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# epMotion® Editor — Software manual

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1 Operating instructions

1.1 Using this manual

Material damage from incorrect use.

- Only use the product for its intended purpose as described in the operating manual.
- Ensure adequate material resistance when using chemical substances.
- In case of doubt, contact the manufacturer of this product.

Before using the epMotion Editor for the first time, please read the operating manual.
- Please view this manual as part of the product and keep it somewhere easily accessible.
- When passing on the device, always enclose the operating manual.
- If this manual is lost, please request another one. The current version of the operating manual can be found on our website at www.eppendorf.com.

1.2 Symbols used

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>Handling</td>
</tr>
<tr>
<td>1.</td>
<td>Actions in the specified order</td>
</tr>
<tr>
<td>2.</td>
<td>List</td>
</tr>
<tr>
<td>Text</td>
<td>Name of fields in the software</td>
</tr>
<tr>
<td>📚</td>
<td>Useful information</td>
</tr>
</tbody>
</table>

1.3 Abbreviations used

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
</tr>
<tr>
<td>DWP</td>
<td>Deepwell plate</td>
</tr>
<tr>
<td>epT.I.P.S.</td>
<td>eppendorf Totally Integrated Pipetting System</td>
</tr>
<tr>
<td>LH</td>
<td>Liquid handling</td>
</tr>
<tr>
<td>MTP</td>
<td>Microplate</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase chain reaction</td>
</tr>
<tr>
<td>PDF</td>
<td>Portable document format</td>
</tr>
<tr>
<td>USB</td>
<td>Universal serial bus</td>
</tr>
<tr>
<td>UV</td>
<td>Ultraviolet radiation</td>
</tr>
</tbody>
</table>

1.4 Glossary

A

Administrator Users with special rights. Configuration settings and several system settings are primarily reserved for the administrator. The administrator has a special PIN for logging in.

C

Command Describes a procedure in a method including all parameters required for the optimal execution of this process.

Comment With the Comment command you can enter a comment line.
Dilute

The Dilute command is a modified Sample Transfer command making it easier to carry out diluting series. A defined volume is transported from one well to the next several times by means of pipetting.

Filling volume

Maximum filling volume of a tube or well that can be aspirated or whose tube, rack or plate can be transported (transport only epMotion 5075).

Height adapter

The height adapter is for mounting very short labware that is placed next to taller labware (e.g. reservoir rack) on the worktable. Travel distances and, therefore, operating times are reduced with the height adapter.

Labware

General term for racks, plates, tips, etc., that can be positioned on the worktable. The administrator specifies which labware can be used by selecting labware that is available in the software. The most current labware version can be viewed on the homepage www.epMotion.com.

Method

Saved sequence for loading the surface (worktable) for the method start and the required procedures for the epMotion.

Mix

With the Mix command you can mix liquids in a tube.

Module racks

The temperature-controlled module racks can be loaded with tubes in various models. Using an adjusting pin, the tubes can be positioned at five different heights in the module racks. Up to seven module racks can be positioned in a reservoir rack.

Number of samples

Use the Number of Samples command to specify how many samples are to be processed in the subsequent steps of a procedure.

Pattern

Distribution pattern; specification of the aspiration and dispensing positions within a dispensing command. With automatic pattern detection, patterns can be defined as simple standard patterns or free patterns. Patterns are direction-independent in x-direction and y-direction (e.g. from left to right or from right to left).

PCR clean

PCR clean is an Eppendorf AG purity standard for disposables. Products labeled with PCRclean are certified free of human DNA, DNase, RNase and PCR inhibitors. A batch-specific certificate can be downloaded from our homepage www.eppendorf.com.

Pool

With the Pool command you can transfer liquids from several source tube locations into destination tube locations.

Pool One destination

With the Pool One Destination command you can transfer liquids from several source tube locations into a single destination tube location.

Procedure

List of commands in chronological order of execution.

Rack

Mount for tubes or pipette tips.

Reagent Transfer

Use the Reagent Transfer command to transfer liquid from a source tube into one or several locations of a destination tube.

Reservoir

The 30 mL and 100 mL reservoirs (pans, tubs) for the reagent presentation are suspended in a reservoir rack (max. 7 reservoirs per rack). Reservoirs with a capacity of 300 mL or 400 mL are placed at the location without a reservoir rack.

Sample Transfer

Use the Sample Transfer command to transfer several liquids from various locations of a source tube into several locations of a destination tube.

Source and destination

Source and destination tube. A location occupied with labware becomes either a source tube or a destination tube in the commands Sample Transfer or Reagent Transfer.
Thermorack  Rack with metal body. For smaller tubes (e.g., Eppendorf Safe-Lock tubes for 0.5, 1.5 mL or 2 mL), a temperature-controlled thermorack with lid holder and 24 positions can be used.

Tips  epT.I.P.S. Motion; pipette tips. Only epT.I.P.S. Motion can be used on the epMotion. Tips with or without filter are used. epT.I.P.S. Motion with filter are PCR clean. Pipette tips are delivered ready-for-use in PP racks.

Tool  Dispensing tool. 6 different dispensing tools can be used as alternatives.

Tubes  Individual tubes that can be placed in a rack.

User intervention  With the User Intervention command you can insert steps into your method that the user must execute manually.

Wait  The Wait command is used to select a pause before the next command.

Working volume  Recommended working volume. Up to the working volume, liquids can be dispensed in a tube or well with various liquid types with minimal contamination.

Worktable  Graphic display of loading (tips, racks, plates ...) the surface by starting a method. If labware is stacked at a location (e.g., height adapter and micro test plate), the stack is correspondingly indicated in the worktable display.
2 Product description and system requirements

2.1 Features

The Eppendorf epMotion Editor is a stand-alone PC program for the Eppendorf automated pipetting system epMotion 5070 and epMotion 5075. The epMotion Editor allows you to define, adapt, and display methods for the epMotion on a PC. The methods you define on the PC are transferred to the system via a MultiMediaCard (MMC)™. The epMotion Editor is designed to be used by trained persons with laboratory and liquid-handling experience.

2.2 System Requirements

The epMotion Editor requires the following hardware and software on your PC.

2.2.1 Hardware

- Pentium III 1.0 GHz or higher
- > 512 MB RAM
- > 1 GByte available hard disk space
- 17" monitor with a resolution of 1280 x 1024 or higher
- USB port for the MultiMediaCard (MMC™) card reader
- USB port for the Editor key

2.2.2 Software

- Microsoft® Windows XP (32-Bit) with Service Pack 2 or higher or higher or Microsoft® Windows Vista (32-Bit or 64-Bit) or
- Microsoft® Windows 7 (32-Bit or 64-Bit)

A USB card reader and a configured MultiMediaCard (MMC™) are delivered with the epMotion. For installing this device, follow the instructions in the appropriate software installation manual. The USB card reader will appear as “removable media” in the computer’s directory tree.
# Troubleshooting

<table>
<thead>
<tr>
<th>Error</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program doesn't start correctly.</td>
<td>Removable media device not connected / active.</td>
<td>▶ Check the connection to the removable media device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Remove connections and reconnect them. Removable media device must appear in the Explorer tree.</td>
</tr>
<tr>
<td></td>
<td>MMC is defective or not loaded.</td>
<td>▶ Check MMC.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Insert MMC into the removable media device again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ MMC and top file must appear in the Explorer tree.</td>
</tr>
<tr>
<td>Top file can't be found.</td>
<td></td>
<td>▶ Repeat backup to MMC on the epMotion workstation.</td>
</tr>
</tbody>
</table>
4 Installation

4.1 Install software

To install epMotion Editor software on a PC, proceed as follows:
1. Make sure that all other Windows programs are closed.
2. Insert the installation CD-ROM into the CD drive. If the Autostart function is active on your PC, the installation will start automatically. Otherwise, start Setup.exe from the CD. The installation wizard will guide you through the setup process step by step.

If you update from an older software version, the PC must be restarted after setup. The epMotion Editor software is now installed on the PC.

4.2 Starting the epMotion Editor for the first time

The epMotion Editor requires access to labware specification and configuration files. On delivery of the Workstation, these specification files are stored in the epMotion memory.

To use the epMotion Editor, the specification and configuration files must first be transferred to the MMC™. Then the location of this directory on the MMC™ must be configured in the epMotion Editor in order to make the files available.

4.2.1 Transferring the labware specification and configuration files to the MMC™

To transfer the labware specification and configuration files from the Workstation to the MMC™, proceed as follows:
1. Insert the MMC™ into the slot on the right side of the Workstation control panel.
2. At the control panel, carry out a data backup to transfer the data to the MMC™, as described in the Software section of the epMotion Manual.

