AutoMate Express™ Instrument
USER GUIDE

for use with:
PrepFiler Express™ Forensic DNA Extraction Kit
PrepFiler Express BTA™ Forensic DNA Extraction Kit
PrepSEQ™ Express Nucleic Acid Extraction Kit
GlycanAssure™ AutoXpress Kit

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<table>
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</tr>
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Product description

The AutoMate Express™ Instrument is a benchtop, automated nucleic acid and N-glycan purification/labeling instrument with an integrated magnetic and syringe unit capable of processing up to 13 samples. Each 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 instrument is designed to run for 8 to 10 hours continuously without any cooling time required between runs. The 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. The purified nucleic acid is suitable for use in downstream applications including quantitative PCR, STR (short-tandem repeat) analysis, SNP typing, sequence analysis, restriction enzyme digestion, and other applications. The labeled glycans are suitable for downstream applications including liquid chromatography (LC) and capillary electrophoresis (CE).

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.

Automated DNA extraction overview

During automated extraction, the AutoMate Express™ Instrument:
• Mixes the sample lysate with magnetic particles and other reagents for subsequent DNA binding to magnetic particles in tips.
• Separates the DNA-bound magnetic particles from the lysate using magnetic separation.
• Thoroughly washes the magnetic particles with wash buffers to remove PCR inhibitors.
• Dries the magnetic particles to remove ethanol.
• Elutes concentrated purified DNA in elution buffer.

Automated N-glycan purification and labeling

During automated protein deglycosylation and glycan labeling, the AutoMate Express™ Instrument:
• Denatures glycoproteins to promote deglycosylation
• Releases glycans from glycoproteins in an enzymatic reaction
• Purifies glycans and removes excess dye with magnetic beads
• Elutes labeled glycans in elution buffer
• At the end of run, collects all hazardous reagents in the cartridge into the sample tube for easy disposal
Instrument components

Instrument exterior and interior

Figure 1 Instrument exterior
① Digital display
② Protocol card slot
③ Door
Figure 2 Instrument interior

1 Syringe unit and nozzles
2 Magnetic unit
3 Heating unit

- **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 separate simultaneously 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 starts.

- **Heating Unit**—Heats samples to up to 80°C.

**WARNING!** Do not touch the surface of the heat block. The temperature of the heat block can reach 80°C. Touching the block can cause burns.
Figure 3  Front panel
1. Power light—When lit, the power is on.
3. Digital display—Displays protocol information, options, and error codes.
4. Keypad—Used to enter parameters and to operate the instrument.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–9</td>
<td>To select menu</td>
</tr>
<tr>
<td>ESC</td>
<td>To previous menu</td>
</tr>
<tr>
<td>START</td>
<td>To run or resume protocol</td>
</tr>
<tr>
<td>STOP</td>
<td>To stop or pause protocol</td>
</tr>
<tr>
<td>Enter</td>
<td>Enter (to confirm or enter the next menu)</td>
</tr>
<tr>
<td>BS</td>
<td>Backspace key to delete the last digit/character</td>
</tr>
<tr>
<td>SHIFT</td>
<td>Shift + Up/Down arrow keys to move the cursor right or left during time/date setup</td>
</tr>
</tbody>
</table>

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 lines 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 select options.
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.

Instrument procedures for sample preparation kits

This document contains general procedures for operating the instrument.

For detailed instructions on operating the instrument with a specific sample preparation or nucleic acid extraction kit, see the user guide for the sample preparation or nucleic acid extraction kit.
Protocol card handling

- Store the card in the plastic cover, in its box, protected from light.
- 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.

Remove a protocol card

For guidelines on handling protocol cards, see “Protocol card handling” on page 12.

1. Ensure that the power switch is in the off position.

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

2. Push the button that is located below the card slot (see the following figure), then pull the card out of the slot.

3. Place the card in the plastic cover in the box. Store the card protected from light.

Insert a protocol card

For guidelines on handling protocol cards, see “Protocol card handling“ on page 12.

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

**Note:** If you insert the card while the instrument is on, the instrument will not recognize the card.
2. Open the card slot.

![Image of a hand inserting a card into a slot]

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

![Image of a protocol card being inserted into a slot]

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. If the card is removed during a run, immediately power off the instrument to minimize the potential for data loss.
Load and insert the cartridge rack

**Note:** To ensure the best pipetting performance, use the cartridge rack and tip and tube rack that are shipped with the instrument. These racks are calibrated with the instrument at the factory.

**Note:** Before using other racks on a specific instrument, run the installation test (see “Perform an installation test (HID applications only)” on page 51) to qualify the racks for use on that instrument.

Wear gloves when you handle samples, cartridges, tips, tubes and racks.

1. Press **Start** to display step-by-step instructions for loading on the touchscreen.

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

3. Prepare the reagent cartridges as described in the user guide for the kit you are using.

   **Note:** Use only supported Thermo Fisher Scientific reagent cartridges.

4. 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. Ensure that the notches in the cartridge align with the notches in the cartridge rack.

