the Bucket holders into the incorrect locations can lead to uneven weight distribution at the rotor. The resulting imbalance may result in a shut-off or cause damage to the centrifuge during centrifugation.

NOTE: Check the date of production [2] that is stamped on the edge of the Bucket holders. Bucket holders expire 1 year from the date of production [2] stamped on the Bucket holders. Contact an Abbott Laboratories representative or an authorized service representative to order new Bucket holders prior to expiration.

Figure 43: Correct insertion of the Bucket holders



1. Open the hatch and the centrifuge lid.
2. Note the location of the Bucket holders on the centrifuge before removing them.

NOTE: Bucket holders come in pairs and share the same rating number [1]. Bucket holders with the same rating number [1] must be installed opposite each other.

3. Remove the Bucket holders from the rotor bolts in pairs.
4. Remove the grease from the rotor bolts.
5. Grease the rotor bolts.
6. Grease the bearing grooves of the new Bucket holders.
7. Place new Bucket holder pairs fitting the sample tubes onto the rotor bolts.
8. Close the centrifuge lid and the hatch.
9. Place the module online.

Related information...

[As-needed maintenance procedures](#), page 98

[Remove samples from the Centrifuge Module](#), page 49

[Place the module online](#), page 65

[Place the module offline](#), page 65

Replace the robot gripper fingers

Required materials Tx6 Torx screwdriver

Required module status Off

Perform this as-needed procedure to replace the robot gripper fingers on the robot gripper.

NOTE: Inspect all four robot gripper fingers and replace any defective robot gripper fingers and their screws. The robot gripper fingers can only be installed in one position by design. The procedure for replacing the robot gripper fingers is identical for all four fingers.

Figure 44: Replacing the robot gripper fingers



Section 8

1. Open the module cover.
2. Move the robot gripper to an accessible location.
3. Rotate the robot gripper head to access the worn/damaged finger.
4. To replace the robot gripper fingers [1], perform the following steps:
 - a. Remove both screws [2] on the robot gripper finger [1] with the Torx screwdriver.
 - b. Remove the robot gripper finger [1] from the bracket.
 - c. Insert a new robot gripper finger [1] into the bracket so that the robot gripper finger [1] tooth points inward.
 - d. Insert new screws [2] into the replaced robot gripper finger [1].
 - e. Tighten the screws [2] with the Torx screwdriver.
5. Close the module cover.
6. Power on the module.

Related information...

