

Axiom™ 2.0 Assay 96-Array Format Automated Workflow SITE PREPARATION GUIDE

for use with:

Axiom™ 2.0 Reagent Kit

Axiom™ Array Plates

Applied Biosystems™ NIMBUS™ Target Preparation Instrument

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Manufacturer:
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Products:
Axiom™ 2.0 Reagent Kit



Manufacturer:
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Products:
Axiom™ Array Plates
Axiom™ myDesign™ Array Plates

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C.0	13 December 2019	Adding information for Windows™ 10 users.
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NIMBUS™ Target Preparation Instrument configuration for Windows™ 7

The Applied Biosystems™ NIMBUS™ Target Preparation Instrument is required to run this version of the Axiom™ 2.0 Assay with the automated target preparation. This chapter contains information specific to the setup, maintenance, and safe use of the NIMBUS™ Instrument and equipment.

Pre-installation information

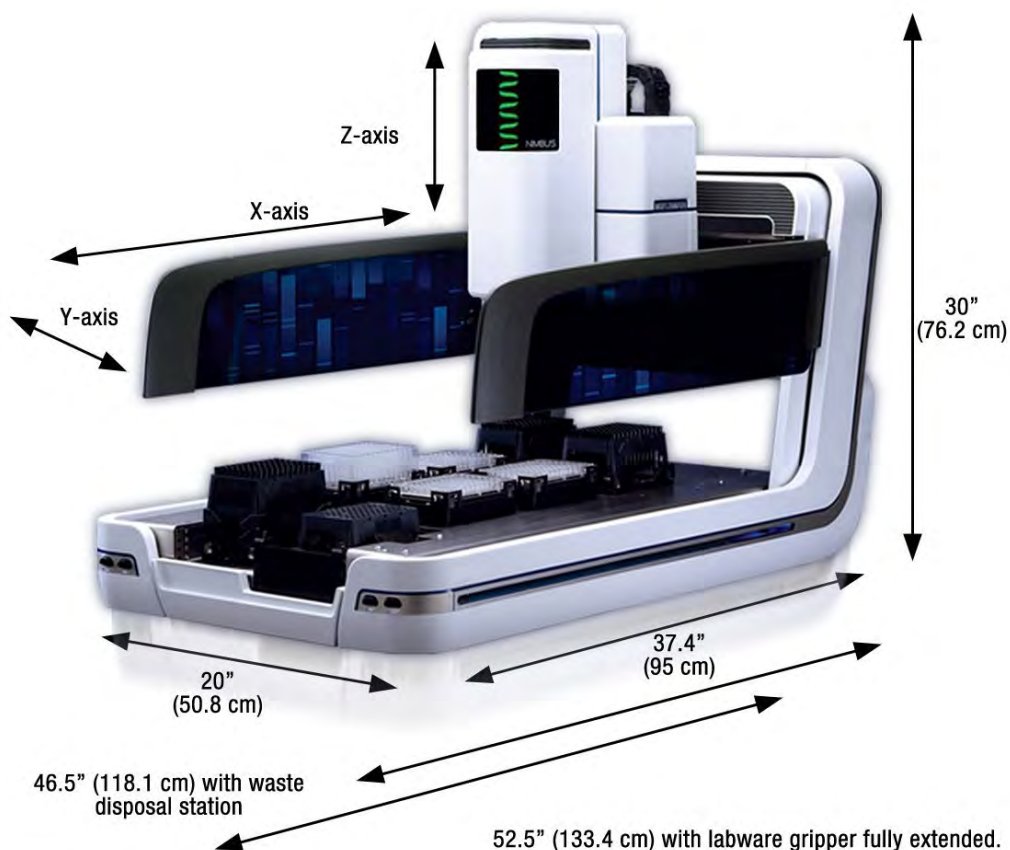
IMPORTANT! Read all of the information in this chapter before unpacking or moving the instrument.

Site selection

IMPORTANT! Determine the NIMBUS™ Instrument location carefully. Moving the instrument after installation requires recalibration.

Location considerations and requirements

- Keep the instrument away from direct sunlight, drafts, excessive vibrations, and widely fluctuating temperatures or humidity. This requirement is especially critical for low volume (<10 µL) applications that require highly accurate and precise pipetting.
- The instrument must be placed on a stable bench, table, or hood that can support up to 200 lbs (89.6 kg) without bowing or swaying.
- The instrument must be oriented so that when facing the instrument, the waste disposal station is on the *left* side of the instrument.
- Ensure that the bench/table surface is as level as possible and affords, at a minimum, the following dimensions:
 - Width (front to rear) 20 inches (50.8 cm)
 - Length (left to right) 52.5 inches (133.4 cm)
 - Height 30 inches (76.2 cm)



For optimum serviceability, it is best to position the NIMBUS Instrument on an island location in the laboratory. Ensure to plan additional space for:

- Computer, mouse, and other accessories such as a printer.
- Storage of manuals, tips, components, and labware.
- Integrated off-deck accessories and third-party devices.

The NIMBUS™ Instrument has a solid waste chute for collection of used tips which is mounted on the front left side of the instrument. The chute is designed with a slide such that the tips are directed off the bench/table into a waste collection bag or bin. Therefore, the front of the instrument must be approximately 1 inch (2.5 cm) from the front edge of the supporting table or bench.

Inventory of components

Find the NIMBUS™ Inventory List that is shipped with the unit. Use this list to check off each item as the components are unpacked. Components that are kits have their own inventory list inside the kit packaging.

Computer and software methods for Windows™ 7

The NIMBUS™ Instrument includes a laptop running the Windows™ 7 operating system. A Thermo Fisher Scientific field application scientist installs the Axiom™ 2.0 Software Methods for the instrument.

Power requirements

The input power (universal supply) is 100-24 VAC, 50–60 Hz, 5/A. The power supply is a UL/CSA/CE-approved universal power supply with IEC connection. International power adapters must be supplied before installation.

A multi-port power strip is supplied with each instrument and can be plugged into a single outlet. If the power strip is not used, three power outlets are required: one for the NIMBUS™ Instrument, one for a laptop or PC, and one for the Multi TEC Controller integration. Uninterruptible power supply (UPS) backup for both the computer and NIMBUS™ Instrument is recommended, but not required.

Hamilton™ equipment and software

Operation specifications

IMPORTANT! The NIMBUS™ Target Preparation Instrument is for indoor operation and use only.

Table 1 Operation specifications for the NIMBUS™ Target Preparation Instrument, and the INHECO™ Thermoshake, and CPAC devices.

Specification	
NIMBUS™ Target Preparation Instrument	
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Relative humidity • Altitude 	<ul style="list-style-type: none"> • 15°C to 35°C (59°F to 95°F) • 30% to 85% R.H. non-condensing • 2,000 m (1.2 miles) above sea level
INHECO™ Thermoshake device	
Technical data:	
<ul style="list-style-type: none"> • Temperature range 	<ul style="list-style-type: none"> • 4°C to 70°C (39.2°F to 158°F)
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Tolerable relative humidity 	<ul style="list-style-type: none"> • 15°C to 32°C (59°F to 90°F) • 10-80% RH (non condensing) at 20°C up to 30°C (68°F to 86°F)
INHECO™ CPAC device	
Technical data:	
<ul style="list-style-type: none"> • Temperature range 	<ul style="list-style-type: none"> • 4°C to 70°C (39.2°F to 158°F)
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Tolerable relative humidity 	<ul style="list-style-type: none"> • 15°C to 32°C (59°F to 90°F) • 30-80% relative (non-condensing)



WARNING! Condensate can prevent the Thermoshake and CPAC devices from operating properly and can damage the unit. Eliminate condensate daily, or if needed, especially in between heating and cooling cycles. On completion of a method run, click **Finish** in the final **Cleanup** window for that stage to prevent or minimize condensation.

Components

The Applied Biosystems™ NIMBUS™ Target Preparation Instrument (Cat. No. 00-0401) is used to run the Axiom™ 2.0 Assay with the automated target preparation. This workstation includes the accessories, software, and deck configuration listed in Table 2. In addition to this workstation, the components that are listed in the next chapter are required.

Table 2 NIMBUS™ Target Preparation Instrument components (Cat. No. 00-0401)

✓	Item
<input type="checkbox"/>	Applied Biosystems™-specific Hamilton Microlab™ NIMBUS™ 96 System: <ul style="list-style-type: none"> • 96-well CO-RE™ pipetting head (1,000 µL) • 9+2 deck, +2 position at -48 mm • Labware Gripper Arm
<input type="checkbox"/>	Hamilton deck hardware: <ul style="list-style-type: none"> • 2 FTR Pedestals: (Hamilton, Cat. No. 61054-01) • One 1,000 µL Tip Isolator: (Hamilton, Cat. No. 64668-01) • 2 Precision DWP Pedestals: (Hamilton, Cat. No. 66591-01) • One 96 Tip Adapter pedestal: (Hamilton, Cat. No. 66450-01) • 3 DWP pedestals: (Hamilton, Cat. No. 61053-01)
<input type="checkbox"/>	INHECO™ devices: <ul style="list-style-type: none"> • INHECO™ Variomag Thermoshake with dock base (Hamilton, Cat. No. 59151-01) • INHECO™ CPAC with dock base (Hamilton, Cat. No. 59146-02) • INHECO™ Tube Rack 24 x 1.5 mL (INHECO™, Cat. No. 7900029) • INHECO™ MultiTEC (INHECO™, Cat. No. 8900030) • INHECO™ Slot Module Board 12V (INHECO™, Cat. No. 2400128) • INHECO™ Slot Module Board 24V (INHECO™, Cat. No. 2400125)

✓	Item
☐	<p>Other items in the accessories kit include:</p> <ul style="list-style-type: none"> • Custom solid waste chute • Solid waste chute components • Power cables (3) and power strip <p>Note: Supplied power cables are compatible with USA power outlets only. Compatible power cables for international power outlets are not included and must be obtained before installation.</p> <ul style="list-style-type: none"> • Ethernet (Cat 5) cable • Integration hardware for the INHECO™ CPAC and Thermoshake devices • Laptop computer • IP address setup and quick start instructions

Install and test the instrument for Windows™ 7

To ensure successful performance of the Axiom™ 2.0 Assay on the NIMBUS™ Target Preparation Instrument, a Hamilton™ field service engineer must perform installation and testing of the NIMBUS™ Instrument system in the following order:

1. Uncrate, place, then level the NIMBUS™ Instrument.
 - NIMBUS™ Instrument placed on designated bench or table
 - All required pedestals and labware have been received
 - Verify levelness and flatness of deck
 - Verify that the recess deck is at the –48 position
 - Verify that the integration plate is attached to INHECO™ Thermoshake
 - Verify that the integration plate is attached to INHECO™ CPAC (factory installed)
 - Attach INHECO™ tube rack to CPAC
 - Install CPAC and Thermoshake slot modules in MTEC
 - Connect power/communication cables from INHECO™ devices to MTEC
 - Slot 1: CPAC
 - Slot 2: Thermoshake
 - Connect USB cable to MTEC and laptop computer
 - Connect MTC power cord to outlet
 - Connect Ethernet Cat 5 cable to NIMBUS™ Instrument and laptop computer
 - Connect NIMBUS™ Instrument power cord
 - Connect laptop computer power cord
 - 96-head foam shipping block removed
2. Install the waste chute.
 - Ensure that the waste chute is installed and level to deck.

3. Prepare the laptop, then install NIMBUS™ Software v5.3.8.0 (for Axiom™ 2.0 Assay).

Note: NVK can also be executed off the service engineer's laptop, in which case the customer's laptop can be configured with the appropriate version of NIMBUS™ Software for the application (v5.3.8.0 Axiom™ 2.0 Assay).

- Verify that the computer has a 64-bit operating system
 - Language setting that is configured to English—United States
 - User Account Control set to "Never Notify"
 - Computer power setting that is changed to never sleep or hibernate
 - IP address set
 - NIMBUS™ Software installed:
 - Phoenix version—4.3.0.7270
 - NIMBUS™ version—5.3.8.0 for Axiom™ 2.0 Assay
 - Checksum validation disabled
 - Set values in **System Configuration Editor**:
 - Deck Configuration "9 +2, left recess at -48 mm"
 - Gripper set to "Available"
 - Pipette Head set to "CORE—96 Head, 1 mL"
 - Hamilton INHECO™ driver software installed v1.2
 - Allow access of HxMTecServer through Windows™ firewall if needed
4. Verify or load firmware to execute NVK.
 5. Perform 96 head and gripper calibration.
 6. Perform NVK positional and volume verifications.
 7. Install INHECO™ devices.
 8. Perform NVK INHECO™ device verifications.
 9. If needed, load and install the final NIMBUS™ software and firmware.

10. Set up the Axiom™ 2.0 Assay NIMBUS™ Instrument Deck configuration (Figure 1).



Figure 1 Axiom 2.0 NIMBUS™ Instrument Deck configuration

- | | |
|---|--------------------------|
| ① Variomag Thermoshake with adapter | ⑥ Tip adapter |
| ② CPAC with reagent template | ⑦ Precision DWP pedestal |
| ③ Precision DWP pedestal | ⑧ DWP pedestal |
| ④ DWP pedestal | ⑨ FTR pedestal |
| ⑤ 35-mm pedestal with Alpillio™ Plate Cushion | ⑩ FTR pedestal |
| | ⑪ Tip isolator |

Note: Positions 6, 9, 10, and 11 must be fastened onto the deck before use.