   If you are processing fewer than 13 samples, you can leave empty slots in the cartridge rack.
Note: An incorrectly loaded cartridge rack can cause the instrument to stop during a run.

1. Correct position
2. Slide the cartridge until the notches align and the cartridge clicks into place

5. 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 80°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.
   
   **Note:** Tip and tube placement on the rack vary between kits.
Run the instrument

1. Set up the instrument as described in the user guide for the kit you are using.

2. Ensure that you have loaded and inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.

3. Press Start from the Home screen.

4. Verify that your kit name is displayed, then press .

5. Follow the on-screen prompts, then press Start.
   For some kits, 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 a run” on page 18 or “Cancel a run” on page 18.

   **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 using the Manual menu as described in “Cancel a run” on page 18.

6. 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 needed.
   - Remove and store samples.
   - Properly dispose of used reagent cartridges, tips, and tubes.

   **Note:** No cooling time is required between runs.

   To perform a new run using a different protocol card, power off the instrument, then change the protocol card.
Chapter 2 Operate the instrument

Pause a run

1. Press Stop to pause the run.
   The display shows the following:

   ![Pause display]

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

Cancel a run

Cancellation steps may vary slightly between kits. See your kit user guide for specific instructions.

1. Press Stop to pause the run.
   The display shows the following:

   ![Pause display]

2. Press Stop again.
   The instrument stops after the current step is completed. The screen returns to the Main menu.

3. Press 1 to go to the Manual screen.

   ![Manual screen]

   Note: When the run is interrupted, the axes and tip do not automatically return to the original positions.
4. Select one of the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>To return tips to the holders</td>
<td>Press 2 [Return Tip]. Note: Upon completion, the instrument returns to the Main menu.</td>
</tr>
<tr>
<td>To move axes when tips do not need to be</td>
<td>1. Press 1 [ORG] to go to the ORG screen.</td>
</tr>
<tr>
<td>returned to holders</td>
<td>2. Move each individual axis to the origin by pressing 1, 2, 3, 4, respectively, or press 0 to</td>
</tr>
<tr>
<td></td>
<td>return all axes to the origin.</td>
</tr>
<tr>
<td></td>
<td>3. Press ESC to return to Main menu.</td>
</tr>
</tbody>
</table>

You are now ready to start a new run.
Test and maintain the instrument

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- Maintain the instrument ............................................... 20
- Perform instrument tests (forensic applications only) ................. 26

Maintenance schedule

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Procedure</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Clean the piercing unit</td>
<td>“Clean the piercing unit” on page 21</td>
</tr>
<tr>
<td>Daily or as needed</td>
<td>• Clean the platform surfaces (racks and bottom tray)</td>
<td>• During verification (see Appendix C, “Verify operation of the instrument”)</td>
</tr>
<tr>
<td></td>
<td>• Clean the tip and tube rack</td>
<td>• “Clean the instrument daily” on page 21</td>
</tr>
<tr>
<td></td>
<td>• Clean the magnets</td>
<td></td>
</tr>
<tr>
<td>Every 2 weeks</td>
<td>Maintain the D-rings</td>
<td>“Maintain the D-rings” on page 22</td>
</tr>
<tr>
<td>Monthly (HID only)</td>
<td>Perform axis and temperature tests</td>
<td>“Perform an axis test (forensic applications only)” on page 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Perform a temperature test (forensic applications only)” on page 29</td>
</tr>
<tr>
<td>Annually</td>
<td>Replace the D-rings</td>
<td>“Replace the D-rings with D-ring tools” on page 23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Replace the D-rings without D-ring tools” on page 24</td>
</tr>
<tr>
<td></td>
<td>Planned maintenance</td>
<td>Contact Thermo Fisher Scientific to schedule.</td>
</tr>
</tbody>
</table>

Maintain the instrument

**IMPORTANT!** Do not perform repairs or service on the instrument other than the procedures in this section. For any other repairs and service, contact Technical Support.

**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

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.

3. Wipe the tips with an alcohol wipe.

4. Press ESC to return the piercing unit to the original position.

Clean the instrument daily

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

1. Clean the clear door panel with a laboratory wipe dampened with water.

**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:

1. Clean the clear door panel with a laboratory wipe dampened with water.

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

2. 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 that are 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 dustfree cloth.

1. Nozzle
2. D-ring
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 with D-ring tools

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

One replacement set of 13 D-rings is included with the instrument. To obtain more D-rings, see Appendix E, “Accessories“.

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

1. Using the D-ring removal tool as shown in the following figure, 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 the D-rings without 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, 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 that 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 instrument.

**WARNING!** The 6.3-A T (time-lag type) fuse that is included with the 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.

