Pre-Installation Manual

Biomek i-Series Automated Workstation

B54472AE
May 2023

Beckman Coulter, Inc.
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Biomek i-Series Automated Workstation
Pre-Installation Manual
PN B54472AE (May 2023)

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.
- In Austria, call us at 0810 300484
- In Germany, call us at 02151 333999
- In Sweden, call us at +46 (0)8 564 859 14
- In the Netherlands, call us at +31 348 799 815
- In France, call us at 0825838306 6
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- In Ireland, call us at +353 (01) 4073082
- In Italy, call us at +39 0295392 456
- In other locales, contact your local Beckman Coulter Representative.

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May be covered by one or more pat. - see www.beckman.com/patents

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

Original Instructions

Revision Status

For updates, go to www.beckman.com/techdocs and download the most recent manual or system help for your instrument.

Initial Issue, B54472AA, March 2017

Revision AB, 07/2017
Updates were made to the following sections: CHAPTER 1, System Specifications; CHAPTER 1, Weights of Biomek i-Series Workstation Components; CHAPTER 1, Integrated Devices Electrical Requirements.

Revision AC, 05/2018
Updates were made to the following sections: CHAPTER 1, Weights of Biomek i-Series Workstation Components; CHAPTER 1, Integrated Devices Electrical Requirements; CHAPTER 1, Vacuum Requirements.

Revision AD, 08/2022
Updates were made to the following sections: Safety Notice, Multi Compliance Label; Safety Notice, UKCA Mark

Revision AE, 05/2023
Updates were made to the following sections: Table 1.1, System Specifications

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

Safety Notice

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate 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 eye wear, gloves, and suitable laboratory attire when operating or maintaining this or any other automated laboratory equipment.

Alerts for Danger, Warning, Caution, Important, and Note

All Dangers, 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.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ 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 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.**
- **Covers and panels are not opened, closed, removed and/or replaced with care.**
- **Improper tools are used for troubleshooting.**

To avoid injury:

- **Keep 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.**
- **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. Only operate your system's computer with software authorized by Beckman Coulter.**
- **You install software that is not an original copyrighted version. Only use 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, contact us.

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 us for any servicing of equipment requiring the removal of covers or panels.

Equipment Ratings

- 100-240Vac
- 50/60 Hz
- 10 A

⚠ DANGER

To reduce the risk of electrical shock, the instrument uses a three-wire electrical cord and plug to connect it to earth-ground. Make sure that the matching wall outlet receptacle is properly wired and earth-grounded.

NOTE The power plug serves as the disconnecting device and must remain easily accessible.

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) wall outlets. Do not use multiplug power strips.

Biological

⚠ WARNING

Risk of contamination. Biohazardous contamination can occur from contact with the waste container and its associated tubing if not handled with care. Wear personal protective equipment. Avoid skin contact. Clean up spills immediately. Dispose of the contents of the waste container in accordance with the local regulations and acceptable laboratory practices.

BioHazard

⚠ 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.

⚠ 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 an ALP, or to access the labware during pipetting operations while positioned on an 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.beckman.com/techdocs**.

⚠ WARNING

California Proposition 65

This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Disposal of Electronic Equipment

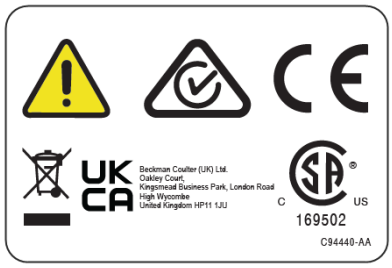
It is important to understand and follow all laws regarding the safe and proper disposal of electrical instrumentation.

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 the device.

Multi Compliance Label



- The “RCM” (Regulatory Compliance Mark) is depicted as a triangle with a partial circle and check. The mark is applied to products that comply with the EMC requirements of the Australian Communications Media Authority (ACMA) for use in Australia and New Zealand.
- 169502 – This label indicates recognition by a Nationally Recognized Testing Laboratory (NRTL) that the instrument has met the relevant product safety standards.

  NOTE 169502 is applicable to North American models only.

- CE – A “CE” mark indicates that a product has been assessed before being placed on the market, and has been found to meet European Union safety, health, and/or environmental protection requirements.

- UKCA — A “UKCA” mark indicates that a product has been assessed before being placed in the UK market, and has been found to meet UK safety, health, and/or environmental protection requirements.
- **Recycling** — Refer to the Recycling Label section in this document.

RoHS Notice

These labels and materials declaration table (the Table of Hazardous Substance's Name and Concentration) are to meet People’s Republic of China Electronic Industry Standard SJ/T11364-2006 “Marking for Control of Pollution Caused by Electronic Information Products” requirements.

China RoHS Caution Label

This logo indicates that this electronic information product contains certain toxic or hazardous substances or elements, and can be used safely during its environmental protection use period. The number in the middle of the logo indicates the environmental protection use period for the product. The outer circle indicates that the product can be recycled. The logo also signifies that the product should be recycled immediately after its environmental protection use period has expired. The date on the label indicates the date of manufacture.

China RoHS Environmental Label

This logo indicates that the product does not contain any toxic or hazardous substances or elements. The “e” stands for electrical, electronic and environmental electronic information products. This logo indicates that this electronic information product does not contain any toxic or hazardous substances or elements, and is green and environmental. The outer circle indicates that the product can be recycled. The logo also signifies that the product can be recycled after being discarded, and should not be casually discarded.

