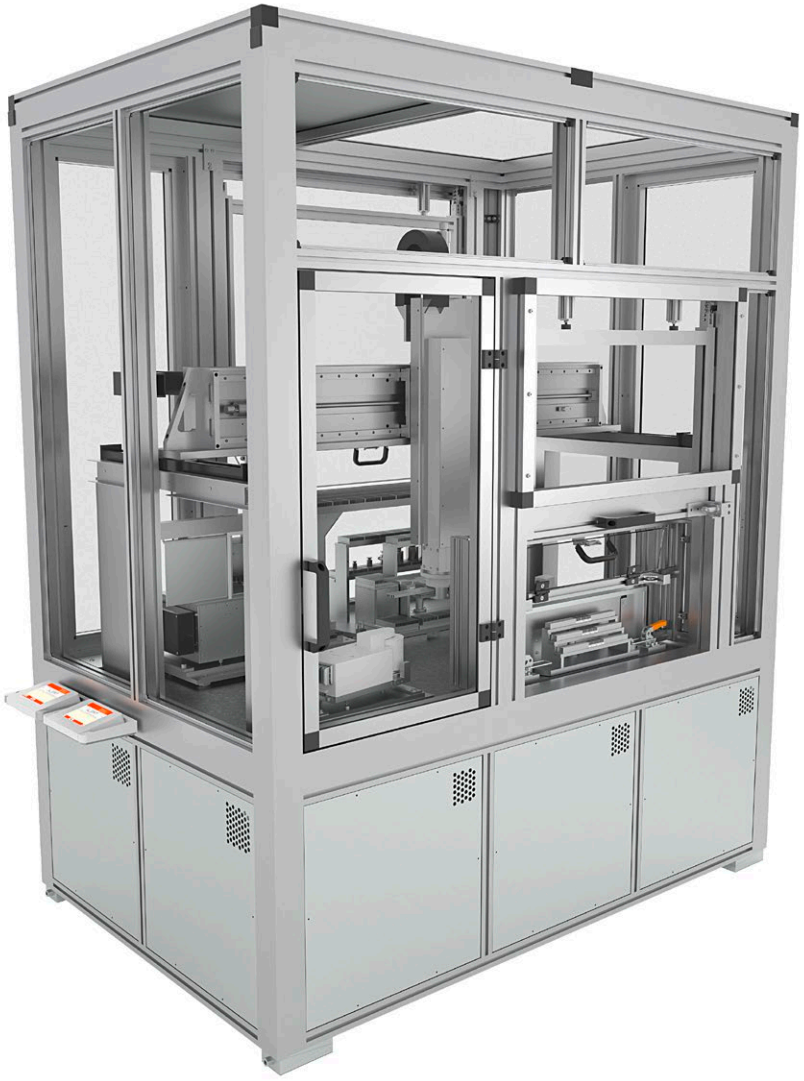
Operating Instructions
Original Operating Instructions

Fully Automatic Mass Comparator

CCR10, CCR1000, CCR10-1000 Models



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Contents

1 About these Instructions

1.1 Scope

These instructions are part of the device. These instructions apply to the device in the following versions:

Device	Model
10 g Mass Comparator	CCR10
1000 g Mass Comparator	CCR1000
10 g and 1000 g Mass Comparator	CCR10-1000

1.2 Other Applicable Documents

▶ In addition to these instructions, observe the following documentation:
- Brief instructions to the Cubis® MCM models on the operation of mass comparators
- YCM20MC-DAKKS climate module and tower operating instructions
- ScalesNet-M YSN03C Base Module control software operating instructions
- OIML Recommendation R111-2004 governing weights

1.3 Target Groups

These instructions are addressed to the following target groups. The target groups must possess the specified knowledge.

Target group	Knowledge and qualifications
User	The user is familiar with the operation of the device and the associated work processes. The user understands the hazards which may arise when working with the device and know how to prevent them. The user is trained in the operation of the device.
Administrator	The administrator is responsible for integrating the device into the production process. The administrator ensures the reliable functioning of the system and device software. The administrator is trained in the operation of the device. The training is carried out by Sartorius Service or the operator.
Operator	The operator of the device is responsible for ensuring compliance with workplace health and safety regulations. The operator must ensure that all persons who work with the device have access to the relevant information and are trained in working with the device.

1.4 Symbols Used

1.4.1 Warnings in Operating Instructions

⚠ WARNING
Denotes a danger with the risk that death or severe injury may result if it is **not** avoided.

⚠ CAUTION
Denotes a hazard that may result in moderate or minor injury if it is **not** avoided.

NOTICE
Denotes a danger with the risk that property damage may result if it is **not** avoided.

1.4.2 Other Symbols

▶ Required action: Describes actions which must be carried out.

▷ Result: Describes the result of the actions carried out.

[ ] Text inside brackets refers to control and display items.

[ ] Text inside brackets indicates status, warning, and error messages.

2 Safety Instructions

2.1 Intended Use

The device is a robotic system and provides a fully automated mass comparisons of weights. The device can determine the masses of entire weight sets or individual weights.

The device is exclusively designed for use in accordance with these instructions. Any further use beyond this is considered **improper**.

If the device is **not** used properly: The protective systems of the device may be impaired. This can lead to unforeseeable personal injury or property damage.

Operating Conditions for the Device

Do **not** use the device in potentially explosive environments. Only use the device indoors.

The device may only be used with the equipment and under the operating conditions described in the Technical Data section of these instructions (see Chapter 15, page 103).

Modifications to the Device

You may **not** modify or repair the device or make any technical changes. Any retrofitting or technical changes to the device are only permitted with prior written permission from Sartorius.

2.2 Personnel Qualification

All persons working on the device must possess the necessary knowledge and qualifications (for description, see Chapter "1.3 Target Groups", page 6).

If **no** qualifications are indicated for the actions described in these instructions: The actions described are addressed to the "User" target group.

If individual actions must be carried out by other target groups or by Sartorius Service personnel: The qualification required will be indicated in the description of the action.

2.3 Significance of these Instructions

Failure to follow the instructions in this manual can have serious consequences, e.g. exposure of individuals to electrical or mechanical hazards.

- Before working with the device: Read the instructions carefully and completely.
- If these instructions are lost, request a replacement or download the latest version from the Sartorius website (www.sartorius.com).
- Ensure that the information contained in these instructions is available to all individuals working on the device.

2.4 Proper Working Order of the Device

A damaged device or worn components may lead to malfunctions or cause hazards which are difficult to recognize.

- Only operate the device when it is safe and in perfect working order.
- Have any damage repaired immediately by Sartorius Service.

2.5 Safety Equipment

The safety equipment on the device protects persons who work with the device against the hazards and harms associated with it, e.g. electrical current. If the device's safety equipment is detached or modified: People may be seriously injured.

- ▶ Do **not** dismantle, modify or disable the safety equipment (safety equipment see Chapter 3.9, page 20).

2.6 Electrical Equipment

2.6.1 Damage to the Device's Electrical Equipment

Damage to the device's electrical equipment, e.g. damaged insulation, can be life-threatening. There is a danger to life from contact with live parts.

- ▶ If the electrical equipment of the device is defective, cut off the power supply and contact Sartorius Service.
- ▶ Keep live parts away from moisture. Moisture can cause short-circuits.

2.6.2 Working on the Device's Electrical Equipment

Only Sartorius Service personnel may work on or modify the electrical equipment of the device. The switching cabinet underneath the device may only be opened by Sartorius Service personnel.

2.7 Action in the Event of an Emergency

If there is immediate danger of personal injury or equipment damage, e.g. due to malfunctions or dangerous situations, the device must be immediately taken out of operation.

- ▶ Activate the emergency shutdown system on the device (for the emergency stop switch, see Chapter 3.1.1, page 12, for the [Emergency Stop] button, see Chapter 4.1.2, page 26).
- ▶ Malfunctions should be remedied by Sartorius Service.

2.8 Accessories, Consumables, and Spare Parts

The use of unsuitable accessories, consumables, and spare parts can affect the functionality and safety of the product and have the following consequences:

- – Risk of injury to persons
- – Damage to the device
- – Device malfunctions
- – Device failure

- ▶ Only use approved accessories, consumables, and spare parts supplied by Sartorius (see Chapter 16, page 108).
- ▶ Only use accessories, consumables, and spare parts that are in proper working order.

2.9 Unsuitable Weights

Weights which are too heavy or too light or which do not comply with the geometric specifications can fall or cause collisions.

- Only use permitted weights (see Chapter 15.7, page 106).
- Only place weights with a mass of at least 1 mg and at most 10 g on the 10 gram magazine positions.
- Only place weights with a mass of at least 10 g and at most 1 kg on the 1000 gram magazine positions.

2.10 Damage to Sensitive Components

2.10.1 Damage to the Grippers

The portal arm grippers are sensitive to physical contact, and bend easily.

- To prevent portal arm collisions: Do not leave items such as weights, tools or cleaning utensils inside the device.
- When work must be performed inside the outer draft shield: Do **not** touch and do **not** clean the portal arm gripper.
- Only unlock and rotate the sample magazine when the portal arm is in the park position (for the park position, see Chapter 7.5, page 51).
- Do not place weights in the magazine positions in the collection station or transfer station.

2.10.2 Damage to the Outer Wind Shield

- To protect the sensitive ESD protective layer on the outer wind shield: Do **not** clean the external wind shield.

2.10.3 Destruction of the 1000 Gram Weigh Cell

Placing weights manually outside of the weighing axis on the 1000 gram weigh cell (manual corner load testing) will destroy the 1000 gram weigh cell.

- Never position weights by hand in the 1000 gram weigh cell. The 1000 gram weigh cell is fitted with a Centermatic™, so corner load errors cannot occur.

2.11 Rotating or Moving Components

If items of clothing or body parts come into contact with rotating or moving parts: Items of clothing or body parts can get caught in the parts. This can lead to serious injuries.

- Wear personal protective equipment.
- If **no** tasks are to be performed on the sample or reference magazines, or on the weigh cells: Close all outer draft shield laws and lock the sliding doors (for door locking, see Chapter 3.9.3, page 21).
- If tasks are to be performed on the sample or reference magazines: Secure the sliding door using the door lock (for door locking, see Chapter 3.9.3, page 21.)
- When moving parts pose a hazard: Actuate the emergency stop switch (for emergency stop switches, see Chapter 3.9.1, page 20).

2.12 Operation in a Network Environment

The device's built-in CCR Server and the PC housing the CCR Client control software can be rendered unusable because of network or operating system malware or vulnerabilities.

- ▶ Access to the PC housing the CCR Client control software must be restricted to trained and trustworthy individuals.
- ▶ Only install software from verified sources on the PC housing the CCR Client control software.
- ▶ Regularly update the operating system on the PC housing the CCR Client control software.
- ▶ Set up a firewall on the network.

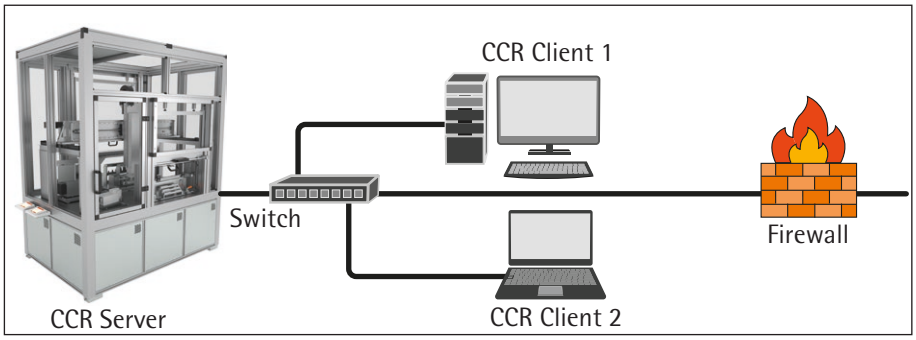


Fig. 1: Device network environment

2.13 Personal Protective Equipment

Personal protective equipment protects against risks arising from the device and protects the weights in use.

Protective equipment designation	Explanation/examples
Protective work clothing	Tight-fitting work clothing with low tear resistance, tight sleeves, and without any projecting parts./Protects against being caught by moving parts or against chemicals, heat, and injuries.
Head covering	Protects hair from being pulled into moving parts.
Safety boots/non-slip shoes	Protect against injuries to the feet caused by mechanical effects./Protect against slipping on wet surfaces.
Gloves	Protect the weights from soiling and damage during use.

3 Device Description

3.1 Device Overview

3.1.1 1000 Gram Side

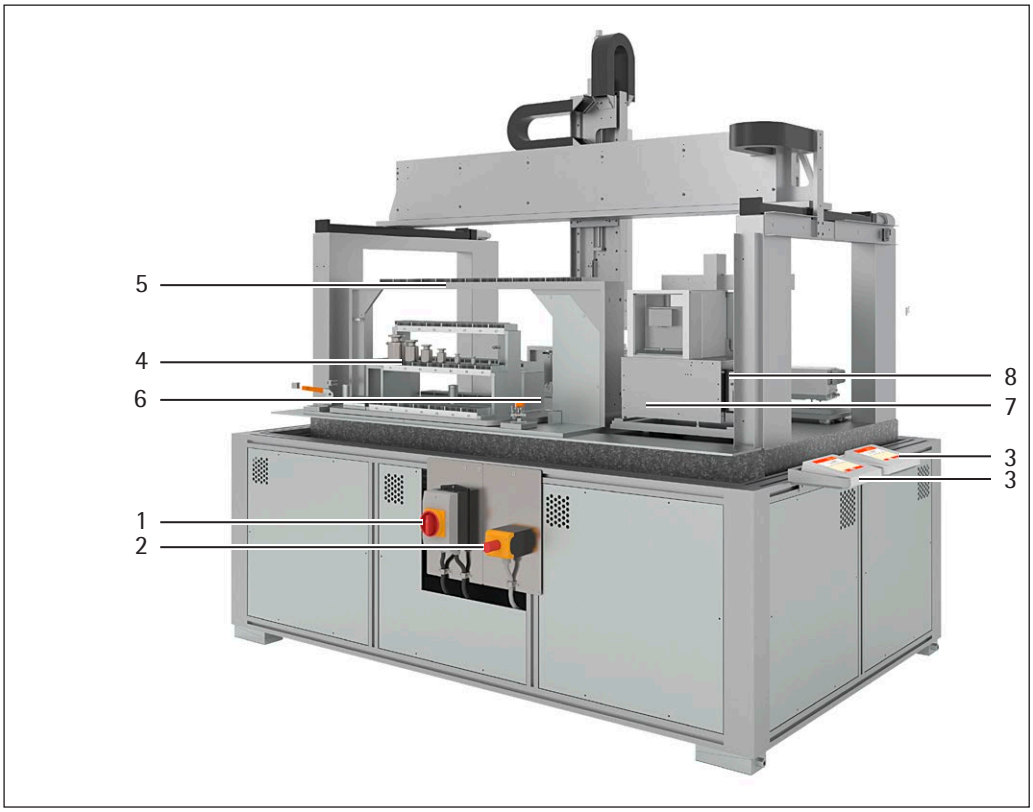


Fig. 2: 1000 gram side of the CCR10-1000

Pos.	Designation	Description
1	Main switch	Provides a connection to the mains power supply.
2	Emergency stop switch	Brings the motors to a standstill.
3	Controls	Are intended to control and monitor the two weigh cells.
4	1000 gram sample magazine	Is intended to load / remove sample weights (10 g to 1000 g, see Chapter 3.3, page 15).
5	1000 gram reference magazine	Is intended to load / remove reference weights between 10 g and 1000 g, whose dimensions comply with Recommendation OIML R111 (see Chapter 3.3, page 15).
6	1000 gram collection station	Is intended by the portal arm to temporarily place and store weights (see Chapter 3.4, page 17).
7	1000 gram weigh cell	Performs weighings between 10 g and 1000 g.
8	Climate module	Measures air pressure, humidity and temperature in the 1000 gram weigh cell (see Chapter 3.7, page 19).

3.1.2 10 Gram Side

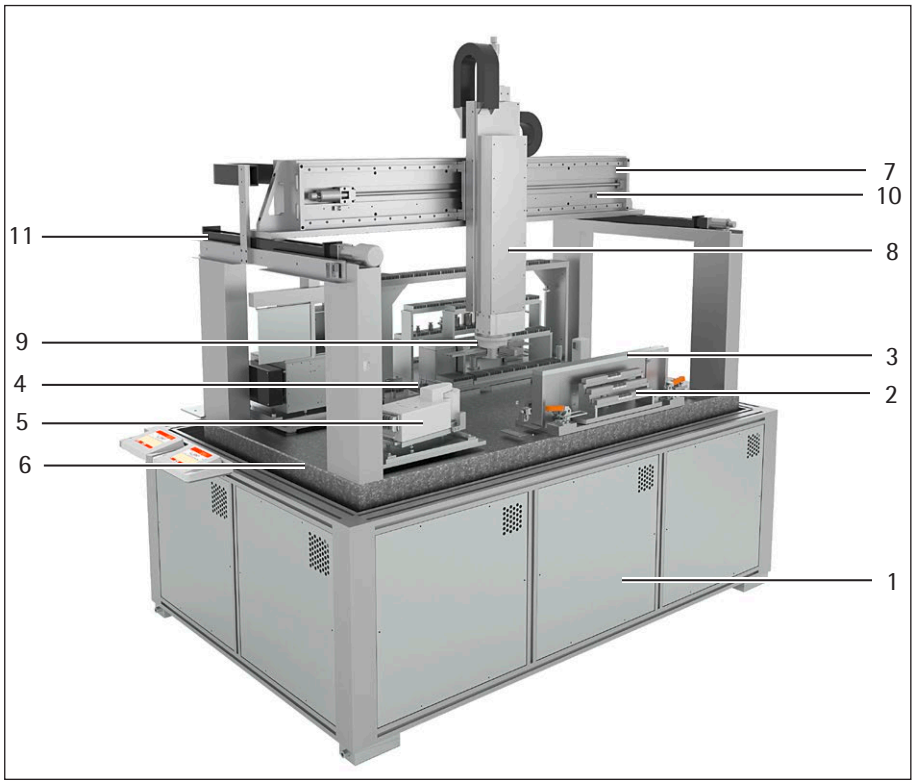


Fig. 3: 10 gram side of the CCR10-1000

Pos.	Designation	Description
1	Control box	Contains the device's control components.
2	10 gram sample magazine	Is intended to load / remove sample weights (0,001 g to 10 g, see Chapter 3.3, page 15).
3	10 gram reference magazine	Is intended to load / remove reference weights (0,001 g to 10 g, see Chapter 3.3, page 15).
4	10 gram collection station	Is intended by the portal arm to temporarily place and store weights (see Chapter 3.4, page 17).
5	10 gram weigh cell	Performs weighings between 0.001 g and 10 g.
6	Granite weighing table	Disconnects the weigh cells from the device.
7	Portal	For moving the portal arm along the x axis.
8	Portal arm	For moving the gripper along the y and z axes.
9	Gripper	For rotating around angle phi.
10	Position marker for safety corridor	Indicates when the portal arm is in the safety corridor.
11	LED	Lights when the portal arm is in the safety corridor.

3.2 Axes and Safety Corridor

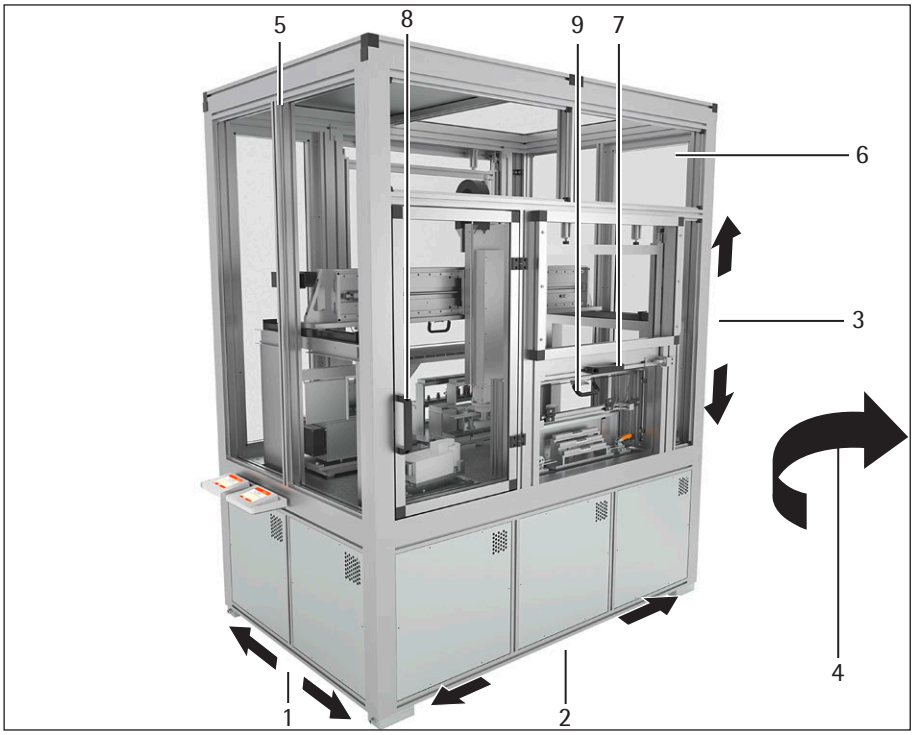


Fig. 4: Axes and safety corridor

Pos.	Designation	Description
1	x axis	Backwards and forwards movement of the portal arm, for example into and out of the sample magazine.
2	y axis	Movement of the portal arm to the left and right (parallel to the sample magazines).
3	z axis	Upward and downward movement of the portal arm.
4	phi	Rotational movement of the gripper on the portal arm.
5	Safety corridor with hinged door	Provides access to the portal arm gripper. Safe portal arm position with no risk of collision for the gripper (see Chapter "3.9.6 Safety Corridor", page 23).
6	Outer draft shield	Shields the device.
7	Sliding door	Provides access to the 10 gram sample magazine.
8	Outer hinged door	Provides access to the 10 gram weigh cell, 10 gram collection station and transfer station.
9	Inner hinged door	Provides access to the 10 gram reference magazine.

3.3 Sample and Reference Magazines

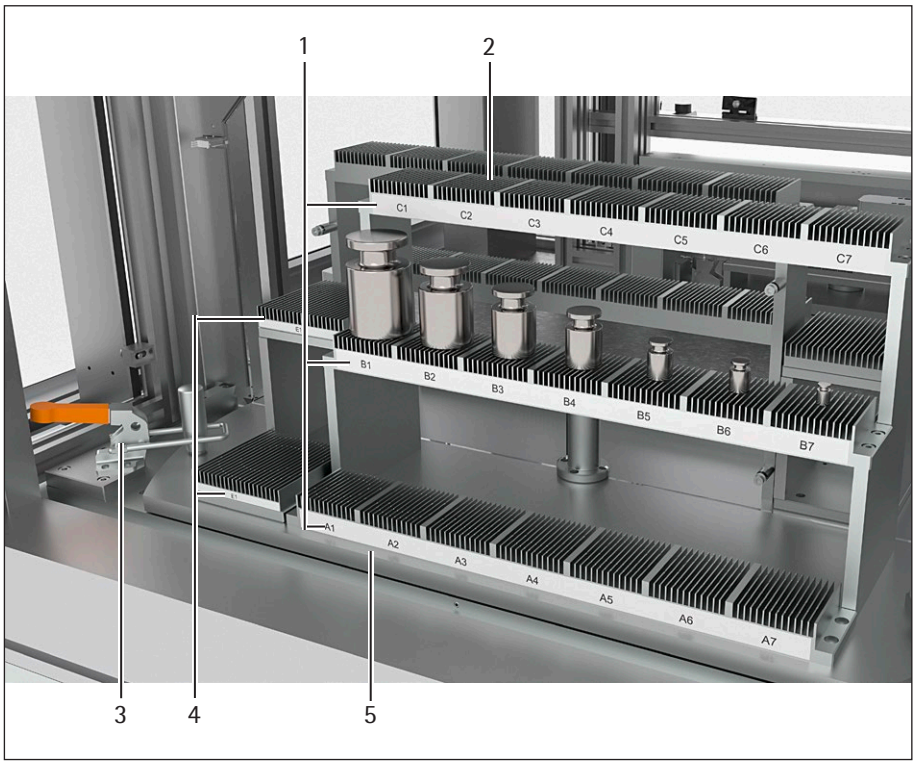


Fig. 5: 1000 gram sample magazine

Pos.	Designation	Description
1	Magazine rows A to C	For sample weights between 10 g and 1 kg, whose dimensions comply with Recommendation OIML R111.
2	Magazine position	For loading with a single sample weight whose dimensions comply with Recommendation OIML R111.
3	Toggle	For securing the turntable.
4	Magazine positions E1 and E2	For sample weights between 10 g and 1 kg, whose dimensions do not comply with Recommendation OIML R111, such as wheel weights or Buoyancy artefacts.
5	Turntable	For rotating the sample magazine by 180°.

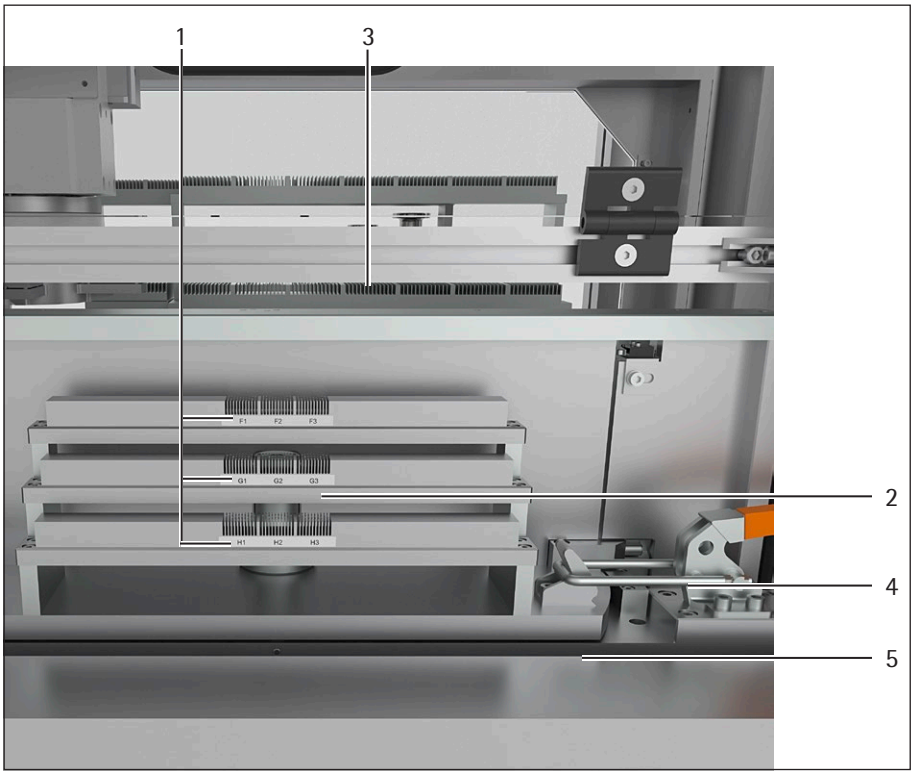


Fig. 6: 10 gram sample magazine

Pos.	Designation	Description
1	Magazine rows F to H	For sample weights between 1 mg and 10 g, whose dimensions comply with Recommendation OIML R111.
2	Magazine position	For loading with a single sample weight whose dimensions comply with Recommendation OIML R111.
3	Reference magazine	For reference weights between 1 mg and 10 g, whose dimensions comply with Recommendation OIML R111.
4	Toggle	For securing the turntable.
5	Turntable	For rotating the sample magazine by 180°.

The front and rear sides of the sample magazine are only identical with the additional Y1000 and Y10M when fitted to the CCR1000 model.

3.4 Collection Station

The device can collect multiple weights in the collection station which are required in combination for mass comparisons. The portal arm transfers the weights individually from the sample and reference magazine positions to the collection station and then together to the corresponding weigh cell.

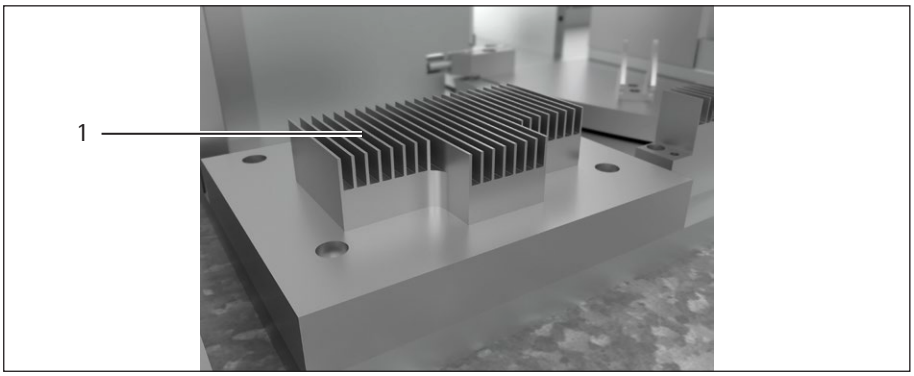


Fig. 7: 1000 gram collection station

Pos.	Designation	Description
1	Collection station	There are collection station on both the 10 gram and 1000 gram sides of the device.