**WARNING!** FIRE HAZARD. For continued protection against the risk of fire, replace fuses only with fuses of the same type and rating as the fuses currently in the instrument.
To replace a 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 that is 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.
Perform instrument tests (forensic applications only)

A protocol card must be installed before you perform instrument tests.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>When to perform</th>
</tr>
</thead>
</table>
| Axis       | Tests full range of motion in all axes. | • During verification (see Appendix C, "Verify operation of the instrument")  
            |                                      | • Monthly                                              |
| Temp (Temperature) | Quick functional test of heater block. | • During verification (see Appendix C, "Verify operation of the instrument")  
            |                                      | • Monthly                                              |
| Ver (Version) | Displays the firmware version | As needed                                             |
| Error      | Displays the error code for the last error that occurred | As needed                                             |
Perform an axis test (forensic applications only)

The following items are needed for the axis test (items are provided with the instrument):

- Sample and Elution tubes provided with the instrument.
- Tips and tip holders provided in the Install kit.
- Empty reagent cartridges provided in the Install kit—Do not fill the empty reagent cartridges. When the test is complete, retain the empty cartridges for future use.

1. Ensure that the protocol card is inserted and that the instrument is powered on as described in “Insert a protocol card” on page 12.

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, then insert the loaded cartridge rack as described in “Load and insert the cartridge rack” on page 14.

4. Using the plastics that are shipped with the instrument and with the Install Kit, load the tip and tube rack in the following order:
   a. **Row S** (fourth row): Load 13 sample tubes.
   b. **Row T1** (second row): Load 13 tips inserted into tip holders.
   c. **Row T2** (third 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.

![Image of elution tubes with labels](image)

1. S—Sample tube
2. T2—Tip and tip holder
3. T1—Tip and tip holder
4. E—Elution

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

![Image of instrument with loaded tubes](image)

6. Ensure that you have inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.

7. In the **Main** menu, press 3 to display the **Tests** menu.
8. In the Tests menu, press 1 to display the Axis test screen.

9. Press Start to start the test. The duration of the test is ~3 minutes.

10. 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 Technical Support.

    **Note:** See “Perform an error test (forensic applications only)” on page 30 for the error screen and “Instrument error codes” on page 34 for the list of error codes.

11. Press ESC to return to the Tests menu.

    **Note:** You can leave the cartridge rack and tip and tube rack in the instrument if you are performing a Temperature test next.

**Perform a temperature test (forensic applications only)**

1. Ensure that the protocol card is inserted and that the instrument is powered on as described in “Insert a protocol card” on page 12.

2. In the Tests menu, press 2 to display the Temp test screen.

3. Use $\square$ to change the Set Temp to 60°C from the default of 25°C.

4. Use your own clock or timer and 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.
    • When the Set Temp value is reached, the Alarm value should change to 00.
If one or both of these values are not reached, contact Technical Support.

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.

### Perform a version test (forensic applications only)

1. From the Main menu, press 3, then press 3 from the Tests menu. The Ver (version) screen shows the firmware version.

![Version screen](image)

2. Press ESC to return to the Main menu.

### Perform an error test (forensic applications only)

1. From the Main menu, press 3, then press 4 from the Tests menu. The Error History screen shows the error code for the last error that occurred. See “Instrument error codes” on page 34 for a list of error codes.

![Error history screen](image)

2. Press ESC to return to the Main menu.
## Troubleshooting instrument operation

<table>
<thead>
<tr>
<th>Observation</th>
<th>Possible cause</th>
<th>Recommended action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No power (the digital display is blank and the fan does not start when you power on)</td>
<td>The AC power cord is not connected.</td>
<td>Check AC power cord connections at both ends. Use the correct cords.</td>
</tr>
<tr>
<td></td>
<td>The fuse has blown.</td>
<td>Check the integrity of the fuse and replace it if needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the problem persists after connecting the correct power cord and replacing the fuse, contact Technical Support.</td>
</tr>
<tr>
<td>The digital display is blank, but the fan starts when you power on</td>
<td>The protocol card is not inserted correctly.</td>
<td>Power off the instrument and reinsert the protocol card in the proper orientation into the card slot [see “Insert a protocol card” on page 12]. Insert it completely into the slot by manually pushing the card.</td>
</tr>
<tr>
<td></td>
<td>The protocol card was inserted when the instrument was powered on.</td>
<td>Power off the instrument, then power on the instrument.</td>
</tr>
<tr>
<td>An error code is displayed</td>
<td>See “Troubleshooting instrument error codes” on page 33.</td>
<td>See “Troubleshooting instrument error codes” on page 33.</td>
</tr>
<tr>
<td>Reagent cartridges, tips, or tubes are not inserted in the correct positions</td>
<td>Operator error.</td>
<td>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.</td>
</tr>
<tr>
<td>Observation</td>
<td>Possible cause</td>
<td>Recommended action</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>
| The run stops after an initial start (you may also see an error code) | • Instrument door was opened during the run.  
• Reagent cartridges, tips, or tubes are incorrectly loaded in the racks.  
• Racks are incorrectly loaded on the instrument. | 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.  
1. Follow the procedure in “Troubleshooting instrument error codes” on page 33.  
2. Before starting a new run, ensure that the reagent cartridges, tips, and tubes are correctly loaded:  
   • Slide the reagent cartridges into the cartridge rack as described in “Load and insert the cartridge rack” on page 14.  
   • Load the cartridge rack before the tip and tube rack for proper positioning.  
   • Load the tip and tube rack as described in “Load and insert the tip and tube rack” on page 16.  
   • Do not cap the tubes.  
3. If the instrument continues to stop during the run, contact Technical Support. |
| Bubbles form during purification | The sample volume is lower than the recommended volume.  
**Note:** Some bubbles are produced during routine operation when using the recommended sample volume. | In future runs, use the sample volume that is recommended in the user guide for the kit you are using.  
Long-term operation with lower-than-recommended sample volumes can lead to problems with liquid handling performance. |
| During the run: No liquid is present in the tip or liquid in the tip does not move  
After the run: No elution volume. | No sample was added to the tube, causing a wet filter barrier on the tip and blockage of nozzles. | Add samples to tubes, load new reagent cartridges, replace wetted tips as needed, then perform the run again.  
The sample volume is lower than the recommended volume, causing a wet filter barrier on the tip and blockage of nozzles. | In future runs, use the recommended sample volume in the user guide for the kit you are using.  
Long-term operation with lower-than-recommended sample volumes can lead to problems with liquid handling performance. |
| Buffer is present in the bottom tray | Motor movements are not smooth. | Schedule preventive maintenance annually to ensure proper motor movements.  
Reagent cartridges, tips, or tubes are incorrectly loaded in the rack. | If you are processing fewer than 13 samples, ensure to load the tips and tubes in the same positions as the reagent cartridges that are loaded in the cartridge rack. |
| 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 or replace the D-rings to prevent leakage. See “Maintain the D-rings” on page 22. |
### Troubleshooting 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.