Software installation requirements

NIMBUS™ Software version for Windows™ 7

- Phoenix version 4.3.0.7270
- NIMBUS™ version 5.3.8.0 (for Axiom™ 2.0 Assay)

NIMBUS™ firmware versions for Windows™ 7

Component	Version
NIMBUS™ System Controller	1.48
CORE 96 pipette head	5.0S
GripperGwz	1.32
Dac2 (gw, y, x drives)	1.20a
Force monitor	1.10
CPU status indicator	1.00
IO board	1.20

INHECO™ driver software for Windows™ 7

Hamilton™ INHECO™ driver software v1.2.



NIMBUS™ Target Preparation Instrument configuration for Windows™ 10

The Applied Biosystems™ NIMBUS™ Target Preparation Instrument is required to run this version of the Axiom™ 2.0 Assay with the automated target preparation. This chapter contains information specific to the setup, maintenance, and safe use of the NIMBUS™ Instrument and equipment.

Pre-installation information

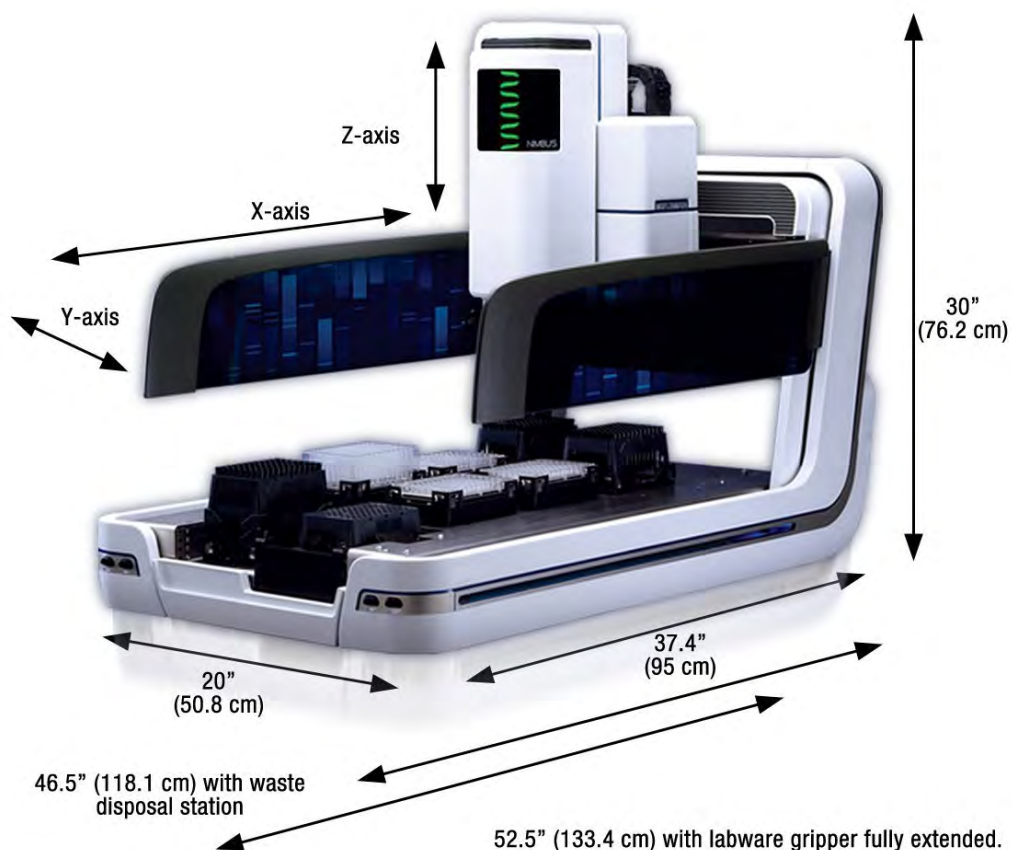
IMPORTANT! Read all of the information in this chapter before unpacking or moving the instrument.

Site selection

IMPORTANT! Determine the NIMBUS™ Instrument location carefully. Moving the instrument after installation requires recalibration.

Location considerations and requirements

- Keep the instrument away from direct sunlight, drafts, excessive vibrations, and widely fluctuating temperatures or humidity. This requirement is especially critical for low volume (<10 µL) applications that require highly accurate and precise pipetting.
- The instrument must be placed on a stable bench, table, or hood that can support up to 200 lbs (89.6 kg) without bowing or swaying.
- The instrument must be oriented so that when facing the instrument, the waste disposal station is on the *left* side of the instrument.
- Ensure that the bench/table surface is as level as possible and affords, at a minimum, the following dimensions:
 - Width (front to rear) 20 inches (50.8 cm)
 - Length (left to right) 52.5 inches (133.4 cm)
 - Height 30 inches (76.2 cm)



For optimum serviceability, it is best to position the NIMBUS Instrument on an island location in the laboratory. Ensure to plan additional space for:

- Computer, mouse, and other accessories such as a printer.
- Storage of manuals, tips, components, and labware.
- Integrated off-deck accessories and third-party devices.

The NIMBUS™ Instrument has a solid waste chute for collection of used tips which is mounted on the front left side of the instrument. The chute is designed with a slide such that the tips are directed off the bench/table into a waste collection bag or bin. Therefore, the front of the instrument must be approximately 1 inch (2.5 cm) from the front edge of the supporting table or bench.

Inventory of components

Find the NIMBUS™ Inventory List that is shipped with the unit. Use this list to check off each item as the components are unpacked. Components that are kits have their own inventory list inside the kit packaging.

Computer and software methods for Windows™ 10

The NIMBUS™ Instrument includes a laptop running the Windows™ 10 operating system. A Thermo Fisher Scientific field application scientist installs the Axiom™ 2.0 Software Methods for the instrument.

Power requirements

The input power (universal supply) is 100-24 VAC, 50–60 Hz, 5/A. The power supply is a UL/CSA/CE-approved universal power supply with IEC connection. International power adapters must be supplied before installation.


A multi-port power strip is supplied with each instrument and can be plugged into a single outlet. If the power strip is not used, three power outlets are required: one for the NIMBUS™ Instrument, one for a laptop or PC, and one for the Multi TEC Controller integration. Uninterruptible power supply (UPS) backup for both the computer and NIMBUS™ Instrument is recommended, but not required.

Hamilton™ equipment and software**Operation specifications**

IMPORTANT! The NIMBUS™ Target Preparation Instrument is for indoor operation and use only.

Table 3 Operation specifications for the NIMBUS™ Target Preparation Instrument, and the INHECO™ Thermoshake, and CPAC devices.

Specification	
NIMBUS™ Target Preparation Instrument	
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Relative humidity • Altitude 	<ul style="list-style-type: none"> • 15°C to 35°C (59°F to 95°F) • 30% to 85% R.H. non-condensing • 2,000 m (1.2 miles) above sea level
INHECO™ Thermoshake device	
Technical data:	
<ul style="list-style-type: none"> • Temperature range 	<ul style="list-style-type: none"> • 4°C to 70°C (39.2°F to 158°F)
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Tolerable relative humidity 	<ul style="list-style-type: none"> • 15°C to 32°C (59°F to 90°F) • 10-80% RH (non condensing) at 20°C up to 30°C (68°F to 86°F)
INHECO™ CPAC device	
Technical data:	
<ul style="list-style-type: none"> • Temperature range 	<ul style="list-style-type: none"> • 4°C to 70°C (39.2°F to 158°F)
Environmental conditions for operation:	
<ul style="list-style-type: none"> • Temperature • Tolerable relative humidity 	<ul style="list-style-type: none"> • 15°C to 32°C (59°F to 90°F) • 30-80% relative (non-condensing)

 **WARNING!** Condensate can prevent the Thermoshake and CPAC devices from operating properly and can damage the unit. Eliminate condensate daily, or if needed, especially in between heating and cooling cycles. On completion of a method run, click **Finish** in the final **Cleanup** window for that stage to prevent or minimize condensation.

Components

The Applied Biosystems™ NIMBUS™ Target Preparation Instrument (Cat. No. 00-0401) is used to run the Axiom™ 2.0 Assay with the automated target preparation. This workstation includes the accessories, software, and deck configuration listed in Table 4. In addition to this workstation, the components that are listed in the next chapter are required.

Table 4 NIMBUS™ Target Preparation Instrument components (Cat. No. 00-0401)

✓	Item
<input type="checkbox"/>	Applied Biosystems™-specific Hamilton Microlab™ NIMBUS™ 96 System: <ul style="list-style-type: none"> • 96-well CO-RE™ pipetting head (1,000 µL) • 9+2 deck, +2 position at -48 mm • Labware Gripper Arm
<input type="checkbox"/>	Hamilton deck hardware: <ul style="list-style-type: none"> • 2 FTR Pedestals: (Hamilton, Cat. No. 61054-01) • One 1,000 µL Tip Isolator: (Hamilton, Cat. No. 64668-01) • 2 Precision DWP Pedestals: (Hamilton, Cat. No. 66591-01) • One 96 Tip Adapter pedestal: (Hamilton, Cat. No. 66450-01) • 3 DWP pedestals: (Hamilton, Cat. No. 61053-01)
<input type="checkbox"/>	INHECO™ devices: <ul style="list-style-type: none"> • INHECO™ Variomag Thermoshake with dock base (Hamilton, Cat. No. 59151-01) • INHECO™ CPAC with dock base (Hamilton, Cat. No. 59146-02) • INHECO™ Tube Rack 24 x 1.5 mL (INHECO™, Cat. No. 7900029) • INHECO™ MultiTEC (INHECO™, Cat. No. 8900030) • INHECO™ Slot Module Board 12V (INHECO™, Cat. No. 2400128) • INHECO™ Slot Module Board 24V (INHECO™, Cat. No. 2400125)

✓	Item
☐	<p>Other items in the accessories kit include:</p> <ul style="list-style-type: none"> • Custom solid waste chute • Solid waste chute components • Power cables (3) and power strip <p>Note: Supplied power cables are compatible with USA power outlets only. Compatible power cables for international power outlets are not included and must be obtained before installation.</p> <ul style="list-style-type: none"> • Ethernet (Cat 5) cable • Integration hardware for the INHECO™ CPAC and Thermoshake devices • Laptop computer • IP address setup and quick start instructions

Install and test the instrument for Windows™ 10

To ensure successful performance of the Axiom™ 2.0 Assay on the NIMBUS™ Target Preparation Instrument, a Hamilton™ field service engineer must perform installation and testing of the NIMBUS™ Instrument system in the following order:

1. Uncrate, place, and level the NIMBUS™ Instrument.
 - NIMBUS™ Instrument placed on designated bench or table
 - All required pedestals and labware have been received
 - Verify levelness and flatness of deck
 - Verify that the recess deck is at the -48 position
 - Verify that the integration plate is attached to INHECO™ Thermoshake
 - Verify that the integration plate is attached to INHECO™ CPAC (factory installed)
 - Attach INHECO™ tube rack to CPAC
 - Install CPAC and Thermoshake slot modules in MTEC
 - Connect power/communication cables from INHECO™ devices to MTEC
 - Slot 1: CPAC
 - Slot 2: Thermoshake
 - Connect USB cable to MTEC and laptop computer
 - Connect MTC power cord to outlet
 - Connect Ethernet Cat 5 cable to NIMBUS™ Instrument and laptop computer
 - Connect NIMBUS™ Instrument power cord
 - Connect laptop computer power cord
 - 96-head foam shipping block removed
2. Install the waste chute.
 - Ensure that the waste chute is installed and level to deck.

3. Prepare the laptop and install NIMBUS™ Software v8.0.4.0 (for Axiom™ 2.0 Assay).
 - Verify that the computer has a Windows™ 10 operating system installed
 - Language setting that is configured to English—United States
 - User Account Control set to "Never Notify"
 - Computer power setting that is changed to never sleep or hibernate
 - IP address set
 - NIMBUS™ Software installed:
 - Phoenix version—4.5.0.7977
 - NIMBUS™ version—8.0.4.0 for Axiom™ 2.0 Assay
 - Checksum validation disabled
 - Set values in **System Configuration Editor**:
 - Deck Configuration "9 +2, left recess at -48 mm"
 - Gripper set to "Available"
 - Pipette Head set to "CORE—96 Head, 1 mL"
 - Hamilton INHECO™ driver software installed v1.2.7.2
 - Allow access of HxMTecServer through Windows™ firewall if needed
4. Perform 96 head and gripper calibration.
5. Perform NVK positional and volume verifications.
6. Install INHECO™ devices.
7. Perform NVK INHECO™ device verifications.

