Migration Guide for Biomek 3000 Methods

Biomek 4000

Laboratory Automation Workstation

PN B08853AC
April 2019

Beckman Coulter, Inc.
250 S. Kraemer Blvd.
Brea, CA 92821 U.S.A.

BECKMAN COULTER

Biomek 4000 Laboratory Automation Workstation Migration Guide for Biomek 3000 Methods
PN B08853AC (April 2019)

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Contact Us
If you have any questions, contact our Customer Support Center.

- Worldwide, find us via our website at www.beckman.com/support/technical
- In the USA and Canada, call us at 1-800-369-0333.
- Outside of the USA and Canada, contact your local Beckman Coulter Representative.

Find us on the World Wide Web at:
www.beckman.com

Glossary of Symbols is available at beckman.com/techdocs (PN C24689).

Original Instructions

Revision Status

Initial Issue, 08/2012
Software Version 4.1

Version AB, 06/2013
Software Version 4.1

Changes were made to:

- Biomek 4000 System Requirements
- Method Migration Using Script
- Figure 1.8, Biomek 4000 Deck — Deck Editor
- Tip Contents and Well Contents
- Marking Wells
- Figure 1.16, Pipetting Template Editor
- Table 1.2, Pipetting Template Wash Tool Steps
- Related Documents

Version AC, 04/2019
Software Version 4.2

Changes were made to:

- Changed Biomek Software Version 4.1 to Biomek Software Version 4 throughout book.
- Updated references to related manuals throughout book.
- China RoHS Caution Label
- Biomek 4000 System Requirements
- 21 CFR Part 11 Compliance
- CHAPTER 1, Deck Mapping
- Related Documents

Note: *Changes that are part of the most recent revision are indicated in text by a bar in the margin of the amended page.*

This document applies to the latest software listed and higher versions. When a subsequent software version affects the information in this document, a new issue will be released to the Beckman Coulter website. For labeling updates, go to www.beckman.com and download the latest version of the manual or system help for your instrument.

Safety Notice

Overview

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate the instrument. Do not attempt to perform any procedure before carefully reading all instructions. Always follow product labeling and manufacturer's recommendations. If in doubt as to how to proceed in any situation, contact us.

Beckman Coulter, Inc. urges its customers and employees to comply with all national health and safety standards such as the use of barrier protection. This may include, but is not limited to, protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this or any other automated laboratory instrumentation.

⚠ WARNING

If the equipment is used in a manner not specified by Beckman Coulter, Inc., the protection provided by the equipment may be impaired.

Alerts for Warning, Caution, Important, and Note

All Warnings and Cautions in this document include an exclamation point, framed within a triangle.

The exclamation point symbol is an international symbol which serves as a reminder that all safety instructions should be read and understood before installation, use, maintenance, and servicing are attempted.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT IMPORTANT is used for comments that add value to the step or procedure being performed. Following the advice in the Important adds benefit to the performance of a piece of equipment or to a process.

NOTE NOTE is used to call attention to notable information that should be followed during installation, use, or servicing of this equipment.

Instrument Safety Precautions

⚠ WARNING

Risk of operator injury if:

- **All doors, covers and panels are not closed and secured in place prior to and during instrument operation.**
- **The integrity of safety interlocks and sensors is compromised.**
- **Instrument alarms and error messages are not acknowledged and acted upon.**
- **You contact moving parts.**
- **You mishandle broken parts.**
- **Doors, covers and panels are not opened, closed, removed and/or replaced with care.**
- **Improper tools are used for troubleshooting.**

To avoid injury:

- **Keep doors, covers and panels closed and secured in place while the instrument is in use.**
- **Take full advantage of the safety features of the instrument. Do not defeat safety interlocks and sensors.**
- **Acknowledge and act upon instrument alarms and error messages.**
- **Keep away from moving parts.**
- **Report any broken parts to your Beckman Coulter Representative.**
- **Open/remove and close/replace doors, covers and panels with care.**
- **Use the proper tools when troubleshooting.**

⚠ CAUTION

System integrity could be compromised and operational failures could occur if:

- **This equipment is used in a manner other than specified. Operate the instrument as instructed in the Product Manuals.**
- **You introduce software that is not authorized by Beckman Coulter into your computer. Operate your system's computer only with software authorized by Beckman Coulter.**
- **You install software that is not an original copyrighted version. Use only software that is an original copyrighted version to prevent virus contamination.**

⚠ CAUTION

If you purchased this product from anyone other than Beckman Coulter or an authorized Beckman Coulter distributor, and, if it is not presently under a Beckman Coulter service maintenance agreement, Beckman Coulter cannot guarantee that the product is fitted with the most current mandatory engineering revisions or that you will receive the most current information bulletins concerning the product. If you purchased this product from a third party and would like further information concerning this topic, call your Beckman Coulter Representative.

⚠ CAUTION

Risk of instrument damage. This device is intended for indoor use only. To avoid device damage, do not install the instrument outdoors.

⚠ CAUTION

Risk of personal injury. Safety protection can be impaired if used in a manner not specified by the manufacturer. To avoid personal injury, use the instrument according to the manufacturer's instructions only.

Electrical Safety

To prevent electrically related injuries and property damage, properly inspect all electrical equipment prior to use and immediately report any electrical deficiencies. Contact a Beckman Coulter Representative for any servicing of equipment requiring the removal of covers or panels.

High Voltage

This symbol indicates the potential of an electrical shock hazard existing from a high-voltage source and that all safety instructions should be read and understood before proceeding with the installation, maintenance, and servicing of all modules.

Do not remove system covers. To avoid electrical shock, use supplied power cords only and connect to properly grounded (three-holed) outlets.

Laser Light

This symbol indicates that a potential hazard to personal safety exists from a laser source. When this symbol is displayed in this manual, pay special attention to the specific safety information associated with the symbol.

Laser Specifications

- **Laser Type:** Class II Laser Diode
- **Maximum Output:** 11 mW
- **Wavelength:** 670 nm

Disposal of Electronic Equipment

It is important to understand and follow all laws regarding the safe and proper disposal of electrical instrumentation.

The symbol of a crossed-out wheeled bin on the product is required in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union. The presence of this marking on the product indicates:

- That the device was put on the European Market after August 13, 2005 and
- That the device is not to be disposed via the municipal waste collection system of any member state of the European Union.

For products under the requirement of WEEE directive, please contact your dealer or local Beckman Coulter office for the proper decontamination information and take back program which will facilitate the proper collection, treatment, recovery, recycling, and safe disposal of device.

Chemical and Biological Safety

⚠ WARNING

Risk of chemical injury from bleach. To avoid contact with the bleach, use barrier protection, including protective eyewear, gloves, and suitable laboratory attire. Refer to the Safety Data Sheet for details about chemical exposure before using the chemical.

If a hazardous substance such as blood is spilled onto the instrument, ALPs, or accessories, clean up the spill by using a high-quality, fragrance-free, gel-free bleach (5 to 6% solution of sodium hypochlorite - available chlorine), or use your laboratory decontamination solution. Then follow your laboratory procedure for disposal of hazardous materials.

⚠ WARNING

Before running with chemistry or any biological samples, new labware types will require testing to determine if labware offsets are necessary to move to or from the Peltier ALP, or to access the labware during pipetting operations while on the Peltier ALP. If you do not do the required testing, the labware could crash and the contents could spill if the offset is incorrect.

Normal operation of the instrument may involve the use of materials that are toxic, flammable, or otherwise biologically harmful. When using such materials, observe the following precautions:

- **Handle infectious samples according to good laboratory procedures and methods to prevent the spread of disease.**
- **Observe all cautionary information printed on the original solutions' containers prior to their use.**
- **Dispose of all waste solutions according to your facility's waste disposal procedures.**
- **Operate the instrument in accordance with the instructions outlined in this manual and take all the necessary precautions when using pathological, toxic, or radioactive materials.**
- **Splashing of liquids may occur; therefore, take appropriate safety precautions, such as using safety glasses and wearing protective clothing, when working with potentially hazardous liquids.**
- **Use an appropriately-contained environment when using hazardous materials.**
- **Observe the appropriate cautionary procedures as defined by your safety officer when using flammable solvents in or near a powered-up instrument.**
- **Observe the appropriate cautionary procedures as defined by your safety officer when using toxic, pathological, or radioactive materials.**

NOTE Observe all warnings and cautions listed for any external devices attached or used during operation of the instrument. Refer to applicable external device user's manuals for operating procedures of that device.

NOTE For Safety Data Sheets (SDS/MSDS) information, go to the Beckman Coulter website at **www.beckmancoulter.com**.

Moving Parts

⚠ WARNING

Risk of personal injury. To avoid injury due to moving parts, observe the following:

- **Never attempt to exchange labware, reagents, or tools while the instrument is operating.**
- **Never attempt to physically restrict any of the moving components of the instrument.**
- **Keep the instrument work area clear to prevent obstruction of the movement.**

Cleaning

Observe the cleaning procedures outlined in this user's manual for the instrument. Prior to cleaning equipment that has been exposed to hazardous material:

- Contact the appropriate Chemical and Biological Safety personnel.
- Review the Chemical and Biological Safety information in the user's manual.

Maintenance

Perform only the maintenance described in the appropriate User's Manual. Maintenance other than that specified in those manuals should be performed only by service engineers.

IMPORTANT It is your responsibility to decontaminate components of the instrument before requesting service by a Beckman Coulter Representative or returning parts to Beckman Coulter for repair. Beckman Coulter will NOT accept any items which have not been decontaminated where it is appropriate to do so. If any parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

China RoHS Caution Label

This label indicates that the electronic information product contains certain toxic or hazardous substances. The center number is the Environmentally Friendly Use Period (EFUP) date, and indicates the number of calendar years the product can be in operation. Upon the expiration of the EFUP, the product must be immediately recycled. The circling arrows indicate the product is recyclable. The date code on the label or product indicates the date of manufacture.

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Introduction

Overview

If you have operated a Biomek 3000 system with Biomek Software, **Version 3.3**, you will find that there are many similarities to the Biomek 4000 system with Biomek Software, **Version 4**. However, the Biomek 4000 system includes improvements that make method-building more intuitive, while providing additional options to further customize your process. This guide provides you with instructions for migrating methods from Biomek Software, Version 3.3, as well as an overview of Biomek 4000 system improvements, features that remain unchanged from your Biomek 3000 system, and discontinued features and their equivalents on your Biomek 4000 instrument.

IMPORTANT Due to the enhanced capabilities of your Biomek 4000 system, Biomek 3000 methods may behave differently in Biomek Software, Version 4. It is important to either perform a dry run or a water-only run to test all migrated methods prior to executing with live reagents.

Biomek 4000 System Requirements

For Biomek Software to install correctly, your system must satisfy the following requirements:

Item	Description
Biomek Controller	**Windows 7: Biomek Software Version 4.1** The following specifications are the minimum requirements needed. **Processor:** Intel Core i5-2400 (3.1 GHZ) or better **Memory:** 2 GB **Hard Drive:** 250 GB or better **Optical Drive:** DVD **Additional Software:** Microsoft SQL Server 2005 Edition **Operating System:** Windows 7, 64-bit with scripting enabled **Internet Browser:** Internet Explorer 8
	Windows 10: Biomek Software Version 4.2 The following specifications are the minimum requirements needed: **CPU:** Intel Core i5-8500 (3.0 GHz) **RAM:** 8 GB **Hard Drive:** 500 GB **Optical Drive:** DVD **Monitor:** 22", 1920 x 1800 **Operating System:** Windows 10, 64-bit

21 CFR Part 11 Compliance

Beckman Coulter Accounts & Permissions is an integrated set of features built into Beckman Coulter software that assists users in complying with 21 CFR Part 11 requirements for closed systems. Below are additional details regarding 21 CFR Part 11 compliance in relation to Biomek Software:

- Support is extended only for the Biomek 4000 instrument; devices integrated with the instrument are not supported unless specified in separate documentation.
- A separate installation program is provided to enable Accounts & Permissions support.
- Beckman Coulter Accounts & Permissions support may be installed before or after Biomek Software is installed on the system.
- Users require a separate account for each system they need to access.
- It is the customer's responsibility to have processes in place to govern all system administration activities, as specified in the 21 CFR Part 11 regulation.
- For more information on 21 CFR Part 11 features please refer to the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).
- For more information on 21 CFR Part 11 regulations, please visit the following website: http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm135680.htm, and search for Part 11.

CHAPTER 1

Migrating Methods

Migrating Biomek Software Methods from Version 3.3 to Version 4

Project items in Biomek Software Version 4, have undergone multiple improvements; therefore, it is vital that you do not overwrite default project items when importing a method from Biomek Software, Version 3.3.

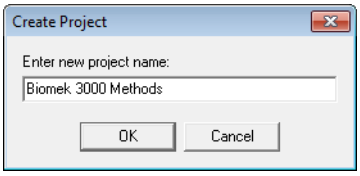
IMPORTANT If your Biomek 3000 method was functioning well within Biomek Software, Version 3.3, you will need to create a new project file for this method within Biomek Software, Version 4, before importing the old method. This action will prevent inadvertent changes to the default Biomek 4000 project file, which should be used as a starting point for new method development.

To import Biomek 3000 methods into Biomek Software, Version 4:

1 With the default Biomek 4000 project file currently open, select **Project > New Project.**

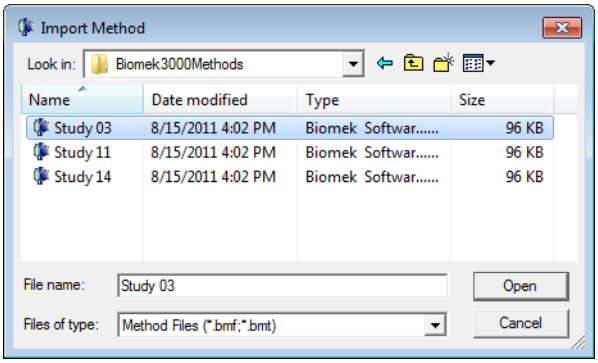
2 In **Create Project**, enter a new project name (Figure 1.1) and select **OK.**

Figure 1.1 Project Name



3 From the **File** menu, choose **Import. Import Method** displays (see Figure 1.2).

Figure 1.2 Import Method



4 In **Look in**, browse to the location where the desired method file is saved.

5 Select the method file to import.

6 Choose **Open** to import the selected method file.

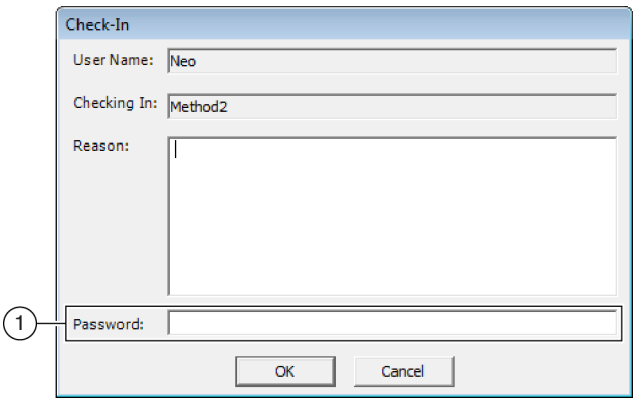
7 Choose **Yes** to confirm the desired method file is selected. If new project items have been added or project items have changed, **Import Project** displays.