1. Make a note of the error code, including the line number. Common error codes are listed in “Instrument error codes” on page 34.

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 “Cancel a run“ on page 18 for details).

4. Run an axis test (see “Perform an axis test (forensic applications only)” on page 27). If the axis test is:
   - Successful, start a new extraction run. Use new samples and plastics where required.
   - Not successful, contact Technical Support.
## Instrument error codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Problem</th>
<th>Code</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Failed return to origins, protocol cannot run</td>
<td>21</td>
<td>P axis time out, protocol in run</td>
</tr>
<tr>
<td>11</td>
<td>Limit error, protocol cannot run</td>
<td>22</td>
<td>M axis time out, protocol in run</td>
</tr>
<tr>
<td>12</td>
<td>Failed to return to Z Axis, protocol in run</td>
<td>23</td>
<td>Y axis time out, protocol in run</td>
</tr>
<tr>
<td>13</td>
<td>Failed to return to P axis, protocol in run</td>
<td>24</td>
<td>Open door in motion</td>
</tr>
<tr>
<td>14</td>
<td>Failed to return to M axis, protocol in run</td>
<td>25</td>
<td>Abnormal input from bottom sensor in motion</td>
</tr>
<tr>
<td>15</td>
<td>Failed to return to Y axis, protocol in run</td>
<td>26</td>
<td>Failed to initialize heating block</td>
</tr>
<tr>
<td>16</td>
<td>Z axis limit error, protocol in run</td>
<td>27</td>
<td>Failed to initialize motion control board</td>
</tr>
<tr>
<td>19</td>
<td>Y axis end limit, protocol in run</td>
<td>110</td>
<td>System error; (Assigned greater than 10)</td>
</tr>
<tr>
<td>20</td>
<td>Z axis time out, protocol in run</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
Unpack and install instrument

- Unpack the instrument .................................................. 35
- Verify the components shipped with the instrument ................. 37
- Install the instrument .................................................... 38
- Prepare the instrument for first use ................................... 40

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 from the instrument box.
9. Remove the instrument from the inner cardboard box.
   The instrument is now in a plastic wrap without cover.
10. Remove the plastic sheet.

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

1. Remove the adhesive tape on the door and on the card slot.
Verify the components shipped with the instrument

Verify that you received all the components that are listed below:

- **Components that are shipped with the instrument**
  - 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 “Perform an axis test (forensic applications only)” on page 27)
  - Empty reagent cartridges (13, for use in “Perform an axis test (forensic applications only)” on page 27)

  **Note:** Do not fill the empty reagent cartridges. Retain the empty cartridges after performing tests for future use.

  - Silicone grease
  - D-rings (13)
Appendix B Unpack and install instrument

Install the instrument

Place the instrument

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

1. Place the instrument on a level laboratory bench with the power switch to the left and the AC inlet at the rear of the unit.

2. Ensure 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 service representatives to remove the instrument cover if needed.
Figure 4  Instrument front view
① Minimum clearance height 114.5 cm (45 in.)
② Instrument height 57.3 cm (22.5 in.)
③ Minimum width 71.1 cm (28 in.)
④ Instrument width 50.8 cm (20 in.)
⑤ Power switch on left

Figure 5  Instrument left side view
① Power switch
1. Check the power cord that is 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 instrument until a protocol card is inserted into the instrument as described in “Insert a protocol card” on page 12.

### Prepare the instrument for first use

#### Insert a protocol card

For guidelines on handling protocol cards, see “Protocol card handling” on page 12.