[As-needed maintenance procedures](#), page 98

[Power off the module](#), page 64

[Power on the module](#), page 63

[Open and close the front and rear module covers](#), page 46

[Open and close the front and rear module covers](#), page 46

[Design and function](#), page 10

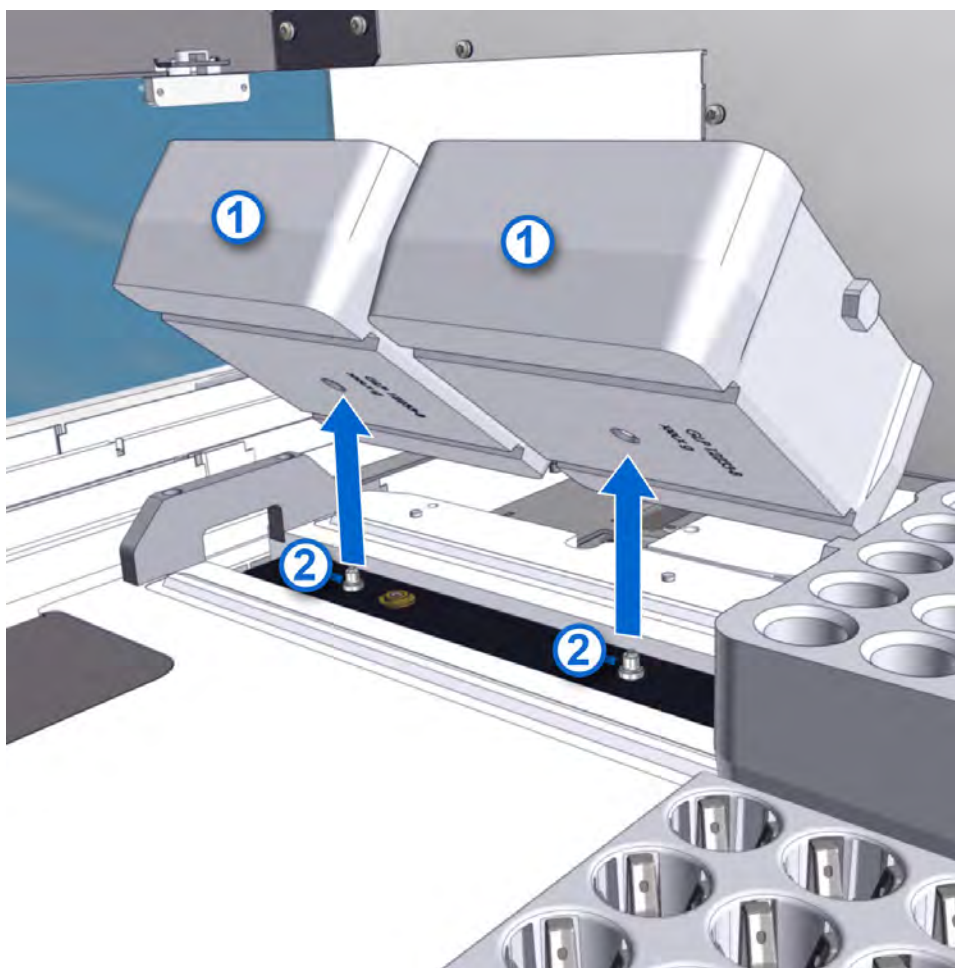
[Main menu screen](#), page 28

Replace the Buckets

Prerequisite The Buckets in the loading area of the module do not contain samples.

Required module status Offline

Perform this as-needed procedure to replace the Buckets.



1. Open the module cover.
2. Identify the Bucket size pairs.
3. Remove the Buckets [1] from the transport belt pins [2] in pairs.
4. Place new Bucket pairs [1] onto the transport belt pins.

NOTE: Only place new Bucket pairs that are the same size as the original Bucket pairs onto the transport belt pins.

NOTE: Contact an Abbott Laboratories representative or an authorized service representative to adjust the configuration settings to use a different bucket size.

5. Close the module cover.
6. Place the module online.

Related information...

As-needed maintenance procedures, page 98

Place the module online, page 65

Place the module offline, page 65

Open and close the front and rear module covers, page 46
Remove samples using the emergency lock, page 55

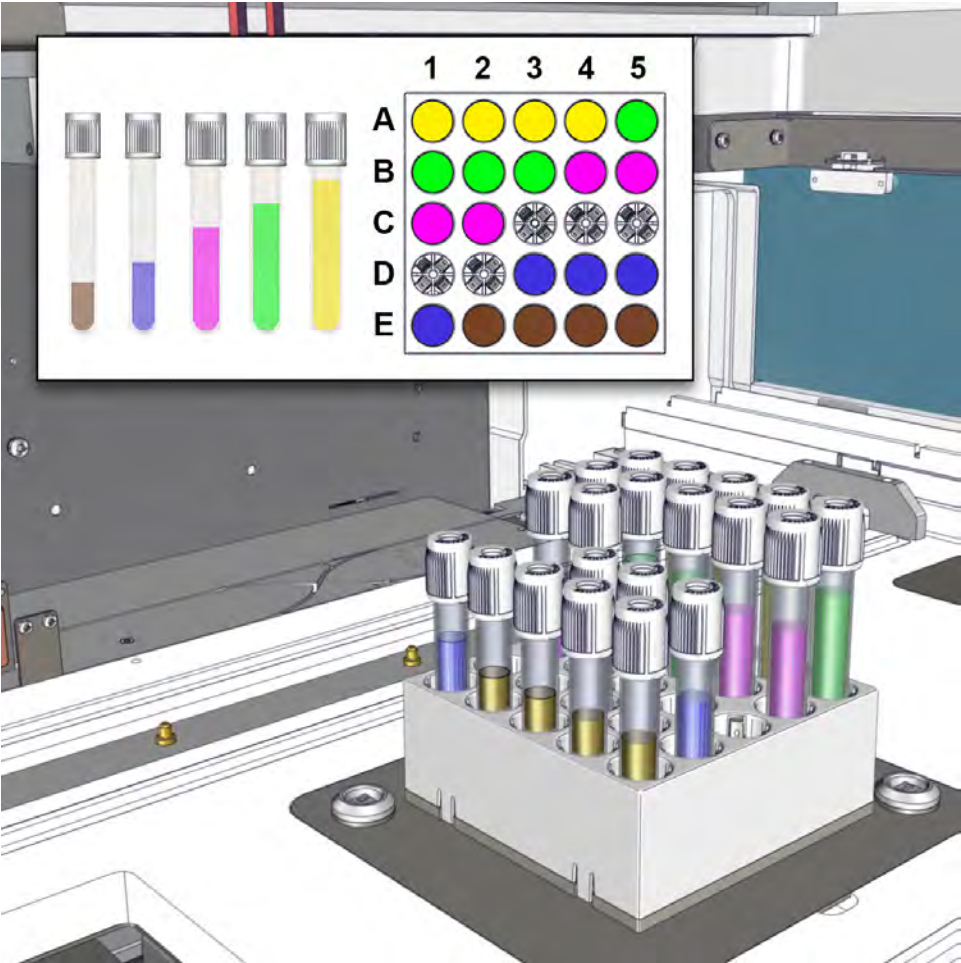
Replace the balance tubes

- Required materials
- Empty sample tubes
 - FlexRack for balance tubes

Required module status

Offline

Perform this as-needed procedure to replace the balance tubes.