8. Set up the Axiom™ 2.0 Assay NIMBUS™ Instrument Deck configuration (Figure 1).



Figure 2 Axiom 2.0 NIMBUS™ Instrument Deck configuration

- | | |
|---|--------------------------|
| ① Variomag Thermoshake with adapter | ⑥ Tip adapter |
| ② CPAC with reagent template | ⑦ Precision DWP pedestal |
| ③ Precision DWP pedestal | ⑧ DWP pedestal |
| ④ DWP pedestal | ⑨ FTR pedestal |
| ⑤ 35-mm pedestal with Alpillio™ Plate Cushion | ⑩ FTR pedestal |
| | ⑪ Tip isolator |

Note: Positions 6, 9, 10, and 11 must be fastened onto the deck before use.

Software installation requirements

NIMBUS™ Software version for Windows™ 10

- Phoenix version 4.5.0.7977
- NIMBUS™ version 8.0.4.0 (for Axiom™ 2.0 Assay)

NIMBUS™ firmware versions for Windows™ 10

Component	Version
NIMBUS™ System Controller	6.1.0.186
CORE 96 pipette head	5.0S
GripperGwz	1.32
Dac2 (gw, y, x drives)	1.41
Force monitor	1.15
CPU status indicator	1.00
IO board	1.23

INHECO™ driver software for Windows™ 10

Hamilton™ INHECO™ driver software v1.2.7.2.

3

NIMBUS™ Target Preparation Instrument setup

Hamilton™ equipment and software

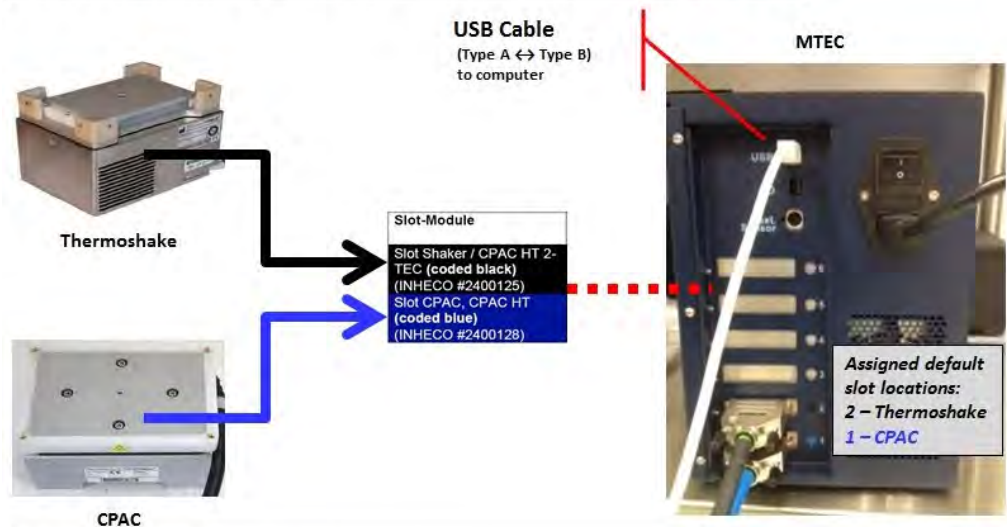
Setup INHECO™ devices

The INHECO™ Multi TEC (MTEC) Controller is used to operate the Thermoshake and the CPAC devices. There are two slot modules on the Multi TEC Controller where cables from each INHECO™ device must be attached into the assigned default slot locations:

- Slot 1: CPAC
- Slot 2: Thermoshake

The Thermoshake device must be set up with the adapter plate for the round deep-well plate to allow precise temperature control during fragmentation. The Hamilton field service engineer installs a 24-position tube rack into the CPAC device during system install. A cooling block template that is placed on top of the CPAC guides operators where reagents must be placed before the start of each run.

Device connections to multi TEC (MTEC) controller are color-coded



Note:
 1) No configuration settings required in the software.
 2) Method will search for thermoshake and CPAC slot locations, if out of order

Pedestals, Thermoshake, and CPAC accessory tool kit

The Applied Biosystems™ NIMBUS™ Target Preparation Instrument comes with a small accessory tool kit that includes a 2 mm, 2.5 mm, and a 3-mm hex wrench (also known as a hex key, Allen key, or Allen wrench). Also, the INHECO™ base plate kit comes with a 1.5-mm hex wrench. These tools are required for fastening pedestals and devices to the NIMBUS™ Instrument deck. Save the small accessory tool kit for future use.



Pedestals

The pedestals in deck positions 6, 9, 10, and 11 are fastened to the NIMBUS™ Instrument deck by tightening the set screws, which are on the left and right side of each pedestal, with a 2-mm hex wrench. When fastening the pedestals to the deck, it is best to start with the pedestals in the back of the deck and work to the pedestals in the front to help the ease of access to set screws.

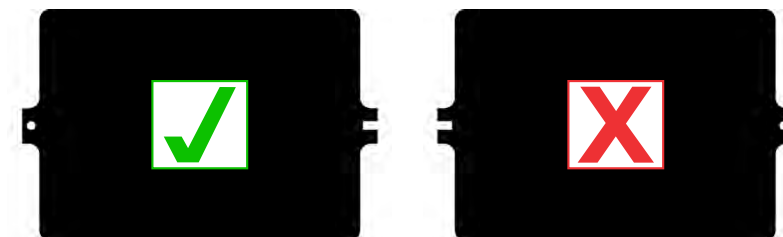
Therefore, using a 2-mm hex wrench, ensure that the pedestals are placed and locked down in the following order:

1. Tip adapter at deck position 6
2. FTR pedestal at deck position 9
3. FTR pedestal at deck position 10
4. Tip isolator at deck position 11

See Figure 1 on page 11 for deck position locations. The remaining pedestals are easily positioned by placing them on the locator pins that are on the deck.

Secure pedestals to the deck

When placing the pedestals on the deck, be aware of the correct orientation that is determined by the shape of the opening for the locator pins. The closed end must face left and the open end must face right.



1. Place a pedestal on the deck, positioned using the two locator pins on the left and right side of the pedestal.

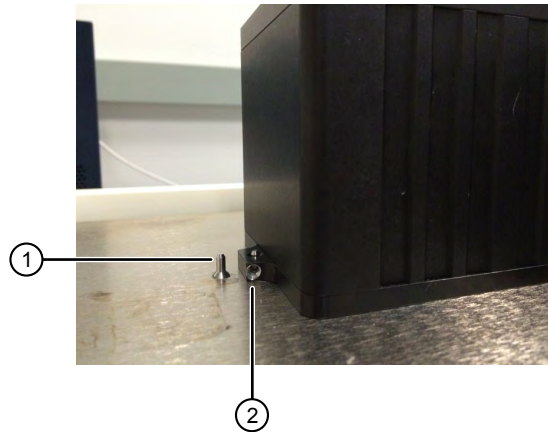
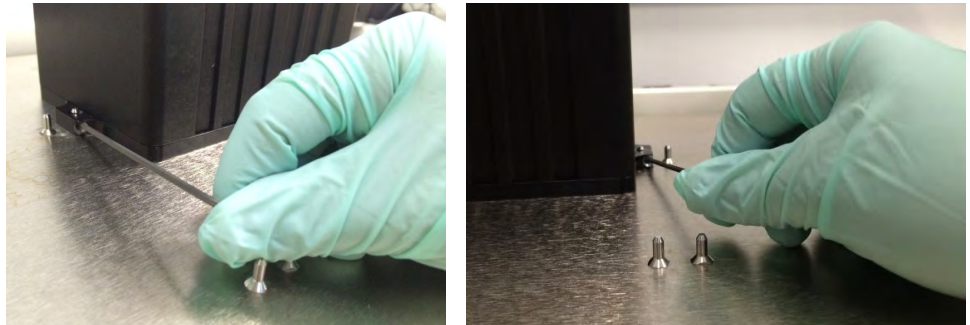


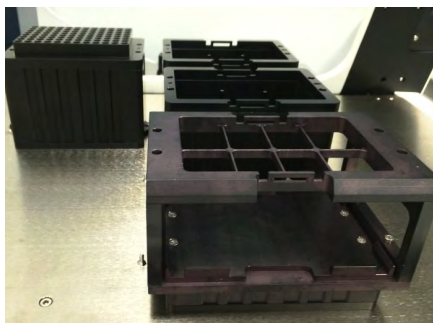
Figure 3 Pedestal placed on deck, positioned using locator pins (front view)

- ① Locator pin. The locator pin that is shown is for a pedestal that is not yet placed on the deck.
 - ② Set screw that tightens the pedestal to the locator pin.
2. Tighten the set screws on the left and right side of the pedestal using a 2-mm hex wrench.



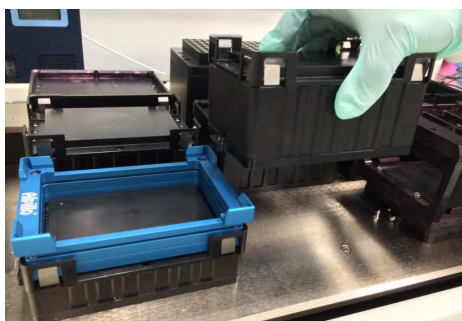
- a. Deck position 6.
 - b. Deck position 9.
 - c. Deck position 10.
3. Using the locator pins on the deck, place, then fasten the remaining pedestals on deck in proper order, working from the back to the front of the deck.

d. Deck position 11.



IMPORTANT! Place a pedestal on the deck and secure by tightening the set screws. Fasten each pedestal that is placed onto the deck before moving on to placing and fastening the next pedestal.

4. Place the remaining pedestals onto the deck, positioning them using the locator pins on the left and right side of each pedestal. These remaining pedestals are not fastened to the deck with set screws. See Figure 1 on page 11 for deck configuration information.



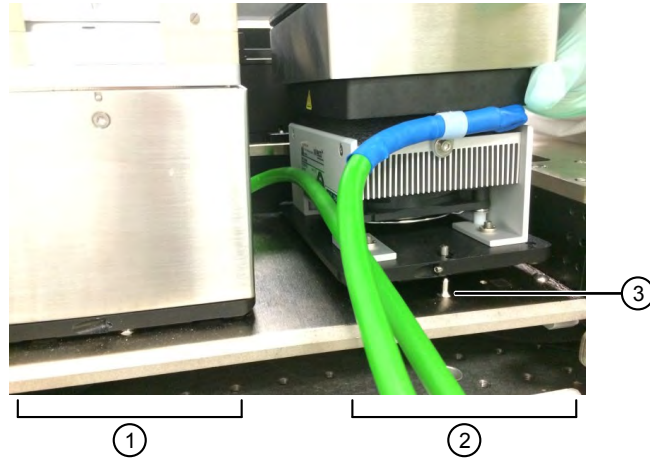
Thermoshake and CPAC devices

The Thermoshake and CPAC devices sit on the NIMBUS™ Target Preparation Instrument in deck positions 1 and 2. When fully assembled, they are found behind the trash chute attachment plate and trash chute mounting bracket. The Thermoshake and CPAC devices are fastened to the deck using a 1.5-mm hex wrench and set screws. The trash chute attachment plate and trash chute mounting bracket are fastened using a 2.5-mm hex wrench and M3 screws.

The instructions that follow assume the first setup. If the set screws for the Thermoshake or CPAC device require tightening after the first installation, the trash chute attachment plate and the trash chute mounting bracket must be removed first to allow access to the device set screws.

Fasten Thermoshake and CPAC devices to deck

1. Place the Thermoshake and CPAC devices in their proper locations onto the deck using the locator pins.

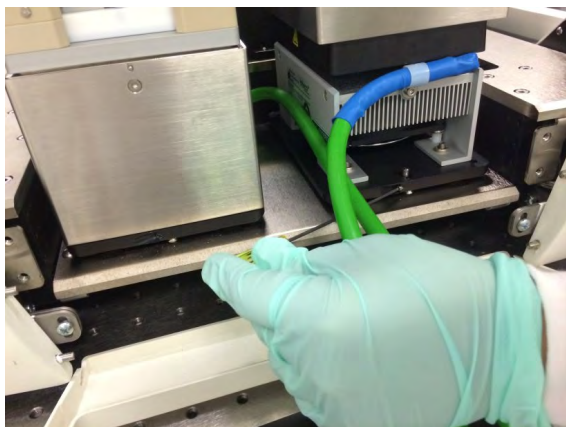


- ① Thermoshake in deck position 1
- ② CPAC in deck position 2
- ③ Locator pin on deck



Figure 4 Each device has only 1 set screw

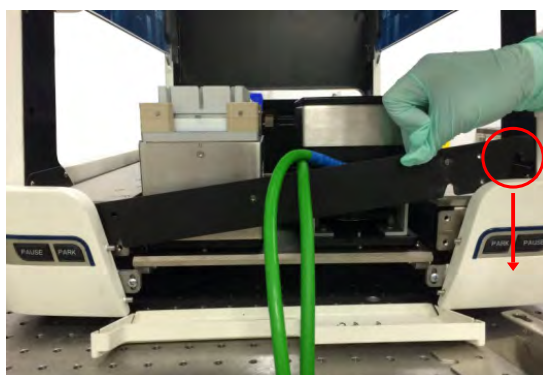
- Using a 1.5-mm hex wrench, tighten the set screws for each device to lock them into place on the NIMBUS™ Instrument deck.



- After fastening the devices, place the trash chute attachment plate on the NIMBUS™ Instrument.