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

   **Note:** If you insert the card while the instrument is on, the instrument will 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. If the card is removed during a run, immediately power off the instrument to minimize the potential for data loss.
1. Open the instrument door (push up the door).

2. Remove the packing peanuts from the instrument.

**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 the instrument daily” on page 21).

2. Allow the parts to dry.

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

3. Insert the bottom tray: 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 80°C. Touching the block can cause burns.

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

---

**Clean the piercing unit**

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.

3. Wipe the tips with an alcohol wipe.
4. Press **ESC** to return the piercing unit to the original position.
Set the instrument date and time

1. From the **Main** menu, press **2** on the keypad (see “Digital display” on page 10) 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](image1)

   ![Setup System](image2)

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

   ![Setup Date](image3)

   ![Setup System Date](image4)

   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+**

3. 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 System Date](image5)

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

   ![Setup System Date](image6)
5. Press to add 1 to the currently displayed year or 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 Setup/Sys/Date/Time screen.

2. Press 2 to display the Time screen.

The screen displays:

- **Cur**—CH (current hour), CM (current minute), CS (current second)
- **Set**—SH (set hour), SM (set minute), SS (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 date 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.
Verify operation of the instrument

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- Insert a protocol card ....................................................... 46
- Perform an axis test (forensic applications only) .................. 48
- Perform a temperature test (forensic applications only) ........ 50
- Perform an installation test (HID applications only) ............... 51

Instrument verification workflow

After you install and prepare the instrument as described in Appendix B, “Unpack and install instrument”, perform these actions in the following order:

- “Insert a protocol card” on page 12
  ▼
  “Perform an axis test (forensic applications only)” on page 27
  ▼
  “Perform a temperature test (forensic applications only)” on page 29
  ▼
  HID applications only
  [PrepFiler Express™ Forensic DNA Extraction Kit or PrepFiler Express BTA™ Forensic DNA Extraction Kit]
  “Perform an installation test (HID applications only)” on page 51
  ▼
  This test is not required for bioprocess applications (PrepSEQ™ Express Nucleic Acid Extraction Kit)

If the instrument fails one or more tests, contact Technical Support.

Insert a protocol card

For guidelines on handling protocol cards, see “Protocol card handling” on page 12.

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

   Note: If you insert the card while the instrument is on, the instrument will 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. If the card is removed during a run, immediately power off the instrument to minimize the potential for data loss.
Perform an axis test (forensic applications only)

The following items are needed for the axis test (items are provided with the instrument):

- Sample and Elution tubes provided with the instrument.
- Tips and tip holders provided in the Install kit.
- Empty reagent cartridges provided in the Install kit—Do not fill the empty reagent cartridges. When the test is complete, retain the empty cartridges for future use.

1. Ensure that the protocol card is inserted and that the instrument is powered on as described in “Insert a protocol card” on page 12.

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, then insert the loaded cartridge rack as described in “Load and insert the cartridge rack” on page 14.

4. Using the plastics that are shipped with the instrument and with the Install Kit, load the tip and tube rack in the following order:
   a. **Row S** (fourth row): Load 13 sample tubes.
   b. **Row T1** (second row): Load 13 tips inserted into tip holders.
   c. **Row T2** (third 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.

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

6. Ensure that you have inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.

7. In the **Main** menu, press 3 to display the **Tests** menu.
8. In the Tests menu, press 1 to display the Axis test screen.

9. Press Start to start the test. The duration of the test is ~3 minutes.

10. 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 Technical Support.

    **Note:** See “Perform an error test (forensic applications only)” on page 30 for the error screen and “Instrument error codes” on page 34 for the list of error codes.

11. Press ESC to return to the Tests menu.

    **Note:** You can leave the cartridge rack and tip and tube rack in the instrument if you are performing a Temperature test next.

### Perform a temperature test (forensic applications only)

1. Ensure that the protocol card is inserted and that the instrument is powered on as described in “Insert a protocol card” on page 12.

2. In the Tests menu, press 2 to display the Temp test screen.

3. Use \( \text{②} \) to change the Set Temp to 60°C from the default of 25°C.

4. Use your own clock or timer and 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.
   - When the Set Temp value is reached, the Alarm value should change to 00.
If one or both of these values are not reached, contact Technical Support.

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.

---

**Perform an installation test (HID applications only)**

Perform this test if you use the instrument for HID applications only (PrepFiler Express™ Forensic DNA Extraction Kit or PrepFiler Express BTA™ Forensic DNA Extraction Kit). This test is not required for bioprocess applications (PrepSEQ™ Express Nucleic Acid Extraction Kit).

Perform the installation test after performing an axis test and a temperature test. Use the cartridges, tips, and tubes provided with the Install Kit (Cat. No. 4441350).

**Inspect cartridges**

1. Inspect the reagent cartridges to ensure that the contents are in the bottom of the wells and that no precipitate has formed in any of the wells.

