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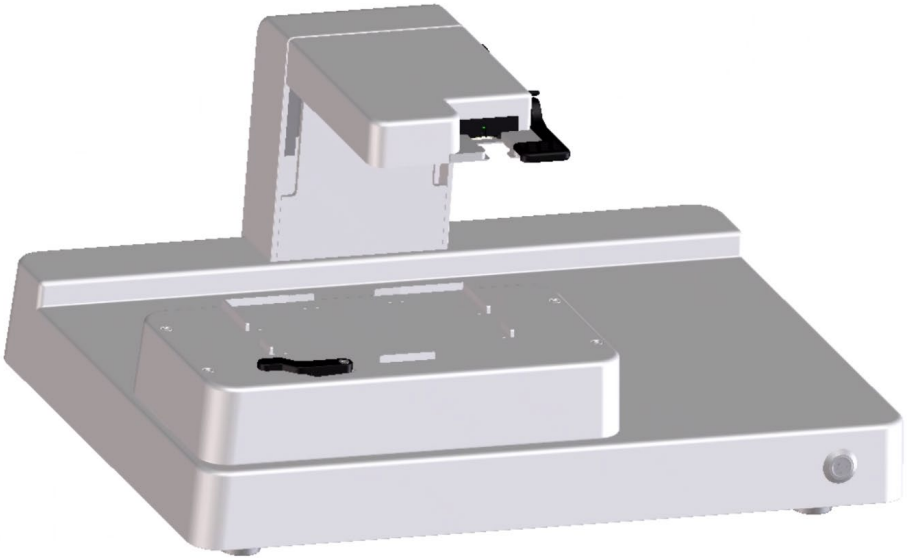
An Endress+Hauser Company

Operating Manual

PULSEspencer RC



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Analytik Jena GmbH+Co. KG

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1 Basic information

1.1 About this manual

The operating manual describes the following dispenser:

- PULSEspencer RC

Applicable documents

The dispenser PULSEspencer RC is controlled via the Analytik Jena dispenser software. These instructions apply to the following document:

- User Manual Analytik Jena dispenser software

The device is intended to be operated by qualified specialist personnel who must observe all instructions given in the operating manual.

The operating manual provides information about the design and operation of the device and provides the operating personnel with the necessary know-how for safe handling of the device and its components. Furthermore, the operating manual includes information on the maintenance and servicing of the device as well as information on potential causes of malfunctions and their correction.

Conventions

Instructions for actions are marked with a black triangle (▶). Results of actions are marked with a checkmark (✔).

Warnings are indicated by a warning triangle and a signal word. The type, source and consequences of the hazard are stated together with notes on preventing the hazard.

Elements of the control software are indicated in bold (e.g. **Edit**).

Symbols and signal words used in this manual

The user manual uses the following symbols and signal words to indicate hazards or instructions. These warnings are always placed before an action.

WARNING

Indicates a potentially hazardous situation which can cause death or serious injuries with permanent damage.

CAUTION

Indicates a potentially hazardous situation which can cause slight or minor injuries.

Note

Provides information on potential material or environmental damage.

1.2 Intended use

The dispenser may only be used for the applications described in this user manual. Only this specified use is regarded as the intended use, ensuring the safety of the user and the device.

The dispenser and dispenseheads are designed for the following specific uses, and the top two conditions and one of the remaining conditions must be met:

- Dispensing of DMSO solvent or water containing surfactant with or without small molecule compounds or biomolecules.
- Dispensing of aqueous fluids without the need for surfactant with or without small molecule compounds or biomolecules.
- Dispensing of acetonitrile.
- Dispensing of single cells ranging in size from 9-25 µm
- For research use only.
- Single-usage (i.e., non-reusable) operation of a dispensehead.

Do not use these products for:

- Dispensing biohazard materials such as BSL-3 or BSL-4 materials, biofluids (e.g. blood, serum, mucus), bacteria, viruses, pathogens, contagions, and infectious agents.
- Food, animal, or human testing, or therapeutic delivery (except in vitro research purposes).
- Dispensing potent toxins, carcinogens, or radioactive substances.
- Any unsafe uses that bypass safety features or disregard safety instructions.

2 Safety

The dispenser should be used in accordance with all applicable safety rules that are in effect in the lab in which it is installed. Use of the dispenser should also follow common-sense safety guidelines for chemical, mechanical, and electrical safety.