3.5 Transfer Station

Only weights from a magazine on the 10 gram side can be weighed in the 10 gram weigh cell. Only weights from a magazine on the 1000 gram side can be weighed in the 1000 gram weigh cell. When performing mass code measurements from 1000 g to 1 mg, the 10 gram weight must be transferred from the 1000 gram side to the 10 gram side. The weight is temporarily stored in the transfer station so that the portal arm can exchange its gripper. The single gripper is used for these transfers.

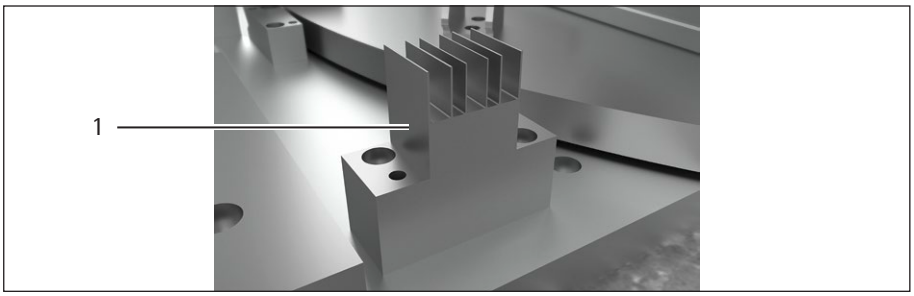


Fig. 8: Transfer station

Pos.	Designation
1	Transfer station

3.6 Portal Arm with Grippers

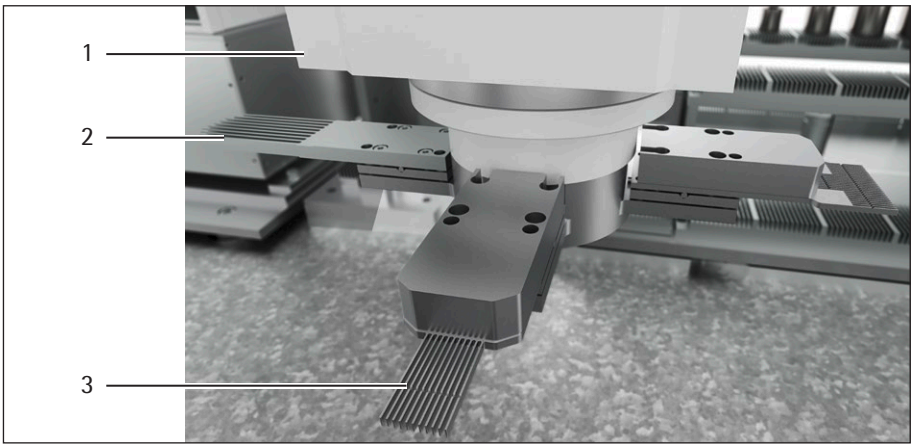


Fig. 9: Portal arm with grippers

Pos.	Designation	Description
1	Portal arm	Performs movements along 3 axes (x, y, z) as well as rotation movements (phi) as required for transferring weights.
2	1000 gram single-gripper	For transferring individual weights with a total mass of up to 1000 g.
3	10 gram single-gripper	For transferring individual weights with a total mass of up to 10 g.

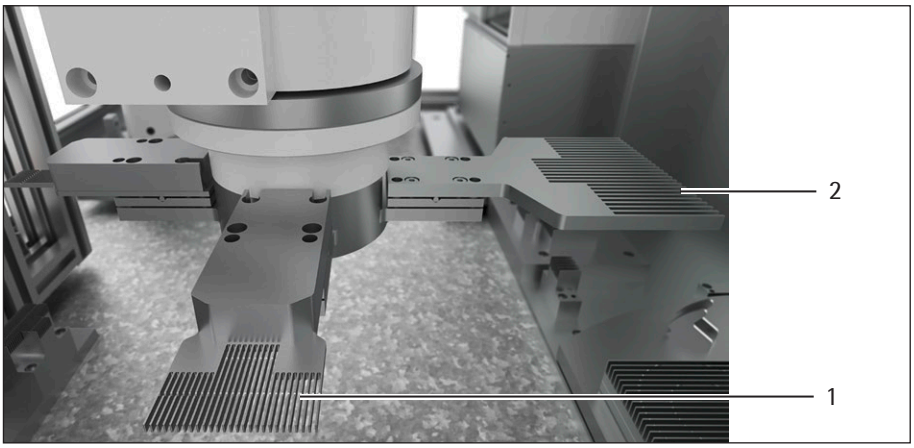


Fig. 10: Portal arm with 1000 gram grippers

Pos.	Designation	Description
1	10 gram multi-gripper	For transferring up to 4 weights with a total mass of up to 10 g.
2	1000 gram multi-gripper	For transferring up to 4 weights with a total mass of up to 1000 g.

3.7 Climate Module and Climate Tower

Fig. 11: Climate module in the 10 gram weigh cell

Pos.	Designation	Description
1	Climate module	Measures the temperature, air humidity and air pressure within the weigh cell. Each of the two weigh cells are fitted with a climate module.

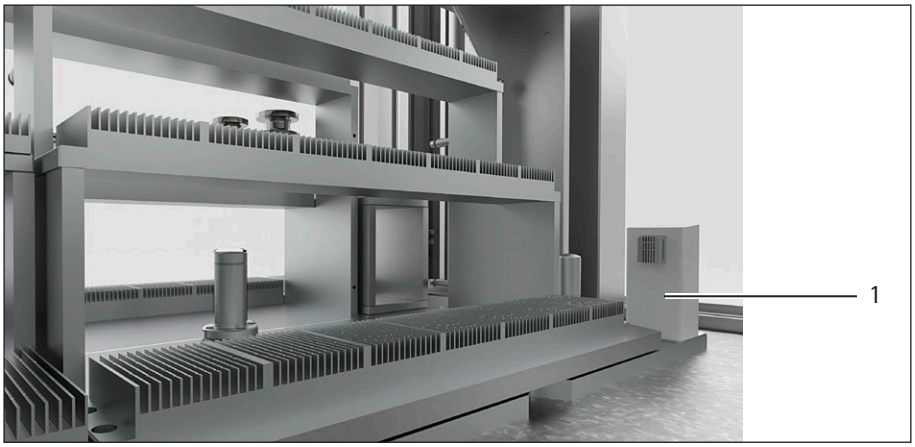


Fig. 12: Climate tower on the base plate of the 1000 gram sample magazine (rear side)

Pos.	Designation	Description
1	Climate tower	Measures the temperature, air humidity and air pressure inside the device for comparison with the values inside the weigh cells. A climate tower is mounted on the turntables of both sample magazines.

3.8 Fully Automatic Mass Comparison

When performing mass comparisons, the magazine positions are manually loaded with the desired weights. This magazine allocation is entered, orders with tasks including weigh cell tests or mass comparisons are created, started, and the performance of the order is monitored in the CCR Client control software.

The portal arm picks up reference and sample weights with different grippers and transports these to the weigh cells. The use of collection station enables the creation of weight groups, which can then be compared in the weigh cell with a reference weight. In this way, several weights in a weight group can be positioned in the weigh cell at the same time.

The weigh cells are equipped with internal substitution weights. The substitution weights ensure that the weigh cells always have the same response sensitivity across the entire weighing range and are within the electrical weighing range.

Climate modules monitor the temperature, humidity and air pressure in the weigh cells during mass comparisons. These values are intended to determine the air density for buoyancy correction. Climate tower temperature, humidity and air pressure are measured in the sample magazines.

When performing the tasks in an order, measurement logs are generated, and saved for later assessment.

While the device is executing orders, the vacant magazine positions of the outward facing sample magazines can once again be loaded with weights for the next order. Once the mass comparison has been completed, the sample magazines can be rotated. The new order can be started immediately. The weights from the previous order must be manually removed by the operator. This enables a higher mass comparison throughput because it does away with the wait time for the acclimatization of weights in the device.

3.9 Safety Equipment

3.9.1 Main Switch and Emergency Stop Switch

The main switch serves as the power disconnector, the emergency stop switch is intended to interrupt operations in emergency situations such as a collision.

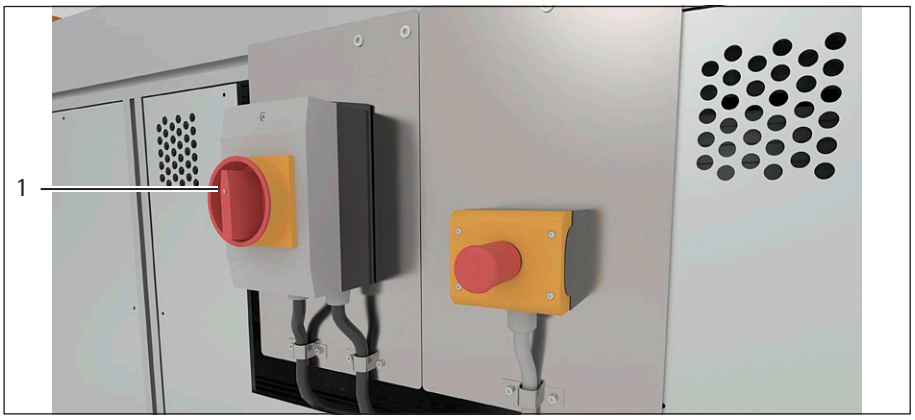


Fig. 13: Main switch and emergency stop switch on CCR10-1000, 1000 gram side

Pos.	Designation	Description
1	Main switch [O/I]	– [O] position (horizontal): The device is disconnected from the power supply. – [I] position (vertical): The device is connected to the power supply.
2	Emergency stop switch	– Pressed: Turns off the power to the device's motors so that all movements come to a standstill. The device will still, however, be powered, and all data for the current order will be retained. – Not pressed: Normal operation, the portal arm can perform movements.

3.9.2 Door Contact Switches

The door contact switches monitor the status of the outer hinged doors. If an outer hinged door is open: A safety shutdown will be triggered immediately. The device motors will be powered down. All movements will be brought to a standstill. Rotating the sample magazine and opening the reference magazine is controlled by a contact switch. This prevents employees from being injured when working inside the outer draft shield.

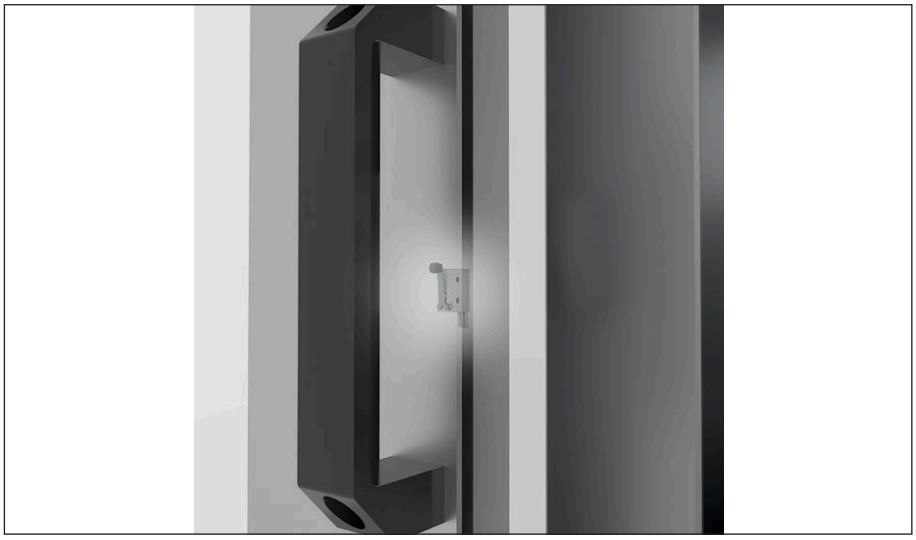


Fig. 14: Door contact switch on an outer hinged door of the CCR10-1000

Pos.	Designation
1	Door contact switches

3.9.3 Door Lock

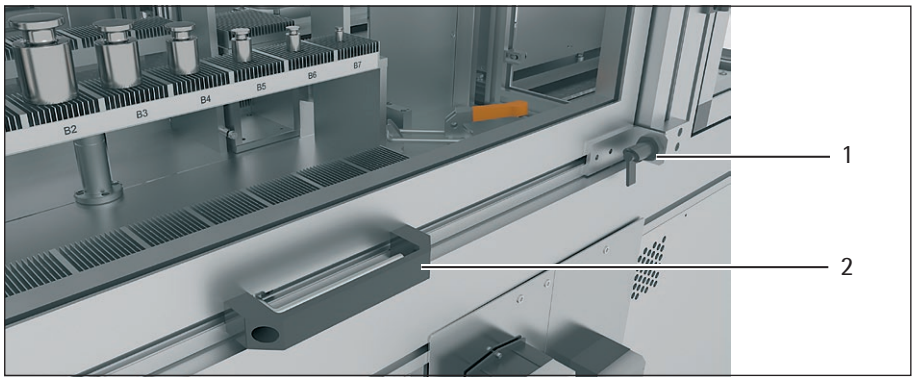


Fig. 15: Door lock on a sliding door of the CCR10-1000

Pos.	Designation	Description
1	Locking lever	To secure the sliding door.
2	Brake lever	To release the sliding door brake.

3.9.4 Toggle

There are two toggles underneath the turntables of both sample magazines. The toggles are intended to clamp a strap. This secures the sample magazine turntables.

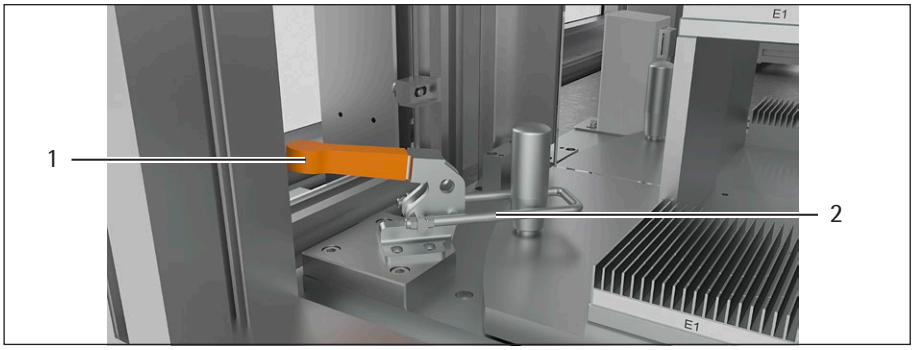


Fig. 16: Toggle on the 1000 gram sample magazine

Pos.	Designation	Description
1	Toggle	For clamping the strap.
2	Loop	For securing the sample magazine turntable.

3.9.5 Collision Detection

If the portal arms come into contact with a conductive component, for example because of an incorrectly positioned weight: A safety shutdown will be triggered. The device motors will be powered down. All movements will be brought to a standstill. This will prevent damage to sensitive components. The device must be restarted (see Chapter "10.7 Restarting after a Safety Shutdown", page 92).

When a gripper picks up weights from one magazine: Collision detection is temporarily disabled provided that the weight does not create a conductive connection between the gripper and the slats of the magazine position.

3.9.6 Safety Corridor

When the portal is in the safety corridor:
- The portal arm can move along the y and z axes without danger of collision (for portal arm axes, see Chapter 3.2, page 14).
- The portal arm is in a safe starting position, from which the device can be made ready for operation, for example after a collision detection or emergency stop has been triggered.
- The CCR Client control software can be used to perform a reference movement.

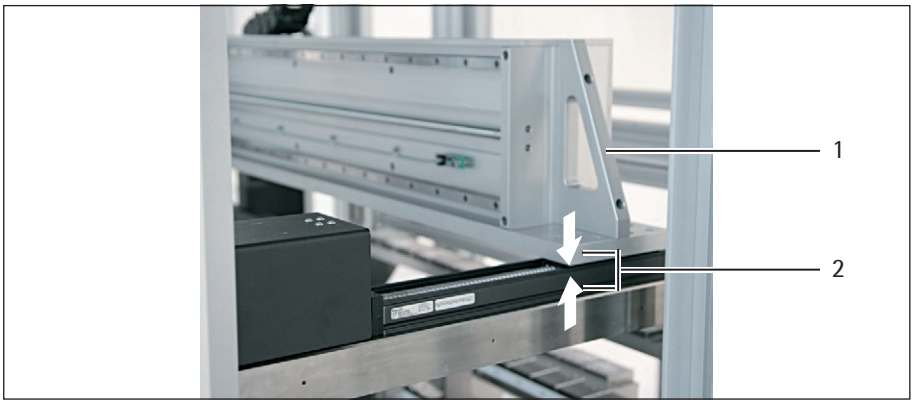


Fig. 17: Position markings for the safety corridor

Pos.	Designation	Description
1	Grip	For manual movement of the portal.
2	Markings	Display the correct position of the portal in the safety corridor.

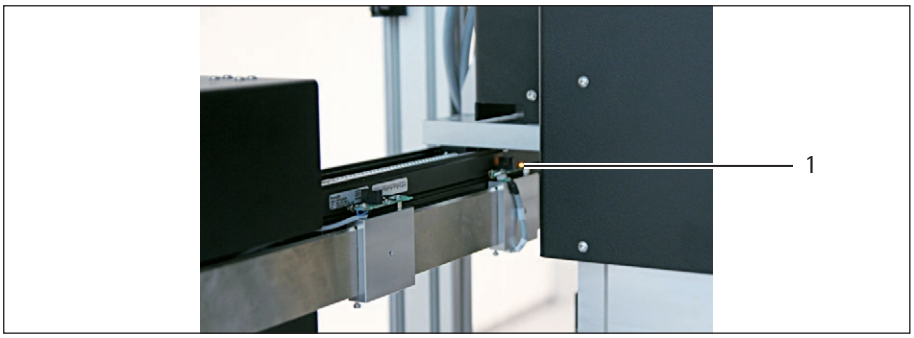


Fig. 18: Light barrier with LED for the safety corridor

Pos.	Designation	Description
1	LED	If the portal is correctly positioned in the safety corridor: The LED on the central light barrier is illuminated in orange. The light barrier is above the weigh cells.

3.9.7 Park Position

When the portal arm is in the park position:
– When the portal arm is in the park positionz axis (for portal arm axes, see Chapter 3.2, page 14).
– All outer and inner hinged doors can be opened without risk. Rotating the sample magazine is only allowed in the park position. It is possible to access the weigh cells, reference magazines, transfer station and collection station.

3.10 Symbols on the Device

Symbol	Meaning
	If body parts come in contact with moving parts of the device: The body parts may be crushed. This can lead to serious injuries.
	During operation, parts in the device may be live. Only electricians may have access to and work on these parts, such as for maintenance and repairs.
	If items of clothing or body parts come into contact with rotating parts of the device: The items of clothing and body parts may get caught and dragged in. This can lead to serious injuries.

4 Operating Concept

4.1 CCR Client

The CCR Client control software is installed on a Windows PC. This is used to configure, monitor and evaluate the measurements.

The device's built-in CCR Server and the Windows PC housing the CCR Client control software require an Ethernet connection. The CCR Server can only be accessed via the CCR Client.

4.1.1 CCR Client Header

The CCR Client header is always visible. This displays the current position of the portal arm and the current measurement values for the two weigh cells.

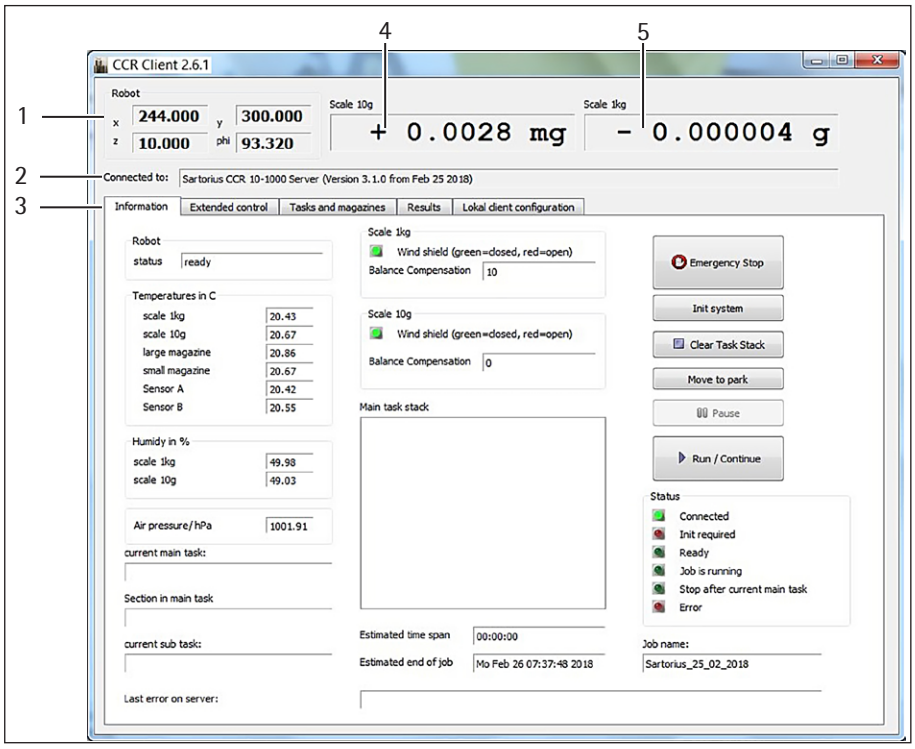


Fig. 19: CCR Client 2.6.1 user interface

Pos.	Designation	Description
1	[Robot] display	– Displays the position of the portal arm on the X, Y and Z axes. – Displays the rotation angle phi of the gripper.
2	[Connected to] display	Displays the current connection to the CCR Server.
3	Tabs	– Display the device and control software settings. – Contain the functions to control the device.
4	[Scale 10g] display	Displays the current measurement value for the 10 gram weigh cell.
5	[Scale 1kg] display	Displays the current measurement value for the 1000 gram weigh cell.

4.1.2 [Information] Tab

The [Information] tab displays the current status of the device as well as the tasks which are currently being performed. The buttons can be used to intervene in the performance of tasks.

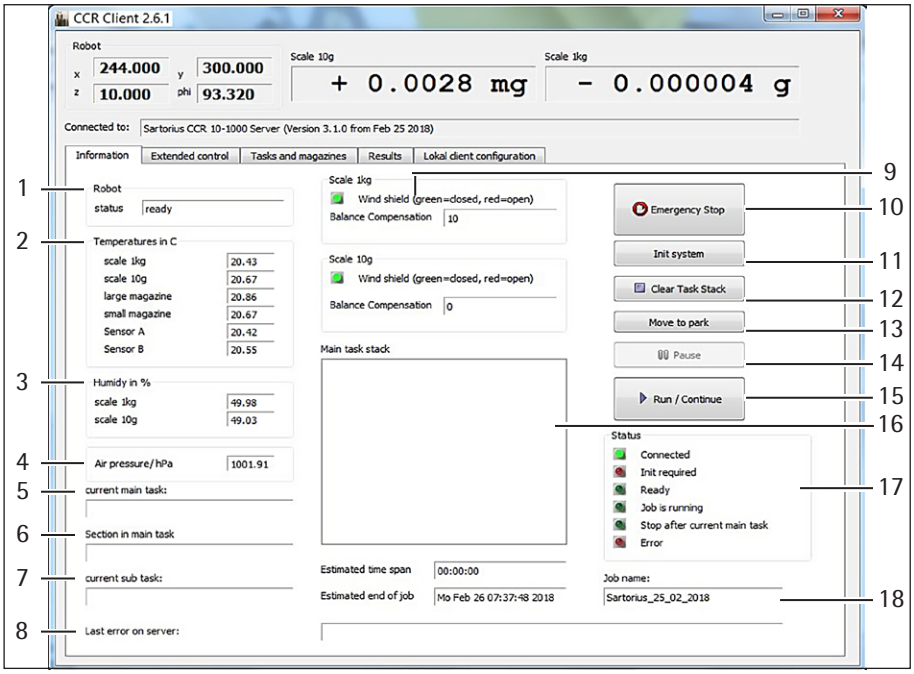


Fig. 20: [Information] tab

Pos.	Designation	Description	
1	[Robot status] display	ready	The device is ready for use.
		moving	The portal arm is moving.
		init_required	The device must be ready for use using the [Init system] button.
		not_homed	A reference movement must be performed.
		no_connection	The CCR Client is **not** connected to the device. The device is switched off, or the Ethernet connection has been interrupted.
2	[Temperatures in °C] display	Displays the temperature values measured on the following components: – Sensor on the 1000 gram weigh cell – Sensor on the 10 gram weigh cell – 1000 gram sample magazine – 10 gram sample magazine	
3	[Humidity in %] display	Sensors on the 10 gram weigh cell and 1000 gram weigh cell	
4	[Air pressure / hPa] display	Displays the current air pressure	
5	[current main task] display	Displays the main task which the device is currently performing, for example a mass comparison of two magazine positions. An order is made up of several tasks.	

Pos.	Designation	Description
6	[Section in main task] display	Displays the position in the current weighing cycle, for example segment B in the sixth of seven ABBA weighing cycles.
7	[current sub task] display	Displays the action which the device is currently performing, for example removing a weight from a magazine position, or opening or closing a weigh cell draft shield.
8	[Last error on server] display	Displays the latest error message sent by the CCR Server (see Chapter 10.3, page 89).

9	[Wind Shield/Balance Compensation] display	– Displays the status of the weigh cell draft shields:
		  – Green: The draft shield is closed.
		  – Red: The draft shield is open.
		– Displays the compensation for the internal substitution weights for the weigh cells (for substitution weights, see Chapter 3.1, page 12).

10	[Emergency Stop] button	Performs a software-side safety shutdown, equivalent to the emergency stop switch function (for emergency stop switch, see Chapter 3.9.1, page 20).
11	[Init system] button	If all of the outer draft shield doors are closed, the emergency stop switch has not been pressed, there has been no collision and all magazine contact switches are enabled: Starts device system initialization: – The motors will be started. – The device will be made ready for use. – The error messages on the [Last error on server] display will be deleted.
12	[Clear Task Stack] button	Deletes all forthcoming tasks. – Button enabled: The portal arm is in the park position. – Button disabled: The function **cannot** be performed, because the portal arm is performing a task.
13	[Move to park] button	Moves the portal arm to the park position.
14	[Pause] button	Starts Sleep mode. If the current task has been completed: The weights will be returned to the magazine positions and the portal arm moves to the park position. – Button enabled: The device is currently performing a task which can be interrupted. – Button disabled: The device is **not** currently performing a task.

Pos.	Designation	Description	
15	[Run/Continue] button	Starts and/or continues an order. – Button enabled: The device is in Sleep mode or **no** order has been started. – Button disabled: The device is already executing an order or the system initialization has **not** yet been performed after a restart.	
16	[Main task stack] display	Displays the list of forthcoming tasks.	
17	Status	Displays the status of the device and of the tasks being performed.	
18	Displays	Display information on all current orders.	
		[Estimated time span]	Expected time remaining
		[Estimated end of job]	Expected completion time
		[Job name]	Name

4.1.3 [Extended control] Tab

This tab contains control elements which will be required after any operation interruption (emergency stop, collision, power supply interruption).

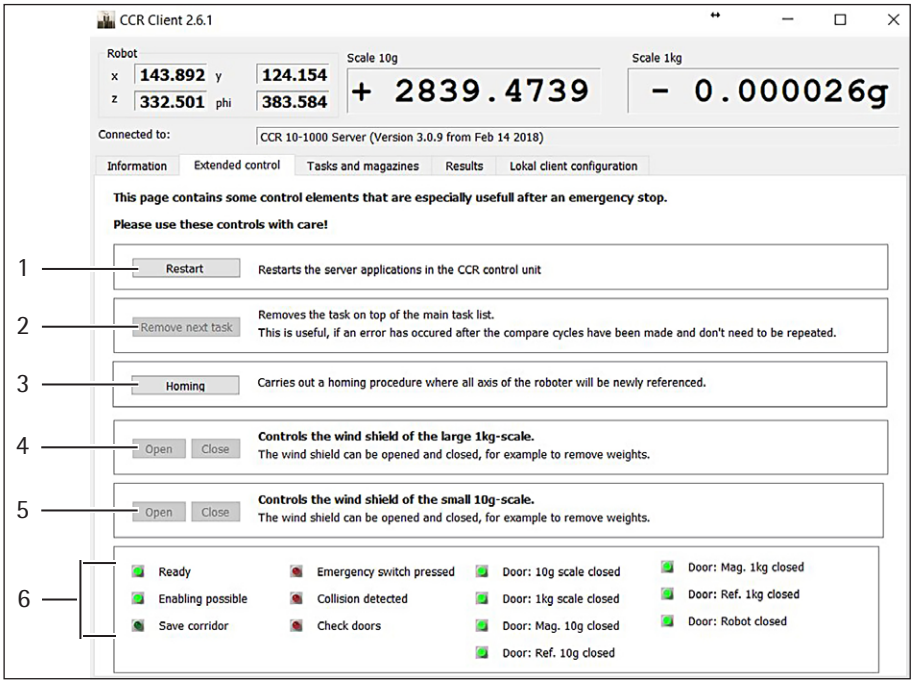


Fig. 21: [Extended control] tab

Pos.	Designation	Description
1	[Restart] button	Restarts the device server application.
2	[Remove next task] button	Deletes the forthcoming ask.