The labware specification and configuration files are now stored in the "top" directory on the MMC™.
4.2.2 Making the labware specification and configuration files available

To make the labware specification and configuration files available in the epMotion Editor on the PC, proceed as follows:

1. Make sure that the Editor key is connected to a USB port of your PC.
2. Connect the USB card reader for the MMC™ to another USB port.
3. Insert the MMC™ into the USB card reader.
4. In the Windows Start menu, select **Start - Programs - Eppendorf - epMotion Editor** to start the epMotion Editor.

   The epMotion Editor starts, and the window *Select Top-Directory* indicates that the "top" directory containing the specification and configuration files has to be defined.

5. Click on the button on the right.

   ![Select Top Directory](image)

   A file system window is opened.

6. Select the drive to which the MMC™ is connected, e.g. drive "E" and then select the top directory on the MMC™.
7. Click on **OK**.

   The window *Select Top-Directory* is displayed.

8. Click on **OK**.

   The "top" directory is now configured, and the labware configuration specification files are available in the epMotion Editor.

---

**Hint!**

Only files located in the specified "top" directory will be available for use in the epMotion Editor.
5.1 Starting and exiting epBlue

5.1.1 Starting the epMotion Editor

To start the epMotion Editor, proceed as follows.

- Double-click on the icon epMotion Editor on the desktop, or select Start - Programs - Eppendorf - epMotion Editor in the Windows Start menu.

epMotion Editor starts, and the first screen appears.

5.1.2 Exiting the epMotion Editor

To exit the epMotion Editor, proceed as follows.

1. Save any changes you have made to your methods (see Saving the Current Method on p. 19).
2. Select File - Exit from the menu.

The epMotion Editor is closed.
5.2 epMotion Editor Overview

5.2.1 Overview of the epMotion Editor

After starting, the main program window of the epMotion Editor is opened. The epMotion Editor has two modes: Worktable mode and Procedure mode. If there is a MMC™ containing a valid “top” directory in the MMC™ card reader, the program will start in Worktable mode. You can switch between Worktable mode and Procedure mode at any time while you are editing a method.

![Start screen epMotion 5075 VAC](image)

Fig. 1: Start screen epMotion 5075 VAC
Fig. 2: Start screen epMotion 5070

Depending on your epMotion model and version, the specific layout of the worktable may differ slightly from the version shown in this manual. However, the main functionality of the epMotion Editor is the same for all models and versions.
5.2.2 Worktable mode

On the Worktable tab, you supply the worktable of the epMotion with the labware required for your method. When you create a new method, it is advisable to equip the worktable first, before switching to Procedure mode.

Fig. 3: Worktable tab epMotion 5075
To switch to the Worktable mode, click on the **Worktable** tab. The Worktable tab is divided into three sections.

- **Worktable** (section 1) is displayed in the top right section of the Worktable tab. It shows the worktable assignment for the active method. You can edit the worktable with the mouse, add and remove labware, or move labware to a different location on the worktable.
- **Labware list** (section 2) is displayed in the bottom section of the Worktable tab. It contains the available labware that you can place on the worktable.
- **Placement list** (section 3) is displayed in the top left section of the Worktable tab. It shows a list of all occupied worktable locations and the labware placed at each location.

Whenever you switch back to Worktable mode later, the window will always show the labware positions at the start of the method. This is particularly important to keep in mind if your method includes transport commands (epMotion 5075), which alter the positions of the labware as the method is carried out.
5.2.3 Procedure mode

On the Procedure tab, you can define the sequence of commands to be carried out when you run the method. It is recommended that you supply the worktable with the required labware first before switching to the Procedure tab.

- To switch to the Procedure mode, click on the Procedure tab.

Fig. 4: Procedure tab epMotion 5075

The Worktable (section 1) is displayed in the top right section of the Procedure tab. It shows the current worktable assignment for the active method. To edit the worktable, you must change to the Worktable tab.

The Parameter section (section 2) is displayed in the bottom right section of the Procedure tab. It shows the parameters for the command which is currently selected in section 3, and allows you to edit these parameters.

The Procedure list (section 3) is displayed on the left hand side of the Procedure tab. It shows the procedure as a list of commands, in the order in which they will be executed.

The Commands section (section 4) is displayed on the left hand side below the Procedure list. It contains icons for all the commands you can use to define a procedure.
5.2.4 Functions in Button Bar

The following icons are available in the icon bar below the main menu.

- New... New Method: to create a new method
- Open... Open Method / Open Labware: to open an existing method or labware
- Print (not active): to print methods and log files
- Save (not active): to save changes to methods
- Select top directory: to select the top directory
- Copy (active only in Procedure tab): to copy the selected command
- Paste (active only in Procedure tab): to paste the copied command
- Delete (active only in Procedure tab): delete the selected command
- CSV (active only in Procedure tab): to import commands from a CSV file
- Check method (active only in Procedure tab): to check whether all parameters for the current method are set

Alternatively, these functions are also available in the menu.

5.3 Creating and Saving Methods

5.3.1 Creating a New Method

To create a new method, proceed as follows.

- Click the New method button or select File – New from the menu.

A new file is opened.

You can now start defining and editing the method.
5.3.2 Opening a Method

To open a method that you want to run on a device, proceed as follows.

1. Click on the Open button or select File – Open from the menu.

The window for selecting the directory and file is opened.

2. Select the required method file from the "top" directory on the MMC™.
3. Click Open.

The method is displayed. You can now edit the method, or save it under a different name.

5.3.3 Saving the Current Method

Each method is saved in the "top" directory on the MultiMediaCard (MMC™) (see Starting the epMotion Editor for the first time on p. 10). Methods created with the epMotion Editor for the epMotion 5070 have the file extension *.lhs; methods for the epMotion 5075 are saved with the extension *.ws.

To save the current method, proceed as follows.

1. To save the method under the same name, click the Save icon, or select File – Save from the main menu.

2. To save the method under a new name, select File – Save As from the main menu.

A dialog window opens.

3. Enter a file name and click Save.

The method is saved in your user directory.
5.3.4 Transferring a Method to the epMotion

To transfer a method to the epMotion, proceed as follows:

1. Exit the epMotion Editor by selecting File – Exit from the menu.

![Exit menu](Image)

2. Remove the MultiMediaCard (MMC™) from the USB card reader on your PC.
3. Insert the MMC™ into the slot on the right side of the control panel, and copy the data from the MMC™ to the epMotion memory, as described in the Software section of the epMotion Manual.

The method is now available for use at the epMotion.

5.4 Printing Methods and Log Files

5.4.1 Printing methods and log files

You can print a description of the current method, e.g. the worktable assignment and procedure of commands defined in a method.

When the method has been executed on a device connected to your system, you can also print the log files of every individual run. The log files record every program step carried out by the device (see Reading the log files on p. 22).

To print a method or its log files, proceed as follows.

1. Open the method (see Opening a Method on p. 19).
2. Click the Print icon, or select File – Print from the main menu.

   The print window opens.

   ![Print window](Image)

3. Select Print Method if you want to print a description of the method. Select Print Logfile if you want to print the log file of a previous run of this method, and select the device and the required log file from the list below.

4. To print the method or log file on the standard printer configured in your system, click Print.
5. To display the method or log file in a separate window, click *Preview*. The Preview window opens.

![Preview window](image)

**Fig. 5:** Preview log file for epMotion 5075

In the Preview window, the following icons are available (from left to right):

- **Search**: to search the document text.
- **Print**: to select a printer and print the document.
- **Print Direct**: to print the document on the standard printer configured in your system.
- **Page Setup**: to change the page setup before printing.
- **Hand Tool**: to navigate by dragging the document up or down with the mouse.
- **Magnifier**: to toggle the zoom factor between 100% and full-page-view.
- **Zoom / Zoom Out / Zoom In**: to adjust the zoom factor.
- **First / Previous / Next / Last Page**: to navigate through the document pages.
- **Multiple Pages**: to specify the number of pages displayed in the Preview window.
- **Background / Watermark**: to change the background color and to insert a watermark.
- **Export Document**: to export the document to a file (e.g. pdf, txt, csv or xls).
- **Send E-mail**: to distribute the document via E-mail.
- **Close Preview**: to close the Preview window.

6. Print or export the document as required, using the icons in the Preview window, as described above.

7. To exit the preview, click the Close Preview icon, or select *File - Exit*, or close the Preview window.

8. To close the print window, click Close.
5.4.2 Reading the log files

A log file is generated automatically when a method is started. The log file precisely records every step of the process.

To view or print log files, the method must first be transferred from the epMotion to a MultiMediaCard (MMC™). The MMC™ must contain a "top" directory.

To transfer a method and its corresponding log files to the MMC™, proceed as follows:

1. Insert the MMC™ into the right-hand opening in the control panel.
2. Select the desired method on the control panel and save it in CSV format with the Convert function.
3. Connect the USB card reader for the MMC™ to a USB connection on the PC.
4. Remove the MMC™ from the control panel of the workstation and insert it into the USB card reader connected to the PC.
5. Start the epMotion Editor on the PC (see Starting the epMotion Editor on p. 12).
6. Load the method in the epMotion Editor (see Opening a Method on p. 19).