CE Mark

A “CE” mark indicates that a product has been assessed before being placed on the market, and has been found to meet European Union safety, health, and/or environmental protection requirements.

UKCA Mark

A “UKCA” mark indicates that a product has been assessed before being placed in the UK market, and has been found to meet UK safety, health, and/or environmental protection requirements.

Warnings and Cautions

Please read and observe all cautions and instructions. Remember, the most important key to safety is to operate this equipment and its supporting software with care.

The WARNINGS and CAUTIONS found in this document are listed below.

⚠ WARNING

Risk of operator injury if:

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

To avoid injury:

- **Keep covers and panels closed and/or 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.**
- **Use the proper tools when troubleshooting.**

⚠ CAUTION

System integrity might be compromised and operational failures might 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. Only operate the computer of your system with software authorized by Beckman Coulter.**
- **You install software that is not an original copyrighted version. Only use 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, contact us.

⚠ WARNING

Risk of personal injury or equipment damage. The Biomek Workstation weighs between 146 - 260 kg (322 - 573 lbs). Do not attempt to lift or move the Biomek Workstation without first contacting your safety officer for instructions regarding lifting heavy objects.

⚠ WARNING

Risk of personal injury or equipment damage. The Biomek i5 instrument will overhang the edges of a 55 cm x 61 cm bench. Make sure there are no obstacles that will interfere with placement of the instrument and that the leveling feet are securely positioned on the bench.

⚠ WARNING

Risk of personal injury or equipment damage. The Biomek i7 instrument will overhang the edges of a 115 cm x 61 cm bench. Make sure there are no obstacles that will interfere with placement of the instrument and that the leveling feet are securely positioned on the bench.

⚠ WARNING

Risk of personal injury or equipment damage. Make sure the bench meets the minimum bench size and can support the total installed weight of the system. Refer to Table 1.1 and Table 1.4 to determine the total weight of the system.

⚠ CAUTION

Risk of bodily injury and/or equipment damage. The Mobile Workstation is heavy and cumbersome. To avoid injury, two or more people are needed to assemble and move the Mobile Workstation. Follow your safety officer's instructions regarding lifting and moving heavy objects.

⚠ CAUTION

Risk of personal injury or equipment damage. The Cytomat device weighs 80-141 kg (176-311 lbs.). Do not attempt to lift it without first contacting your safety officer for instructions regarding lifting heavy objects.

⚠ WARNING

Risk of bodily injury. Side panels of the packing crate are heavy and can fall when screws are removed. To prevent the side panels from falling on the person unpacking a Cytomat device, a second person must hold each panel while the screws are removed. Follow your safety officer's instructions regarding lifting and moving heavy objects.

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CHAPTER 1

Preparing the Site

Preparation Overview

This pre-installation manual details the required site preparation prior to the installation of the Biomek i-Series instrument and components. Pay careful attention to the specifications and requirements described in this manual. Accurate and timely preparation allows the Beckman Coulter Field Service Engineer to unpack and install the Biomek i-Series instrument and components efficiently upon arrival.

For pre-installation information for optional Cytomat incubators and storage units and other optional integrated devices, refer to CHAPTER 3, *Preparing Cytomat Devices*.

Site Preparation

NOTE Consult local fire codes to determine required ceiling height and other requirements for your location.

Appropriate site preparation includes making sure that:

- System specification requirements are met when the Biomek i-Series instrument is installed. See *Biomek i-Series System Specifications*.
- Adequate work space is set up for the instrument and automation controller. See *Work Area Minimum Dimensions*.
- Aisle and door widths are sufficient to allow the instrument to be moved from the receiving area to the final work area. See Door and Aisle Clearances under *Work Area Minimum Dimensions*.
- The bench holding the Biomek i-Series system meets the minimum dimensions and supports the total installed weight of the Biomek i-Series instrument and any peripheral equipment. See *Component Weights*. The bench must also be level and stable so that normal operations of the Biomek i-Series instrument do not cause the bench to shift, jerk, or sway.
- The Biomek i-Series instrument must be placed on an i-Series table or Beckman Coulter Mobile Workstation if it will be integrated with a Cytomat device. See CHAPTER 3, *Preparing Cytomat Devices*.
- Electrical supply and power quality are adequate for operation. See *Biomek Instrument Electrical Requirements*.
- Appropriate de-gassed system fluid is available for a Biomek i-Series instrument equipped with a Span-8 pod. See *System Fluid Requirements - Span-8 Pod Only*.

Biomek i-Series System Specifications

Table 1.1 presents system specifications and requirements for the Biomek i-Series instrument.