Pos.	Designation	Description	
3	[Homing] button	Starts a portal arm reference movement. This will move to previously defined reference positions on each axis (z, phi, x, y). The device can then calculate all of the required positions, and move to these in a targeted manner.	
4	Buttons	Control the draft shield of the 1000 gram weigh cell.	
		[Open]	Opens the draft shield.
		[Close]	Closes the draft shield.
5	Buttons	Control the draft shield of the 10 gram weigh cell.	
		[Open]	Opens the draft shield.
		[Close]	Closes the draft shield.
6	Displays	Display the status of the device and its doors:	
		[Ready] display	Green: The device is ready for use.
		[Enabling possible] display	Green: The device can be switched on.
		[Save corridor] display	Green: The portal arm is in the safety corridor.
		[Emergency switch pressed] display	Red: The emergency stop switch has been pressed.
		[Collision detected] display	Red: A gripper has come into contact with conductive components.
		[Check doors] display	Red: Outer draft shield doors or magazine hinged doors are open.
		[Door: 10g scale closed] display	Green: The outer hinged door, which provides access to the 10 gram weigh cell, is closed.
		[Door: 1kg scale closed] display	Green: The outer hinged door, which provides access to the 1000 gram weigh cell, is closed.
		[Door: Mag. 10g closed] display	Green: The rotating sample magazine on the 10 gram side is in the end position, and locked using the toggle.
		[Door: Ref. 10g closed] display	Green: The inner hinged door in front of the 10 gram reference magazine is closed.
		[Door: Mag. 1kg closed] display	Green: The rotating sample magazine on the 1000 gram side is in the end position, and locked using the toggle.
		[Door: Ref. 1kg closed] display	Green: The inner hinged door in front of the 1000 gram reference magazine is closed.
		[Door: Robot closed] display	Green: The hinged door to the safety corridor is closed.

4.1.4 [Tasks and magazines] Tab

The [Tasks and magazines] tab is intended to generate and start orders to be performed by the device. Orders (jobs) consist of tasks (tasks) and subsidiary tasks (sub-tasks).

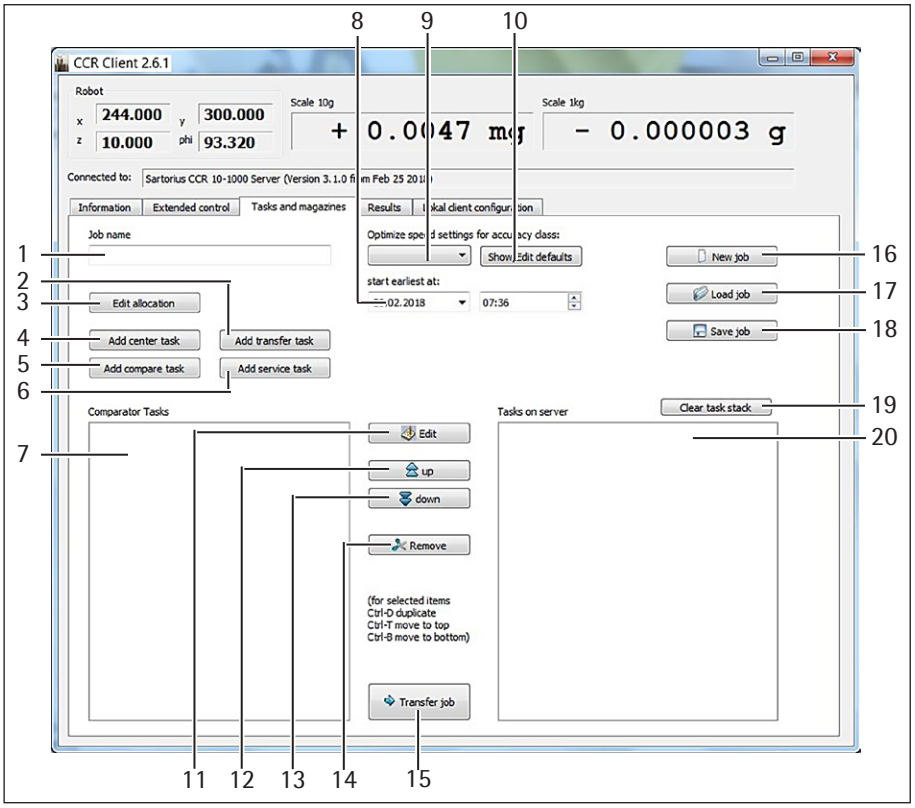


Fig. 22: [Tasks and magazines] tab

Pos.	Designation	Description
1	[Job name] text box	For entering an order name.
2	[Add transfer task] button	– Opens the [Transfer task] dialog box (see Chapter 4.2.3, page 37). – Inserts a task to transfer a weight from the 10 gram side to the 1000 gram side (or vice-versa) into the order.
3	[Edit allocation] button	– Opens the [magazine allocation] dialog box (see Chapter 4.2.1, page 35). – For entering the current magazine position assignment (see Chapter 8.3, page 62).
4	[Add center task] button	– Opens the [Center task] dialog box (see Chapter 4.2.2, page 36). – Inserts a task to automatically center a weight in its magazine position on the 1000 gram side into the order.
5	[Add compare task] button	– Opens the [Compare task] dialog box (see Chapter 4.2.4, page 38). – Inserts a mass comparison task into the order.

Pos.	Designation	Description
6	[Add service task] button	– Opens the [Add task] dialog box (see Chapter 4.2.6, page 40). – Inserts a service task into the order (e.g. a sensitivity or corner load test, a weigh cell calibration or a delay).
7	[Comparator Tasks] display	Displays all tasks in the order.
8	[start earliest at] selection box	Defines the date and time at which the order should be started.
9	[Optimize speed settings for accuracy class] selection box	Defines the accuracy class for the order.
10	[Show/Edit defaults] button	– Opens the [Show/Edit defaults] dialog box. – Allows you to edit the configuration settings. The configuration settings ensure that tasks are set up according to the accuracy class of the order.
11	[Edit] button	Opens the task which was selected in the [Comparator Tasks] display.
12	[up] button	Moves the currently selected task one step up in the [Comparator Tasks] display.
13	[down] button	Moves the currently selected task one step down in the [Comparator Tasks] display.
14	[Remove] button	Deletes the currently selected task in the [Comparator Tasks] display.
15	[Transfer job] button	Transfers the current order with its list of tasks to the CCR Server, so that the order can then be started. The order tasks will appear in the [Tasks on server] display.
16	[New job] button	– Creates a new order. – Deletes all previously created tasks in the [Comparator Tasks] display. – Deletes all previously entered weights in the [magazine allocation] dialog box.

17	[Load job] button	Opens a saved order. When opening several orders consecutively: A prompt will appear asking whether the orders should be merged.
		– If the orders are **not** to be merged: The currently open order will be overwritten.
		– If the orders are to be merged:
		  – The tasks for the newly opened order will be inserted at the bottom of the [Comparator Tasks] display.
		  – If the magazine allocations for different orders overlap: The magazine allocation for the last opened order will overwrite the existing magazine allocations (see Chapter 8.3.3, page 65).

18	[Save job] button	Saves the created order.

Pos.	Designation	Description
19	[Clear task stack] button	Only enabled when **no** measurement is being performed: Deletes all tasks not yet performed from the CCR Server. The order will be canceled and cannot then be continued.
20	[Tasks on server] display	Displays the tasks which have already been created and transferred to the CCR Server.

4.1.5 [Results] Tab

The [Results] tab displays the measurement results of the tasks performed.

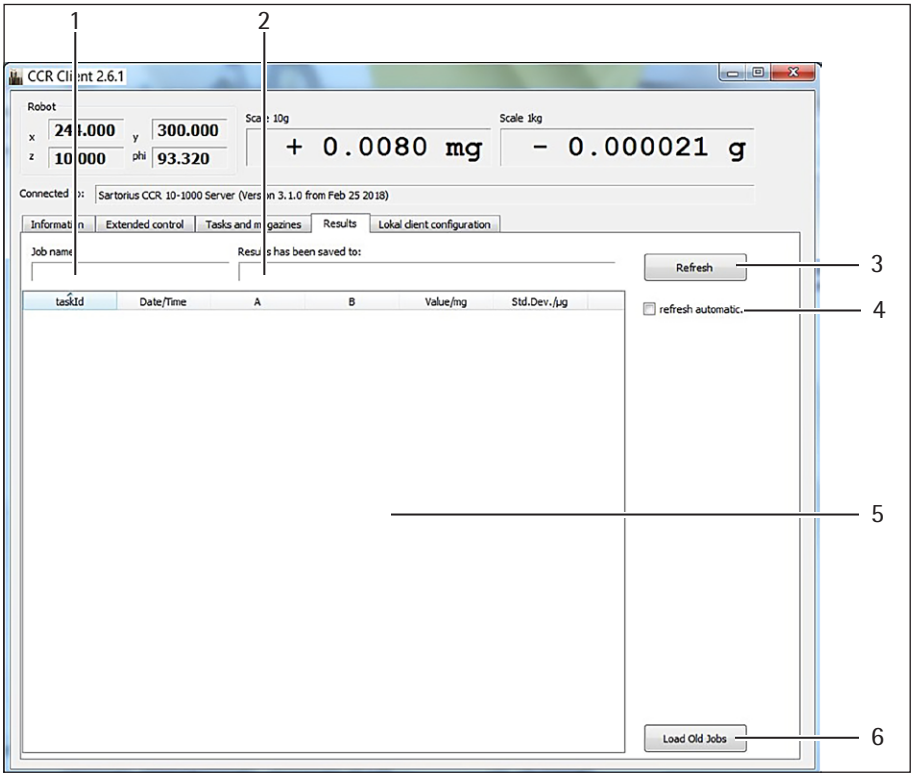


Fig. 23: [Results] tab

Pos.	Designation	Description
1	[Job name] display	Displays the name of the order whose results are being displayed.
2	[Results have been saved to] display	Displays the directory where the results have been saved.
3	[Refresh] button	– Loads all available results for the current order from the CCR Server. – Displays these results in the [Results] display. – Saves the results in the [Results have been saved to] directory path.
4	[refresh automatic] checkbox	Enables / disables automatic updating of the results.

Pos.	Designation	Description
5	[Results] display	Displays the results of the order tasks. The results display the following details:
	[taskID] display	ID number of the mass comparison and/or service task
	[Date/Time] display	Timestamp for the start of the task
	[A] display	First magazine position in use
	[B] display	Second magazine position in use or up to 4 magazine positions if a combination is being used
	[Value/mg] display	Results value for the mass comparison in milligrams
	[Std.Dev./µg] display	Standard deviation of the mass comparison in micrograms
6	[Load Old Jobs] button	Loads the results for older jobs.

4.1.6 [Local client configuration] Tab

Sartorius Service configures the network settings in the [Local client configuration] tab during commissioning. The directories in which results and orders are saved can be defined.

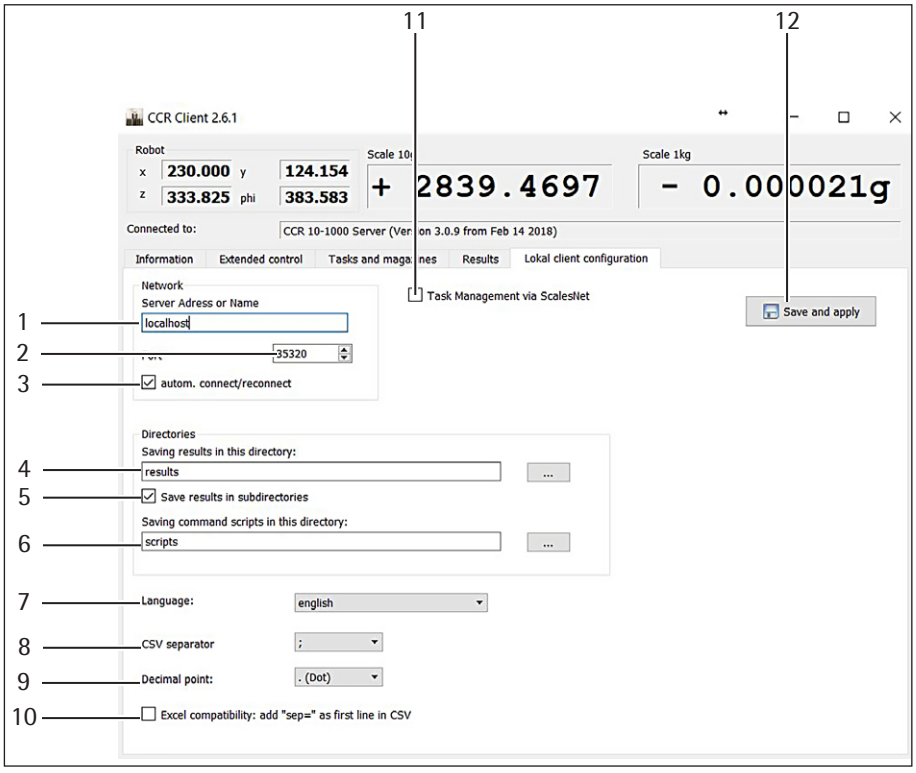


Fig. 24: [Local client configuration] tab

Pos.	Designation	Description
1	[Server Address or Name] text box	Server name or address for addressing the CCR Server.
2	[Port] selection box	TCP/IP port for addressing the CCR Server.

Pos.	Designation	Description
3	[autom. connect/reconnect] checkbox	Enables/disables automatic connection by the CCR Client to the CCR Server when the client or server is restarted.
4	[Saving results in this directory] selection box	Defines the directory in which the results will be saved.
5	[Save results in subdirectories] checkbox	Enables/disables saving of the results in subdirectories sorted by date and time.
6	[Saving command scripts in this directory] selection box	Defines the directory in which orders will be saved.
7	[Language] selection box	Sets the language to be used in the CCR Client interface.
8	[CSV separator] selection box	Defines the characters to be used to separate the columns of tables in results files.
9	[Decimal point] selection box	Defines the decimal separator character in results files (comma or dot).
10	[Excel compatibility] checkbox	Enables / disables the insertion of "sep=" in the first row so that results are displayed correctly in Microsoft® Excel.
11	[Task Management via ScalesNet] selection box	Enables / disables ScalesNet-32 instead of the CCR Client.
12	[Save and apply] button	Saves the CCR Client network configuration and applies the settings.

4.2 CCR Client Dialog Boxes

4.2.1 Displays and Buttons in the [magazine allocation] Dialog Box

The assignments of weights to magazine positions are entered in the [magazine allocation] dialog box. This enables the device to perform the tasks correctly with the appropriate weights.

The assignment of weights to magazine positions can be saved, subsequently opened and edited for later orders (see Chapter "8.3 Editing a Magazine Allocation", page 62). Multiple assignments can also be merged (see Chapter 8.3.3, page 65).

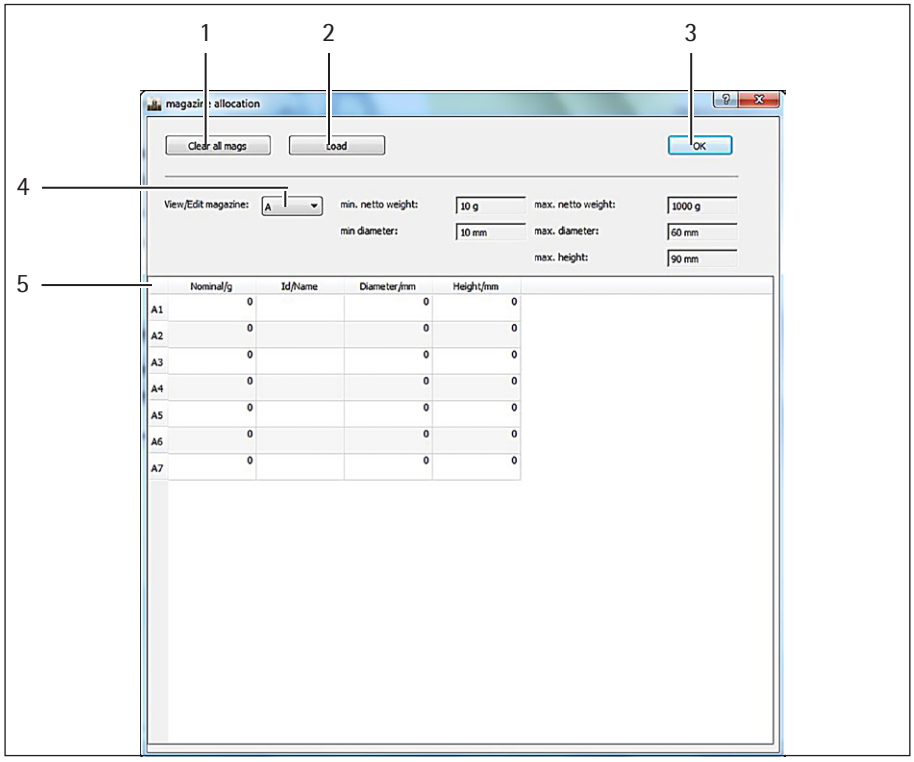


Fig. 25: [magazine allocation] dialog box

Pos.	Designation	Description
1	[Empty all mags.] button	Deletes the current assignment.
2	[Load] button	Opens a previously created and saved assignment. If multiple assignments are opened consecutively: The assignments will be merged, i.e.: – Newly opened assignments will be inserted into already opened assignments. – If assignments overlap: Overwrite the last opened assignments (see Chapter 8.3.3, page 65).
3	[OK] button	– The current assignment will be saved and used in the current order. – The [magazine allocation] dialog box will close.

Pos.	Designation	Description
4	[View/Edit magazine] selection box	Defines the magazine row in which weights should be assigned to magazine positions: – A to C and E: 1000 gram sample magazine – D: 1000 gram reference magazine – F to H: 10 gram sample magazine – I: 10 gram reference magazine
	[Limit values] display	Displays the permissible limit values for the selected magazine row. The assigned weights may not undercut or exceed these limit values (for limit values, see Chapter "15.7 Suitable Weights", page 106): – Minimum mass in grams – Maximum mass in grams – Minimum diameter in millimeters – Maximum diameter in millimeters – Maximum height in millimeters
5	Input Area	Characteristics of the assigned weights
	[Nominal/g]	Nominal mass of the weight in grams
	[Id/Name]	Designation for the weight (max. 20 characters, no equal signs)
	[Diameter/mm]	Diameter of the weight in mm
	[Height/mm]	Height of the weight in mm

4.2.2 Displays and Buttons in the [Center task] Dialog Box

Weights are often not optimally centered when the magazine positions are manually loaded. After being transferred to the weigh cell, the weights may also not be centered, which can cause weighing errors. The [Center task] dialog box is used to center weights before weighing on the center of gravity of the weighing axis using Centermatic™. This will prevent errors due to eccentric loading.

Only the 1000 gram weigh cell is equipped with a Centermatic™. This means that no centering tasks can be performed for weights in the 10 gram sample magazine.

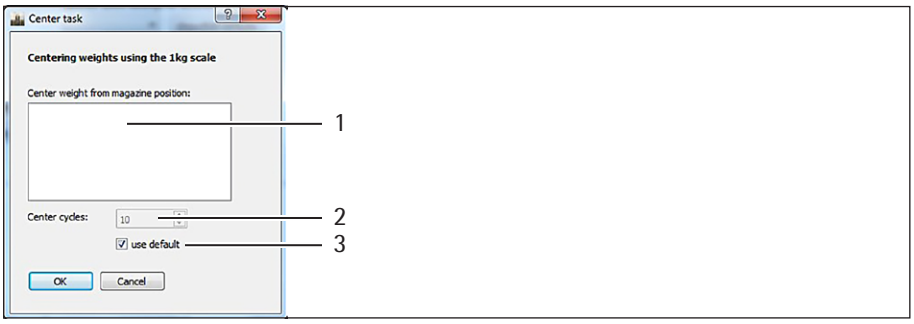


Fig. 26: [Center task] dialog box

Pos.	Designation	Description
1	[Center weight from magazine position] display	Displays the magazine positions in the 1000 gram sample magazine, for which weights can be selected for a centering task.
2	[Center cycles] selection box	If the [use default] checkbox is not ticked: Defines the number of centering cycles.
3	[use default] checkbox	Enables / disables acceptance of the standard value for the number of centering cycles. This standard value will depend on the selected order accuracy class.

4.2.3 Displays and Buttons in the [Transfer task] Dialog Box

If a 10 gram weight must be used consecutively in both weigh cells: The [Transfer task] task enables the device to transfer a weight back and forth between the 10 gram side and 1000 gram side.

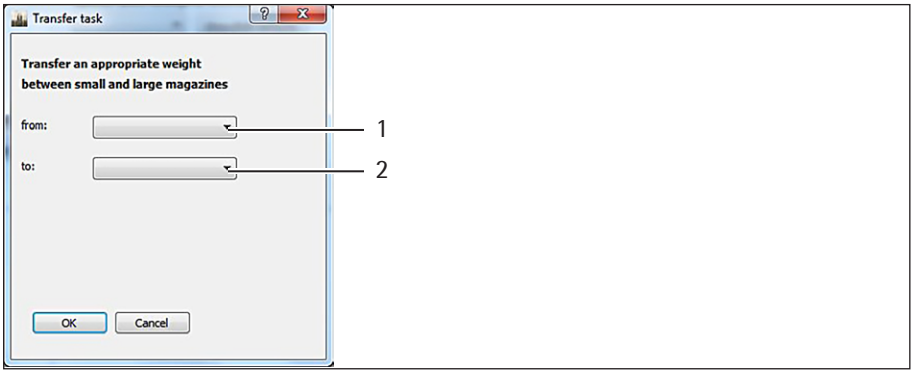


Fig. 27: [Transfer task] dialog box

Pos.	Designation	Description
1	[from] selection box	Defines the magazine position from which the weight should be taken.
2	[to] selection box	Defines the magazine position to which the weight should be transferred.

4.2.4 Displays and Buttons in the [Compare task] Dialog Box

Tasks for comparing weights are created in the [Compare task] dialog box. This defines the weights which will be compared with each other, either individually or in combination, in each weigh cell. Only weights which have already been entered in the [magazine allocation] dialog box can be used in the mass comparison.

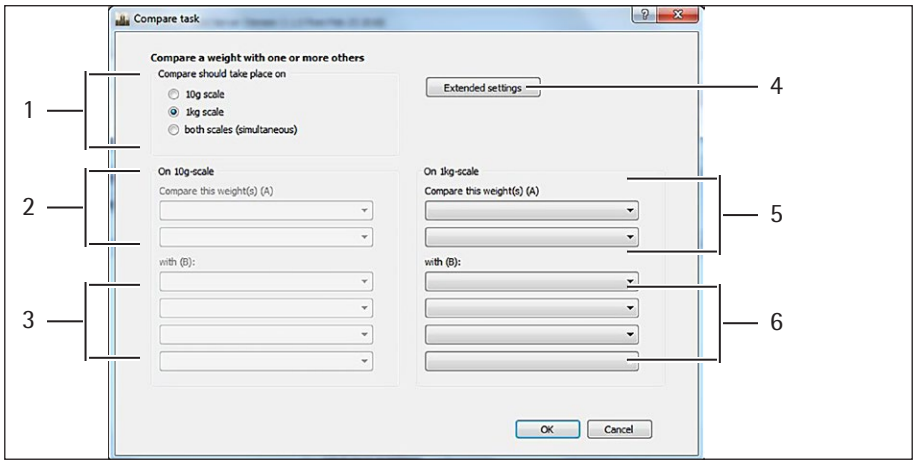


Fig. 28: [Compare task] dialog box

Pos.	Designation	Description
1	[Compare should take place on] option	– Defines the weigh cell with which the mass comparison will be performed. – Enables the settings for a mass comparison with one or both weigh cells.
2	[Compare this weight(s)] selection box	Defines the reference weights for the 10 gram weigh cell, which will be used in the comparison. One or two weights can be assigned, regardless of their size.
3	[with (B)] selection box	Defines the sample weights for the 10 gram weigh cell which will be compared with the reference weights. Up to four sample weights can be combined.
4	[Extended settings] button	Opens the [Compare task - extended settings] dialog box (see Chapter 4.2.5, page 39).
5	[Compare this weight(s)] selection box	Defines the reference weights for the 1000 gram weigh cell, which will be used in the comparison. One or two weights can be assigned, regardless of their size.
6	[with (B)] selection box	Defines the sample weights for the 1000 gram weigh cell which will be compared with the reference weights. Up to four sample weights can be combined.

4.2.5 Displays and Buttons in the [Compare task – extended settings] Dialog Box

Special tasks for performing individual mass comparisons can be defined in the [Compare task - extended settings] dialog box. Profiles with preset standard values are stored for this purpose, and these can then be adjusted.

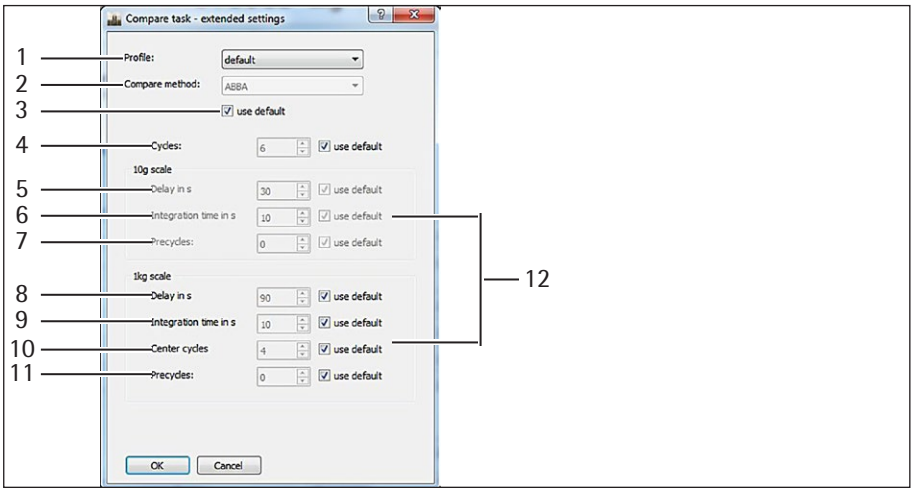


Fig. 29: [Compare task - extended settings] dialog box

Pos.	Designation	Description
1	[Profile] selection box	– Defines a profile for the mass comparison. The preset parameters for the selectable profiles are optimally adjusted to the accuracy classes, and are named accordingly. – Overwrites the setting defined in the [Optimize speed settings for accuracy class] selection box for the overall order.
2	[Compare method] selection box	Defines the method to be used in the mass comparison.
3	[use default] checkbox	Enables / disables acceptance of all standard values from the selected profile.
4	[Cycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of weighing cycles.
5	[Delay in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the delay for the 10 gram weigh cell between placing the weight on the weighing pan and the start of the integration time.
6	[Integration time in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the integration time for the 10 gram weigh cell, i.e. the duration of the individual measurement processes.
7	[Precycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of preliminary cycles for the 10 gram weigh cell which improve the performance behavior of the weigh cell prior to the actual mass comparison.
8	[Delay in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the delay for the 1000 gram weigh cell, after which the measurement process will start.

Pos.	Designation	Description
9	[Delay in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the integration time for the 1000 gram weigh cell, i.e. the duration of the individual measurement processes.
10	[Center cycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of centering cycles for the 1000 gram weigh cell.
11	[Precycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of preliminary cycles for the 1000 gram weigh cell which improve the performance behavior of the weigh cell prior to the actual mass comparison.
12	[use default] button	Enables / disables acceptance of the standard values for the adjacent profile setting.

4.2.6 Displays and Buttons in the [Add task] Dialog Box

The [Add task] dialog box is intended to add service tasks to an order, including delays or weigh cell sensitivity or corner load tests and/or calibrations.

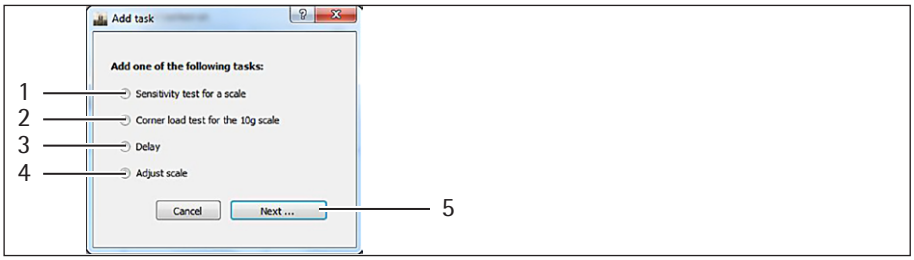


Fig. 30: [Service task] dialog box

Pos.	Designation	Description
1	[Sensitivity test for a scale] option	Defines the "Sensitivity test" service task.
2	[Corner load test for the 10g scale] option	Defines the "Corner load test" service task. Corner load tests are only available in the 10 gram weigh cell.
3	[Delay] option	Defines the "Delay" service task.
4	[Adjust scale] option	Defines the "Adjustment" service task.
5	[Continue] button	Opens the dialog box for the selected service task.