IMPORTANT Prior to importing methods from other instruments, verify that the project file that you are using is not the default Biomek 4000 project file. This action prevents inadvertent changes to the default Biomek 4000 project file, which should be used as a starting point for new method development.

8 Ensure that all project items you wish to import are selected, and then choose **OK**.

9 If Accounts & Permissions is enabled, **Check-In** displays (Figure 1.3).

Figure 1.3 Checking in a Method



1. **Password:** Appears only when Accounts & Permissions is configured to require password checks (refer to the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390) for additional information).

a. In **Reason**, enter a reason for the check-in. Text entered in **Reason** is date and time stamped, and stored in the audit log of all user activity.

b. Enter the user **Password**, if required.

c. Choose **OK** to import the method.

Precaution For Instrument Files

The instrument file stores information about the hardware configuration and deck layout of the Biomek 4000 instrument. Instrument files can represent different Biomek instruments, or different hardware configurations for the same instrument.

IMPORTANT Never import a Biomek 3000 instrument file to control a Biomek 4000 instrument. Importing decks from Biomek 3000 instruments could lead to crashing. Decks need to be reconstructed in Biomek Software, Version 4. See *Deck Mapping* for additional details.

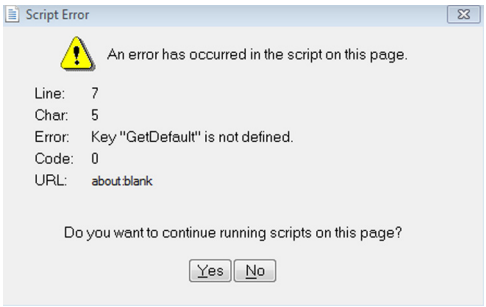
NOTE The storage file for Biomek instrument files, backups, and logs has changed to the following location: C:\Users\Public\Public Documents\Biomek

Method Migration Using Script

Beckman Coulter Inc. does not support scripting. Methods that use scripts are at high risk for requiring changes to work with Biomek Software Version 4.

When using HTML prompts, one known problem is **Key "GetDefault" is not defined.** (Figure 1.4) This is a known incompatibility with Internet Explorer 8 and above.

Figure 1.4 Script Error



Code that looks like: **VariableToSet = Dictionary.GetDefault ("Key_name", "Default_Value")** will fail with **Key "GetDefault" is not defined.**

It is recommended that code similar to the above be re-written as:

on error resume next
VariableToSet = "Default_Value"
VariableToSet = world.volatile("Key_name")

This will allow the functionality of **GetDefault** to be preserved.

Deck Mapping

Deck mapping is the process of mapping an **Instrument Setup** configuration from one Biomek deck layout to another. Deck mapping is necessary when a method is imported from another system with a different deck, or when the deck selection within the **Instrument Setup** step of method is changed. The **Instrument Setup** step allows a user to specify on which deck the proceeding method is written.

If a deck of the same name is not available when migrating a method from another system, Biomek Software prompts you to **Map Onto** an existing deck on that system.

NOTE Labware mapped from one deck to another is directly tied to the labware position name. If position names are different, additional steps will need to be taken to ensure successful deck mapping. In most cases, tools will need to be reconfigured on the new deck.

Depending on the setup configurations of the Biomek 3000 and Biomek 4000 systems, when importing a Biomek 3000 method onto the Biomek 4000 system, you will need to proceed with the option below that applies to the current circumstances.

NOTE The sections below require methods to be exported from Biomek Software, Version 3.3, and imported into Biomek Software, Version 4. Instructions for exporting methods can be found in the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390), and instructions for importing methods can be found in *Migrating Biomek Software Methods from Version 3.3 to Version 4*.

Note that some methods may have been migrated already as part of the installation or upgrade process. However, the steps listed below for migrated methods should still be followed for every method migrated from a Biomek 3000 instrument.

- *Identical Deck Names, Identical Configurations*
- *Identical Deck Names, Different Configurations*
  - *Same Position Names, Different Layout*
  - *Different Position Names*
- *Different Deck Name, Identical Configurations; and Different Deck Name, Different Configurations*

Identical Deck Names, Identical Configurations

To import Biomek 3000 methods containing the same deck name with the same configuration as the Biomek 4000 deck:

1. Export the method from the Biomek 3000 system.
2. Import the method into Biomek Software, Version 4. No further action is required.

Identical Deck Names, Different Configurations

If the Biomek 3000 method contains the same deck name as the Biomek 4000 method, but the decks are configured differently from each other, determine which of the following scenarios applies to the method, and complete the instructions provided:

- *Same Position Names, Different Layout*
- *Different Position Names*

Same Position Names, Different Layout

For decks that have the same position names, but the layouts of those positions are different, do the following:

1 Open the method on the Biomek 3000 instrument.

2 View the **Instrument Setup** step, noting the details of the following:

- Name of the deck used in **Instrument Setup** step
- Deck layout
- Labware used
- Labware properties
- Deck positions of the labware

3 Export the method from the Biomek 3000 system.

4 Open Biomek Software on the Biomek 4000 instrument.

5 Examine the current deck layout, taking note of the location of the deck positions.

6 Import the method into Biomek Software, Version 4.

NOTE All labware maps to the new deck, but the deck layout is different than the previous deck. For example, Figure 1.5 shows the deck in the Biomek 3000 method, and Figure 1.6 shows the same deck after being imported into Biomek Software, Version 4. Figure 1.7 and Figure 1.8 show the decks in the **Deck Editor**.

Figure 1.5 Biomek 3000 Deck — Instrument Setup

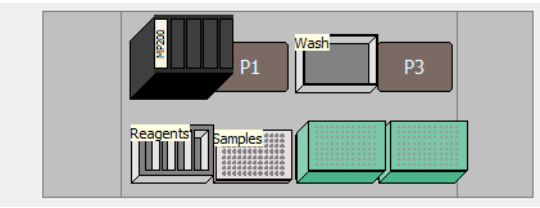


Figure 1.6 Biomek 4000 Deck — Instrument Setup

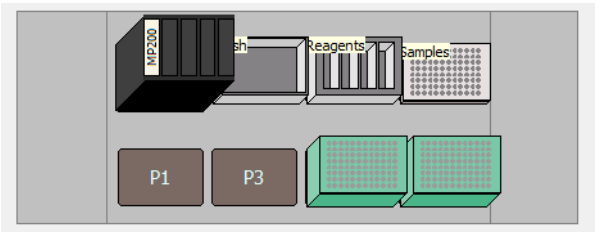


Figure 1.7 Biomek 3000 Deck — Deck Editor

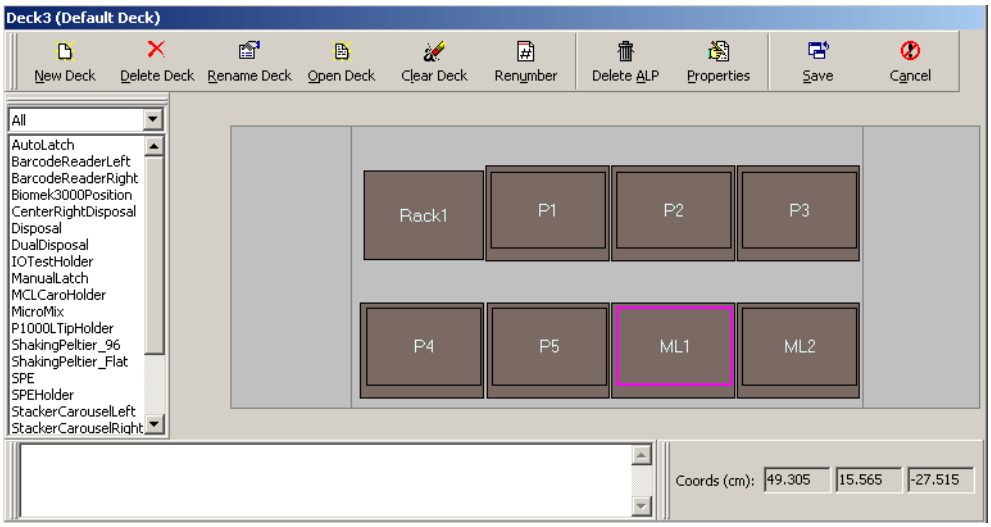
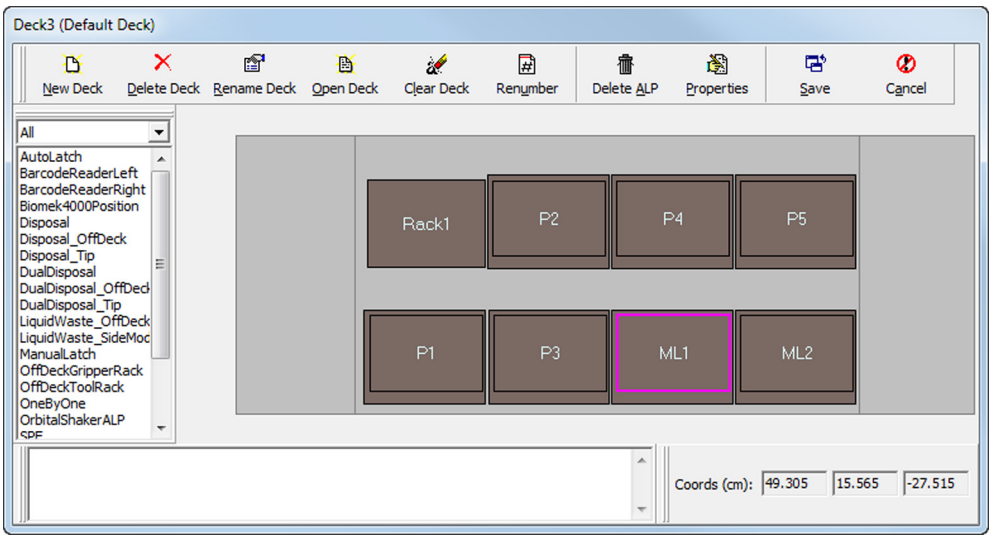


Figure 1.8 Biomek 4000 Deck — Deck Editor



7 Proceed with one of the following. If you wish to:

- **Keep labware in the new configuration**, no further method rework is required.
- **Reconfigure the labware on the deck to reduce flyover and to optimize labware placement for efficiency**, some method steps might need to be reconfigured to be compatible with the new deck setup (see *Deck Mapping and Method Repair* for details).

8 Confirm that all original labware has mapped onto the new deck.

9 Select the **Finish** step in the method to check for any validation errors.

10 If necessary, correct any validation errors. See the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390) for additional information.

IMPORTANT Always run modified methods in simulation mode or with water before live execution.

Different Position Names

If the decks from both systems have identical names, but contain different position names, reconfigure the setup by doing the following:

1 Open the method in the Biomek 3000 system.

2 View the **Instrument Setup** step, noting the details of the following:

- Name of the deck used in **Instrument Setup** step
- Deck layout
- Labware used
- Labware properties
- Deck positions of the labware

3 Correct the deck position mismatch using one of the three options below:

Option 1 — Reconstruct the deck using the Biomek 4000 system:

a. Export the method from the Biomek 3000 system.

b. Import the method into Biomek Software, Version 4.

NOTE This might cause labware to be lost. For example, Figure 1.9 shows the deck in the Biomek 3000 method, and Figure 1.10 shows the same deck after being imported into Biomek Software, Version 4. Figure 1.11 and Figure 1.12 show the decks in the **Deck Editor**.

Figure 1.9 Biomek 3000 Deck — Instrument Setup

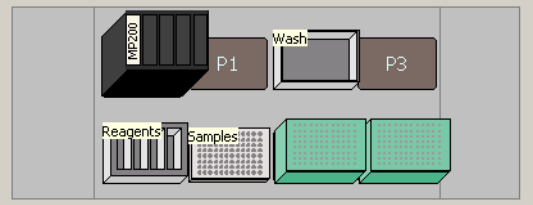


Figure 1.10 Biomek 4000 Deck — Instrument Setup

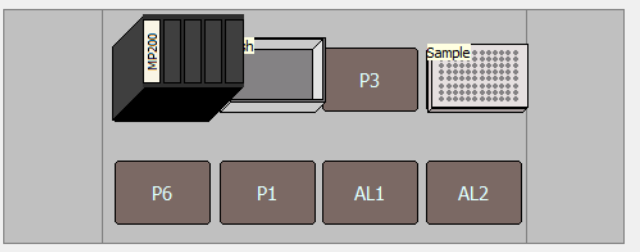


Figure 1.11 Biomek 3000 Deck — Deck Editor

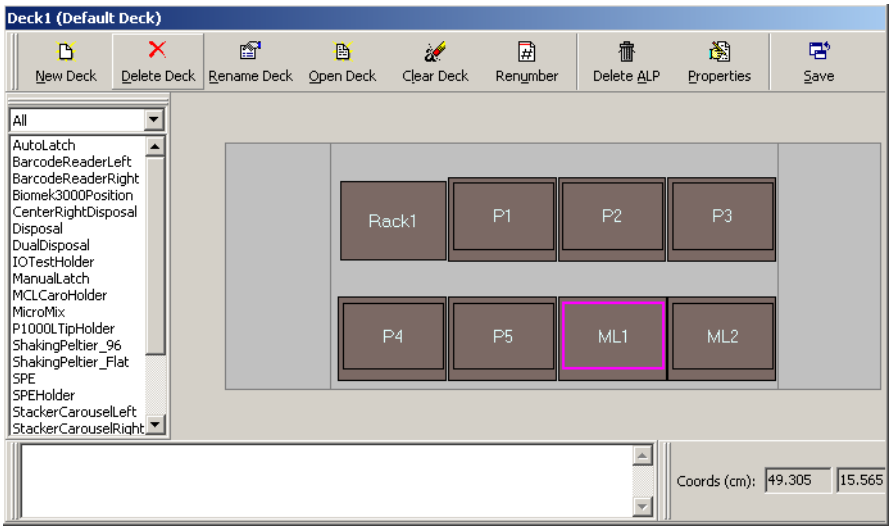
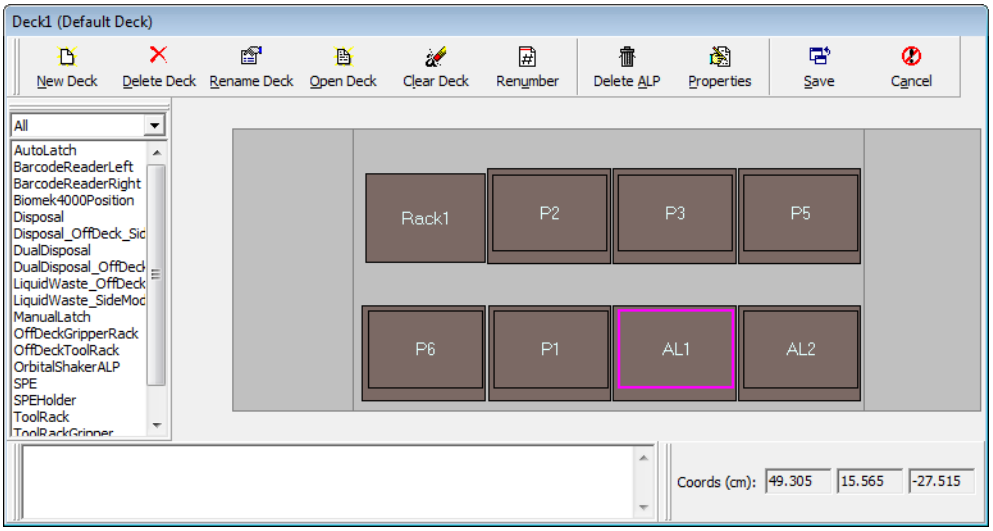


Figure 1.12 Biomek 4000 Deck — Deck Editor



c. Reconfigure the deck to match the Biomek 3000 method, adding lost labware and making other adjustments in the **Instrument Setup** step of the new method.