Color (tube position)	Total weight	Sample tube size
Yellow	20 g; +/- 1 g	100 × 16 mm
Green	15 g; +/- 1 g	100 × 16 mm
Pink	10 g; +/- 1 g	100 × 16 mm
Gray (empty)	None	None

Color (tube position)	Total weight	Sample tube size
Blue	10 g; +/- 1 g	100 × 13 mm
Brown	6 g; +/- 1 g	100 × 13 mm

1. Open the module cover.
2. Remove the damaged balance tube.
3. Fill the new, empty sample tube with water until the balance tube weight specified in the table is achieved.

NOTE: Include the cap in the total weight of the filled sample tube.

4. Secure the filled sample tube with the tube cap.
5. Insert the filled sample tube into the FlexRack as shown in the figure above.
6. Repeat steps 2 (page 104) through 5 (page 104) for each damaged balance tube.
7. Close the module cover.
8. Place the module online.

The module automatically detects the inserted balance tubes.

Related information...

[As-needed maintenance procedures](#), page 98

[Place the module online](#), page 65

[Place the module offline](#), page 65

[Open and close the front and rear module covers](#), page 46

[Weekly maintenance procedures](#), page 92

Replace the FlexRack

Prerequisite Remove all samples from the module to prevent sample contamination.

Required materials Tx8 Torx screwdriver

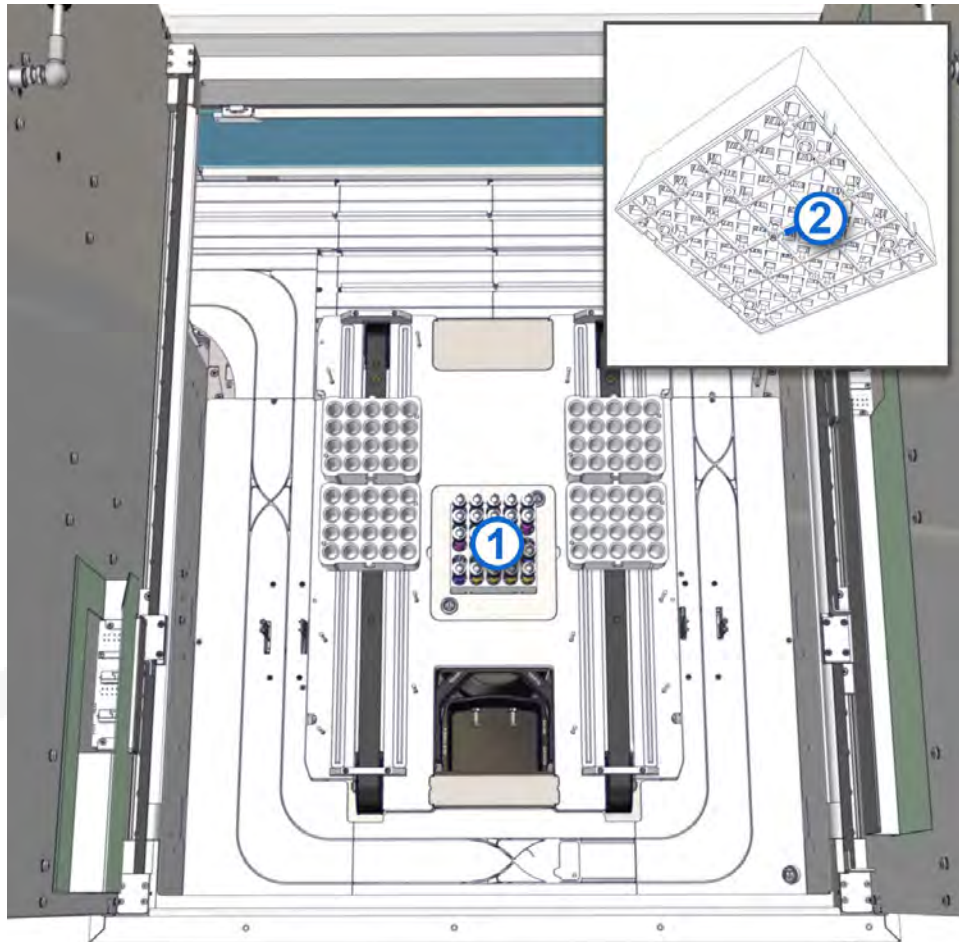
Required module status Off

Perform this as-needed procedure to replace a FlexRack on the module.



CAUTION: Biological RISKS. This activity or area may expose the operator to potentially infectious material.

Figure 45: FlexRack



1. Open the module cover.
2. Locate the screw [2] in the middle of the old FlexRack [1].
3. Loosen the screw [2] with the Tx8 Torx screwdriver.
4. Remove the screw [2] from the old FlexRack [1].
5. Remove the old FlexRack [1] by pulling it up.
6. Insert the new FlexRack.
7. Insert the screw [2] into the middle of the new FlexRack.
8. Tighten the screw [2] with the Tx8 Torx screwdriver.
9. Close the module cover.
10. Power on the module.

Related information...

[As-needed maintenance procedures](#), page 98

NOTES

Introduction

Problems with the Centrifuge Module are characterized by symptoms. Troubleshooting tools, references, and suggested techniques help to trace the symptom to one or more root causes.