You can now view or print the method and its corresponding log files.

Example: Extract from a log file - Sample Transfer

13 11:07:53 2 SampleTransfer 0x0000 SRC-ID = 3 Name = PCR96TwinTec Labware = ./top\dws\plates\PCR96\EP_TT_PCR_150
14 11:07:53 2 SampleTransfer 0x0000 DES-ID = 6 Name = FILTER96 Labware = ./top\dws\plates\FILTER96\EP_Cleanup_FP
15 11:07:53 2 SampleTransfer 0x0000 Samples= 96 Replicates= 1
16 11:07:53 2 SampleTransfer 0x0000 Tool = ./top\dws\tools\TM_300_8
17 11:07:53 2 SampleTransfer 0x0000 Liquid = ./top\dws\liquids\water
18 11:07:53 2 SampleTransfer 0x0000 Volume = 50 Transfer type=pip Change tips=bafn
19 11:08:23 2 SampleTransfer 0x0000 SMP 1.1 SRC 3.0 VOL 60 DES 6.0 VOL 0
20 11:08:49 2 SampleTransfer 0x0000 SMP 9.1 SRC 3.1 VOL 60 DES 6.1 VOL 0
21 11:09:16 2 SampleTransfer 0x0000 SMP 17.1 SRC 3.2 VOL 60 DES 6.2 VOL 0
22 11:09:43 2 SampleTransfer 0x0000 SMP 25.1 SRC 3.3 VOL 60 DES 6.3 VOL 0

Abbreviations used in log files:

- SRC-ID: source identification; includes the name given and the labware path.
- DES-ID: destination identification; includes the name given and the labware path.
- Samples: number of samples for processing, quoting the number of replicates.
- Tool: pipetting tool used in the command.
- Liquid: liquid type used in the command.
- Volume: volume in μL.
- Transfer type: "pip" means transferring by pipetting; "dis" means transferring by multidispensing.
- Change tips: specifies when the tips are changed.
  - "finished" means "when command is finished".
  - "bafnw" means "before asp. from next well, tube or...".
  - "bea" means "before each aspirating".
  - "keep" means "keep tips, do not change tips".
  - "bafnd" means "before asp. for next destination".
- MixBefore: mix before aspirating.
- MixAfter: mix after dispensing.
- Cyc: number of mixing cycles ("no. of cycles").
- Spd: speed of the mixing cycles (0.2 - 110 mm/s).
• SMP: sample aspirated from the source, quoting precise position and volume as a numerical code.
• DES: sample dispensed to the destination, quoting precise position and volume as a numerical code.

5.5 Positioning labware on the worktable

To position labware on the worktable, proceed as follows.

1. In the Labware Type list, select the type of labware that you want to use, e.g. "Plates".
   If there are subtypes, these are displayed in the Sub-Types list.

2. In the Sub-Types list, select the subtype you want to use, e.g. "mtp96".
   The available labware of this type is displayed in the Labware list.

3. In the Labware list, select the labware you want to position on the worktable, e.g. "CO_MTP_360_1".
   Some information on the selected labware is displayed on the right hand side.

4. To position the labware on the worktable, press the left mouse button and keep it pressed, dragging the labware upwards from the list.

While you are dragging the labware, it is attached to the mouse pointer by its upper left hand corner. To position the labware on the worktable, direct the mouse pointer (not the center of the labware icon) to the intended location. The mouse pointer carries a small "+" (plus) symbol if the labware can be positioned at the current location.

5. Drag the labware to its intended location on the worktable and drop it there by releasing the mouse button.

A dialog window opens which allows you to change the settings for this labware.
6. If required, edit the name of the labware in the Name field.

7. If the optical sensor is to perform liquid detection at this location during the method, then set the desired option. The following options are available:
   - **Off**: Liquid detection is switched off at this location. If you use this option, click in the Volume field and specify a volume for the labware.
   - **Random Access**: The optical sensor performs liquid detection at a few randomly-selected positions of this labware.
   - **All Positions**: The optical sensor performs liquid detection at all positions of this labware. It is not recommended to select this option for racks and plates with 96 positions, as this is time-consuming.

8. Click **OK** to confirm the settings.

   The labware is positioned in the location.

9. Proceed in the same way to supply the other locations on the worktable.

   The labware on the worktable is also displayed in the Placement list on the left hand side of the Worktable tab.

---

When positioning labware, please note the following restrictions:

- **all A locations**: no reservoir racks.
- **epMotion 5075**:
  - **location B0**: not all labware items suitable.
  - **all C locations**: no tips.
  - **TMX location**: no reservoir rack, no height adapters.
  - **Vac Lid** can only be placed in gripper position.

To check whether a particular labware item can be positioned in a location, try dragging the labware over that location and observe the shape of the mouse pointer: the labware can be positioned only if the mouse pointer carries a “+” (plus) symbol.
5.5.1 Stacking labware at a location

You can stack certain labware components at a location one above the other, e.g. selected plates or a height adapter and a plate.

The maximum you can stack are five predefined plates from Eppendorf in locations and four labware components in the vacuum unit (epMotion 5075). The maximum stacking height is 126 mm. The following plates can be stacked in a location:

- EP_pDNA_96_MTP
- EP_TT_PCR_150
- EP_TT_PCR_40
- EP_DWP_1200
- EP_pDNA_96_DWP

To stack labware at a location, the specification (geometry, name, bottom tolerance etc.) of the plates must be the same.

Do not stack plates on the TMX location.

Additional labware suitable for stacking is available for download in the VIP section at www.epMotion.com. To download and import this labware, carry out a labware update.

Dispensing operations are not possible from a plate stack.
The optical sensor can perform location detection. Liquid detection is not possible.
Stacks may not be transported by the gripper of the epMotion 5075. Individual plates are removed from the stack for transport.

When stacking plates, ensure that the filling level is adapted. The working volume should not be exceeded.

When stacking labware, always proceed in just the same way as when normally positioning individual labware components.
To stack labware at a location, proceed as follows.

1. Select and position the labware which is to be located in the bottom location, e.g. a height adapter.
2. Select and position the labware which is to be located at the same top location, e.g. a plate.

Proceed in just the same way as when positioning the bottom labware component.
The two labware components are displayed in the location. The number of stacked items is displayed in brackets next to the location name.

The stacked labware components are also displayed in the Placement list on the left hand side of the Worktable tab.
5.5.2 Editing labware properties on the worktable

To display and edit the properties of labware on the worktable, proceed as follows.

1. Double-click on the labware on the worktable, or right-click on the labware in the Placement list and select Properties from the context menu.

2. To edit the properties of stacked labware which is positioned lower down in the stack, e.g. a height adapter, right-click on the labware in the Placement list and select Properties from the context menu. This labware can only be accessed via the Placement list. A dialog window opens which allows you to change the settings for this labware.

3. If required, edit the name of the labware in the Name field.

4. If the optical sensor is to perform liquid detection at this location during the method, then set the desired option.

   The following options are available:
   - Off: Liquid detection is switched off at this location. If you use this option, click in the Volume field and specify a volume for the labware.
   - Random Access: The optical sensor performs liquid detection at a few randomly-selected positions of this labware.
   - All Positions: The optical sensor performs liquid detection at all positions of this labware. It is not recommended to select this option for racks and plates with 96 positions, as this is time-consuming.

5. Click OK to confirm the settings.

The changed labware properties are active.
5.5.3 Removing labware from the worktable

To remove labware from the worktable, proceed as follows.

1. Right-click on the labware you want to delete, either on the worktable or in the Placement list, and select *Delete* from the context menu.

![Image](image.png)

2. Or drag the labware from its location on the worktable to the waste position with the mouse, and drop it there.

The labware is removed from the worktable and also from the Placement list.
5.6 Defining the Procedure

5.6.1 Overview of available commands

All available commands are displayed as icons in the Commands section below the Procedure list.

This section gives you only a brief overview of the commands. Details on all commands and their parameters are included in the reference list (see Reference list of commands and parameters on p. 42).

The following commands are available for defining a procedure.

**Number of Samples**: Use the Number of Samples command to specify how many samples are to be edited or processed in the subsequent steps of the procedure. The command can be used several times in a method to change the number of samples during the sequence of the procedure.

**Sample Transfer**: Use the Sample Transfer command to transfer samples from several positions of the source labware to several positions of the destination labware.

**Reagent Transfer**: Use the Reagent Transfer command to transfer a reagent from one or several positions of the source labware to several positions of the destination labware.

**Dilute**: The Dilute command is a modified sample transfer to make it easier for you to perform dilution series. A defined volume is transported from one well to the next several times by means of pipetting.