Option 2 — Change the names of the deck positions in Biomek Software, Version 4, to match those used in the Biomek 3000 method.

a. Export the method from the Biomek 3000 system.

b. Rename deck positions on the Biomek 4000 system to match those of the original system.

IMPORTANT This option is only viable on systems that do not already have other methods using the current deck.

c. Import the method to the Biomek 4000 system.

Option 3 — Change the deck in the Biomek 3000 method to allow for easy importing into the Biomek 4000 system:

a. Rearrange labware in the Biomek 3000 method **Instrument Setup** step to use only the positions existing on the Biomek 4000 deck.

b. Export the method from the Biomek 3000 system.

c. Import the method to the Biomek 4000 system.

4 Confirm that all original labware has been placed onto the new deck.

5 Select the **Finish** step and check for validation errors. Some method steps may need to be reconfigured to be compatible with the new deck setup. See *Deck Mapping and Method Repair* for details.

IMPORTANT Always run modified methods in simulation or with water before live execution.

Different Deck Name, Identical Configurations; and Different Deck Name, Different Configurations

If the Biomek 3000 method contains a different deck name from the Biomek 4000 method, but the decks are configured exactly the same, as shown in Figure 1.13 (Deck1) and Figure 1.14 (Deck4), follow the procedure below.

Figure 1.13 Biomek 3000 Deck

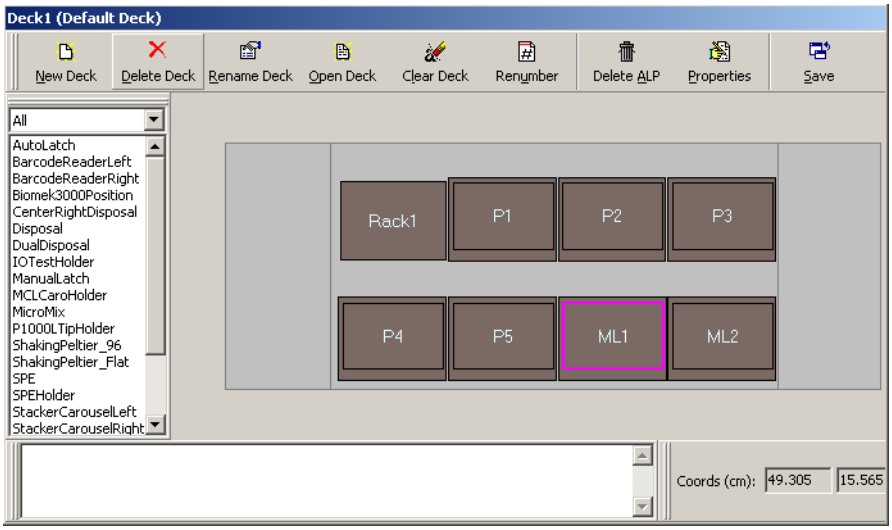
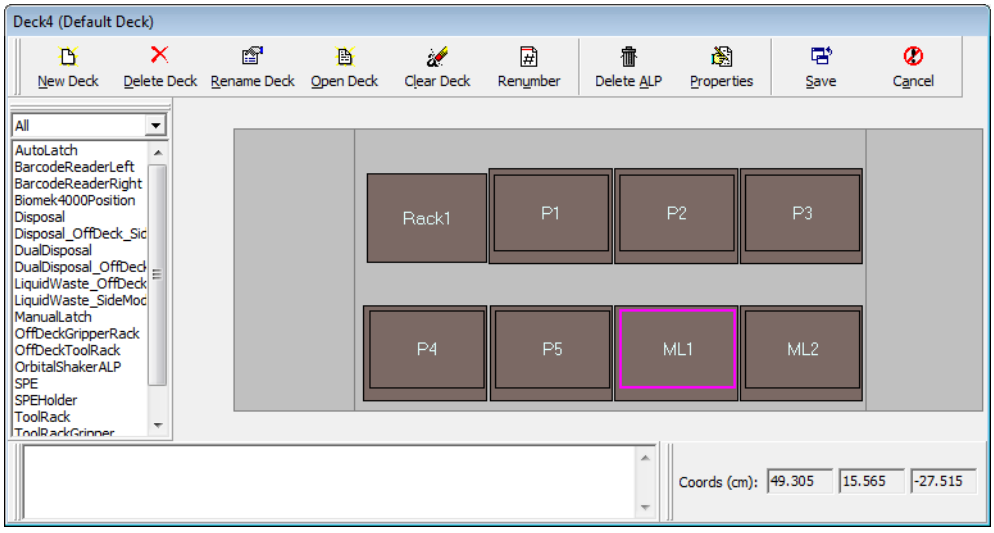


Figure 1.14 Biomek 4000 Deck



If the Biomek 3000 method contains a different deck name from the Biomek 4000 method, and the decks are configured differently, do the following:

---

1 Open the method on the Biomek 3000 system and view the **Instrument Setup** step, noting the details of the following:

- Name of the deck used in **Instrument Setup** step

- Deck layout
- Labware used
- Labware properties
- Deck positions of the labware

2 Open Biomek Software on the Biomek 4000 instrument, taking note of the available deck and all deck positions available for use.

3 Correct the deck position mismatch using one of the three options below:

Option 1 — Reconstruct the deck using the Biomek 4000 system:

a. Export the method from the Biomek 3000 system.

b. Import the method to the Biomek 4000 system.

c. The **Instrument Setup** step(s) produces the following warning: **This step is configured with an undefined deck layout!**

d. Choose the appropriate deck from the drop-down, and then select **Map Onto** (Figure 1.15).

NOTE This might cause labware to be lost.

e. Add lost labware and configure in the **Instrument Setup** step of the method on the new system to match the original system.

Option 2 — Change the names of the deck positions in Biomek Software, Version 4, to match those used in the Biomek 3000 method.

a. Export the method from the Biomek 3000 system.

b. Rename deck positions on the Biomek 4000 system to match those of the original system.

c. Import the method to the new system.

d. The **Instrument Setup** step(s) produces the warning: **This step is configured with an undefined deck layout!**

e. Choose the appropriate deck from the drop-down, and then select **Map Onto** (Figure 1.15).

IMPORTANT This option is only viable on systems that do not already have other methods using the current deck.

Option 3 — Change the deck in the Biomek 3000 method to allow for ease of importing into the Biomek 4000 system:

a. Rearrange labware on the Biomek 3000 **Instrument Setup** step to use only those positions that are existing on the Biomek 4000 deck.

b. Export the method from the Biomek 3000 system.

c. Import the method into the Biomek 4000 system.

d. The **Instrument Setup** step(s) produce the warning: **This step is configured with an undefined deck layout!**

e. Choose the appropriate deck from the drop-down, and then select **Map Onto** (Figure 1.15).

4 Confirm that all original labware has been placed onto the new deck.

5 Select the **Finish** step to check for validation errors. If errors occur, correct them (see the *Biomek Software User's Manual Version 4.1* (PN B30026), or *Biomek Software User's Manual Version 4.2* (PN C40390) for details).

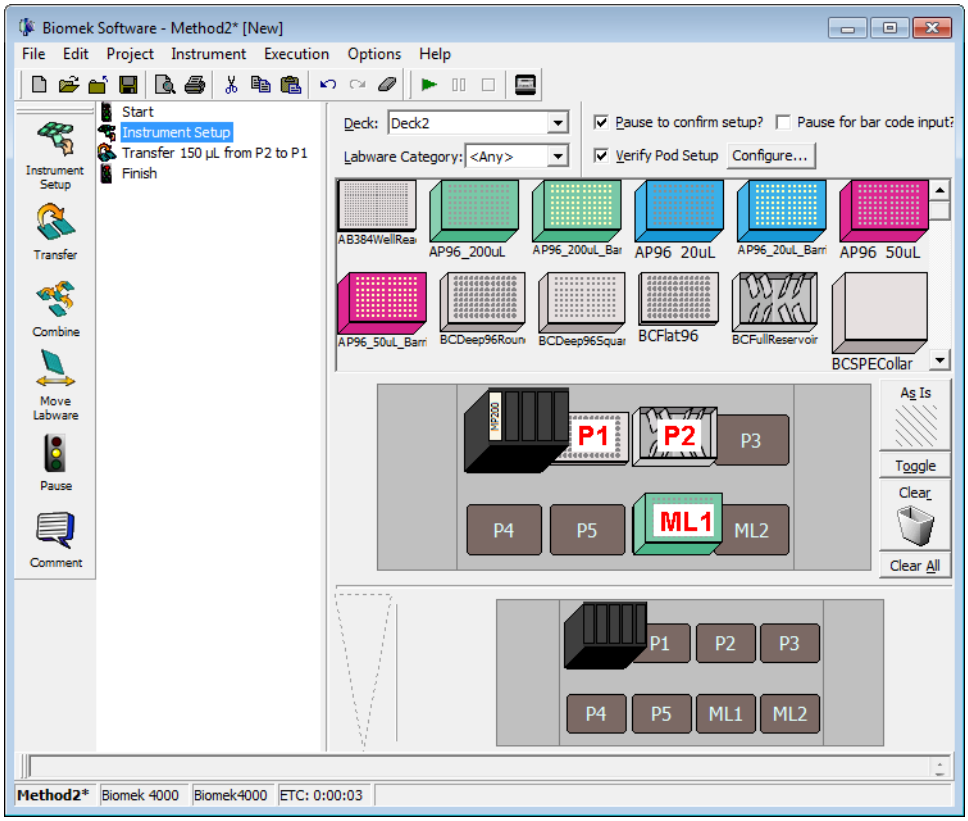
IMPORTANT Always run modified methods in simulation or with water before live execution.

Deck Mapping and Method Repair

If your Biomek 4000 deck layout has changed significantly from the layout of your Biomek 3000 deck, steps within imported methods could contain validation errors, requiring reconfiguration to work properly. Likewise, labware within the **Instrument Setup** step might need to be rearranged for optimal placement.

TIP When building methods, it is helpful to name labware by right-clicking on the labware (in the **Instrument Setup** step), selecting **Properties**, and entering the name in the **Name** field. This allows for method steps (**Transfer** step, **Move Labware** step, tip loading) to use the labware name instead of position names. When mapping to various deck configurations, this requires less method rework, as labware names will not change when mapping a deck.

Figure 1.15 Biomek 3000 Method Imported Into Biomek Software, Version 4



To successfully map the deck, labware from the imported method (Figure 1.15) is relocated to new positions on the deck (Figure 1.17). The steps within method remain as configured on the original deck (transfer from **P2** to **P1**) causing a validation error (Figure 1.16). Each step within the method using these labware items will require reconfiguration to prevent validation errors.

Figure 1.16 Validation Error

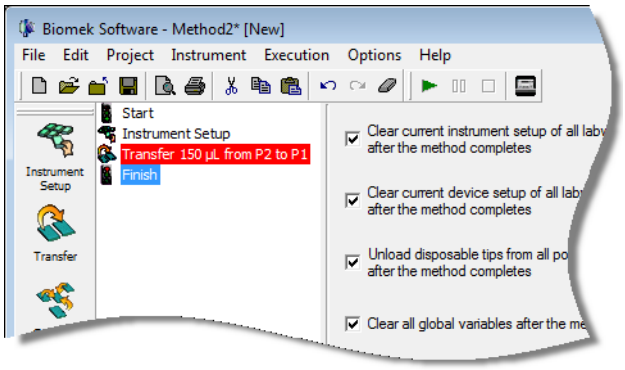
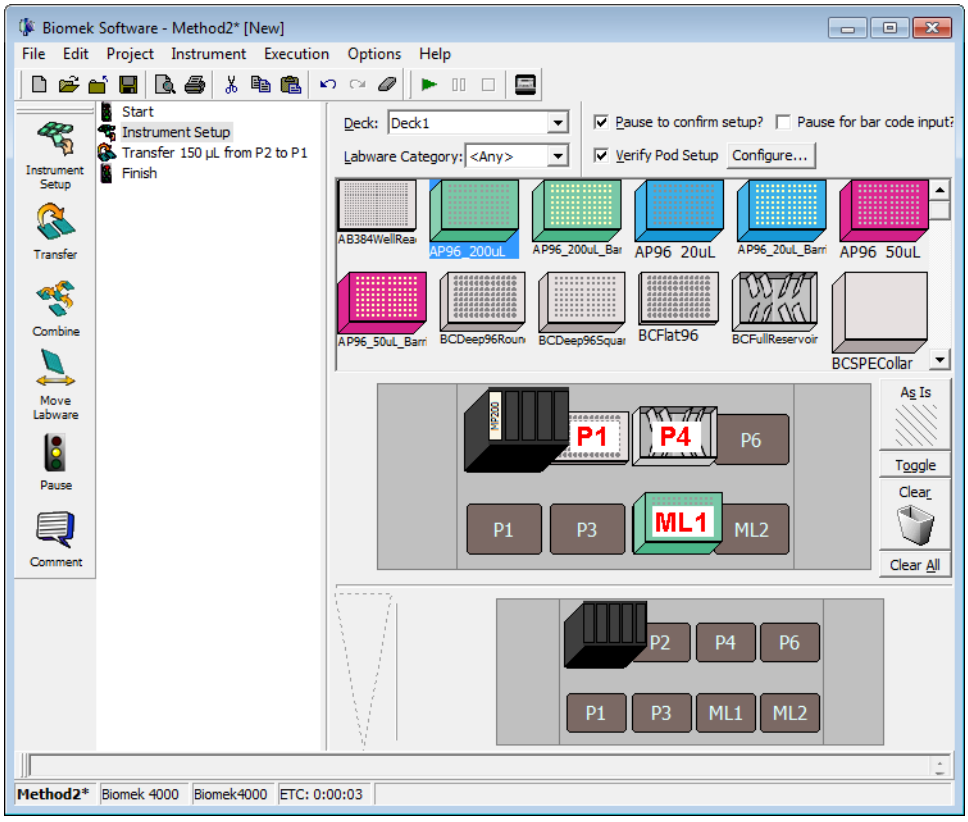


Figure 1.17 Mapped Method



Using Named Labware

When the method in Figure 1.18 is mapped, the **Transfer** step uses labware names instead of positions within the method, and, therefore, does not require further attention. Figure 1.19 shows the method mapped to a different deck; validation errors are not present.