CAUTION

Do not remove any of the dispenser covers. Contact your Service Help Desk if the dispenser is not working properly. Do not attempt to repair the dispenser yourself.

Note

If this unit requires service, or you are unsure about any aspect of operation or safety, contact the Service Help Desk. The contact information can be found in the dispenser Service and Support document by navigating to the **File | Documentation** menu of the software.

2.1 General safety rules

- Place the dispenser on a work surface that supports all four feet securely.
- Plug the dispenser into a standard, grounded, electrical outlet. Note the power requirement listed on the back label of the dispenser.
- Avoid the moving parts of the dispenser during operation.

2.2 Personal protective equipment

The dispenser dispenses chemicals normally used by your company. The same safety precautions and personal protective equipment (PPE) specified by your employer for fluid transfer operations, such as pipetting into bioassay well plates, should be used when operating the dispenser and handling these materials.

2.3 Possible inhalation hazard

The dispenser was designed with chemical safety in mind; however, it does dispense picoliter droplets of fluid and generates a small amount (less than 1% by volume) of very small aerosol droplets that might not be trapped within the well plate that you are dispensing into.

- If the fluids are known or suspected to be an inhalation or contact hazard, use the dispenser in an enclosure with an exhaust, such as a lab fume hood.

2.4 Electrical safety

The dispenser is TUV-certified for the CE mark signifying compliance with applicable electrical regulations in the regions where the product is sold. Electrical specifications of the dispenser: voltage 100-240 V AC, 1 phase/3 wire, 50/60 Hertz, 1.2 A full load amperage.

- Do not touch the static eliminator electrode probe located under the cover guard. Even if device power is off, directly touching the probe may result in personal injury, electrical shock, or malfunction.

2.5 Electrical emissions safety

The dispenser has passed an FCC/EMC test for electrical emissions safety. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications to this equipment not expressly approved by Analytik Jena may cause harmful interference and void your warranty.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense. This Class A digital apparatus also complies with Canadian ICES -003.

2.6 Decontamination prior to servicing

Service personnel may require you to certify that appropriate cleaning, decontamination, and other abatement of potential threats to service personnel have been performed prior to shipping the dispenser for servicing. Recommended cleaning and decontamination procedures are described in section "Cleaning the dispenser" p. 25.

2.7 Safe disposal of dispensehead cassettes and pipette tips

Disposal of used pipette tips and dispensehead cassettes (DHCs) should be performed in accordance with your company's chemical waste procedures. The DHCs do not require any special disposal procedures except for those required for the chemicals which have been placed in them by your laboratory.

2.8 Ergonomic safety

The dispenser typically requires a single manual pipetting operation for each dispensed compound. In most situations, using the dispenser in the intended manner decreases the frequency of shoulder, arm, and wrist motions and so decreases the stress on these joints compared to traditional methods.

To minimize ergonomic risks associated with the use of the dispenser, consider the following work area design ideas:

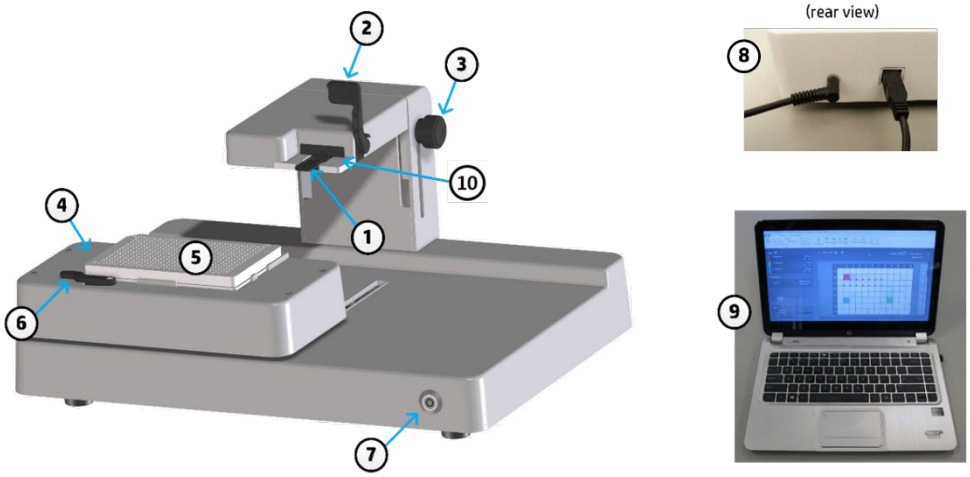
- Place the dispenser on a work bench at a height that allows for proper visual and physical access for operators. Having the dispenser too high can lead to greater shoulder elevation when pipetting into the dispensehead. Having the dispenser too low can lead to increased neck and back flexion.
- If an operator is too short to comfortably access the dispenser, consider moving the dispenser to a lower bench height. Alternatively, use a footstool or high lab stool that adjusts to the proper work height.
- Place the dispenser close to the front of the work surface to minimize the distance the operator must reach to pipette into the dispensehead.
- Place the pipette tip disposal receptacle close to the dispenser.
- Place the computer keyboard close to the dispenser to minimize reach distance.
- Adjust the computer monitor height and screen angle for good physical and visual access during dispenser operation.
- Perform data analysis at a separate ergonomically designed workstation whenever possible rather than at the dispenser computer.