After determining the root cause, perform the corrective actions to resolve the problem.

Before troubleshooting is performed for system errors, the module status must be Offline.

The laboratory staff may perform procedures that are included in this manual. Procedures not included in this manual may be performed only by an Abbott Laboratories representative or an authorized service representative.

NOTE: Corrective actions may involve hazardous activity. Use caution to minimize operator exposure and to prevent personal injury or system damage.



CAUTION: Do not remove samples from a CAR or the track. If samples are removed from the track, they must be deleted from the Track Sample Manager before they are placed back in the Input/Output Module for appropriate routing.



CAUTION: Risk of infection. The operator may be exposed to potentially infectious materials, such as patient samples, through contact with non-intact skin or mucous membranes. Wear personal protective equipment while operating the laboratory automation system.

Related information...

[Message codes](#), page 108

[Centrifuge Module observed problems](#), page 138

Message codes

Message codes are displayed on the touchscreen user interface when errors occur. Message codes provide information about conditions or errors of system operation.

If a message code cannot be resolved, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Troubleshooting](#), page 107

[Message code screen](#), page 108

Message code screen

The Message code screen on the module displays the following screen elements.

Figure 46: Message code screen



Legend:

1. Warning symbol: Indicates that an error has occurred.
2. Message code: Displays the message code number.
3. Date and time: Displays the date and time that the message code was generated.
4. Information text: Displays the message code description.
5. **Next** button: Navigates to the Solutions screen.

Related information...

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[25150](#), page 137

Acknowledge a message code

Perform this procedure to acknowledge an error message on the module.

1. On the Message code screen, tap the **Next** button .
2. On the Solutions screen, select the appropriate option by tapping it.
3. Tap the **Next** button to confirm the selection.

Related information...

[Message code screen](#), page 108

Message code: 100

System error.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Ignore error message.

Related information...

[Message code screen](#), page 108

Message code: 101

Invalid product code.

Product code invalid or not supported by display.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 105

Module Controller is out of memory.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Error cannot be repaired. Stop module and call service.

Related information...

[Message code screen](#), page 108

Message code: 106

Invalid data structure.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Ignore error message. • Error cannot be repaired. Stop module and call service. • Switch module to offline status.

Related information...

[Message code screen](#), page 108

Message code: 107

Unknown message type received.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Ignore error message. • Switch module to offline status. • Error cannot be repaired. Stop module and call service.

Related information...

[Message code screen](#), page 108

Message code: 108

Data protocol version is not matching.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Ignore error message. • Switch module to offline status. • Error cannot be repaired. Stop module and call service.

Related information...[Message code screen](#), page 108**Message code: 109**

Checksum error.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Ignore error message. • Error cannot be repaired. Stop module and call service. • Switch module to offline status.

Related information...[Message code screen](#), page 108**Message code: 15004**

AccessPoint: number of clamp failures exceeds threshold.

Probable cause	Corrective action
An error has occurred.	Contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 15010**

AccessPoint motor driver / hardware error.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 15015

AccessPoint might require reconfiguration.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 20105

No solution file found.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 20150

Invalid robot operation requested.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 20151

Invalid robot (0) target position.

0 = Robot type

Details	Solutions
Not applicable.	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...

[Message code screen](#), page 108

Message code: 20200

AccessPoint connection problem.

Details	Solutions
AccessPoint heartbeat lost.	Please select one of the offered solutions below. - Reset and initialize the component again. - Error cannot be repaired. Stop module and call service. - Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20201

AccessPoint does not respond.

Details	Solutions
AccessPoint did not confirm release of CAR (0). 0 = CAR ID	Please select one of the offered solutions below. - The CAR (0) is gone or has been removed. - Reset and initialize the component again. - Error cannot be repaired. Stop module and call service. - Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20202

AccessPoint fault.

The AccessPoint has reported a problem while handling CAR (0).

0 = CAR ID

Probable cause	Corrective action
An error has occurred.	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 20203

AccessPoint hardware failure.

Details	Solutions
The AccessPoint has reported a hardware problem.	Please select one of the offered solutions below. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20204

The AccessPoint restarted unexpectedly.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Please check if module operation is safe and confirm. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20205

AccessPoint initialization timeout.

Details	Solutions
The AccessPoint did not complete initialization in the expected time.	Please select one of the offered solutions below. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20206

RFID read problems.

Details	Solutions
The AccessPoint reported RFID read problems.	Please select one of the offered solutions below. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20207

CARs could not be caught.

Details	Solutions
The AccessPoint was not able to catch some CARs. Check the catch position.	Please select one of the offered solutions below. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20209

AccessPoint catch position too tight.

Details	Solutions
The AccessPoint reports that the catch position is too tight. Please adjust it.	Please select one of the offered solutions below. • Reset and initialize the component again. • Error cannot be repaired. Stop module and call service. • Continue operation and ignore the error until the next restart. • Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20210

The AccessPoint lost too many CARs.

Details	Solutions
Check the AccessPoint settings or replace the AccessPoint.	Please select one of the offered solutions below. • Reset and initialize the component again. • Disable component until next restart. • Error cannot be repaired. Stop module and call service.