Figure 1.18 Biomek 3000 Method Imported Into Biomek Software, Version 4

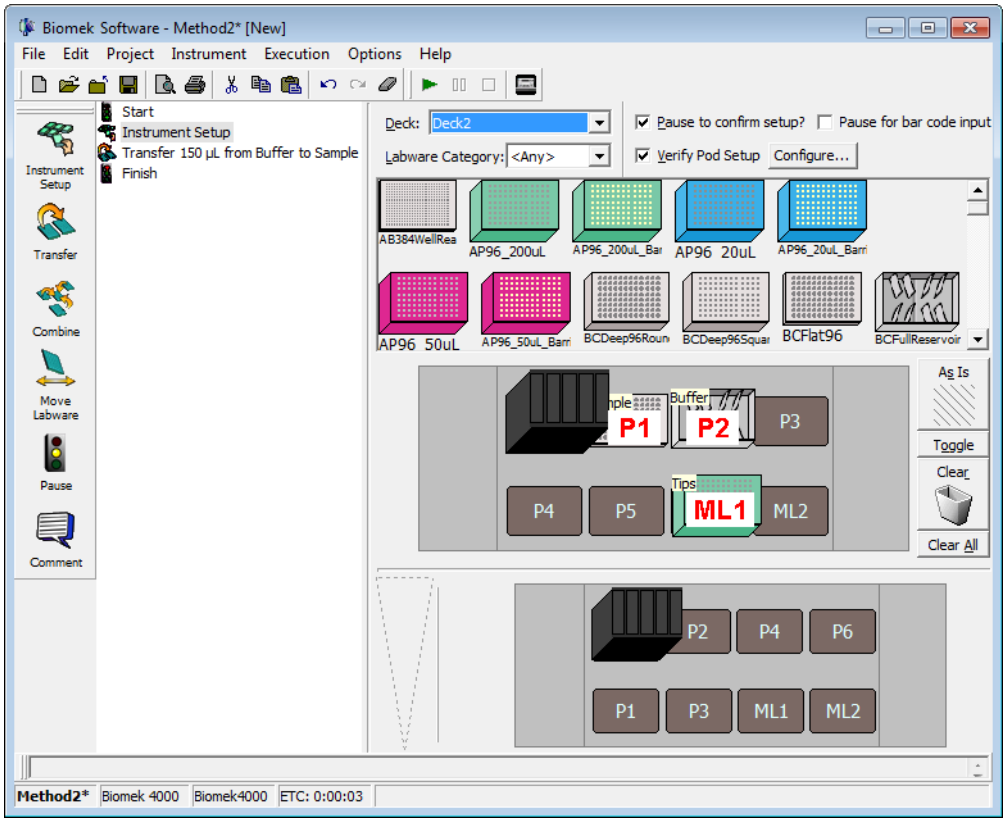
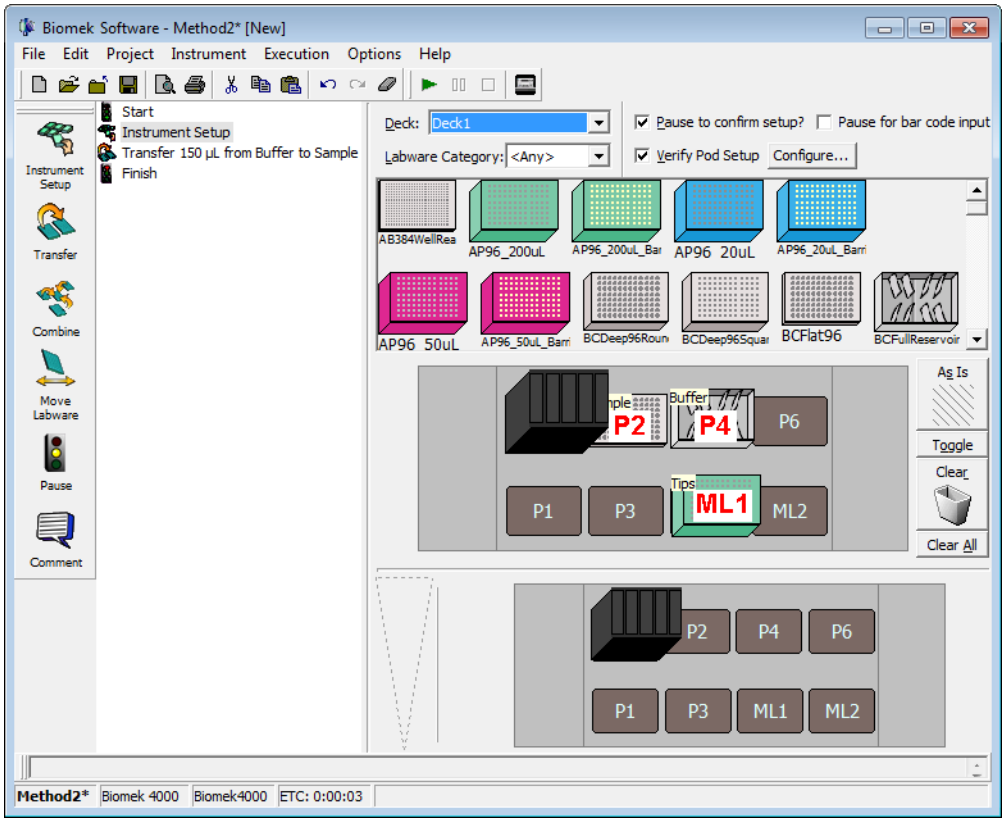


Figure 1.19 Mapped Method



CHAPTER 2

Biomek 4000 System Updates

Overview

The following sections provide an overview of the Biomek 4000 system updates in comparison to the Biomek 3000 system. Brief instructions are provided where necessary.

Updates include the following:

- *Tip Contents and Well Contents*
- *AccuFrame Tool*
- *Automatic Tool Loading*
- *Error Recovery During Liquid Level Sensing*
- *Integration Deck*
- *Log Files for Validated Runs*
- *Marking Wells*
- *MP1000*
- *Off-Deck ALPs*
- *Orbital Shaker*
- *P1000SL*
- *Per-Well Liquid Assignment*
- *Runtime Patterns*
- *Single Channel Serial Dilution*
- *Wash Tools*

Tip Contents and Well Contents

In Biomek Software Version 4, The **Transfer**, **Combine**, **Aspirate**, and **Transfer From File** steps can specify the liquid by Well Contents. The **Dispense** step allows specifying liquid by Tip Contents.

Well Contents

When setting a source to **Well Contents**, Biomek will use the **Liquid Type** in the well, tube, or reservoir section to determine the liquid type for pipetting and data tracking. This allows for easier method creation, since Biomek software will automatically transfer based on the **Liquid Type** in the labware. This option is the default for new methods, but can be overridden by selecting another liquid type.

Tip Contents

When setting a destination to **Tip Contents**, Biomek Software Version 4 will use the **Liquid Type** in the tip to determine the **Liquid Type** for pipetting and data tracking. If a tip has multiple liquids, **Tip**

Contents will use the liquid at the bottom of the tip (the last liquid aspirated). This allows for easier method creation, since Biomek Software will automatically transfer based on the liquid type in the tip. This option is the default for new methods.

NOTE The Multichannel pod must pipette the same liquid for every aspirate and dispense. An error will occur when attempting to pipette **well contents** or **tip contents** when all liquid types in a single aspirate or dispense do not match.

NOTE When **Well Contents** or **Tip contents** is selected, the Span-8 pod will automatically break up aspirates and dispenses to ensure that each aspirate and dispense operation only operates on one liquid. This ensures that each liquid is pipette correctly, including all tip touches and pauses.

For more information on the specific steps, please see the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software Users Manual Version 4.2* (PN C40390), *Configuring Transfer and Combine Steps*; *Configuring the Aspirate Step*; *Configuring the Dispense Step* and *Transfer From File Step (including 4000)*.

AccuFrame Tool

The AccuFrame tool allows you to automatically frame labware positions on the deck. The AccuFrame tool is a
plug-and-go device.

⚠ WARNING

Turn off power to the Biomek 4000 Laboratory Automation Workstation before attaching or removing the AccuFrame tool. Failure to do so can cause electrical shock or equipment damage.

IMPORTANT Certain features, including the Liquid Waste Station, require manual framing, and the AccuFrame tool is not available for use.

For additional instructions for using the AccuFrame tool, refer to the *Biomek 4000 Laboratory Automation Workstation Hardware Manual* (PN A99498).

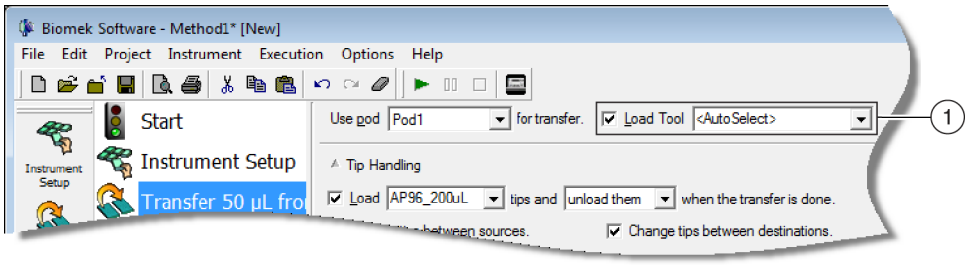
NOTE The AccuFrame tool is an optional accessory.

Automatic Tool Loading

New Methods

In methods newly created using Biomek Software, Version 4, the appropriate tool for completing a step is automatically selected by the software as a default. Manual tool-selection can still be completed by selecting a specific tool from the drop-down (see Figure 2.1) located in the Configuration View. The automatic tool-loading option replaces the necessity of using the **Load Tool** or **Change Tool** step in the Biomek Software, Version 3.3.

Figure 2.1 Automatic Tool Loading in a Biomek 4000 Transfer Step

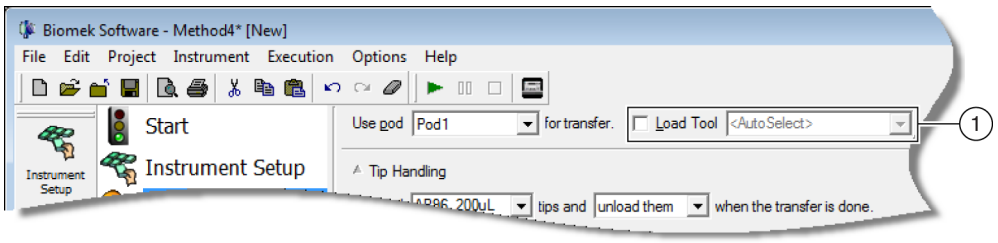


1. **Load Tool** is selected, with **<AutoSelect>** as the default selection.

Imported Methods From Biomek Software, Version 3.3

When migrating a method from the Biomek 3000 system, **Load Tool** is automatically *unchecked* (see Figure 2.2), and the imported method uses the tools that were configured in the original Biomek 3000 method.

Figure 2.2 Tool Loading in a Transfer Step From a Migrated Method



1. As a default, **Load Tool** is not selected when importing a Biomek 3000 method into Biomek Software, Version 4.

Error Recovery During Liquid Level Sensing

If you are notified of a liquid level sensing error during a method run, Biomek Software, Version 4, provides the opportunity to manually adjust the liquid and retry aspiration. This allows you to refill reservoirs or take other actions without aborting the method.

Integration Deck

The Integration Deck is an optional feature that elevates the main deck of the instrument, allowing the use of off-deck ALPs that had previously exceeded height limitations of the Biomek 3000 instrument.

Log Files for Validated Runs

Text log files are now always generated, even when using validated methods. These log files can be used for LIMS integration or reporting. Log files are found in the following location: C:\Users\Public\Public Documents\Biomek\Logs

Logs that are compliant to 21 CFR Part 11 regulations, and therefore unable to be modified, are accessed through the Validated Run History.

Marking Wells

Biomek Software, Version 4, has been upgraded to prevent accidental reuse of wells in **Transfer**, **Transfer From File**, and **Combine** steps. Every well that is used during a transfer is now marked, which allows you to choose to perform the subsequent transfer process either starting **At first selected well** or **At first unmarked well**. This added functionality allows you to use a multi-tip pipetting tool and 384-well plates in the **Transfer**, **Transfer From File**, and **Combine** steps.

Biomek Software, Version 3.3, only allowed you to mark the last well used, which meant that the software did not retain a history of the other wells that were involved in the transfer, and therefore, that information could not be used for the following transfers. In addition, this process only worked when using a single-tip pipetting tool.

For additional information on marking wells, refer to the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).

MP1000

The Biomek 4000 instrument has added an MP1000 tool to expand liquid handling capabilities for large volume transfers. This tool uses Span-8, Non-Conductive P1000 tips and fits in standard tool rack positions (on-deck and off-deck). This tool is added to Biomek Software through the **Hardware Setup** dialog. The *Biomek 4000 Laboratory Automation Workstation Hardware Manual* (PN A99398) provides in-depth instructions for installing and using the MP1000 tool.

Off-Deck ALPs

Biomek 4000 instruments have added off-deck mounts that expand the labware positions on the deck. In the software, these positions appear as typical positions. ALPs are placed on the deck using the **Deck Editor**. Figure 2.3 is an example of a deck setup using the off-deck mounts.

When migrating a Biomek 3000 method, the tools will not map to the new tool racks. In the **Instrument Setup** step, you will need to add tools manually to the tool racks.

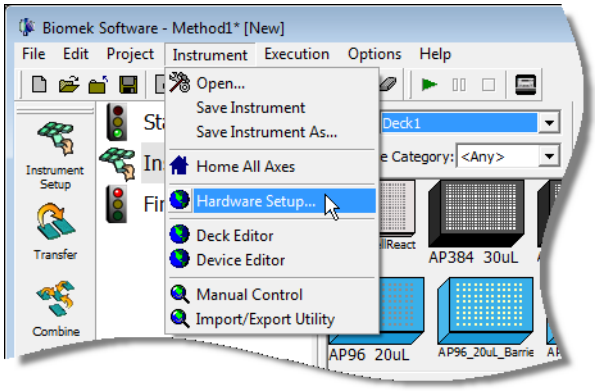
Figure 2.3 Example of Off-Deck ALPs — Deck Configuration View

1. **Left Off-Deck ALPs**: The **LiquidWaste_OffDeck** and the **DualDisposal_OffDeck** ALPs are added to the Left Off-Deck Mount using **Deck Editor.**
2. **Right Off-Deck ALPs**: The **OffDeckGripperRack** and the **OffDeckToolRack** were added to Right Off-Deck Mount using the **Deck Editor.**

Orbital Shaker

The Orbital Shaker ALP is available on Biomek 4000 instruments. Within the software, this ALP is installed using **Hardware Setup** (Figure 2.4). Once installed in the software, the Orbital Shaker ALP can be set up as an active ALP. The *Biomek 4000 ALPs and Accessories Manual* (PN A99501) provides in-depth instructions for installing and using the Orbital Shaker.