2.9 Additional assistance

Contact the Service Help Desk for additional assistance. The contact information can be found on the inside cover of this document.

3 Design and function

3.1 Hardware components



1 Dispensehead cassette
2 Cassette clamp lever
3 Plate height adjustment lock
4 Motorized stage and destination plate holder
5 Destination plate
6 Plate clamp
7 Power switch and indicator light
8 Power and USB connections
9 PC with dispenser software
10 Cassette holder

3.2 Principal of operation

The dispenser provides fast, reliable dispensing performance across a wide dynamic range, eliminating slow, wasteful, error-prone manual serial dilutions and enabling assay miniaturization through low-volume assay component addition.

The dispenser provides fast, reliable dispensing across a wide range of life science applications:

- Dose-response curves for small molecules, biologically based drug discovery research
- Drug-drug synergy experiments for drug discovery
- Low-volume assay component dispensing of a wide range of fluids into microplates
- Complex enzyme kinetic studies
- DMPK standards
- Single-cell isolation
- Single-cell proteomics, genomics, and transcriptomics
- Cell line development

Using single-use dispenseheads to minimize the possibility of cross-contamination, the dispenser offers non-contact digital dispensing in the picoliter to microliter range. It combines walk-up convenience, ready-to-run performance and flexible, intuitive experiment design software to increase research productivity, reliability of results, and speed of life science research including the latest capability for single cell isolation.

Even the most complex experimental plate layouts, such as drug-drug interaction (synergy) studies, can be made simple. Titrating one drug down the plate while another is titrated orthogonally across the plate enables two or more drug doses to be independently generated in every well. In addition, plate layouts can be randomized to reduce the impact of edge effects, increasing the integrity of the experimental data. The dispenser offers a convenient solution to address the most challenging experiments.

4 Installation and commissioning

The dispenser runs on standard AC power, between 100 to 240 V.

WARNING

Be sure the dispenser power requirements match your outlet voltage. The voltage requirement is shown on the power supply label. DO NOT plug the power supply into the incorrect voltage. If the labeled voltage on the power supply does not match your standard outlet, contact the Service Help Desk.

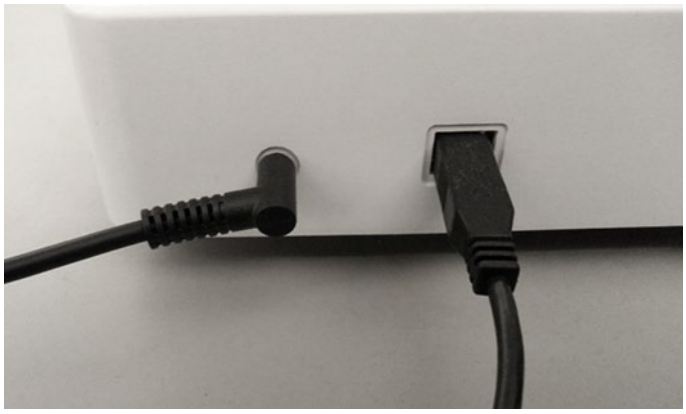
An electrical outlet is required for the dispenser. A dedicated circuit is not required as the dispenser draws less than two amps.

The dispenser requires a level bench space which is at least 40 cm (16 inches) wide, 32 cm (13 inches) deep, and 23 cm (9 inches) high. This does not include space for the required computer.