**Pool**: The Pool command is used to transfer liquids from several source positions to a destination position. For example, the contents of several wells of the source labware can be pooled in a new well in the destination labware.

**Pool One Destination**: The Pool One Destination command is used to transfer liquid from several source positions to a single destination position. This command is a simplified Pool command.

**Mix**: Use the Mix command to mix liquids within a position.

**Vacuum**: Only on epMotion 5075 VAC. Use the Vacuum command to set the vacuum in the vacuum unit.

**Transport**: Only epMotion 5075. The Transport command uses the gripper to transport labware to a different destination location or to the Mastercycler (epMotion 5075 MC) or vacuum unit (epMotion 5075 VAC). Tips, racks, thermoadapters and height adapters cannot be transported. Semi-skirted and unskirted PCR plates can only be transported in combination with the thermoblock.

**Temperature**: Only epMotion 5075. The Temperature command is used to specify the temperature of a thermal module.

**Thermomixer**: Only for epMotion 5075 with thermomixer. Use the Thermomixer command to set temperature and speed of the thermomixer.
**Wait**: The Wait command specifies a defined pause before the next step. The procedure continues automatically after the specified time has elapsed.

**Comment**: Use the Comment command to enter a comment line to be displayed at a particular point in the procedure.

**User Intervention**: The User Intervention command enables you to insert steps in your method which the operator has to execute manually. The procedure only continues after the operator has confirmed the display message.

**TempCycler**: Only for epMotion 5075 MC. Use this command to select the temperature for the cycler lid and/or for the cycler block before starting a cycler program.

**StartCycler**: Only for epMotion 5075 MC. Use this command to select a cycler program and specify the start. The StartCycler command must always be the last command of a method.

**Exchange**: Only epMotion 5070. This command is used to switch labware to the location in the current method.
5.6.2 Adding a command to the program

To add a command to the program, proceed as follows.

1. To **insert** a command into the program at any position, either in the procedure or at the end, click on the command icon in the Commands section of the Procedure tab, e.g. on the Sample Transfer icon, drag the command upwards and drop it in the intended procedure position.

2. To **append** a command at the end of the procedure, double-click on the command icon in the Commands section of the Procedure tab, e.g. on the Sample Transfer icon. The command is added to the procedure.

   ![Sample Transfer icon]

   The command parameters are displayed in the parameter section of the Procedure tab.

3. Click on the Parameters, Options, Mix and Liquid Type tabs in the parameter section to edit the command parameters according to the requirements of your method (see *Editing command parameters and options on p. 30*).

   The example shows the Sample Transfer command. Other commands may have different options in the parameter section of the Procedure tab. Details on all commands and their parameters are included in the reference list (see *Reference list of commands and parameters on p. 42*).

4. Complete the procedure by adding other commands in the same way. In addition to adding commands in the ways described above, you can also move a command up or down within the procedure (see p. 37), copy a command including its parameters and options (see p. 38), or delete a command from the procedure (see p. 38).

5.6.3 Editing command parameters and options

Each command has its own set of parameters, which you can edit at any time while you are creating or editing a procedure.

To edit the parameters and options for a command, proceed as follows.

1. In the Procedure list of the Procedure tab, select the command you wish to edit, e.g. a Sample Transfer command.

   ![Sample Transfer command]

   The command parameters are displayed in the parameter section.
2. Select a dispensing tool from the Pipet. Tool list. When using filter tips, activate the Filter tips option.

3. Set the Volume to be dispensed and select the Transfer Type (Pipette or Multidispense).

4. Select Source and Destination for the command (see Selecting source and destination from a list on p. 32).

5. Specify the Pattern for the command (see Editing the pattern for a transfer command on p. 33).

6. To specify further options for the command (e.g. liquid type, settings for mixing and changing tips), click on the Options, Mix and Liquid Type tabs in the parameter section to edit the command parameters according to the requirements of your method.

7. To discard the changes, click Discard Changes below the parameter section immediately, before selecting a different command in the Procedure list.

8. To apply the changes, click Apply Changes below the parameter section, or simply select a different command in the Procedure list.

The example shows the Sample Transfer command. Other commands may have different options in the parameter section of the Procedure tab. For a detailed description of the available parameters and options for each command, see the reference list of commands (see Reference list of commands and parameters on p. 42).
5.6.4 Defining source and destination for a transfer command

You can define up to four source and destination locations for each transfer command. To use labware as source or destination for a transfer command, the labware must have been previously positioned on the worktable (see Positioning labware on the worktable on p. 23).

Within one transfer command, you can define up to four labware locations as source and up to four locations as destination. The second and all further labware locations must be compatible with the first labware selected.

There are two ways of defining source and destination for a transfer command:

• You can select source and destination labware from a list of labware items positioned on the worktable (see Defining source and destination for a transfer command on p. 32).
• Immediately after you have added a command to the procedure, you can define source and destination by clicking with the mouse (see Selecting source and destination from a list on p. 32).

Selecting source and destination from a list

You can select up to four source and destination locations by selecting labware from a list of labware items positioned on the worktable. To do so, proceed as follows.

1. In the Procedure list of the Procedure tab, select the command you wish to edit, e.g. a Sample Transfer command.

2. In the parameter section, select the first source labware from the list.

   The list for the next location becomes active automatically. The second list shows only labware on the worktable which is compatible with the first selected labware location.

3. Specify further source locations in the same way, if required.
4. Select the destination labware in the same way.

   The source and destination locations for this command are active immediately.
Clicking on source and destination with the mouse

You can define up to four source and destination locations by clicking with the mouse (only possible immediately after you have added the command to the procedure). To do so, proceed as follows.

1. Add a command to the procedure, e.g. a Sample Transfer command (see Adding a command to the program on p. 30).
2. Immediately after adding the command, move the mouse over the worktable.
   The mouse pointer changes into a dispensing tool symbol.
3. Click on the first source labware on the worktable.
   The selected source labware is highlighted in blue, and the source list in the parameter section shows the name of the labware in first position.
4. If required, select further source locations by clicking with the mouse (up to four locations).
   They are also highlighted in blue and displayed as source locations in the parameter section.
5. To define the destination labware, press and hold the Ctrl key on the keyboard, and click on the first destination labware on the worktable.
   The selected destination labware is highlighted in red, and the destination list in the parameter section shows the name of the labware in first position.
6. If required, select further destination locations by holding the Ctrl key and clicking with the mouse (up to four locations).
   They are also highlighted in red and displayed as destination locations in the parameter section.

The source and destination locations for this command are active immediately. You can edit them later by selecting different locations from the lists in the parameter section (see Selecting source and destination from a list on p. 32).

5.6.5 Editing the pattern for a transfer command

The following pattern types are available for transfer commands:

- **Standard pattern** (for Sample Transfer commands only): a simple, regular pattern that can be either row-wise or column-wise.
- **Regular pattern with automatic pattern detection** (for all commands, except when using module racks): a regular pattern that is not strictly row-wise or column-wise, e.g. to pipette a sample from the first column of a source plate 1:1 into the second column of a destination plate. To define this pattern, you need to specify only the first few positions, the pattern is then recognized and completed automatically.
• **Irregular pattern** (for some commands): irregular pattern for a plate or module rack in which the source and destination positions can be defined freely. Automatic pattern detection is not possible, all positions must be specified manually (see Creating an irregular pattern for a plate or rack on p. 36).

To edit the pattern for a transfer command, proceed as follows.

1. In the Procedure list of the Procedure tab, select the command you wish to edit, e.g. a Sample Transfer command, and define the source and destination labware (see Defining source and destination for a transfer command on p. 32).

2. If the Sample Transfer command requires a standard pattern that is either row-wise or column-wise, check the **Standard** checkbox and select the row-wise or column-wise option.

3. To define a regular pattern that is not row-wise or column-wise, click the **Pattern** button. The Pattern window opens.

   The source and destination labware is displayed. The source labware is shown on the left, marked with a blue frame. The destination labware is shown on the right, marked with a red frame.

4. If there is a previous pattern that you do not want to use, click the **New Pattern** button to remove it.

5. In the source labware, click on the first position from which liquid is to be taken, e.g. position 1A.

6. In the destination labware, click on the position (or positions) to which the first amount of liquid is to be transferred, e.g. position 2A.
7. In the source labware, click on the second position from which liquid is to be taken, e.g. position 1B.

8. In the destination labware, click on the position (or positions) to which the second amount of liquid is to be transferred, e.g. position 2B.

The epMotion Editor will attempt to recognize the intended pattern and will highlight the next position in grey.

9. If the recognized pattern matches your requirements, click OK to confirm and close the Pattern window. The pattern will be completed automatically up to the defined number of samples.

10. If you wish to discard the recognized pattern, click New Pattern and start again.

11. To check a defined pattern, click Show Process in the pattern window.

The pattern sequence is shown, and corresponding source and destination positions are displayed in the same color.