Figure 2.4 Instrument Menu



P1000SL

The Biomek 4000 instrument has added a P1000SL tool to expand liquid handling capabilities for large volume transfers to a single well. This tool uses Span-8, Non-Conductive, P1000 tips and fits in standard tool rack positions (on-deck and off-deck). This tool is added to Biomek Software through the **Hardware Setup** dialog. The *Biomek 4000 Laboratory Automation Workstation Hardware Manual* (PN A99498) provides in-depth instructions for installing and using the P1000SL tool.

Per-Well Liquid Assignment

In Biomek Software Version 3.3, only the well volume could be changed. Biomek Software, Version 4 allows you to define the **Volume** and **Liquid Type** per well.

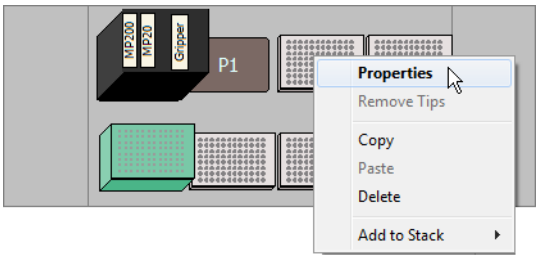
When labware is added to the deck, you can define per-well volume and liquid type within the **Labware Properties.**

To assign per-well volume and liquid types:

1. From the deck view in an **Instrument Setup** step, right click on the labware that you wish to make per-well specifications.

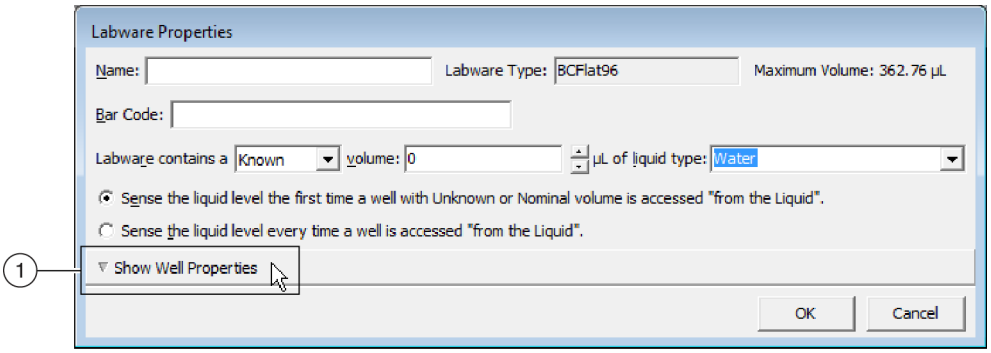
2. Select **Properties** (see Figure 2.5).

Figure 2.5 Labware Menu Options



3 In **Labware Properties**, select **Show Well Properties** (see Figure 2.6).

Figure 2.6 Labware Properties

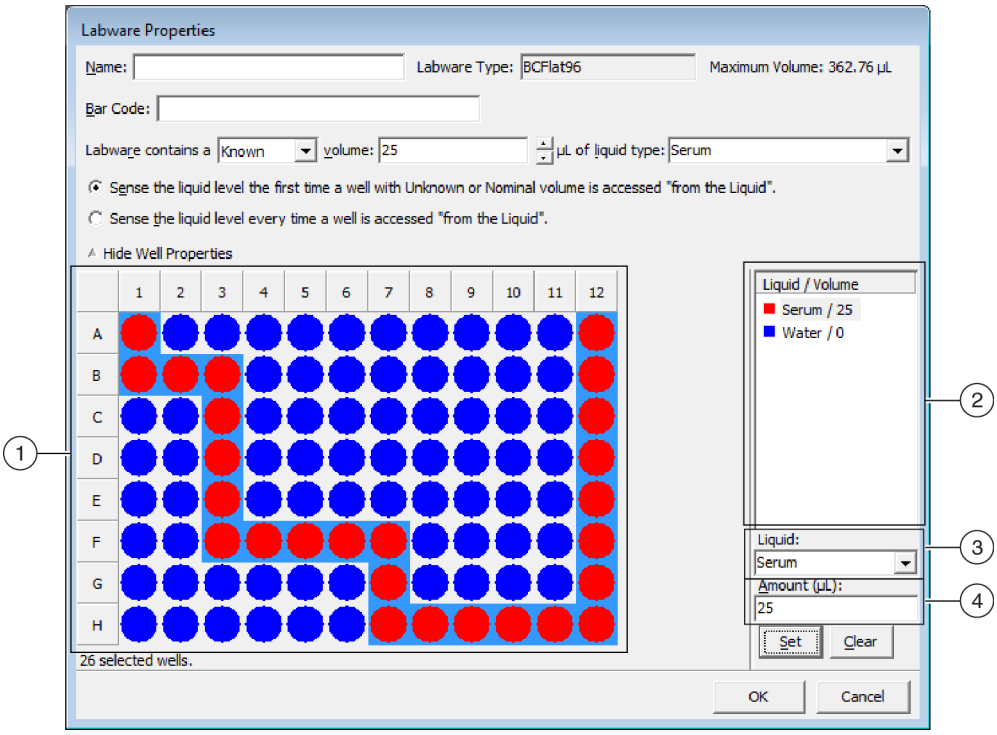


1. Select **Show Well Properties** for an expanded view.

4 Select the desired well(s) (see Figure 2.7).

NOTE To select multiple wells, press the Ctrl key while clicking on each desired well.

Figure 2.7 Labware Properties with Well Properties Expanded



1. Select specific wells on the graphical representation of the labware.
2. Each liquid/amount combination is listed here. The wells are given a color code that corresponds to the list of set liquid types/volumes.
3. Choose the liquid type from the **Liquid** drop-down.
4. Specify the volume of liquid in µL the **Amount** field.

5 In **Liquid**, choose the liquid type used in the wells from the drop-down.

6 In the **Amount** field, enter the volume in microliters (µL).

7 Select **Set**. After completing this process, the liquid type/amount combination displays with a color code in the list located next to the labware graphic. For example, in Figure 2.7, the red wells contain 25 µL of serum.

8 After making any other necessary changes to the **Labware Properties**, select **OK**.

Runtime Patterns

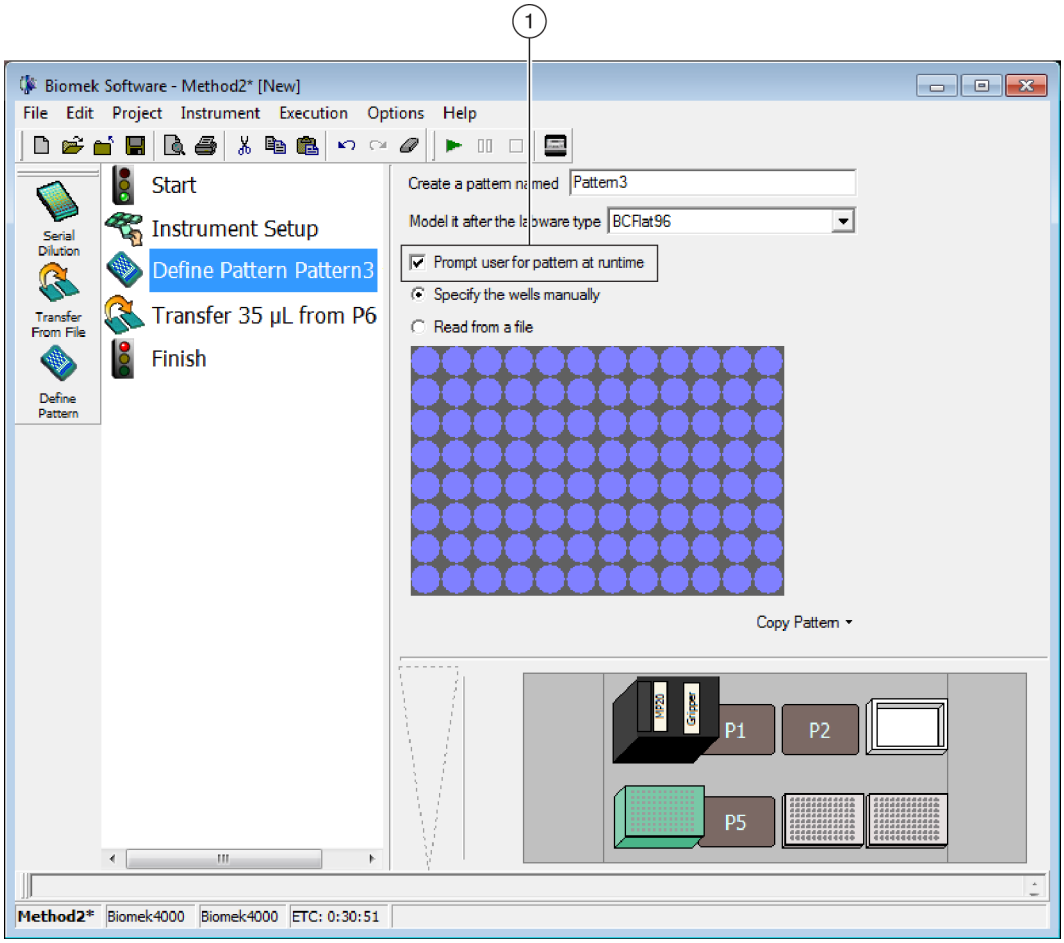
For methods where you routinely run a varying number of samples through the same process, using the **Runtime Pattern** feature allows you to easily adapt the pattern of liquid for aspiration and dispense operations during each run based on the specific location of samples in your labware.

The Well Pattern feature existed within Biomek Software, Version 3.3, but changing or altering the well pattern *during the run* was not possible. This features prompts you to alter the pattern on the labware when the run is initiated.

When migrating a Biomek 3000 method, the **Define Pattern** step does not automatically prompt you at runtime. If a method contains a pattern that is often altered, you should reconfigure the step by choosing to **Prompt user for pattern at runtime** for more efficient implementation of patterns. The enhanced **Define Pattern** step also offers more flexibility for well patterns than those defined within the project file.

More information on runtime patterns can be found in the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).

Figure 2.8 Runtime Pattern Prompt



1. Select this check box to enable the **Runtime Pattern** feature.

To enable **Runtime Patterns**:

1 Add a **Define Pattern** step to the method.

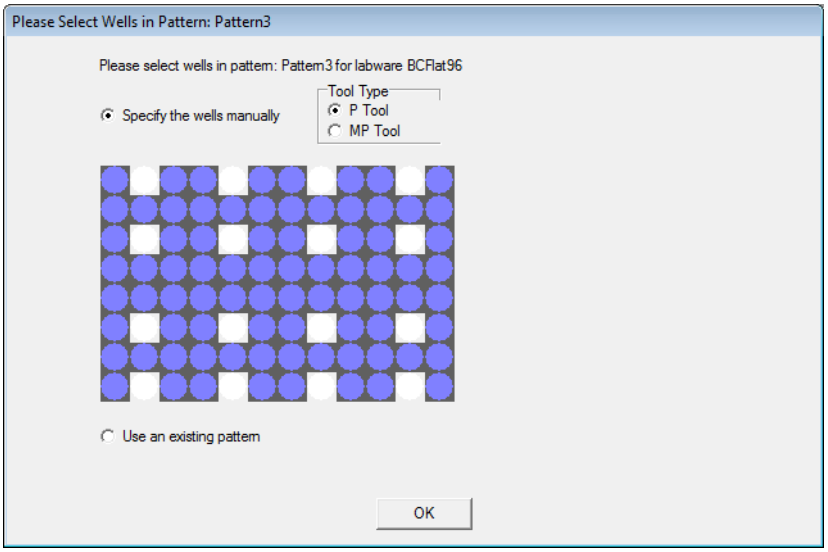
2 Select the **Prompt user for pattern at runtime** check box to enable the **Runtime Pattern** feature (Figure 2.8).

3 Once all method setup activities are completed, and the method run is started, you will receive the **Please Select Wells in Pattern:** dialog. You can either specify the wells manually or use an existing pattern saved to the software. Make the required selections, and select **OK** when completed.

NOTE To select multiple wells, press the Ctrl key while clicking on desired each well.

Figure 2.9 is an example of selections made at runtime.

Figure 2.9 Runtime Pattern Selections

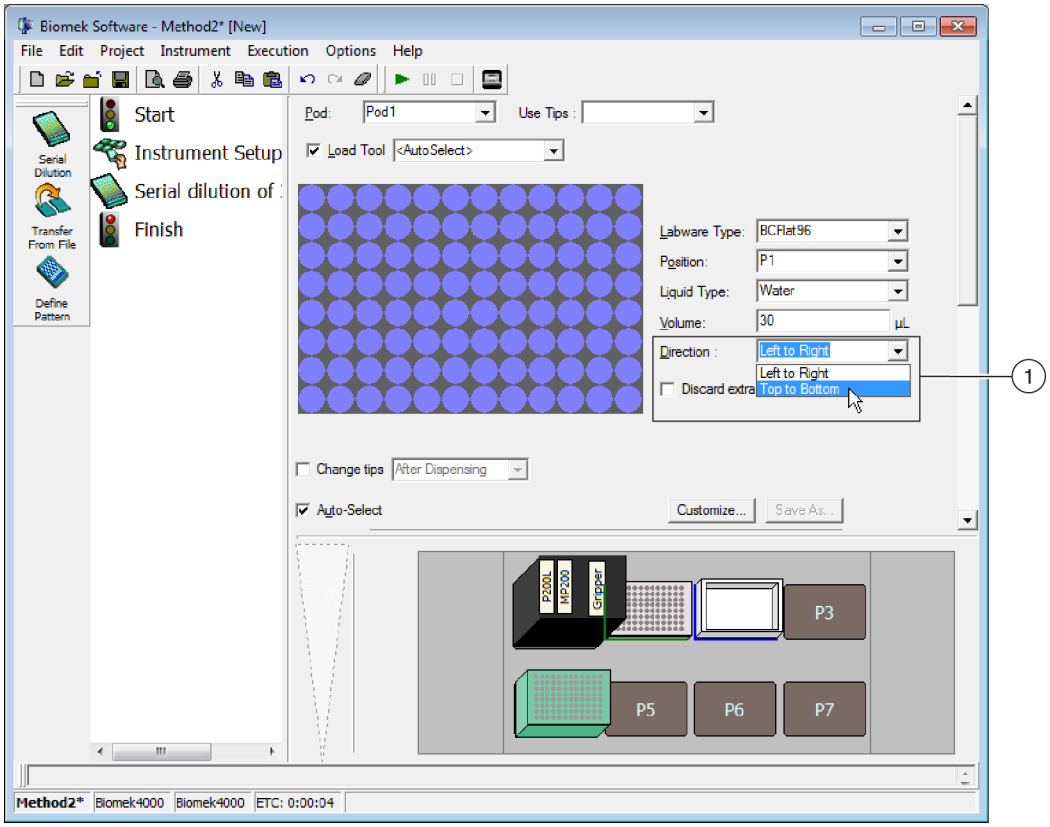


Single Channel Serial Dilution

In the Biomek Software, Version 3.3, serial dilutions could only be performed using a multi-channel tool. Biomek Software, Version 4, includes the option of using a single-channel tool in addition to the multi-channel tool to perform serial dilutions. With the additional single-channel tool option, you can now control the direction in two ways: left-to-right **or**, the new option of top-to-bottom.

