



OPERATIONS MANUAL

**GLP systems Track
Laboratory Automation System**

DECAPPER MODULE (DM)



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Printed in Germany, translation of the original operations manual.

Validity

This operations manual is valid only in combination with the following documents:

- Operations manual for the *GLP systems Track* laboratory automation system base system
- Product Information Sheet

Change Overview

NOTE

Observe the changes in the following chapters:

Chapter	Contents	Action
5 Operation	Note regarding possible deviations in display of screens	New
5.1 Switching On the Module	Procedure, second bullet point, second sentence in 1st instruction: <i>A red light point briefly appears next to the module's touchscreen.</i>	Deleted

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1 Overview

The *DM* decaps the sample tubes from the distribution system, which are sealed with commercially available screw caps or push caps.

Essentially, a distinction is made between *DM* and *DM double*.

The *DM* has a *Decapper Module*, consisting of a robot with gripper and an AccessPoint. The *DM double* has two Decapper Modules.

2 Safety

The following safety indications are on the *DM*:



Fig. 1: Position of the safety indications on the module

NOTE

In addition, the safety instructions laid out in the operations manual for the *GLP systems Track* laboratory automation system base system must be observed.

3 Technical Data

General Data	Values
Dimensions width × depth × height (both <i>DM</i> versions)	40 × 103 × 188 cm
Weight <i>DM</i> <i>DM double</i>	207 kg 212 kg
Waste heat (at full capacity) <i>DM</i> <i>DM double</i>	270 kJ/h 306 kJ/h
Acoustic level (both <i>DM</i> versions)	< 65 dBA
Waste bag capacity	5000 caps/waste bag

NOTE

Please see the product information sheet for all other technical data.

4 Design and Function

The *DM* consists of the following components:

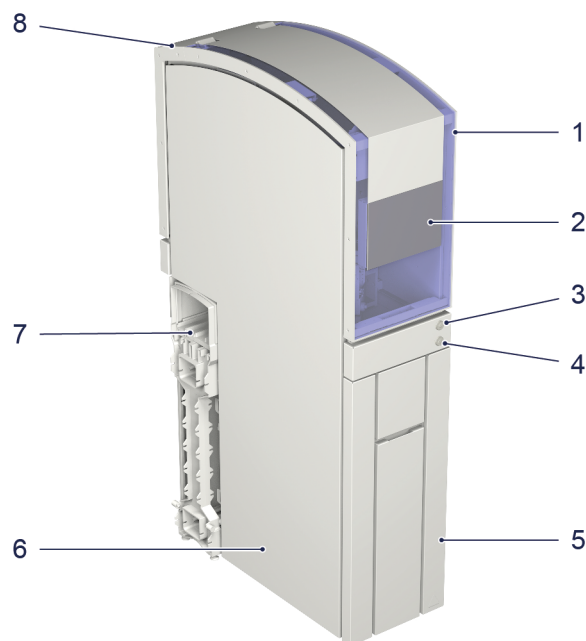


Fig. 2: Overview of the DM – exterior

1	Front hood	5	Pull-out compartment
2	Touchscreen	6	Housing
3	Online/Offline push-button with pause function	7	Track element
4	On/Off push-button	8	Rear hood

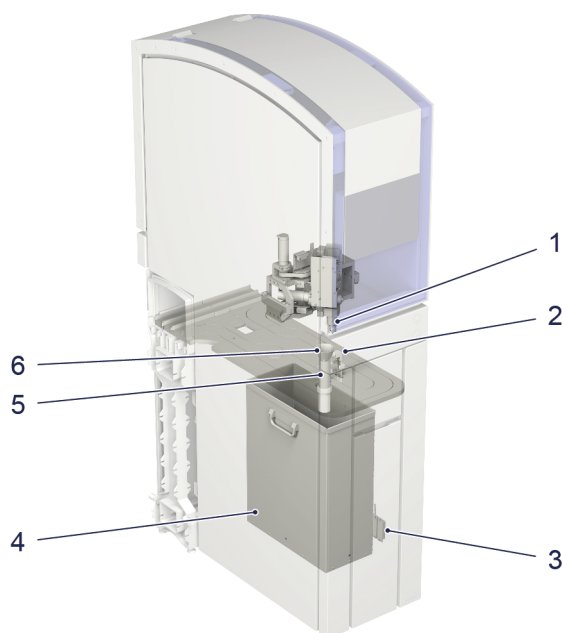


Fig. 3: Overview of the DM – interior

- | | | | |
|----------|--------------------------------|----------|-------------|
| 1 | Gripper | 4 | Waste bin |
| 2 | AccessPoint with clamping jaws | 5 | Waste shaft |
| 3 | Right control sensor | 6 | Funnel |

The CARs moving in with the samples are stopped at the AccessPoint. The AccessPoint clamping jaws grip the sample tube and the robot decaps the sample tube with its gripper. The decapped sample tube is routed into the distribution system and the cap is fed to the waste bin via the waste shaft.