![Cartridge compartments](image)

**Figure 7** Cartridge compartments

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lysis Buffer</td>
</tr>
<tr>
<td>2</td>
<td>Magnetic Particles suspension</td>
</tr>
<tr>
<td>3</td>
<td>Binding Solution</td>
</tr>
<tr>
<td>4 through 6</td>
<td>Wash Buffer</td>
</tr>
<tr>
<td>7</td>
<td>Elution Buffer</td>
</tr>
<tr>
<td>9</td>
<td>Proteinase K Solution</td>
</tr>
<tr>
<td>11</td>
<td>Lysis Tube (added by user)</td>
</tr>
<tr>
<td>12</td>
<td>Heated chamber for elution</td>
</tr>
</tbody>
</table>

2. If precipitate forms in compartments 1 or 2 (Lysis Buffer and Magnetic Particles 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 an installation test

1. Ensure that the protocol card is inserted and that the instrument is powered on as described in “Insert a protocol card“ on page 12.

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. Vortex again with the cartridge foil side down, then repeat with the cartridge on its side.

   c. Ensure that the magnetic particles are resuspended. If they are not, repeat the previous vortex steps.

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

5. Load 13 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. Ensure that the notches in the cartridge align with the notches in the cartridge rack (see the following diagram).

   **Note:** An incorrectly loaded cartridge rack can 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 80°C. Touching the block can cause burns.
7. Using the plastics that are provided in the 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): 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 can occur, clogging the tips.

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

10. Ensure that you have inserted the cartridge rack and tip and tube rack correctly, then close the instrument door.

11. Press \( \text{ } \), 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 a run” on page 18 or “Cancel a run” on page 18.

   **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 using the **Manual** menu as described in “Cancel a run” on page 18.

12. Observe the entire test run, and contact 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 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 “Perform an installation test” on page 52. 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.
Specifications

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- Environmental requirements ........................................... 56
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Instrument specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument type</td>
<td>Benchtop dispenser instrument with 13 nozzles</td>
</tr>
<tr>
<td>Sample processing</td>
<td>1–13 samples/run</td>
</tr>
<tr>
<td>Processing time</td>
<td>Variable (see kit user guide)</td>
</tr>
<tr>
<td>Dispensing volume</td>
<td>5 to 1,000 μL</td>
</tr>
<tr>
<td>Dispensing accuracy</td>
<td>DN100N tips:</td>
</tr>
<tr>
<td></td>
<td>• 25 to 50 μL: Less than 5% (CV%)</td>
</tr>
<tr>
<td></td>
<td>• 50 to 1,000 μL: Less than 2% (CV%)</td>
</tr>
<tr>
<td>Heat block temperature control[^1]</td>
<td>30 to 80°C (at ambient ~25°C)</td>
</tr>
<tr>
<td>Instrument dimensions</td>
<td>50.8 cm (20 inches) [w] x 55.9 cm (22 inches) [d] x 57.2 cm (22.5 inches) [h]</td>
</tr>
<tr>
<td>Weight</td>
<td>55 kg (121 pounds)</td>
</tr>
<tr>
<td>Built-in features</td>
<td>Digital display, alarm, light LED</td>
</tr>
<tr>
<td>Protocol card</td>
<td>Flash, 512 KB memory card pre-programmed with the purification protocol that directs the volume of reagents used, mixing steps, and incubation time.</td>
</tr>
<tr>
<td></td>
<td>• Store in the plastic cover, in its box, protected from light.</td>
</tr>
<tr>
<td></td>
<td>• Do not drop or bend the card</td>
</tr>
<tr>
<td></td>
<td>• Do not wipe or clean the card using volatile chemicals such as alcohol or equivalent</td>
</tr>
<tr>
<td></td>
<td>• Do not expose the card to water or any solution</td>
</tr>
<tr>
<td>Bottom tray</td>
<td>Stainless steel</td>
</tr>
<tr>
<td></td>
<td>42.672 cm (16.8 inches) [l] x 27.432 cm (10.8 inches) [w] x 0.635 cm (0.25 inches) [d].</td>
</tr>
</tbody>
</table>
### Environmental requirements

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required input power</td>
<td>AC 100-240 V ±10%, 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>Grounding is necessary</td>
</tr>
<tr>
<td>Installation site</td>
<td>Indoor use only</td>
</tr>
<tr>
<td>Altitude</td>
<td>Safety tested up to 2,000 m (6,562 ft)</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>• 5 to 40°C</td>
</tr>
<tr>
<td></td>
<td>• 80% maximum relative humidity for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C</td>
</tr>
<tr>
<td>Transient category</td>
<td>Installation categories II</td>
</tr>
<tr>
<td>Main supply voltage fluctuations</td>
<td>Up to ±10 percent of nominal voltage</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>2</td>
</tr>
<tr>
<td>Transport conditions</td>
<td>• – 20 to +50°C</td>
</tr>
<tr>
<td></td>
<td>• Minimum 15% relative humidity, maximum 75% (non-condensing)</td>
</tr>
<tr>
<td></td>
<td>• Environmental class 2K2 &amp; 2M2 (IEC60721-3-2)</td>
</tr>
</tbody>
</table>