Displays and Buttons in the [Defining sensitivity test] Dialog Box

The sensitivity test is used to verify the sensitivity of the weigh cells using a test weight.

▶ Tip: Use 20 g for the 1000 gram weigh cell and 2 g for the 10 gram weigh cell.

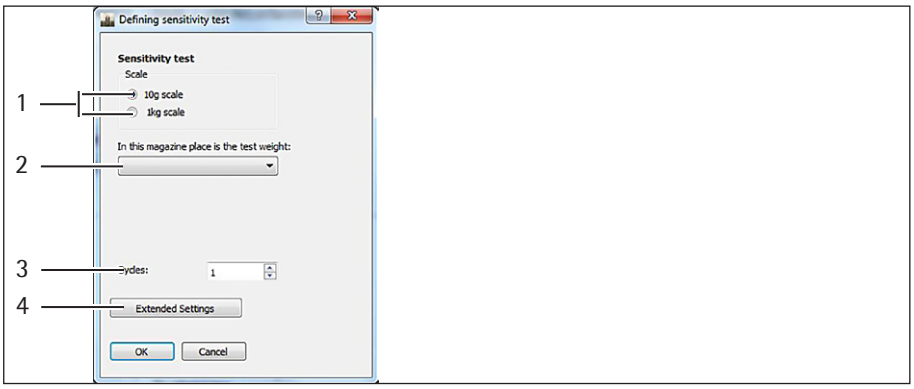


Fig. 31: [Defining sensitivity test] dialog box

Pos.	Designation	Description
1	[Scale] selection box	Defines the weigh cell on which the sensitivity test will be performed.
2	[In this magazine place is the test weight] selection box	Defines the magazine position in the reference magazine in which the test weight is placed.
3	[Cycles] selection box	Defines the number of test weighing cycles.
4	[Extended Settings] button	Opens the [Compare task - extended settings] dialog box.

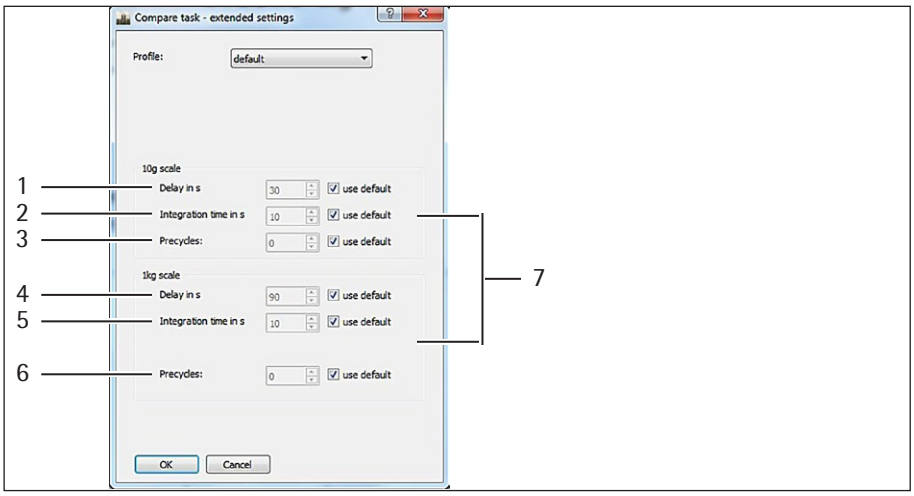


Fig. 32: [Compare task - extended settings] dialog box

Pos.	Designation	Description
1	[Profile] selection box	– Defines a profile for the sensitivity test. The preset parameters of the selectable profiles are optimally adapted to the accuracy classes in accordance with OIML R111, and are named accordingly. – Overwrites the setting defined in the [Optimize speed settings for accuracy class] selection box for the overall order.
5	[Delay in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the delay for the 10 gram weigh cell, after which the measurement process will start.
6	[Integration time in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the integration time for the 10 gram weigh cell, i.e. the duration of the individual measurement processes.
7	[Precycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of preliminary cycles for the 10 gram weigh cell which improve the performance behavior of the weigh cell prior to the actual mass comparison.
8	[Delay in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the delay for the 1000 gram weigh cell, after which the measurement process will start.
9	[Integration time in s] selection box	If the adjacent [use default] checkbox is not ticked: Defines the integration time for the 1000 gram weigh cell, i.e. the duration of the individual measurement processes.
11	[Precycles] selection box	If the adjacent [use default] checkbox is not ticked: Defines the number of preliminary cycles for the 1000 gram weigh cell which improve the performance behavior of the weigh cell prior to the actual mass comparison.
12	[use default] button	Enables / disables acceptance of the standard values for the adjacent profile setting.

Displays and Buttons in the [Defining the corner load test] Dialog Box

Corner load tests are used to detect potential corner load errors in the 10 gram weigh cell.

The corner load test is **not** available for the 1000 gram weigh cell, as this is equipped with a Centermatic™.

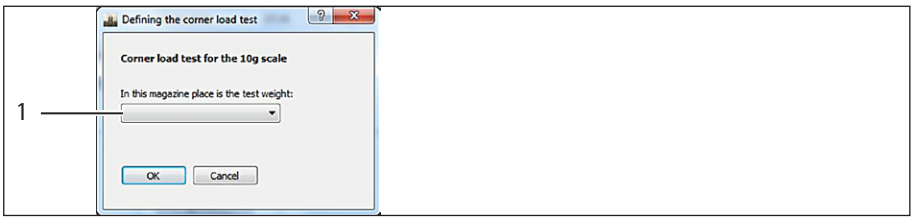


Fig. 33: [Defining the corner load test] dialog box

Pos.	Designation	Description
1	[In this magazine place is the test weight] selection box	Defines the magazine position in the 10 gram reference magazine in which the test weight is placed.

Displays and Buttons in the [Pause task] Dialog Box

When a delay has been defined:

– The execution of orders or individual tasks can be set for a specific time, for example to arrange orders for a specific time of day when measurement conditions are optimal.
– A delay is set between the performance of two tasks or before the start of an order, for example in order for the weights to acclimatize.

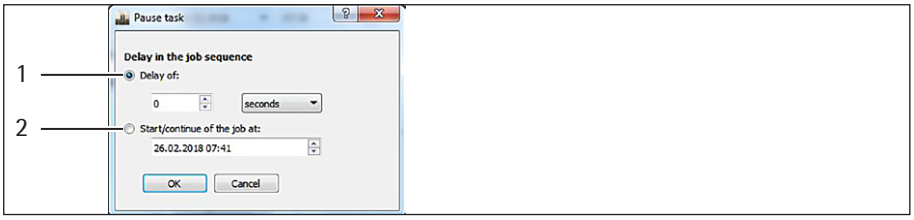


Fig. 34: [Pause task] dialog box

Pos.	Designation	Description
1	[Delay of] selection box	Defines a delayed time in hours, minutes or seconds, after which the next task will start.
2	[Start/continue of the job at] selection box	Defines a date and time as a starting point for the next task.

Displays and Buttons in the [Adjustment] Dialog Box

The weigh cells can be externally calibrated and adjusted using an appropriate reference weight.

▶ Tip: Use 20 g for the 1000 gram weigh cell and 2 g for the 10 gram weigh cell.

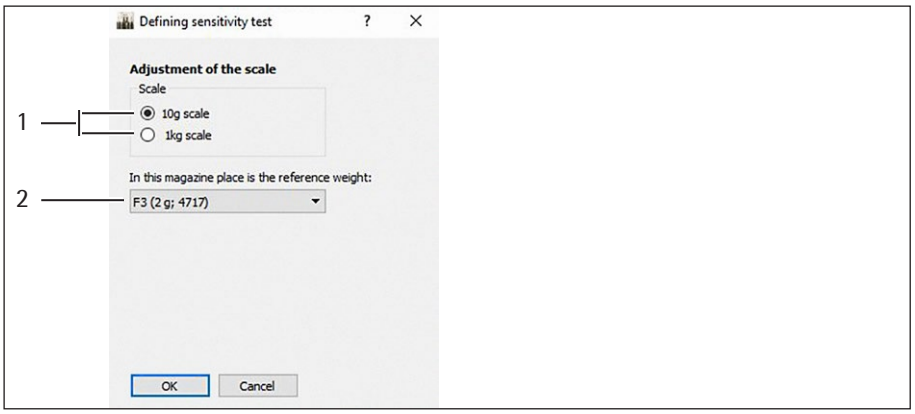


Fig. 35: [Adjustment] dialog box

Pos.	Designation	Description
1	[Balance] selection box	Defines the weigh cell to be calibrated.
2	[In this magazine place is the test weight] selection box	Defines the magazine position in the 10 gram or 1000 gram reference magazine in which the calibration weight has been placed.

4.3 CCR Server

The CCR Server control software is installed on a PC running a Linux operating system inside the device. This is used to control the portal arm in accordance with the order specifications.

The device's built-in CCR Server and the Windows PC housing the CCR Client control software require an Ethernet connection. The CCR Server can only be accessed via the CCR Client.

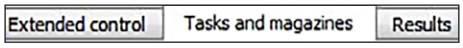
4.4 Menu Structure

▶ Navigating to dialog boxes (see Chapter 4.5, page 45).

Tab	Related dialog boxes	
Information		
Extended control		
Tasks and magazines	Edit allocation	
	Add center task	
	Add transfer task	
	Add compare task	Extended settings
	Add service task	Sensitivity test / Extended settings
		Corner load test
		Delay
		Adjustment
Results		
Local client configuration		

4.5 Navigating Between Dialog Boxes

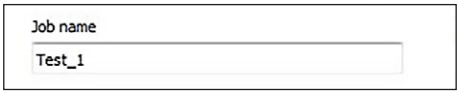
Procedure



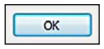
▶ To switch between the tabs: Click on the desired tab, e.g. the [Tasks and magazines] tab.

▶ To enter a dialog box and define settings: Click on the dialog box button, e.g. the [Add compare task] button.

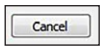
▶ To select a value from a selection box: Open the drop-down list and click on the desired value.



▶ To add values in a selection field: Click on the selection field and type in the value.

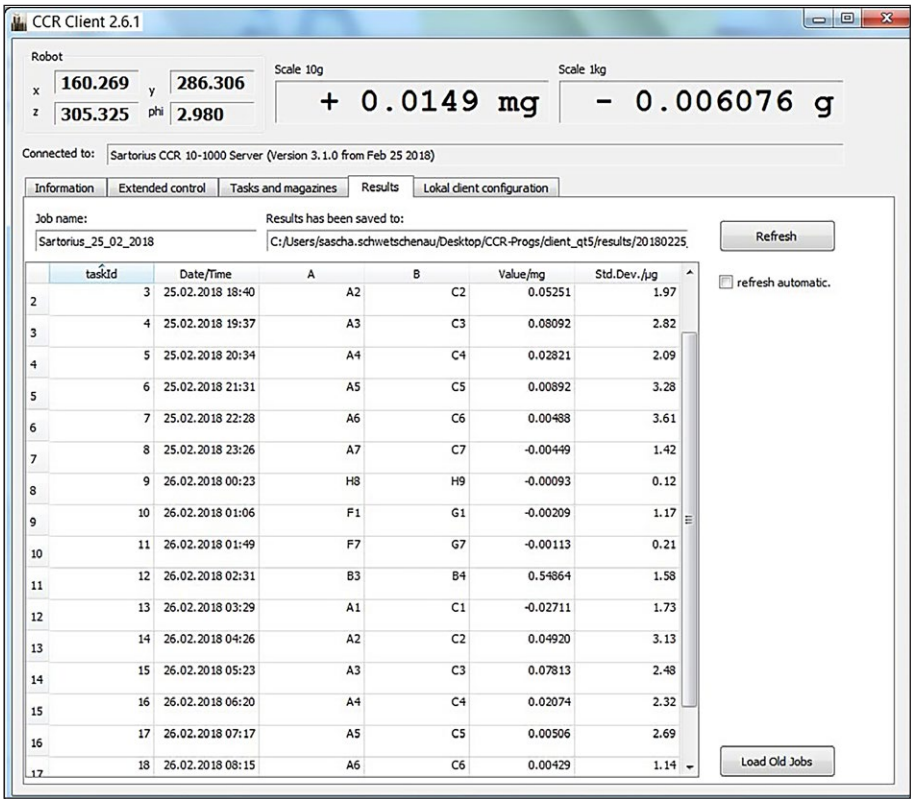


▶ To confirm settings, create tasks and close the dialog box: Click on the [OK] or [Continue] button.



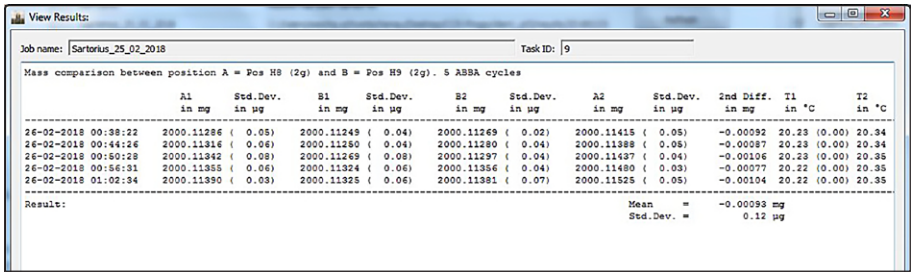
▶ To discard settings and close the dialog box: Click on the [Cancel] button.

▶ To call up the results for individual tasks in the [Results] tab: Double-click on a result in the [Results] display.



	taskId	Date/Time	A	B	Value/mg	Std.Dev./µg
2	3	25.02.2018 18:40	A2	C2	0.05251	1.97
3	4	25.02.2018 19:37	A3	C3	0.08092	2.82
4	5	25.02.2018 20:34	A4	C4	0.02821	2.09
5	6	25.02.2018 21:31	A5	C5	0.00892	3.28
6	7	25.02.2018 22:28	A6	C6	0.00488	3.61
7	8	25.02.2018 23:26	A7	C7	-0.00449	1.42
8	9	26.02.2018 00:23	H8	H9	-0.00093	0.12
9	10	26.02.2018 01:06	F1	G1	-0.00209	1.17
10	11	26.02.2018 01:49	F7	G7	-0.00113	0.21
11	12	26.02.2018 02:31	B3	B4	0.54864	1.58
12	13	26.02.2018 03:29	A1	C1	-0.02711	1.73
13	14	26.02.2018 04:26	A2	C2	0.04920	3.13
14	15	26.02.2018 05:23	A3	C3	0.07813	2.48
15	16	26.02.2018 06:20	A4	C4	0.02074	2.32
16	17	26.02.2018 07:17	A5	C5	0.00506	2.69
17	18	26.02.2018 08:15	A6	C6	0.00429	1.14

▷ A new results window will open. The climate values for each mass comparison will be displayed.



5 Installation

5.1 Scope of Delivery

Item	Quantity
Mass comparator	1
Operating Instructions	1
CCR Client control software	1

5.2 Selecting an Installation Site

Procedure

▶ Make sure that the following conditions are met at the installation site:

Condition	Features
Ambient conditions	Suitability tested (for ambient conditions, see Chapter 15.2, page 103)
Setup surface	– Stable, even surface with little vibration – Sufficient space for the device (for device space requirements, see Chapter 15.1, page 103) – Sufficient load bearing for the device (for device weight, see Chapter 15.1, page 103)
Access to parts relevant to operation	Convenient and safe

5.3 Unpacking the Device

The device is unpacked by Sartorius Service.

5.4 Assembly

The device will be transported to the installation location, leveled and assembled by Sartorius Service.

5.5 Acclimatization

When a cold device is brought into a warm environment: The temperature difference can lead to condensation from humidity in the device (moisture formation). Moisture in the device can lead to malfunctions.

▶ Allow the device to acclimatize for approx. 2 hours at the installation site. The device must be disconnected from the power supply during that time.

6 Getting Started

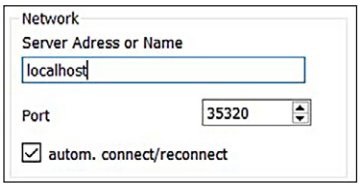
6.1 Connecting the Power Supply

Procedure

- ⚠ **WARNING** Danger of fatal electrical shock! Severe injuries caused by using defective power supply cables! Do **not** manipulate the switching cabinet or electrical fittings.
- Check the power supply cable for damage, e.g. cracks in the insulation.
  - If necessary: Contact Sartorius Service.
- Check whether the country-specific power plug matches the socket at the installation site.
  - If necessary: Replace the country-specific power plug adapter.
  - If necessary: Contact Sartorius Service.
- **NOTICE** Damage to the device due to excessive input voltage! Check whether the voltage specifications on the power supply unit match those of the power supply at the installation site.
  - If the input voltage is too high: Do **not** connect the device to the power supply.
  - Contact Sartorius Service.
- Connect the device to the power supply.

6.2 Configuring the Network Connection

Sartorius Service will establish a network connection (100BaseT) between the CCR Server and the CCR Client.



The IP address and/or network name of the CCR Server and the TCP/IP port number can be found on the [Local client configuration] tab of the CCR Client control software.

If necessary: Sartorius Service will configure the CCR Server so that its internal clock is automatically synchronized with a time server via the NTP protocol (TCP/IP port 123). To do this, the IP address of a time server must be provided.

If necessary: Sartorius Service will configure the CCR Server so that it sends status information and log files via e-mail using the SMTP protocol (TCP/IP port 25). To do this, the IP address and name of an SMTP server as well as the desired e-mail addresses must be provided.

6.3 Remote Diagnosis by Sartorius Service

If remote diagnosis is approved: Sartorius Service gains access to an internal SSH server via a TCP/IP port which was set up during the installation. The network firewall must permit this TCP/IP port at least for the duration of the respective remote access. This will allow the device to be checked and controlled over the Internet. Measurement results, climatic measurements and status log files can be viewed by Sartorius Service and checked for problems or abnormalities. The CCR Client control software can be updated. The remote diagnosis always takes place on port 22 of the CCR Server.

7 Process Preparation

7.1 Switching on the Device

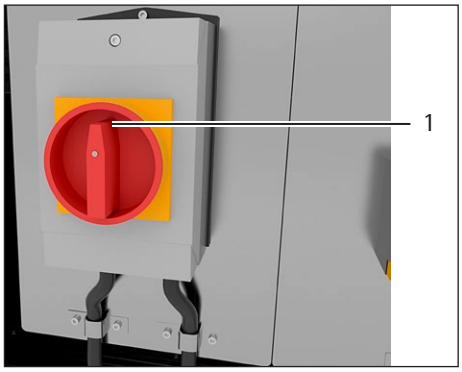
The device is designed for continuous operation, and should be switched on during operational breaks.

The device requires a lengthy warmup time after it is switched on.

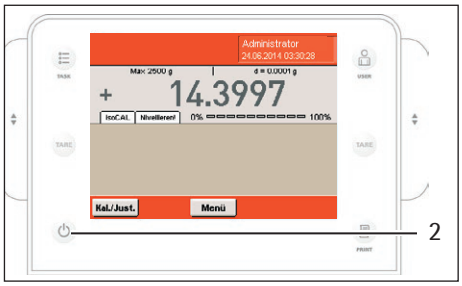
The portal arm must be manually brought into the safety corridor during initial commissioning. The rotating portal arm grippers cannot collide with other elements in the safety corridor.

Procedure

- ▶ Start the control computer and the CCR Client software (see Chapter 8.1, page 57).
- ▶ If the portal arm is not in the safety corridor: Move the portal arm manually to the safety corridor (see Chapter 7.4, page 50; For the safety corridor safety device, see Chapter 3.2, page 14).
- ▶ Turn the main switch to position [I] (1).



- ▶ Switch on the weigh cells. To do this, press the operating button (2) on both operating panels (for the operating button, see the Brief instructions for the Cubis® MCM models on the operation of mass comparators).



- ▶ Initialize the system with the CCR Client control software (see Chapter 7.3, page 50)
- ▷ Perform a portal arm reference movement (for reference movements, see Chapter 10.8.3, page 97).

7.2 Launching the CCR Client Control Software

The CCR Client control software can be used to generate orders and tasks, and to retrieve measurement results.

Requirements

- – The power supply is switched on.
- – All outer draft shield doors are closed.
- – The portal arm is in the safety corridor. If the portal arm is not in the safety corridor: Move the portal arm into the safety corridor (see Chapter 7.4, page 50).

– The computer with the external CCR Client control software is connected to the device via Ethernet.
– The network communication of the external CCR Client control software with the device is correctly set up to use TCP/IP port 35320.

Procedure

▶ Launch the CCR Client control software.
  ▶ To do this, click on [ccrclnt.exe] in the Windows Start menu.
  ▶ Otherwise, double-click on the [ccrclnt.exe] icon on the desktop.
  ▶ Otherwise, double-click on the [ccrclnt.exe] file in the [C:\Programme(x86)\Sartorius\CCR] directory.

▷ The CCR Client control software will start and attempt to connect to the device.
▷ The device status is displayed in the [Robot status] field on the [Information] tab.

7.3 Initializing the Device

Once it is switched on, the device is not yet ready to take measurements. To get the device ready for operations: The device must be initialized.

Requirements

– The CCR Client control software is started (see Chapter 7.2, page 49).
– [not_init] is displayed in the [Robot status] field on the [Information] tab.
– On the [Information] tab, the [Init system] button is **not** grayed out.

Procedure

▶ On the [Information] tab, click on the [Init system] button.
▷ The portal arm motors and counter will start.
▷ If an error message is displayed in the [Last error on server] display on the [Information] tab: The error message will be deleted.
▷ Orders can be initiated.

7.4 Bringing the Portal Arm to the Safety Corridor

During initial commissioning, after a safety shutdown or a power interruption, the portal arm must be manually brought into the safety corridor. The rotating portal arm grippers cannot collide with other elements in the safety corridor.

Requirements

– The emergency stop switch has **not** been actuated. If an emergency stop has been triggered: Re-start the device (see Chapter 10.7, page 92).
– The power supply has **not** been unexpectedly interrupted. If the power supply has been unexpectedly interrupted: Re-start the device (see Chapter 10.8, page 96).
– There are **no** weights in the portal arm grippers.
– The portal arm is in the park position (see Chapter 7.5, page 51).

Procedure

▶ Open the hinged door to the safety corridor.
▷ Stop all movements.
▶ **NOTICE** The portal arm grippers are sensitive to physical contact, and bend easily. Do **not** touch the portal arm grippers.

▶ Use the handgrip (1) to move the portal along the x axis to the correct position (portal axes, see Chapter 3.2, page 14):
  – The safety corridor position markings (1) are superimposed.
  – The safety corridor light barrier LED is lit.

▷ The portal arm it is in a safe starting position, from which the device can be made ready for operation.

▷ The portal arm can be moved along the y axis without risk of collision.

7.5 Bringing the Portal Arm to the Park Position

If the portal arm does not automatically move to the park position after switching on, initializing or interrupting or canceling an order: The portal arm must be moved to the park position using the CCR Client control software. In the park position, it is possible to work safely and rotate the sample magazine without danger, and without damaging anything.The outer hinged doors are closed.

Requirements

– All outer hinged doors are closed.
– The device has been initialized (see Chapter 7.3, page 50).

Procedure

▶ ⚠ **CAUTION** If items of clothing or body parts come into contact with rotating or moving parts: Items of clothing or body parts can get caught in the parts. This can lead to serious injuries.
  ▶ Wear personal protective equipment.
  ▶ If the sample magazine sliding doors are open: Do **not** reach into the path of the portal arm.

▶ Open the [Information] tab in the CCR Client (for the [Information] tab, see Chapter 4.1.2, page 26).

▶ If the device is **not** processing a task: On the [Information] tab, click on the [Move to park] button.

▶ If the device is already processing a task: Activate idle mode. To do this, click on the [Pause] button.

▷ The portal arm moves to the park position.

7.6 Loading a Magazine with Weights

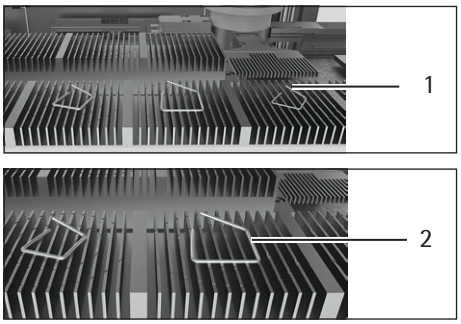
7.6.1 Important Safety Information when Loading Weights

⚠ WARNING

Danger of injury from the portal arm

If items of clothing or body parts come into contact with rotating or moving parts: The items of clothing and body parts may get caught and forcibly dragged in. This can lead to serious injuries.

▶ Wear personal protective equipment.
▶ If the sample magazine sliding doors are open: Do not reach into the path of the portal arm.
▶ Secure the sliding door of the sample magazine using the door lock (door locking, see Chapter 3.9.3, page 21.)
▶ Only release the rotatable sample magazine toggle once the device is in Sleep mode and the portal arm is in the park position (toggle, see Chapter 3.9.4, page 22).
▶ Do **not** disassemble the protection mechanisms.



NOTICE

Damage to the device due to inappropriate weights

Incorrect weight positioning or the use of inappropriate weights can damage the magazine positions or prevent the smooth processing of the order.

- ▶ Comply with the weight approval criteria for the respective reference magazines (for permitted masses and dimensions, see Chapter 15.1, page 103).
- ▶ Only position a single weight in every magazine position.
- ▶ Do not use deformed or damaged weights.
- ▶ Do not use soiled weights. If necessary: Use a brush or air bulb to remove dust or dirt from the weights.
- ▶ If wire weights are used: Align the wire weight openings with the rear of the magazine position (1).
- ▶ When positioning very fine, triangular wire weights: Position the closed side of the wire weight in the magazine position groove (2).

NOTICE

Faulty measurement results due to soiled weights

If there is dust or dirt in the magazine positions or on the weights: The measurement results will be incorrect.

- ▶ Only touch the weights with gloves and/or appropriate tweezers (for accessories, see Chapter 16.1, page 108).
- ▶ Keep the weight transport routes as short as possible. To do this, position the necessary weights directly in front of the sample magazine sliding door.

NOTICE

Faulty measurement results due to temperature changes

If weights which have been stored in a different temperature environment are used: The density of the weights will deviate from the expected value because of the temperature difference. This will lead to faulty measurements.

- ▶ Allow the weights to acclimatize to the installation location.

7.6.2 Rotating the Sample Magazine

The sample magazine can be rotated 180°. The loading for each side varies according to each order.

Weights can only be placed in or removed from the side facing the user. The portal arm grippers can remove weights from the side facing the portal arm.

NOTICE

Damage to the device and weights due to incorrect rotation of the sample magazine

If the sample magazine is unlocked and rotated when the portal arm is moving: There is a risk of collision and damage to parts of the device. Rotating the sample magazine quickly or suddenly can cause the weights to slide and fall.

- ▶ Ensure that the device is in Sleep mode and that the portal arm is in the park position (see Chapter 8.6.3, page 85).
- ▶ Rotate the turntable **slowly** and **carefully** by 180°.
- ▶ Immediately secure the turntable with the toggle after rotating it.

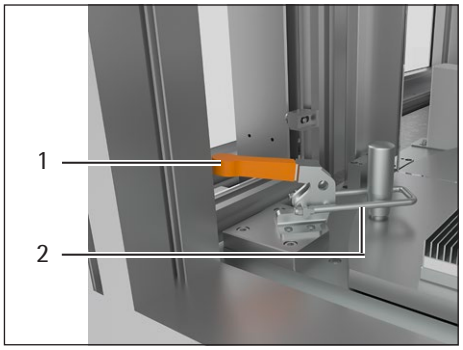
CAUTION

Danger of crushing when manually rotating a sample magazine or manipulating the sliding or hinged doors

When a sample magazine is unlocked and being rotated: Rotating a sample magazine or manipulating the sliding or hinged doors poses a danger of crushing of body parts.

- ▶ Ensure that the device is in Sleep mode and that the portal arm is in the park position (see Chapter 8.6.3, page 85).
- ▶ Rotate the turntable **slowly** and **carefully** by 180°.
- ▶ Immediately secure the turntable with the toggle after rotating it.

Procedure



- ▶ Release the sample magazine toggle (for the toggle, see Chapter 3.9.4, page 22):
  - ▶ To release the loop (2): Slide the toggle (1) upward.
  - ▶ Lift the loop (2) out of its holder.
- ▶ Rotate the turntable **slowly** and **carefully** by 180°.
- ▶ Closing the sample magazine toggle:
  - ▶ Insert the loop (2) into the holder.
  - ▶ Press the toggle (1) fully downward.

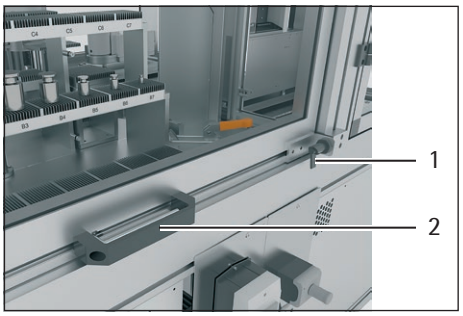
7.6.3 Opening the Sliding Door of a Sample Magazine

In order to load a sample or reference magazine, the sliding doors must be opened.

