

USER GUIDE

applied
biosystems®
by *life* technologies™

AutoMate *Express*™ Instrument

for use with:

PrepFiler® *Express* Forensic DNA Extraction Kit (Cat.no. 4441352)

PrepFiler® *Express* BTA Forensic DNA Extraction Kit (Cat. no. 4441351)

PrepSEQ® *Express* Nucleic Acid Extraction Kit (Cat. no. 4466351)

Publication Number 4441982

Revision D

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About This Guide



CAUTION! ABBREVIATED SAFETY ALERTS. Hazard symbols and hazard types specified in procedures may be abbreviated in this document. For the complete safety information, see the “Safety” appendix in this document.

IMPORTANT! Before using this product, read and understand the information in the “Safety” appendix in this document.

Revision history

Revision	Date	Description
D	August 2012	Incorporated references to the PrepSEQ® Express Nucleic Acid Extraction Kit.

Purpose

This user guide provides the following information about the AutoMate *Express*[™] Instrument:

- Unpacking and installation
- Instrument verification instructions
- General operating instructions
- Testing and maintenance
- Troubleshooting
- Instrument details and specifications

For information on running a specific chemistry application on the instrument, refer to the user guide provided with the chemistry kit.

About This Guide

Purpose

1

Unpack and Install the AutoMate Express™ Instrument

This chapter covers:

- Unpack the instrument 10
 - Remove the packaging 10
 - Remove the protectors 11
- Verify the components shipped with the instrument 12
- Install the instrument 13
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- Prepare the instrument for first use 15
 - Insert the protocol card, turn on the instrument,
and remove the packing peanuts 15
 - Clean and insert the instrument components 16
 - Set the instrument date and time 18

Unpack the instrument

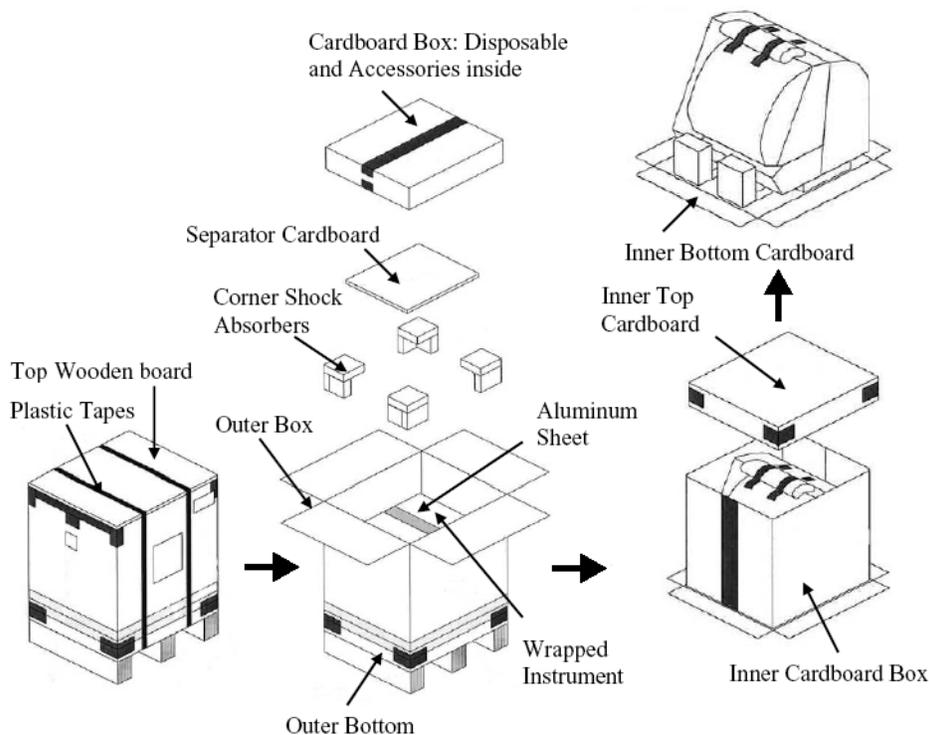
Remove the packaging

Note: The weight of the instrument is 55 kg (121 pounds).

1. Cut the plastic straps and the tape securing the outer box to the outer bottom.
2. Remove the top wooden board, then open the top of the box.
3. Remove the box containing the plastic disposables and instrument accessories.
4. Remove the cardboard separator.
5. Remove the shock absorbers from the four corners.
6. Remove the outer cardboard box by pulling up on the box.
7. Remove the wrapped instrument box from the outer bottom cardboard.
8. Remove the aluminum sheet wrapping the instrument box.
9. Remove the instrument from the inner cardboard box. The instrument is now in a plastic wrap without cover.

IMPORTANT! Handle the instrument carefully from this point to avoid any damage to the unit.

10. Remove the plastic sheet.



Remove the protectors

1. Remove the adhesive tape on the door and on the card slot.
2. Push up the instrument door until the magnet holds it up.
3. Remove the Y axis shipping clamp by removing the three screws using a small Phillips head screwdriver.



Verify the components shipped with the instrument

Verify that you received all of the components listed below:

Components shipped with the AutoMate Express™ Instrument:

- AutoMate Express™ Instrument
- Power cord (for U.S./Canada/Taiwan/Japan, Europe, or U.K.)
- Cartridge rack
- Tip and tube rack
- Bottom tray
- Tips and tip holders (52 sets, for use in the [“Axis test” on page 24](#))
- Empty reagent cartridges (13, for use in the [“Axis test” on page 24](#)).

Note: Do not fill the empty reagent cartridges.

- Silicone grease
- D-rings (13)
- 6.3-A T (time-lag type) fuse
- 3.15-A T (time-lag type) fuse
- Barcode reader box, containing the following:
 - Gryphon GD4130 Barcode Reader
 - USB cable (CAB-426 SH4043)

Components shipped separately:

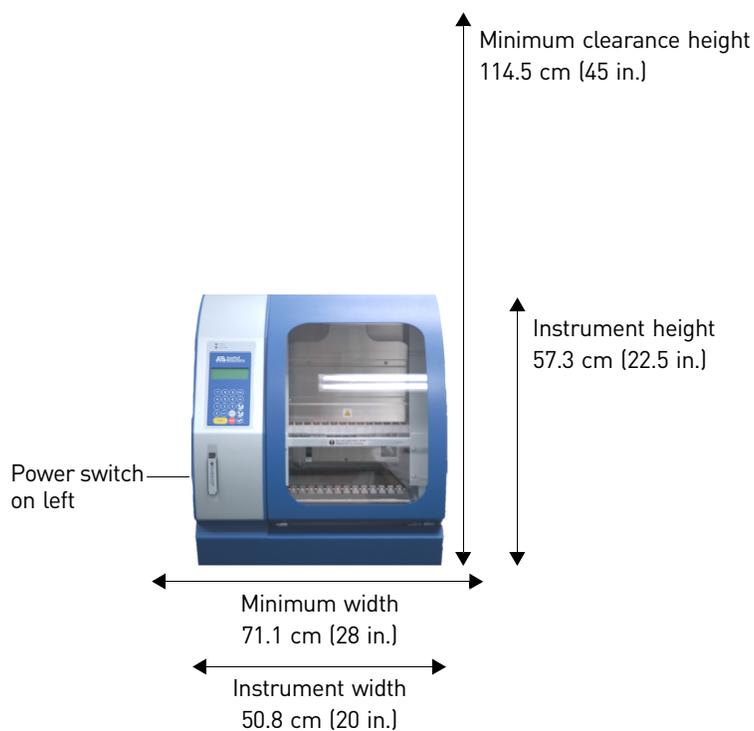
- Protocol card
- Universal Power Cord Kit
- *AutoMate Express™ Instrument User Guide*
- (HID applications only) The AutoMate Express™ Install Kit (for use in the [“Installation test” on page 29](#))

Install the instrument

Place the instrument

The surface on which you install the instrument must support 55 kg (121 pounds).

1. Place the AutoMate Express™ Instrument on a level laboratory bench with the power switch to the left and the AC inlet at the rear of the unit.
2. Make sure there is clearance around the instrument as follows:
 - 10 cm (4 inches) on the right and left side of the instrument to ensure proper ventilation of the unit.
 - Room at the back of the instrument to attach the power cord and access the fuses.
 - Vertical clearance of 114.5 cm (45 inches) to allow Life Technologies service representatives to remove the instrument cover if necessary.



Left side view



Power switch

Rear view



Fuse

Computer*

Barcode
reader*Power cord
reader*

* Not used with current system configuration

Attach the power cord

1. Check the power cord supplied with the unit to ensure that the cord is compatible with the local socket format.
2. With the AC power switch in the Off position, attach the power cord to the AC inlet and then to the electrical outlet. Use only properly grounded AC outlets and power cords.

IMPORTANT! Do not start the AutoMate Express™ Instrument until a protocol card is inserted into the instrument as described in [“Insert the protocol card, turn on the instrument, then remove the packing peanuts”](#) on page 15.

Prepare the instrument for first use

Insert the protocol card, turn on the instrument, then remove the packing peanuts

For guidelines on handling protocol cards, see [“Protocol card” on page 64](#).

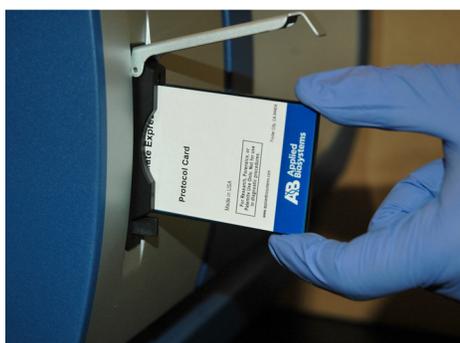
1. Confirm that the power switch is in the OFF position.

Note: If you insert the card while the instrument is on, the instrument does not recognize the card.

2. Open the card slot.



3. Insert the protocol card in the slot with the arrow pointing toward the instrument and the label facing left.

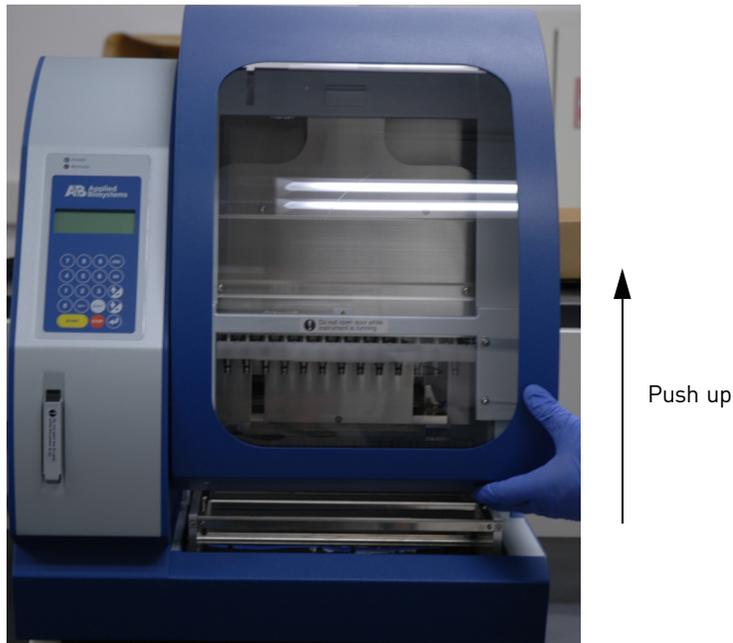


4. Push the card completely into the card slot, then close the card slot.
5. Power on the instrument.

When the card is fully inserted in the correct orientation, the display briefly shows information including the instrument version, then shows the Main menu.