Once you have added a **Serial Dilution** step (from the **Span-8** step palette), you will choose the desired direction from the **Direction** drop-down menu located in the step configuration (see Figure 2.10).

Figure 2.10 Serial Dilution Direction Selection



1. Choose the direction for **Serial Dilution** in the **Direction** drop-down menu. Options include **Left to Right** or **Top to Bottom**.

Wash Tools

Wash operations on Biomek 4000 instruments have significantly changed from Biomek 3000 instruments. The functionality has greatly expanded to allow for greater flexibility.

The major updates are described in this section. For additional details, refer to the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).

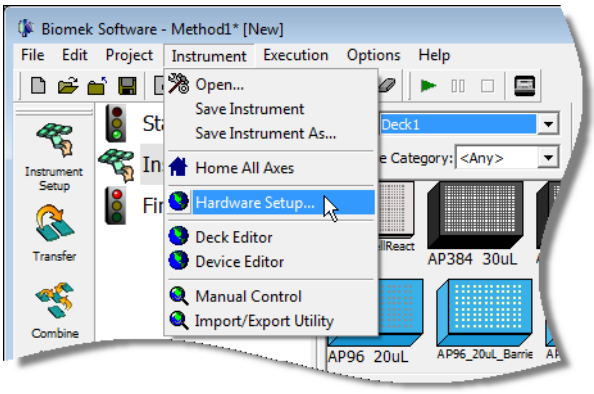
Adding Wash Devices to Biomek Software, Version 4

Before any wash operations can take place, the wash devices specific to your workstation need to be added to the software using **Hardware Setup**.

To add one or more wash devices:

1 From the **Instrument** menu, select **Hardware Setup** (see Figure 2.11).

Figure 2.11 Instrument Menu

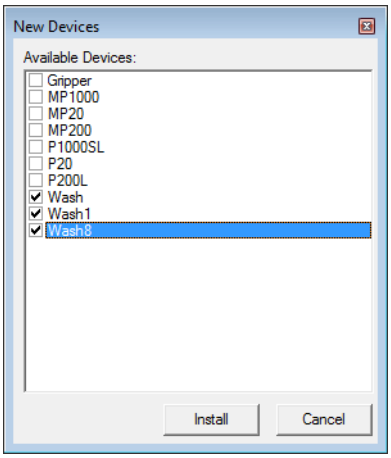


2 From the **Biomek Hardware Setup** window, select Add Device.

3 In **New Devices,** select the wash device(s) to add to your system.

NOTE **Wash** is the actual wash unit, while **Wash1** and **Wash8** are the wash tools.

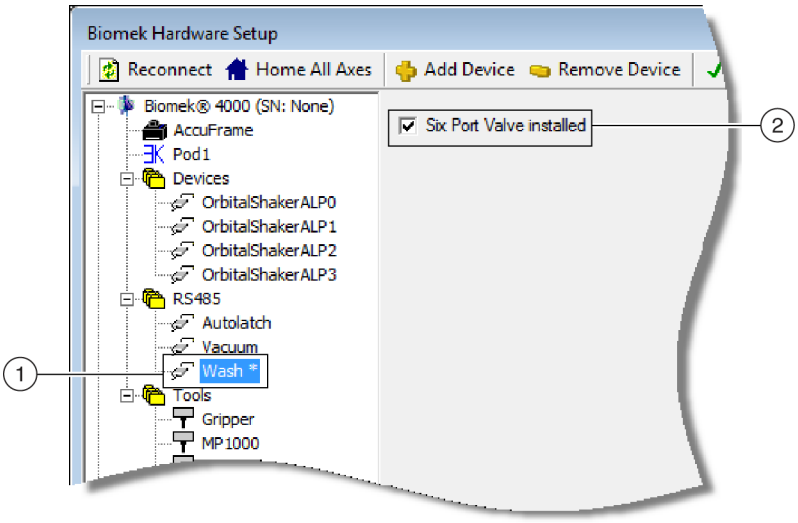
Figure 2.12 New Devices Wash Tool Selections



4 Select **Install**.

5 If your instrument contains a 6-Port Valve, select **Wash** on the left-hand pane of the **Hardware Setup** window and then select the **Six Port Valve installed** check box (see Figure 2.13).

Figure 2.13 Six Port Valve Installation



1. Select **Wash** to install the Six Port Valve.
2. Six Port Valve selection in **Hardware Setup**.

6 Select ✓ Accept to complete the process.

Using the Wash Tool Step Palette

A **Wash Tool** step palette is now available. With this step palette, you will be able to complete the operations described in Table 2.1. For details on setting up each of these steps, refer to the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).

Table 2.1 Wash Tool Step Palette

Step	Icon[a]	Description
Wash Tool Setup		Allows you to define the liquid type(s) currently available on the unit. For instruments with a 6-port valve installed, you will specify which valves contain liquid, as well as the type of liquid contained in each of those valves.
Wash Tool Bulk Dispense		Performs a bulk dispense operation from a wash liquid container using the selected wash tool.
Wash Tool Purge		Ensures that the lines are primed, purged, and ready for use. If the 6-port valve is installed on the instrument, this step can also be used to manually change the currently selected liquid.
Wash Tool Vacuum		Aspirates liquid to waste as specified within the step.
Wash Tool Wash		Performs wash operations by alternating between dispensing and vacuuming wash liquid within selected wells. For example, if you are performing this step on a 96-well plate, instead of performing dispense operations to all 12 columns, and then aspirating all 12 columns, the instrument now performs both the dispense and aspiration operations in column 1 prior to moving to column 2.

a. "WT" is the abbreviation for "Wash Tool."

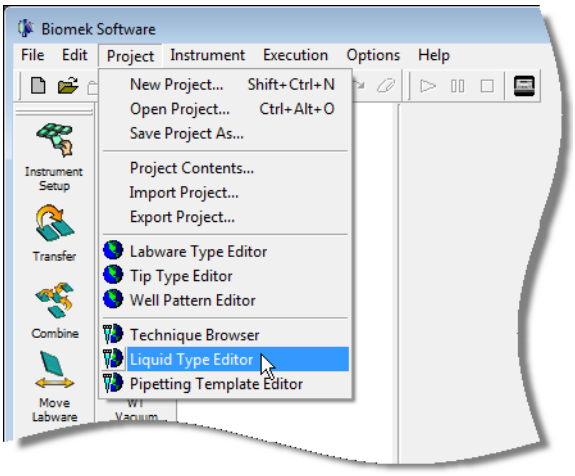
Specifying Wash Tool Liquid Settings

For the wash tool steps to work properly, liquids specifically used for wash operations need to undergo additional adjustments. These adjustments include settings for purge, backup, vacuum, blowout, dispense, and return operations.

To set up definitions for liquids used with wash tools:

1 From the **Project** menu, select **Liquid Type Editor** (Figure 2.14).

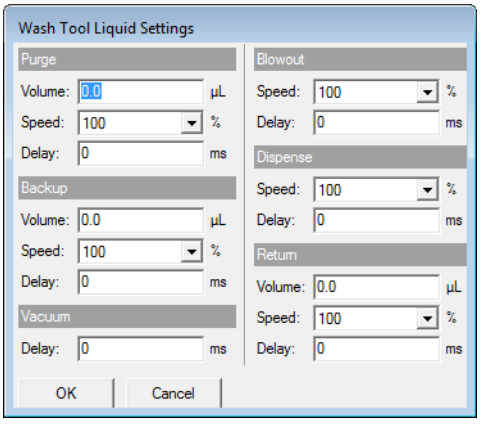
Figure 2.14 Project Menu



2 In the **Liquid Type** panel of the **Liquid Type Editor**, select the liquid type you wish to edit.

3 Select the Wash Tool Liquid Settings button. **Wash Tool Liquid Settings** displays (Figure 2.15).

Figure 2.15 Wash Tool Liquid Settings



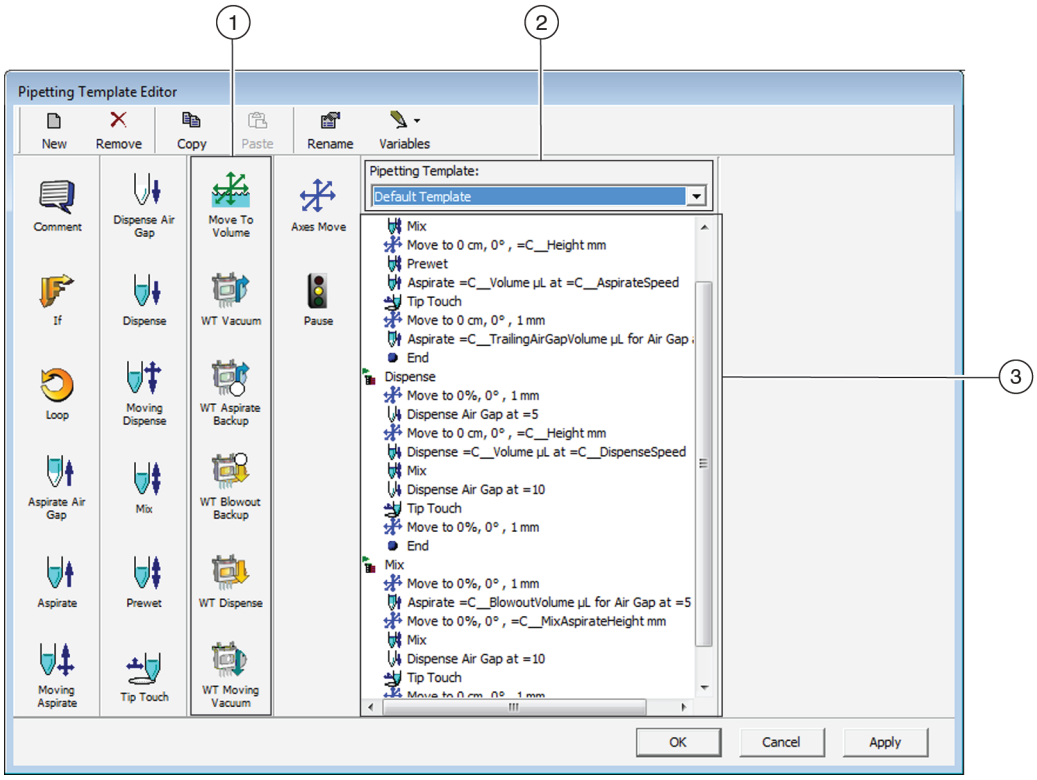
4 Enter data as necessary, and choose **OK** when completed.

Customizing Wash Tool Pipetting Templates

Wash tool techniques and templates are now available in Biomek Software, Version 4. These are new features, not previously available with Biomek Software, Version 3.3. These features provide additional control over wash tool steps, allowing you to customize techniques by modifying the existing wash tool pipetting templates. Templates are customized through the **Pipetting Template Editor** (Figure 2.16). Steps used to create wash tool pipetting templates are described in Table 2.2.

For instructions on creating pipetting templates, see the *Biomek Software User's Manual Version 4.1* (PN B30026) or *Biomek Software User's Manual Version 4.2* (PN C40390).

Figure 2.16 Pipetting Template Editor



1. **Wash Tool Pipetting Template** steps.
2. This drop-down allows you to choose a template to use as a baseline for customizing your own wash template.

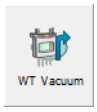
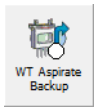
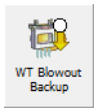
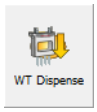
   NOTE Modifying the **DefaultWashTool** template is recommended, rather than creating a brand new wash template, as this process is typically not intuitive. To ensure the default template remains unchanged, select **Copy** > **Paste** > **Rename**. After entering a name and selecting **OK**, modifications will only be applied to your new template.

3. Template steps.

IMPORTANT Method steps for wash tool operations are created and modified using the **Pipetting Template Editor.** When working with wash tool templates, use these language substitutions for the following operations:

To Create a [ ] Action	Use a [ ] Step	Under [ ] Section in Template
Wash	Combination of **WT Vacuum** and **WT Dispense**	Mix
Bulk Dispense	**WT Dispense**	Dispense
Aspiration	**WT Vacuum**	Aspirate

Table 2.2 Pipetting Template Wash Tool Steps

Step	Icon[a]	Description
Move To Volume		**Move to Volume** moves wash tips to a defined place within a well, based on the current volume of liquid already within the well.
Wash Tool Vacuum		**Wash Tool Vacuum** activates the vacuum on the wash pump for a defined amount of time.
Wash Tool Aspirate Backup		**Wash Tool Aspirate Backup** aspirates an air gap into the tubing to allow the wash tool to move between wells without dripping liquid onto the labware. Through this step, you define the volume of air to aspirate, as well as the speed and delay time for this operation. This is generally the last step in the dispense part of the wash tool pipetting operation or bulk dispense operation template.
Wash Tool Blowout Backup		**Wash Tool Blowout Backup** is generally the first step in the dispense operations step of the wash tool pipetting template. The amount of air that has been backed up is remembered by the system and is not needed as a parameter. Only speed and delay inputs are needed for this step.
Wash Tool Dispense		**Wash Tool Dispense** dispenses liquid from the currently selected valve. Volume, speed, and the length of time for the delay after dispensing are the parameters you will enter for this step.
Wash Tool Moving Vacuum		**Wash Tool Moving Vacuum** allows you to vacuum while moving the pod in the X, Y, and/or Z axis. Volume at which to turn on, Speed of the pod, distance, and the time before turning off the vacuum are the parameters you can specify through this step.

a. "WT" is the abbreviated version of "Wash Tool."

Resolving Wash Tool Validation Errors in Migrated Methods

When Biomek 3000 methods containing wash steps are imported into Biomek Software, Version 4, they will cause validation errors. To correct this issue, all steps associated with washing must be replaced with equivalent Biomek 4000 steps. Table 2.3 provides the information you need to make the required updates. The major difference is that Biomek 4000 wash steps allow you to select techniques and define liquid properties, allowing greater control over washing parameters, which were not available in Biomek Software, Version 3.3. Techniques, templates, and Liquid Type Settings need to be optimized prior to live method execution.

When importing a method and project items from Biomek Software, Version 3.3, to a new project file in Biomek Software, Version 4, also import the project items from the Default Biomek 4000 project file shown in Figure 2.17. These items are required for using the wash tools within Biomek Software, Version 4.