Table 1.1 System Specifications

Item	Description	
	Without Enclosure	**With Enclosure (door closed)**
Dimensions — i5 Base Unit	**Width**: 112 cm (44 in.) **Depth**: 81 cm (32 in.) **Height**: 104 cm (41 in.)	**Width**: 112 cm (44 in.) **Depth**: 81 cm (32 in.) **Height**: 112 cm (44 in.)
Dimensions — i7 Base Unit	**Width**: 170 cm (67 in.) **Depth**: 81 cm (32 in.) **Height**: 104 cm (41 in.)	**Width**: 170 cm (67 in.) **Depth**: 81 cm (32 in.) **Height**: 112 cm (44 in.)
Maximum Height with Door Open	N/A	148 cm (58 in.)
Weight — i5 Base Unit Multichannel Span-8	 155 kg (341 lbs) 146 kg (322 lbs)	 181 kg (399 lbs) 172 kg (379 lbs)
Weight — i7 Base Unit Multichannel Dual Multichannel Span-8 Hybrid	 199 kg (439 lbs) 234 kg (516 lbs) 190 kg (419 lbs) 225 kg (496 lbs)	 234 kg (516 lbs) 269 kg (593 lbs) 225 kg (496 lbs) 260 kg (573 lbs)
Environment	Indoor use only	
Electrical Requirements	100 - 240 VAC, 50/60 Hz, 10 A	
System Fluid Requirements **NOTE** Only instruments equipped with a Span-8 Pod require system fluid.	• De-ionized or distilled water. • System Fluid should be de-gassed for 24 hours prior to use.	
Ambient Operating Temperature	10°C-30°C (50°F-86°F)	
Humidity Restrictions	20 – 85% (non-condensing) @ 30°C (86°F)	
Altitude Restrictions	Up to 2000 m (6562 ft.)	
Installation Category	Category II	
Pollution Degree	2	
Sound Pressure Level	• Maximum sound pressure: 70 dB(a) • Maximum sound pressure at 1 meter: 70 dB(a)	
Circuit Breaker	• **US**: 250VAC, 60Hz, 10 Amp, UL recognized, CSA certified, UL File E96454 • **Europe**: 250VAC, 50Hz, 10 Amp, VDE Certificate Number: 40011305	

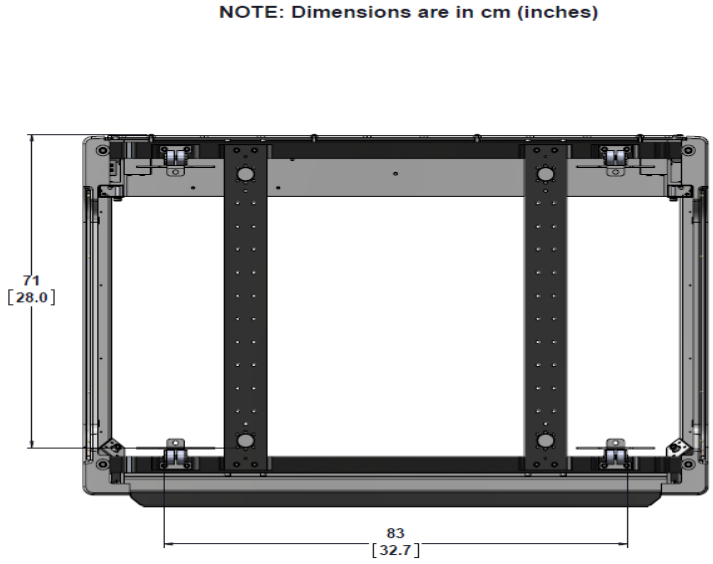
Table 1.1 System Specifications *(Continued)*

Item	Description
Communications to Host and Cameras	USB 2.0
Communications to Active ALPs	CAN

Work Area Minimum Dimensions

Table Dimensions for Biomek i5 Instrument

Figure 1.1 Biomek i5 leveling feet dimensions with minimum bench size needed (bottom view)



Minimum bench necessary for Biomek i5 instrument (see Table 1.2)

Use Table 1.2 to determine:

- Minimum dimensions required for the Biomek i5 system work area.
- Location for the automation controller and stand near the instrument bench.

NOTE The minimum bench width necessary to hold the Biomek i5 instrument (71 cm (28 in.)) is shorter than the recommended base width of the instrument (83 cm (33 in.)). The minimum bench width (71 cm) allows you to lift the instrument onto bench. Due to the narrow width of the bench you cannot use the casters to roll the instrument onto the bench. If the bench is slightly shorter than the Biomek i5 instrument, be sure to allow enough space on both sides for the instrument to overhang the bench while the leveling feet are securely positioned on the bench.

NOTE The recommended bench width (83 cm) allows you to use the casters to roll the instrument onto bench and the instrument will sit securely on the bench and not overhang.

Table 1.2 Space and Table Requirements for Biomek i5 Instrument

Component	Minimum Dimensions Required
Height clearance[ab] **Without Enclosure** **With Enclosure**	 188 cm (74 in.): (84 cm (33 in.) table height + 104 cm (41 in.) instrument) 196 cm (77 in.): (84 cm (33 in.) table height + 112 cm (44 in.) instrument)
Rear access clearance	10 cm (4 in.)
Side access clearance	31 cm (12 in.)
Minimum recommended bench necessary to adequately hold the Biomek i5 instrument	71 cm x 83 cm (28 in. x 33 in.) **⚠ WARNING** **Risk of personal injury or equipment damage. The Biomek i5 instrument will overhang the edges of a 71 cm x 83 cm bench. Make sure there are no obstacles that will interfere with placement of the instrument and that the leveling feet are securely positioned on the bench.** **⚠ WARNING** **Risk of personal injury or equipment damage. Make sure the bench meets the minimum bench size and can support the total installed weight of the system. Refer to Table 1.1 and Table 1.4 to determine the total weight of the system.**
Aisle and door clearance for delivery	86 cm (34”) minimum