Tip

The sliding doors can also be opened during measurement operations. Opening a sliding door will **not** trigger an emergency stop.

Procedure



- ▶ Open the sliding door of the sample magazine on the side to be loaded. To do this:
  - ▶ Rotate and release the locking lever (1) on the door lock (for door locking, see Chapter 3.9.3, page 21).
  - ▶ Press and hold the sliding door brake lever (2) and slide the sliding door upwards.
  - ▷ The lighting will automatically light on the 10 gram side.
  - ▶ Release the brake lever.
  - ▶ ⚠ **CAUTION** Danger of injury due to falling sliding door! Secure the sliding door using the locking lever (1).

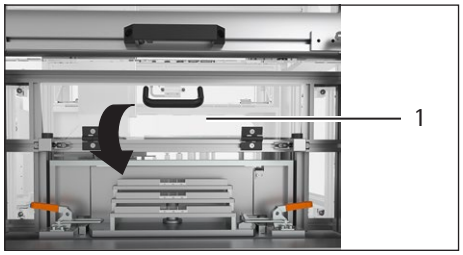
7.6.4 Loading the Reference Magazine

Reference weights should be positioned on a magazine position in one of the two reference magazines. Reference weights with a mass of up to 10 g must be positioned in the 10 gram reference magazine; reference weights with a mass of up to 1000 g must be positioned in the 1000 gram reference magazine. The corresponding sliding door will open (see Chapter 7.6.3, page 53).

Requirements

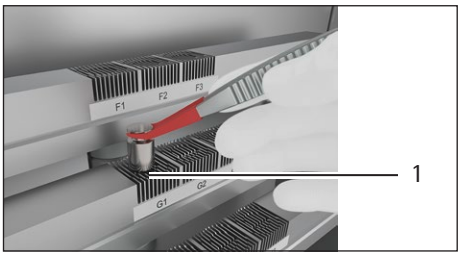
The corresponding sliding door is open (siehe Chapter 7.6.3, page 53).

Procedure



▶ Open the inner hinged door (1) of the reference magazine.

▶ Check whether the magazine positions to be loaded are empty.
  ▶ If necessary: Remove unnecessary weights from the magazine positions.



▶ Position a weight centrally on a magazine position (1) in the reference magazine.
▶ To correct the position of a weight:
  ▶ Completely remove and re-position the weight.
  ▶ Do **not** move the weight in the magazine position.

▶ Close the inner hinged door (1) of the reference magazine.
▶ Close the sliding door of the sample magazine and secure this using the locking lever.

7.6.5 Loading the Sample Magazine

Sample weights should be positioned on a magazine position in one of the two sample magazines. Sample weights with a mass of up to 10 g must be positioned in the 10 gram sample magazine; sample weights with a mass of up to 1000 g must be positioned in the 1000 gram sample magazine.

Tip

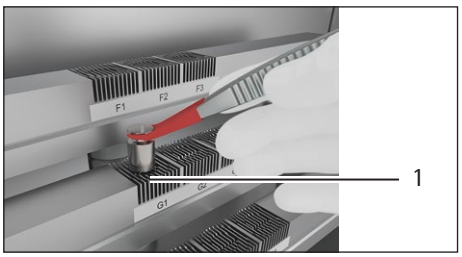
The accessible sides of the sample magazines can also be loaded during measurement operations. Opening the sample magazine sliding doors will **not** trigger an emergency stop.

Requirements

The corresponding sliding door is open (see Chapter 7.6.3, page 53).

Procedure

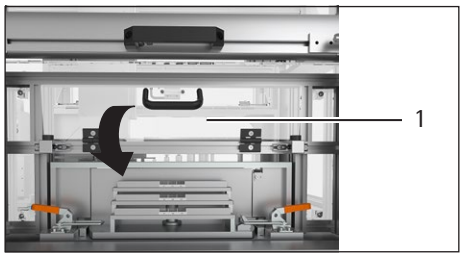
▶ Check whether the magazine positions to be loaded are empty.
  ▶ If necessary: Remove unnecessary weights from the magazine positions.



▶ Position a weight centrally on a magazine position (1) in the sample magazine.
▶ To correct the position of a weight:
  ▶ Completely remove and re-position the weight.
  ▶ Do **not** move the weight in the magazine position.

▶ Close the sliding door of the sample magazine and secure this using the locking lever.

7.6.6 Unloading the Reference Magazine

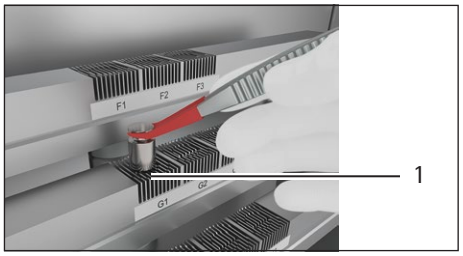


Requirements

The corresponding sliding door is open (see Chapter 7.6.3, page 53).

Procedure

▶ To open the inner hinged door (1) of the reference magazine:



▶ Remove the weights individually from the magazine positions (1) and place these securely in the storage box.

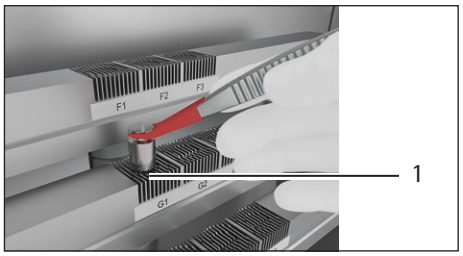
▶ Close the inner hinged door (1) of the reference magazine.
▶ Close the sliding door of the sample magazine and secure this using the locking lever.

7.6.7 Unloading the Sample Magazine

Requirements

The corresponding sliding door is open (see Chapter 7.6.3, page 53).

Procedure



▶ Remove the weights individually from the magazine positions (1) and place these securely in the storage box.

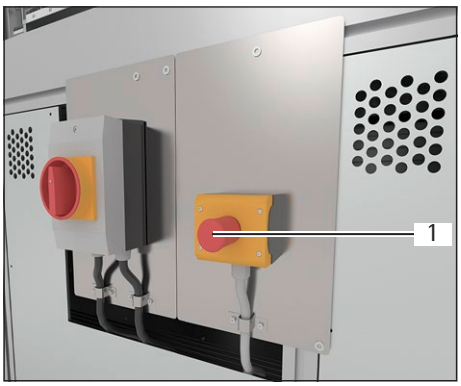
▶ Close the sliding door of the sample magazine and secure this using the locking lever.

7.7 Triggering an Emergency Stop

In a hazardous situation or when weights fall over or fall down, for example: The device can be brought to a standstill.

There are two ways to bring the device to a standstill.

Procedure



▶ Either press the emergency stop switch on the device.

▶ Or click on the [Emergency Stop] button on the [Information] tab in the CCR Client.

▷ Power will be cut off from the device motors so that all movements come to a standstill. The device will still, however, be powered, and all data for the current order will be retained.

8 Operation

8.1 Launching the CCR Client Control Software

The CCR Client control software can be used to generate orders and tasks, and to retrieve measurement results (see Chapter 7.2, page 49).

Tip

▶ If a wider range of functions is required: Use the modular ScalesNet-M software suite with the YSN03C Base Module and MARO Elektronik robot module.

8.2 Processing an Order

An order (job) refers to a specific positioning of the magazines and consists of multiple steps (tasks). Tasks can, for example, include centering, transferring or comparing weights or weigh cell tests and/or calibrations.

Jobs can be saved, loaded and merged.

8.2.1 Creating an Order

For an order, an accuracy class is defined in accordance with Recommendation OIML R111. For this purpose, parameters such as delays or the number of repeat cycles are pre-set for specific tasks, so that the requirements for this accuracy class are fulfilled.

Requirements

– The power supply to the device is switched on.
– The magazines are loaded with the desired weights.
– All outer draft shield doors are closed.
– The CCR Client software is started.
– The device has been initialized.
– [ready] is displayed in the [Robot status] field on the [Information] tab.

Procedure

▶ Click on the [New job] button on the [Tasks and magazines] tab.
▶ Type the order name that you want into the [Job name] input field.

▶ Set an accuracy class in [Optimize speed settings for accuracy class] selection.
▷ For this purpose, parameters such as delays or the number of repeat cycles are pre-set for specific tasks, so that the requirements for this accuracy class are fulfilled.
▶ To display or make a global change to the parameters configured for the selected accuracy class: Click on the [Show/Edit defaults] button.
▷ The [Edit profile] dialog box will open.

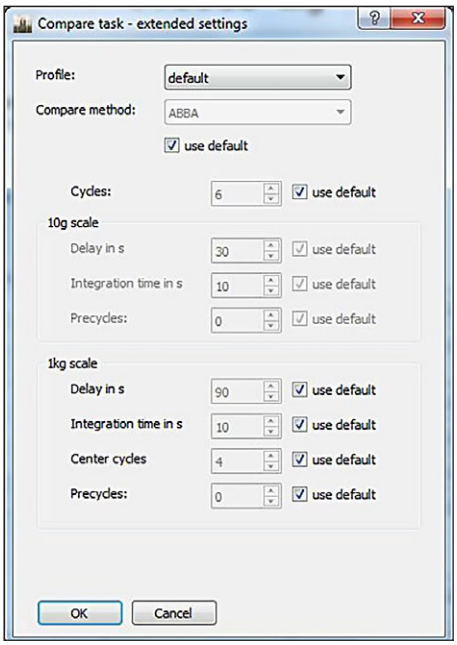


Fig. 36: [Edit profile] dialog box

▷ The parameters will be modified globally.

▶ In the [start earliest at] selection fields, set the desired start date and time for the order.

▶ Create, load or merge and then save the magazine allocation (see Chapter 8.3, page 62).

▶ Add the desired tasks to the order (see Chapter 8.4, page 66).

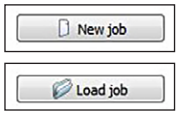
▶ Save the order (see Chapter 8.2.5, page 60).

▶ Send the order to the device (see Chapter 8.2.6, page 61).

8.2.2 Loading an Individual Order

Loading an order replaces the currently open order with the loaded order. The currently open order will therefore be deleted without prompting.

Procedure



▶ If the currently open order or its magazine allocation is still required: Save the current order (see Chapter 8.2.5, page 60).

▶ Click on the [New job] button on the [Tasks and magazines] tab.

▶ Click on the [Load job] button on the [Tasks and magazines] tab.

▷ The [Select a command script] dialog box will open.

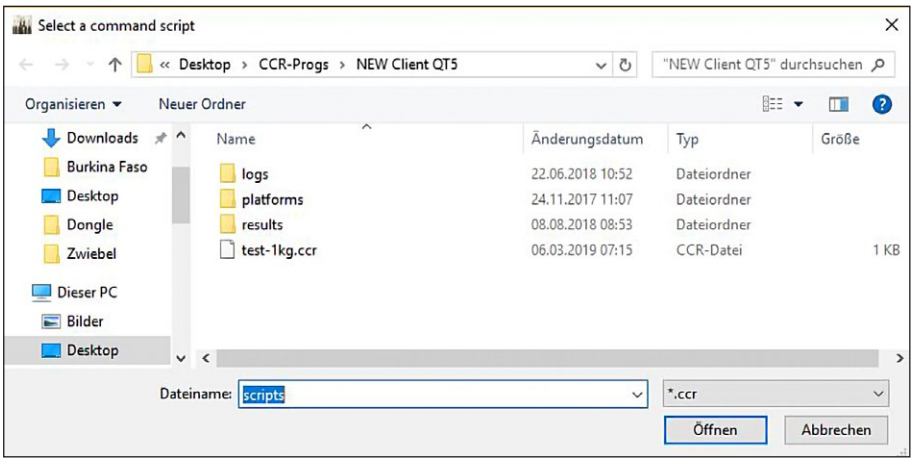


Fig. 37: [Select a command script] dialog box

- ▶ Select the order in the [Select a command script] dialog box and click on the [Open] button.
- ▷ The name, accuracy class, start time and tasks for the loaded order will be displayed on the [Tasks and magazines] tab.
- ▷ The magazine allocation for the loaded order will be loaded.

8.2.3 Merging Multiple Orders

Merging orders combines the tasks and respective allocations of the magazine allocation. So as to ensure that the allocations of the magazine allocation are not unexpectedly overwritten, attention must be paid to the sequence when loading the individual orders.

Procedure

- ▶ Create (see Chapter 8.2.1, page 57) or load (see Chapter 8.2.2, page 58) the first order which will form part of the merged order.
- ▶ Ensure that the [Comparator Tasks] display only displays tasks which will form part of the merged order.
- ▶ Click on the [Load job] button on the [Tasks and magazines] tab.
- ▷ The [Select a command script] dialog box will open.

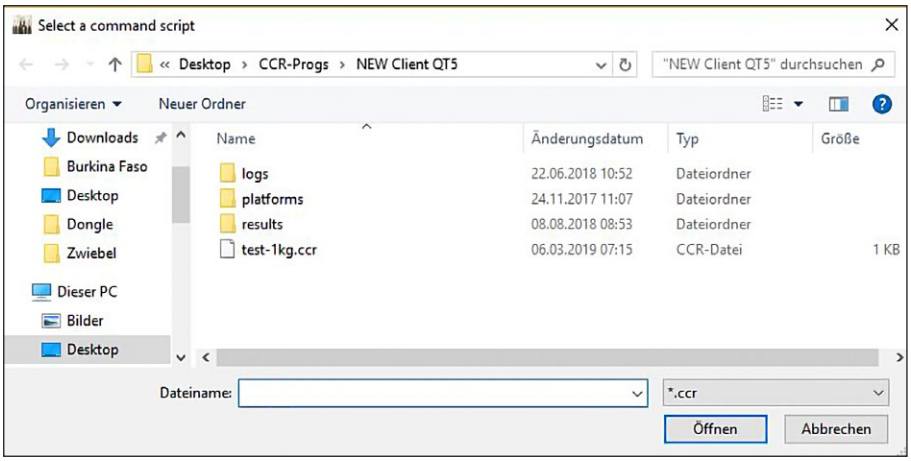
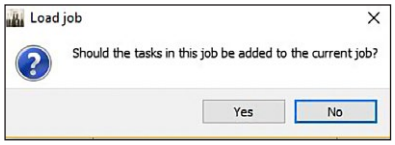


Fig. 38: [Select a command script] dialog box



- ▶ In the [Select a command script] dialog box, select the next order which will form part of the merged order, and click on the [Open] button.
- ▷ The [Job load] dialog box will open.
- ▶ To merge the selected orders: Click on [Yes].
- ▷ The name, accuracy class and start time of the current order will once again be displayed.
- ▷ The tasks for the loaded order will be inserted at the bottom of the [Comparator Tasks] display.
- ▷ If the allocations of the magazine allocation for different orders overlap: The magazine allocation for the last loaded order will be loaded.
- ▶ If necessary: Click again on the [Load job] button to insert further orders. Pay attention to the sequencing when doing so.

8.2.4 Deleting an Order

The order currently displayed on the [Tasks and magazines] tab but not yet transferred to the CCR Server can be deleted. This will prepare the CCR Client control software to create or load a new order.

Tip

- ▶ To delete an order which has already been transferred to the CCR Server but which has not yet been started: See Chapter 8.2.7, page 61.
- ▶ To delete an order which has already been transferred to the CCR Server and started: See Chapter "8.6.4 Canceling an Order Prematurely", page 85.

Procedure

- ▶ To delete the order currently displayed on the [Tasks and magazines] tab:
  - ▶ Click on the [New job] button.
  - ▷ The current order will be deleted.

8.2.5 Saving an Order

Orders which will be executed once again or edited in future should be saved. Orders can be executed without saving them beforehand.

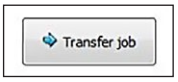
Procedure

- ▶ To save the order currently displayed on the [Tasks and magazines] tab: Click on the [Save job] button.

8.2.6 Transferring an Order to the Device

In order for the device to be able to process an order, the latter must first be transferred to the CCR Server. The CCR Server is integrated into the device, and controls all processes.

Procedure



▶ On the [Tasks and magazines] tab, click on the [Transfer job] button.
▷ On the [Tasks and magazines] tab, the tasks are transferred from the [Comparator Tasks] display to the [Tasks on server] display.

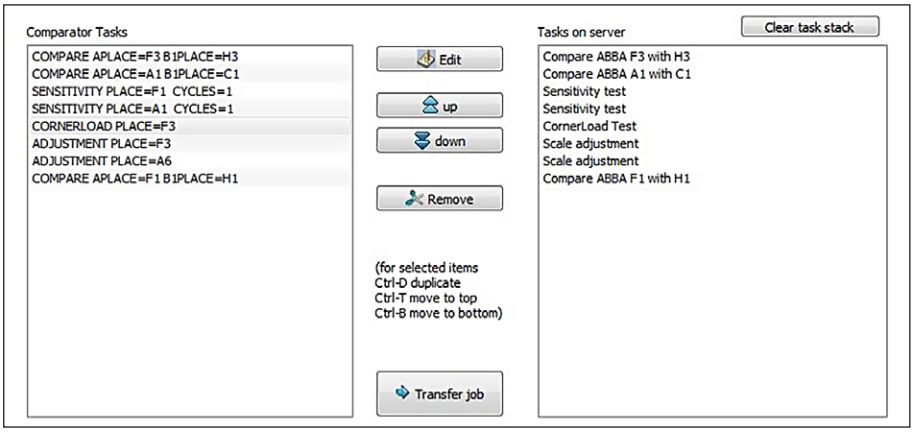


Fig. 39: [Comparator Tasks] and [Tasks on server] display on the [Tasks and magazines] tab

▷ The order can now be started.

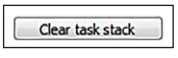
8.2.7 Canceling the Order Transfer

All of the tasks for an order which has already been transferred to the CCR Server can be deleted from the [Tasks on server] display. This will delete the order from the CCR Server.

Tip

▶ To delete an order which has not yet been transferred to the CCR Server: See Chapter 8.2.4, page 60.
▶ To delete an order which has already been transferred to the CCR Server and started: See Chapter "8.6.4 Canceling an Order Prematurely", page 85.

Procedure



▶ Click on the [Clear task stack] button on the [Tasks and magazines] tab.
▷ The order will be deleted from the CCR Server.
▷ The tasks for the deleted order are still in the [Comparator Tasks] display and can be edited.

8.2.8 Starting an Order

Once an order has been transferred to the CCR Server, the order can be started.

Requirements

- The magazines have been loaded with the desired weights.
- An order with the desired tasks has been created (see Chapter 8.2.1, page 57), loaded (see Chapter 8.2.2, page 58) or merged (see Chapter 8.2.3, page 59).
- The magazine allocation for the order precisely matches the magazine loading.
- The order has been transferred to the CCR Server (see Chapter 8.2.6, page 61).
- The device has been initialized (see Chapter 7.3, page 50).

Procedure

▶ Click on the [Run/Continue] button on the [Information] tab.
▷ The device will start to process the order tasks at the preset start time.

8.3 Editing a Magazine Allocation

A magazine allocation is required for every order. This requires entering the placement for the magazine positions so that the device can use the correct weights for the respective tasks.

Tip

Magazine allocations can be saved, loaded and merged.

▶ Create separate allocations of the magazine allocation for each test and reference magazine or for each magazine row. This will make it easier to merge the allocations of the magazine allocation (see Chapter 8.3.3, page 65).

8.3.1 Creating a Magazine Allocation

The following upper and lower weight limits apply when allocating weights to magazine positions (see Chapter "15.7 Suitable Weights", page 106).

Tip

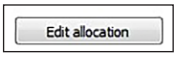
A designation is entered for each weight when allocating these to magazine positions. These designations will be used when tasks such as mass comparisons are created or measurement results are displayed.

▶ Enter descriptive designations which clarify whether this is a reference, sample, test or basic weight.
▶ In particular, identify weights which are needed in both weigh cells (for example, with an asterisk*). In this way, these weights will also be easily recognizable when they are transferred to another magazine position.

Requirements

- The portal arm is in the park position (see Chapter 8.6.3, page 85).
- The magazines are loaded with the desired weights (see Chapter 7.6.4, page 53).
- An order has been created, loaded or merged (Chapter 8.2, page 57).

Procedure



▶ On the [Tasks and magazines] tab, click on the [Edit allocation] button.
▷ The [magazine allocation] dialog box will open.

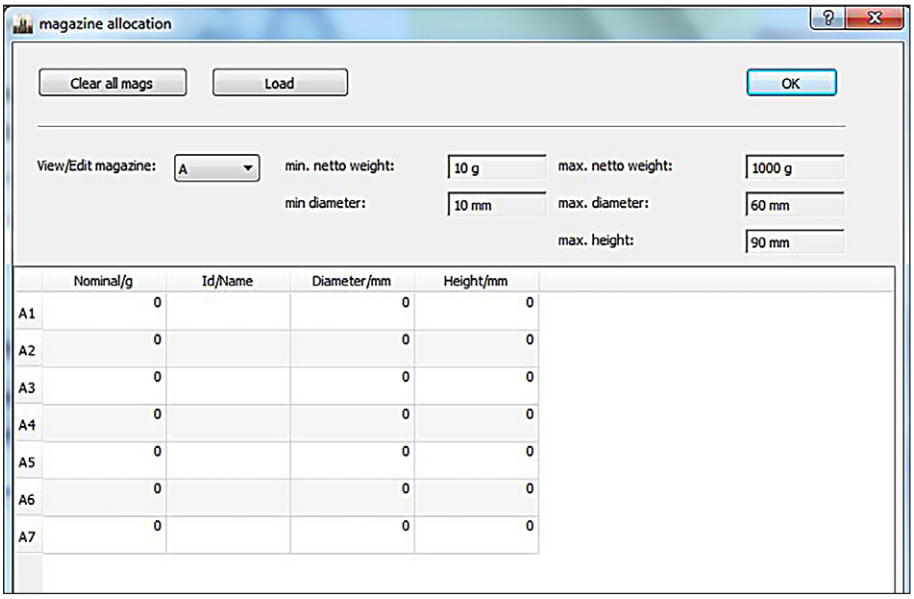
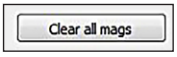


Fig. 40: [magazine allocation] dialog box



▶ In the [magazine allocation] dialog box, click on the [Clear all mags.] button.
▶ In the [View/Edit magazine] selection box, select the magazine row for which the placement will be entered.
  ▷ The input area will display a table of all of the magazine positions for the selected magazine.
  ▷ In addition to the [View/Edit magazine] selection box, the upper and lower limits for the weights permitted in the selected magazine will appear.
▶ **NOTICE** If a diameter and height for the weight is **not** entered: Weights may collide during the automated generation of weight combinations! In the input area for each magazine position to be loaded, enter the following:
  ▶ In the [Nominal/g] column, enter the nominal mass of the weight in grams.
  ▶ In the [Id/Name] column, enter a designation for the weight. This can be a maximum of 20 characters in length and must **not** include an equal sign.
  ▶ In the [Diameter/mm] column, enter the diameter of the weight in millimeters.
  ▶ In the [Height/mm] column, enter the height of the weight in millimeters.

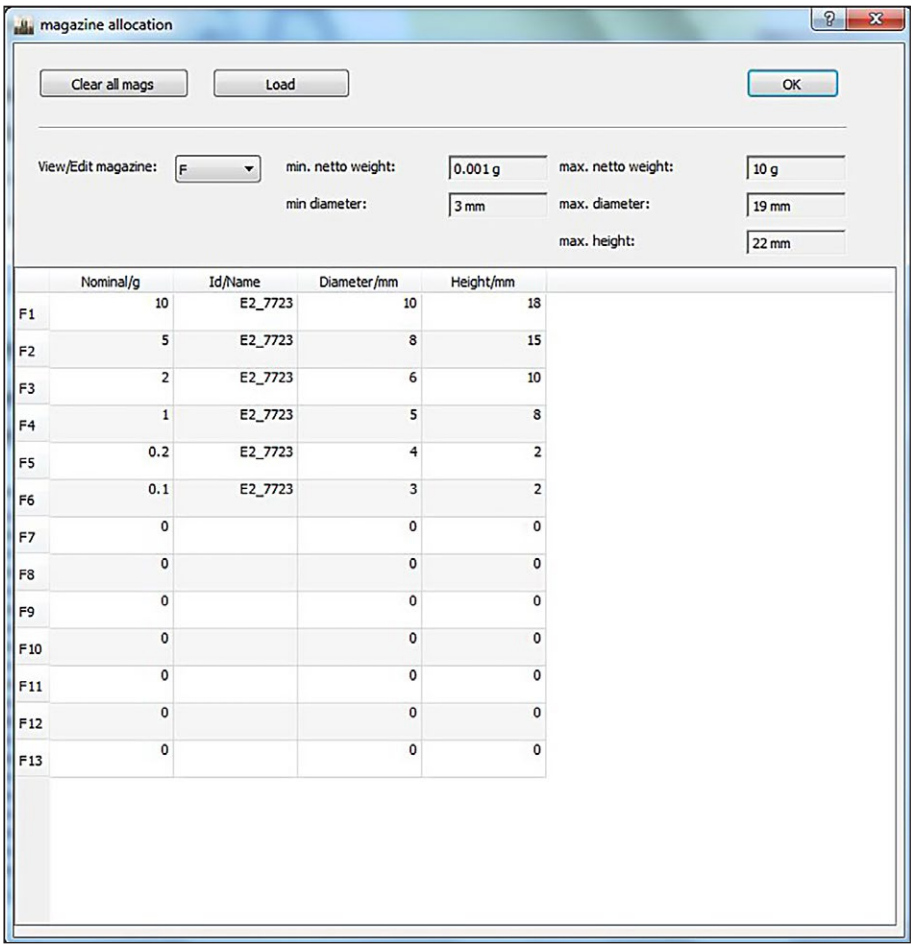


Fig. 41: [magazine allocation] dialog box with weights entered

8.3.2 Loading an Individual Magazine Allocation

Loading a magazine allocation replaces the currently open magazine allocation with the loaded magazine allocation. The currently open magazine allocation will therefore be deleted without prompting.

Procedure

▶ In the [magazine allocation] dialog box, click on the [Clear all mags.] button.

▶ In the [magazine allocation] dialog box, click on the [Load] button.
▷ The [Select file from which the magazine usage should be loaded] dialog box will open.

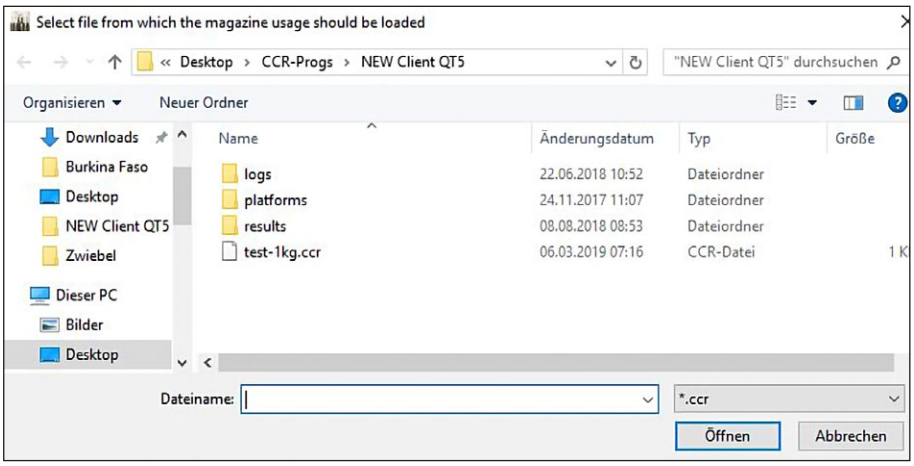


Fig. 42: [Select file from which the magazine usage should be loaded] dialog box

- ▶ In the [Select file from which the magazine usage should be loaded] dialog box, select the order for which the magazine allocation should be loaded, and click on the [Open] button.
- ▷ The magazine allocation for the loaded order will be loaded.

8.3.3 Merging Multiple Allocations of the Magazine Allocation

Merging magazine allocation assignments combines the respective allocations. So as to ensure that the allocations of the magazine allocation are not unexpectedly overwritten, attention must be paid to the sequence when loading the individual allocations.

Procedure

- ▶ Create (see Chapter 8.3.1, page 62) or load (see Chapter 8.3.2, page 64) the first allocation which will form part of the merged allocation.
- ▶ Ensure that all of the magazine rows in the input areas only display allocations which will form part of the merged allocation.
- ▶ In the [magazine allocation] dialog box, click on the [Load] button.

- ▷ The [Select file from which the magazine usage should be loaded] dialog box will open.