Related information...

[Message code screen](#), page 108

Message code: 20211

AccessPoint did not respond.

Details	Solutions
The AccessPoint did not respond to a CAR ID request.	Please select one of the offered solutions below. - Reset and initialize the component again. - Error cannot be repaired. Stop module and call service. - Disable component until next restart.

Related information...

[Message code screen](#), page 108

Message code: 20300

CAR lost during sample transport.

Details	Solutions
The CAR used for sample transport left unexpectedly from AccessPoint. CAR with ID: (0). 0 = CAR ID	Please select one of the offered solutions below. The tube was removed from gripper by pressing the grippers release button.

Related information...

[Message code screen](#), page 108

Message code: 20901

Teach positions not valid.

Details	Solutions
Robot (0). 0 = Robot type	Please select one of the offered solutions below. Check the teach-in positions.

Related information...

[Message code screen](#), page 108

Message code: 20902

Invalid reference positions.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface.

Probable cause	Corrective action
	2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...*Message code screen*, page 108**Message code: 20906**

Invalid grip position specified.

Details	Solutions
Lowest possible gripHeight for this module is (0). Chosen gripHeight is (1) and gripHeightHigh is (2). 0 = Lowest possible grip height 1 = Selected grip height 2 = High grip height	Please select one of the offered solutions below. Ignore error message.
Lowest possible gripHeight for this module is (0). Chosen gripHeight is (1). 0 = Lowest possible grip height 1 = Selected grip height	

Related information...*Message code screen*, page 108**Message code: 20910**Configuration data checksum error.
The checksum of the configuration data is invalid.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...*Message code screen*, page 108**Message code: 20911**

Unexpected position detected.

Details	Solutions
Not applicable.	Please select one of the offered solutions below.

Details	Solutions
	Check the orientation of the robot axes.

Related information...

[Message code screen](#), page 108

Message code: 20912

Wrong firmware detected for a component.

Details	Solutions
FW version (0) is detected. FW version (1) is needed. 0 = Current FW version 1 = Supported FW version	Please select one of the offered solutions below. - Component was updated. Please reinitialize. - Error cannot be repaired. Stop module and call service.

Related information...

[Message code screen](#), page 108

Message code: 21000

Robot initialization error.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...

[Message code screen](#), page 108

Message code: 21001

Robot invalid parameter detected.

Details	Solutions
Parameter: (1). 1 = Parameter name	Please select one of the offered solutions below. Ignore error message.

Related information...

[Message code screen](#), page 108

Message code: 21002

Robot invalid position detected.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. Remove error status flag from Robot.

Related information...[Message code screen](#), page 108**Message code: 21003**

Invalid robot PICCOLA controller CAN ID.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Change robot status to defect.

Related information...[Message code screen](#), page 108**Message code: 21004**

Robot crash detected.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. • Reset and initialize the component again. • Change robot status to defect.

Related information...[Message code screen](#), page 108**Message code: 21005**

Robot hardware error.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • Remove error status flag from Robot.

Related information...[Message code screen](#), page 108**Message code: 21006**

Robot is unresponsive.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. • Reset and initialize the component again.

Related information...[Message code screen](#), page 108**Message code: 21008**

Missing sensor signal at robot.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...

[Message code screen](#), page 108

Message code: 21009

Invalid robot PICCOLA controller hardware version.

Hardware: (1)

1 = PICCOLA controller hardware version

Probable cause	Corrective action
An error has occurred.	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21010

Unexpected obstacles detected.

Axis: (0)

0 = Robot axis

Probable cause	Corrective action
An error has occurred.	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21011

No sample is detected at the gripper.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. - Reset and initialize component. - Confirm remaining sample(s) at position has been removed.

Related information...[Message code screen](#), page 108**Message code: 21012**

Sample is detected at the gripper.

Details	Solutions
Please also check the surrounding processing area to ensure no potential contamination.	Please select one of the offered solutions below. The tube was removed from gripper by pressing the grippers release button.

Related information...[Message code screen](#), page 108**Message code: 21013**

Unknown robot command.

Details	Solutions
Command: (1). 1 = Robot command	Please select one of the offered solutions below. Change robot status to defect.

Related information...[Message code screen](#), page 108**Message code: 21014**

Robot PICCOLA communication error.

Details	Solutions
Program: (1). 1 = Program version	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...[Message code screen](#), page 108**Message code: 21015**

Hardware CAN ID does not match Software CAN ID.

Probable cause	Corrective action
An error has occurred.	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21016

Invalid firmware version for PICCOLA controller.

Details	Solutions
Firmware: (1). 1 = Firmware version	Please select one of the offered solutions below. Change robot status to defect.

Related information...

[Message code screen](#), page 108

Message code: 21017

Invalid PICCOLA chipset.

Details	Solutions
Chipset: (1). 1 = Chipset number	Please select one of the offered solutions below. Change robot status to defect.

Related information...

[Message code screen](#), page 108

Message code: 21018

Invalid PICCOLA extension ID.