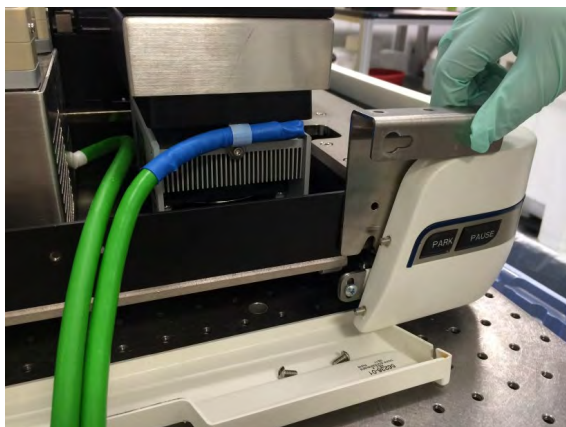


①

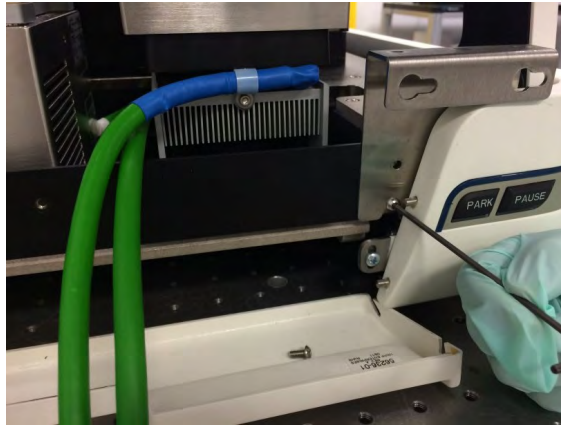


②

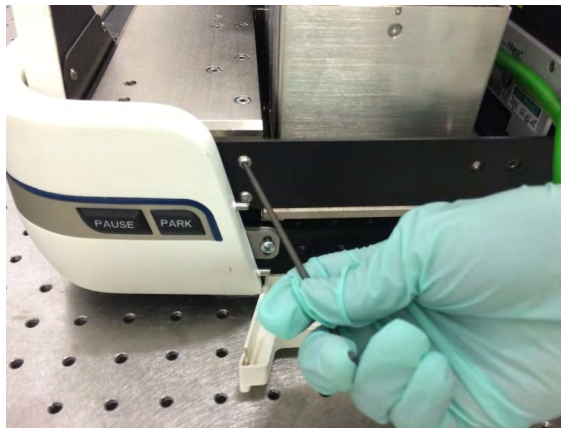
- Slide the left side of the trash chute attachment plate horizontally into position.
 - Slide the right side down into place.
- With the trash chute attachment plate in place, insert the trash chute mounting bracket into position on the right side.



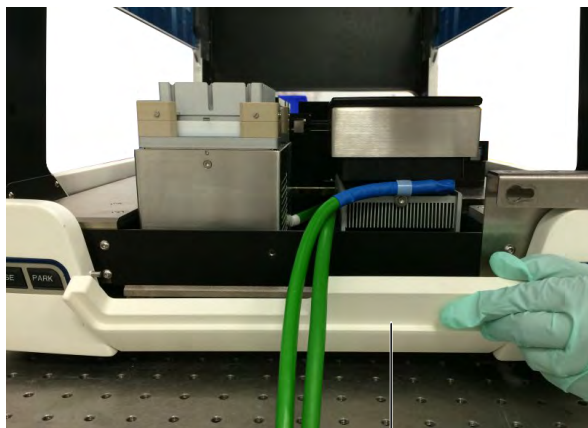
- Using a 2.5-mm hex wrench and two M3 screws fasten the trash chute mounting bracket onto the NIMBUS™ Instrument.



- Using a 2.5-mm hex wrench and two M3 screws fasten the left side of the trash chute attachment plate onto the NIMBUS™ Instrument.



- Snap the end cover into place.



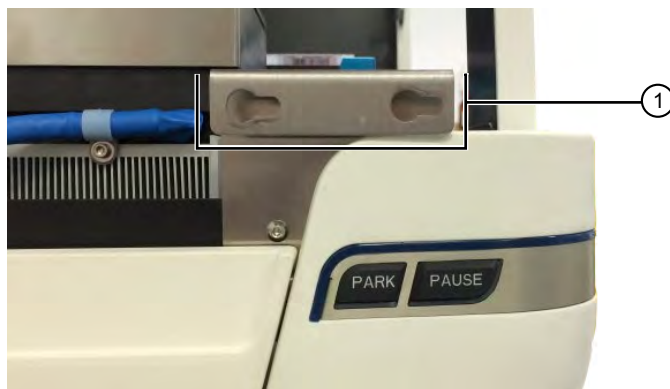
①

① End cover

Assemble the trash chute

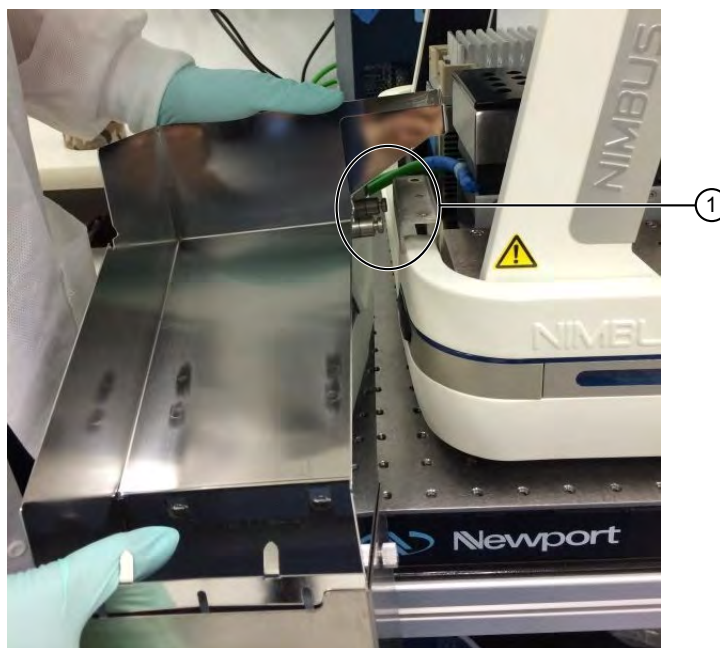
This section provides instructions for the proper assembly of the trash chute and trash chute cover to the NIMBUS™ Instrument. Use these instructions to attach properly or remove the trash chute if needed for cleaning or other purposes. To remove the trash chute, follow these instructions in reverse.

1. Find the trash chute mounting bracket on the left side of the NIMBUS™ Instrument.



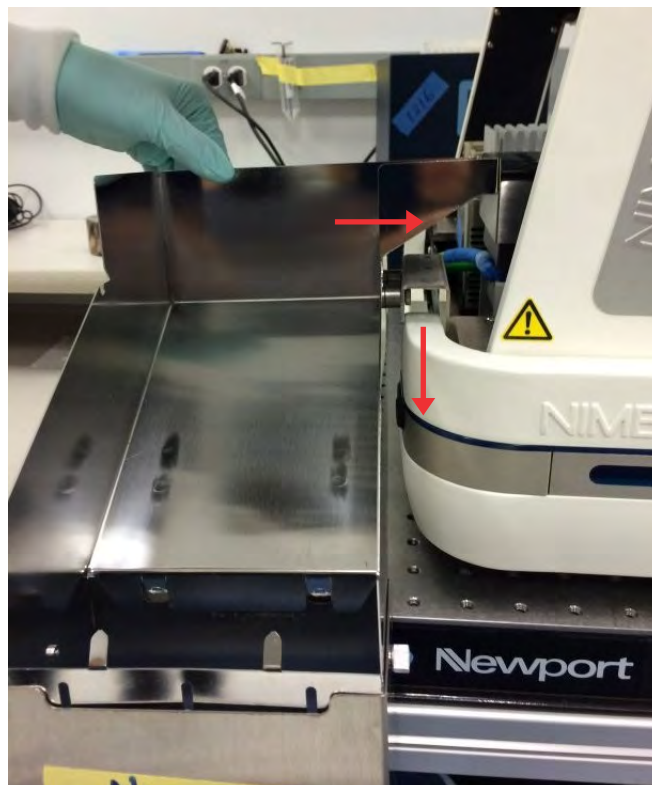
① Trash chute mounting bracket

2. Hold trash chute with both hands, then align the two securing pins on the right side of the trash chute with the two holes in the trash chute mounting bracket.



① Align the securing pins with holes in trash chute mounting bracket.

3. Insert securing pins into the holes in the trash chute mounting bracket, then pull the trash chute forward toward the front of the NIMBUS™ Instrument. This action holds the trash chute in place.



4. After successfully attaching the trash chute to the NIMBUS™ Instrument, turn the leveling foot, on the underside of the trash chute, to support, then level the trash chute.



① Leveling foot

5. Ensure that the trash chute is level.

IMPORTANT! Ensure that the trash chute is level. Trash chutes that are not level result in problems with disposal of tips, plates, or other materials from the deck.



①

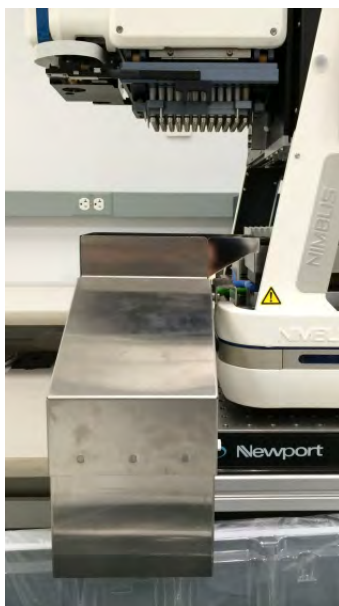
① Example of a trash chute that is not level.



②

② Example of a trash chute that is properly attached and leveled.

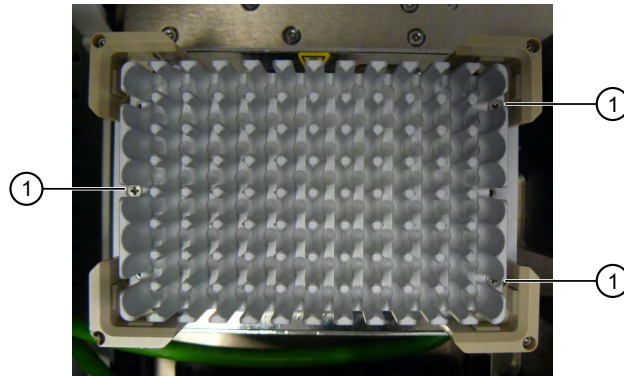
6. After the trash chute has been installed, then leveled, attach the trash chute cover.



Set up the Thermoshake Deep-well Plate Adapter

1. Gather materials that are needed for setting up the Thermoshake device with the adapter plate.
 - INHECO™ Thermoshake device
 - Thermoshake Deep-well Plate Adapter (INHECO™, Cat. No. 203232)
 - 1/8 inch (4 mm) slotted screwdriver
 - No. 1 Phillips screwdriver
 - Three screws that are provided with the adapter plate

2. Fasten the adapter plate onto the Thermoshake device using the three screws and the Phillips screwdriver.



① Locations for the 3 screws to fasten the adapter plate to the Thermoshake device.

3. Using the slotted screwdriver, tighten the 8 grub screws, 2 at each corner, found at the top of the Thermoshake device (Figure 5).

On the opposite side of each grub screw, there is a tab that protrudes towards the adapter plate. As a grub screw is tightened, the tab becomes flush (Figure 6).

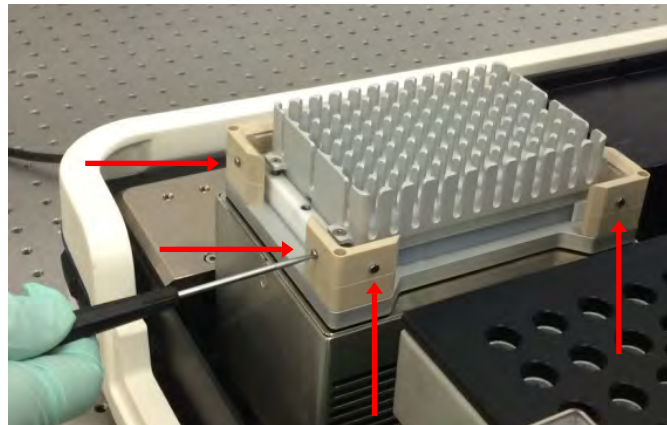


Figure 5 Grub screws on the Thermoshake device

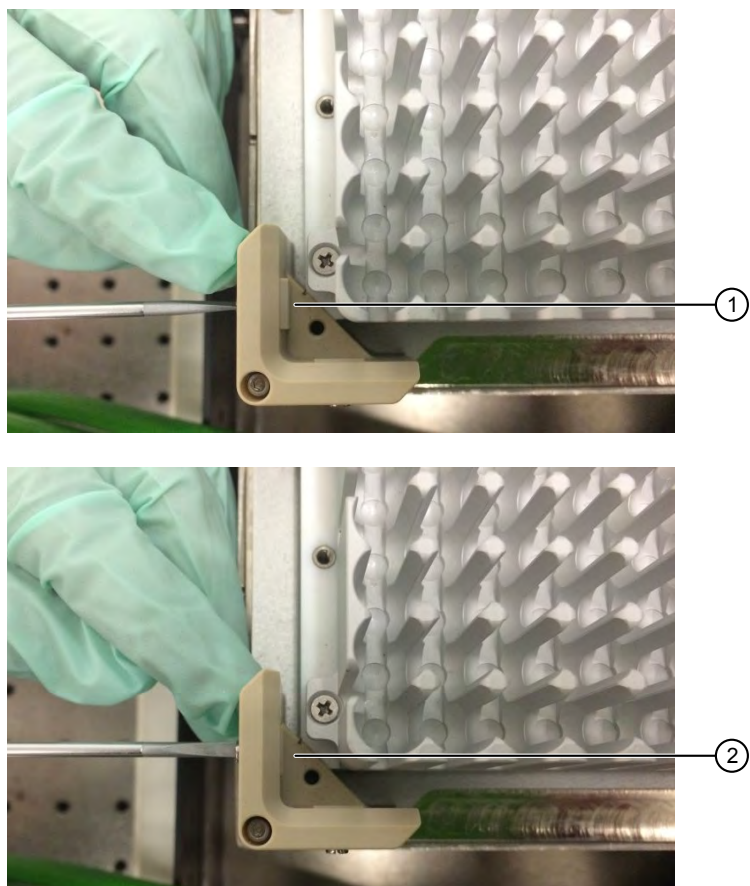


Figure 6 Image of a tab on the opposite side of a grub screw on the Thermoshake device before and after tightening.