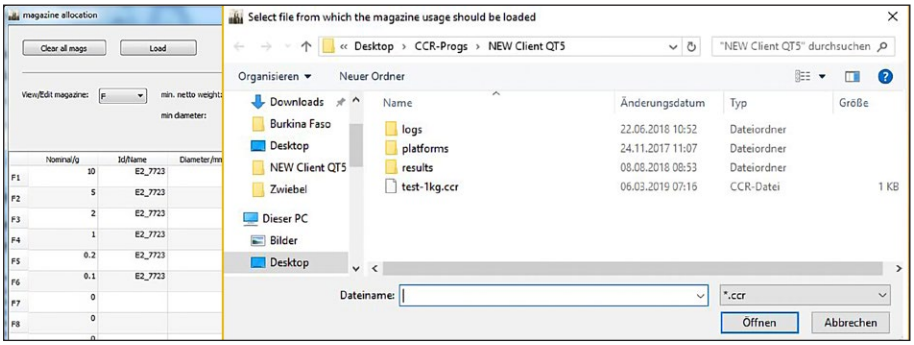


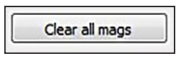
Fig. 43: [Select file from which the magazine usage should be loaded] dialog box

- ▶ In the [Select file from which the magazine usage should be loaded] dialog box, select the next order the magazine allocation for which will form part of the merged allocation, and click on the [Open] button.

8.3.4 Deleting a Magazine Allocation

Only unsaved magazine allocations can be deleted.

Procedure

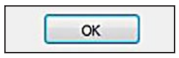


- ▶ To delete incorrectly entered weights:
  - ▶ In the input area of the [magazine allocation] dialog box, correct or delete the incorrect entry.
- ▶ To delete all entered weights:
  - ▶ In the [magazine allocation] dialog box, click on the [Clear all mags.] button.

8.3.5 Saving a Magazine Allocation

Magazine allocations must be saved before the associated order can be started.

Procedure



- ▶ In the [magazine allocation] dialog box, click on the [OK] button.
- ▷ The magazine allocation will be saved.
- ▷ The [magazine allocation] dialog box will close.

8.4 Editing a Task

Tasks form the component parts of an order. The following tasks are available:

Name		Purpose
Center task		Centering a weight of between 10 g and 1000 g in the 1000 gram weigh cell
Transfer task		Transferring a weight from the 10 gram side to the 1000 gram side or vice-versa
Compare task		Mass comparison of two weights
Service task	Sensitivity test	Sensitivity test for a weigh cell
	Corner load test	Corner load test for a weigh cell
	Pause task	Delay before the next task
	Adjustment	Calibration of a weigh cell

Tasks consist of sub-tasks such as moving the portal arm, opening or closing weigh cells or performing a weighing operation as part of a weighing cycle. Sub-tasks **cannot** be displayed or modified here.

Typically, an order contains tasks in the following sequence:

1. Task [Center task]
   All of the weights to be weighed on the 1000 gram weigh cell will be centered.
2. [Sensitivity test] service task
   The sensitivity of the 10 gram weigh cell will be verified using an appropriate reference weight.
3. [Adjustment] service task
   The 10 gram weigh cell will be calibrated using an appropriate reference weight.

4. [Sensitivity test] service task
   The sensitivity of the 10 gram weigh cell will be once again verified using an appropriate reference weight.
5. If necessary: [CornerLoad Test] service task
   The corner load error for the 10 gram weigh cell will be verified using an appropriate reference weight.
6. [Transfer task] task
   The reference weight which will be used for the sensitivity tests and calibrations for both weigh cells will be transferred from the 10 gram side to the 1000 gram side of the device.
7. [Sensitivity test] service task
   The sensitivity of the 1000 gram weigh cell will be verified using an appropriate reference weight and an additional basic weight.
8. [Adjustment] service task
   The 1000 gram weigh cell will be calibrated using an appropriate reference weight and an additional basic weight.
9. [Sensitivity test] service task
   The sensitivity of the 1000 gram weigh cell will be verified once again using an appropriate reference weight and an additional basic weight.
10. [Compare task] task
    Mass comparisons of reference and sample weights and/or combinations of weights are performed in accordance with their specific comparison methods, for example ABBA.

    The number of centering, preliminary and weighing cycles, the wait and integration times (the length of the weighing process) can be determined for each mass comparison.
11. If necessary: Repetitions of the mass comparisons
12. [Transfer task] task
    The reference weight which was used for the sensitivity tests and calibrations for both weigh cells will be transferred back from the 10 gram side to the 1000 gram reference magazine.

Tip

Climatic or temperature differences between magazine positions and weigh cells can affect the measurement results.

- ▶ If necessary: [Pause task]-type tasks can be inserted.
  - ▶ A delay can be set before the next task.
  - ▶ The next task can be set to run at a specific time, when measurement conditions are optimal.
- ▷ Weights can acclimatize.
- ▷ Measurement errors are minimized.

8.4.1 Inserting a [Center task] Task into an Order

The [Center task] task ensures that a weight is precisely centered on the center of gravity of the weighing axis when the measurement is taken. This prevents corner load errors.

Only the 1000 gram weigh cell is equipped with a Centermatic™. For this reason, [Center task]-type tasks can only be created for weights weighed on the 1000 gram weigh cell.

Tip

Depending on the profile selected, automatic centering cycles are performed independently of the [Center task] task before each measurement:
– Profile E1: Centering cycles are performed automatically.
– Profile M: Centering cycles are **not** performed.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add center task] button.
▷ The [Center task] dialog box will open.

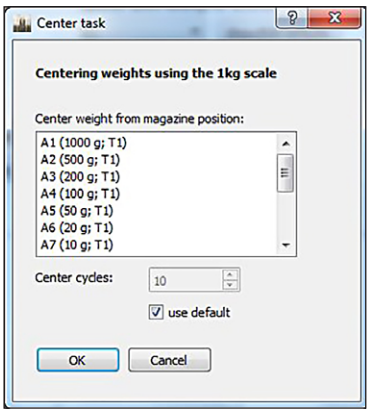


Fig. 44: [Center task] dialog box with weights which can be centered

▶ In the [Centering weight from magazine position] display, select the weights to be centered.
▶ If the number of centering cycles should be automatically selected according to the accuracy class of the order:
  ▶ Tick the [use default] checkbox.
▶ If the number of centering cycles should be individually selected:
  ▶ Untick the [use default] checkbox.
  ▶ Set the desired number of centering cycles in the [Center cycles] selection box.
▶ Click on the [OK] button.
▷ The [Center task] dialog box will close.
▷ On the [Tasks and magazines] tab, the [CENTERING PLACE=...] task will be added to the end of the list in the [Comparator Tasks] display.

8.4.2 Inserting a [Transfer task] Task into an Order

Only weights from a magazine on the 10 gram side can be weighed in the 10 gram weigh cell; only weights from a magazine on the 1000 gram side can be weighed in the 1000 gram weigh cell. If a weight such as a reference weight for sensitivity tests or for calibration must be used in both weigh cells consecutively: The weight must be transferred from one side to the other. The [Transfer task] task must be inserted for this purpose.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add transfer task] button.
▷ The [Transfer task] dialog box will open.

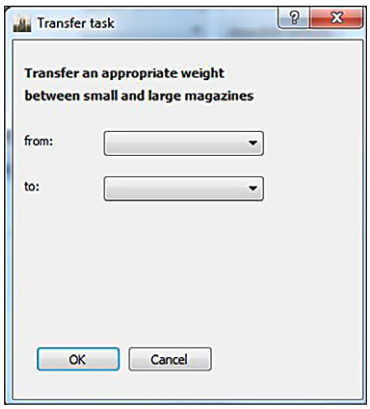


Fig. 45: [Transfer task] dialog box

▶ In the [from] selection box, select the allocated magazine position from which the weight will be taken.
▶ In the [to] selection box, select the empty magazine position to which the weight will be transferred.
▶ Click on the [OK] button.
▷ The [Transfer task] dialog box will close.
▷ On the [Tasks and magazines] tab, the [TRANSFER FROM=...TO=..] task will be added to the end of the list in the [Comparator Tasks] display.

Tip

After the transfer, the weight will no longer be in the magazine position indicated in the [magazine allocation] dialog box.
▶ In the subsequent tasks which will use this weight, enter the new magazine position [TO=...].

8.4.3 Inserting a [Compare task] Task into an Order

The [Compare task] task performs a mass comparison of 2 weights or of a combination of weights.

Mass comparisons can be performed either consecutively in the same weigh cell or simultaneously in both weigh cells. Simultaneous measurements mean that the [Compare task] task is performed in parallel without restrictions in the 10 gram weigh cell and in the 1000 gram weigh cell. This can be advantageous in terms of time.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add compare task] button.
▷ The [Compare task] dialog box will open.

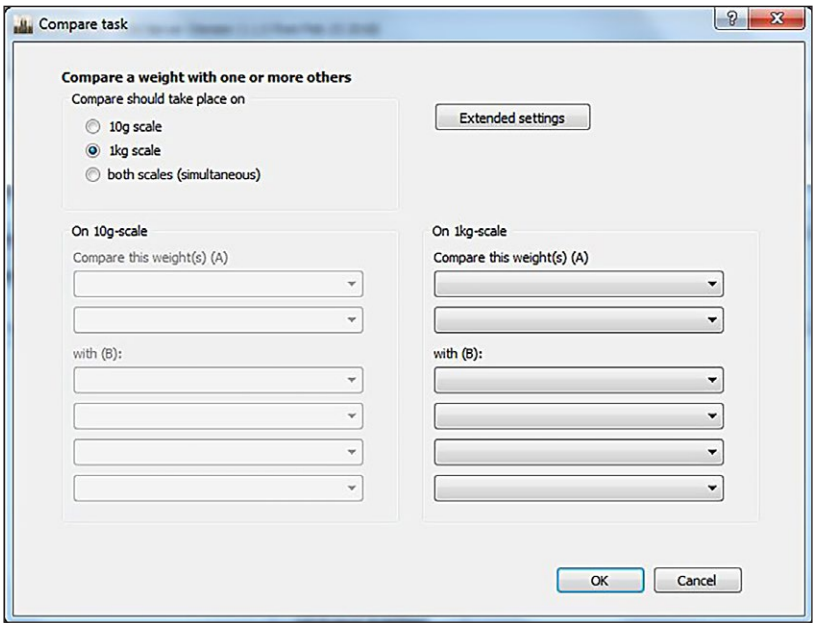


Fig. 46: [Compare task] dialog box

▶ If the mass comparison is to be performed consecutively in the 10 gram weigh cell: Enable the [10g scale] option.
▷ The [On 10g-scale] area will be enabled.
▶ If the mass comparison is to be performed consecutively in the 1000 gram weigh cell: Enable the [1kg scale] option.
▷ The [On 1kg-scale] area will be enabled.
▶ If the mass comparison is to be performed simultaneously in both weigh cells: Enable the [both scales] option.
▷ The [On 10g-scale] and [On 1kg-scale] areas will be enabled.
▶ In the [Compare this weight(s) (A)] selection box for the active area, select the reference magazine positions in which the reference weights will be used in the mass comparison.
▶ In the [with (B)] selection box, select the sample magazine positions in which the sample weights will be compared with the reference weights.

▷ The designations of the magazine positions and weights will be displayed as follows when the same weigh cell is used.

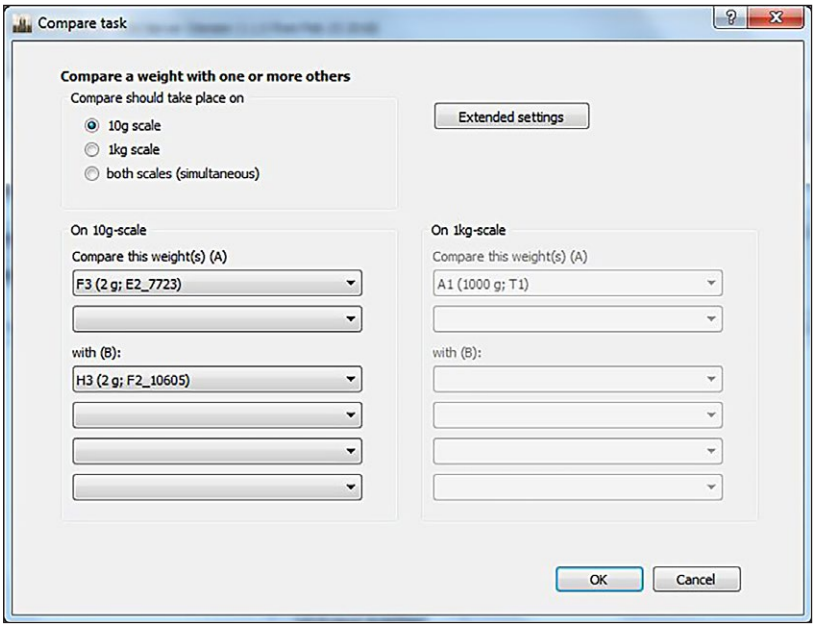


Fig. 47: [Compare task] dialog box with selected weights and mass comparison in the same weigh cell

▷ The designations of the magazine positions and weights will be displayed as follows when both weigh cells are used.

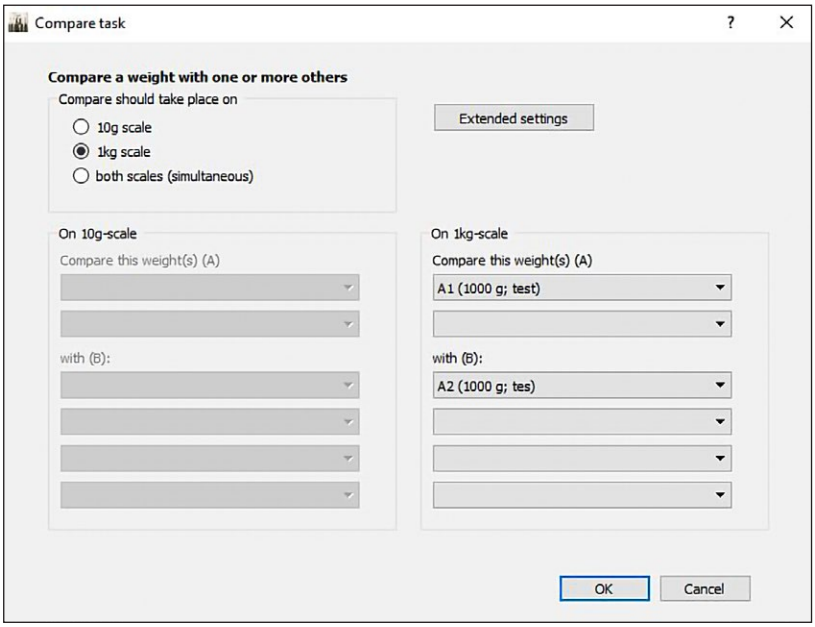


Fig. 48: [Compare task] dialog box with selected weights and mass comparison in different weigh cells

- ▶ If necessary: Checking or modifying default settings for a mass comparison (see Chapter 8.4.4, page 72).
- ▶ Click on the [OK] button.
- ▷ The [Compare task] dialog box will close.
- ▷ On the [Tasks and magazines] tab, the following task will be inserted at the end of the list in the [Comparator Tasks] display:
  - ▷ If the same weigh cell is used: [COMPARE A1PLACE=... A2PLACE=... B1PLACE=... B2PLACE=... B3PLACE=... B4PLACE=...]
  - ▷ If both weigh cells are used: [COMPAREX SA1PLACE=... SA2PLACE=... SB1PLACE=... SB2PLACE=... SB3PLACE=... SB4PLACE=...LA1PLACE=... LA2PLACE=... LB1PLACE=... LB2PLACE=... LB3PLACE=... LB4PLACE=...].

8.4.4 Modifying the Default Settings for a Mass Comparison

Default settings are used in mass comparisons which are summarized in a profile. The profiles were created according to your specifications by Sartorius Service during the installation of the device.

Each profile contains the following default settings:

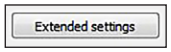
Name	Meaning
Comparison method	Weighing cycle repeat pattern', e.g. ABBA, ABA BAB, ...
Cycles	Number of weighing cycles
Delay	Delay before the measurement process Can be set separately for both weigh cells.
Integration time	Duration of the measurement process Can be set separately for both weigh cells.
Centering cycles	Number of centering cycles Only available in the 1000 gram weigh cell.
Preliminary cycles	Number of preliminary cycles Can be set separately for both weigh cells.

Tip

The standard default settings for the mass comparison are summarized in the [default] profile and change based on the selected order accuracy class.

- ▶ Check the standard default settings for the mass comparison.
- ▶ If necessary: Change the standard default settings for the mass comparison.

Procedure



▶ In the [Compare task] dialog box, click on the [Extended settings] button.
▷ The [Compare task – extended settings] dialog box will open.

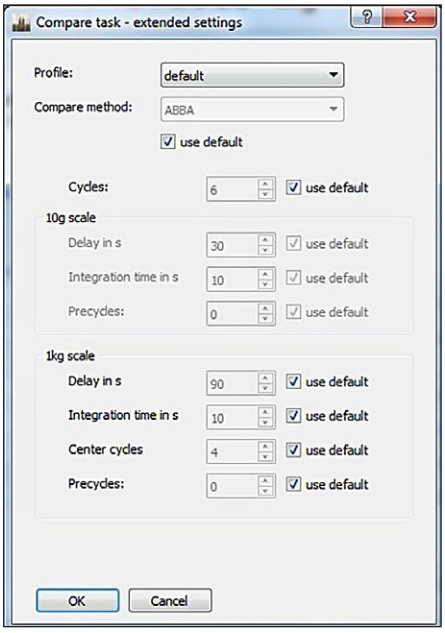


Fig. 49: [Compare task – extended settings] dialog box

▶ If the default settings are to be automatically selected based on the order accuracy class:
  ▶ Tick the corresponding [use default] checkbox.
▶ If the default settings are to be individually adjusted:
  ▶ Untick the corresponding [use default] checkbox.
  ▶ Set the desired default settings in the [Compare method], [Cycles], [Delay time], [Integration time], [Center cycles] and [Precycles] selection boxes.
▶ Click on the [OK] button.
▷ The [Compare task – extended settings] dialog box will close.
▷ Changes to the standard default settings will only apply to the mass comparison shown in the [Compare task] dialog box.

8.4.5 Inserting a [Sensitivity test] Service Task into an Order

The [Sensitivity test] service task tests the sensitivity of a weigh cell; here, the same test weight is weighed several times consecutively. The standard deviation determined serves as a measure for the accuracy of the weigh cell.

Tip

It is recommended that a 20 gram weight be used to perform sensitivity tests of the 1000 gram weigh cell.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add service task] button.
▷ The [Add task] dialog box will open.

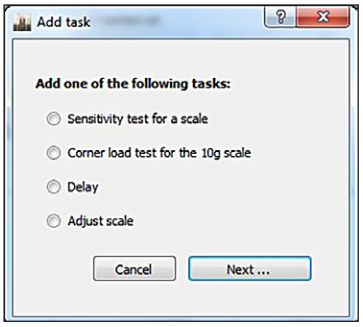


Fig. 50: [Add task] dialog box

▶ In the [Add task] dialog box, enable the [Sensitivity test for a scale] option and click on the [Next...] button.
▷ The [Defining sensitivity test] dialog box will open.

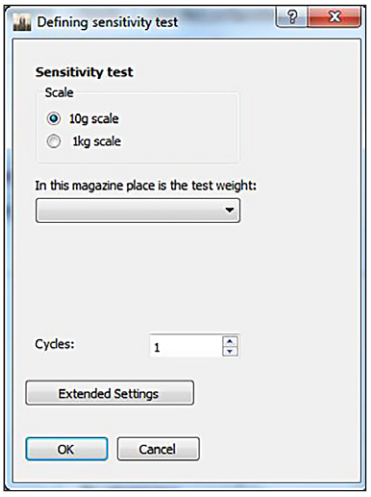


Fig. 51: [Defining sensitivity test] dialog box

▶ Enable the option for the desired weigh cell.
▶ In the [In this magazine place is the test weight] selection box, set the magazine position for the test weight to be used.
▶ If a sensitivity test is to be performed in the 1000 gram weigh cell: In the [Basic weight] selection box, set the magazine position for the basic weight to be used.
▶ In the [Cycles] selection box, set the number of measurement processes.
▶ If necessary: Check or modify the default settings for the [Sensitivity test] service task (see Chapter 8.4.6, page 75).
▶ Click on the [OK] button.
▷ The [Compare task – extended settings] dialog box will close.
▷ On the [Tasks and magazines] tab, the [SENSITIVITY PLACE=... CYCLES=...] task will be added to the end of the list in the [Comparator Tasks] display.

- ▶ Enter the mass of the test weights used in the weigh cell menu (see "Mass Comparators: MCM Model" Operating Instructions):
  - ▶ Tap on [Menu] on the control panel of the weigh cell to be tested.
  - ▶ Tap on [Configuring the calibration / adjustment].
  - ▶ Under [Define external test weights], enter the mass of the test weights to be used.
  - ▷ The mass of the test weight must be entered on the control panel of the 10 gram weigh cell.
  - ▷ The total mass (test weight plus basic weight) must be entered on the control panel of the 1000 gram weigh cell.
  - ▶ Do **not** enter anything in the [weight ID] text box.
  - ▶ Save the settings.

8.4.6 Modifying the Default Settings for the [Sensitivity test] Service Task

Default settings are used in the [Sensitivity test] service task which are summarized in a profile.

Each profile contains the following default settings – separately for the two weigh cells – :

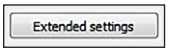
Name	Meaning
Delay	Delay before the measurement process
Integration time	Duration of the measurement process
Preliminary cycles	Number of preliminary cycles

Tip

The standard default settings for the [Sensitivity test] service task are summarized in the [default] profile and change based on the selected order accuracy class.

- ▶ Check the standard default settings for the [Sensitivity test] service task.
- ▶ If necessary: Modify the standard default settings for the [Sensitivity test] service task.

Procedure



▶ In the [Defining sensitivity test] dialog box, click on the [Extended settings] button.
▷ The [Compare task – extended settings] dialog box will open.

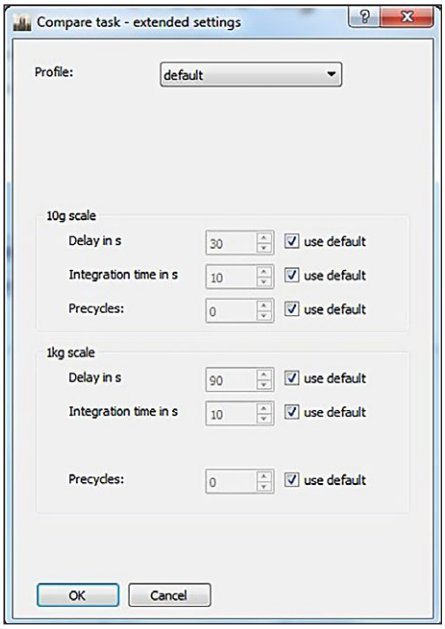


Fig. 52: [Compare task – extended settings] dialog box

▶ If the default settings are to be automatically selected based on the order accuracy class:
  ▶ Tick the corresponding [use default] checkbox.
▶ If the default settings are to be individually adjusted:
  ▶ Untick the corresponding [use default] checkbox.
  ▶ In the [Delay time], [Integration time] and [Precycles] selection boxes, set the desired default settings.
▶ Click on the [OK] button.
▷ The [Compare task – extended settings] dialog box will close.
▷ Changes to the standard default settings will only apply to the [Sensitivity test] service task currently displayed in the [Defining sensitivity test] dialog box.

8.4.7 Inserting a [CornerLoad Test] Service Task into an Order

The [CornerLoad Test] service task checks the 10 gram weigh cell, by weighing the same test weight several times consecutively in different positions on the edge and in the center of the weighing pan. The standard deviation determined serves as a measure for the corner load error of the weigh cell.

The [CornerLoad Test] service task can only be set for the 10 gram weigh cell. The 1000 gram weigh cell is fitted with a Centermatic™, so corner load errors cannot occur.

Tip

It is recommended that a 2 gram weight be used to perform corner load tests of the 10 gram weigh cell.

Notice

1000 gram weigh cell destroyed because of manually eccentrically positioned weights

Placing weights manually outside of the weighing axis on the 1000 gram weigh cell (manual corner load testing) will destroy the 1000 gram weigh cell.

▶ Never position weights by hand in the 1000 gram weigh cell.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add service task] button.

▷ The [Add task] dialog box will open.

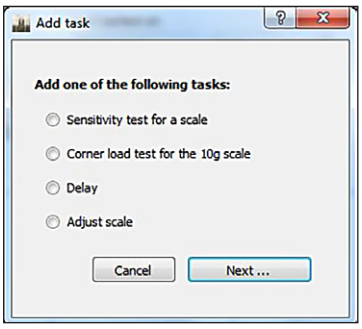


Fig. 53: [Add task] dialog box

▶ In the [Add task] dialog box, enable the [Corner load test for the 10g scale] option and click on the [Next...] button.

▷ The [Defining the corner load test] dialog box will open.

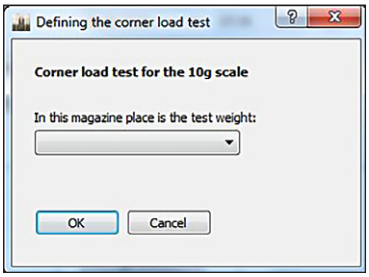


Fig. 54: [Defining the corner load test] dialog box

▶ In the [In this magazine place is the test weight] display, set the magazine position on which the test weight has been placed.

▶ Click on the [OK] button.

▷ The [Defining the corner load test] dialog box will close.

▷ On the [Tasks and magazines] tab, the [CORNERLOADTEST PLACE=...] task will be added to the end of the list in the [Comparator Tasks] display.

8.4.8 Inserting a [Pause task] Service Task into an Order

The [Pause test] service task allows a delay to be inserted before the next task or a start time to be set for the next task.

This delay is additional to the delays which are set in the [Compare task] tasks.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add service task] button.
▷ The [Add task] dialog box will open.

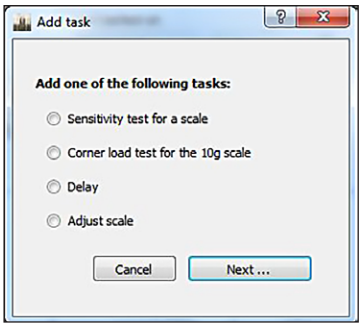


Fig. 55: [Add task] dialog box

▶ In the [Add task] dialog box, enable the [Delay] option and click on the [Next...] button.
▷ The [Pause task] dialog box will open.

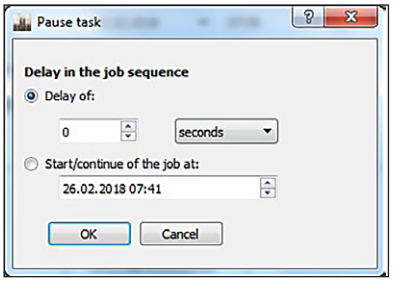


Fig. 56: [Pause task] dialog box

▶ To set a delay before the next task:
  ▶ Enable the [Delay of] option.
  ▶ Enter the desired delay in seconds, minutes or hours.
▶ To set a start time for the next task:
  ▶ Enable the [Start/continue of the job at] option.
  ▶ Set the desired start time.
▶ Click on the [OK] button.
▷ The [Pause task] dialog box will close.
▷ On the [Tasks and magazines] tab, the [PAUSE=...] task will be added to the end of the list in the [Comparator Tasks] display.

8.4.9 Inserting an [Adjustment] Service Task into an Order

The [Adjustment] service task allows a weigh cell to be calibrated using a reference weight.

Procedure

▶ On the [Tasks and magazines] tab, click on the [Add service task] button.
▷ The [Add task] dialog box will open.

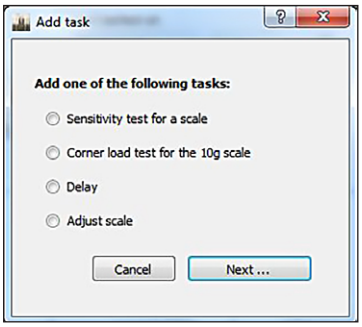


Fig. 57: [Add task] dialog box

▶ In the [Add task] dialog box, enable the [Sensitivity test for a scale] option and click on the [Next...] button.
▷ The [Defining sensitivity test] dialog box will open.

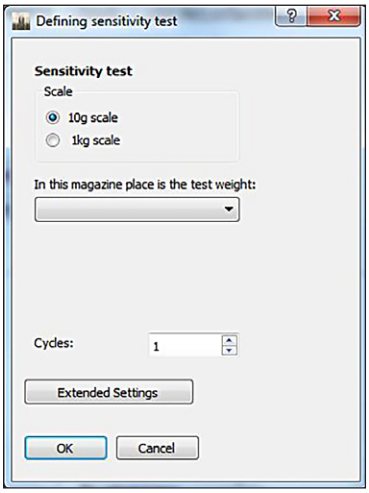


Fig. 58: [Defining sensitivity test] dialog box

▶ Enable the option for the desired weigh cell.
▶ In the [In this magazine place is the test weight] selection box, set the magazine position for the test weight to be used.
▶ If a sensitivity test is to be performed in the 1000 gram weigh cell: In the [Basic weight] selection box, set the magazine position for the basic weight to be used.
▶ In the [Cycles] selection box, set the number of measurement processes.
▶ If necessary: Check or modify the default settings for the [Sensitivity test] service task (see Chapter 8.4.6, page 75).
▶ Click on the [OK] button.
▷ The [Compare task – extended settings] dialog box will close.