IMPORTANT! Do not remove or insert the protocol card while the instrument is powered on. Removing the card stops the run, and it may cause instrument data file loss. To remove the card, see [“Insert or change the protocol card and power on the instrument” on page 34](#).

6. Open the instrument door (push up the door).



7. Remove the packing peanuts from the instrument.

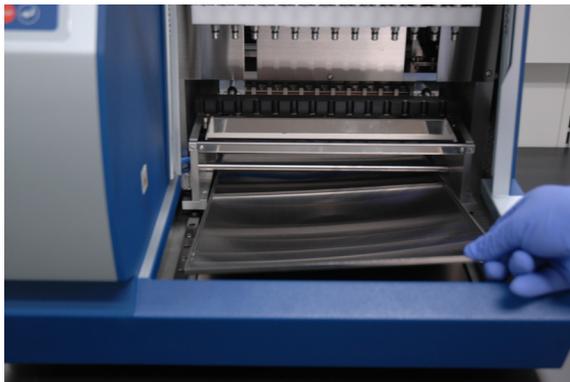
Clean and insert the instrument components

Note: Do not move instrument components such as the platform, magnets, and syringes while the instrument is powered on.

1. Clean the cartridge rack, tip and tube rack, and bottom tray with a mild detergent before use (see [“Clean and decontaminate the instrument” on page 48](#) for cleaning and maintenance of parts).
2. Allow the parts to dry.

Note: If you have more than one AutoMate Express™ Instrument in your lab, label the racks so that you can identify the instrument to which the racks belong.

3. Insert the bottom tray as follows:
 - a. Power off the instrument.
 - b. Push the platform toward the back of the instrument. Holding the front edge of the tray, insert the tray into the instrument.



4. Insert the cartridge rack into the instrument.



WARNING! Do not touch the surface of the heat block. The temperature of the heat block can reach 95°C. Touching the block can cause burns.



5. Insert the tip and tube rack into the instrument with row E in the front.



Set the instrument date and time

Before setting the date and time, insert the protocol card (see [page 15](#)), close the instrument door, and power on the instrument.

Set the date

- From the Main menu, press **2** on the keypad (see “[Digital display](#)” on [page 39](#)) to display the Setup screen, press **1** to display the Setup/System screen, then press **1** again to display the Setup/Sys/Date/Time screen.

```
Setup
1: System
Key: ESC
```

```
Setup>System
1: Date/Time
Key: 1, ESC
```

- Press **1** to display the Date screen.

```
Setup>Sys>Date/Time
1: Date
2: Time
Key: 1, 2, ESC
```

```
Setup>Sys>>Date
Cur: CMN CD, CYYY
Set: SMN SD, SYYY
Key: Up, Dn, RET, ESC
```

The screen displays:

- Cur – CMN (current month), CD (current date), CYYY (current year)
- Set – SMN (set month), SD (set date), SYYY (set year)

To move the cursor from the current field to the first character in a field to the:

- Left, press **Shift+** 
- Right, press **Shift+** 

- Press  to display the months starting with January or press  to display the months starting with December. When the correct month is displayed, press **Shift** +  to select the month and move the cursor to the SD field.

```
Setup>Sys>>Date
Cur: CMN CD, CYYY
Set: SMN SD, SYYY
Key: Up, Dn, RET, ESC
```

- Press  to add 1 day to the currently displayed date or press  to subtract 1 day from the currently displayed date until the correct date is displayed, then press **Shift** +  to select the date and move the cursor to the SYYY field.

```
Setup>Sys>>Date
Cur: CMN CD, CYYY
Set: SMN SD, SYYY
Key: Up, Dn, RET, ESC
```

5. Press  to add 1 to the currently displayed year. Press  to subtract 1 from the currently displayed year. The system lets you set the year between 2000 and 2040.
6. Press  to save the settings and display the Main menu.

Set the time

1. From the Main menu, press **2, 1, 1** to display the Date/Time screen. The instrument uses the 24-hour clock.
2. Press **2** to display the Time screen.

```
Setup>Sys>>Time
Cur:CH:CM:CS
Set:SH:SM:SS
Key:Up,Dn,RET,ESC
```

The screen displays:

- Cur – CH (current hour), CM (current minute), CS (current second)
- Set – SH (set hour), SM (set minute), SS (and set second)

To move the cursor from the current field to the first character in a field to the:

- Left, press **Shift+** 
 - Right, press **Shift+** 
3. Press  to add 1 to the currently displayed hour or press  to subtract 1 from the currently displayed hour. When the correct hour is displayed, press **Shift +**  to select the hour and move the cursor to the SM field.
 4. Press  to add 1 to the currently displayed minute or press  to subtract 1 from the currently displayed minute. When the correct minute is displayed, press **Shift +**  to select the minute and move the cursor to the SS field.
 5. Press  to add 1 to the currently displayed second or press  to subtract 1 from the currently displayed second.
 6. Press  to save the settings and display the Main menu.

2

Verify Operation of the AutoMate Express™ Instrument

This chapter covers procedures for verifying AutoMate Express™ Instrument operation after installation and before first use:

■ About instrument verification	22
■ Before you begin	22
■ Axis test	24
■ Temperature test	27
■ Installation test	29

About instrument verification

After you install and prepare the instrument as described in Chapter 1, “Unpack and Install the AutoMate Express™ Instrument” on page 9, perform three required tests in the following order:

1. **Axis test** (page 24) – Confirms that the axis settings are correct.
2. **Temperature test** (page 27) – Confirms that the heating block reaches the appropriate temperature.
3. **Installation test** (page 29) – Confirms that the instrument operates correctly during a run.

IMPORTANT! Perform the installation test if you use the instrument for HID applications (PrepFiler® Express and PrepFiler® Express BTA kits). This test does *not* apply if you use the instrument for bioprocess applications (PrepSEQ® Express kits).

IMPORTANT! If the instrument fails one or more tests, contact Life Technologies Technical Support (see “Obtaining support” on page 80).

Before you begin

Insert the protocol card (shipped with the instrument), then power on the instrument as follows:

1. Confirm that the power switch is in the OFF position.
Note: If you insert the card while the instrument is on, the instrument does not recognize the card.
2. Open the card slot.



3. Insert the protocol card in the slot with the arrow pointing toward the instrument and the label facing left.



4. Push the card completely into the card slot, then close the card slot.
5. Power on the instrument. When the card is fully inserted in the correct orientation, the digital display briefly shows information including the instrument version, then shows the Main menu.

IMPORTANT! Do not remove or insert the protocol card while the instrument is powered on. Removing the card stops the run, and it may cause instrument data file loss. To remove the card, see [“Insert or change the protocol card and power on the instrument”](#) on page 34.

If you accidentally remove the protocol card during a run, power off the instrument immediately to minimize potential for instrument data loss.



```
<MENU> May 20 03:02
START:Protocols
1:Man 2:Setup 3:Test
Key:START,1,2,3
```

Axis test

Use the cartridges and tips shipped with instrument, and the tubes provided with the AutoMate Express™ Install Kit.

Note: Do not fill the empty reagent cartridges.

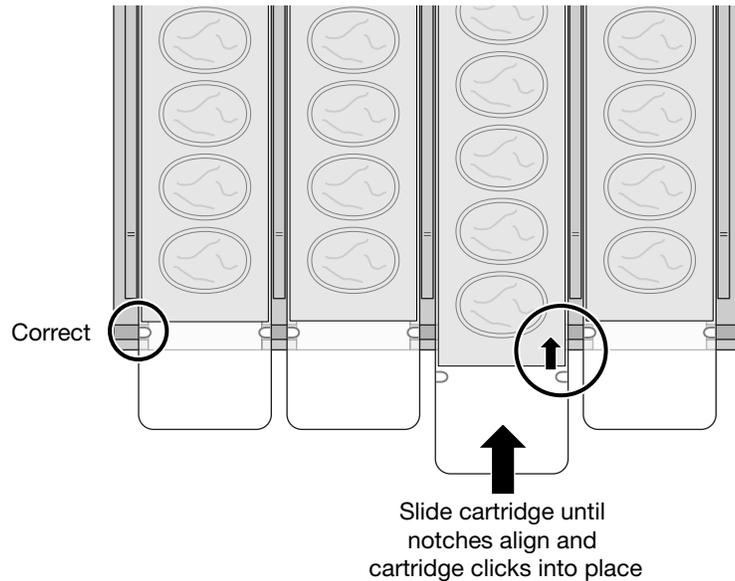
To perform the axis test:

1. Confirm that the protocol card is inserted and that the instrument powered on as described in “Before you begin” on page 22.
2. Open the instrument door (push up the door), then remove the tip and tube rack and the cartridge rack.



3. Load 13 empty reagent cartridges into the cartridge rack by sliding each reagent cartridge along the groove in the direction of the arrow until the reagent cartridge clicks into place. Make sure that the notches in the cartridge align with the notches in the cartridge rack (see the following diagram).

Note: An incorrectly loaded cartridge rack may cause the instrument to stop during a run.



4. Insert the loaded cartridge rack into the instrument.

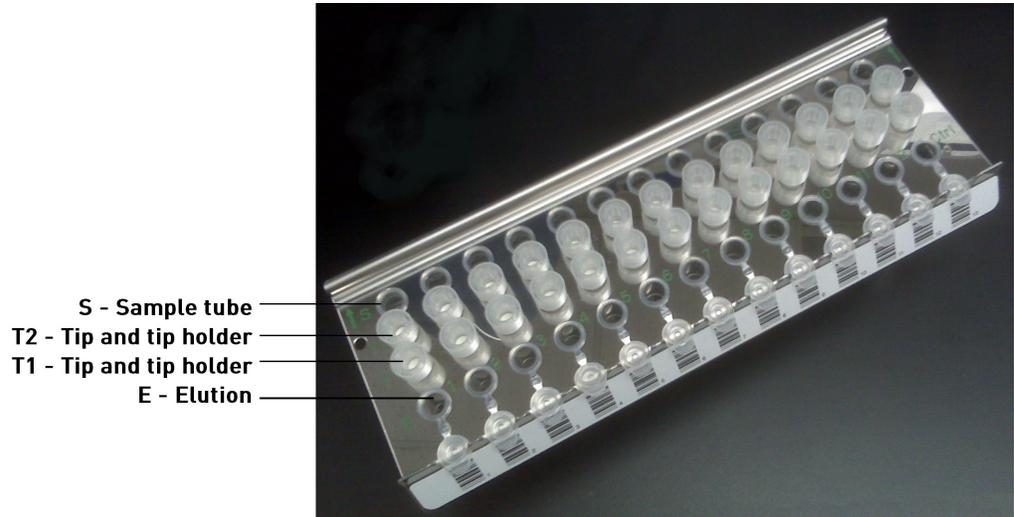


WARNING! Do not touch the surface of the heat block. The temperature of the heat block can reach 95°C. Touching the block can cause burns.