Component	Design and Function
Housing and hoods	The interior is located in the upper part of the housing. A waste bin is located beneath this. The front and rear hoods protect the user against injury and keep the interior free of soiling. The two hoods can be opened to the front and to the back for service work.
Interior	In the interior of the DM, the sample tubes entering the system are decapped directly on the CARs.
Decapper gripper	The gripper decaps the sample tubes and feeds the caps to the waste bin. The gripper is located at the lower end of the robot.
Funnel	The caps are fed to the waste shaft via the funnel.
Waste shaft	The caps are fed to the waste bin via the waste shaft.

Component	Design and Function
Waste bin	The caps are collected in the waste bin. The waste bin fill level is displayed on the touchscreen.
Control sensor	The control sensor checks whether the pull-out compartment is closed.
Touchscreen	The touchscreen is integrated into the front hood. It serves as the central operating and display element.
On/Off push-button	The On/Off push-button switches the module on or off. When the module is ready to operate, it flashes green.
Online/Offline push-button with pause function	The Online/Offline push-button with pause function switches the module online, offline or into pause mode. ■ Online = module is in automatic mode, lights green. ■ Offline = module is in standby mode, lights yellow. ■ Pause = module is in pause mode, flashes green.
AccessPoint	The AccessPoint grips the sample with its clamping jaws while the sample tube is decapped.
Module controller	The module controller controls the processes in the module and communicates with the <i>TSM</i> .
Supply controller	The supply controller controls the module's power supply.
Track element	Track elements route the <i>CARs</i> to the AccessPoint and then onward to the distribution system.

5 Operation

NOTE

The screens shown in the operations manual are examples and may differ slightly on the module. The functions are not affected by this.

5.1 Switching on the module

Precondition

- The module is connected to the power supply.
- The module has been switched off for more than one minute.
- The On/Off push-button on the front of the module flashes green.

Procedure

1. Press and hold the On/Off push-button on the front of the module for at least three seconds.
 - ▶ The On/Off push-button flashes at a higher frequency.
 - ▶ The module starts up.
 - ▶ The start page is displayed. The **Start** tab lights up green once the module is ready for initialization.



Fig. 4

2. To initialize the module, select the **Start** tab.
 - ▶ A screen with a rotating animation appears.
 - ▶ After successful initialization, the module's main menu appears.
 - ▶ The On/Off push-button lights up green without flashing.

Main Menu

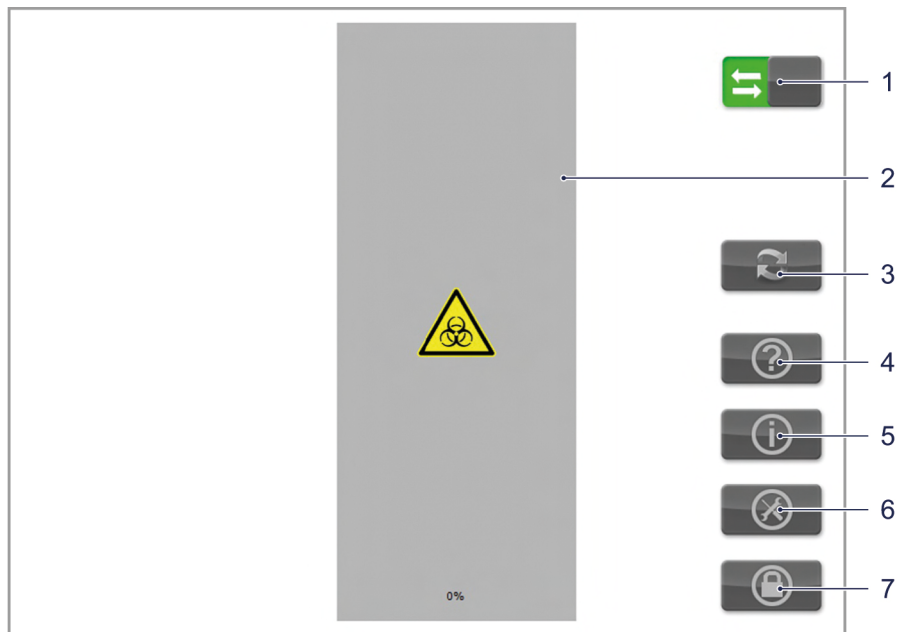


Fig. 5: Main Menu

- | | | | |
|----------|--|----------|--------------------------|
| 1 | Online/Offline tab
with pause function | 5 | Information tab |
| 2 | Waste bin level meter | 6 | Configuration tab |
| 3 | Waste bin emptying confirmation tab | 7 | Login tab |
| 4 | Help tab | | |

5.2 Switching the Module Offline

In offline mode, all processes running in the module stop. The *CARs* are no longer routed to the module.