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

---

**Component** | **Specification**
--- | ---
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 Thermo Fisher Scientific reagent cartridges only. Do not load reagent cartridges from other manufacturers in the 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)  
• Row 1—E – hinged elution tubes  
• Rows 2 and 3—T1 and T2 tips  
• Row 4 S—sample tubes

Tips and holders |  
• Tip—Polypropylene with filter barriers  
• Tip holder—Polypropylene, 5 to 1,000 μL, 9.906 cm (3.9 inches) (l) × 1.092 cm (0.43 inches) (d)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage conditions</td>
<td>• 5 to 40°C</td>
</tr>
<tr>
<td></td>
<td>• Minimum 15% relative humidity, maximum 75% (non-condensing)</td>
</tr>
<tr>
<td></td>
<td>• Environmental class 2K2 &amp; 2M2 (IEC60721-3-1)</td>
</tr>
</tbody>
</table>

## Barcode reader specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum scan rate</td>
<td>325 scans/sec</td>
</tr>
<tr>
<td>Maximum resolution</td>
<td>0.076 mm</td>
</tr>
<tr>
<td>Reading indicators</td>
<td>Beep and a green spot on the code</td>
</tr>
<tr>
<td>Sensor</td>
<td>CCD solid state</td>
</tr>
<tr>
<td>Illuminator</td>
<td>LED array</td>
</tr>
<tr>
<td>Wavelength</td>
<td>630–670 nm</td>
</tr>
<tr>
<td>Reading angle</td>
<td>Skew: ± 65°</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 to 55°C</td>
</tr>
<tr>
<td>Weight</td>
<td>~169 g</td>
</tr>
</tbody>
</table>
Unless otherwise indicated, all materials are available through thermofisher.com.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoMate Express™ accessories</td>
<td></td>
</tr>
<tr>
<td>AutoMate Express™ Tip and Tube Rack</td>
<td>4456842</td>
</tr>
<tr>
<td>AutoMate Express™ Cartridge Rack</td>
<td>4452767</td>
</tr>
<tr>
<td>D-ring Exchange Tools</td>
<td>4457423</td>
</tr>
<tr>
<td>D-rings, (set of 13)</td>
<td>4448950</td>
</tr>
<tr>
<td>AutoMate Express™ Install Kit</td>
<td>4441350</td>
</tr>
<tr>
<td>PrepFiler Express™ accessories</td>
<td></td>
</tr>
<tr>
<td>PrepFiler Express™ Forensic DNA Extraction Kit</td>
<td>4441352</td>
</tr>
<tr>
<td>PrepFiler Express BTA™ Forensic DNA Extraction Kit</td>
<td>4441351</td>
</tr>
<tr>
<td>PrepSEQ™ Express accessories</td>
<td></td>
</tr>
<tr>
<td>PrepSEQ™ Express Protocol Card</td>
<td>A27904</td>
</tr>
<tr>
<td>PrepSEQ™ Express Nucleic Acid Extraction Kit</td>
<td>4466351</td>
</tr>
<tr>
<td>GlycanAssure™ accessories</td>
<td></td>
</tr>
<tr>
<td>N-glycan purification and labeling: GlycanAssure™ AutoXpress Script</td>
<td>A36164</td>
</tr>
<tr>
<td>GlycanAssure™ AutoXpress Kit</td>
<td>A36063</td>
</tr>
</tbody>
</table>
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**