5. Using the plastics shipped with the instrument and with the AutoMate Express™ Install Kit, load the tip and tube rack in the following order:
 - a. **Row S** (fourth row): Load 13 sample tubes.
 - b. **Row T2** (third row): Load 13 tips inserted into tip holders.

- c. **Row T1** (second row): Load 13 tips inserted into tip holders.
- d. **Row E** (first row): Load 13 elution tubes, with the caps open and secured as shown in the photo.



- 6. Insert the loaded tip and tube rack into the instrument with row E in the front.



- 7. Confirm that you have inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.
- 8. In the Main menu, press 3 to display the Tests menu.

```
<MENU> May 20 03:02  
START:Protocols  
1:Man 2:Setup 3:Test  
Key:START,1,2,3
```

9. In the Tests menu, press **1** to display the Axis test screen.

```

Tests
 1:Axis  3:Uer
 2:Temp  4:Error
Key:1-4,ESC
    
```

10. Press **Start** to begin the test. The duration of the test is ~3 minutes.

```

Axis test
Set all Disposables
ALL OK? [START] key
Return? [ESC] key
    
```

11. At the end of the test, note the following:
 - If the screen displays ALL OK, no problem is detected.
 - If an error screen with an error code is displayed, note the error code, then contact Life Technologies Technical Support.

Note: See “Error test” on page 47 for the error screen and “Instrument error codes” on page 58 for the list of error codes.
12. Press **ESC** to return to the Tests menu.

Note: You can leave the cartridge rack and tip and tube rack in the instrument during the next (Temperature) test.

Temperature test

Perform the temperature test after performing the axis text on [page 24](#).

To perform the temperature test:

1. Confirm that the protocol card is inserted and that the instrument powered on as described in “Before you begin” on [page 22](#).
2. From the Tests menu, press **2** to display the Temp test screen.

```

Tests
 1:Axis  3:Uer
 2:Temp  4:Error
Key:1-4,ESC
    
```

3. Use  to change the Set Temp to 60°C.

Note: The default temperature is 25°C.

```

Temp test
Set Temp=60.0degC
ALL OK? [START] key
Return? [ESC] key
    
```

4. Use your own clock or timer; make note of the start time.
5. Press **Start** to run the test:
 - The Now Temp value should reach the Set Temp value within 5 minutes
 - Once the Set Temp value is reached, the Alarm value should change to 00

If one or both of these values are not reached, contact Life Technologies Technical Support.



```
TEMP test
Set Temp=60.0degC
Now Temp=60.3degC
Alarm=00
```

6. Press **ESC** to return to the Tests menu, then press **ESC** again to return to the Main menu.

IMPORTANT! When the Temperature test is complete, the Set Temp resets to 25°C. The temperature of the heater unit cools down at a rate of about 1°C per minute.

Installation test

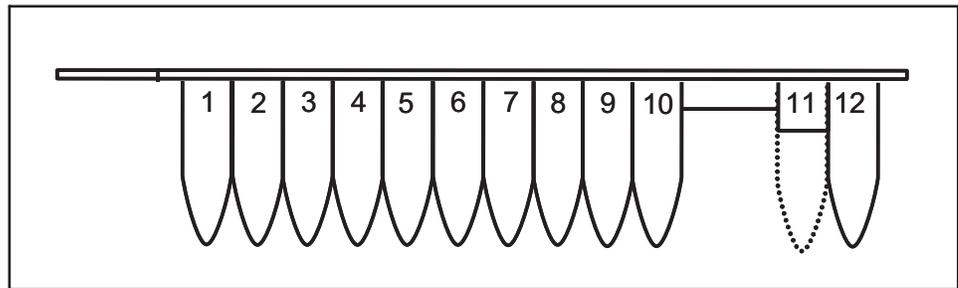
IMPORTANT! Perform the installation test if you use the instrument for HID applications (PrepFiler® Express and PrepFiler® Express BTA kits). This test does *not* apply if you use the instrument for bioprocess applications (PrepSEQ® Express kits).

Perform the installation test after performing the axis test on [page 24](#) and temperature test on [page 27](#).

Use the cartridges, tips, and tubes provided with the AutoMate Express™ Install Kit (Part no. 4441350).

Before you begin

Inspect the reagent cartridges. If precipitate forms in compartments 1 or 2 (lysis buffer and magnetic particle suspension), heat the cartridge in an incubator at 37°C for 30 minutes or until the precipitate is no longer visible. Heat only those cartridges that you plan to use that day.



Perform the installation test

1. Confirm that the protocol card is inserted and that the instrument is powered on as described in “[Before you begin](#)” on [page 22](#).
2. In the Main menu, press **Start**.
Note: Press  after following each on-screen prompt.
3. Open the instrument door (push up the door), then remove the tip and tube rack and the cartridge rack.
4. Mix the reagents and resuspend the magnetic particles in each cartridge:
 - a. Hold the cartridge foil-side up on a vortexer set to maximum speed, then pulse (approximately 3 seconds) 2–3 times.
 - b. Repeat step a with the cartridge foil side down, then repeat again with the cartridge on its side.
 - c. Confirm that the magnetic particles are resuspended; if not, repeat steps a and b.

Note: Vortexing may result in foam in compartment 1 (lysis buffer). The foam disperses within minutes and should not affect the assay performance.

5. Load 13 pre-filled cartridges into the cartridge rack by sliding each reagent cartridge along the groove in the direction of the arrow until the reagent cartridge clicks into place. Make sure that the notches in the cartridge align with the notches in the cartridge rack (see the diagram on [page 25](#)).

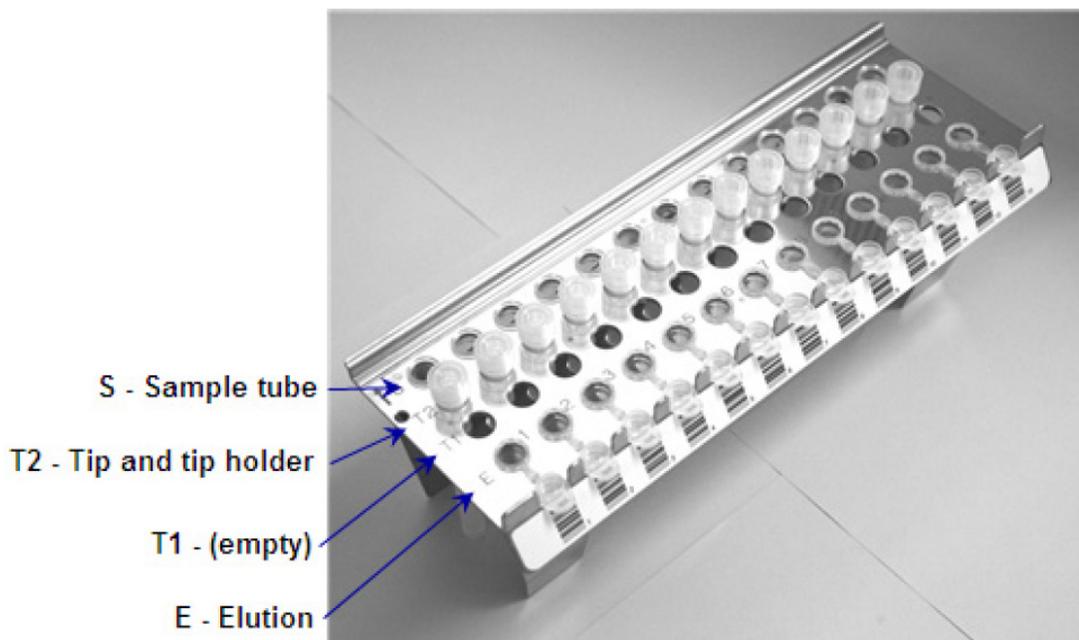
Note: An incorrectly loaded cartridge rack may cause the instrument to stop during a run.

6. Insert the loaded cartridge rack into the instrument.



WARNING! Do not touch the surface of the heat block. The temperature of the heat block can reach 95°C. Touching the block can cause burns.

7. Using the plastics provided in the AutoMate Express™ Install Kit, load the tip and tube rack as described below:
 - a. **Row S** (fourth row): Load 13 sample tubes.
 - b. **Row T2** (third row): Load 13 tips inserted into tip holders.
 - c. **Row T1** (second row): Leave empty.
 - d. **Row E** (first row): Load 13 elution tubes, with the caps open and secured as shown in the photo.



8. Pipet 200 µL of water into each sample tube (row S, positions 1–13).

IMPORTANT! If the sample tubes do not contain liquid, extensive bubble formation may occur, clogging the tips.

9. Insert the loaded tip and tube rack into the instrument with row E in the front.
10. Confirm that you have inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.

11. Press , press **2** to select the PF Express BTA option, then press **Start**.
The screen shows the steps and the approximate run time remaining.

IMPORTANT! Do not open the door during a run. To pause or cancel the run, see [“Pause or cancel a run” on page 41](#).

Note: If you lose power or the power cord is unplugged, the run stops. When the power resumes, the screen displays the Main menu. You cannot resume the run. If the tips are still on the syringe unit when the power resumes, return the tips to the original position as described in [steps 3 through 5 of “Cancel a run” on page 41](#).

12. Observe the entire test run, and contact Life Technologies Technical Support if you observe processing problems such as:
 - Tips not being picked up
 - On-screen error messages
 - Instrument crashes
 - Any other instrument failure
13. At the end of the run (the instrument beeps briefly and the digital display shows “Finished Protocol”):
 - a. Press  to return to the Main menu, then open the instrument door.
 - b. Remove the tip and tube rack and the cartridge rack.
14. Contact Life Technologies Technical Support if you observe:
 - Colored liquid in the eluate tubes (test eluate should be clear; color indicates a transfer of magnetic particles)
 - Dark coloring or observable particles in any cartridge wells (indicates a transfer of magnetic particles)

Note: Some discoloration or particles may be visible in position 2 if the magnetic particles were not completely resuspended in [step 4 on page 29](#). If you observe particles only in position 2, it is not necessary to contact Technical Support.
 - Any liquid in the bottom tray (indicates leakage of reagents during run)
15. Close the instrument door, then power off the instrument.
16. Properly dispose of the used reagent cartridges, tips, and tubes.

3

Operate the AutoMate *Express*[™] Instrument

This chapter covers general procedures for operating the instrument. See the user guide for the kit you are using for specific procedures to prepare and run samples on the AutoMate *Express*[™] Instrument:

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Pause a run	41
Cancel a run	41

Important information about order of operations

To avoid significant problems such as data loss or run cancellation, always perform operations in the following order:

- Before you insert or remove a protocol card, power OFF the instrument
- Before you power ON the instrument:
 - Insert the protocol card
 - Close the instrument door
- If you need to pause the instrument during an extraction run, press **Stop** before you open the instrument door
- When you are *not* performing an extraction run or instrument test, you can open the instrument door with the power OFF or ON
- Do not move instrument components such as the platform, magnets, and syringes while the instrument is powered ON.