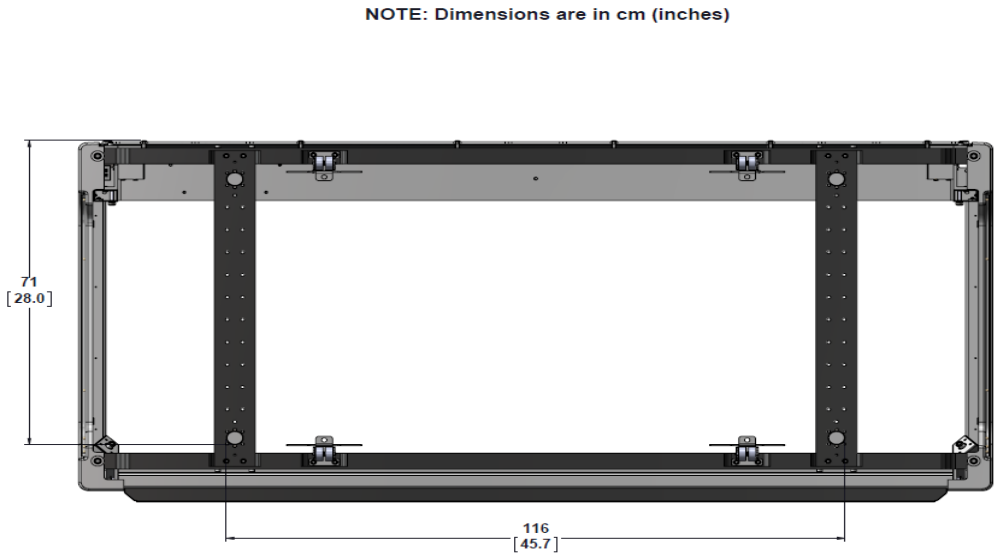
a. Consult local fire codes for ceiling clearance requirements.

b. Height may vary if using a table or bench not supplied by Beckman Coulter.

NOTE The dimensions for the lab bench in the above table do not include space for the automation controller or additional accessories. A lab bench with shelving for accessories underneath the instrument is desirable.

Table Dimensions for Biomek i7 Instrument

Figure 1.2 Biomek i7 leveling feet dimensions with minimum bench size needed (bottom view)



Minimum bench necessary for Biomek i7 instrument (see Table 1.3)

Use Table 1.3 to determine:

- Minimum dimensions required for the Biomek i7 system work area.
- Location for the automation controller and stand near the instrument bench.

NOTE The minimum bench length necessary to hold the Biomek i7 instrument (116 cm (46 in.)) is shorter than the base of the instrument (170 cm (67 in.)). If the bench is slightly shorter than the Biomek i7 instrument, be sure to allow enough space on both sides for the instrument to overhang the bench and ensure the leveling feet are securely positioned on the bench.

Table 1.3 Space & Table Requirements for Biomek i7 instrument

Component	Minimum Dimensions Required
Height clearance[ab] Without enclosure With enclosure	 188 cm (74 in.): (84 cm (33 in.) table height + 104 cm (41 in.) instrument) 196 cm (77 in.): (84 cm (33 in.) table height + 112 cm (44 in.) instrument)
Rear access clearance	10 cm (4 in.)
Side access clearance	31 cm (12 in.)
Minimum bench necessary to adequately hold the Biomek i7 instrument	116 cm x 63 cm (46 in. x 28 in.) image values **⚠ WARNING** **Risk of personal injury or equipment damage. The Biomek i7 instrument will overhang the edges of a 116 cm x 63 cm bench. Make sure there are no obstacles that will interfere with placement of the instrument and that the leveling feet are securely positioned on the bench.** **⚠ WARNING** **Risk of personal injury or equipment damage. Make sure the bench meets the minimum bench size and can support the total installed weight of the system. Refer to Table 1.1 and Table 1.4 to determine the total weight of the system.**
Aisle and door clearance for delivery	34” minimum

a. Consult local fire codes for ceiling clearance requirements.

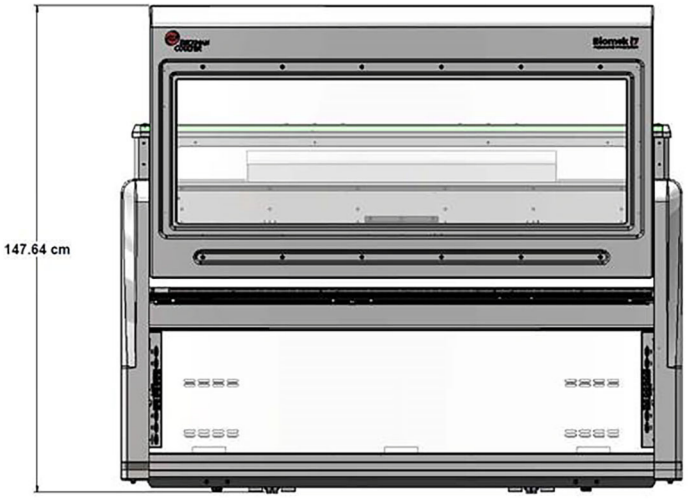
b. Height may vary if using a table or bench not supplied by Beckman Coulter.

NOTE The dimensions for the lab bench in the above table do not include space for the automation controller or additional accessories. A lab bench with shelving for accessories underneath the instrument is desirable.