Figure 2.17 Default Project Items to Import Into Migrated Methods

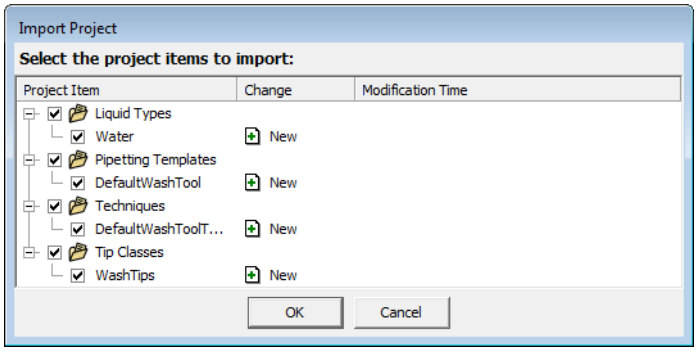


Table 2.3 Biomek 3000/4000 Wash Step Equivalency Matrix

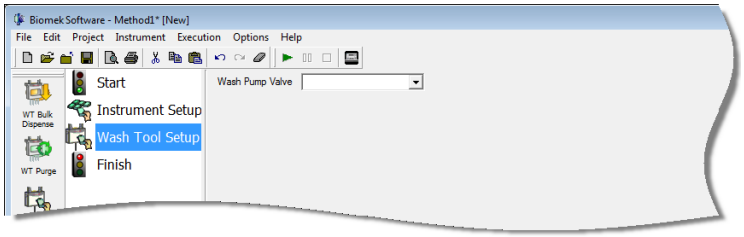
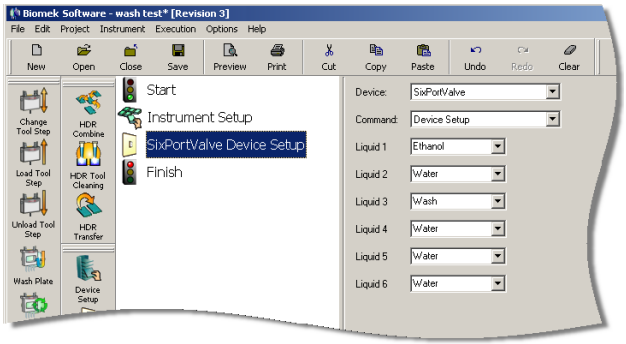
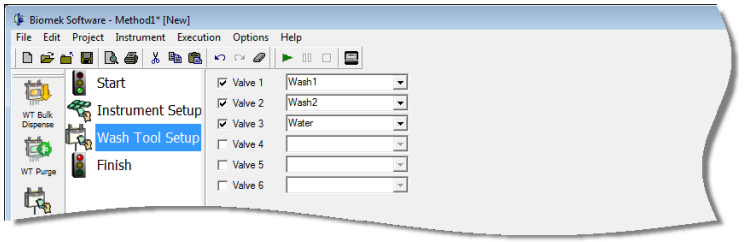
Action	Item	Biomek Software, Version 3.3	Biomek Software, Version 4
Wash Configuration	**Step**	*No equivalent step.*	**Wash Tool Setup**
	Icon		
	Configuration View		 *Biomek 4000 instruments utilize liquid types for more control over aspirate and dispense operations using the wash tools; therefore, liquids used in the wash system must be defined.*
Six Port Valve Configuration	**Step**	**Device Action Step**	**Wash Tool Setup**
	Icon		
	Configuration View		

Table 2.3 Biomek 3000/4000 Wash Step Equivalency Matrix *(Continued)*

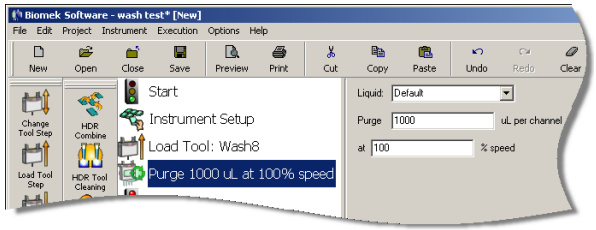
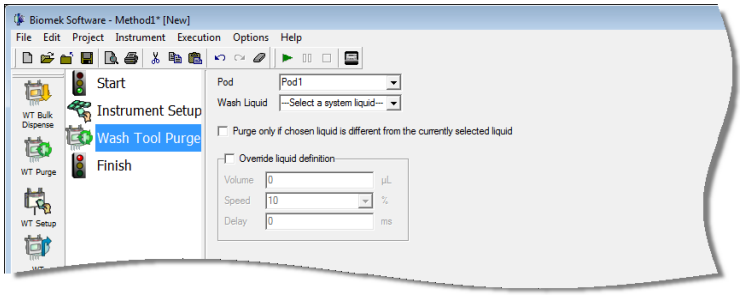
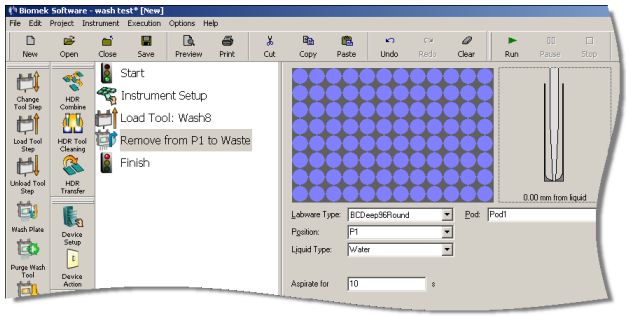
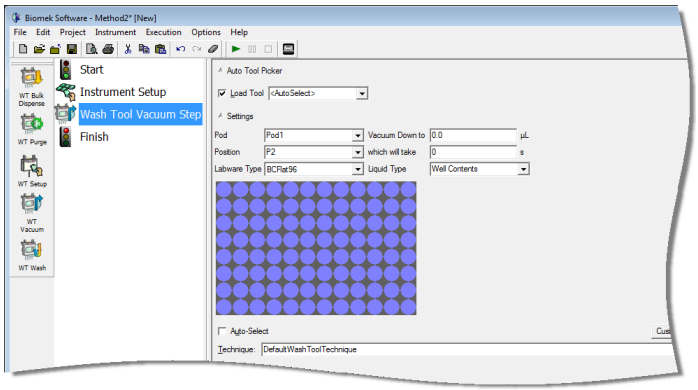
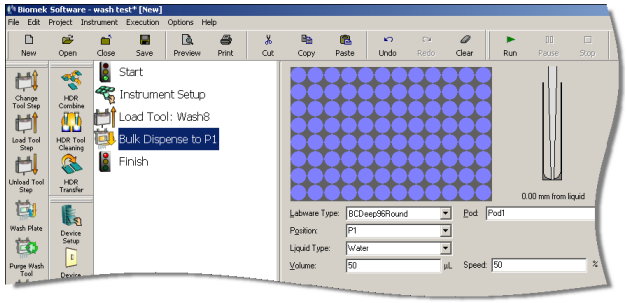
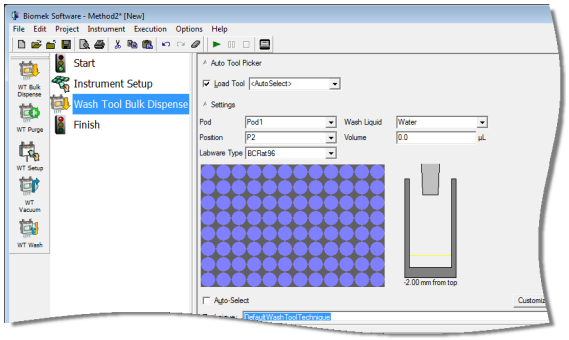
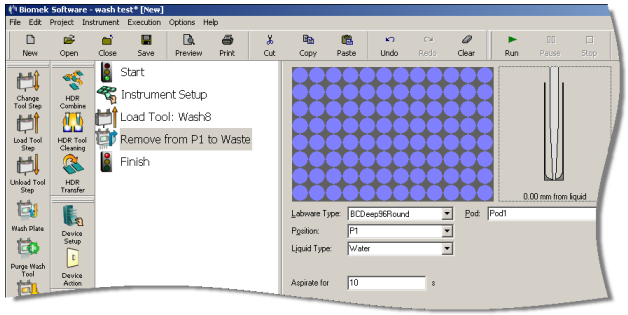
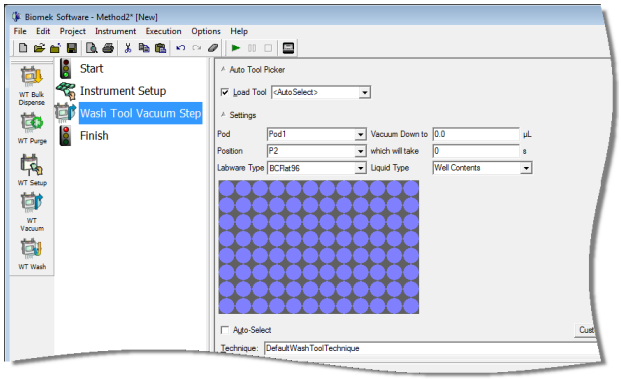
Action	Item	Biomek Software, Version 3.3	Biomek Software, Version 4
Purge	Step	**Purge Wash Tool**	**Wash Tool Purge**
	Icon		
	Configuration View		
Wash	Step	**Wash Plate**	**Wash Tool Wash**
	Icon		
	Configuration View		

Table 2.3 Biomek 3000/4000 Wash Step Equivalency Matrix *(Continued)*

Action	Item	Biomek Software, Version 3.3	Biomek Software, Version 4
Dispense	**Step**	**Bulk Dispense**	**Wash Tool Bulk Dispense**
	Icon		
	Configuration View		
Aspirate	**Step**	Remove to Waste	**Wash Tool Vacuum**
	Icon		
	Configuration View		

CHAPTER 3

Continued Features

Overview

The features described in this section have remained consistent to the Biomek 3000 system.

Biomek Software, Version 4, Features

Biomek Software, Version 4, features remaining unchanged include, but are not limited to, the following:

- Error Options
- Exporting Saved Methods
- Hardware Setup
- Home All Axes
- Importing Instrument Parameters
- Importing Labware Definitions
- Importing Techniques
- Instrument File
- Method History
- Opening a Saved Method
- Project File
- Save/Save As
- Technique Browser, Group
- Workspace

The following features apply only when **Accounts & Permissions** is enabled. These features have remained consistent to the release of Biomek Software, Version 3.3.

- Check In Method
- Check Out Method
- Exporting Checked Out Methods
- Opening Checked In Methods
- Saving Methods

ALPs

The Static Peltier and/or Shaking Peltier ALPs work consistently to the operation on your Biomek 3000 instrument; however, depending on the version of the Peltier used on your Biomek 3000 instrument, the method could require some rework for the method to validate. To correct incompatible versions, replace the steps using the Static Peltier or Shaking Peltier created in Biomek Software, Version 3.3, with steps in Biomek Software, Version 4, and configure them using the same parameters as the Biomek Software, Version 3.3, steps.

For additional information, see the *Shaking Peltier ALP Instruction Manual for Biomek 4000 Instruments* (PN B20570) or the *Static Peltier ALP Instruction Manual for Biomek 4000 Instruments* (PN B20569).

CHAPTER 4

Discontinued Features

Overview

The following sections provide an overview of the features used with the Biomek 3000 system that are not available on the Biomek 4000 system. In most cases, a similar upgrade has replaced the discontinued items, and, if applicable, these items are discussed in the sections below.

Discontinued items include the following:

- *Arrayplex and GenomeLab Applications*
- *DPC MicroMix Shaker*
- *High-Density Replication (HDR) Tools*
- *Lift and Level Leg Kit*
- *P1000/P1000L Hardware Components and Labware*
- *Stacker Carousel*
- *Pipetting Techniques and Templates*
- *Thermocycler*

Arrayplex and GenomeLab Applications

Arrayplex and GenomeLab applications are not supported on the Biomek 4000 Laboratory Automation Workstation.

When migrating Biomek 3000 methods to Biomek Software, Version 4, the exact Biomek 3000 hardware configuration is no longer supported (Figure 4.1); however, all functionalities are maintained by moving the Static Peltier and Shaking Peltier to the right side of the Integration Deck as shown in Figure 4.2.

Figure 4.1 Biomek 3000 Configuration

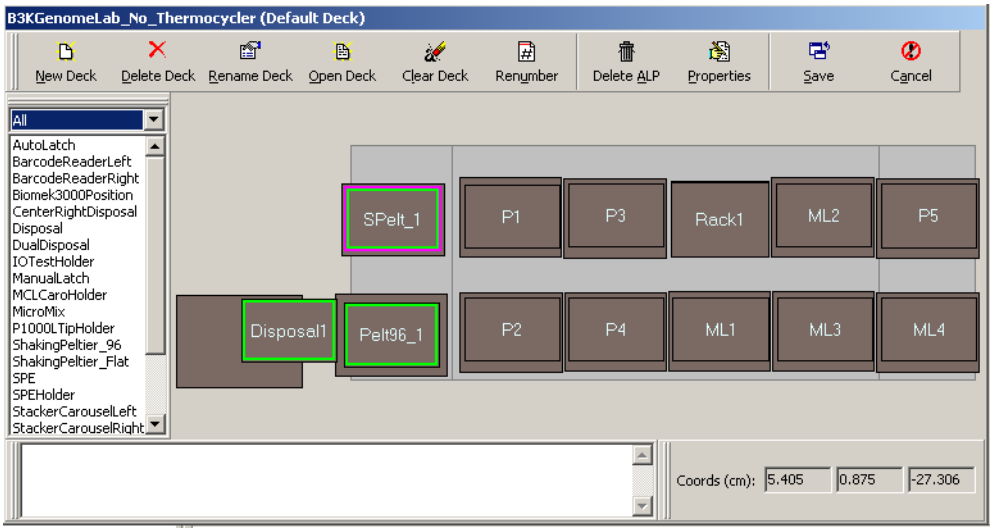
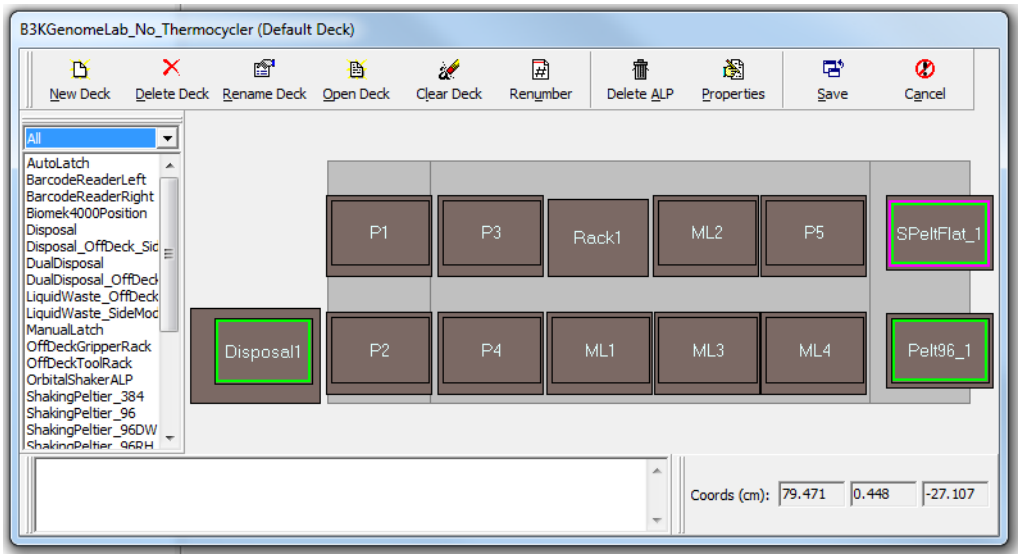


Figure 4.2 Biomek 4000 Configuration



DPC MicroMix Shaker

The DPC MicroMix Shaker is not available on Biomek 4000 instruments, but the capabilities remain. Biomek 3000 methods containing steps using the MicroMix Shaker will encounter validation errors in Biomek Software, Version 4. To correct this issue, remove those steps from the method, and use the Orbital Shaker or Shaking Peltier mixing operations. See the *Biomek 4000 ALPs and Accessories Manual* (PN A99501) or the *Shaking Peltier ALP Instruction Manual for Biomek 4000 Instruments* (PN B20570) for details.