Precondition

- The module is online.
- The **Online/Offline** push-button and the tab **Online/Offline** light up green without flashing.

Procedure

1. Press and hold the **Online/Offline** push-button on the front of the module for at least three seconds or tap the green arrow area of the tab **Online/Offline** on the touchscreen.
 - ▶ The module switches to offline.
 - ▶ The **Online/Offline** push-button lights up yellow without flashing.
 - ▶ The arrow area of the tab **Online/Offline** is grayed out.

Deactivating Offline Mode

Procedure

1. Briefly press the **Online/Offline** push-button or press the tab **Online/Offline** in the grayed-out area on the touchscreen to exit offline mode.
 - ▶ The **Online/Offline** push-button and the button **Online/Offline** light up green without flashing.
 - ▶ The module is online.

5.3 Switching the Module to Pause Mode

The pause function is activated via the **Online/Offline** push-button.

In pause mode, all processes running in the module stop. However, the connection to the *TSM* remains intact. The *CARs* are still routed to the module.

Precondition

- The module is online.
- The **Online/Offline** push-button and the button **Online/Offline** light up green without flashing.

Procedure

1. Briefly press the **Online/Offline** push-button or tap on the button **Online/Offline** in the gray area on the touchscreen.
 - ▶ The module is in pause mode.
 - ▶ The **Online/Offline** push-button and the button **Online/Offline** flash green.

Deactivating pause mode

Procedure

1. Briefly press the **Online/Offline** push-button or tap on the button **Online/Offline** in the gray area on the touchscreen to exit pause mode.

- ▶ The **Online/Offline** push-button and the button **Online/Offline** light up green without flashing.
- ▶ The module is online.

NOTE

If the pause time is exceeded, the module will automatically switch to offline mode.

5.4 Switching off the module

Precondition

- The module is switched on.
- The On/Off push-button lights up green without flashing.
- The module has ended all processes.

Procedure

1. Press and hold the On/Off push-button on the front of the module for at least three seconds.
 - ▶ The module is switched off.
 - ▶ The On/Off push-button flashes green.

5.5 Emptying and Resetting the Waste Bin

⚠ WARNING!

Risk of infection due to removing the waste bag

Pulling the waste bag out over the edge of the waste bin can cause the waste bag to tear, and the user can come into contact with infected sample matter.

- Wear personal protective clothing.
- Always lift waste bags out vertically upwards; do not drag them over the edge of the waste bin.

NOTE

The pull-out compartment can be opened only when in offline mode.

Precondition

- The main menu is shown.
- The module is offline.

Procedure

1. Completely pull the pull-out compartment with waste bin out of the module.
2. Carefully lift the waste bag upward out of the waste bin with both hands and dispose of it as per local regulations.
3. Hang a new waste bag in the waste bin.
4. Close the pull-out compartment.

Make sure that the pull-out compartment is closed correctly after waste disposal and that the sensor is not covered by the waste bag.

5. Confirm waste bin emptying on the touchscreen.
6. Press the **Online/Offline** push-button.
 - ▶ The **Online/Offline** push-button or the tab **Online/Offline** light is lit up steadily green.
 - ▶ The module is online.

5.6 Replace the funnel

⚠ WARNING!

Risk of infection due to removing the funnel

Pulling out the funnel can lead to contact with infected sample matter.

- Wear personal protective clothing.

Precondition

- The module is offline.

Procedure

1. Open the front hood on the module by simultaneously pressing in the unlocking mechanism.
2. Pull the old funnel off upwards from the waste shaft.
3. Place a new funnel on the waste shaft.
4. Close the front hood.
5. Switch the module online.

5.6.1 Consumables

The following consumables can be obtained via *Abbott Automation Solutions* service:

Consumables	Product Description	Item Number	Component concerned
Waste bags	<i>Decapper Disposable Bags</i> (350 pieces)	GLP12244	Pull-out compartment with waste bin
Funnel	<i>Decapper Waste Funnel</i>	GLP41187	Interior of the <i>DM</i>

6 Cleaning and Maintenance

6.1 Safety

▲ WARNING!