Dimensions for Biomek i5 Instrument With the Door Raised

For closed enclosure instrument models, the work space must allow enough space to operate the instrument with the door raised. The maximum height of the instrument with the door raised is approximately 148 cm (refer to Figure 1.3).

Figure 1.3 Maximum Dimensions for Operating the Instrument With the Door Raised



Component Weights

The weight of the Biomek i-Series workstation varies based upon the components included. Use Table 1.1 and Table 1.4 to determine the bench load requirements for the approximate installed weight of Biomek i-Series workstation with pods, heads, and components.

⚠ WARNING

Risk of personal injury or equipment damage. The Biomek Workstation weighs between 146-260 kg (322-573 lbs). Do not attempt to lift or move the Biomek Workstation without first contacting your safety officer for instructions regarding lifting heavy objects.

Table 1.4 Weights of Biomek i-Series Workstation Components

Component	Part Number	Weight
1 x 1 Static ALP	B87477	.9 kg (2 lbs.)
1 x 3 Static ALP	B87478	1.8 kg (4 lbs.)
1 x 5 Static ALP	B87479	2.7 kg (6 lbs.)
Positive Position ALP	719856	2.3 kg (5 lbs.)
Orbital Shaker ALP	379448	3.2 kg (7 lbs.)
Fly-By Bar Code Reader (FBBCR)	B87481	.82 kg (1.8 lbs.)
Conveyor ALP long	394443	3.7 kg (8.3 lbs.)
Conveyor ALP short	A19855	3.4 kg (7.5 lbs.)
Circulating Reservoir Tip Box ALP	394586	2.5 kg (5.6 lbs.)
Static Peltier ALP	A85303	2.5 kg (5.6 lbs.)
Shaking Peltier ALP	A85316	4.4 kg (9.7 lbs.)
Heating/Cooling ALP single position	719361	1.5 kg (3.3 lbs.)
Trash ALP	B87483	2.5 kg (5.5 lbs.)
Span-8 Active Wash ALP	B87475	.82 kg (1.8 lbs.)
Span-8 Wash ALP	B87476	.82 kg (1.8 lbs.)
384 Tip Wash ALP	B87474	1.6 kg (3.5 lbs.)
96 Channel Tip Wash ALP	B87698	2.9 kg (6.3 lbs.)
1-300 µL 96 channel head	B87589	3.5 kg (7.7 lbs.)
5-1200 µL 96 channel head	B87590	8.9 kg (8.6 lbs.)
0.5 - 60 µL 384 channel head	B87591	3.4 kg (7.4 lbs.)
Automation Controller	B87685	9 kg (19.8 lbs.)
HEPA Kit, 115V (Biomek i5)	B98217	13.2 kg (29 lbs.)
HEPA Kit, 230V (Biomek i5)	C07609	13.2 kg (29 lbs.)
HEPA Kit, 115V (Biomek i7)	B98219	18.2 kg (40 lbs.)
HEPA Kit, 230V (Biomek i7)	C07610	18.2 kg (40 lbs.)
Vacuum Filtration System	C26695	2.3 kg (5 lbs.)

Electrical Requirements

Biomek Instrument Electrical Requirements

Make sure the proper electrical supply dedicated solely to the Biomek instrument is available at the bench where Biomek i-Series instrument will be positioned. Table 1.5 defines the electrical requirements.

Table 1.5 Electrical Components and Requirements

Electrical Component	Electrical Requirements
Base Unit	100 – 240VAC @ 10 amps
Automation Controller	100 – 240VAC @ 2.5 amps
Monitor	100 – 240VAC @1 amps
I/O Box	100 – 240VAC @ 6.3 amps

NOTE All AC devices are at 50/60 Hz.

NOTE Connecting the instrument to an uninterruptible power source (UPS) is recommended to prevent unexpected power failures.

Integrated Devices Electrical Requirements

Make available the proper electrical supply at the location where the Biomek i-Series instrument will be positioned. Table 1.6 defines the electrical requirements for specific integrated devices.

Table 1.6 Integrated Devices Electrical Requirements

Electrical Component	Electrical Requirements
Cytomat Microplate Hotel (MPH)	100 - 230VAC @ 0.7 amps, 50/60 Hz
Cytomat 2C	100 - 230VAC @ 6 amps, 50/60 Hz
Conveyor ALP	100 - 240VAC @ 1.2 amps, 50/60 Hz
Circulating Reservoir/Tip Box ALP	90 - 260VAC @ 2.2 amps, 50/60 Hz
Fly-By Bar Code Reader (FBBCR)	100 - 240VAC @ 6 amps, 50/60 Hz
HEPA Filter Kit	115VAC @ 2.16 amps, 50/60 Hz 230VAC @ 1.32 amps, 50/60 Hz
Vacuum Filtration System	100-240 VAC @ 1.0 amp, 50/60 Hz

NOTE All AC devices are at 50/60 Hz.

Vacuum Requirements

If a filtration system is installed with the Biomek i-Series Instrument, a vacuum supply is required.

IMPORTANT Use a regulator with a 16 in. Hg minimum and 20.3 in. Hg maximum with your vacuum, unless your waste container is rated for a higher vacuum.