Probable cause	Corrective action
An error has occurred.	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21019

Robot end position not detected.

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...[Message code screen](#), page 108**Message code: 21020**

Conveyor bucket sensor mismatch.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 21021**

The robot has reported the loss of a sample.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. • As necessary, remove tube from the gripper. Please confirm that the tube is removed by pressing the gripper release button.

Related information...[Message code screen](#), page 108**Message code: 21023**

Robot axis length out of tolerance.

Details	Solutions
Check the axis length and belt tension. Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. • Change robot status to defect.

Related information...[Message code screen](#), page 108**Message code: 21034**

Robot temperature out of range.

Details	Solutions
Temperature: (1). 1 = Temperature value	Please select one of the offered solutions below. • Change robot status to defect.

Related information...

[Message code screen](#), page 108

Message code: 21036

Robot power error.

Details	Solutions
Status: (1). 1 = Robot status	Please select one of the offered solutions below. • Change robot status to defect.

Related information...

[Message code screen](#), page 108

Message code: 21037

Unexpected gripper operation detected.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21041

Sample position check error.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 21050

Unknown error (1).

1 = Error code

Details	Solutions
Axis: (0). 0 = Robot axis	Please select one of the offered solutions below. Reset and initialize the component again.

Related information...[Message code screen](#), page 108**Message code: 21060**

Barcode reading error.

Details	Solutions
Not applicable.	Please select one of the offered solutions below. Remove error status flag from Robot.

Related information...[Message code screen](#), page 108**Message code: 22002**

Internal centrifuge error

Probable cause	Corrective action
Error code (0) 0 = Internal Centrifuge error code	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 22003**

Centrifuge positioning error

Probable cause	Corrective action
Error code (0) 0 = Internal Centrifuge Error code	- Correct the error by following the instructions on the touchscreen user interface. - If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108

Message code: 22004

Centrifuge init error

Probable cause	Corrective action
Error code (0) 0 = Internal Centrifuge Error code	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22005

Centrifuge communication timeout

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22007

Centrifuge imbalance

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22008

The lid of the centrifuge is blocked

Probable cause	Corrective action
Error code (0) 0 = Internal Centrifuge Error code	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22009

Invalid centrifugation parameter

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22010

A bucket could not be detected

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22011

Centrifuge lid is open

Probable cause	Corrective action
Please lock the lid and try again	1. Correct the error by following the instructions on the touchscreen user interface.

Probable cause	Corrective action
	2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22012

A bucket could not be detected

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22013

The centrifuge has sent a NAK

Probable cause	Corrective action
NAK code (0) 0 = Internal Centrifuge error code	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22014

Balancing failed

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 22015**

Crash during bucket drop

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 22016**

Crash during bucket pick

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 22017**

Centrifuge overheated

Probable cause	Corrective action
The centrifuge has reported that it is overheated. Please make sure the ventilation slots are not covered and wait some time. Internal error code {0}. 0 = Internal Centrifuge error code	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...[Message code screen](#), page 108**Message code: 22018**

Zero calibration failed

Probable cause	Corrective action
The zero calibration of the rotor failed. Please perform the calibration again.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22019

Rotor position out of tolerance

Probable cause	Corrective action
The centrifuge rotor position is out of tolerance	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22020

Invalid positioning status

Probable cause	Corrective action
The centrifuge reported an invalid positioning status	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22021

A Counterweight seems to be out of place.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface.

Probable cause	Corrective action
	2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22022

A counterweight could not be detected in its designated Position.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22023

High Centrifuge Temperature

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22024

Low Centrifuge Temperature

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22025

Centrifugation process has been interrupted.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22200

Locking failed.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22201

Unlocking failed.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22202

Lock not responding.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 22250

Init Error

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 23000

Requested dialog file for ID {0} could not be found.

0 = Dialog ID number

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 23001

No dialog options found.

Probable cause	Corrective action
Could not find dialog options for dialog (0). 0 = Dialog ID number	1. Correct the error by following the instructions on the touchscreen user interface.

Probable cause	Corrective action
	2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 23002

Unknown dialog type for dialog ID {0} received by the display.

0 = Dialog ID number

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 23003

Invalid dialog ID {0} received by the display.

0 = Dialog ID number

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 23004

Unknown display dialog error for dialog ID {0} occurred.

0 = Dialog ID number

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Message code: 25150

Lock not configured.

Probable cause	Corrective action
An error has occurred.	1. Correct the error by following the instructions on the touchscreen user interface. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Message code screen](#), page 108

Centrifuge Module observed problems

Observed problems provide information about problems that may occur on the system and provide corrective actions that help to resolve the problems.

If the corrective actions for an observed problem do not resolve the problem, contact the local representative or find country-specific contact information at corelaboratory.abbott.

Related information...