Set up the AutoMate Express™ Instrument

Before a run, follow these procedures to set up the instrument:

1. [“Insert or change the protocol card and power on the instrument” on page 34.](#)
2. [“Load and insert the cartridge rack” on page 35.](#)
3. [“Load and insert the tip and tube rack” on page 38.](#)

Insert or change the protocol card and power on the instrument

IMPORTANT! Do not remove or insert the protocol card while the instrument is powered on. Removing the card stops the run, and it may cause instrument data file loss. To remove the card, see [step 3 on page 35](#).

If you accidentally remove the protocol card during a run, power off the instrument immediately to minimize potential for instrument data loss.

For guidelines on handling protocol cards, see [“Protocol card” on page 64](#).

1. Confirm that the power switch is in the OFF position.

Note: If you insert the card while the instrument is on, the instrument does not recognize the card.

2. Open the card slot.



3. To remove an installed card, push the button located below the card slot (see the photo below), then pull the card out of the slot. Place the card in the plastic cover in the box. Store the card protected from light.

IMPORTANT! Do not remove the protocol card while the instrument is on.



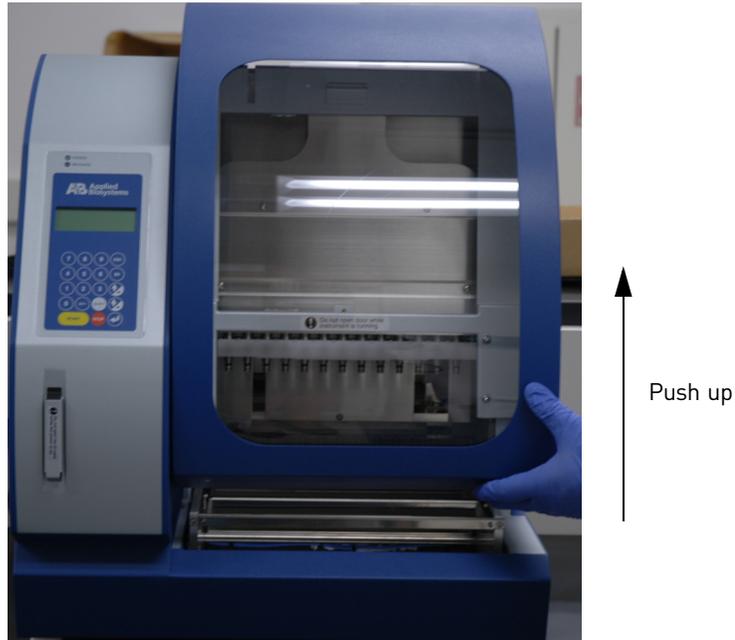
4. Insert the appropriate protocol card in the slot with the arrow pointing toward the instrument and the label facing left.
5. Push the card completely into the card slot, then close the card slot.
6. Power on the instrument.
When the card is fully inserted in the correct orientation, the display briefly shows information including the instrument version, then displays the Main menu.
7. Press **Start**.

Load and insert the cartridge rack

Note: To ensure the best pipetting performance, use the cartridge rack and tip and tube rack shipped with the instrument; these racks are calibrated with the instrument at the factory. Before using other racks on a specific instrument, run the installation test (see [“Perform the installation test” on page 29](#)) to qualify the racks for use on that instrument.

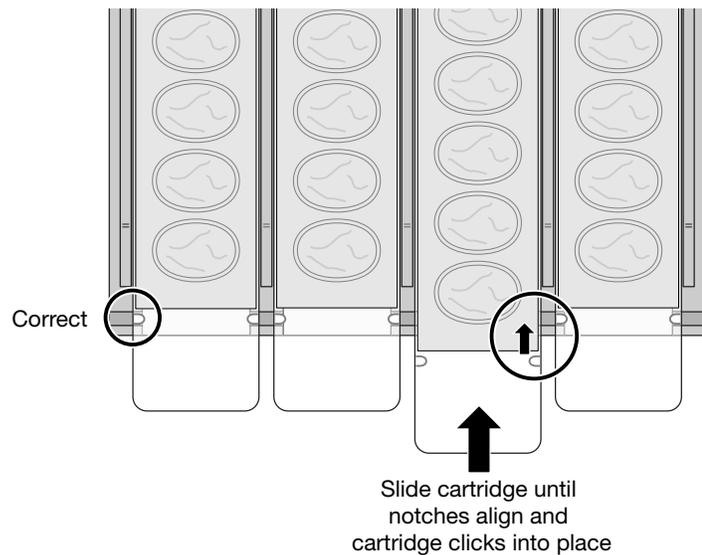
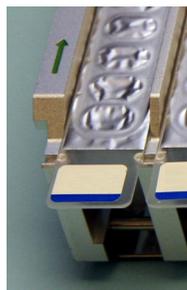
Wear gloves when you handle samples or load the cartridges, tips, and tubes in the rack.

1. Open the instrument door (push up the door), then remove the tip and tube rack and the cartridge rack.



2. Prepare the reagent cartridges as described in the user guide for the kit you are using.
Note: Use only supported Life Technologies reagent cartridges.
3. Load the reagent cartridges into the cartridge rack by sliding each reagent cartridge along the groove in the direction of the arrow until the reagent cartridge clicks into place. Make sure that the notches in the cartridge align with the notches in the cartridge rack.

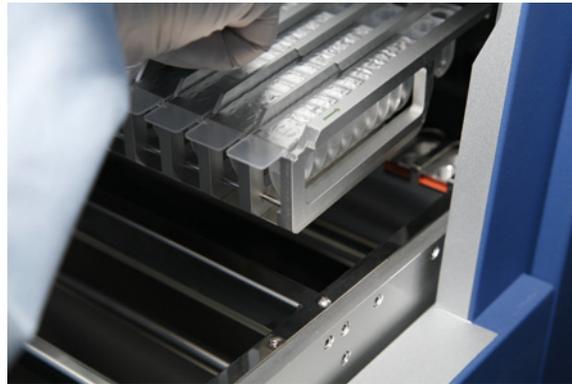
Note: An incorrectly loaded cartridge rack may cause the instrument to stop during a run.



4. Insert the loaded cartridge rack into the instrument.



WARNING! Do not touch the surface of the heat block. The temperature of the heat block can reach 95°C. Touching the block can cause burns.



Load and insert the tip and tube rack

IMPORTANT! Insert the cartridge rack before the tip and tube rack.

1. Load the tips and tubes into the tip and tube rack as described in the user guide for the kit you are using.
Note: If you are processing fewer than 13 samples, make sure to load the tips and tubes in the same positions as the reagent cartridges that are loaded in the cartridge rack.
2. Insert the loaded tip and tube rack into the instrument with row E in the front.



Use the front panel

The front panel (Figure 1) provides tools for operating the instrument and tools for the service engineer to maintain the instrument. The front panel contains:

- A digital display that shows the steps of the protocol that is in use
- Two LEDs: Green indicates the power is On, and blinking red indicates an error code
- The Keypad to enter parameters and operate the instrument:

Key	Description
0-9	To choose menu
ESC	To previous menu
START	To run or resume protocol
STOP	To stop or pause protocol
	Enter (to confirm or enter the next menu)
BS	Backspace key to delete the last digit/character
SHIFT	Shift + Up/Down arrow keys to move the cursor right or left during time/date setup

Figure 1 AutoMate Express™ Instrument – front panel



Digital display

The digital display consists of 4 lines of information and menu choices.

For the Main menu, Tests menu, and Manual menu:

- The first line shows the current menu name
- The second and third line show the executable commands for the current menu
- The fourth line describes the keys to use for executing the commands

For the protocols screen, the display provides current information on the protocol step and allows you to choose options.

Run the AutoMate Express™ Instrument

1. Set up the instrument as described in the user guide for the kit you are using.
2. Confirm that you have loaded and inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.
3. Press , follow the on-screen prompts, then select the script for the kit you are using.
4. Press **Start**.
The screen shows the steps and the approximate run time remaining.

IMPORTANT! Do not open the door during a protocol run. To pause or cancel the run, see [“Pause or cancel a run” on page 41](#).

Note: If you lose power or the power cord is unplugged, the run stops. When the power resumes, the digital display shows the Main menu. You cannot resume the run. If the tips are still on the syringe unit when the power resumes, return the tips to the original positions as described in [steps 3 through 5](#) of [“Cancel a run” on page 41](#).

5. At the end of the run, the instrument beeps briefly. Follow the instructions in the user guide for the kit you are using to:
 - Run additional scripts if necessary
 - Remove and store samples
 - Properly dispose of used reagent cartridges, tips, and tubes.

Note: No cooling period is required between runs.

To perform a new run using a different protocol card, power off the instrument, then change the protocol card.

Pause or cancel a run

Pause a run

1. Press **Stop** to pause the run.

The display shows the following:

```
--Pausing by User--
START:Continue
STOP :Stop Protocol
```

2. To resume the run after a pause, press **Start**.
 The run continues from the last step before the pause.

Cancel a run

1. Press **Stop** to pause the run.

The display shows the following:

```
--Pausing by User--
START:Continue
STOP :Stop Protocol
```

2. Press **Stop** again.

The instrument stops after the current step is completed. The screen returns to the Main menu.

```
<MENU> May 20 03:02
START:Protocols
1:Man 2:Setup 3:Test
Key:START,1,2,3
```

3. Press **1** to go to the Manual screen.

```
Manual
1:ORG          3:Clean
2:Return Tip
Key:1,2,3,ESC
```

4. Move the axes to the original positions and/or return the tip to the origin as follows:

Note: When the run is interrupted, the axes and tip do not automatically return to the original positions.

- **If the tips need to be returned to the holders** – Press 2 (Return Tip) to return the tips to the tip holders and move all axes to the original position.

```
Manual
1:ORG          3:Clean
2:Return Tip
Key:1,2,3,ESC
```

- **If the tips do *not* need to be returned to the holders** –
 - Press 1 (ORG) to go to the ORG screen

```
Manual
1:ORG          3:Clean
2:Return Tip
Key:1,2,3,ESC
```

- Move each individual axis to the origin by pressing **1, 2, 3, 4**, respectively, or press **0** to return all axes to the origin.

```
ORG
1:Y          3:Z
2:P          4:M          0:ALL
Key:1,2,3,4,0,ESC
```

5. Press ESC to return to Main menu.

You are now ready to start a new run.