CAUTION

Do not place items on the top surfaces of the dispenser.

- Unpack the dispenser.
- Connect the power cord (packaged separately) to the back of the dispenser (see below, left).

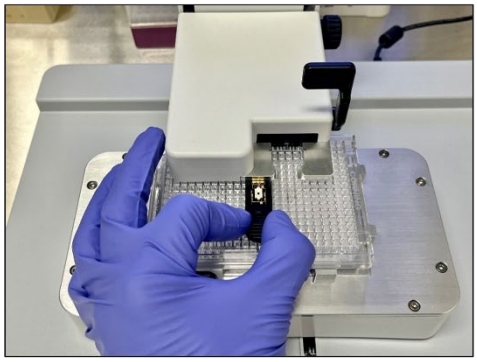


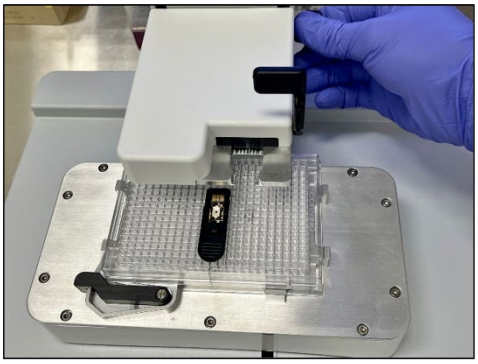
- Plug the other end of the power cord into the appropriate power outlet.
- Turn the dispenser on by depressing the main power switch on the front of the dispenser.
- ✓ The power switch will illuminate, indicating the dispenser is turned on.
- Use the USB cable that comes with the dispenser to connect the computer to the dispenser. The USB port is on the back of the dispenser (see above, right).

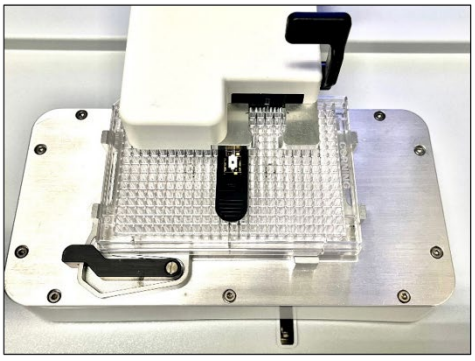
4.1 Adjusting the cassette-to-plate height

It is important to set the height of the cassette above the well plate so that it clears the well plate and dispenses optimally.

- Turn off the dispenser.
- Place a well plate on the destination plate holder and move it under the cassette holder.
- Use a cassette as a spacer by placing it directly on the well plate. The cassette should be placed as shown below, with the front side of the cassette between the dispenser tower and the well plate.







- Loosen the adjustment knob and lower the cassette holder until it touches the cassette. The space should be ~1.25 mm. Gently tighten the knob and remove the cassette.

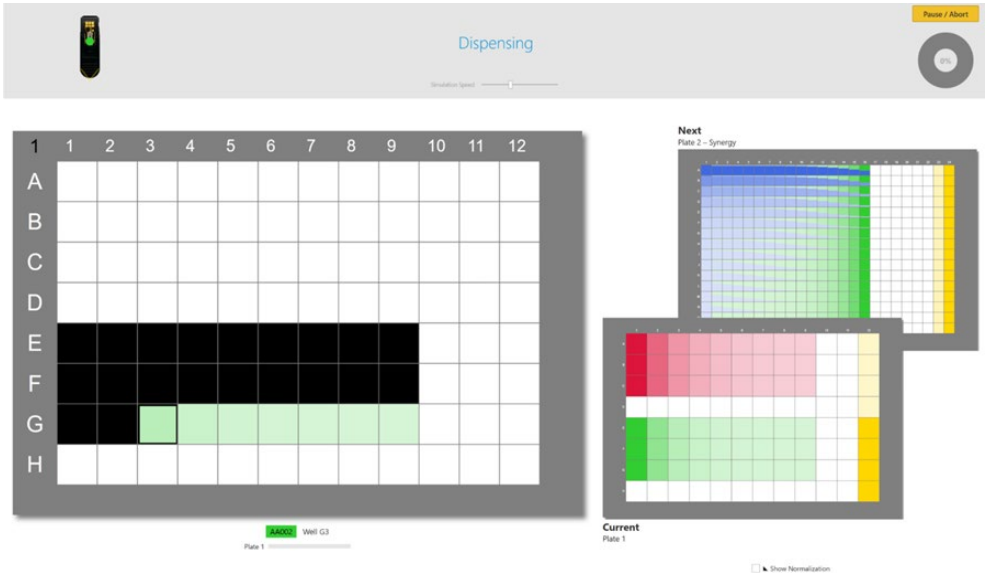
The height adjustment can also be made at protocol runtime or during A1 alignment check.