For a description of all available commands and their parameters, see the reference list of commands (see Reference list of commands and parameters on p. 42).

Alternatively, you can create an irregular pattern for a plate or module rack.
5.6.6 Creating an irregular pattern for a plate or rack

An irregular pattern for a plate or module rack is a pattern in which the source and destination positions can be defined freely. Automatic pattern detection is not possible, all positions must be specified manually. Alternatively, you can define a standard pattern (row-wise or column-wise) or a regular pattern with automatic pattern detection (see Editing the pattern for a transfer command on p. 33).

To create an irregular pattern for a plate, rack or module rack, proceed as follows.

1. In the Procedure list of the Procedure tab, select the command you wish to edit, e.g. a Sample Transfer command, and define the source and destination labware.
2. In the parameter section, check the checkbox irregular Pattern below the list of source and/or destination labware as required.

3. Click the Pattern button.

The Pattern window opens.

The source and destination labware is displayed. The source labware is shown on the left, highlighted in blue. The destination labware is shown on the right, highlighted in red.

4. In the source labware, click on the first position from which liquid is to be taken.

5. In the destination labware, click on the position to which the first amount of liquid is to be transferred.
6. Select all positions of the intended pattern in the same way, alternating between the source and destination labware.
7. To confirm the pattern and close the Pattern window, click **OK**.
8. If you wish to discard the pattern, click **New Pattern** and start again.
9. To check a defined pattern, click **Show Process** in the pattern window.
   The pattern sequence is shown, and corresponding source and destination positions are displayed in the same color.

For a description of all available commands and their parameters, see the reference list of commands (see Reference list of commands and parameters on p. 42).

5.6.7 Checking the method or individual commands (parameter test)

The parameter test allows you to check whether all required parameters are set, either for the entire method or for individual commands or a sequence of commands.

1. To check the parameter settings of the current method, click the **Check Method** icon in the icon bar of the Work tab (see Functions in Button Bar on p. 18), or select **Edit - Check Method** from the main menu.

2. To check an individual command or a sequence of commands, select the commands you wish to check, right-click and select **Check** from the context menu.
   A message window opens to inform you if a parameter error was found. Correct the error and repeat the check until all errors have been corrected.

5.6.8 Moving a command up or down in the procedure

To move a command to a different position in the procedure, proceed as follows.

- In the Procedure list of the Procedure tab, click on the command you wish to move, drag it upwards or downwards with the mouse and drop it in its new position.
  The command is moved to the new position.
5.6.9 Duplicating a command

To duplicate a command, including its parameters and options, and insert the duplicate into the procedure, proceed as follows.

1. In the Procedure list of the Procedure tab, select the original command, and check that the parameters and options are defined as required.
2. Click the Copy icon, or right-click on the command and select Copy from the context menu.
3. Select the command below the position in which you want to insert the duplicate, right-click and select Paste before from the context menu.

The command is duplicated and the duplicate is inserted at the chosen position.

You can now edit the parameters of the original command and the duplicate independently of each other.

5.6.10 Removing commands from the procedure

To remove one or several commands from the procedure, proceed as follows.

1. In the Procedure list of the Procedure tab, select the command you wish to remove.
2. To select a sequence of commands, click on the first command in the sequence, then press the Shift key on the keyboard and click on the last command in the sequence.
3. Press the Del key on the keyboard, or right-click on the command or sequence of commands and select Delete from the context menu.

A warning message appears.

4. To delete, click OK.

The command or sequence of commands is removed from the procedure.

5.6.11 Importing commands from a CSV file

When working with biological material (e.g. protein solutions, nucleic acid solutions), it may be necessary to transfer defined quantities of different samples from various parent solutions to a target container in order to adjust the concentration (thus creating standards). The quantities of sample material that must be transferred can be determined by physical measurements (e.g. by using spectroscopic methods, enzymatical analysis, or chemical methods), and the resulting quantities can then be listed in a table.

The menu function Edit - Import from CSV allows you to import such a table in CSV file format, which defines the volumes of sample material to be transferred from positions of a source container to selected positions of a target container.

The imported table is converted into a sequence of Sample Transfer commands. In each imported Sample Transfer command, the liquid is transferred from one specific source position to one specific destination position. Automatic pattern recognition is not active for this command.
You can create and edit tables in CSV file format in an editor or spreadsheet program. Importing a procedure from a file also allows you to re-use the same sequence of commands in different methods by simply importing that sequence again from the same source file.

Creating a CSV file for import

A CSV file is an ASCII text file that defines the structure and contents of a table. Each line of text in the CSV file specifies one table row. The contents of the cells in each table row are separated by commas, semicolons or tabulators. You can create and edit a CSV file with any basic ASCII text editor, e.g. Windows Notepad, or with a spreadsheet program, e.g. Microsoft Excel.

To create a CSV file, make sure it meets the following requirements.

1. If you create your table in a spreadsheet program and then export it to CSV format, make sure that the original spreadsheet file contains only one sheet, as only one sheet of table data can be exported to a CSV file.

2. Each transfer command must be defined in a separate row. Values must be sorted in six columns as follows: "Rack" (source rack), "Source" (source position), "Rack" (destination rack), "Destination" (destination position), "Volume" (transfer volume in µl), "Tool" (dispensing tool). The values in each row must be divided by commas, semicolons or tabulators. In decimal numbers, the decimal point or comma can be used. Make sure that the separator for lists is not identical with the decimal symbol.

To illustrate the required file structure, the following example shows the first few table rows of a CSV file as displayed in a spreadsheet program:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rack</td>
<td>Source</td>
<td>Rack</td>
<td>Destination</td>
<td>Volume</td>
</tr>
<tr>
<td>1</td>
<td>a1</td>
<td>1</td>
<td>a1</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>a2</td>
<td>1</td>
<td>a5</td>
<td>2.8</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>b5</td>
<td>1</td>
<td>c5</td>
<td>4.0</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>c7</td>
<td>1</td>
<td>d6</td>
<td>4.1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>c7</td>
<td>1</td>
<td>d7</td>
<td>4.2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>r7</td>
<td>1</td>
<td>a1</td>
<td>3.9</td>
<td>1</td>
</tr>
</tbody>
</table>

For comparison, this shows the same CSV file as displayed in an ASCII text editor:

```
l1m2l1:m112.0:1
l2m11:m5150.8:1
l1b51:c64.1:1
l1c71:d854.1:1
l1r71:ex4.2:1
l1a1:a41.4:1
```

3. The values in the six columns of the CSV file must begin in line two of the file and must continue without gaps. Below the values, there must be no further entries, because this would be interpreted as a command during import and would cause errors.

4. If a row begins with ‘#’ it is interpreted as comment and will not be imported.

5. A maximum of 500 transfer commands can be imported into a method of the epMotion Editor from a CSV file, but only 102 commands can be transferred to the Control Panel.

6. The rack numbers stated as source and destination locations in the CSV file must correspond to the number of racks defined in the first Sample Transfer command that you add to the method manually before importing the file (see p. 40). A maximum of four source locations and four destination locations on the worktable can be used. The exact source and destination positions on each plate can be entered as numbers (1, 2, 3, etc.) or as alphanumerical coordinates on the plate (A1, B5, A3, etc.).
7. The tool numbers in the CSV file must correspond to the dispensing tools as follows:
   • 1 - TS_50
   • 2 - TS_300
   • 3 - TS_1000

   TM tools cannot be used. It is recommended to avoid frequent tool changes within a method.

**Importing a CSV file**

To import a sequence of Sample Transfer commands from a CSV file, proceed as follows.

1. In a new procedure, add a Number of Samples command as the first step (see *Adding a command to the program on p. 30*).
2. In the parameter section of the Number of Samples command, activate the option "Fix number of samples" and set the number of samples to 1.
   The number of samples for the following steps has now been limited so that each Sample Transfer command which follows will be only carried out once, i.e. for one sample.

3. As the second step in the procedure, add a Sample Transfer command (see *Adding a command to the program on p. 30*).

   ![Sample Transfer command](image)

   This first Sample Transfer command and its source and destination locations on the worktable will serve as the master setting for the entire sequence of commands which will be imported from the CSV file. Only the source and destination locations defined manually in this first Sample Transfer command will be available for use during the sequence of imported commands.

4. Define the source and destination locations for the Sample Transfer command (see *Defining source and destination for a transfer command on p. 32*).
   The following example shows a Sample Transfer command with two source locations and two destination locations. These locations will be available for the imported sequence of commands.
The rack numbers stated as source and destination locations in the CSV file must correspond to the number of racks defined in the first Sample Transfer command. A maximum of four source locations and four destination locations can be defined. The rack locations will then be used in the order in which they appear in the parameter section of the first Sample Transfer command, i.e. if the source rack 2 is specified in the file, the second rack in the list of source locations will be used as the source rack for that step.