4

Test and Maintain the AutoMate Express™ Instrument

This chapter covers instructions for performing tests to ensure the proper functioning of the instrument:

■ Maintenance schedule	44
■ Perform instrument tests	44
When to perform.	44
Required materials	45
Access the Tests menu	45
Axis test	46
Temperature test	46
Version test	47
Error test.	47
■ Maintain the instrument	48
Clean and decontaminate the instrument.	48
Maintain the D-rings	50
Replace the D-rings	51
Replace the fuse	53

Maintenance schedule

Schedule	Procedure	See
Daily	Clean the piercing unit	"Clean the piercing unit daily" on page 48
Daily or as needed	<ul style="list-style-type: none"> Clean the platform surface (racks and bottom tray) Clean the tip and tube rack Clean the magnets 	"Clean the instrument daily or as needed" on page 48
Every 2 weeks	Maintain the D-rings	"Maintain the D-rings" on page 50
Monthly	Perform axis and temperature tests	"Perform instrument tests" on page 44
Annually	Replace the D-rings	"Replace the D-rings" on page 51
	Planned maintenance	<p>Contact Life Technologies to schedule. See "Obtaining support" on page 80 for contact information.</p> <p>For the latest services and support information for all locations, go to:</p> <p>www.lifetechnologies.com/support</p>

Perform instrument tests

When to perform

Test	Description	When to perform
Axis	Tests full range of motion in all axes.	<ul style="list-style-type: none"> During verification (see "Verify Operation of the AutoMate Express™ Instrument" on page 21) Monthly
Temp (Temperature)	Quick functional test of heater block.	<ul style="list-style-type: none"> During verification (see "Verify Operation of the AutoMate Express™ Instrument" on page 21) Monthly
Ver (Version)	Displays the firmware version	As needed
Error	Displays the error code for the last error that occurred	As needed

Required materials

- Protocol card
- For the Axis test (items provided with the instrument):
 - AutoMate Express™ Instrument tips and tip holders
 - Empty reagent cartridges

Access the Tests menu

1. Confirm that the protocol card is inserted into the card slot as described in [“Insert or change the protocol card and power on the instrument” on page 34](#).
2. Power on the instrument. The Main menu is displayed.



```
<MENU> May 20 03:02
START:Protocols
1:Man 2:Setup 3:Test
Key:START,1,2,3
```

3. Press 3 to display the Tests screen.



```
Tests
1:Axis 3:Ver
2:TEMP 4:Error
Key:1-4,ESC
```

4. Follow the instructions for the specific test that you want to perform:
 - [“Axis test” on page 46](#)
 - [“Temperature test” on page 46](#)
 - [“Version test” on page 47](#)
 - [“Error test” on page 47](#)

Axis test

1. Press **1** from the Tests menu.
The Axis test screen is displayed.

```
Axis test
Set all Disposables
ALL OK? [START] key
Return? [ESC] key
```

2. Load 13 empty reagent cartridges (supplied with the instrument) into the cartridge rack. Insert the loaded rack into the instrument as described in [“Load and insert the cartridge rack” on page 35](#).
3. Load the instrument tip and tube rack with tips and tubes as described on [“Axis test” on page 24](#). Make sure to load tips with tip holders in rows T1 and T2.
4. Press **Start** to begin the test. The duration of the test is ~3 minutes.
During the Axis test, all well and hole positions are checked by moving tips on each position. At the end of the test, the screen displays ALL OK if no problem is detected. If a problem is detected, the error screen with the appropriate error code is displayed (see [“Error test” on page 47](#) for the error screen and [“Instrument error codes” on page 58](#) for the list of error codes).
5. Press **ESC** to return to the Tests menu.

Temperature test

1. Press **2** from the Tests menu (see [“Access the Tests menu” on page 45](#)).
The Temp test screen is displayed.

```
Temp test
Set Temp=25.0degC
ALL OK? [START] key
Return? [ESC] key
```

Note: The default temperature is 25°C.

2. Use  to change the Set Temp to **60°C**.

```
Temp test
Set Temp=60.0degC
ALL OK? [START] key
Return? [ESC] key
```

3. Use your own clock or timer; make note of the start time.

4. Press **Start** to run the test:

- The Now Temp value should reach the Set Temp value within 5 minutes
- Once the Set Temp value is reached, the Alarm value should change to 00

If one or both of these values are not reached, contact Life Technologies Technical Support.

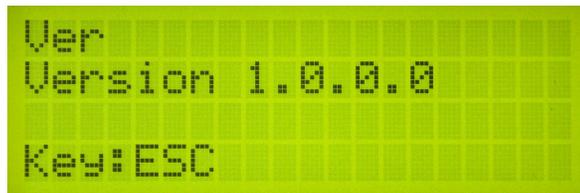


5. Press **ESC** to return to the Tests menu. Press **ESC** again to return to the Main menu.

IMPORTANT! When the Temp test is complete, the Set Temp resets to 25°C. The temperature of the heater unit cools down at a rate of about 1°C per minute.

Version test

1. Press **3** from the Tests menu (see [“Access the Tests menu” on page 45](#)).
The Ver (version) screen shows the firmware version.



2. Press **ESC** to return to the Main menu.

Error test

1. Press **4** from the Tests menu (see [“Access the Tests menu” on page 45](#)).
The Error History screen shows the error code for the last error that occurred. See [“Instrument error codes” on page 58](#) for a list of error codes.



2. Press **ESC** to return to the Main menu.

Maintain the instrument

IMPORTANT! Do not perform repairs or service on the AutoMate Express™ Instrument other than the procedures in this section. For any other repairs and service, contact Life Technologies Technical Support (“[Obtaining support](#)” on page 80).

Clean and decontaminate the instrument



WARNING! Do not clean the instrument with acids, or bases (such as bleach). Acids and bases can react with the guanidine thiocyanate in the lysis buffer and generate toxic gas.

Clean the piercing unit daily

1. From the Main Menu, press **1** to display the Manual screen.
2. Press **3** (Clean), then press **1** to lower the piercing unit.



CAUTION! The tips of the piercing unit are sharp.

```

Manual
1:ORG          3:Clean
2:Return Tip
Key: 1, 2, 3, ESC
  
```

3. Wipe the tips with an alcohol wipe.
4. Press **ESC** to return the piercing unit to the original position.

Clean the instrument daily or as needed

Clean the door panel, racks, bottom tray, and magnets daily or as needed as described below:

1. Clean the clear door panel with a wet laboratory wipe.

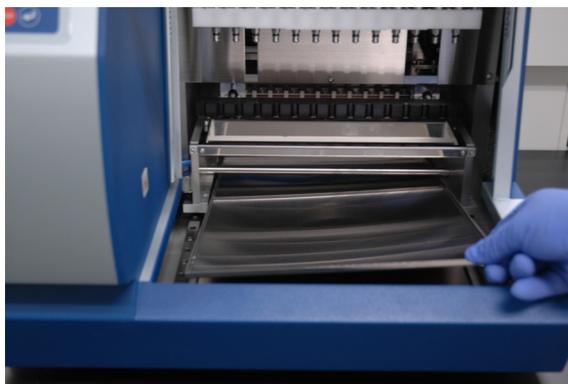
IMPORTANT! Do not clean the clear door panel with ethanol.

2. Clean the cartridge rack, tip and tube rack, and magnets with mild detergent, then rinse with deionized water. Allow the parts to dry before use.

3. Remove and clean the bottom tray:
 - a. Power off the instrument, then push the tray platform toward the back of the instrument.

IMPORTANT! Make sure that the instrument is powered off before moving the tray platform to the rear of the instrument.

- b. Holding the front edge of the tray, remove the tray from the instrument.



- c. Clean the tray with mild detergent, then rinse with deionized water.
 - d. Allow the tray to dry, then place the tray back properly in the bottom of the instrument before use.

Decontaminate the instrument as needed



WARNING! Do not decontaminate the instrument with acids, or bases (such as bleach). Acids and bases can react with the guanidine thiocyanate in the lysis buffer and generate toxic gas.

Decontaminate the instrument before moving, long-term storage, disposition, servicing by an engineer, or as needed:

- Clean the clear door panel with a wet laboratory wipe.

IMPORTANT! Do not clean the clear door panel with ethanol.

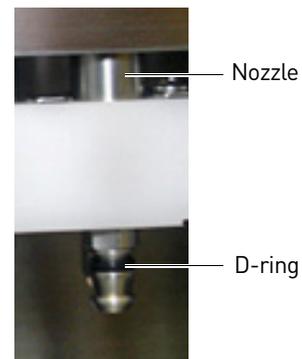
- Clean the metal bottom tray, cartridge rack, tip and tube rack, nozzles, piercing unit, and heater block by wiping with deionized water followed by 70% ethanol.

Maintain the D-rings

Every two weeks, apply silicon grease (supplied with the instrument) to the nozzle D-rings on the syringe unit to maintain proper attachment of the tips to the nozzles and prevent leakage:

Note: You can use any vacuum-type silicon grease.

1. Place some silicon grease on a gloved finger.
2. Apply the silicon grease on the surface of the D-rings attached to the nozzles. Do not put grease into the nozzles. If you accidentally put grease into a nozzle, remove the grease using a laboratory wipe or a dust-free cloth.
3. Wipe off any excess grease on the edges of the nozzles using a laboratory wipe or a dust-free cloth. Excess grease interferes with the operation of the instrument.



Replace the D-rings

Once a year, replace the nozzle D-rings to maintain proper attachment of the tips to the nozzles and prevent leakage.

Note: One replacement set of 13 D-rings is included with the AutoMate Express™ Instrument. To obtain more D-rings, see [“Accessories” on page 65](#).

Replace D-rings using D-ring tools

If you are using the D-ring removal and installation tools (Part no. 4457423), replace the D-rings as follows:

1. Using the D-ring removal tool as shown below, press the D-ring from behind to create a loop in front. Grab the loop with pliers or a pipette tip, then stretch and remove the D-ring.



2. Using the D-ring installation tool, slip a new D-ring into the nozzle groove. Keep the flat inner surface of the D-ring in contact with the installation tool so that the D-ring does not roll. Ensure that the D-ring is placed properly on the nozzle to prevent leakage.



Replace D-rings without using D-ring tools

If the D-ring removal and installation tools are not available, replace the D-rings as follows:

1. Using a small forceps or pliers, remove each D-ring from the nozzle by pulling out the D-ring and then sliding it from the nozzle.
2. Place some silicon grease on a gloved finger.
3. Apply the silicon grease to each nozzle.
4. Slide a new D-ring on to each greased nozzle. Ensure the D-ring is placed properly on the nozzle to prevent leakage.
5. Wipe off any excess grease on the edges of the nozzles using a laboratory wipe or a dust-free cloth. Excess grease interferes with the operation of the instrument.

Replace the fuse

Extra 3.15-A T (time-lag type)/250 V fuses are supplied with the AutoMate Express™ Instrument.

 **WARNING!** The 6.3-A T (time-lag type) fuse included with the AutoMate Express™ Instrument is for internal parts (CPU, motor driver, heater) of the instrument. Do not attempt to change the 6.3-A T fuse for these internal parts. If the 6.3-A T fuse needs replacement, contact Technical Support (“[Obtaining support](#)” on page 80).

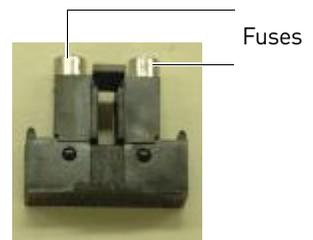
 **WARNING! FIRE HAZARD.** For continued protection against the risk of fire, replace fuses only with fuses of the same type and rating as those currently in the instrument.