5 Running a protocol

Refer to the User Manual Analytik Jena Dispenser Software for PULSEspencer RC for information about initiating and completing a protocol run.

5.1 Run window layout – plate and fluid preparation

In this phase of the run, you load the plate, cassettes, and fluids as prompted.



Initially, you will be prompted for both plate and cassette load. Plate and cassette load regions will be displayed as needed during the run. You have the opportunity to adjust the cassette-to-plate height during the run.

The **Simulation Speed** bar is displayed if you are running a simulation. Use the bar to adjust the progress speed of the dynamic display of fluids as they are being dispensed. You can adjust the simulation speed at any time during the simulated run.

Fluid dispensing begins when the plate and cassette are loaded, and the fluid reservoir has been filled for dispensing.

The sections of the **Run** window for this phase are:

- Status area
- **Pause/Abort** button
- Well plate grid display
- Plate prompt/Cassette prompt

5.1.1 Status area

The upper portion shows a status display area, indicating **Waiting on Operator** for plate and fluid preparation. There is also a progress circle that lets you know how far along the run is.

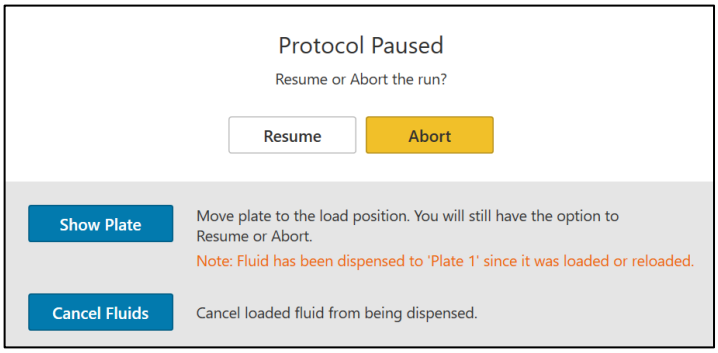
Additionally, a **Pause/Abort** button is available for the balance of the run. If you want to quit the run, you must click this button to leave the run before completion – you cannot exit by clicking the **X** in the upper right corner of the window.

Note

A run can be paused by either using the **Pause/Abort** button or staying in the **Waiting on operator** state. Pausing for long periods during a run is not recommended. If the USB connection to the dispenser is lost, the protocol cannot be resumed. Various PC settings can influence how quickly an idle PC will disconnect from hardware. For protocols with aqueous fluids, there is no option to pause the protocol run.

5.1.2 Pause/Abort

- Click **Pause/Abort** to pause or abort the run while dispensing is occurring.
- After you click **Pause/Abort**, click **Resume** to proceed with the just-paused run (center left below) or **Abort** to terminate it (center right below).



When appropriate, additional options will be offered.

Show Plate will move the plate to where it can be examined by the operator. **Resume** will return the plate to the dispense area and continue dispensing.

Cancel Fluids allows un-dispensed fluid to be re-planned using a new dispensehead. This may be used if an incorrect fluid has been loaded into the cassette.

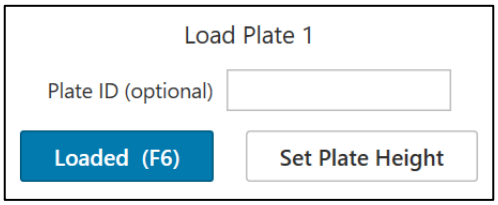
Warning status messages may be displayed for both **Show Plate** and **Cancel Fluids**.

5.1.3 Well plate grid display

The current plate is displayed in the well plate grid. However, the tools and functions of the main operating window are not available. Nevertheless, you can move your cursor over the wells on the monitor screen to see the well summary information. Once dispensing begins, the well plate grid shows the dispense progress as fluids are dispensed into the wells.

5.1.4 Plate prompt and loading a plate

This box prompts you to load the plate and then click **Loaded (F6)** once you have done so.