5. In the Options and Mix tabs in the parameter section of the Sample Transfer command, define the options and mix settings you want to use for the sequence of imported commands.

The options and mix settings defined manually for the first Sample Transfer command will be copied and used for all imported commands. The option “Elution from filter” is not available for imported commands.

6. Check the parameter settings for the first Sample Transfer command and make sure that they meet the requirements needed for the entire sequence of commands.

Please pay specific attention to the mixing volume and the mixing speeds, as these settings must be suitable for all imported transfer commands. The pre-set value for the mixing speed must be overwritten manually with a different value. If you want to use different dispensing tools (including TS_300), a mixing speed of 11 mm/sec is recommended.

7. To import the sequence of commands from the file, click on the Sample Transfer command in the program list to make sure it is selected.

8. Select Edit - Import from CSV from the main menu.

9. Select the CSV file you want to import, and click Open.

The CSV file is imported. Each row defined in the CSV file is added to the procedure as a Sample Transfer command with the settings for source, destination, volume and tool defined in the file. The imported sequence of commands is displayed in the program list.
A maximum of 101 transfer commands can be imported into a method from a CSV file. The maximum number of commands that can be used in one method is 102.

Make sure that the maximum of commands is 102 before you transfer the method to the Control Panel.

5.7 Reference list of commands and parameters

This reference list contains all available commands and their parameters and options. Further details and specialized information can be found in the appendix.

You can use these commands to define a procedure.

5.7.1 General parameters for transfer commands

The following general parameters and options are used in transfer commands. Click on the Parameters, Options, Mix and Liquid Type tabs in the parameter section to edit the command parameters according to the requirements of your method.

Some parameters may differ or may not be available for individual commands. Where this is the case, see the section on the respective transfer command for details: Sample Transfer, Reagent Transfer, Dilute, Pool and Pool One Destination.
Parameters

- **Pipet. Tool / Filter Tips**: select from the list the dispensing tool you want to use for the transfer. If you are using filter tips, activate the Filter Tips option.
- **Volume**: enter the volume to be transferred in each step. The volume is aspirated or dispensed according to the transfer type specified below.
- **Transfer Type**:
  - **Pipette**: the volume set above is aspirated or dispensed in each step.
  - **Multidis pense**: the volume set above is dispensed in each multidispense step.
  - **Multiaspirate**: the volume set above is aspirated in each multiaspirate step.
- **Source / Destination**: select source and destination labware from the worktable assignment.
- **Pattern**: the pattern is used to specify aspiration and dispensing positions within this command.
  - **Standard pattern**: if the command requires a standard pattern that is either row-wise or column-wise, check the **Standard** checkbox and select the row-wise or column-wise option.
  - **Regular pattern with automatic pattern detection**: to define a regular pattern that is not row-wise or column-wise, click the **Pattern** button and define the intended pattern.
  - **Irregular pattern**: to create an irregular pattern for a plate or module rack, check the checkbox **Irregular Pattern** below the list of source and/or destination labware as required. Then click the **Pattern** button and define the intended pattern.

Options

- **Aspirate from bottom**: select if the liquid is to be aspirated from the bottom of the well.
- **Elution from filter**: select if the liquid is to be aspirated from a PCR Cleanup filter plate.
- **Dispense from top**: select if the liquid is to be dispensed from the top edge of the well.
- **Change tips**: select one of the available options to specify when the tips are to be changed.

Mix

- **Mix before aspirating / Mix after dispensing**: activate the relevant option if the liquid is to be mixed before aspiration or after dispensing. To mix the liquid, it will be aspirated into the tip and dispensed back into the same well.
- **No. of cycles**: set the required number of mixing cycles.
- **Speed**: set the mixing speed.
- **Volume**: set the volume that is to be aspirated and dispensed during the mixing process.
- **Fixed height**: activate this option if you wish to use fixed height positions for mixing, and set the height values for aspiration and dispensing. The height is measured between the tip and the bottom of the well.
  
  This option should only be used with filling levels below the volume of the well. With greater filling volumes, liquid can be forced out of the tube or well!

Liquid Type

- **Standard Liquid Type**: select the liquid type which most closely resembles the physical properties of the liquid you want to transfer.
- **Change Parameters**: to change the settings for the selected liquid type for this command, activate this option and set the values according to your requirements.
  
  To restore the default settings for the selected liquid type, click the **Set Default** button.
5.7.2 Number of Samples

Use the Number of Samples command to specify how many samples are to be edited or processed in the subsequent steps of the procedure. It applies to all commands until the next Number of Samples command in the procedure. The command can be used several times in a method to change the number of samples during the sequence of the procedure.

Depending on the type and purpose of subsequent commands, the Number of Samples command will have different effects:

- Sample Transfer: number of samples which is aspirated from the source plate.
- Reagent Transfer: number of wells of the destination plate into which the reagent is dispensed.
- Dilute: number of samples to be diluted.
- Pool and Pool One Destination: number of wells in the source plate from which liquid is collected.
- Mix: number of wells in the plate in which the liquid is mixed.

Parameters

- **Fix Number of Samples / (Max) Number of Samples**: to define a fixed number of samples for all runs of this method, activate the option *Fix Number of Samples* and enter the required number. The specified number of samples will then be used for all method runs.
  
  To use a variable number of samples, deactivate the option *Fix Number of Samples* and enter the maximum number of samples. The exact number of samples for each individual method run must then be entered by the operator when the method starts.

- **Comment**: enter a comment, if required. The comment will be displayed at the start of the method.

5.7.3 Sample Transfer

Use the Sample Transfer command to transfer samples from several positions of the source labware to several positions of the destination labware. During the sample transfer, each sample is taken from its original well in the source plate to a specified well in the destination plate, according to the defined pattern.

This command requires the general parameters for transfer commands. The following details are specific for this command.

Parameters

- **Transfer Type**:
  - Pipette: the volume set above is aspirated or dispensed in each step.
  - Multidisperse: the volume set above is dispensed in each multidispense step.
  - Multiaspirate: not available.
5.7.4 Reagent Transfer

Use the Reagent Transfer command to transfer a reagent from one position of the source labware to several positions of the destination labware. During the reagent transfer, the reagent is taken from its tube or well in the source labware and is dispensed into various specified wells in the destination plate, according to the defined pattern.

This command requires the general parameters for transfer commands. The following details are specific for this command.

Parameters

- **Transfer Type:**
  - **Pipette:** the volume set above is aspirated or dispensed in each step.
  - **Multidispense:** the volume set above is dispensed in each multidispense step.
  - **Multiaspirate:** not available.

- **Pattern:** the pattern is used to specify aspiration and dispensing positions within this command.
  - Standard pattern: not available.
  - Regular pattern with automatic pattern detection: to define a regular pattern that is not row-wise or column-wise, click the **Pattern** button and define the intended pattern.
  - Irregular pattern: to create an irregular pattern for a plate or module rack, check the checkbox **Irregular Pattern** below the list of source and/or destination labware as required. Then click the **Pattern** button and define the intended pattern.

5.7.5 Dilute

The Dilute command is a modified sample transfer to make it easier for you to perform dilution series. A defined volume is transported from one well to the next several times by means of pipetting.

This command requires the general parameters for transfer commands. The following details are specific for this command.

Parameters

- **Transfer Type:**
  - **Pipette:** the volume set above is aspirated or dispensed in each step.
  - **Multidispense:** not available.
  - **Multiaspirate:** not available.

- **Pattern:** the pattern is used to specify aspiration and dispensing positions within this command.
  - Standard pattern: not available.
  - Regular pattern with automatic pattern detection: to define a regular pattern that is not row-wise or column-wise, click the **Pattern** button and define the intended pattern.
  - Irregular pattern: available only for the source position. To create an irregular pattern for a source plate or module rack, check the checkbox **Irregular Pattern** below the list of source labware. Then click the **Pattern** button and define the intended pattern.

Options

- **Aspirate from bottom:** select if the liquid is to be aspirated from the bottom of the well.
- **Elution from filter:** not applicable.
- **Dispense from top:** select if the liquid is to be dispensed from the top edge of the well.
- **Change tips:** select one of the available options to specify when the tips are to be changed.
5.7.6 Pool

The Pool command is used to transfer liquids from several source positions to a destination position. For example, the contents of several wells of the source labware can be pooled in a new well in the destination labware.

This command requires the general parameters for transfer commands. The following details are specific for this command.

Parameters

- **Transfer Type**:
  - Pipette: the volume set above is aspirated or dispensed in each step.
  - Multidis pense: not available.
  - Multiaspirate: the volume set above is aspirated in each multiaspirate step.

- **Pattern**: the pattern is used to specify aspiration and dispensing positions within this command.
  - Standard pattern: not available.
  - Regular pattern with automatic pattern detection: to define a regular pattern that is not row-wise or column-wise, click the Pattern button and define the intended pattern.
  - Irregular pattern: not available.