To replace the 3.15 A fuse for the main power socket:

1. Power off the instrument and remove the power cord from the rear of the instrument.
2. Open the fuse compartment located on the rear of the instrument using a small flat-blade screwdriver to gently pry open the fuse compartment.



3. Pull the fuse holder out of the compartment and inspect the fuse. If the fuse is burned or there is a break in the fuse element, replace the 3.15 A fuse with the identical type fuse.
4. Place the fuse holder back into the compartment and snap the cover closed.





Troubleshooting

- Troubleshoot instrument operation 55
- Instrument error codes 58

Troubleshoot instrument operation

For symptoms other than those listed in this section, contact Technical Support (“Obtaining support” on page 80).

Observation	Possible Cause	Suggested Solution
No power (the digital display is blank and the fan does not turn on when you power on)	AC power cord is not connected	Check AC power cord connections at both ends. Use the correct cords.
	Fuse has blown	Check the integrity of the fuse and replace it if necessary (“Replace the fuse” on page 53). If the problem persists after connecting the correct power cord and replacing the fuse, contact Technical Support (“Obtaining support” on page 80).
The digital display is blank, but the fan turns on when you power on	Protocol card is not inserted correctly	Power off the instrument and re-insert the protocol card in the proper orientation into the card slot (see “Insert or change the protocol card and power on the instrument” on page 34). Insert it completely into the slot by manually pushing the card.
	Protocol card was inserted when the instrument was powered on	Power off the instrument, then power on the instrument.
Error code displayed	--	See “Instrument error codes” on page 58.
Reagent cartridges, tips, or tubes are not inserted in the correct positions	--	Press Stop to pause the run. Open the door, add the missing items, then press Start to resume the run. Do not open the door without pausing the run.

Observation	Possible Cause	Suggested Solution
Run stops after an initial start (you may also see an error code).	<ul style="list-style-type: none"> Instrument door opened during the run Reagent cartridges, tips, or tubes incorrectly loaded in the rack Racks incorrectly loaded on the instrument 	<p>IMPORTANT! If you open the instrument door while the instrument is running, the run stops, and it cannot be restarted. If you need to open the instrument door during a run, first press Stop to pause the run, then open the door.</p> <ol style="list-style-type: none"> Follow the procedure in “Instrument error codes” on page 58. Before starting a new run, make sure that the reagent cartridges, tips, and tubes are correctly loaded: <ul style="list-style-type: none"> Slide the reagent cartridges into the cartridge rack as described on “Load and insert the cartridge rack” on page 35. Load the cartridge rack before the tip and tube rack for proper positioning. Do not cap the tubes. If the instrument continues to stop during the run, contact Applied Biosystems Technical Support.
Bubbles formed during purification	<p>Sample volume is lower than the recommended volume</p> <p>Note: Some bubbles are produced during routine operation when using the recommended sample volume.</p>	<p>In future runs, use the sample volume recommended in the user guide for the kit you are using.</p> <p>Long-term operation with lower-than-recommended sample volumes can lead to issues with liquid handling performance.</p>
During run: No liquid in tip, or liquid in tip not moving	No sample added to tube, leading to wet filter barrier on the tip and blockage of nozzles	Add samples to tubes, load new reagent cartridges, then perform the run again.
After run: No elution volume	Sample volume is lower than the recommended volume, leading to wet filter barrier on the tip and blockage of nozzles	<p>In future runs, use the recommended sample volume in the user guide for the kit you are using.</p> <p>Long-term operation with lower-than-recommended sample volumes can lead to issues with liquid handling performance.</p>
Buffer in the bottom tray	Motor movements are not smooth	Schedule preventive maintenance annually to ensure proper motor movements.
	Reagent cartridges, tips, or tubes incorrectly loaded in the rack	<p>If you are processing fewer than 13 samples, make sure to load the tips and tubes in the same positions as the reagent cartridges that are loaded in the cartridge rack.</p> <p>See below for leakage from tips.</p>
Leakage from tips or uneven liquid handling between nozzles	D-Rings are not greased regularly or they need replacement	You can continue the run, but maintain the D-rings as scheduled (“Maintain the D-rings” on page 50) or replace the D-rings (“Maintain the D-rings” on page 50) to prevent leakage.

Observation	Possible Cause	Suggested Solution
Blockage of tips	<p>In HID applications: Too much starting material causing clumps or aggregates</p> <p>In bioprocess applications: Loose cell pellet</p>	<p>For HID applications:</p> <ul style="list-style-type: none"> • Contact Technical Support (“Obtaining support” on page 80). • In future runs, use the sample volume recommended in the user guide for the kit you are using. <p>For bioprocess applications:</p> <ul style="list-style-type: none"> • Contact Technical Support (“Obtaining support” on page 80). • Before loading samples into the tip and tube rack, centrifuge the samples for 3 minutes at 1000 x g. After loading the centrifuged samples into the instrument, begin the run as soon as possible.

Instrument error codes

If an extraction run is interrupted by an error, you cannot resume the interrupted run. Follow the procedure below to resolve the error before you start a new run.

If you observe an error code:

1. Make a note of the error code, including the line number. Common error codes are listed in [Table 1](#).
2. Press **ESC** to return to the Main menu.
3. If there are tips attached to the nozzles, press 1 to select the Manual screen, then press 2 to return the tips to the original position (see [step 4 on page 42](#) for details).
4. Power OFF the instrument, remove the protocol card, wait 5 minutes, insert the protocol card, then power on the instrument.
5. Run the axis test (see [“Axis test” on page 46](#)).
6. If the axis test:
 - Is successful, start a new extraction run. Use new samples and plastics where required.
 - Is *not* successful, contact Technical Support ([“Obtaining support” on page 80](#)).

Table 1 Error codes

Code	Problem	Code	Problem
10	Failed return to origins, protocol cannot run	20	Z axis time out, protocol in run
11	Limit error, protocol can not run	21	P axis time out, protocol in run
12	Failed to return to Z Axis, protocol in run	22	M axis time out, protocol in run
13	Failed to return to P axis, protocol in run	23	Y axis time out, protocol in run
14	Failed to return to M axis, protocol in run	24	Open door in motion
15	Failed to return to Y axis, protocol in run	25	Abnormal input from bottom sensor in motion
16	Z axis limit error, protocol in run	26	Failed to initialize heating block
17	/	27	Failed to initialize motion control board
18	/	110	System error; (Assigned greater than 10)
19	Y axis end limit, protocol in run		



About the AutoMate *Express*[™] Instrument

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AutoMate *Express*[™] Instrument features

The AutoMate *Express*[™] Instrument:

- Performs simultaneous purification from up to 13 samples
- Minimizes the potential for cross contamination between samples
- Uses pre-programmed protocol cards that contain the extraction protocol, allowing hands-free extraction
- Provides consistent, reliable results due to the simultaneous rapid and accurate dispensing of reagents by 13 nozzles in the syringe unit
- Minimizes the potential carry-over of magnetic particles into the purified nucleic acid
- Includes built-in safety features

AutoMate Express™ Instrument description

The AutoMate Express™ Instrument (Figure 2) is a benchtop, automated nucleic acid purification instrument with an integrated magnetic and syringe unit capable of purifying nucleic acid from up to 13 samples. Each AutoMate Express™ Instrument consists of the magnetic and syringe unit, and a platform. A pre-programmed protocol card controls the purification parameters such as buffer volumes, mixing steps, and incubation time. The AutoMate Express™ Instrument is designed to run for 8 to 10 hours continuously without any cooling period required between runs.

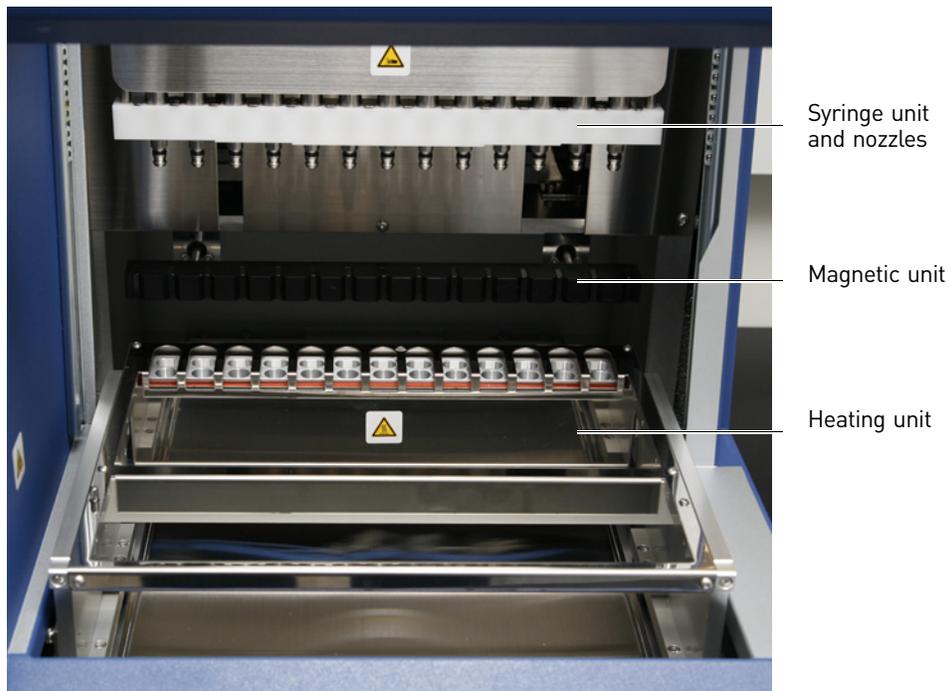
The AutoMate Express™ Instrument uses:

- Patented Magtration® (magnetic filtration) technology, which traps magnetic particles against the sidewall of the pipetting tip. This technology improves the washing of particles and nucleic acid recovery compared to other magnetic-based purification systems.
- A simple bind-wash-elute procedure to eliminate filtration and centrifugation steps from the nucleic acid isolation process. The purified nucleic acid is suitable for use in various downstream applications including quantitative PCR, STR (short-tandem repeat) analysis, SNP typing, sequence analysis, restriction enzyme digestion, and other applications.

Figure 2 AutoMate Express™ Instrument – front view



Instrument interior Figure 3 Interior of the instrument



The interior parts are:

- **Syringe unit** – Contains 13 nozzles that simultaneously move in the Z-axis direction to aspirate and dispense the nucleic acid purification reagents.
- **Magnetic Unit** – Contains 13 magnets (neodymium iron boron type) that align with the instrument tips to simultaneously separate the magnetic particles from up to 13 samples during nucleic acid purification.
- **Piercing unit** (not shown) – Contains 13 piercing rods that move in Z-axis to pierce the foil on the reagent cartridges before the purification protocol begins.
- **Heating Unit** – Heats samples to up to 95°C.



WARNING! Do not touch the surface of the heat block. The temperature of the heat block may be very high (up to 95°C) and can cause burns.