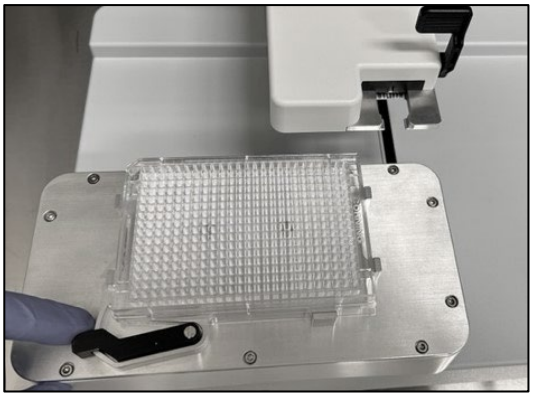
If the plate load sequence is not strictly sequential, **note plate number** messages will be displayed as a reminder to load the correct plate.

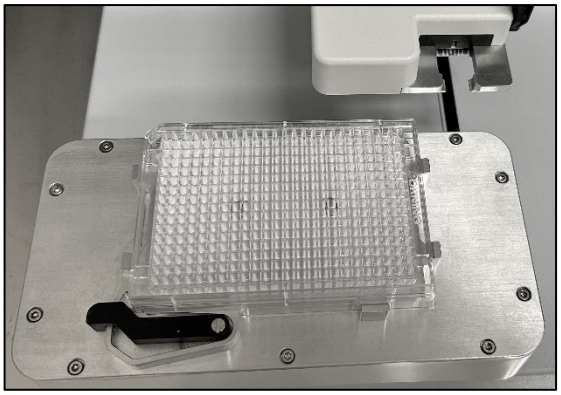
If the plate has an identification code you want to track, scan the bar code on the plate using a USB bar code reader attached to your computer, or enter its identification number manually into the **Plate ID (optional)** field.

If the **Require and validate plate ID** option has been selected in **Run Settings**, you must enter a Plate ID and re-enter that ID each time the plate is re-loaded so it can be validated.

Loading a plate

- Pull back on plate clamp lever and place the well plate on the plate holder. Ensure the plate sits within the metal guides on all sides.
- Release the plate clamp lever to secure the plate.





- Make sure the plate is completely level and down on the destination plate holder.
- Ensure that the A1 well position (upper-left-most well in the grid) is at the top-left corner of the destination plate holder.
- Click **Loaded (or F6)** to proceed.

5.1.5 Cassette prompt and loading a cassette

When a cassette is required, a **Cassette Load** prompt is displayed, indicating the type of cassette required.

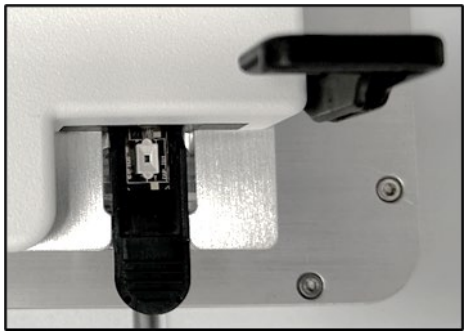
Standard-volume reagent cassette (CRL or CRLs)

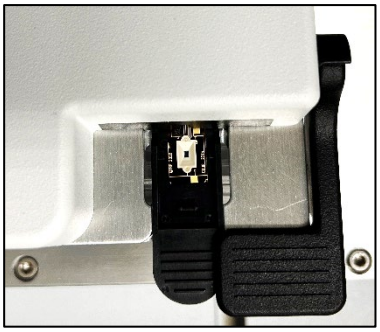
High-volume reagent cassette (CRH or CRHs)

Cell Dispensing Cassette (CC)

Loading a cassette

- If a used cassette is already in the dispenser, release the cassette clamp (put the handle in the up position) and remove the cassette by pulling it horizontally toward the front of the dispenser.
- With the handle in the up position, insert a new cassette by pushing the new cassette into the cassette holder horizontally towards the back of the dispenser.
- Clamp the cassette by rotating the clamp lever downward.