- The Filtration System requires a minimum of 20 in. Hg (67.7 kPa @ 0.127 m^3(Cubed)/min) at 4.5 SCFM (refer to the *Biomek i-Series Automated Labware Positioners, Accessories, & Devices Instructions for Use* (PN B54477)).

System Fluid Requirements - Span-8 Pod Only

NOTE Only instruments equipped with a Span-8 Pod require system fluid.

If a Span-8 Pod is installed on the Biomek i-Series instrument, make sure the site has the following system fluid available:

- De-ionized water

  OR

- Distilled water

NOTE System fluid ambient operating temperature is 15°C – 30°C (59°F – 86°F).

NOTE System fluid should be de-gassed for 24 hours prior to system installation. De-gassing the system fluid is accomplished by letting the system fluid rest in the supply container for 24 to 48 hours prior to attaching it to the Biomek i-Series Span-8 instrument. The lack of motion allows the air bubbles in the system fluid to escape or burst prior to use.

NOTE System fluid should be stored in carboys or other appropriate containers.

CHAPTER 2

Workspace for Integrated Devices

Overview

This section details the necessary workspace required for a Biomek i-Series Automated Workstation integrated with other devices.

Preparing the site for other devices includes:

- determining if electrical supply and power are adequate for operation (refer to CHAPTER 1, *Integrated Devices Electrical Requirements*).
- determining adequate space is set aside for devices integrated to the Biomek i-Series instrument (see *Estimating Required Workspace Dimensions*)

Estimating Required Workspace Dimensions

NOTE Consult local fire codes to determine required ceiling height and other requirements for your location.

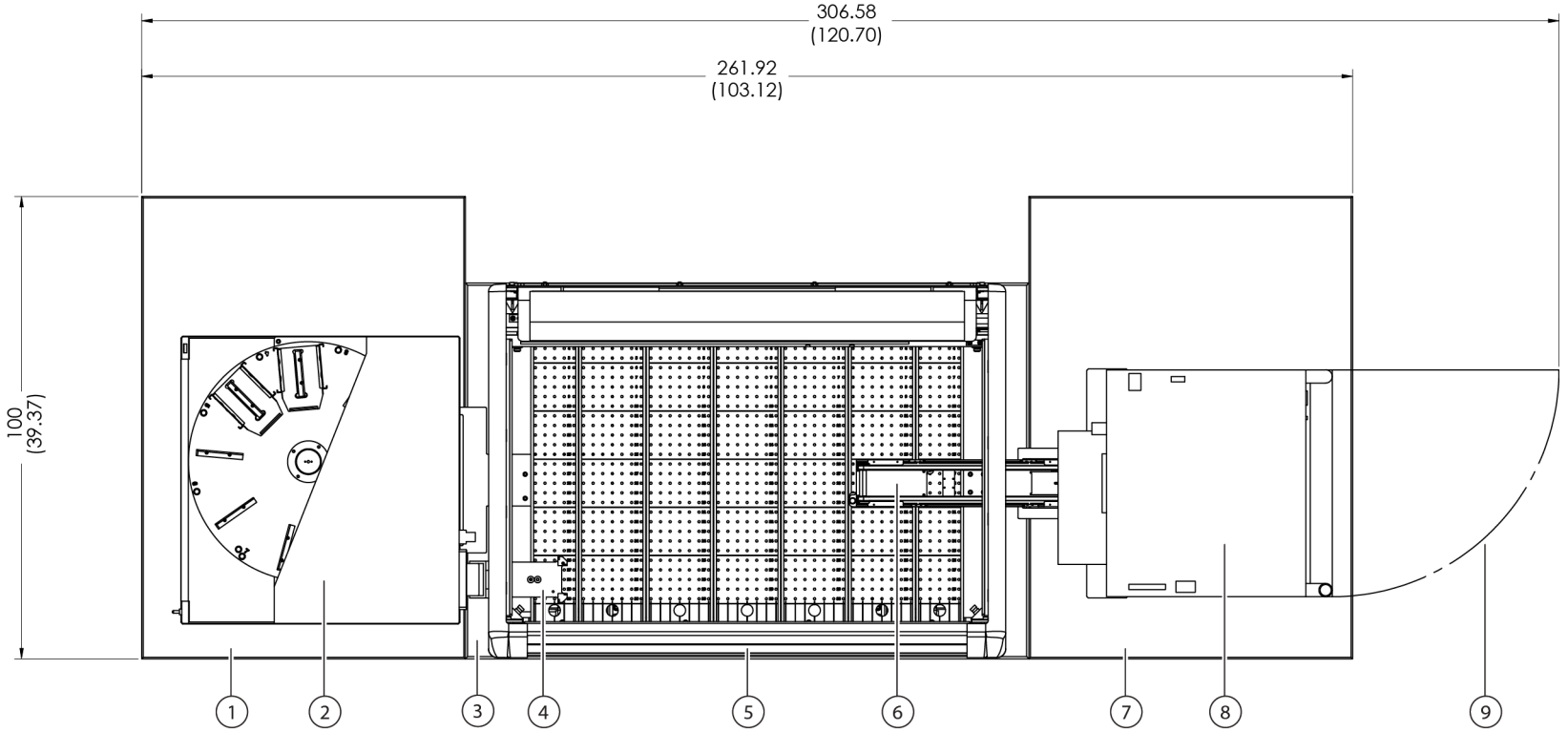
The required workspace dimensions depend on a number of factors. Use the dimensions in this section to estimate the workspace required for integrating Cytomat devices with the Biomek i-Series instrument.