▷ On the [Tasks and magazines] tab, the [SENSITIVITY PLACE=... CYCLES=...] task will be added to the end of the list in the [Comparator Tasks] display.

▶ Enter the mass of the test weights to be used in the menu of the weigh cell (see "Mass Comparators: MCM Model" Operating Instructions):
  ▶ Tap on [Menu] on the control panel of the weigh cell to be tested.
  ▶ Tap on [Configuring the calibration / adjustment].
  ▶ Under [Define external test weights], enter the mass of the test weights to be used.
  ▷ The mass of the test weight must be entered on the control panel of the 10 gram weigh cell.
  ▷ The total mass (test weight plus basic weight) must be entered on the control panel of the 1000 gram weigh cell.
  ▶ Do **not** enter anything in the [weight ID] text box.
  ▶ Save the settings.

8.4.10 Checking All of the Tasks

All of the tasks inserted into an order can be seen in the [Comparator Tasks] display, in the order in which they were inserted.

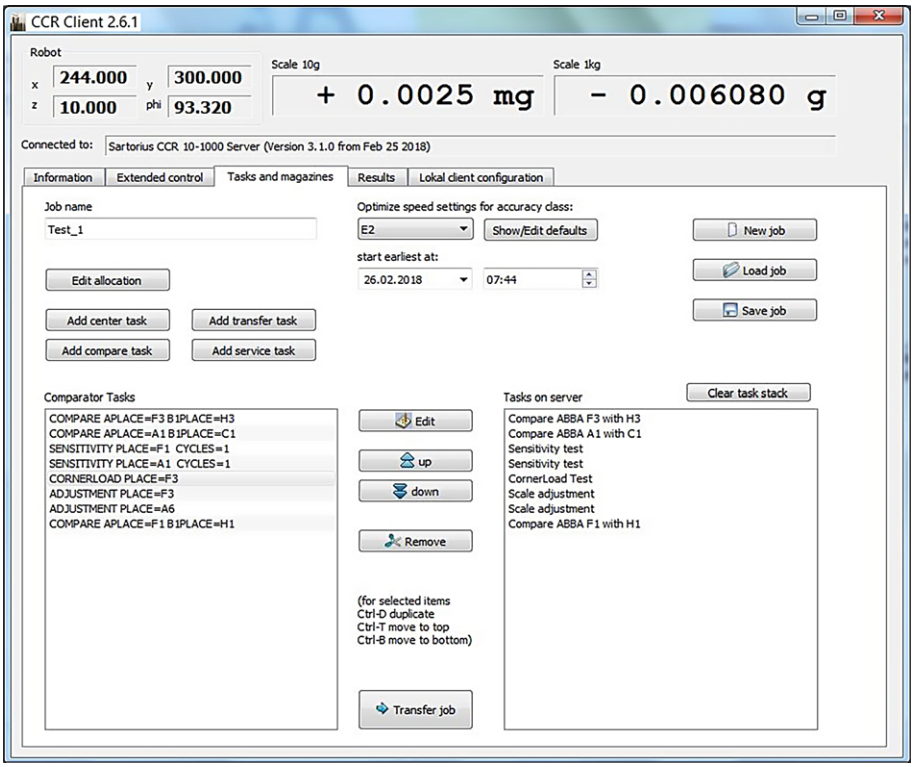


Fig. 59: [Comparator Tasks] display on the [Tasks and magazines] tab

Procedure

▶ On the [Tasks and magazines] tab, check the magazine positions and weights set in the [Comparator Tasks] display – particularly for tasks which make use of a previously transferred weight.
  ▶ If necessary: Modify the set magazine positions (see Chapter 8.4.11, page 81).

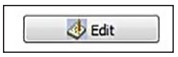
▶ On the [Tasks and magazines] tab, check the task sequence in the [Comparator Tasks] display.
  ▶ If necessary: Modify the task sequence (see Chapter 8.4.13, page 81).

▶ On the [Tasks and magazines] tab, check whether superfluous tasks have been inserted in the [Comparator Tasks] display.
  ▶ If necessary: Delete superfluous tasks (see Chapter 8.4.14, page 82).

8.4.11 Modifying a Task

An existing task can be reopened. The assigned magazine positions and weights can be modified.

Procedure



- ▶ In the [Comparator Tasks] display, select the task to be modified.
- ▶ Click on the [Edit] button.
- ▷ The task editing dialog box will open.

8.4.12 Duplicating Tasks

If tasks with the same default settings are to be repeated: One or more tasks can be duplicated in the [Comparator Tasks] display.

Procedure

- ▶ In the [Comparator Tasks] display, select the task and/or multiple tasks to be duplicated.
- ▶ Press the [Ctrl] and [D] keys.
- ▷ In the [Comparator Tasks] display, the duplicated tasks will be inserted underneath the selected tasks.

8.4.13 Modifying the Task Sequence

One or more tasks can be moved within the [Comparator Tasks] display.

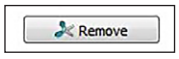
Procedure

- ▶ To move tasks step-by-step:
  - ▶ In the [Comparator Tasks] display, select the task and/or multiple tasks to be moved.
  - ▶ To move the selected tasks one step up: Click on the [up] button.
  - ▶ To move the selected tasks one step down: Click on the [down] button.
- ▶ To move tasks to the start of the order:
  - ▶ In the [Comparator Tasks] display, select the task and/or multiple tasks to be moved to the start.
  - ▶ Press the [Ctrl] and [T] keys.
- ▶ To move tasks to the end of the order:
  - ▶ In the [Comparator Tasks] display, select the task and/or multiple tasks to be moved to the end.
  - ▶ Press the [Ctrl] and [B] keys.

8.4.14 Deleting a Task

Tasks in an order which has not yet been started can be deleted from the [Comparator Tasks] display. This means that these tasks will be deleted from the current order.

Procedure



▶ In the [Comparator Tasks] display, select one or more tasks to be deleted.
▶ Click on the [Remove] button.
▷ The selected tasks will be deleted from the current order.

8.5 Managing Order Results

The results of all jobs are saved on an ongoing basis in a proprietary file format on the CCR Server. CSV files are also saved, which can be opened and edited in spreadsheet software such as Microsoft Excel.

Results can be summarized in an overview form per order, or displayed as detailed individual results for individual tasks.

▶ Open the [Results] tab.
▷ The results for all tasks in the current order will be displayed.

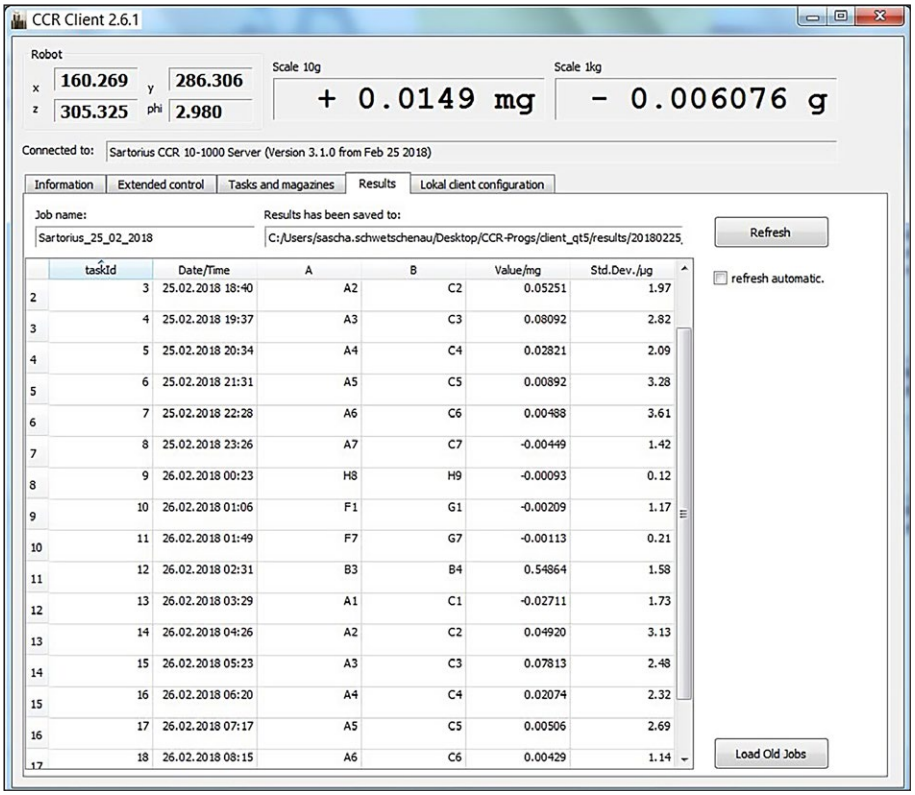
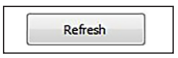
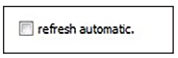


Fig. 60: [Results] tab with measurement results



- To manually call up results for an ongoing order while the order is being processed:
  - Click on the [Refresh] button.
  - The results of all completed tasks are transferred from the CCR Server to the CCR Client and saved locally in the specified folder.



- To automatically update the display of the results for the ongoing order:
  - Tick the [refresh automatic] checkbox.
  - The results will be automatically transferred from the CCR Server to the CCR Client when a task has been completed.

- To display the results of completed orders:
  - Click on the [Load Old Jobs] button.
  - Select the desired directory.
  - Double-click on the file with the CCR extension.
- To view the results of completed orders using spreadsheet software such as Microsoft Excel, OpenOffice Calc, GNOME Gnumeric or Apple Numbers:
  - With Windows Explorer, open the directory listed in the [Saving results in this directory] text box on the [Local client configuration] tab.
  - If the [Save results in subdirectories] checkbox is ticked on the [Local client configuration] tab: Open the desired subdirectory.
  - Double-click on the file with the CSV extension.
  - The results will open in the installed spreadsheet software.
  - The results can be edited and displayed.
- To display detailed results for individual tasks:
  - On the [Results] tab, double-click on the desired row.
  - The [Display results] dialog box will open.

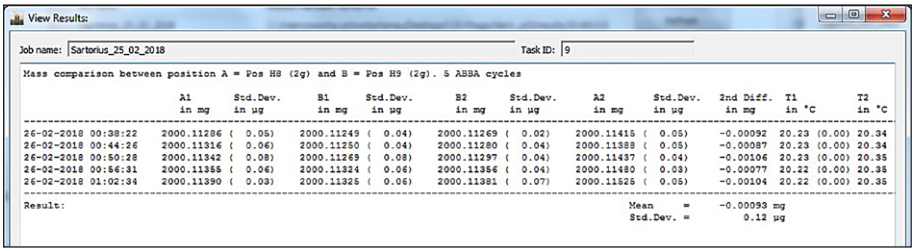


Fig. 61: [Display results] dialog box with measurement results

8.6 Intervening in Ongoing Operations

The [Information] tab will display the following while an order is being processed:

- The [current main task] display shows the task currently being performed.
- The [Section in main task] display shows the work step currently being performed.
- The [current sub task] display shows the sub-task currently being performed.
- The [Main task stack] display shows the next tasks.
- The [Emergency Stop] and [Pause] buttons are enabled.

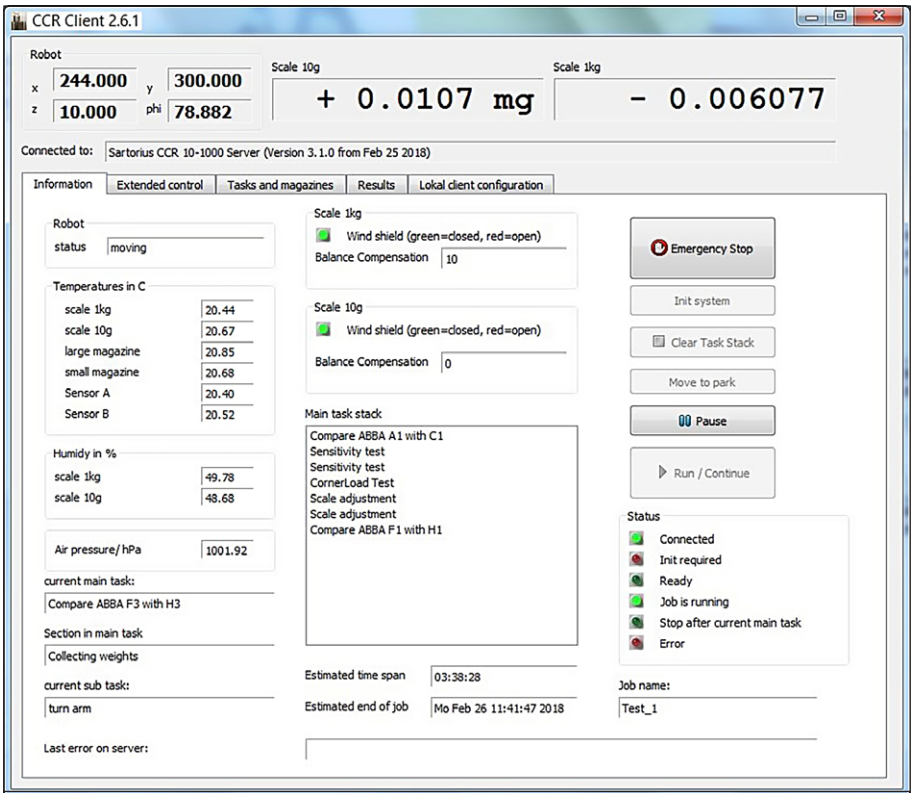


Fig. 62: [Emergency Stop] and [Pause] buttons on the [Information] tab

8.6.1 Interrupting Order Processing

The execution of an order can be stopped, for example to start Sleep mode and move the portal arm to the park position. In Sleep mode, doors on the outer the draft shield can be opened without triggering a fault.

NOTICE

Accidental termination because of safety shutdown

If the [Emergency Stop] button is clicked or the emergency stop switch on the device has been pressed: All portal arm movements stop – possibly in the middle of a weighing operation. There may be weights on the grippers or in the weigh cells. The weights must be manually returned to their magazine positions.

- ▶ Only in the event of danger: Press the [Emergency Stop] button or the emergency stop switch on the device. Open the outer draft shield doors.
- ▶ To stop the device in the CCR Client, click on the [Pause] button.

Tip

To load a sample magazine: It is **not** necessary to stop the ongoing operation.

- ▶ Open the sliding door of the desired sample magazine.
- ▶ Position the weights for the next order in the sample magazine (see Chapter 7.6.5, page 54).
- ▶ If all of the weights are again in their magazine positions once the current order has been completed: Rotate the sample magazine (see Chapter 7.2, page 49).
- ▶ Start the new order (see Chapter 8.2.6, page 61).
- ▶ Remove the weights from the previous order from the sample magazine (see Chapter 7.6.7, page 55).

Procedure

▶ On the [Information] tab, click on the [Pause] button.
▷ The task currently being performed will continue until it ends.
▷ The measurement results for this task can be displayed (see Chapter 8.5, page 82).
▷ All of the weights will be transferred back to their magazine positions.
▷ The portal arm moves to the park position.
▷ The [Run/Continue] button is enabled.

8.6.2 Continuing Processing the Order

After Sleep mode has been enabled, the processing of the current order can be continued without losing the measurement results.

Procedure

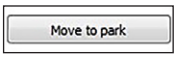
▶ Click on the [Run/Continue] button on the [Information] tab.
▷ The tasks displayed uppermost in the [Main task stack] display will be performed.

8.6.3 Bringing the Portal Arm to the Park Position

The portal arm can only been moved to the park position in Sleep mode. The button is grayed out during measurement operations.

If the portal arm is in the park position: Outer draft shield doors can be opened without triggering a fault.

Procedure



▶ On the [Information] tab, click on the [Move to park] button.

8.6.4 Canceling an Order Prematurely

Tasks which have not been performed for an order which has been transferred and started on the server can be deleted.

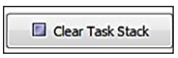
Tip

▶ To delete an order which has already been transferred to the CCR Server but which has not yet been started: See Chapter 8.2.7, page 61.
▶ To delete an order which has not yet been transferred to the CCR Server: See Chapter 8.2.4, page 60.

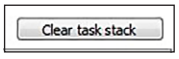
Procedure

▶ To delete all tasks which have not yet been performed in a previously started order from the [Tasks on server] display:

▶ On the [Information] tab, click on the [Pause] button.
▷ The task currently being performed will be ended.
▷ All of the weights will be transferred to their magazine positions.
▷ The portal arm moves to the park position.



▶ Either click on the [Clear Task Stack] button on the [Information] tab.



▶ Or click on the [Clear task stack] button on the [Tasks and magazines] tab.
▷ The performance of all tasks which have not yet been performed is interrupted.

▶ To cancel the performance of the next task:
▶ On the [Extended control] tab, click on the [Remove next task] button.

8.7 Updating the Client

The CCR Client can be updated as soon as a new client software version is announced on the www.sartoriusportal.com portal.

Requirements

Required qualification: Administrator

Procedure

- ▶ Download the latest CCR Client control software.
- ▶ Open Windows Control Panel/Software.
- ▶ Update the CCR Client (ccrclnt) control software.

9 Cleaning and Maintenance

⚠ CAUTION

Risk of injury when working inside the device!

Individuals can injure themselves on sharp edges such as the slats of the magazine positions or the portal arm gripper when working inside the device.

- ▶ Proceed with care and do not use excessive force.

NOTICE

Unqualified personnel can damage the device!

The device is sensitive. Unqualified personnel can easily damage the device when cleaning or maintaining it.

- ▶ If necessary: Cleaning tasks should only be performed by the operating personnel.
- ▶ Maintenance tasks should only be performed by Sartorius Service.

NOTICE

Corrosion or mechanical damage due to the use of unsuitable cleaning agents!

- ▶ **Do not** use corrosive, chloride-containing or aggressive cleaning agents**.**
- ▶ **Do not** use cleaning agents that contain abrasive ingredients, e.g. scouring agents or steel wool.
- ▶ **Do not** use solvent-based cleaning agents.
- ▶ Only use suitable cleaning agents. Read the product information provided for all cleaning agents used.

NOTICE

Cleaning the components can damage the device!

The outer draft shield has a sensitive ESD protective layer. The portal arm grippers and weigh cells are sensitive to touch.

- ▶ Do **not** clean the outer draft shield.
- ▶ Do **not** clean the portal arm grippers and weigh cells.

9.1 Cleaning the Magazine Work Area

Dust or dirt has collected in the magazine work area.

Requirements

The device is in sleep mode (see Chapter 8.6.1, page 84).

Procedure

- ▶ Open the sliding doors of the sample magazine and secure these with the door lock (door lock, see Chapter 3.9.3, page 21).
- ▶ Clean the sliding door rails with a slightly damp cloth. Do not forget to also clean the grooves. Use a mild soapy solution or a suitable cleaning agent for more severe contaminations.
- ▶ Remove all cleaning tools from the device.
- ▶ Close the sample magazine sliding doors and secure these with the door lock (door lock, see Chapter 3.9.3, page 21).

9.2 Checking and Cleaning the Magazine Positions

Several collisions have occurred at a single magazine position, or dust and dirt have visibly collected in or around the magazine positions.

Requirements

The device is in sleep mode (see Chapter 8.6.1, page 84).

Procedure

- ▶ Open the sliding doors of the sample magazine and secure these with the door lock (door lock, see Chapter 3.9.3, page 21).
- ▶ Check all reference and sample magazine positions for damage and dirt.
- ▶ If magazine position slats or grippers are bent or damaged: Contact Sartorius Service.
- ▶ If dust or dirt has collected in the magazine position slats: Sweep out the magazine position slats with a soft brush or blow dust out with an air bulb (for accessories, see Chapter 16, page 108).
- ▶ If dust or dirt has collected beneath or between the magazine positions: Clean the areas with a slightly damp cloth (for accessories, see Chapter 16, page 108).
- ▶ Remove all cleaning tools from the device.
- ▶ Close the samplemagazine sliding doors and secure these with the door lock (door lock, see Chapter 3.9.3, page 21).

9.3 Maintenance

The device must be checked and cleaned once annually by Sartorius Service.
A maintenance contract must be signed with Sartorius for this purpose.

10 Malfunctions

10.1 Status Messages (Display)

Error messages from the weigh cell operator panels: Check the instructions for the Cubis® MCM model.

10.2 Warning Messages (Display)

Warning messages from the weigh cell operator panels: Check the instructions for the Cubis® MCM model.

10.3 Error Messages

10.3.1 Error Messages on the [Information] Tab

The following error messages are listed in the [Last error on server] display on the [Information] tab.

Error message	Fault	Cause	Correction	Chapter, page
[timeout]	The portal arm remains at a standstill, and the grippers do not rotate.	The portal arm and gripper control system has triggered a timeout.	Restart after performing a safety shutdown.	10.7, 92
[position not reached]		Movement command was not executed properly.	Restart after performing a safety shutdown.	10.7, 92
[error ... in robot]			If the error occurs again: Contact Sartorius Service.	17, 109
[robot doesn't answer]				
[self disabling of robot]				
[collision detected]	Collision detection has triggered a safety shutdown.	A gripper has come into contact with a magazine position.	Ensure that there is no damage to the gripper or other anomalies.	
			Restart after performing a safety shutdown.	10.7, 92
			If the error occurs again: Contact Sartorius Service.	17, 109
[timeout during homing procedure]	The portal arm remains at a standstill, and the grippers do not rotate.	An error has occurred during the movement to the target.	Restart after performing a safety shutdown.	10.7, 92
			If the error occurs again: Contact Sartorius Service.	17, 109
[emergency stop switch pressed or door opened]	A user has triggered a safety shutdown.	The door is open or the emergency stop switch has been actuated.	Close the door and unlock the emergency stop switch. The open door can be seen on the [Extended control] tab.	4.1.3, 28
			Restart after performing a safety shutdown.	10.7, 92

Error message	Fault	Cause	Correction	Chapter, page
[no weight at magazine place or scale compensation failed]	When a weight has been placed on the weigh cell: No valid value appears on the display. The weight is returned to its magazine position. The portal arm moves to the park position. The system comes to a stop.	The weigh cell weight switching system has not switched, or the weight in the magazine position does not correspond to the Client allocation.	Check that the weight used matches the entry in the Client assignment.	10.8, 96
			If this matches and the error occurs again: Disconnect the entire system from the mains for 5 seconds at the main switch. Finally, restart the device.	
[unexpected scale values]			If the error occurs again: Contact Sartorius Service.	17, 109
[wind shield is closed]	The weigh cell draft shield has not opened, and the portal arm remains at a standstill.	No communication with the weigh cell is possible. There is no electrical power to the weigh cell or the draft shield is faulty.	Check the control unit display. Actuate the draft shield manually.	
[wind shield not open (10g scale)]			Restart after performing a safety shutdown.	10.7, 92
[wind shield not open (1kg scale)]			If this matches and the error occurs again: Disconnect the entire system from the mains for 5 seconds at the main switch. Finally, restart the device.	10.8, 96
			If the error occurs again: Contact Sartorius Service.	17, 109
[the 10g scale does not respond correctly]	The weigh cells do not react.	No communication with the weigh cells is possible during initialization.	If this matches and the error occurs again: Disconnect the entire system from the mains for 5 seconds at the main switch. Finally, restart the device.	10.8, 96
[the 1kg scale does not respond correctly]			If the error occurs again: Contact Sartorius Service.	17, 109
[servercrash]	The device does not react.	The CCR Server has crashed.	Restart the server application.	10.9, 98

10.3.2 Error Messages in Separate Windows

The following error messages are listed when compiling measurements or service tasks in a separate dialog box.

Error message	Fault	Cause	Correction	Chapter, page
[invalid weight ... on 10g scale] [invalid weight ... on 1kg scale]	The magazine allocation has been incorrectly edited, or the measurement task has been incorrectly compiled.	The weight is not suitable for the magazine or weigh cell. The weight is either too light or too heavy, or the dimensions of the weight are above or below the permissible values.	Ensure that only weights within the permissible dimension range are placed in the magazine positions, and that these have the permitted dimensions. These weights must be correctly assigned to the magazine positions in the Client.	7.6, 51
[the selected magazine cannot be used with the 1kg scale]	The magazine allocation has been incorrectly edited, or the measurement task has been incorrectly compiled.	An operating error has occurred during the selection of the magazine position for pre-centering the 1000 gram weigh cell.	Ensure that only weights within the permissible dimension range are placed in the magazine positions, and that these have the permitted dimensions. These weights must be correctly assigned to the magazine positions in the Client.	7.6, 51
[corner positions not defined]	The magazine allocation has been incorrectly edited, or the measurement task has been incorrectly compiled.	An operating error has occurred during the allocation of the weight for the 10 gram weigh cell off-center load test.	Ensure that only weights within the permissible dimension range are placed in the magazine positions, and that these have the permitted dimensions. These weights must be correctly assigned to the magazine positions in the Client.	7.6, 51
[weight combination is not defined]	The magazine allocation has been incorrectly edited, or the measurement task has been incorrectly compiled.	An operating error has occurred during the generation of weight combinations.	Ensure that only weights within the permissible dimension range are placed in the magazine positions, and that these have the permitted dimensions. These weights must be correctly assigned to the magazine positions in the Client.	7.6, 51

10.4 Troubleshooting

Fault	Cause	Correction	Chapter, page
Power interruption	The main switch is in position [0].	– Restart after power interruption.	10.8, 96
	The power supply has been interrupted by a power cut.		
The device is at a standstill.	The emergency stop switch on the device has been pressed.	– Restart after performing a safety shutdown.	10.7, 92
	The [Emergency Stop] button in the CCR Client control software has been clicked.		
	A door contact switch has triggered a safety shutdown.		
	Collision detection has triggered a safety shutdown.		
	A weigh cell draft shield has not been closed.		

Fault	Cause	Correction	Chapter, page
The CCR Client is not connected to the device. [no_connection] is displayed in the [Robot status] field on the [Information] tab.	The Ethernet connection has been interrupted.	Check the cable, hub and router.	
	Incorrect CCR Server IP address and/or name	Contact Sartorius Service.	17, 109
	The CCR Server has crashed.	Restart the server application.	10.9, 98
	Another network device is using the same IP address.	Contact the IT department.	
	Autoconnect is not enabled.	Enable Autoconnect.	10.10, 98
	Task administration via ScalesNet is enabled.	Disable ScalesNet.	10.11, 99

10.5 Removing Weights from Slats in a Magazine Position

Small wire- or leaf weights have fallen between the slats of a magazine position.

Procedure

▶ **NOTICE** The use of inappropriate tools can damage the weight or the magazine position. Use a small piece of paper to carefully push the weight between the slats.

10.6 Repairs

Device components are damaged, for example, gripper tines or magazine slats are bent or faulty.

Procedure

▶ **NOTICE** Improper attempts to repair the device can cause further damage. Do **not** attempt to perform repairs yourself. Contact Sartorius Service (see the Sartorius website www.sartorius.com).

10.7 Restarting after a Safety Shutdown

At least one of the following has occurred:
- The emergency stop switch has been pressed or the [Emergency Stop] button in the CCR Client has been clicked.
- A door contact switch has triggered a safety shutdown.
- Collision detection has triggered a safety shutdown.
- The draft shield of a weigh cell has not been closed.
- There is an error message from the CCR Client.

All movements have stopped as a result – possibly in the middle of a weighing operation. There may be weights on the grippers, in the weigh cells, in the collection station or in the transfer station. The portal arm is in any position. A gripper may have come into contact with a magazine or is positioned in an open weigh cell.

Requirements

The power supply has **not** been interrupted.

Procedure

- ▶ If a gripper is positioned in an open weigh cell: Move the gripper out of the weigh cell (see Chapter 10.7.1, page 93).
- ▶ If there are weights on the grippers: Manually remove the weights from the grippers (see Chapter 10.7.2, page 93).
- ▶ If there are weights in the weigh cells: Manually remove the weights from the weigh cells (see Chapter 10.7.3, page 94).
- ▶ If there are weights in the collection station or transfer station: Return the weights manually to their respective magazine positions.
- ▶ Manually move the portal arm into the safety corridor (see Chapter 10.7.4, page 95).
- ▶ Bring the portal arm to its park position (see Chapter 7.5, page 51).
- ▶ Restart the device (see Chapter 10.7.5, page 95).
- ▷ As there was no interruption to the power supply, no measurement results have been lost, and the weighing operation continues automatically.

10.7.1 Moving the Gripper out of the Weigh Cell

A safety shutdown has brought the device to a standstill, at which point a gripper was in a weigh cell.

Requirements

- The power supply to the device is switched on.
- The device is at a standstill.
- The CCR Client control software is connected to the device. If there is no connection:
  - Ensure that the server name and/or server address on the [Local client configuration] tab are correct.
  - Restart the CCR Server (Chapter 10.9, page 98).

Procedure

- ▶ Manually move the portal arm into the safety corridor (see Chapter 7.4, page 50).
- ▶ Bring the portal arm to its park position (see Chapter 7.5, page 51).

10.7.2 Removing the Weights from the Grippers

A safety shutdown has brought the device to a standstill, at which point at least one weight was on a gripper.