Options

- **Aspirate from bottom**: select if the liquid is to be aspirated from the bottom of the well.
- **Elution from filter**: not applicable.
- **Dispense from top**: select if the liquid is to be dispensed from the top edge of the well.
- **Change tips**: select one of the available options to specify when the tips are to be changed.

5.7.7 Pool One Destination

The Pool One Destination command is used to transfer liquid from several source positions to a single destination position. This command is a simplified Pool command.

This command requires the general parameters for transfer commands. The following details are specific for this command.

Parameters

- **Transfer Type**:
  - Pipette: the volume set above is aspirated or dispensed in each step.
  - Multidis pense: not available.
  - Multiaspirate: the volume set above is aspirated in each multiaspirate step.

- **Pattern**: the pattern is used to specify aspiration and dispensing positions within this command.
  - Standard pattern: not available.
  - Regular pattern with automatic pattern detection: to define a regular pattern that is not row-wise or column-wise, click the Pattern button and define the intended pattern.
  - Irregular pattern: available only for the source position. To create an irregular pattern for a source plate or module rack, check the checkbox Irregular Pattern below the list of source labware. Then click the Pattern button and define the intended pattern.

Options

- **Aspirate from bottom**: select if the liquid is to be aspirated from the bottom of the well.
- **Elution from filter**: not applicable.
- **Dispense from top**: select if the liquid is to be dispensed from the top edge of the well.
- **Change tips**: select one of the available options to specify when the tips are to be changed.
5.7.8 Mix

Use the Mix command to mix liquids within a position. To mix the liquid, it will be aspirated into the tip and dispensed back into the same well.

Parameters

- **No. of cycles**: set the required number of mixing cycles.
- **Speed**: set the mixing speed.
- **Tool / Filter Tips**: select from the list the dispensing tool you want to use. If you are using filter tips, activate the Filter Tips option.
- **Mixing Volume**: set the volume that is to be aspirated and dispensed during the mixing process.
- **Fixed height**: activate this option if you wish to use fixed height positions for mixing, and set the height values for aspiration and dispensing. The height is measured between the tip and the bottom of the well.
  
  This option should only be used with filling levels below the volume of the well. With greater filling volumes, liquid can be forced out of the tube or well!
- **Racks**: select the labware from the worktable assignment.
- **Pattern**: the pattern is used to specify mixing positions within this command.
  
  - **Regular pattern with automatic pattern detection**: click the Pattern button and define the intended pattern.
  
  - **Irregular pattern**: to create an irregular pattern, check the checkbox Irregular Pattern below the Racks list. Then click the Pattern button and define the intended pattern.

Options

- **Liquid Type**: select the liquid type which most closely resembles the physical properties of the liquid you want to mix.
- **Change tips**: select one of the available options to specify when the tips are to be changed.

5.7.9 Vacuum (epMotion 5075 VAC)

Only on epMotion 5075 VAC. Use the Vacuum command to set the vacuum in the vacuum unit.

Parameters

- **Frame**: select the Vac Frame.
- **Vacuum Pressure**: set the vacuum pressure in kPa or mbar.
- **Vacuum Time**: set the time for extraction.
- **Use Vacuum Lid**: activate this option if you want to use the Vac Lid. The gripper will transport the Vac Lid from location T0 to the filter plate in the vacuum unit at the start of the command.
- **Check Levels**: activate this option if all wells of the filter plate are to be scanned by the optical sensor after method of the vacuum. Check Levels must not be preceded by a dispensing command.

5.7.10 Exchange (only epMotion 5070)

The Exchange command is used to carry out a manual labware exchange between two worktable locations. When the method runs on the epMotion 5070, the method run stops at the Exchange command, and the operator is requested to change the labware manually.

Parameters

- **exchange Labware**: select the first labware to be changed.
- **with Labware**: select the second labware.
5.7.11 Transport (only epMotion 5075)

The Transport command uses the gripper to transport labware to a different destination location or to the Mastercycler (epMotion 5075 MC) or vacuum unit (epMotion 5075 VAC). Tips, racks, thermoadapters and height adapters cannot be transported. Semi-skirted and unskirted PCR plates can only be transported in combination with the thermoblock.

Parameters

- **Labware**: select the labware to be transported.
- **To Location**: select the destination location for transport.

5.7.12 Thermomixer (epMotion 5075 with thermomixer)

The Thermomixer command is used to specify the temperature and the mix settings for the Thermomixer.

Parameters

- **Template**: optionally you can choose precast templates for different mix functions.
- **Save**: you can save your own Templates.
- **Speed on**: activate the checkbox if you want to mix.
  - **Speed**: set a speed between 300 – 2000 rpm.
  - **Time**: set a time between 30 s and 120 min.
- **Temperature on**: activate the checkbox if you want to set a temperature.
  - **keep temperature after method run**: activate this checkbox, if you want to hold the temperature after the method run.
  - **Temperature**: set a temperature between 4 °C and 95 °C.

If you want to switch off temperature control before the end of the method, insert another Thermomixer command at the appropriate step in the procedure and deactivate the parameter **Temperature On** in this second Thermomixer command.

! The Thermomixer can reach a minimal temperature 15 °C under the actual room temperature.

5.7.13 Temperature (only epMotion 5075 with thermal module)

The Temperature command is used to specify the temperature of a thermal module.

Parameters

- **Location**: select a thermal module.
- **Temperature On**: switch on temperature control.
- **Hold Temperature**: activate this option if you want the selected thermal module to hold the set temperature after the method has finished.
- **Temperature**: set a temperature between 0 °C and 110 °C.

If you want to switch off temperature control before the end of the method, insert another Temperature command at the appropriate step in the procedure and deactivate the parameter **Temperature On** in this second Temperature command.
5.7.14 Wait

The Wait command specifies a defined pause before the next step. The procedure continues automatically after the specified time has elapsed.

Parameters
- **Wait Time**: set the duration of the pause.
- **Wait for Temperature / Location**: activate this option if you want the epMotion to wait until a set temperature has been reached at a location, and select the location from the list.

5.7.15 Comment

Use the Comment command to enter a comment line to be displayed at a particular point in the procedure.

- **Comment**: enter the text for the comment.

5.7.16 User Intervention

The User Intervention command enables you to insert steps in your method which the operator has to execute manually. The procedure only continues after the operator has confirmed the display message.

- **Comment**: enter an informative comment to tell the operator what task he or she needs to carry out.
- **Alarm**: activate this option for an alerting signal when this step in the procedure is reached.

5.7.17 Temp Cycler (only epMotion 5075)

Only for epMotion 5075 MC. Use this command to select the temperature for the cycler lid and/or for the cycler block before starting a cycler program.

- **Lid Temperature On / Lid Temperature**: activate this option to set a temperature for the cycler lid and enter the temperature.
- **Block Temperature On / Block Temperature**: activate this option to set a temperature for the cycler block and enter the temperature.

5.7.18 Start Cycler (only epMotion 5075)

Only for epMotion 5075 MC. Use this command to select a cycler program and specify the start. The StartCycler command must always be the last command of a method.

---

![Hint!]

You have to save the method first before you can choose a cycler program.

- **Cycler Program**: select the cycler program.
6 Ordering information

6.1 Accessories

Use only original Eppendorf accessories or accessories (labware) approved by Eppendorf AG on the epMotion.

6.1.1 Dispensing Tools

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5280 000.010</td>
<td>Single-channel dispensing tool TS 50</td>
</tr>
<tr>
<td></td>
<td>Volume range 1 μL - 50 μL</td>
</tr>
<tr>
<td>5280 000.037</td>
<td>Single-channel dispensing tool TS 300</td>
</tr>
<tr>
<td></td>
<td>Volume range 20 μL - 300 μL</td>
</tr>
<tr>
<td>5280 000.053</td>
<td>Single-channel dispensing tool TS 1000</td>
</tr>
<tr>
<td></td>
<td>Volume range 40 μL - 1000 μL</td>
</tr>
<tr>
<td>5280 000.215</td>
<td>Eight-channel-dispensing tool TM 50</td>
</tr>
<tr>
<td></td>
<td>Volume range 1 μL - 50 μL</td>
</tr>
<tr>
<td>5280 000.231</td>
<td>Eight-channel-dispensing tool TM 300</td>
</tr>
<tr>
<td></td>
<td>Volume range 20 μL - 300 μL</td>
</tr>
<tr>
<td>5280 000.258</td>
<td>Eight-channel-dispensing tool TM 1000</td>
</tr>
<tr>
<td></td>
<td>Volume range 40 μL - 1000 μL</td>
</tr>
<tr>
<td>5075 774.003</td>
<td>Holder for 6 dispensing tools</td>
</tr>
</tbody>
</table>

6.1.2 epT.I.P.S. Motion pipette tips.