Troubleshooting, page 107

Balance tubes not sitting straight, page 139

Bar code is not read, page 139

Buckets are raised and tilted during unloading due to sample labels, page 139

CAR does not move into the module, page 140

CAR is lifted with the sample, page 140

CAR moves through the AccessPoint without stopping, page 140

CAR stops at the AccessPoint and then will not move, page 141

Centrifuge comes off the rails, page 141

Centrifuge is tilted on the rails of the hatch and could topple over, page 141

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Module cover does not remain in position when opened, page 143

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Sealed sample tube was dropped, page 146

Touchscreen user interface and push buttons do not respond, page 147

Touchscreen user interface does not respond, page 147

Unlock button is illuminated when the module is online, page 148

Balance tubes not sitting straight

Probable cause	Corrective action
The balance tube FlexRack is damaged.	Contact an Abbott Laboratories representative or an authorized service representative if necessary.
The FlexRack is damaged.	Replace the FlexRack , page 104.

Related information...

[Centrifuge Module observed problems](#), page 138

Bar code is not read

Probable cause	Corrective action
The bar code reader is dirty, worn, or damaged.	1. Clean the bar code reader. Perform Clean the bar code reader, page 80. 2. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Buckets are raised and tilted during unloading due to sample labels

Probable cause	Corrective action
Buckets are raised and tilted during unloading due to incorrect positioning of sample labels or multiple sample labels on the tube.	1. Open the module cover. Perform Open and close the front and rear module covers, page 46. 2. Remove the sample. 3. On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual. 4. Close the module cover. Perform Open and close the front and rear module covers, page 46. 5. Inspect the sample tube to verify that the bar code is correctly affixed to the sample. 6. Relabel the sample tube if necessary. 7. Place the sample in the correct input area of the Input/Output Module to complete analysis. 8. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

CAR does not move into the module

Probable cause	Corrective action
An error or defect occurred that involves the switch 90 divergent lane element.	Contact an Abbott Laboratories representative or an authorized service representative.
A module error occurred.	Correct errors on the module.
An error occurred with the Track Sample Manager (TSM) or Track Workflow Manager (TWM).	1. Verify the TSM or TWM connection. 2. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

CAR is lifted with the sample

Probable cause	Corrective action
The robot lifts the CAR with the sample.	1. Open the module cover. Perform Open and close the front and rear module covers, page 46. 2. Remove the sample from the CAR. 3. Manually place the CAR back on the track. 4. On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from TSM, refer to the GLP systems Track Operations Manual. 5. Close the module cover. Perform Open and close the front and rear module covers, page 46. 6. Place the sample in the correct input area of the Input/Output Module to complete analysis.

Related information...

[Centrifuge Module observed problems](#), page 138

CAR moves through the AccessPoint without stopping

Probable cause	Corrective action
• An error occurred at the AccessPoint	Contact an Abbott Laboratories representative or an authorized service representative.

Probable cause	Corrective action
• Communication between CAR and AccessPoint is interrupted. • Hardware defect of the AccessPoint. • Software defect of the AccessPoint. • Incorrect or unexpected bar code, destination, or CAR sequence.	

Related information...

[Centrifuge Module observed problems](#), page 138

CAR stops at the AccessPoint and then will not move

Probable cause	Corrective action
An error occurred at the AccessPoint.	1. Cycle power to the module, page 62. 2. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Centrifuge comes off the rails

Probable cause	Corrective action
The centrifuge has come off the rails when pulled out.	1. Contact an Abbott Laboratories representative or an authorized service representative if necessary. 2. Do not attempt to pick up the centrifuge.

Related information...

[Centrifuge Module observed problems](#), page 138

Centrifuge is tilted on the rails of the hatch and could topple over

Probable cause	Corrective action
The centrifuge is not positioned correctly on the rails.	1. Contact an Abbott Laboratories representative or an authorized service representative if necessary. 2. Do not attempt to pick up the centrifuge.

Related information...

[Centrifuge Module observed problems](#), page 138

Folding feet are not fully extended or only one folding foot is extended

Probable cause	Corrective action
One or both folding feet do not unfold.	Fold in folding feet. Perform Remove samples from the Centrifuge Module , page 49.

Related information...

[Centrifuge Module observed problems](#), page 138

Folding feet clamp will not fully unlock

Probable cause	Corrective action
One of both folding feet do not unfold.	Fold in folding feet. Perform Remove samples from the Centrifuge Module , page 49. Perform Remove samples using the emergency lock , page 55 if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Hatch safety lock does not unlock

Probable cause	Corrective action
The hatch safety lock does not unlock.	1. Place the module offline. 2. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Message code is displayed on the touchscreen user interface

Probable cause	Corrective action
An error has been detected.	1. Follow the error dialog on the touchscreen user interface. 2. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Module cover does not remain in position when opened

Probable cause	Corrective action
A hardware error occurred.	Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

Centrifuge Module observed problems, page 138

One or more robots do not respond

Probable cause	Corrective action
A robot error or a mechanical problem occurred.	1. Follow the error dialog on the touchscreen user interface. 2. <i>Cycle power to the module</i>, page 62. 3. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

Centrifuge Module observed problems, page 138

Power to the module is interrupted

Probable cause	Corrective action
The power source to the module is interrupted.	1. Open the module cover. Perform <i>Open and close the front and rear module covers</i>, page 46. 2. Remove all samples from the module. CAUTION: Danger due to power failure. In the case of a power failure, the samples (including STAT samples) remain inside the laboratory automation system (LAS) and must be removed manually as required. – Only allow trained operators to remove the samples manually. – If a sample is held by a robot gripper, manually remove the sample. – Observe the LAS for any remaining STAT samples and remove them manually. – Follow the information in the operations manuals for the modules.