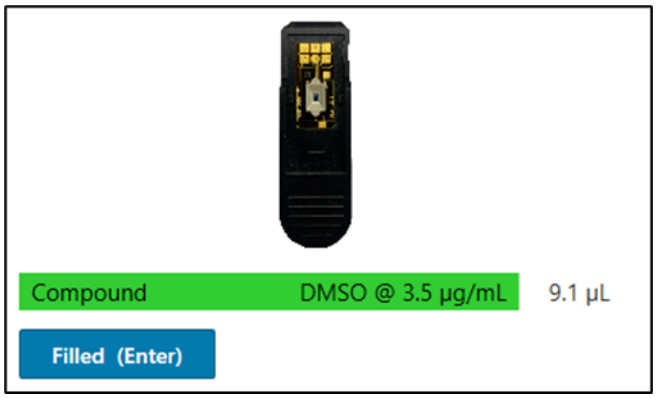




Once the cassette has been clamped, the dispenser will detect that it has been loaded and will validate the cassette. If the cassette was used in a previous run, the software program will show the cassette as used.

5.1.6 Load fluid prompt

After the cassette has been loaded, the **Load Fluid** prompt will appear. The prompt indicates the fluid to be loaded and the required load volume.



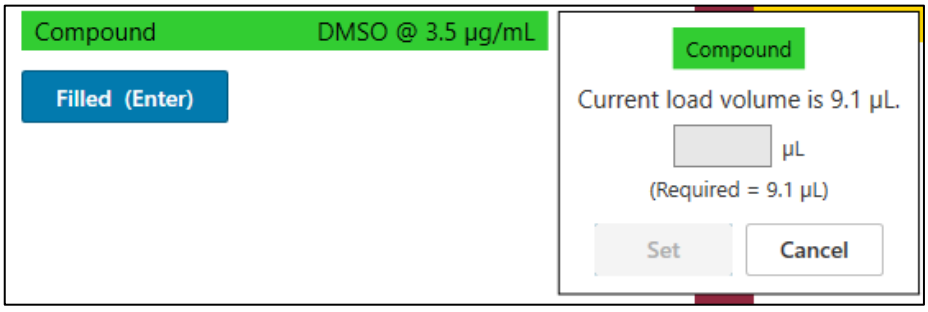
- Fill the cassette reservoir (see "Loading fluid" p. 19).
  At this point, the software is waiting for you to fill the reservoir.
- Indicate that the reservoir has been filled by clicking **Filled (Enter)**.
- ✓ When you click **Filled**, dispensing of that fluid will proceed.

The load volume quantity of the **Load Fluid** prompt will always be greater than the amount of fluid requested to be dispensed. The volume to be dispensed for each fluid is labeled as the total volume in the right-hand column of fluid list on the main operating window. The difference between the dispense volume and the load volume is to account for the dead volume, the fluid which is retained in the dispensehead after dispensing. The dead volume is dependent upon the dispense volume and fluid class, with greater dispense volumes and certain fluid classes having greater dead volumes. The minimum load volume ensures proper priming of the dispenseheads (see "Appendix E – Dispense Specifications" in the User Manual Analytik Jena Dispenser Software for PULSEspencer RC).

Modifying load volume

The load volume, which is included in reports, can be modified at the **Fluid** prompt to match the actual volume to be loaded. Load volumes can only be increased from the required amount.

- To modify load volume, move the cursor over the volume on the monitor and click when highlighted.
- ✓ A popup box allows the dispensehead volume to be modified.

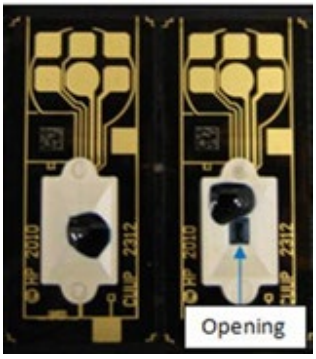


5.1.7 Loading fluid

- Fill a pipette with at least the amount of fluid that is indicated in the **Load Fluid** prompt.
- Load fluid into the dispensehead when prompted.

Pipette directly into the opening

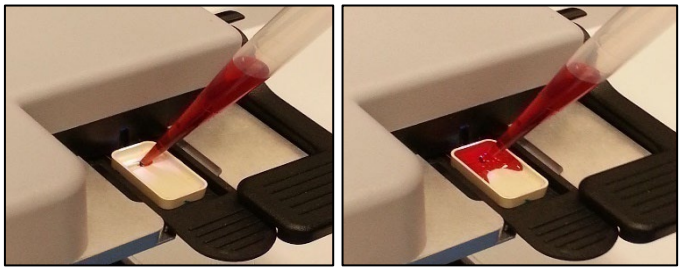
Do NOT depress the plunger to the second blow out stop.