Procedure

- ▶ Open the corresponding doors on the outer draft shield.
- ▶ **NOTICE** Touching the weights with your hand can change or modify them. Wear gloves and/or use appropriate tweezers. Carefully remove the weights from the gripper.
- ▶ Return the weights to their original positions in the reference and/or sample magazines.

10.7.3 Removing the Weights from the Weigh Cells

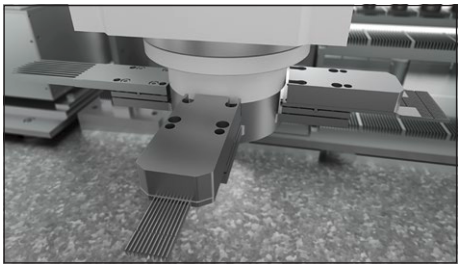
There are weights in closed weigh cells after a safety shutdown or a power interruption. In order to be able to remove the weights: The weigh cell draft shield must be opened.

Requirements

- The device is at a standstill.
- The CCR Client control software is connected to the device. If there is no connection:
  - Ensure that the server name and/or server address on the [Local client configuration] tab are correct.
  - Restart the CCR Server (Chapter 10.9, page 98).

Procedure

▶ Click on the [Open] button for the affected weigh cell in the CCR Client control software, on the [Extended control] tab.
▷ The weigh cell draft shield will open.
▷ If the weigh cell draft shield does **not** open: Contact Sartorius Service.
▶ Open the corresponding doors on the outer draft shield.
▶ **NOTICE** Touching the weights with your hand can change or modify them. Wear gloves and/or use appropriate tweezers. Carefully remove the weights from the weigh cell.



▶ If there is only one weight in a weigh cell:
  ▶ Place the weight centrally on the 10 and/or 1000 gram single-gripper.
▶ If there are several weights in a weigh cell:
  ▶ Replace the weight which is listed first in the [current main task] display (A2 in the example below), in magazine position A2.

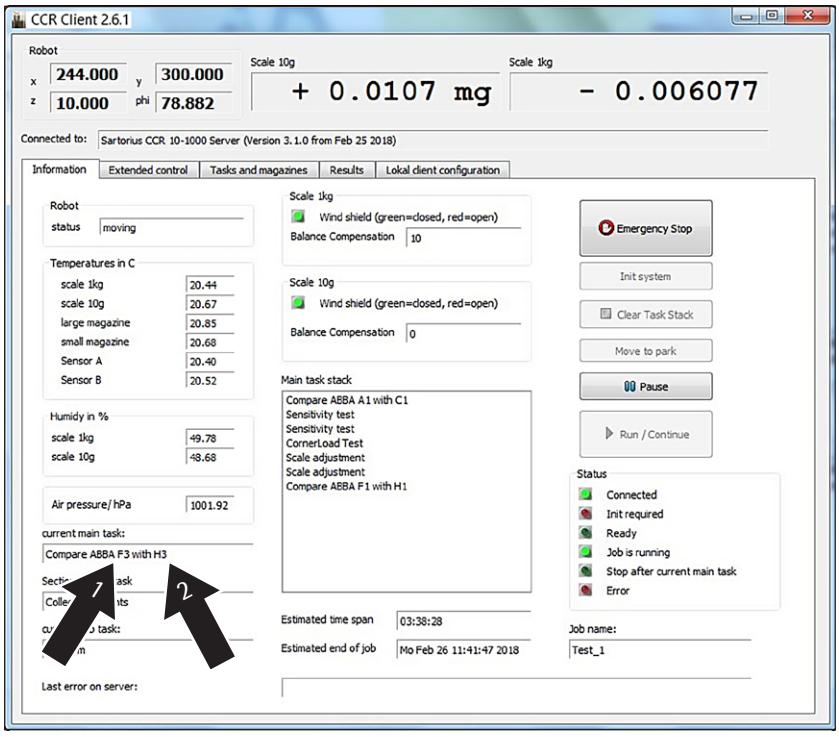
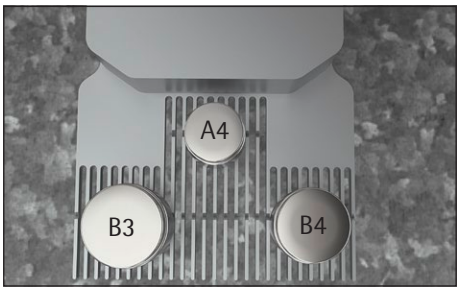


Fig. 63: [Information] tab



▶ Replace the other weights (B2 in the example above) in magazine position B2.
▷ There may be up to four weights in the multi-gripper.

▶ Click on the [Close] button for the affected weigh cell in the CCR Client control software, on the [Extended control] tab.
▷ The weigh cell draft shield will close.

10.7.4 Moving the Portal Arm into the Safety Corridor

A safety shutdown have brought the device to a standstill, at which point the portal arm was **not** in the safety corridor.

Requirements

– The device is at a standstill.
– There are **no** weights on the grippers.

Procedure

▶ Open the hinged door to the safety corridor.
▶ Manually move the portal arm into the safety corridor (see Chapter 7.4, page 50).

10.7.5 Restarting after Performing a Safety Shutdown

A safety shutdown has brought the device to a standstill.

Requirements

– The device is at a standstill.
– There are **no** weights in a gripper.
– There are **no** weights in the weigh cells.
– The portal arm is in the safety corridor.
– The device is correctly connected to the power supply, and the main switch is in position [I].
– The CCR Client control software is connected to the device. If there is no connection:
  – Ensure that the server name and/or server address on the [Local client configuration] tab are correct.
  – Restart the CCR Server (Chapter 10.9, page 98).

Procedure

▶ Ensure that the reason for the service interruption has been resolved:
  ▶ The emergency stop switch is in its normal position.
  ▶ All outer draft shield doors are closed.
  ▶ The cause of the CCR Client error message has been eliminated.

▶ Click on the [Init system] button on the [Information] tab in the CCR Client.
▷ The portal arm will move automatically to the park position.
▶ Check the status of the device and of the order process in the CCR Client.

▶ Click on the [Run / Continue] button on the [Information] tab in the CCR Client.
▷ The weighing operation will continue automatically.

10.8 Restarting after a Power Interruption

At least one of the following has occurred:
– The main switch is in position [0].
– There has been a power failure.
All movements have stopped as a result – possibly in the middle of a weighing operation. There may be weights on the grippers, in the weigh cells, in the collection station or in the transfer station. The portal arm is in any position. A gripper may have come into contact with a magazine or is positioned in an open weigh cell. The power interruption means that the portal arm control system has lost the reference information.

NOTICE

Collision hazard when switching on the weigh cell again

Once the power supply has been restored, the weigh cells will be in Standby mode. If a weigh cell is switched to automatic mode: The weigh cell draft shield will close and can collide with the portal arm if the latter is in the weigh cell.
▶ In the event of an interruption to the power supply, immediately check whether a gripper is in a weigh cell.
▶ If a gripper is positioned in an open weigh cell:
  ▶ First manually remove the portal arm from the weigh cell.
  ▶ Only switch the weigh cells back to automatic mode once this has been done.

Procedure

▶ If there are weights on the grippers: Manually remove the weights from the grippers (see Chapter 10.7.2, page 93).
▶ If there are weights in the weigh cells: Manually remove the weights from the weigh cells (see Chapter 10.7.3, page 94).
▶ If there are weights in the collection station or transfer station: Remove the weights from the collection station or transfer station (see Chapter 10.8.1, page 96).
▶ Manually move the portal arm into the safety corridor (see Chapter 10.7.4, page 95).
▶ Restart the device (see Chapter 10.8.2, page 97).
▷ As the power supply was interrupted, the weighing operation cannot continue automatically. The order must be restarted.

10.8.1 Removing the Weights from the Collection Station or Transfer Station

A power supply interruption has brought the device to a standstill, at which point there were weights in the magazine positions in the collection station or transfer station.

Requirements

– The device is at a standstill.

Procedure

- ▶ Open the corresponding doors on the outer draft shield.
- ▶ **NOTICE** Touching the weights with your hand can change or modify them. Wear gloves and/or use appropriate tweezers. Carefully remove the weights from the collection station or transfer station.
- ▶ Return the weights to their original positions in the reference and/or sample magazines.

10.8.2 Restarting after Performing a Safety Shutdown

Requirements

- – The power supply has been restored, and the main switch is in position [I]).
- – [not_homed_init] is displayed in the [Robot status] text box of the [Information] tab in the CCR Client.
- – The portal arm is in the safety corridor.
- – All outer draft shield doors are closed.

Procedure

- ▶ Click on the [Init system] button on the [Information] tab in the CCR Client.
- ▷ Drive systems and weigh cells are active. The portal arm will move automatically to the park position.
- ▶ Turn the main switch to position [0].
- ▶ Wait 30 seconds.
- ▶ Turn the main switch to position [I].
- ▶ Wait 2 minutes.
- ▶ Turn on the weigh cells at the operating panel.

- ▶ Click again on the [Init system] button on the [Information] tab in the CCR Client.
- ▷ A portal arm reference movement will start. This will move to previously defined reference positions on each axis (z, phi, x, y). This process can take several minutes. The device can then calculate all of the required positions, and move to these in a targeted manner.
- ▶ Optional: Initiate a portal arm reference movement (see Chapter 10.8.3, page 97).
- ▷ The device is ready for use.

10.8.3 Starting a Portal Arm Reference Movement

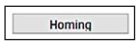
A power supply interruption will cause the portal arm control system to lose its reference information. The portal arm can no longer move to the magazine positions or weigh cells properly. [not_homed] is displayed in the [Robot status] field on the [Information] tab.

Once the power supply is restored and the [Init system] button on the [Information] tab in the CCR Client has been clicked, the portal arm will automatically perform a reference movement. A portal arm reference movement can also be triggered manually, for example if collision detection often triggers safety shutdowns.

During a reference movement, the portal arm moves once completely along each axis (z, phi, x, y) until it strikes the end switches (reference positions). In this way, the device learns to accurately determine the position of the portal arm so that it can then move precisely to weigh cells and magazine positions and collisions are avoided. This also eliminates potential mechanical stresses in the portal. The reference movement can take several minutes.

Requirements
– The portal arm is in the safety corridor (see Chapter 7.5, page 51).
– All hinged draft shield doors are closed.
– The main switch is in position [I].

Procedure

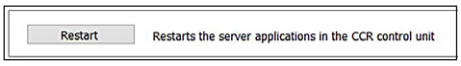


▶ Click on the [Homing] button on the [Extended control] tab in the CCR Client.
▷ The reference movement will then start.
▷ If the referenced movement has completed: The portal arm moves to the park position. The device is ready for use.

10.9 Restarting the Server Application

The device is switched on, but does not react. Orders cannot be initiated.

Procedure



▶ Click on the [Restart] button on the [Extended control] tab in the CCR Client.
▷ The CCR Server will restart.
▷ The device will be accessible in 2 minutes.

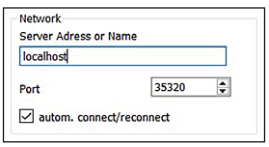
10.10 Enabling Autoconnect

The CCR Client control software does not establish a connection after the device is switched on.

Requirements

– The power supply to the device is switched on.
– The computer with the external CCR Client control software is connected to the device via Ethernet.
– The network communication of the external CCR Client control software with the device is correctly set up to use TCP/IP port 35320.
– The CCR Server control software is functioning. If the CCR Server has crashed: Restart the CCR Server (Chapter 10.9, page 98).
– The CCR Client control software starts.

Procedure



▶ Tick the [autom. connect/reconnect] checkbox on the [Local client configuration] tab.

▶ Click on the [Save and apply] button.
▷ The connection will be established.
▷ In future, this connection will be automatically established when the CCR Client is launched.

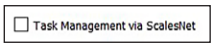
10.11 Enabling/Disabling ScalesNet

The control software can be switched between the Sartorius CCR Client and the modular ScalesNet-M software suite provided by MARO Elektronik.

Requirements

- The power supply to the device is switched on.
- The computer with the external CCR Client control software is connected to the device via Ethernet.
- The network communication of the external CCR Client control software with the device is correctly set up to use TCP/IP port 35320.
- The CCR Server control software is functioning. If the CCR Server has crashed: Restart the CCR Server (Chapter 10.9, page 98).
- The CCR Client control software starts.
- The necessary ScalesNet-M control software modules are installed on the PC.

Procedure



▶ Tick the [Task Management via ScalesNet] checkbox on the [Local client configuration] tab.

▶ Click on the [Save and apply] button.

▷ The connection between the CCR Client and the device has been terminated.

▶ Configure the connection to the ScalesNet-M control software (see the ScalesNet-M YSN03C Base Module control software operating instructions).
  - By default, the IP address of the CCR Server is 192.168.0.2.
  - Communication must be via TCP/IP port 35320.
  - If a connection outside of the local network (e.g. over the Internet) must be used: TCP/IP port 35320 must be routed via a tunnel through a firewall

11 Decommissioning

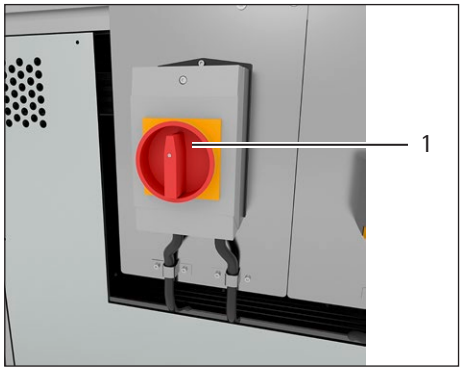
11.1 Decommissioning the Device

The device should be decommissioned, either temporarily or permanently.

Requirements

– Order processing has been completed.
– All weights in use have been removed from the device.
– The portal arm is in the safety corridor (see Chapter 7.4, page 50).

Procedure



▶ Turn the device off. To do this, turn the main switch (1) to position [0].

▶ Disconnect the device from the power supply.
▶ Clean the device.
▶ Cover the device so that it is free from dust.

12 Transport

12.1 Transporting the Device

The device is equipped with a very heavy granite weighing table. The device cannot be transported.

Procedure

▶ If the device must be transported: Contact Sartorius Service (see Chapter 17, page 109).

13 Storage and Shipping

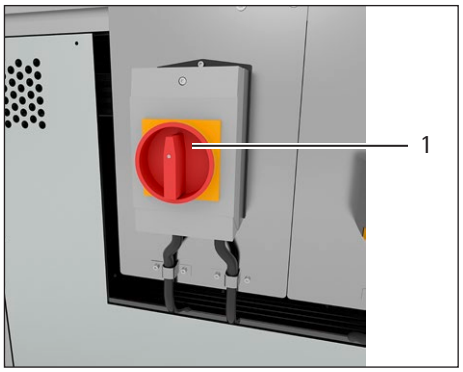
13.1 Storing

The device is equipped with a very heavy granite weighing table. The device can only be stored in its installation location.

Requirements

– Order processing has been completed.
– All weights in use have been removed from the device.
– The portal arm is in the safety corridor (see Chapter 7.4, page 50).

Procedure



▶ Turn the device off. To do this, turn the main switch (1) to position [0].
▶ Disconnect the device from the power supply.
▶ Clean the device.
▶ Cover the device so that it is free from dust. Observe the environmental conditions when doing so (see Chapter 15.2, page 103).

13.2 Returning the Device and Parts

The device is equipped with a very heavy granite weighing table. The device or parts of the device must only be retrieved by Sartorius Service.

Procedure

▶ Decommission the device (see Chapter 11.1, page 100).
▶ Contact Sartorius Service for instructions on how to return devices or parts (please refer to our website at www.sartorius.com for return instructions).

14 Disposal

14.1 Information on Decontamination

The device does **not** contain any hazardous materials that necessitate special disposal measures.

If the device has come into contact with hazardous substances: Steps must be taken to ensure proper decontamination and declaration. The operator is responsible for adhering to local government regulations on the proper declaration for transport and disposal and the proper disposal of the device.

14.2 Disassembly

The device has reached the end of its lifespan and must be dismantled and disposed of.

Requirements

The device has been decommissioned (see Chapter 11.1, page 100).

Procedure

▶ Contact Sartorius Service (see Chapter 17, page 109).

14.3 Disposing of the Device and Parts

14.3.1 Information on Disposal

The device and the device accessories must be disposed of properly by disposal facilities.

A lithium cell battery, type CR2032, is installed inside the device. Batteries must be disposed of properly by disposal facilities.

The packaging is made of environmentally friendly materials that are intended to be used as secondary raw materials.

14.3.2 Disposing

Requirements

The device has been decontaminated.

Procedure

▶ Dispose of the device.
  ▶ Follow the disposal instructions on our website (www.sartorius.com).
  ▶ Inform the disposal facility that there is a lithium cell battery, type CR2032, installed inside the device.
▶ Dispose of the packaging in accordance with local government regulations.

15 Technical Data

15.1 Dimensions and Weight

Model		CCR10	CCR1000	CCR10-1000
	Unit	Value	Value	Value
Dimensions (L x W x H)	mm	1950 x 1350 x 2330	1950 x 1350 x 2330	1950 x 1350 x 2330
Weighing pan dimensions	mm	49 x 29	104 x 68	49 x 29 / 104 x 68
Sample size (D x H)	mm	18 x 20	100 x 120	18 x 20 / 100 x 120
Installation position (L x W x H)	mm	1900 x 1250 x 2350	1900 x 1250 x 2350	1900 x 1250 x 2350
Weight, approx.	kg	1550	1550	1550

15.2 Ambient Conditions

15.2.1 Installation Site

	Unit	Value
Installation site		
Standard laboratory rooms		
Installation site according to IEC 60259-1, maximum altitude above sea level	m	2000
For indoor use only		
Temperature		
In operation	°C	+17 – +27
During storage and transport	°C	-20 – +60
Relative humidity		
At temperatures of up to 31°C	%	80
Then linear decrease from 80% at 31°C to 50% at 40°C		
Recommended environmental conditions in accordance with OIML R 111-1		
Humidity	%	40 – 60
Air temperature	°C	22
No heat from heating systems or direct sunlight		
Enclosed room with no window, **no** drafts from AC systems or doors		
No vibrations		
No "heavy traffic" areas personnel		
No electromagnetic fields		
No dry air		

15.2.2 Protection Class

	Value
IP protection according to IEC 60529-1	IP 32

15.3 Power Supply

15.3.1 Device

	Unit	Value
Voltage	V	100 – 240 (±10%)
Frequency	Hz	50 – 60 (±5%)
Power consumption	VA	< 100
Power supply connection using the original power supply cable supplied		
Short circuit protection: Electronic		
Protection class according to IEC 62368-1		I
Pollution level according to IEC 61010-1		2
Overvoltage category according to IEC 606641-1		II

15.3.2 Safety of Electrical Equipment

According to EN 61010-1 / IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General Requirements

15.3.3 Electromagnetic Compatibility

Interference resistance
Suitable for use in industrial areas
Transient emissions
Class B
Suitable for use in residential areas and areas that are directly connected to a low voltage network that also supplies residential buildings.

15.4 Integrated Clocks

	Unit	Value
Clocks on both control units		
Maximum deviation per month (RTC)	s	30
CCR Server clock		
To ensure that the time on the CCR Server is correct: Synchronize the time using the Network Time Protocol (NTP).		

15.5 Backup Battery

	Unit	Value
Lithium battery, type CR2032		
Service life at room temperature, minimum	Years	10

15.6 Metrological Data

Model		CCR10	CCR1000	CCR10-1000
	Unit	Value	Value	Value
Electrical weighing range (Max)	g	3.5	26	3.5/26
Maximum nominal capacity (Max)	g	10.5	1016	10.5/1016
Range 1 (Max1)	g	3.5	26	3.5/26
Range 2 (Max2)	g	7	36	7/36
Range 3 (Max3)	g	–	46	46
Range 4 (Max4)	g	–	66	66
Range 5 (Max5)	g	–	76	76
Range 6 (Max6)	g	–	116	116
Range 7 (Max7)	g	–	216	216
Range 8 (Max8)	g	–	316	316
Range 9 (Max9)	g	–	516	516
Range 10 (Max10)	g	–	616	616
Scale interval (d)	µg	0.1	1	0.1/1
Repeatability at approx. maximum capacity (ABBA)				
Standard deviation of the differences, tolerance	µg	0.5	8	0.5/8
Standard deviation of the differences, typical value	µg	0.2	2	0.2/2
Repeatability at approx. 0.5 x maximum capacity (ABBA)				
Standard deviation of the differences, tolerance	µg	0.3	5	0.3/5
Repeatability at approx. 0.1 x maximum capacity (ABBA)				
Standard deviation of the differences, tolerance	µg	3	3	0.2/3
Linearity deviation, tolerance	µg	1	10	1/10
Eccentricity deviation, positions according to OIML R76				
Test weight	g	2	-	2/1000
Typical value	µg	5	-	5/100
Substitution weights	g	2 x 3.5	30/40/50, 2 x 100/ 300/400	2 x 3.5/ 30/40/50, 2 x 100/300/400
Typical stabilization time	s	15	25	15/25
Typical measurement time (ABBA)	s	240	400	240/400

15.7 Suitable Weights

Magazine rows A to C and D to I are for weights whose dimensions comply with Recommendation OIML R111.
Magazine row E is for test weights whose dimensions do not comply with Recommendation OIML R111, such as wheel weights or Buoyancy artefacts.

Magazine	Magazine row	Magazine positions	Net weight		Diameter		Height
			min.	max.	min.	max.	max.
1000 gram sample magazine	A	A1 to A7	10 g	1000 g	10 mm	60 mm	90 mm
	B	B1 to B7	10 g	1000 g	10 mm	60 mm	90 mm
	C	C1 to C7	10 g	1000 g	10 mm	60 mm	90 mm
	E	E1 to E2	10 g	1000 g	10 mm	90 mm	130 mm
1000 gram reference magazine	D (for Y1000R only)	D1 to D7	10 g	1000 g	10 mm	60 mm	90 mm
10 gram sample magazine	F	F1 to F13	0.001 g	10 g	3 mm	19 mm	22 mm
	G	G1 to G13	0.001 g	10 g	3 mm	19 mm	22 mm
	H	H1 to H13	0.001 g	10 g	3 mm	19 mm	22 mm
10 gram reference magazine	I (for Y10R only)	I1 to I13	0.001 g	10 g	3 mm	19 mm	22 mm

15.8 Recommended Adjustment Weight

		CCR10	CCR1000	CCR10-1000
	Unit	Value	Value	Value
External test weight	g	2	20	2/20
Recommended accuracy class		E2	E2	E2

15.9 Interfaces

15.9.1 Specifications of the COM-RS232 25-pin Interface

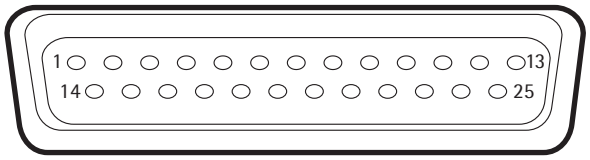
Type of interface: Serial interface

Interface operation: Full duplex

Level: RS232

Connection: D-sub connector, 25-pin

Pin assignment



Pin 1: Shield
Pin 2: Data output (TxD)
Pin 3: Data input (RxD)
Pin 4: Signal GND
Pin 5: Clear to Send (CTS)
Pin 6: **Not** used
Pin 7: Internal ground (GND)
Pin 8: Internal ground (GND)
Pin 9: **Not** used
Pin 10: **Not** used
Pin 11: +12 V output
Pin 12: Reset _ Out: Peripherals restart
Pin 13: +5 V output
Pin 14: Internal ground (GND)
Pin 15: Control input/output 1
Pin 16: Control input/output 2
Pin 17: Control input/output 3
Pin 18: Control input/output 4
Pin 20: Data Terminal Ready (DTR)
Pin 21: **Not** used
Pin 22: **Not** used
Pin 23: **Not** used
Pin 24: **Not** used
Pin 25: +5 V output

15.9.2 Specifications of the COM-RS232 9-pin Interface

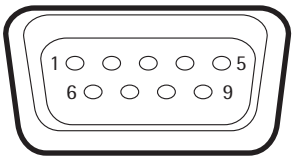
Type of interface: Serial interface

Interface operation: Full duplex

Level: RS232

Connection: D-sub connector, 9-pin

Pin assignment



Pin 1: **Not** used
Pin 2: Data output (TxD)
Pin 3: Data input (RxD)
Pin 4: **Not** used
Pin 5: Internal ground
Pin 6: **Not** used
Pin 7: Clear to Send (CTS)
Pin 8: Request to Send (RTS)
Pin 9: **Not** used

16 Accessories

16.1 Accessories

This table contains an excerpt of the accessories that can be ordered. For information on other products, contact Sartorius Service.

Item	Quantity	Order number
Scales-Net-M PC software for calibrating weights	1	YSN03C
Calibration weight		
2 g, accuracy class E2 for CCR10 and CCR10-1000 models	1	YCW322-02
20 g, accuracy class E2 for CCR1000 and CCR10-1000 models	1	YCW422-02

16.2 Extensions

Item	Quantity	Order number
Upgrade kits		
for CCR10 model	1	Y1000UPGRADE
for CCR1000 model	1	Y10GPGRADE
Reference magazine		
for CCR10 model	1	Y10R:(26)
for CCR1000 model	1	Y1000R:13 (D1-12 / E3)
for CCR10-1000 model	each	Y10R:(26) Y1000R:13 (D1-12 / E3)
2. Turning magazine		
for CCR10 model	1	Y10M:(39)
for CCR1000 model	1	Y1000M:(23)
for CCR10-1000 model	each	Y10M:(39) | Y1000M:(23)

17 Sartorius Service

Sartorius Service is always available to answer any queries regarding the device. Please visit the Sartorius website (www.sartorius.com) for information about the service addresses, services provided, or to contact a local representative.

When contacting Sartorius Service with questions about the system or in the event of malfunctions, be sure to have the device information, e.g. serial number, hardware, firmware, and configuration, to hand. Consult the information on the device's ID label and on the title bar of the CCR Client control software.

18 Conformity & Certificates

18.1 EU Declaration of Conformity

The attached Declaration of Conformity hereby confirms compliance of the device with the recommendations cited.

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Original

EG-/EU-Konformitätserklärung
EC / EU Declaration of Conformity

Hersteller
Manufacturer

Sartorius Lab Instruments GmbH & Co. KG
37070 Goettingen, Germany

erklärt in alleiniger Verantwortung, dass das Betriebsmittel
declares under sole responsibility that the equipment

Geräteart
Device type

Roboter
Roboter

Modell
Model

CCR10, CCR1000, CCR10-1000

in der von uns in Verkehr gebrachten Ausführung allen einschlägigen Bestimmungen der folgenden Europäischen Richtlinien - einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen - entspricht und die anwendbaren Anforderungen folgender harmonisierter Europäischer Normen erfüllt:

in the form as delivered fulfils all the relevant provisions of the following European Directives – including any amendments valid at the time this declaration was signed - and meets the applicable requirements of the harmonized European Standards listed below:

2014/30/EU — Elektromagnetische Verträglichkeit
Electromagnetic compatibility
EN 61326-1:2013

2011/65/EU — Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS)
Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
EN 50581:2012

2006/42/EG
2006/42/EC
Maschinen
Machines
EN ISO 12100:2010, EN 61010-1:2010

Die Person, die bevollmächtigt ist, die technischen Unterlagen zusammenzustellen:
The person authorised to compile the technical file:
Sartorius Lab Instruments GmbH & Co. KG
International Certification Management
37070 Goettingen, Germany

Jahreszahl der CE-Kennzeichenvergabe / *Year of the CE mark assignment:* **16**

Sartorius Lab Instruments GmbH & Co. KG
Goettingen, 2016-04-20

i.V. R. Baumfalk

Dr. Reinhard Baumfalk
Vice President R&D

i.V. Klausgrete

Dr. Dieter Klausgrete
Head of International Certification Management

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten EG- und EU-Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Bei einer mit uns nicht abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit. Die Sicherheitshinweise der zugehörigen Produktdokumentation sind zu beachten.

This declaration certifies conformity with the above mentioned EC and EU Directives, but does not guarantee product attributes. Unauthorised product modifications make this declaration invalid. The safety information in the associated product documentation must be observed.

Doc: 2048697-00 SLI16CE004-00.de,en 1 / 1 PMF: 2048696 OP-113_fo1_2015.10.12

FCC Supplier's Declaration of Conformity

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Device type Roboter

Model CCR10, CCR1000, CCR10-1000

Party issuing Supplier's Declaration of Conformity / Responsible Party – U.S. Contact Information

Sartorius Corporation
5 Orville Dr Suite 200
11716 Bohemia, NY
USA

Telephone: +1.631.254.4249

FCC Compliance Statement

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 undesired operation.

Information to the user

Note: This equipment has been tested and found to comply with the limits for a **class B** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Connections between the device and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

Any modifications made to this device that are not approved by Sartorius may void the authority granted to the user by the FCC to operate this equipment.

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The information and figures contained in these instructions correspond to the version date specified below.
Sartorius reserves the right to make changes to the technology, features, specifications and design of the equipment without notice.
Masculine or feminine forms are used to facilitate legibility in these instructions and always simultaneously denote the other gender as well.

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