Risk of infection due to skin contact

Risk of serious diseases, including death or infections, due to skin contact with infected sample matter.

- Always wear personal protective clothing during operation.

Observe the safety instructions from the Safety section in the *GLP systems Track* laboratory automation base system operations manual.

Before cleaning or maintenance work is performed, the module must be switched to offline mode using the **Online/Offline** push-button.

All work not listed here may be performed only by *Abbott Automation Solutions* or an authorized service partner.

6.2 Cleaning

Task	Accessories	Activity	D	W	2W	AR
Clean the interior	- Handheld vacuum (recommended) - Surface disinfectant used in the laboratory - Damp, lint-free cloth	- Vacuum the surfaces of the track elements - Vacuum the guiding slot - Carefully remove any dirt				X
Clean the AccessPoint clamping jaws	- Handheld vacuum (recommended) - Surface disinfectant used in the laboratory - Damp, lint-free cloth	Remove any adhesive residues left by the labels				X
Clean the AccessPoint	- Handheld vacuum (recommended) - Surface disinfectant used in the laboratory - Damp, lint-free cloth	Carefully remove any dirt				X
Clean the gripper						X
Clean the touchscreen				X		
Clean the hood					X	
Clean the waste shaft					X	

D Daily

W Weekly

2W Every 2 weeks

AR As required

6.3 Checks

Dirt may be a sign of system malfunctions.

Checks	Control Interval
Check whether the surface of the track elements within the module is free from dirt.	Daily
Check whether the gripper is damaged or soiled.	Daily
Check whether the AccessPoint is free of soiling.	Daily
Check whether the touchscreen is damaged or displays error messages.	Daily
Check whether the waste bin has been emptied.	Daily

6.4 Maintenance

All maintenance work on the module may be performed only by *Abbott Automation Solutions* or an authorized service partner.

Task	Accessories	Activity	Interval
Care for hoods	- Anti-static plastic cleaner - Dry, lint-free cloth	- Spray directly on or dampen the cleaning cloth - Wipe entire surfaces to clean them; do not wipe them dry, but rather let them air-dry in order to allow an anti-static film to form	Once every two weeks

7 Errors and Troubleshooting

▲ WARNING!

Risk of infection due to skin contact

Risk of serious diseases, including death or infections, due to skin contact with infected sample matter.

- Always wear personal protective clothing during operation.

Whichever errors occur, always remain calm and carefully consider your next step.

Before troubleshooting malfunctions, the module must be switched to offline mode or pause mode using the **Online/Offline** push-button.

All work not listed here may be performed only by *Abbott Automation Solutions* or an authorized service partner.

The following errors may occur on the *DM*:

Error	Troubleshooting
Sample is jammed in the gripper.	Open the front hood, remove the sample manually and place it back in the <i>Input / Output Module</i> , close the hood and switch the module to online. Follow the error dialog on the touchscreen.
The cap does not release from the gripper once the sample tube has been decapped.	Open the front hood, remove the cap manually and follow the error dialog on the touchscreen.
The sample is not decapped, but is routed to the <i>Buffer Module</i> and parked there.	Check whether the waste bin pull-out compartment is closed correctly. If necessary, close the waste bin pull-out compartment and follow the error dialog on the touchscreen.
Robot error is displayed.	Follow the error dialog on the touchscreen.
Sample tubes are not opened. The gripper grips too high or low.	Contact service.
Samples are not gripped at the AccessPoint.	Contact service.

7.1 Replacing gripper fingers

Always check all four gripper fingers and replace any defective gripper fingers together with their bolts. The gripper fingers can only be used in one position by design. The procedure for replacing the gripper fingers is identical for all four fingers.