NOTE The dimensions determined in this section do not include space for the automation controller or additional accessories. A lab bench with shelving for accessories underneath the instrument is desirable.

Several factors determine the minimum and maximum dimensions:

- the number and type of Cytomat devices
- whether a Cytomat device is integrated on the left, right or both sides of the Biomek i-Series instrument
- the size and position of the Conveyor ALP on the Biomek i-Series instrument deck, if used
- dimensions of the benches, Mobile Workstations, or i-Series tables
- access space around the instrument and integrated devices

Figure 2.1 Example layout of a Biomek i5 instrument with Microplate Hotel left and Cytomat 2C right



1. 70 cm x 100 cm (28 in x 39.4 in.) Table
2. Cytomat Microplate Hotel
3. 48” x 32” cart
4. Direct Access Cytomat MPH Platform in Left Column ALP position
5. Biomek i5 Series instrument
6. Short Conveyor ALP with bar code reader in Column 5 ALP position
7. 70 cm x 100 cm (28 in x 39.4 in.) Table
8. Cytomat 2C
9. Door swing (45 cm (18 in.))

NOTE Dimensions are in cm (inches)

To estimate the workspace dimensions for a Biomek i-Series instrument with integrated Cytomat devices:

1 Select an appropriate configuration from Table 2.1 for the Biomek instrument and Beckman Coulter supplied bench or table.

Table 2.1 Biomek Instrument and bench or i-Series table

Instrument and Table or Cart	Width	Depth
Biomek i5 with 1m x 1m i-Series table	112 cm (44 in.)	100 cm (39.3 in.)
Biomek i5 with Mobile Workstation	122 cm (48 in.)	82.3 cm (32 in.)
Biomek i7 with 1m x 1m i-Series table	170 cm (67 in.)	100 cm (39.3 in.)
Biomek i7 with Mobile Workstation	183 cm (72in.)	82.3 cm (32 in.)

OR

If using tables or benches not supplied by Beckman Coulter, determine the combined maximum width and depth of the instrument and bench. See Table 1.1 for Biomek i5 or Biomek i7 instrument dimensions.

For example, for a Biomek i7 and a 65.0 cm x 100 cm bench:

	Dimensions	Estimated Space required
Instrument	***170 cm width*** × 81 cm depth	***170 cm width*** (from Instrument) × ***100 cm depth*** (from Bench)
Bench	65 cm width × ***100 cm depth***	

IMPORTANT refer to Table 1.2 for the minimum bench size required for the Biomek i5 instrument, or Table 1.3 for the minimum bench required for the Biomek i7 instrument.

2 Add the Cytomat and required bench dimensions from Table 2.2:

Table 2.2 Cytomat Devices on modular bench

Cytomat Device and Table	Width	Depth
Microplate Hotel, left	70 cm (27.6 in.)	100 cm (39.3 in.)
Microplate Hotel, right	70 cm (27.6 in.)	100 cm (39.3 in.)
2C Incubator, left	70 cm (27.6 in.)	100 cm (39.3 in.)
2C Incubator, right	70 cm (27.6 in.)	100 cm (39.3 in.)

3 Add additional amount from Table 2.3 to allow for access to each Cytomat device:

Table 2.3 Additional width for access to each Cytomat device

Device	Access Width
Microplate Hotel	0
2C Incubator	46 cm (18 in.)

4 Add additional amount from Table 2.4 for each Conveyor Device to be used:

Table 2.4 Additional width for conveyor

Conveyor Device	Width
Short Conveyor in far left position	48.5 cm (19 in.)
Standard Conveyor in far left position	74 cm (29 in.)

5 Add 61 cm (24 in.) (the minimum rear clearance to a wall) to the calculated depth.

6 Add a minimum of 61 cm (24 in.) in front for instrument access.

7 Using the total calculated minimum dimensions, ensure the area where the equipment will be installed meets the minimum workspace requirements.

CHAPTER 3

Preparing Cytomat Devices

Overview

This section details the site preparation required before a Beckman Coulter Field Service Engineer can integrate optional Cytomat devices with a Biomek i-Series instrument.

The engineer only integrates and connects Cytomat devices to the Biomek i-Series instrument, but does not physically assist in preparing the site and unpacking the Cytomat devices — though he or she might be present at this time.

NOTE The Cytomat device must be unpacked and set on the bench or table for the Beckman Coulter Field Service Engineer.

Preparing the site for Cytomat devices includes:

- *Cytomat Device Specifications*
- *Setting Up Tables*
- *Unpacking Cytomat Devices*

Cytomat Device Specifications

Table 3.1 Cytomat 2C Incubator and Cytomat Hotel Specifications

Item	Cytomat 2C Incubator	Cytomat Microplate Hotel
Crate Dimensions	84 cm (L) x 89 cm (W) x 141 cm (H) 33 in. (L) x 35 in. (W) x 55.5 in. (H)	85 cm (L) x 101 cm (W) x 104 cm (H) 33.5 in. (L) x 40 in. (W) x 41 in. (H)
Device Dimensions	49.1 cm (L) x 53 cm (W) x 110.1 cm (H) 19.4 in. (L) x 20.9 in. (W) x 43.4 in. (H)	62 cm (L) x 65 cm (W) x 88 cm (H) 24.4 in. (L) x 25.6 in. (W) x 34.7 in. (H)
Crated Weight	141 kg (311 lbs.)	108 kg (238 lbs.)
Device Weight	80 kg (176 lbs.)	50 kg (110 lbs.)