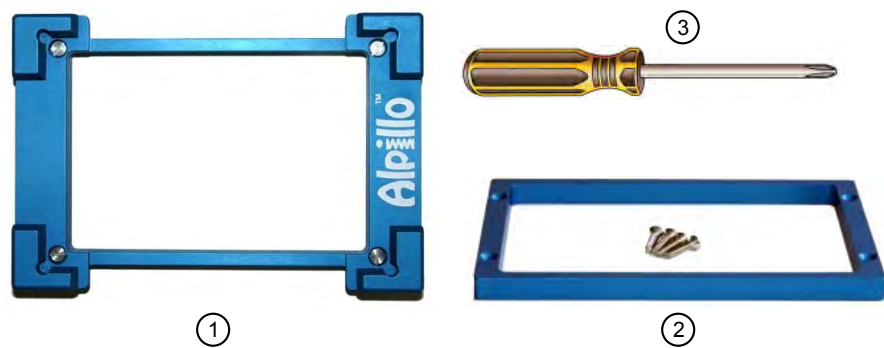
- ① Tab protruding
- ② Tab flush after tightening

Assemble the Alpollo™ Plate Cushion

The Alpollo™ Plate Cushion compensates for physical tolerances between labware and pipettor, and helps automated precision pipetting. The Alpollo™ Extension is used to increase the height of the plate cushion allowing it to be used for deeper plate nests.

The Alpollo™ Plate Cushion and extension must be assembled before use on the NIMBUS™ Instrument deck.

1. Gather the necessary materials as listed in the following figure.



- ① Alpollo™ Plate Cushion (Cat. No. A000007)
- ② Alpollo™ Extension (Cat. No. K000018) with the 4 screws provided
- ③ No. 1 Phillips screwdriver

2. Position the plate cushion on top of the extension such that the 4 screw holes align.
3. Using the 4 screws, fasten the plate cushion to the extension.

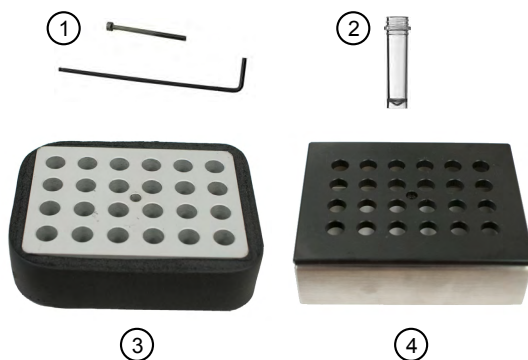


Figure 7 Plate cushion and extension assembled

Assemble the CPAC tube adapter and cover

If the CPAC tube adapter and tube adapter cover are not properly aligned when installed on the CPAC unit, you can experience difficulty inserting the reagent tubes into the block. Tubes that are not correctly inserted can cause reagent tube labels to peel off, or can generate an error during the run. A properly assembled tube adapter and cover helps ensure proper alignment of the holes and adapter plates.

1. Gather the necessary materials as listed in the following figure.



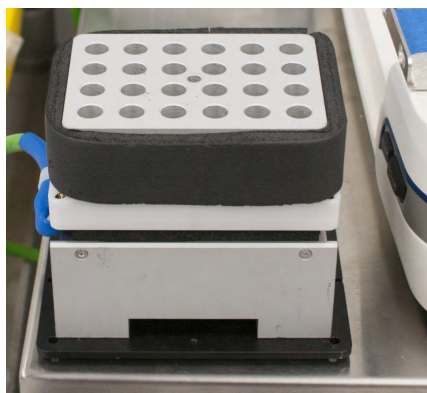
- ① Fastening screw and hex wrench (also known as a hex key, Allen key, or Allen wrench)
- ② Twenty-four 2-mL tubes
- ③ Twenty-four hole tube adapter
- ④ Twenty-four hole tube adapter cover

2. Place the 24-hole tube adapter over the CPAC unit, ensuring that it is in the proper orientation with the bottom side down.

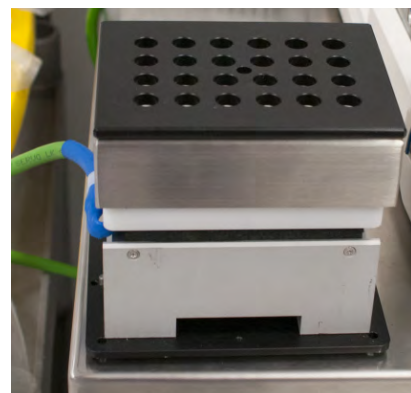


- ① Top side. This image shows the proper orientation.
- ② Bottom side. Identify the bottom side of the 24-hole tube adapter by the ridge along the edge of the adapter.

3. Place the 24-hole tube adaptor cover over the 24-hole tube adaptor.



①



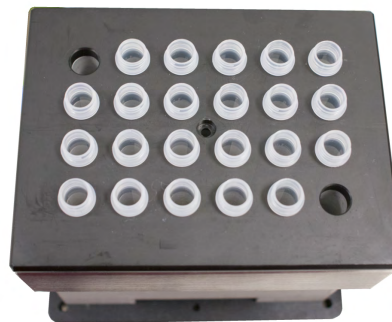
②

- ① The 24-hole tube adaptor that is placed on the CPAC unit
- ② The 24-hole tube adaptor cover in place

4. Insert 22 x 2-mL tubes into the cover with the upper left and lower right corner holes empty (Figure 8).
5. After inserting the tubes, inspect the alignment of the holes, then adjust the alignment if needed. Figure 8 shows examples of both improper and proper alignment.



①



②

Figure 8 Hole alignment between the tube adaptor and cover

- ① The holes that are not properly aligned between the 24-hole tube adaptor and the cover
- ② Proper aligned between the 24-hole tube adaptor and the cover

6. Complete the assembly of the CPAC unit:
 - a. Carefully insert two 2-mL tubes into the remaining empty holes.
 - b. Insert the fastening screw into the center hole.
 - c. Using the hex wrench, tighten the tube adaptor and tube adaptor cover to the CPAC unit.
7. Remove all the 2-mL tubes from the unit to complete the assembly.

O-ring care

The o-rings on the head of the NIMBUS™ Target Preparation Instrument allow the instrument to pick up and manipulate the pipette tips that are loaded on the deck. When the head is left in a squeezed position for an extended amount of time, the o-rings wear out and the head is stressed.



WARNING! It is not recommended to leave tips on the head or leave the head in a squeezed position for extended lengths of time. This practice can lead to premature o-ring wear and poor system performance.

On successfully completing a method, the head is normally parked with the o-rings in a relaxed position. If a method is interrupted or stopped, it is possible that the head can stand still with the o-rings in the squeezed position (Figure 9). For instances when the o-rings remain in the squeezed position, try initializing the instrument.

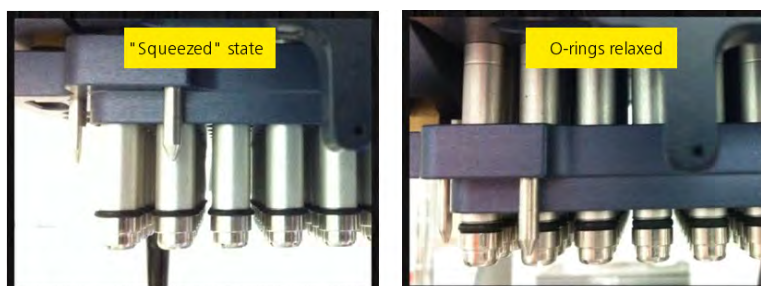


Figure 9 O-rings shown in a squeezed and relaxed state

To help preserve the longevity of the o-rings, remember the following:

- Never power off the instrument with any tips that are loaded on the head.
- Never leave the instrument with the head in the squeezed position.
- Initializing the instrument usually resolves the head remaining in the squeezed position leaving the head in a relaxed position.



Assay equipment and supplies required

This chapter includes the supplier and ordering information for the equipment, software, reagents, arrays, labware, and other consumables that have been verified for use with the Applied Biosystems™ Axiom™ 2.0 Assay 96-Array Format Automated Workflow.

Applied Biosystems™ equipment, software, reagents, and arrays required

✓	Item	Source
Equipment		
<input type="checkbox"/>	GeneTitan™ Multi-Channel Instrument ^[1]	Contact Thermo Fisher Scientific
Software		
<input type="checkbox"/>	GeneChip™ Command Console™ (GCC)	version 4.3 or later
<input type="checkbox"/>	Axiom™ Analysis Suite	version 4.0 or later
Reagents		
<input type="checkbox"/>	Axiom™ 2.0 Reagent Kit Sufficient to process one 96-array format plate.	901758
<input type="checkbox"/>	Axiom™ Reference Genomic DNA 103 (optional)	951957
Arrays		
<input type="checkbox"/>	Axiom™ Array Plate	Varies by design
<input type="checkbox"/>	Axiom™ Microbiome Array Plate (96-array format)	902904

✓	Item	Source
Training Kits		
<input type="checkbox"/>	<p>Axiom™ 2.0 CEU Training Kit for Automated Target Preparation on Applied Biosystems™ NIMBUS™ Instrument</p> <p>Each kit includes:</p> <ul style="list-style-type: none"> • Two Axiom™ CEU 96-Array Plates • Two Axiom™ 2.0 Reagent Kit (96 reactions per kit) • Two Axiom™ GeneTitan™ Consumables Kit • Two full plates of 96 HapMap DNA samples^[2] • One GeneTitan™ ZeroStat AntiStatic Gun 	902517
<input type="checkbox"/>	<p>Axiom™ 2.0 CEU Training Kit for Automated Target Preparation on Applied Biosystems™ NIMBUS™ Instrument for Agrigenomics</p> <p>Each kit includes:</p> <ul style="list-style-type: none"> • One Axiom™ CEU 96-Array Plate • Two Axiom™ 2.0 Reagent Kit (96 reactions per kit) • Two Axiom™ GeneTitan™ Consumables Kit • One full plate of 96 HapMap DNA samples^[2] • One GeneTitan™ ZeroStat AntiStatic Gun • Please order an additional catalog array plate of your choosing for use with your samples. 	902518
<input type="checkbox"/>	<p>Axiom™ 2.0 Assay Training Module for Microbiome 96-Array Plates</p> <p>Each kit includes:</p> <ul style="list-style-type: none"> • One Axiom™ CEU 96-Array Plate • One Axiom™ Microbiome Array Plate (96-array format) • Two Axiom™ 2.0 Reagent Kit (96 reactions per kit) • Two Axiom™ GeneTitan™ Consumables Kit • One full plate of 96 HapMap DNA samples^[2] • One GeneTitan™ ZeroStat AntiStatic Gun 	902988
GeneTitan™ consumables		
<input type="checkbox"/>	<p>Axiom™ GeneTitan™ Consumables Kit</p> <p>Sufficient to process one 96-format array plate. Consists of:</p> <ul style="list-style-type: none"> • Five 96 layout GeneTitan™ stain trays with covers • One 96 layout GeneTitan™ hybridization tray • One 96 layout GeneTitan™ scan tray with cover and protective base <p>These trays are required for processing a CarrierScan™ Array Plate on the GeneTitan™ Multi-Channel Instrument^[1].</p>	901606

^[1] For a complete list of all equipment and supplies required for GeneTitan™ Multi-Channel Instrument installation and operation, consult the *GeneTitan™ Multi-Channel Instrument Site Preparation Guide* (Pub. No. 08-0305)

^[2] Per agreement with Coriell, all residual HapMap DNA samples must be destroyed immediately following completion of training.