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0030 014.405 0030 015.207</td>
<td>epT.I.P.S. Motion 50 μL</td>
</tr>
<tr>
<td></td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td></td>
<td>Eppendorf Quality</td>
</tr>
<tr>
<td></td>
<td>Sterile</td>
</tr>
<tr>
<td>0030 014.448 0030 015.223</td>
<td>epT.I.P.S. Motion 300 μL</td>
</tr>
<tr>
<td></td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td></td>
<td>Eppendorf Quality</td>
</tr>
<tr>
<td></td>
<td>Sterile</td>
</tr>
<tr>
<td>0030 014.480 0030 015.240</td>
<td>epT.I.P.S. Motion 1 000 μL</td>
</tr>
<tr>
<td></td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td></td>
<td>Eppendorf Quality</td>
</tr>
<tr>
<td></td>
<td>Sterile</td>
</tr>
<tr>
<td>0030 014.413 0030 015.215</td>
<td>epT.I.P.S. Motion Filter 50 μL</td>
</tr>
<tr>
<td></td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td></td>
<td>PCR clean</td>
</tr>
<tr>
<td></td>
<td>PCR clean and Sterile</td>
</tr>
<tr>
<td>0030 014.456 0030 015.231</td>
<td>epT.I.P.S. Motion Filter 300 μL</td>
</tr>
<tr>
<td></td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td></td>
<td>PCR clean</td>
</tr>
<tr>
<td></td>
<td>PCR clean and Sterile</td>
</tr>
</tbody>
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### 6.1.3 Reagent reservoirs

<table>
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<tr>
<th>Order no. (international)</th>
<th>Description</th>
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<tbody>
<tr>
<td>0030 014.499</td>
<td>epT.I.P.S. Motion Filter 1 000 µL</td>
</tr>
<tr>
<td>0030 015.258</td>
<td>10 racks with 96 tips each</td>
</tr>
<tr>
<td>0030 014.421</td>
<td>PCR clean</td>
</tr>
<tr>
<td>0030 014.464</td>
<td>PCR clean and Sterile</td>
</tr>
<tr>
<td>0030 014.502</td>
<td>epT.I.P.S. Motion Reloads 50 µL</td>
</tr>
<tr>
<td>0030 014.430</td>
<td>12 × 2 trays with 96 tips each</td>
</tr>
<tr>
<td>0030 014.472</td>
<td>Eppendorf Quality</td>
</tr>
<tr>
<td>0030 014.510</td>
<td>epT.I.P.S. Motion Reloads 300 µL</td>
</tr>
<tr>
<td>5075 751.399</td>
<td>12 × 2 trays with 96 tips each</td>
</tr>
<tr>
<td>5075 754.002</td>
<td>PCR clean</td>
</tr>
<tr>
<td>0030 0126.505</td>
<td>epT.I.P.S. Motion Reloads 1 000 µL</td>
</tr>
<tr>
<td>0030 0126.513</td>
<td>12 × 2 trays with 96 tips each</td>
</tr>
<tr>
<td>5075 751.399</td>
<td>Eppendorf Quality</td>
</tr>
<tr>
<td>TipHolder</td>
<td>12 × 2 trays with 96 tips each</td>
</tr>
<tr>
<td>5075 754.002</td>
<td>PCR clean</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ReservoirRack</td>
<td>for 30 mL and 100 mL reservoirs and ReservoirRack Module TC</td>
</tr>
<tr>
<td>epMotion Reservoir</td>
<td>PCR clean, 10 × 5 pieces in bags</td>
</tr>
<tr>
<td>0030 126.505</td>
<td>30 mL</td>
</tr>
<tr>
<td>0030 126.513</td>
<td>100 mL</td>
</tr>
</tbody>
</table>
### 6.1.4 Racks for individual tubes

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5075 761.009</td>
<td>Racks for individual tubes for use with Eppendorf vessels and glass or plastic test tubes, cannot be tempered Ø 17 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 775.000</td>
<td>Ø 17 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 760.002</td>
<td>Ø 16 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 776.006</td>
<td>Ø 16 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 792.028</td>
<td>Ø 15 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 792.044</td>
<td>Ø 15 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 792.001</td>
<td>Ø 14 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 792.060</td>
<td>Ø 14 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 762.005</td>
<td>Ø 13 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 792.087</td>
<td>Ø 13 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 763.001</td>
<td>Ø 12 mm × 100 mm max. length</td>
</tr>
<tr>
<td>5075 792.109</td>
<td>Ø 12 mm × 60 mm max. length</td>
</tr>
<tr>
<td>5075 792.125</td>
<td>Rack for 24 HPLC vessels Ø 12 mm × 40 mm max. length</td>
</tr>
<tr>
<td>5075 791.005</td>
<td>Rack for 96 × 1.5/2.0 mL screw cap tubes</td>
</tr>
<tr>
<td>5075 751.160</td>
<td>Thermorack TMX for 24 Safe-Lock tubes 0.5 mL</td>
</tr>
<tr>
<td>5075 751.186</td>
<td>1.5/2.0 mL</td>
</tr>
</tbody>
</table>

### 6.1.5 Modular rack components

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>5075 799.049</td>
<td>ReservoirRack Module TC PCR 0.2 mL</td>
</tr>
<tr>
<td>5075 799.065</td>
<td>PCR 0.5 mL</td>
</tr>
<tr>
<td>5075 799.081</td>
<td>Safe-Lock Ø 12 mm</td>
</tr>
<tr>
<td>5075 799.103</td>
<td>Ø 16 mm</td>
</tr>
<tr>
<td>5075 799.120</td>
<td>Ø 17 mm</td>
</tr>
<tr>
<td>5075 799.162</td>
<td>Ø 29 mm</td>
</tr>
<tr>
<td>5075 799.189</td>
<td>Reservoir 30 mL</td>
</tr>
<tr>
<td>5075 799.146</td>
<td>Reservoir 100 mL</td>
</tr>
<tr>
<td>5075 799.280</td>
<td></td>
</tr>
</tbody>
</table>

### 6.1.6 Height Adapter

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5075 751.003</td>
<td>Height adapter 85 mm</td>
</tr>
<tr>
<td>5075 752.000</td>
<td>55 mm</td>
</tr>
<tr>
<td>5075 755.009</td>
<td>40 mm</td>
</tr>
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</table>

### 6.1.7 Additional Accessories

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5075 753.006</td>
<td>Waste box</td>
</tr>
</tbody>
</table>
### 6.1.8 Accessories for real-time PCR

<table>
<thead>
<tr>
<th>Order no. (international)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5070 750.009</td>
<td>Rack Smart</td>
</tr>
<tr>
<td>5070 795.000</td>
<td>Rack LC, 20 µL/100 µL</td>
</tr>
<tr>
<td>5075 751.305</td>
<td>Thermoadapter LC Sample, for MagNA Pure LC sample cartridge</td>
</tr>
<tr>
<td>5075 767.031</td>
<td>Thermorack CB, 100 µL</td>
</tr>
<tr>
<td>5075 787.008</td>
<td>Thermoadapter, for PCR plates, 96 wells, skirted</td>
</tr>
<tr>
<td>5075 788.004</td>
<td>for PCR 384 wells, skirted</td>
</tr>
<tr>
<td>5075 789.000</td>
<td>Thermoadapter Frosty</td>
</tr>
<tr>
<td>5075 766.000</td>
<td>Thermoblock, PCR 96, for use with vessels 0.2 mL or 77 PCR tubes 0.5 mL</td>
</tr>
<tr>
<td>5075 767.007</td>
<td>Thermoblock, PCR 384</td>
</tr>
<tr>
<td>0030 128.648</td>
<td>twin.tec PCR Plate 96, skirted, Wells colorless, 25 pieces</td>
</tr>
<tr>
<td>0030 128.656</td>
<td>clear</td>
</tr>
<tr>
<td>0030 128.664</td>
<td>yellow</td>
</tr>
<tr>
<td>0030 128.672</td>
<td>green</td>
</tr>
<tr>
<td>0030 128.680</td>
<td>blue</td>
</tr>
<tr>
<td>0030 128.800</td>
<td>red</td>
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<td>0030 128.508</td>
<td>twin.tec PCR Plate 96, skirted, Wells black, 25 pieces</td>
</tr>
<tr>
<td>0030 128.516</td>
<td>yellow</td>
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<tr>
<td>0030 128.524</td>
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<td>0030 128.532</td>
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<tr>
<td>0030 128.540</td>
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<td>Order no. (international)</td>
<td>Description</td>
</tr>
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<td>--------------------------------------------------</td>
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<tr>
<td>3881 000.015</td>
<td>PCR-Cooler</td>
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<tr>
<td></td>
<td>Starter Set (1 x pink, 1 x blue)</td>
</tr>
<tr>
<td></td>
<td>pink</td>
</tr>
<tr>
<td></td>
<td>blue</td>
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All twin.tec plates can be obtained with barcoding on request.