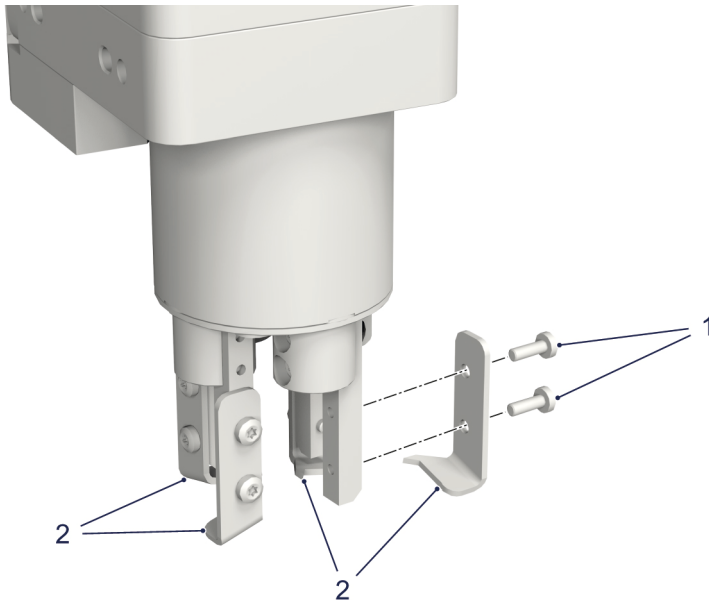


Fig. 6: Replacing gripper fingers

- 1 Screws
- 2 Gripper fingers

Precondition

- The module is switched off.
- The robot is in an accessible position.

Tools Required

- Tx6 Torx screwdriver

Procedure

1. Open the front hood on the module by simultaneously pressing in the unlocking mechanism.
2. Loosen both screws on the gripper finger with the Torx screwdriver and remove them.
3. Remove the gripper finger from the bracket.
4. Insert a new gripper finger into the bracket so that the gripper finger tooth points inward.
5. Insert new screws into the replaced gripper finger and tighten them with the Torx screwdriver.
6. Close the front hood on the module and allow it to engage.
7. Switch on the module.

7.2 Replacing clamping jaws at the AccessPoint

Both clamping jaws and screws must always be replaced at the same time.

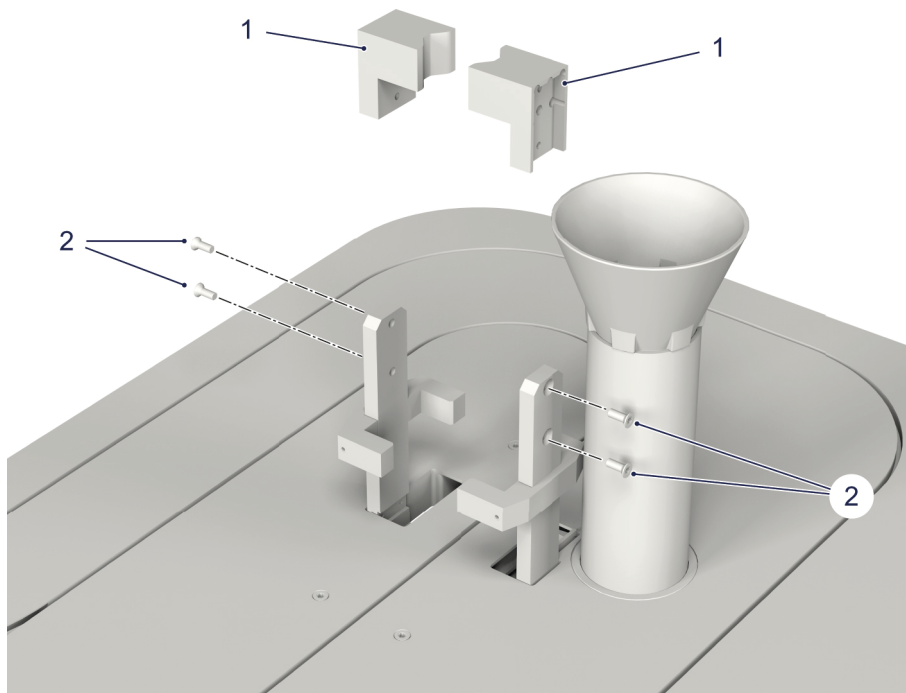


Fig. 7: Replacing clamping jaws at the AccessPoint

- 1 AccessPoint clamping jaw
- 2 Torx screws

Precondition

- The module is switched off.
- The robot is in the rear interior position.

Tools Required

- Tx10 Torx screwdriver

Procedure

1. Open the front hood on the module by simultaneously pressing in the unlocking mechanism.
2. Release both bolts on the clamping jaw with the Torx screwdriver and remove.
3. Remove the clamping jaw from the mount.
4. Insert a new clamping jaw into the mount.
5. Insert new bolts into the exchanged clamping jaw and tighten with the Torx screwdriver.
6. Close the front hood on the module and allow it to engage.
7. Switch on the module.

7.2.1 Spare Parts

The following replacement parts can be obtained via *Abbott Automation Solutions* service:

Spare Parts	Product Description	Item Number	Component concerned
Gripper fingers	<i>Decapper gripper finger kit</i>	GLP41192	Decapper robot
Clamping jaws	<i>AP Rubber Clamping Jaw Set</i>	GLP41275	AccessPoint

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