Setting Up Tables

The Microplate Hotel and the Biomek i-Series instrument can be placed on a Mobile Workstation or i-Series table when integrated. Prior to uncrating Cytomat devices, transport the Mobile Workstation or i-Series table crate(s) to the laboratory. Unpack and assemble the table(s) at the proper workspace area.

Mobile Workstations

Please refer to the instructions included in the Mobile Workstations packaging.

i-Series Tables

The i-Series tables have a black phenolic resin top with a cardinal white base cabinet that is color matched to the i-Series platforms. The tables have hinged doors in the front, a single pull-out drawer inside the cabinet, mounting holes for a monitor arm, and removable side panels to allow for easier cable routing when multiple table are placed side-by-side. The i-Series tables also have leveling feet that can be adjusted with a wrench.

The i-Series tables are available in two sizes, 1-m x 1-m and 0.7-m x 1-m (refer to Figure 3.1 and Figure 3.2). The 0.7-m x 1-m i-Series table should be used when a Cytomat is used with an i-Series instrument.

The i-Series table is shipped fully assembled.

Figure 3.1 i-Series table (0.7-m x 1-m)

1. Phenolic resin top
2. Hinged doors (pull-out drawer inside)
3. Leveling feet
4. Removable panels

Figure 3.2 i-Series table (1-m x 1-m)

Unpacking Cytomat Devices

Cytomat devices should be unpacked prior to the arrival of the Beckman Coulter Field Service Engineer.

NOTE Refer to the tables in *Cytomat Device Specifications* for more information about Cytomat device crate dimensions and weights.

NOTE Before unpacking a Microplate Hotel, unpack and set up the i-Series table or cart where the device will be placed (see *Setting Up Tables*).

NOTE Unpacking a Cytomat device from the shipping crate requires two or more people.

⚠ CAUTION

Risk of personal injury or equipment damage. The Cytomat device weighs 80 - 41 kg (176-311 lbs.). Do not attempt to lift it without first contacting your safety officer for instructions regarding lifting heavy objects.

⚠ WARNING

Risk of bodily injury. Side panels of the packing crate are heavy and can fall when screws are removed. To prevent the side panels from falling on the person unpacking a Cytomat device, a second person must hold each panel while the screws are removed. Follow your safety officer's instructions regarding lifting and moving heavy objects.

To unpack any of the Cytomat units:

1. Remove the top panel of the crate with a Phillips-head screwdriver and set it aside.
2. Remove the screws along the bottom and side of one panel of the crate and set it aside.
3. If unpacking an incubator, slide the shelf from the crate.

   NOTE The microplate hotel crate does not include a shelf.
4. Remove the screws from the other panels, one panel at a time, and set the panel aside. Discard the screws.
5. Remove and discard the bag covering the Cytomat unit.
6. With appropriate equipment or help, lift the instrument straight up and set it on an i-Series table or cart.

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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 from the manufacturer's own warranty.
3. Any product claimed to be defective must, if required by the Company, be returned to the factory, transportation charges prepaid, and will be returned to Purchaser with transportation charges collect unless the product is found to be defective, in which case the product must be properly decontaminated of any chemical, biological, or radioactive hazardous material.
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 inconsistent 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.

Except as expressly provided herein, Beckman Coulter makes no other warranty, whether oral or written, expressed or implied, as to any matter whatsoever, including but not limited to those concerning merchantability and fitness for a particular purpose, nor is freedom from any patent owned by Beckman Coulter or by others to be inferred.

LIMITATIONS OF LIABILITY

Beckman Coulter shall not be liable, to any extent whatsoever, for any damages resulting from or arising out of the use or performance of this system and related documentation or the procedures specified in this manual, regardless of foreseeability or the form of action, whether in contract, tort (including negligence), breach of warranty, strict liability or otherwise, and including but not limited to damages resulting from loss of data, loss of anticipated profits, or any special, indirect, incidental or consequential damages. In no event shall Beckman Coulter’s liability to the user exceed the amount paid by the user to Beckman Coulter hereunder. The user assumes full responsibility for the results obtained from the use of this system and related documentation and for application of such results.

Related Documents

Biomek i-Series Hardware Reference Manual
PN B54474

Biomek i-Series Instructions for Use
PN B54473

Biomek i-Series Software Reference Manual
PN B56358

Biomek i-Series Tutorials
PN B54475

Biomek i-Series Automated Labware Positioners, Accessories, & Devices Instructions for Use
PN B54477

Cytomat Device and Conveyor ALP Instructions for Use
PN B91265

Static Peltier ALP Integration Manual for Biomek FX/FX^{P}, NX/NX^{P}, and i-Series Instruments
PN A93392, Rev. AC and up

Shaking Peltier ALP Integration Manual for Biomek FX/FX^{P}, NX/NX^{P}, and i-Series Instruments
PN A93393, Rev. AC and up

SAMI EX Software for Biomek i-Series Automated Workstations Instructions for Use
PN B58997

SAMI EX Software for Biomek i-Series Automated Workstations Reference Manual
PN B59001

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