Axiom™ consumables kits for the NIMBUS™ Instrument

Table 5 Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 (Cat. No. 902907)

Component ^[1]	Part No. ^[2]	Number	
		Per run	Per kit ^[3]
96-well full skirt plate	203023	7	30
96 half-skirt plate	203009	1	4
Square deep-well plate	203016	3	12
Round deep-well plate	203028	2	10
Square 1.2 mL plate	203031	1	4
4-column reservoir	203056 or 203025	9	36

^[1] This consumables kit does not include a 96-well UV plate. This plate is in the Axiom™ 96 Consumables Kit for QC for Applied Biosystems™ NIMBUS™ 2.0 (Cat. No. 902909).

^[2] Plate part numbers are provided for identification purposes only.

^[3] The kit provides sufficient quantities of consumables for 4 runs of 96-format array plates.

Table 6 Axiom™ 96 Consumables Kit for QC for Applied Biosystems™ NIMBUS™ 2.0 (Cat. No. 902909)

Component	Part No.	Number	
		Per run	Per kit
96-well UV plate	202919	1	25

Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™

Table 7 Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ (Cat. No. 902365)

Component	Quantity/ run
96 Half-Skirt Plate Holder	1
Thermoshake Deep-well Plate Adapter	1
Alpillo™ Plate Cushion	1
Alpillo™ Extension	1
Axiom™ 2.0 Reagent Kit Template	1
Pedestal, 35.48 mm	1
Reservoir holder	2
Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0	1

Component	Quantity/ run
Axiom™ 96 Consumables Kit for QC for Applied Biosystems™ NIMBUS™ 2.0	1
2-mL tubes	25

Labware and accessories required

Deck accessories required

Table 8 Deck accessories required from other vendors

Item	Source	Quantity/ run
24-Position Tube Rack	Beckman Coulter™ 373661	1
Insert, 11 mm, for 1.5-mL Microfuge Tubes	Beckman Coulter™ 373696	1

Pipette tips

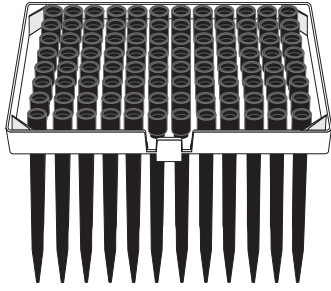
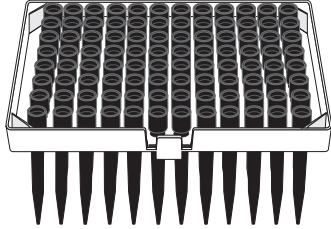
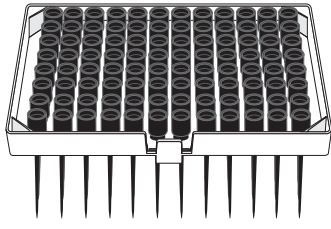
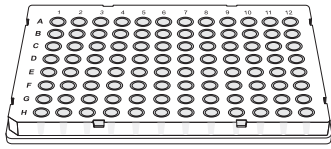
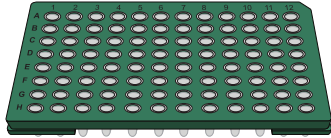
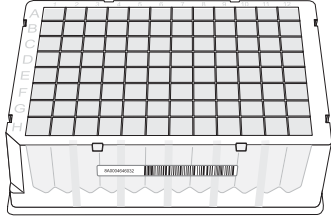
The following table provides the pipette tip usage for one full run of the Axiom™ 2.0 Assay 96-Array Format Automated Workflow on the Applied Biosystems™ NIMBUS™ Target Preparation Instrument workstation.

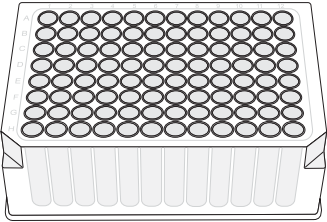
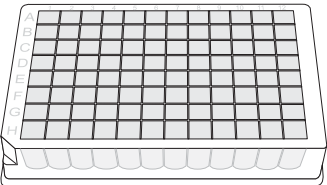
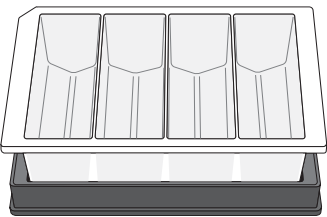
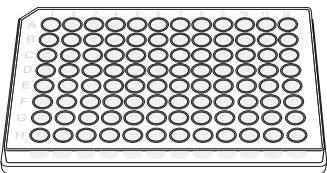


Step	CO-RE™ Filter Tips 1,000 µL	CO-RE™ Filter Tips 300 µL	CO-RE™ Filter Tips 50 µL
DNA amplification	24 tips	120 tips	—
Fragmentation	33 tips	114 tips	—
Resuspension	—	104 tips	—
Hybridization preparation	14 tips	105 tips	—
Sample QC	—	16 tips	192 tips
Hybridization transfer	—	96 tips	—
GeneTitan™ preparation 1	47 tips	7 tips	—
GeneTitan™ preparation 2	28 tips	1 tip	—
Totals	146 tips	563 tips	192 tips

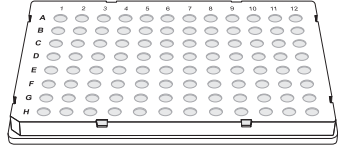
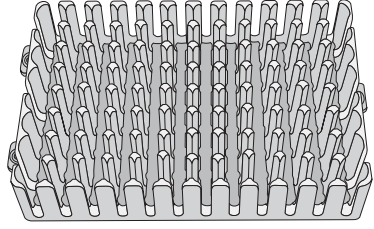
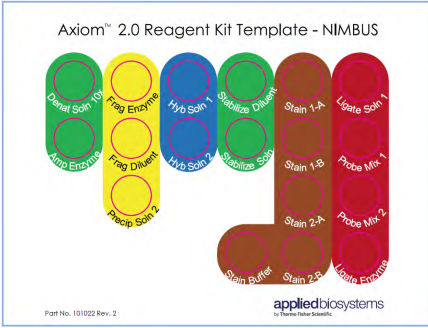
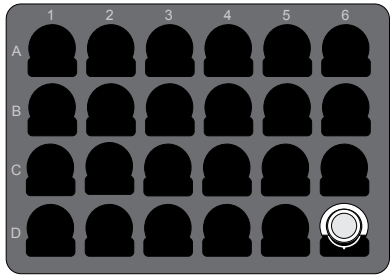
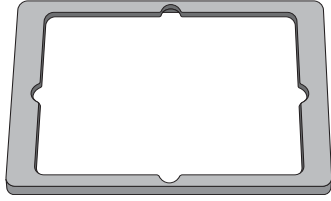
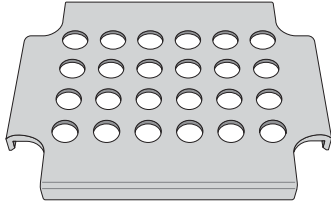
Labware used on the deck

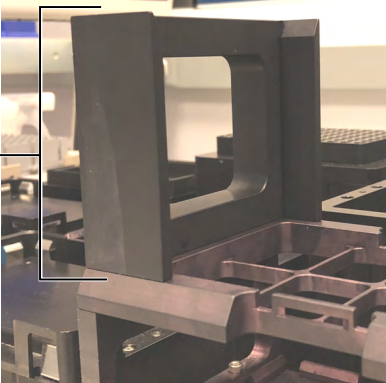



Unless otherwise indicated, all materials are available through **thermofisher.com**.
MLS: Fisher Scientific (**fisherscientific.com**) or other major laboratory supplier.

Table 9 Labware images and ordering information

Labware	Source	Image
CO-RE™ Filter Tips 1,000 µL Conductive 1,000 µL filter pipette tips in frames	Hamilton™ Robotics 235905	
CO-RE™ Filter Tips 300 µL Conductive 300 µL filter pipette tips in frames	Hamilton™ Robotics 235903	
CO-RE™ Filter Tips 50 µL Conductive 50 µL filter pipette tips in frames	Hamilton™ Robotics 235948	
96-well full skirt plate	Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: Fisher Scientific™ 14-222-326	
96 half-skirt plate also called Hard-Shell™ 96-Well PCR Plate, high profile, semi skirted	Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: Bio-Rad™ HSS9641	
Square deep-well plate	Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: Fisher Scientific™ AB-0932	

Labware	Source	Image
Round deep-well plate	Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: Axygen P-DW-20-C-S	
Square 1.2 mL plate	Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: E&K Scientific OX1263	
4-column reservoir with reservoir frame	4-column reservoir: Available as a component of the Axiom™ 96 Consumables Kit for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902907 Purchase separately: E&K Scientific EK-2119 Reservoir frame: Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ (kit 902365) Purchase separately: Fisher Scientific™ NC1353562	 <p data-bbox="1008 978 1435 1094">Note: The 4-column reservoir must always be placed on a reservoir frame when on the NIMBUS™ Instrument deck.</p>
96-well UV plate	Available as a component of the Axiom™ 96 Consumables Kit for QC for Applied Biosystems™ NIMBUS™ 2.0 Cat. No. 902909 Purchase separately: Fisher Scientific™ 07-200-623	
Alpillo™ Plate Cushion and Alpillo™ Extension	Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ (kit 902365) Purchase separately: ALPAQUA: plate cushion, A000007 extension, K000018	 <p data-bbox="1057 1577 1386 1661">The image shown displays the plate cushion and extension assembled.</p>
Pedestal, 35.48 mm (designed specifically for the Axiom™ method to fasten the Alpillo™ Plate Cushion and extension on deck position 5)	Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ (kit 902365)	

Labware	Source	Image
<p>96 Half-Skirt Plate Holder (used as holder for 96 half-skirt plate)</p>	<p>Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ 902365 Purchase separately: Bio-Rad™ TRC 9601</p>	
<p>Thermoshake Deep-well Plate Adapter (Adapter plate: Round deep-well plate, Axygen, Cat. No. P-DW-20-C-S)</p>	<p>Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ 902365 Purchase separately: INHECO™ 3200390</p>	
<p>Axiom™ 2.0 Reagent Kit cooling block template (designed specifically for use with the NIMBUS™ Instrument and the Axiom™ 2.0 Reagent Kit)</p>	<p>Available as a component of the Axiom™ Starter Kit for Applied Biosystems™ NIMBUS™ 902365</p>	
<p>24-Position Tube Rack (with one 11 mm tube insert in position D6)</p>	<p>Beckman Coulter™ 373661 Insert, 11 mm, for 1.5-mL Microfuge Tubes, Beckman Coulter™ 373696</p>	
<p>Plate collar</p>	<p>Included as part of the NIMBUS™ Instrument configuration</p>	
<p>Tube collar</p>	<p>Included as part of the NIMBUS™ Instrument configuration</p>	

Labware	Source	Image
Tip loading tool	Included as part of the NIMBUS™ Instrument configuration	 <p>① Tip loading tool attached to deck.</p>
GeneTitan™ ZeroStat AntiStatic Gun and Ion-Indicator Cap	74-0014	
96-well Block Cooling Chamber for 0.2 mL tubes, 96 holes (four for 1.5 mL and six for 0.5 mL tubes), Dim.: 6 1/8" L x 3 1/8" W x 1" H	Diversified Biotech CHAM-1000	
Adhesive film	Use one of the following: <ul style="list-style-type: none"> • MicroAmp™ Clear Adhesive Film, 4306311 • Microseal™ 'B' PCR Plate Sealing Film, Bio-Rad™ MSB1001 	

Other equipment, consumables, and reagents required

Preamplification area

Precautions are required when manipulating genomic DNA to avoid contamination with foreign DNA amplified in other reactions and procedures. It is recommended that genomic DNA manipulations are performed in a dedicated preamplification room or area separate from the main laboratory.

This preamplification area must have a dedicated set of pipettes and plasticware. If no dedicated area is available, use of a dedicated bench or a dedicated biosafety hood and dedicated pipettes is suggested. If no dedicated bench or biosafety hood is available, a set of dedicated pipettes is recommended.

Oven requirements

We recommend using the BINDER™ ED 56 oven that is listed in the table below. If another oven is used, it must be able to maintain a constant temperature of 37°C for at least 24 hours, and have a temperature accuracy of ±1°C.

Unless otherwise indicated, all materials are available through **thermofisher.com**.
MLS: Fisher Scientific (**fisherscientific.com**) or other major laboratory supplier.

✓	Item	Source
<input type="checkbox"/>	Oven: Required if processing more than 3 plates per week: <ul style="list-style-type: none"> • BINDER™ ED 56 drying and heating chamber <ul style="list-style-type: none"> – ED056UL-120V Voltage: 120 V 1~60 Hz – ED056-230V Voltage: 230 V 1~50/60 Hz 	BINDER™ 9010-0334 BINDER™ 9010-0333
	Optional—for low throughput of 3 or fewer array plates per week: <ul style="list-style-type: none"> • GeneChip™ Hybridzation Oven 645^[1] 	00-0331

^[1] The GeneChip™ Hybridzation Oven 640 is currently not supported with the Axiom™ 2.0 Assay. However, to use it in the workflow contact your field service engineer (FSE) or Thermo Fisher Scientific Technical Support regarding the compatibility of this oven with the Axiom™ 2.0 Assay.

Spectrophotometer

We recommend using one of the following spectrophotometers, or equivalent.