High-Density Replication (HDR) Tools

HDR tools are not supported on Biomek 4000 instruments, and Biomek 3000 methods requiring HDR tools are unable to be used. Contact a Beckman Coulter Representative for information regarding alternative solutions.

Lift and Level Leg Kit

The Biomek 4000 Integration Deck has replaced the Biomek 3000 Lift and Level Leg Kit. Having similar capabilities to the Lift and Level Leg Kit, the Integration Deck is the mounting point for the Static Peltier, Shaking Peltier, and Orbital Shaker on the left and right sides of the Biomek 4000 Laboratory Automation Workstation.

P1000/P1000L Hardware Components and Labware

Labware has been updated to reflect the new capabilities of the Biomek 4000 system. Table 4.1 lists the discontinued labware and replacements available on your Biomek 4000 Laboratory Automation Workstation.

Table 4.1 Discontinued vs. New Labware

Discontinued Biomek 3000 Labware	Biomek 4000 Replacement Labware
• P1000L Tool • P1000 Tips • P1000 Tip Box • P1000 Tip Rack Holder	• P1000SL Tool • Span-8 P1000 Tips • Span-8 P1000 Tip Box • Biomek 4000 Manual Latch

Migrated Biomek 3000 methods that used discontinued items require reconfiguration prior to use in Biomek Software, Version 4. Reconfiguration details are presented in Table 4.2.

Table 4.2 Labware Error Remedies

Location of Error	Remedy
Biomek 4000 Physical Deck Setup	**IMPORTANT** Do not use the P1000 tip rack holder from Biomek 3000 instruments. Instead, use Span-8 P1000 tips, which are compatible with Manual Latch and Auto Latch positions. **⚠ CAUTION** **Do NOT use the P1000SL tool with P1000 tip boxes (72-count, black). Failure to consider this notice can result in tips not being loaded, resulting in hardware crashes and/or hazardous waste spills.**
Instrument Setup Step	• Replace all P1000 tips boxes (72-count, black) with Span-8 P1000 tips (orange) in the **Instrument Setup Step**. • Add the P1000SL tool to the tool rack.
Load Tool/Change Tool Steps	• Reconfigure all **Load Tool** and/or **Change Tool** steps to use the P1000SL tool. **OR** • Remove all **Load Tool** and/or **Change Tool** steps and use the **Load Tool**/tool **Auto-Select** field within **Transfer** and **Combine** steps.
Pipetting Operations	• Change the selected tip to Span-8 P1000 tips. • Choose the P1000SL tool.
Project File	• Remove the P1000 tip box from the Biomek 4000 project file.

Stacker Carousel

The Stacker Carousel is not supported on Biomek 4000 instruments, and Biomek 3000 methods requiring the Stacker Carousel are unable to be used. Contact a Beckman Coulter Representative for information regarding alternative solutions.

Pipetting Techniques and Templates

The default pipetting templates and techniques from the Biomek Software, Version 3.3, have been replaced by application-based default templates and techniques, as detailed in Table 4.3. Pipetting techniques and templates from Biomek 3000 methods can be imported and used in Biomek Software, Version 4, and may be appropriate for optimized and/or validated methods. When developing new methods, modify the new default techniques and templates for more reliable performance.

IMPORTANT When it is required to use techniques and templates from Biomek Software, Version 3.3, ensure that you do not overwrite default techniques and templates provided with Biomek Software, Version 4.

Table 4.3 Default Pipetting Techniques and Templates

Item	Discontinued Items — Biomek 3000 (Biomek Software, Version 3.3)	Replacement Items — Biomek 4000 (Biomek Software, Version 4)
Pipetting Techniques	• AP96 P50 - High Volume • AP96 P50 - Low Volume • MP20_P20 • MP200 • P1000 • P200	• Bulk Dispense • Multi dispense • Default • Mix • Waste Removal • Wash Tool Default
Pipetting Templates	• AP96 P50 • MP20_P20 Default Template • P1000 Default Template • P200 Default Template	• Default Template • DefaultWashTool

Thermocycler

The thermocycler integration is not supported on Biomek 4000 instruments. If your application requires an on-deck thermocycler, contact a Beckman Coulter Representative for information regarding alternative solutions.

Abbreviations

ALP — active labware positioner

CFR — Code of Federal Regulations

DVD — digital versatile disk

GB — gigabyte

GHz — gigahertz

HDR — high-density replication

MSDS — Material Safety Data Sheet

mW — milliwatt

nm — nanometer

RoHS — Restriction of Hazardous Substances

SDS — Safety Data Sheet

SQL — structured query language

USPTO — United States Patent and Trademark Office

WEEE — Waste Electrical and Electronic Equipment

WT — wash tool

Glossary

21 CFR Part 11 — Outlines the technical and procedural FDA requirements to implement electronic records and/or electronic signatures for computer systems.

AccuFrame Tool — A device that automates the process of teaching Biomek Software, the location of the labware positioners, and devices positioned on the deck.

Beckman Coulter Accounts & Permissions — An integrated set of features built into Beckman Coulter software that assists users in complying with 21 CFR Part 11 requirements for closed systems. With Biomek Software support is extended only for the Biomek instrument; devices integrated with the Biomek instrument are not supported unless specified in separate documentation.

Biomek 4000 Laboratory Automation Workstation — Multi-axis liquid handler designed for bench top use and to fit in a laminar flow or fume hood for sterile or hazardous operations. The open architecture design, along with the extensible operating software, provides a foundation for integrating current and future specific-use components. The Biomek 4000 instrument uses a single pod with a series of interchangeable tools. Different tools provide options for performing a variety of functions, including liquid transfer and plate washing operations and moving labware around the deck.

Check In (a Method) — Similar to saving a method, but in addition creates a new revision of the method, checks in all project items of the project file, and creates new revisions for any items that have changed.

Check Out (a Method) — Allows any revision of a method to be opened in read-only mode. Validated methods may be checked out in validated mode when Accounts & Permissions is enabled. A method revision that is checked out may also be exported to a method file.

Combine Step — Biomek Software step that aspirates from multiple sources and dispenses to a single destination.

Configuration View — Part of the Biomek Software main editor where the configuration for each step appears. The view changes to correspond to the highlighted step in the Method View.

Current Deck Display — Display located at bottom of the Biomek main editor showing the location of labware on the deck during a method run. Also shown in the **Deck Editor**.

Deck — Workspace on the software. Physical deck of the instrument. The Biomek 4000 deck is the work surface of the instrument and provides eight standard positions for tool racks and labware positioners. The deck contains predrilled locating holes used to place labware positioners and tool racks precisely.

Deck Layout — Current configuration of the deck.

Disposal Accessory — Provides a waste receptacle for disposing of tips and labware from the Biomek 4000 deck using the gripper tool. Tip boxes or other labware may be deposited directly to the disposal accessory, eliminating the need to manually dispose of waste.

Framing — Process of providing exact coordinates of positions on the Biomek instrument deck or exact offsets for the gripper. Also called teaching.

Gripper — On the Biomek 4000 instrument, the gripper is usually referred to as the gripper tool. The gripper tool has gripper fingers (two in front and one in back) that grasp labware along the long side and move the labware from one location on the Biomek deck to another.

Import File — File that contains settings from a workspace.

Import/Export Utility — Utility that allows settings from a workspace to be recovered or shared.

Instrument File — Stores information about the hardware configuration and deck layout of the Biomek instrument. Instrument files can represent different Biomek instruments, or different hardware configurations for the same instrument.

Instrument Setup — Step which specifies the configuration of the Biomek instrument deck and pods. Includes labware and labware contents for items on the deck.

Liquid Level Sensing — On the Biomek 4000 instrument, P200L and P1000SL tools include patented technology that sonically detects the liquid level. Liquid level sensing is performed using an acoustic process involving a transmitter and receiver within the single-channel tools. The transmitter emits a sound wave through the tip that bounces back when it contacts liquid. The receiver detects the wave as it bounces back past the end of the tip.

Main Editor — Main window in Biomek Software for building liquid-handling methods for a Biomek instrument. Includes the step palettes, Method View, Configuration View, Current Deck Display, menu bar, toolbar, and status bar.

Marks — When labware is accessed, the software keeps track of which wells have been used. If **Set marks** is enabled, the wells accessed for any operation are marked and future operations may continue from the marked wells by either selecting the **At first selected well** or **At first unmarked well** option.

Method — Sequentially ordered list of steps comprising a liquid-handling procedure.

Method View — Pane in the Biomek main editor displaying the steps in a method.

Orbital Shaker ALP — Active ALP that shakes labware using an orbital shaking motion. Thumbscrews attach the ALP to the lift kit elevated base and a clamping mechanism anchors and positions labware for shaking and pipetting operations.

Off-Deck Tool Rack — Special off-deck tool rack on Biomek 4000 instruments used to hold up to two interchangeable pipetting tools or one gripper in a single deck position attached directly to the left/right side of deck or attached to left side of the left-side module.

Parameters — Configuration values that are part of a method or step.

Pipetting Template — Controls the pipetting actions and movements of a pod within the wells of labware.

Pipetting Tools — Single-channel and eight-channel tools used on the Biomek 4000 pod to aspirate and dispense liquid.

Shaking Peltier ALP — A labware positioner with microplate shaking and heating and cooling cap ab ili it es from a connected controller.

Software Error — Error resulting from inconsistencies between the software and instrument or between configuration items.

Static Peltier ALP — A labware positioner with heating and cooling capabilities from a connected controller.

Step Configuration — Pane in the Biomek main editor allowing for configuration of a highlighted step.

Step Palette — Panes in the Biomek main editor showing steps available for insertion in a method. Located on the main editor.

Steps (in Biomek Software) — User-configurable actions that may be included in a method and executed during a method run.

Technique — Preprogrammed and automatically-selected ways to pipette based upon properties and values

Technique Properties — Specific items, such as labware type and liquid type, associated with a technique. The number of properties that match a method determine the technique that is selected.

Tool Rack — Special labware positioner on the Biomek 4000 instrument used to hold up to five interchangeable tools in a single deck position during a method.

Tool Rack With Gripper — Labware positioner used to hold up to two interchangeable pipetting tools and one gripper in a single deck position during a method.

Transfer Step — Biomek Software step that aspirates from a single source and dispenses to single or multiple destinations.

Validate (the current method before running it) — Option which signals the software to simulate the method prior to a run in order to allow errors to be detected before a method starts.

Validated Method — Revision of a method that is checked in, approved with an electronic signature, and protected from further modification. Revisions of project items required to run the validated method are also checked in and protected from further modification. This ensures that validated method runs are reproducible. When Beckman Coulter Accounts & Permissions is enabled, methods may be validated. Only users with Validate Methods permission can validate methods.

Wash System — Includes single-channel and eight-channel wash tools used to perform plate washing and bulk dispense operations on Biomek 4000 instruments.

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Beckman Coulter, Inc.
Warranty and Returned Goods Requirements

All standard Beckman Coulter, Inc. policies governing returned goods apply to this product. Subject to the exceptions and upon the conditions stated below, the Company warrants that the products sold under this sales agreement shall be free from defects in workmanship and materials for one year after delivery of the products to the original Purchaser by the Company, and if any such product should prove to be defective within such one year period, the Company agrees, at its option, either (1) to correct by repair or at the Company's election by replacement, any such defective product provided that investigation and factory inspection discloses that such defect developed under normal and proper use, or (2) to refund the purchase price. The exceptions and conditions mentioned above are as follows:

1. Components or accessories manufactured by the Company which by their nature are not intended to and will not function for one year are warranted only to reasonable service for a reasonable time. What constitutes a reasonable time and a reasonable service shall be determined solely by the Company. A complete list of such components and accessories is maintained at the factory.
2. The Company makes no warranty with respect to components or accessories not manufactured by it. In the event of defect in any such component or accessory, the Company will give reasonable assistance to Purchaser in obtaining the manufacturer's own warranty.
3. Any product claimed to be defective must, if required by the Company, be returned to the factory, properly decontaminated of any chemical, biological, or radioactive hazardous material, transportation charges prepaid, and will be returned to the Purchaser with transportation charges collect unless the product is found to be defective.
4. The Company shall be released from all obligations under all warranties, either expressed or implied, if any product covered hereby is repaired or modified by persons other than its own authorized service personnel, unless such repair by others is made with the written consent of the Company.
5. If the product is a reagent or the like, it is warranted only to conform to the quantity and content and for the period (but not in excess of one year) stated on the label at the time of delivery.

It is expressly agreed that the above warranty shall be in lieu of all warranties of fitness and of the warranty of merchantability, and that the company shall have no liability for special or consequential damages of any kind or from any cause whatsoever arising out of the manufacture, use, sale, handling, repair, maintenance, or replacement of any of the products sold under the sales agreement.

Representatives and warranties made by any person, including dealers and representatives of the Company, which are consistent or in conflict with the terms of this warranty, shall not be binding upon the Company unless reduced in writing and approved by an expressly authorized officer of the Company.

Parts replaced during the warranty period are warranted to the end of the instrument warranty.

NOTE
Performance characteristics and specifications are only warranted when Beckman Coulter replacement parts are used.

Except as provided in writing signed by an officer to Beckman Coulter, Inc., this system and any related documentation are provided “as is” without warranty of any kind, expressed or implied, including that the system is “error free.” This information is presented in good faith, but Beckman Coulter does not warrant, guarantee, or make any representations regarding the use or the results of the use of this system and related documentation in terms of correctness, accuracy, reliability, currentness, omissions, or otherwise. The entire risk as to the use, results, and performance of this system and related documentation is assumed by the user.

Related Documents

Biomek 4000 Laboratory Automation Workstation Preinstallation Manual
PN A99499

Biomek 4000 Laboratory Automation Workstation Customer Start-Up Guide
PN A99598

Biomek 4000 Laboratory Automation Workstation Hardware Manual
PN A99498

Biomek 4000 Laboratory Automation Workstation Software Tutorial
PN A99502

Biomek 4000 Laboratory Automation Workstation ALPs and Accessories Manual
PN A99501

Shaking Peltier ALP Instruction Manual for Biomek 4000 Instruments
PN B20570

Static Peltier ALP Instruction Manual for Biomek 4000 Instruments
PN B20569

Biomek Software User's Manual Version 4.1
PN B30026

Biomek Software User's Manual Version 4.2
PN C40390

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