Probable cause	Corrective action
	3. Open the hatch and centrifuge lid. Perform Remove samples from the Centrifuge Module, page 49. 4. Inspect the centrifuge for samples. If samples are present, manually remove the samples. 5. Assess the centrifugation status of the samples. 6. On the Track Sample Manager (TSM) user interface, remove the samples from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual. 7. Place the samples in the correct input area of the Input/Output Module. 8. Clean any spills if necessary. For more information, refer to the GLP systems Track Operations Manual. 9. Close the module cover. Perform Open and close the front and rear module covers, page 46. 10. Place the module online, page 65. 11. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Robot gripper fingers are worn or damaged

Probable cause	Corrective action
The robot gripper fingers are worn or damaged.	Replace the robot gripper fingers , page 100.

Related information...

[Centrifuge Module observed problems](#), page 138

Robot gripper loses its grip on the sample tube

Probable cause	Corrective action
The robot gripper fingers are worn or damaged.	• Replace the robot gripper fingers, page 100. • On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual. • Manually insert the sample tube for analysis in the sample input drawer of the IOM.

Related information...

[Centrifuge Module observed problems](#), page 138

Samples are not positioned vertically in the Buckets

Probable cause	Corrective action
Incorrect bucket size.	Verify correct bucket size (13 mm or 16 mm) is installed. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Sample tube is jammed in the robot gripper

Probable cause	Corrective action
The robot gripper fingers are damaged or dirty.	1. Open the module cover. Perform Open and close the front and rear module covers, page 46. 2. If a sample tube is located in a robot gripper, secure the sample tube with one hand and press the tube release button with the other hand. See Design and function, page 10. 3. Inspect the robot gripper fingers for damage and dirt. 4. If necessary, perform Clean the robot gripper, page 83. 5. If necessary, perform Replace the robot gripper fingers, page 100. 6. Follow the error dialog on the touchscreen user interface. 7. On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual. 8. Close the module cover. Perform Open and close the front and rear module covers, page 46. 9. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

[Centrifuge Module observed problems](#), page 138

Sample tube is stuck in the CAR

Probable cause	Corrective action
A sample tube is stuck in the CAR.	1. Open the module cover. Perform <i>Open and close the front and rear module covers</i>, page 46. 2. Remove the CAR from the track. 3. Remove the sample tube from the CAR. 4. Manually place the CAR back on the track. 5. On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual. 6. Place the sample in the Input/Output Module. 7. If sample matter has been spilled, clean the area and inspect the other sample tubes for contamination. 8. Close the module cover. Perform <i>Open and close the front and rear module covers</i>, page 46. 9. Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

Centrifuge Module observed problems, page 138

Sealed sample tube was dropped

Probable cause	Corrective action
A sealed sample tube was dropped.	1. Open the module cover. Perform <i>Open and close the front and rear module covers</i>, page 46. 2. Pick up the sample. 3. Remove the sample. 4. Close the module cover. Perform <i>Open and close the front and rear module covers</i>, page 46. 5. On the Track Sample Manager (TSM) user interface, remove the sample from the TSM database. For more information on removing samples from the TSM, see the GLP systems Track Operations Manual.

Probable cause	Corrective action
	6. Place the sample in the correct input area of the Input/Output Module.

Related information...

[Centrifuge Module observed problems](#), page 138

Touchscreen user interface and push buttons do not respond

Probable cause	Corrective action
A hardware error occurred.	1. Locate the leftmost power switch at the rear of the module. If the power switches cannot be located, contact an Abbott Laboratories representative or an authorized service representative. 2. Move the leftmost power switch to the Off position to turn off the power. 3. After the module is powered off, wait for a minimum of 1 minute. 4. Move the leftmost power switch to the On position. As soon as the power supply has been restored, perform Power on the module, page 63. 5. Contact an Abbott Laboratories representative or an authorized service representative if necessary. For information regarding emergency shutdown, refer to the GLP systems Track Operations Manual.

Related information...

[Centrifuge Module observed problems](#), page 138

Touchscreen user interface does not respond

Probable cause	Corrective action
A software error occurred.	1. Cycle power to the module, page 62. 2. If the error cannot be corrected, contact an Abbott Laboratories representative or an authorized service representative.

Related information...

[Centrifuge Module observed problems](#), page 138

Message code: Unlock button is illuminated when the module is online

Probable cause	Corrective action
An error has occurred.	Contact an Abbott Laboratories representative or an authorized service representative if necessary.

Related information...

Centrifuge Module observed problems, page 138

Revision history

Document control numbers	Revision date	Content revised
80004068-101	2023-10-23	Original release

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