Unless otherwise indicated, all materials are available through **thermofisher.com**.

✓	Item	Source
<input type="checkbox"/>	Thermo Scientific™ Multiskan™ Sky Microplate Spectrophotometer	Cat. No. 51119500
<input type="checkbox"/>	SpectraMax® Plus 384 Microplate Reader	Molecular Devices®, Cat. No. PLUS 384
<input type="checkbox"/>	DTX 880 Multimode Detector with genomic filter slide	Beckman Coulter™

Thermal cyclers recommendations and protocol

We have verified the performance of this assay using the following thermal cyclers.

- Applied Biosystems™ GeneAmp™ PCR System 9700 (with gold-plated or silver block)
- Applied Biosystems™ Veriti™ Thermal Cycler
- Applied Biosystems™ ProFlex™ PCR System
- Eppendorf™ Mastercycler™ pro S

IMPORTANT! Always use the heated lid option when programming protocols. See the appropriate thermal cycler user guide for programming information.

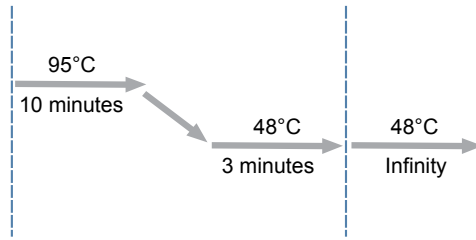


Figure 10 Axiom 2.0 Denature protocol (Stage 5)



WARNING! Evaporation during denaturation can negatively affect assay performance. Use the recommended thermal cycler consumables and sealing film to eliminate condensation and evaporation.

Shakers

We recommend using one of the following shakers.

Unless otherwise indicated, all materials are available through **thermofisher.com**.
 MLS: Fisher Scientific (**fisherscientific.com**) or other major laboratory supplier.

✓	Item	Source
<input type="checkbox"/>	Compact Digital Microplate Shaker	88880023 or 88880024
	The Jitterbug™	Boekel Scientific™ 130000 (115V) Boekel Scientific™ 130000-2 (230V)

Plate centrifuge

One plate centrifuge is required for the Axiom™ 2.0 Assay. The plate centrifuges listed in Table 10 are recommended for the Axiom™ 2.0 Assay 96-Array Format Automated Workflow. When centrifuging and drying pellets, the centrifuge must be able to centrifuge plates at:

- Rcf: $3,200 \times g$ with an appropriate rotor - bucket combination (4,000 rpm for the Eppendorf™ Centrifuge 5810 R that is described in Table 10)
- Temperature: 4°C

Relative centrifugal force (rcf) is calculated using the following formula:

$$rcf = (1.118 \times 10^{-5}) R S^2$$

Where R is the radius of the rotor in centimeters, and S is the speed of the centrifuge in revolutions per minute.

In addition, the bottom of the rotor buckets must be soft rubber to ensure that the deep well plates do not crack. Do not use buckets where the plates sit directly on a metal or hard plastic bottom. For the Eppendorf™ Centrifuge 5810 R, do not use the A-4-62 rotor with a WO-15 plate carrier (hard bottom).

Table 10 Plate centrifuge recommendations for the Axiom™ 2.0 Assay 96-Array Format Automated Workflow

✓	Item	Supplier	Cat. No.
<input type="checkbox"/>	Sorvall™ Legend™ XTR Centrifuge (refrigerated), with:	Thermo Fisher Scientific	75004520 (230 V, 50 Hz)
<input type="checkbox"/>	TX-750 4 + 750mL Swinging Bucket Rotor		75004521 (120 V, 60 Hz)
<input type="checkbox"/>	Microplate/Flask Carriers		75004523 (230 V, 50–60 Hz, USA and Canada)
<input type="checkbox"/>			75003180 (rotor)
<input type="checkbox"/>			75003795 (set of 2 carriers)
<input type="checkbox"/>			75003617 (set of 4 carriers)
<input type="checkbox"/>	Centrifuge 5810 R, with:	Eppendorf™	022625551 (230 V, 50–60 Hz)
<input type="checkbox"/>	Rotor A-4-81, with 4 MTP/Flex buckets		022625501 (120 V, 50–60 Hz, 15 A)
			022625101 (120 V, 50–60 Hz, 20 A)
			022638807 (rotor)
<input type="checkbox"/>	Allegra™ 25R Benchtop Centrifuge, Refrigerated, with:	Beckman Coulter™	369434 (280 V, 60 Hz)
<input type="checkbox"/>	S5700 Swinging-Bucket Rotor		369435 (200 V, 50–60 Hz)
			369436 (230 V, 50 Hz)
			368954 (rotor)

Other equipment, reagents, and supplies required

Unless otherwise indicated, all materials are available through **thermofisher.com**.
MLS: Fisher Scientific (**fisherscientific.com**) or other major laboratory supplier.


✓	Item	Source
Common laboratory equipment		
<input type="checkbox"/>	Freezer, -20°C	MLS
<input type="checkbox"/>	Refrigerator, 2°C to 8°C	MLS
<input type="checkbox"/>	Vortex-Genie™ 2 (for plates and microtubes) ^[1]	Fisher Scientific™ 50-728-002 (120 V/60 Hz) 50-728-004 (230 V/50 Hz)
<input type="checkbox"/>	Mini microcentrifuge, for 2-mL tubes ^[1]	MLS
<input type="checkbox"/>	Bel-Art™ SP Scienceware® Cryo-Safe™ Mini Quick-Freeze Microcentrifuge Tube Cooler, -15°C ^[1]	Fisher Scientific™ 03-410-497
<input type="checkbox"/>	Ice bucket, 4–9 liters	MLS
<input type="checkbox"/>	Pipet-Aid™	MLS
<input type="checkbox"/>	GeneTitan™ ZeroStat AntiStatic Gun	74-0014
Reagents		
<input type="checkbox"/>	2-Propanol, anhydrous, 99.5% (isopropanol)	Sigma-Aldrich 278475
<input type="checkbox"/>	Low EDTA TE Buffer (10 mM Tris-HCl pH 8.0, 0.1 mM EDTA)	Fisher Scientific™ AAJ75793AE
<input type="checkbox"/>	Quant-iT™ PicoGreen™ dsDNA Assay Kit	P7589
Materials, reagents, and gels required to run QC steps		
<input type="checkbox"/>	Mother E-Base™ Device	EBM03
<input type="checkbox"/>	Daughter E-Base™ Device	EBD03
<input type="checkbox"/>	E-Gel™ 48 Agarose Gels, 4%	G800804
<input type="checkbox"/>	TrackIt™ 25 bp DNA Ladder, or equivalent (Follow the product instructions for dilution method.)	10488022
<input type="checkbox"/>	TrackIt™ Cyan/Orange Loading Buffer	10482028
<input type="checkbox"/>	E-Gel™ 48 Agarose Gel, 1%	G800801
<input type="checkbox"/>	E-Gel™ 48 Agarose Gels, 2%	G800802
<input type="checkbox"/>	E-Gel™ 96 High Range DNA Marker	12352019
<input type="checkbox"/>	Water, Nuclease-free, Molecular Biology Grade, Ultrapure	Fisher Scientific™ 71786
Pipettes and tips recommended for performing the gel QC steps		
<input type="checkbox"/>	Pipet-Lite™ Magnetic Assist Pipet, single channel P20	Rainin™ L-20
<input type="checkbox"/>	Pipet-Lite™ Magnetic Assist Pipet, single channel P200	Rainin™ L-200

✓	Item	Source
<input type="checkbox"/>	Pipet-Lite™ Magnetic Assist Pipet, single channel P1000	Rainin™ L-1000
<input type="checkbox"/>	Pipette 12-channel P20	Rainin™ L12-20
<input type="checkbox"/>	Pipette 12-channel P50 (optional)	Rainin™ L12-50
<input type="checkbox"/>	Pipette 12-channel P200	Rainin™ L12-200
<input type="checkbox"/>	Pipette 12-channel P1200	Rainin™ L12-1200
<input type="checkbox"/>	Pipette tips Green-Pak™ 10 µL refill	Rainin™ 30389274
<input type="checkbox"/>	Pipette tips Green-Pak™ 200 µL refill	Rainin™ 30389276
<input type="checkbox"/>	Pipette tips Green-Pak™ 1,000 µL refill	Rainin™ 30389272
<input type="checkbox"/>	Pipette tips RT 10 µL (racked tips)	Rainin™ 30389225
<input type="checkbox"/>	Pipette tips RT 200 µL (racked tips)	Rainin™ 30389239
<input type="checkbox"/>	Pipette tips RT 1,000 µL (racked tips)	Rainin™ 30389212
Other laboratory supplies		
<input type="checkbox"/>	Adhesive film for 96-well plates—use one of the following: <ul style="list-style-type: none"> • MicroAmp™ Clear Adhesive Film • Microseal™ 'B' PCR Plate Sealing Film 	4306311 Bio-Rad™ MSB1001
<input type="checkbox"/>	Kimwipes™ laboratory tissue	MLS
<input type="checkbox"/>	Markers, permanent, fine point	MLS

^[1] Equivalent item from other manufacturer is acceptable.



Safety




-
-  **WARNING! GENERAL SAFETY.** Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.
- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
 - Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDSs, see the “Documentation and Support” section in this document.
-

Symbols on this instrument



In this document, the hazard symbol is used along with one of the following user attention words.






- **CAUTION!**—Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- **WARNING!**—Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **DANGER!**—Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

Standard safety symbols

Symbol and description	
	CAUTION! Risk of danger. Consult the manual for further safety information.
	CAUTION! Risk of electrical shock.
	CAUTION! Hot surface.



Symbol and description	
	CAUTION! Potential biohazard.
	CAUTION! Ultraviolet light.

Symbole et description	
	MISE EN GARDE ! Risque de danger. Consulter le manuel pour d'autres renseignements de sécurité.
	MISE EN GARDE ! Risque de choc électrique.
	MISE EN GARDE ! Surface chaude.
	MISE EN GARDE ! Danger biologique potentiel.
	MISE EN GARDE ! Rayonnement ultraviolet.

Location of safety labels



Figure 11 Warning label on the right side of the unit to the left of the power switch

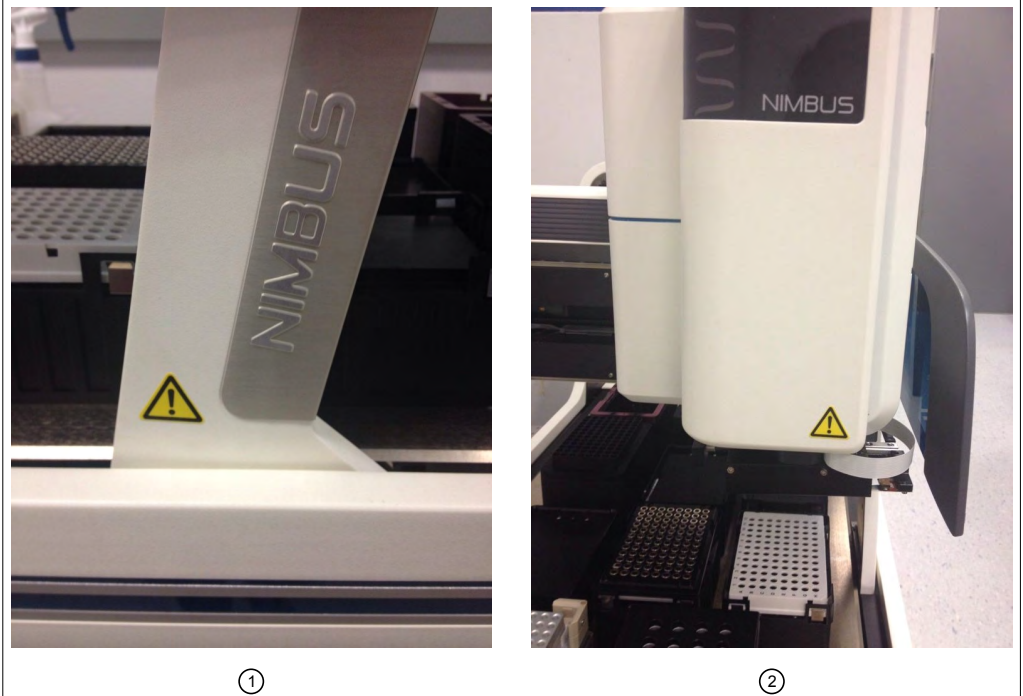


Figure 12 Pinch points

- ① Gantry arm
- ② NIMBUS™ Instrument head

Control and connection symbols

Symbols and descriptions	
	On (Power)
	Off (Power)
	Earth (ground) terminal
	Protective conductor terminal (main ground)
	Direct current
	Alternating current
	Both direct and alternating current

Conformity symbols

Conformity mark	Description
	Indicates conformity with safety requirements for Canada and U.S.A.
	Indicates conformity with China RoHS requirements.
	Indicates conformity with European Union requirements.
	Indicates conformity with the WEEE Directive 2012/19/EU. CAUTION! To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.



Safety information for instruments not manufactured by Thermo Fisher Scientific

Some of the accessories provided as part of the instrument system are not designed or built by Thermo Fisher Scientific. Consult the manufacturer's documentation for the information needed for the safe use of these products.