Symbols may be found on the instrument to warn against potential hazards or convey important safety information. 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.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>English</th>
<th>Français</th>
</tr>
</thead>
<tbody>
<tr>
<td>⚠️</td>
<td>Caution, risk of danger&lt;br&gt;Consult the manual for further safety information.</td>
<td>Attention, risque de danger&lt;br&gt;Consulter le manuel pour d'autres renseignements de sécurité.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Caution, risk of electrical shock</td>
<td>Attention, risque de choc électrique</td>
</tr>
<tr>
<td>⚠️</td>
<td>Moving parts</td>
<td>Parties mobiles</td>
</tr>
<tr>
<td>⚠️</td>
<td>Caution, sharp edges</td>
<td>Attention, bords coupants</td>
</tr>
<tr>
<td>Symbol</td>
<td>English</td>
<td>Français</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>![Warning triangle]</td>
<td>Caution, hot surface</td>
<td>Attention, surface chaude</td>
</tr>
<tr>
<td>![Biohazard symbol]</td>
<td>Potential biohazard</td>
<td>Danger biologique potentiel</td>
</tr>
<tr>
<td>![Line]</td>
<td>On (marche)</td>
<td>Off [arrêt]</td>
</tr>
<tr>
<td>![Circle]</td>
<td>Off</td>
<td>Off [arrêt]</td>
</tr>
<tr>
<td>![Circle plus line]</td>
<td>On/Off</td>
<td>On/Off [marche/arrêt]</td>
</tr>
<tr>
<td>![Power symbol]</td>
<td>Standby</td>
<td>En attente</td>
</tr>
<tr>
<td>![Ground symbol]</td>
<td>Earth (ground) terminal</td>
<td>Borne de (mise à la) terre</td>
</tr>
<tr>
<td>![Protective ground symbol]</td>
<td>Protective conductor terminal (main ground)</td>
<td>Borne de conducteur de protection [mise à la terre principale]</td>
</tr>
<tr>
<td>![Alternating current symbol]</td>
<td>Terminal that can receive or supply alternating current or voltage</td>
<td>Borne pouvant recevoir ou envoyer une tension ou un courant de type alternatif</td>
</tr>
<tr>
<td>![Direct current symbol]</td>
<td>Terminal that can receive or supply alternating or direct current or voltage</td>
<td>Borne pouvant recevoir ou envoyer une tension ou un courant continu ou alternatif</td>
</tr>
</tbody>
</table>
### Conformity Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>English</th>
<th>Français</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Do not dispose of this product in unsorted municipal waste</td>
<td>Ne pas éliminer ce produit avec les déchets usuels non soumis au tri sélectif.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>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.</td>
<td>MISE EN GARDE ! Pour minimiser les conséquences négatives sur l’environnement à la suite de l’élimination de déchets électroniques, ne pas éliminer ce déchet électronique avec les déchets usuels non soumis au tri sélectif. Se conformer aux ordonnances locales sur les déchets municipaux pour les dispositions d’élimination et communiquer avec le service à la clientèle pour des renseignements sur les options d’élimination responsable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conformity mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Indicates conformity with safety requirements for Canada and U.S.A.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Indicates conformity with European Union requirements for safety and electromagnetic compatibility.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Indicates conformity with Australian standards for electromagnetic compatibility.</td>
</tr>
</tbody>
</table>
Safety alerts on this instrument

Additional text may be used with one of the symbols described above when more specific information is needed to avoid exposure to a hazard. See the following table for safety alerts found on the instrument.

<table>
<thead>
<tr>
<th>English</th>
<th>Français</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAUTION! Hazardous chemicals.</strong> Read the Safety Data Sheets (SDSs) before handling.</td>
<td><strong>MISE EN GARDE ! Produits chimiques dangereux.</strong> Lire les fiches signalétiques (FS) avant de manipuler les produits.</td>
</tr>
<tr>
<td><strong>CAUTION! Hazardous waste.</strong> Refer to SDS(s) and local regulations for handling and disposal.</td>
<td><strong>MISE EN GARDE ! Déchets dangereux.</strong> Lire les fiches signalétiques (FS) et la réglementation locale associées à la manipulation et à l’élimination des déchets.</td>
</tr>
</tbody>
</table>

Location of safety labels

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.
Physical injury

**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! 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.

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

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

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.

Barcode scanner laser

The barcode scanner that is provided with the instrument is a class 1 laser device.
Safety and electromagnetic compatibility (EMC) standards

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

### Safety

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 61010-1</td>
<td>Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements</td>
</tr>
<tr>
<td>UL 61010-1</td>
<td>Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements</td>
</tr>
<tr>
<td>CSA C22.2 No. 61010-1</td>
<td>Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements</td>
</tr>
<tr>
<td>EN 61010-2-010</td>
<td>Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials</td>
</tr>
<tr>
<td>EN 61010-2-081</td>
<td>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</td>
</tr>
</tbody>
</table>

### EMC

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS/NZS 2064</td>
<td>Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radiofrequency Equipment</td>
</tr>
<tr>
<td>ICES-001, Issue 3</td>
<td>Industrial, Scientific and Medical (ISM) Radio Frequency Generators</td>
</tr>
</tbody>
</table>

### Environmental design

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
</table>
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.
Biological hazard safety

**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.

Documentation and support

Related documents

<table>
<thead>
<tr>
<th>Document</th>
<th>Publication number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barcode Reader for the AutoMate Express™ Instrument User Guide</td>
<td>4453801</td>
<td>Provides instructions for installing and using the optional barcode reader with the AutoMate Express™ Instrument.</td>
</tr>
<tr>
<td>PrepFiler Express™ and PrepFiler Express™ BTA Forensic DNA Extraction Kits User Guide</td>
<td>4442699</td>
<td>Step-by-step instructions for using the PrepFiler Express™ Forensic DNA Extraction Kit and the PrepFiler Express BTA™ Forensic DNA Extraction Kit for:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Manual preparation of lysate from forensic samples</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Automated extraction and isolation of genomic DNA on the AutoMate Express™ Instrument</td>
</tr>
</tbody>
</table>

Customer and technical support

For support:
- **In North America** — Send an email to HIDTechSupport@thermofisher.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 thermofisher.com/support to obtain the following information.
- Worldwide contact telephone numbers
- Product support
- Order and web support
- Safety Data Sheets (SDSs; also known as MSDSs)

Additional product documentation, including user guides and Certificates of Analysis, are available by contacting Customer Support.
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 at www.thermofisher.com/us/en/home/global/terms-and-conditions.html. If you have any questions, please contact Life Technologies at www.thermofisher.com/support.