AutoMate Express™ Instrument requirements and specifications

Requirement	Specifications
Environmental conditions (operation, transport, and storage)	
Required input power	AC 100-240 V ±10%, 240 VA, 50/60 Hz Grounding is necessary.
Installation site	Indoor use only
Altitude	Up to 2000 meters
Operating conditions	<ul style="list-style-type: none"> • 5 to 40°C • 80% maximum relative humidity for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C
Transient category	Installation categories II
Main supply voltage fluctuations	Up to ± 10 percent of nominal voltage
Pollution degree	2
Transport conditions	<ul style="list-style-type: none"> • -20 to 50°C • Minimum 15% relative humidity, maximum 75% (non-condensing) • Environmental class 2K2 & 2M2 (IEC60721-3-2)
Storage conditions	<ul style="list-style-type: none"> • 5 to 40°C • Minimum 15% relative humidity, maximum 75% (non-condensing) • Environmental class 1K2 & 1M2 (IEC60721-3-1)
Specifications	
Instrument type	Benchtop dispenser instrument with 13 nozzles
Sample processing	1-13 samples/run
Processing time	Variable (see kit user guide)
Dispensing volume	5 to 1000 µL
Dispensing accuracy	DN100N tips: <ul style="list-style-type: none"> • 25 to 50 µL: Less than 5% (CV%) • 50 to 1000 µL: Less than 2% (CV%)
Heat block temperature control†	30 to 80°C (at ambient ≈ 25°C)
Instrument dimensions	50.8 cm (20 inches) (w) × 55.9 cm (22 inches) (d) × 57.2 cm (22.5 inches) (h)
Weight	55 kg (121 pounds)
Built-in features	Digital display, alarm, light LED

Requirement	Specifications
Protocol card	Flash, 512 KB memory card pre-programmed with the purification protocol that directs the volume of reagents used, mixing steps, and incubation time. Store in the plastic cover, in its box, protected from light. Handling: <ul style="list-style-type: none"> • Do not drop or bend the card • Do not wipe or clean the card using volatile chemicals such as alcohol or equivalent • Do not expose the card to water or any solution
Bottom tray	Stainless steel 42.672 cm (16.8 inches) (l) x 27.432 cm (10.8 inches) (w) x 0.635 cm (0.25 inches) (d).
Cartridge rack	Stainless steel, aluminum alloy 27.432 cm (10.8 inches) (l) x 13.9 cm (5.5 inches) (w) x 5.9 cm (2.3 inches) (d). Note: The cartridge rack is designed to hold Life Technologies reagent cartridges only. Do not load reagent cartridges from other manufacturers on the AutoMate Express™ Instrument cartridge rack.
Reagent cartridges	See the user guide for the kit you are using
Tip and tube rack	Stainless steel 28.702 cm (11.3 inches) (l) x 10.16 cm (4 inches) (w) x 7.62 cm (3 inches) (d) <ul style="list-style-type: none"> • Row 1 – E – hinged elution tubes • Rows 2 and 3 – T1 and T2 – tips • Row 4 S – sample tubes
Tips and holders	<ul style="list-style-type: none"> • Tip – Polypropylene with filter barriers • Tip holder – Polypropylene, 5 to 1000 µL, 9.906 cm (3.9 inches) (l) x 1.092 cm (0.43 inches) (d)
Barcode reader	Reads most standard barcodes including UPC-A, EAN-13, Code 32, Code 39, and Code 128.
Built-in features	Digital display, alarm, light LED

† The listed temperature is for the heating block and may not reflect the actual temperature of the sample/solution in a tube.

Barcode reader specifications

Barcode reader specifications	
Maximum scan rate	325 scans/sec
Maximum resolution	0.076 mm
Reading indicators	Beep and a green spot on the code
Sensor	CCD solid state
Illuminator	LED array
Wavelength	630–670 nm
Reading angle	Skew: ± 65°
Operating temperature	0 to 55°C
Weight	≈169 g

Accessories

The following AutoMate Express™ Instrument accessories are available separately from Life Technologies.

For more information, go to www.lifetechnologies.com or contact Technical Support (“Obtaining support” on page 80).

Product	Part Number
AutoMate Express™ Tip and Tube Rack	4456842
AutoMate Express™ Cartridge Rack	4452767
D-ring Exchange Tools	4457423
D-rings, (set of 13)	4448950
AutoMate Express™ Install Kit	4441350
HID applications: PrepFiler® Express & PrepFiler® Express BTA Protocol Card	4445165
Bioprocess applications: PrepSEQ® Express Protocol Card	4467654

Instrument Warranty Information

Limited Product Warranty

Limited Warranty

Life Technologies (LT) warrants that all standard components of its AutoMate Express™ Instrument will be free of defects in materials and workmanship for a period of one (1) year from the date the warranty period begins. LT will repair or replace, at its discretion, all defective components during this warranty period. Warranty repairs, at LT's option, may be performed at an LT repair center or on-site at Customer's location. If LT opts to perform warranty services at a repair center, customer must contact LT for instructions on handling and shipping the AutoMate Express™ Instrument to the designated LT repair center. Cost of shipping instrument from customer's site to LT's repair center and back to customer will be borne by LT.

After this warranty period, repairs and replacement components may be purchased from LT at its published rates. LT also provides service agreements for post-warranty coverage. LT reserves the right to use new, repaired, or refurbished instruments or components for warranty and post-warranty service agreement replacements. Repair or replacement of products or components that are under warranty does not extend the original warranty period.

LT warrants that all optional accessories supplied with its AutoMate Express™ Instrument, such as peripherals and printers, will be free of defects in materials and workmanship for a period of ninety (90) days from the date the warranty begins. LT will repair or replace, at its discretion, defective accessories during this warranty period. After this warranty period, LT will pass on to the buyer, to the extent that it is permitted to do so, the warranty of the original manufacturer for such accessories.

With the exception of consumable and maintenance items, replaceable products or components used on or in the instrument are themselves warranted to be free of defects in materials and workmanship for a period of ninety (90) days.

LT warrants that chemicals and other consumable products will be free of defects in materials and workmanship when received by the buyer, but not thereafter, unless otherwise specified in documentation accompanying the product.

LT warrants that for a period of ninety (90) days from the date the warranty period begins, the tapes, diskettes, or other media bearing the operating software of the product, if any, will be free of defects in materials and workmanship under normal use. If there is a defect in the media covered by the above warranty and the media is returned to LT within the ninety (90) day warranty period, LT will replace the defective media.

LT does not warrant that the operation of the instrument or its operating software will be uninterrupted or error free.

Warranty Period Effective Date

Any applicable warranty period under these sections begins on the earlier of the date of installation or ninety (90) days from the date of shipment for hardware and software installed by Life Technologies (LT) personnel. For all hardware and software installed by the buyer or anyone other than LT, and for all other products, the applicable warranty period begins the date the product is delivered to the buyer.

Warranty Claims

Warranty claims must be made within the applicable warranty period, or, for chemicals or other consumable products, within thirty (30) days after receipt by the buyer.

Warranty Exceptions

The above warranties do not apply to defects resulting from misuse, neglect, or accident, including without limitation: operation with incompatible solvents or samples in the system; operation outside of the environmental or use specifications or not in conformance with the instructions for the instrument system, software, or accessories; improper or inadequate maintenance by the user; installation of software or interfacing, or use in combination with software or products, not supplied or authorized by Life Technologies (LT); modification or repair of the product not authorized by LT, relocation or movement of the instrument by Customer or any third party not acting on behalf of LT; or intrusive activity, including without limitation computer viruses, hackers or other unauthorized interactions with instrument or software that detrimentally affects normal operations. Without limiting the above mentioned and for avoidance of doubt, computer hardware, monitors, accessories, software or other products not purchased from or supplied by LT (Non-LT Product”) are not covered under the foregoing warranty even if such Non-LT Product is integral to functional use of an LT product.

Warranty Limitations

THE FOREGOING PROVISIONS SET FORTH LIFE TECHNOLOGIES' SOLE AND EXCLUSIVE REPRESENTATIONS, WARRANTIES, AND OBLIGATIONS WITH RESPECT TO ITS PRODUCTS, AND LIFE TECHNOLOGIES MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER ARISING FROM A STATUTE OR OTHERWISE IN LAW OR FROM A COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED.

THE REMEDIES PROVIDED HEREIN ARE THE BUYER'S SOLE AND EXCLUSIVE REMEDIES. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, IN NO EVENT SHALL LIFE TECHNOLOGIES BE LIABLE, WHETHER IN CONTRACT, TORT, WARRANTY, OR UNDER ANY STATUTE (INCLUDING WITHOUT LIMITATION, ANY TRADE PRACTICE, UNFAIR COMPETITION, OR OTHER STATUTE OF SIMILAR IMPORT) OR ON ANY OTHER BASIS, FOR DIRECT, INDIRECT, PUNITIVE, INCIDENTAL, MULTIPLE, CONSEQUENTIAL, OR SPECIAL DAMAGES SUSTAINED BY THE BUYER OR ANY OTHER PERSON OR ENTITY, WHETHER OR NOT FORESEEABLE AND WHETHER OR NOT LIFE TECHNOLOGIES IS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING FROM OR RELATED TO LOSS OF USE, LOSS OF DATA, FAILURE OR INTERRUPTION IN THE OPERATION OF ANY EQUIPMENT OR SOFTWARE, DELAY IN REPAIR OR REPLACEMENT, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF GOOD WILL, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS OR PERSONAL INJURY OR PROPERTY DAMAGE.

NO AGENT, EMPLOYEE, OR REPRESENTATIVE OF LIFE TECHNOLOGIES HAS ANY AUTHORITY TO MODIFY THE TERMS OF THIS LIMITED WARRANTY STATEMENT OR TO BIND LIFE TECHNOLOGIES TO ANY AFFIRMATION, REPRESENTATION, OR WARRANTY CONCERNING THE PRODUCT THAT IS NOT CONTAINED IN THIS LIMITED WARRANTY STATEMENT, AND ANY SUCH MODIFICATION, AFFIRMATION, REPRESENTATION, OR WARRANTY MADE BY ANY AGENT, EMPLOYEE, OR REPRESENTATIVE OF LIFE TECHNOLOGIES WILL NOT BE BINDING ON LIFE TECHNOLOGIES, UNLESS IN A WRITING SIGNED BY AN EXECUTIVE OFFICER OF LIFE TECHNOLOGIES.

THIS WARRANTY IS LIMITED TO THE BUYER OF THE PRODUCT FROM LIFE TECHNOLOGIES AND IS NOT TRANSFERABLE.

Some countries or jurisdictions limit the scope of or preclude limitations or exclusion of warranties, of liability, such as liability for gross negligence or wilful misconduct, or of remedies or damages, as or to the extent set forth above. In such countries and jurisdictions, the limitation or exclusion of warranties, liability, remedies or damages set forth above shall apply to the fullest extent permitted by law, and shall not apply to the extent prohibited by law.