Instrument safety

General



CAUTION! Do not remove instrument protective covers. If you remove the protective instrument panels or disable interlock devices, you may be exposed to serious hazards including, but not limited to, severe electrical shock, laser exposure, crushing, or chemical exposure.



CAUTION! Solvents and Pressurized fluids. Wear eye protection when working with any pressurized fluids. Use caution when working with any polymeric tubing that is under pressure:

- Extinguish any nearby flames if you use flammable solvents.
 - Do not use polymeric tubing that has been severely stressed or kinked.
 - Do not use polymeric tubing with tetrahydrofuran or nitric and sulfuric acids.
 - Be aware that methylene chloride and dimethyl sulfoxide cause polymeric tubing to swell and greatly reduce the rupture pressure of the tubing.
 - Be aware that high solvent flow rates (~40mL/min) may cause a static charge to build up on the surface of the tubing and electrical sparks may result.
-

Physical injury



CAUTION! Moving and Lifting Injury. The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. Improper lifting can cause painful and permanent back injury.


Things to consider before lifting or moving the instrument or accessories:


- Depending on the weight, moving or lifting may require two or more persons.
- If you decide to lift or move the instrument after it has been installed, do not attempt to do so without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques.
- Ensure you have a secure, comfortable grip on the instrument or accessory.
- Make sure that the path from where the object is to where it is being moved is clear of obstructions.
- Do not lift an object and twist your torso at the same time. Keep your spine in a good neutral position while lifting with your legs.
- Participants should coordinate lift and move intentions with each other before lifting and carrying.
- For smaller packages, rather than lifting the object from the packing box, carefully tilt the box on its side and hold it stationary while someone else slides the contents out of the box.





CAUTION! Moving Parts. Moving parts can crush, pinch and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing.


Electrical safety

 **WARNING! Fuse Installation.** Before installing the instrument, verify that the fuses are properly installed and the fuse voltage matches the supply voltage. Replace fuses only with the type and rating specified for the unit. Improper fuses can damage the instrument wiring system and cause a fire.


 **AVERTISSEMENT ! Installation des fusibles.** Avant d'installer l'instrument, vérifier que les fusibles sont correctement insérés et que leur tension correspond à celle fournie par le circuit d'alimentation. Ne remplacer les fusibles que par des modèles du type et de la puissance spécifiés pour l'appareil. L'utilisation de fusibles inadaptés peut endommager le circuit électrique de l'instrument et provoquer un incendie.

 **WARNING! Voltage Selector Switch.** Before installing the instrument, verify that the voltage selector switch is set for the supply voltage. This will prevent damage to the instrument, reduce risk of fire, and enable proper operation.


 **AVERTISSEMENT ! Sélecteur de tension.** Avant d'installer l'instrument, vérifier que le sélecteur de tension est adapté à la tension d'alimentation. Cela permet d'éviter d'endommager l'instrument, de réduire le risque d'incendie et d'assurer son bon fonctionnement.


 **WARNING! Ensure appropriate electrical supply.** For safe operation of the instrument:

- Plug the system into a properly grounded receptacle with adequate current capacity.
- Ensure the electrical supply is of suitable voltage.
- Never operate the instrument with the ground disconnected. Grounding continuity is required for safe operation of the instrument.

 **AVERTISSEMENT ! Veiller à utiliser une alimentation électrique appropriée.** Pour garantir le fonctionnement de l'instrument en toute sécurité :

- Brancher le système sur une prise électrique correctement mise à la terre et de puissance adéquate.
- S'assurer que la tension électrique est convenable.
- Ne jamais utiliser l'instrument alors que le dispositif de mise à la terre est déconnecté. La continuité de la mise à la terre est impérative pour le fonctionnement de l'instrument en toute sécurité.

 **WARNING! Power Supply Line Cords.** Use properly configured and approved line cords for the power supply in your facility.

 **AVERTISSEMENT ! Cordons d'alimentation électrique.** Utiliser des cordons d'alimentation adaptés et approuvés pour raccorder l'instrument au circuit électrique du site.



WARNING! Disconnecting Power. To fully disconnect power either detach or unplug the power cord, positioning the instrument such that the power cord is accessible.



AVERTISSEMENT ! Déconnecter l'alimentation. Pour déconnecter entièrement l'alimentation, détacher ou débrancher le cordon d'alimentation. Placer l'instrument de manière à ce que le cordon d'alimentation soit accessible.

Cleaning and decontamination



CAUTION! Cleaning and Decontamination. Use only the cleaning and decontamination methods specified in the manufacturer's user documentation. It is the responsibility of the operator (or other responsible person) to ensure the following requirements are met:

- No decontamination or cleaning agents are used that could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in the equipment.
- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan (decontamination forms may be requested from customer service).
- Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.



MISE EN GARDE ! Nettoyage et décontamination. Utiliser uniquement les méthodes de nettoyage et de décontamination indiquées dans la documentation du fabricant destinée aux utilisateurs. L'opérateur (ou toute autre personne responsable) est tenu d'assurer le respect des exigences suivantes:

- Ne pas utiliser d'agents de nettoyage ou de décontamination susceptibles de réagir avec certaines parties de l'appareil ou avec les matières qu'il contient et de constituer, de ce fait, un DANGER.
- L'instrument doit être correctement décontaminé a) si des substances dangereuses sont renversées sur ou à l'intérieur de l'équipement, et/ou b) avant de le faire réviser sur site ou de l'envoyer à des fins de réparation, de maintenance, de revente, d'élimination ou à l'expiration d'une période de prêt (des informations sur les formes de décontamination peuvent être demandées auprès du Service clientèle).
- Avant d'utiliser une méthode de nettoyage ou de décontamination (autre que celles recommandées par le fabricant), les utilisateurs doivent vérifier auprès de celui-ci qu'elle ne risque pas d'endommager l'appareil.

Instrument component and accessory disposal

To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety and electromagnetic compatibility (EMC) standards

The instrument design and manufacture complies with the following standards and requirements for safety and electromagnetic compatibility.

Safety standards

Reference	Description
EU Directive 2014/35/EU	European Union “Low Voltage Directive”
IEC 61010-1 EN 61010-1 UL 61010-1 CAN/CSA C22.2 No. 61010-1	<i>Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements</i>
IEC 61010-2-081 EN 61010-2-081	<i>Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes</i>

EMC standards

Reference	Description
EU Directive 2014/30/EU	European Union “EMC Directive”
EN 61326-1 IEC 61326-1	<i>Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 1: General Requirements</i>



Reference	Description
FCC Part 15 Subpart B (47 CFR)	<p><i>U.S. Standard Radio Frequency Devices</i></p> <p>This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:</p> <ul style="list-style-type: none"> • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.

Environmental design standards

Reference	Description
Directive 2012/19/EU	European Union “WEEE Directive”—Waste electrical and electronic equipment
Directive 2011/65/EU	European Union “RoHS Directive”—Restriction of hazardous substances in electrical and electronic equipment
SJ/T 11364-2014	“China RoHS” Standard—Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products

Chemical safety



WARNING! GENERAL CHEMICAL HANDLING. To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. To obtain SDSs, see the “Documentation and Support” section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.
- **IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.



AVERTISSEMENT ! PRÉCAUTIONS GÉNÉRALES EN CAS DE MANIPULATION DE PRODUITS CHIMIQUES. Pour minimiser les risques, veiller à ce que le personnel du laboratoire lise attentivement et mette en œuvre les consignes de sécurité générales relatives à l'utilisation et au stockage des produits chimiques et à la gestion des déchets qui en découlent, décrites ci-dessous. Consulter également la FDS appropriée pour connaître les précautions et instructions particulières à respecter :

- Lire et comprendre les fiches de données de sécurité (FDS) fournies par le fabricant avant de stocker, de manipuler ou d'utiliser les matériaux dangereux ou les produits chimiques. Pour obtenir les FDS, se reporter à la section « Documentation et support » du présent document.
- Limiter les contacts avec les produits chimiques. Porter des équipements de protection appropriés lors de la manipulation des produits chimiques (par exemple : lunettes de sûreté, gants ou vêtements de protection).
- Limiter l'inhalation des produits chimiques. Ne pas laisser les récipients de produits chimiques ouverts. Ils ne doivent être utilisés qu'avec une ventilation adéquate (par exemple, sorbonne).

- Vérifier régulièrement l'absence de fuite ou d'écoulement des produits chimiques. En cas de fuite ou d'écoulement d'un produit, respecter les directives de nettoyage du fabricant recommandées dans la FDS.
 - Manipuler les déchets chimiques dans une sorbonne.
 - Veiller à utiliser des récipients à déchets primaire et secondaire. (Le récipient primaire contient les déchets immédiats, le récipient secondaire contient les fuites et les écoulements du récipient primaire. Les deux récipients doivent être compatibles avec les matériaux mis au rebut et conformes aux exigences locales, nationales et communautaires en matière de confinement des récipients.)
 - Une fois le récipient à déchets vidé, il doit être refermé hermétiquement avec le couvercle fourni.
 - Caractériser (par une analyse si nécessaire) les déchets générés par les applications, les réactifs et les substrats particuliers utilisés dans le laboratoire.
 - Vérifier que les déchets sont convenablement stockés, transférés, transportés et éliminés en respectant toutes les réglementations locales, nationales et/ou communautaires en vigueur.
 - **IMPORTANT !** Les matériaux représentant un danger biologique ou radioactif exigent parfois une manipulation spéciale, et des limitations peuvent s'appliquer à leur élimination.
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WARNING! HAZARDOUS WASTE (from instruments). Waste produced by the instrument is potentially hazardous. Follow the guidelines noted in the preceding General Chemical Handling warning.



WARNING! 4L Reagent and Waste Bottle Safety. Four-liter reagent and waste bottles can crack and leak. Each 4-liter bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position.

Biological hazard safety



WARNING! Potential Biohazard. Depending on the samples used on this instrument, the surface may be considered a biohazard. Use appropriate decontamination methods when working with biohazards.



WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, 5th Edition, HHS Publication No. (CDC) 21-1112, Revised December 2009; found at:
<https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf>
 - World Health Organization, *Laboratory Biosafety Manual*, 3rd Edition, WHO/CDS/CSR/LYO/2004.11; found at:
www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf
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Documentation and support

Related documentation

Document	Publication number	Description
<i>Axiom™ 2.0 Assay 96-Array Format Automated Workflow User Guide—Applied Biosystems™ NIMBUS™ Target Preparation Instrument</i>	MAN0017740	This document provides instruction on running the Axiom™ 2.0 Assay on 96-array format plates using an automated workflow on the on the Applied Biosystems™ NIMBUS™ and array processing on the GeneTitan™ Multi-Channel Instrument.
<i>Axiom™ 2.0 Assay 96-Array Format Automated Workflow Quick Reference—Applied Biosystems™ NIMBUS™ Target Preparation Instrument</i>	MAN0017742	An abbreviated reference for the target preparation step of the Axiom™ 2.0 Assay 96-Array Format Automated Workflow on the Applied Biosystems™ NIMBUS™. This quick reference document is for experienced users.
<i>Axiom™ gDNA Sample Preparation Quick Reference</i>	MAN0017720	An abbreviated reference on preparing the genomic DNA sample.
<i>GeneTitan™ MC Protocol for Axiom™ Array Plate Processing Quick Reference</i>	MAN0017718	An abbreviated reference for processing Axiom™ Array Plates with the GeneTitan™ Multi-Channel Instrument.
<i>GeneTitan™ Multi-Channel Instrument User Guide</i>	08-0308	The GeneTitan™ Multi-Channel Instrument automates array processing from target hybridization to data generation by combining a hybridization oven, fluidics processing, and state-of-the art imaging device into a single benchtop instrument. This document details the use, care, and maintenance for the GeneTitan™ Multi-Channel Instrument.
<i>GeneTitan™ Multi-Channel Instrument Site Preparation Guide</i>	08-0305	Provides guidance on creating and maintaining the proper environment required for the GeneTitan™ Multi-Channel Instrument.
Analysis and software		
<i>Axiom™ Genotyping Solution Data Analysis User Guide</i>	702961	This guide provides information and instructions for analyzing Axiom™ genotyping array data. It includes the use of Axiom™ Analysis Suite, Applied Biosystems™ Array Power Tools (formerly APT) and SNPolisher™ Package to perform quality control analysis (QC) for samples and plates, SNP filtering before downstream analysis, and advanced genotyping methods.

Document	Publication number	Description
<i>GeneChip™ Command Console™ (GCC) 4.0 User Guide</i>	702569	This user guide provides instructions on using GeneChip™ Command Console™ (GCC) used to control GeneChip™ instrument systems. GeneChip™ Command Console™ software provides an intuitive set of tools for instrument control and data management used in the processing of GeneChip™ arrays.
<i>Axiom™ Analysis Suite User Guide</i>	703307	This user guide provides instructions on using Axiom™ Analysis Suite—a single-source software package to enable complete genotyping analysis of all Axiom™ arrays.
NIMBUS™ Target Preparation Instrument documents		
<i>MicroLab NIMBUS™ User Guide</i>	62965-01	The Hamilton use guide for the NIMBUS™ Instrument. This document is shipped in the deck hardware kit.

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Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

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