Damages, Claims, and Returns

Damages

If shipping damage to the product is discovered, contact the shipping carrier and request inspection by a local agent. Secure a written report of the findings to support any claim. Do not return damaged goods to Life Technologies (LT) without first securing an inspection report and contacting LT Technical Support for a Return Authorization (RA) number.

Claims

After a damage inspection report is received by LT, LT will process the claim unless other instructions are provided.

Returns

Do not return any material without prior notification and authorization.

If for any reason it becomes necessary to return material to LT, contact LT Technical Support or your nearest LT subsidiary or distributor for a return authorization (RA) number and forwarding address. Place the RA number in a prominent location on the outside of the shipping container, and return the material to the address designated by the LT representative.



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, etc). To obtain SDSs, see the “Documentation and Support” section in this document.

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Instrumentation safety

Symbols on instruments

Safety labels on instruments

The following CAUTION, WARNING, and DANGER statements may be displayed on Life Technologies instruments in combination with the safety symbols described in the preceding section.

Hazard symbol	English	Français
	CAUTION! Risk of danger. Consult the user guide for further safety information associated with this symbol.	ATTENTION! Risque de danger. Pour plus d'information au sujet des risques associés, consulter le manuel d'utilisation.
	CAUTION! Hot surface.	ATTENTION! Surface brûlante.
	DANGER! High voltage.	DANGER! Haute tension.
	CAUTION! Risk of electric shock.	ATTENTION! Risque de choc électrique.
	CAUTION! Risk of injury due to moving parts.	ATTENTION! Pièce mobile. Risque de blessure.
	CAUTION! Sharp points.	ATTENTION! Angle tranchant.
	Biohazard.	DANGER! Biologique.

Electrical symbols on instruments

The following table describes the electrical symbols that may be displayed on Life Technologies instruments.

Symbol	Description
	Indicates the On position of the main power switch.
	Indicates the Off position of the main power switch.
	Indicates a standby switch by which the instrument is switched on to the Standby condition. Hazardous voltage may be present if this switch is on standby.
	Indicates the On/Off position of a push-push main power switch.



Symbol	Description
	Indicates a terminal that may be connected to the signal ground reference of another instrument. This is not a protected ground terminal.
	Indicates a protective grounding terminal that must be connected to earth ground before any other electrical connections are made to the instrument.
	Indicates a terminal that can receive or supply alternating current or voltage.

Environmental symbols on instruments

The following symbol applies to all Life Technologies electrical and electronic products placed on the European market after August 13, 2005.

Symbol	Description
	Do not dispose of this product as unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE). European Union customers: Call your local Life Technologies Customer Service office for equipment pick-up and recycling. See www.lifetechnologies.com for a list of customer service offices in the European Union.

General instrument safety

 **WARNING! PHYSICAL INJURY HAZARD.** Using the instrument in a manner not specified by Life Technologies may result in personal injury or damage to the instrument.

Moving and lifting the instrument

 **CAUTION! PHYSICAL INJURY HAZARD.** Do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques. Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more persons.

Operating the instrument

Ensure that anyone who operates the instrument has:

- Received instructions in both general safety practices for laboratories and specific safety practices for the instrument.
- Read and understood all applicable Safety Data Sheets (SDSs). See “[Obtaining SDSs](#)” on page 80.



Cleaning or decontaminating the instrument



CAUTION! Using a cleaning or decontamination method other than that specified by the manufacturer may result in damage to the instrument.

Physical hazard safety

Moving parts



WARNING! PHYSICAL INJURY HAZARD. Moving parts can crush and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing the instrument.

Solvents and pressurized fluids



WARNING! PHYSICAL INJURY HAZARD. Always wear eye protection when working with solvents or any pressurized fluids.

Electrical safety



WARNING! ELECTRICAL SHOCK HAZARD. Severe electrical shock can result from operating the AutoMate Express™ Instrument without its instrument panels in place. Do not remove instrument panels. High-voltage contacts are exposed when instrument panels are removed from the instrument.

Fuses



WARNING! FIRE HAZARD. Improper fuses or high-voltage supply can damage the instrument wiring system and cause a fire. Before turning on the instrument, verify that the fuses are properly installed and that the instrument voltage matches the power supply in your laboratory.



WARNING! FIRE HAZARD. For continued protection against the risk of fire, replace fuses only with fuses of the type and rating specified for the instrument.

Power



WARNING! ELECTRICAL HAZARD. Grounding circuit continuity is required for the safe operation of equipment. Never operate equipment with the grounding conductor disconnected.



WARNING! ELECTRICAL HAZARD. Use properly configured and approved line cords for the voltage supply in your facility.



WARNING! ELECTRICAL HAZARD. Plug the system into a properly grounded receptacle with adequate current capacity.



Overvoltage rating

The AutoMate *Express*[™] Instrument has an installation (overvoltage) category of II, and is classified as portable equipment.

Workstation safety

Correct ergonomic configuration of your workstation can reduce or prevent effects such as fatigue, pain, and strain. Minimize or eliminate these effects by configuring your workstation to promote neutral or relaxed working positions.



CAUTION! MUSCULOSKELETAL AND REPETITIVE MOTION HAZARD.

These hazards are caused by potential risk factors that include but are not limited to repetitive motion, awkward posture, forceful exertion, holding static unhealthy positions, contact pressure, and other workstation environmental factors.

To minimize musculoskeletal and repetitive motion risks:

- Use equipment that comfortably supports you in neutral working positions and allows adequate accessibility to the keyboard, monitor, and mouse.
- Position the keyboard, mouse, and monitor to promote relaxed body and head postures.



Safety and electromagnetic compatibility (EMC) standards

This section provides information on:

- U.S. and Canadian safety standards
- Canadian EMC standard
- European safety and EMC standards
- Australian EMC Standards

U.S. and Canadian safety standards

The AutoMate *Express*[™] Instrument has been tested to and complies with standard:

UL 61010-1/CSA C22.2 No. 61010-1, "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements."

UL 61010-2-010, "Particular Requirements for Laboratory Equipment for the Heating of Materials."

The bar code scanner provided with the AutoMate *Express*[™] Instrument is a class 1 laser device.

Canadian EMC standard

This instrument has been tested to and complies with ICES-001, Issue 3: "Industrial, Scientific, and Medical Radio Frequency Generators."

European safety and EMC standards

Safety

This instrument meets European requirements for safety (Low Voltage Directive 2006/95/EC). This instrument has been tested to and complies with standards EN 61010-1:2001, "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements."

EN 61010-2-010, "Particular Requirements for Laboratory Equipment for the Heating of Materials."

EN 61010-2-081, "Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes."

EMC

This instrument meets European requirements for emission and immunity (EMC Directive 2004/108/EC). This instrument has been tested to and complies with standard EN 61326 (Group 1, Class A), "Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements."





Australian EMC Standards

This instrument has been tested to and complies with standard AS/NZS 2064, "Limits and Methods Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radio-frequency Equipment."

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, and 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.



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.



Specific chemical handling

CAS	Chemical	Phrase
593-84-0	Guanidine Isothiocyanate	Contact with acids or bleach liberates toxic gases. DO NOT ADD acids or bleach to any liquid wastes containing this product.
50-01-1	Guanidine HCl	Contact with acids or bleach liberates toxic gases. DO NOT ADD acids or bleach to any liquid wastes containing this product.

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. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective equipment, which includes but is not limited to: protective eyewear, face shield, clothing/lab coat, and gloves. All work should be conducted in properly equipped facilities using the appropriate safety equipment (for example, physical containment devices). Individuals should be trained according to applicable regulatory and company/institution requirements before working with potentially infectious materials. Read and follow the applicable guidelines and/or regulatory requirements in the following:

In the U.S.:

- U.S. Department of Health and Human Services guidelines published in Biosafety in Microbiological and Biomedical Laboratories found at: www.cdc.gov/biosafety
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030), found at: www.access.gpo.gov/nara/cfr/waisidx_01/29cfr1910a_01.html
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.
- Additional information about biohazard guidelines is available at: www.cdc.gov

In the EU:

Check local guidelines and legislation on biohazard and biosafety precaution and refer to the best practices published in the World Health Organization (WHO) Laboratory Biosafety Manual, third edition, found at: www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/



Safety alerts

Specific alerts for instrumentation



WARNING! Do not touch the surface of the heat block. The temperature of the heat block may be very high (up to 95°C) and can cause burns.





Documentation and Support

Related documentation

Portable document format (PDF) versions of this guide and the following related guide are available at www.lifetechnologies.com/support:

Document	Cat. no.	Description
<i>AutoMate Express™ Instrument Barcode Reader User Bulletin</i>	4453801	Provides instructions for installing and using the optional barcode reader with the AutoMate Express™ Instrument.

Note: To open the user documentation available at www.lifetechnologies.com/support, use the Adobe® Acrobat® Reader® software available from www.adobe.com

Refer to the user guide for the kits you are using for additional information about using the instrument.

Application	Document	Cat. no.	Description
HID applications	<i>PrepFiler® Express and PrepFiler® Express BTA Forensic DNA Extraction Kits User Guide</i>	4442699	Step-by-step instructions for using the PrepFiler® Express and PrepFiler® Express BTA Forensic DNA Extraction Kits for: <ul style="list-style-type: none"> • Manual preparation of lysate from forensic samples • Automated extraction and isolation of genomic DNA on the AutoMate Express™ Instrument
Bioprocess applications	<i>PrepSEQ® Express Nucleic Acid Extraction Kit User Guide</i>	4466840	Step-by-step instructions for using the PrepSEQ® Express Nucleic Acid Extraction Kit for automated lysis, extraction, and isolation of nucleic acid from bioprocess samples on the AutoMate Express™ Instrument.

Note: For additional documentation, see “Obtaining support” on page 80.

For additional information about the AutoMate Express™ Instrument and related applications, see:

- HID applications: www.lifetechnologies.com/support
- Bioprocess applications: www.lifetechnologies.com/automate

Obtaining SDSs

Safety Data Sheets (SDSs) are available from www.lifetechnologies.com/support.

Note: For the SDSs of chemicals not distributed by Life Technologies, contact the chemical manufacturer.

Obtaining Certificates of Analysis

The Certificate of Analysis provides detailed quality control and product qualification information for each product. Certificates of Analysis are available on our website. Go to www.lifetechnologies.com/support and search for the Certificate of Analysis by product lot number, which is printed on the box.

Obtaining support

HID support

- In North America – send an email to HIDTechSupport@lifetech.com, or call 888-821-4443 option 1.
- Outside North America – contact your local support office.

For the latest services and support information for all locations, go to:

www.lifetechnologies.com/support

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support (techsupport@lifetech.com)
- Search for user documents, SDSs, vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
- Obtain information about customer training
- Download software updates and patches

Bioprocess support For the latest services and support information for all locations, go to:

www.lifetechnologies.com/support

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support (**techsupport@lifetech.com**)
- Search for user documents, SDSs, vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
- Obtain information about customer training
- Download software updates and patches

Limited Product Warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at **www.lifetechnologies.com/termsandconditions**. If you have any questions, please contact Life Technologies at **www.lifetechnologies.com/support**.

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