Good load **Bad load**

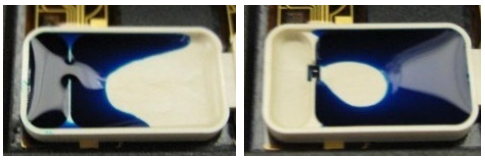
Examples of good (left) and bad (right) load on low-volume cassettes

- Make sure to load the fluid into the opening on top of the dispensehead by placing the pipette tip in the opening and expelling the fluid as shown above. Do NOT depress the pipette plunger to the second blow out stop because this could introduce air into the dispensehead.
- When loading high-volume dispenseheads, position the pipette tip in the slot at bottom/left side of the fluid reservoir. Pipette slowly to prevent fluid from spilling out of reservoir.



Pipette directly into the opening

Do NOT depress the plunger to the second blow out stop

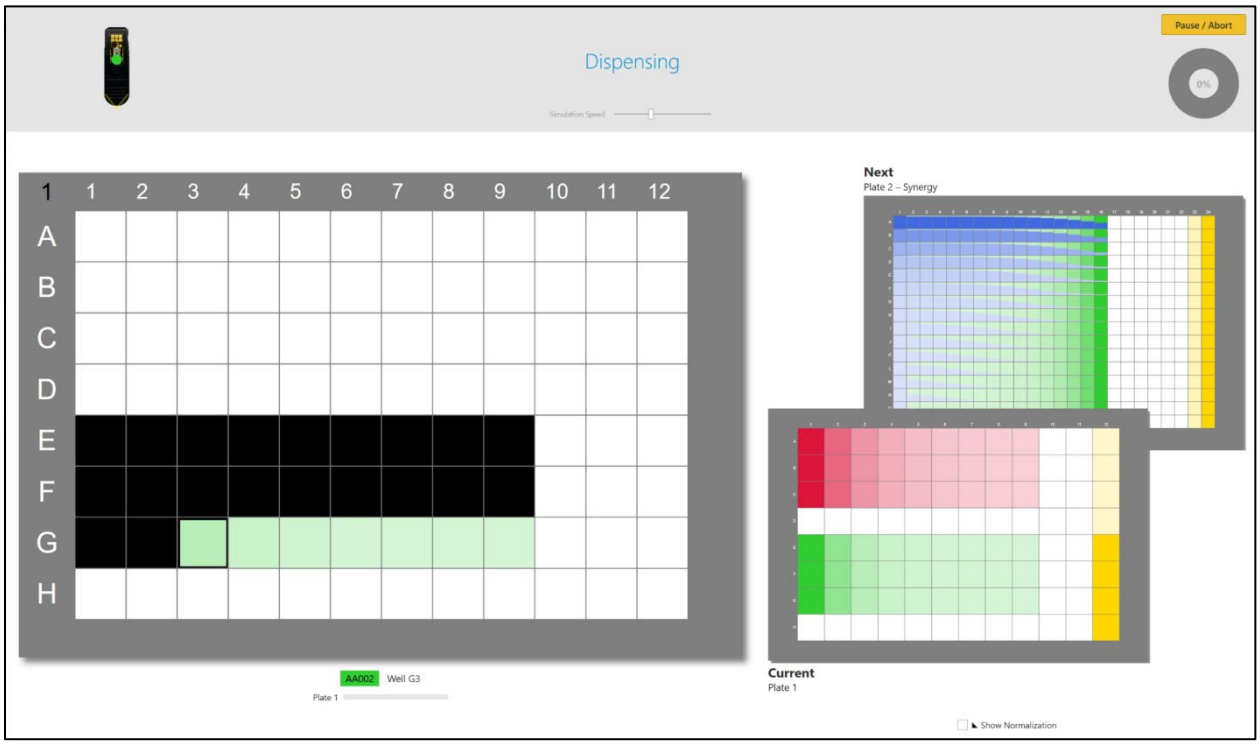


Good load **Bad load**

Examples of good (left) and bad (right) load on high-volume cassettes.

5.2 Fluid dispensing

Once you click **Filled**, dispensing of the fluid is initiated and the dynamic display of the protocol dispensing begins.



In the status area, the status indicates **Dispensing** and the progress circle begins to advance.

The lower area shows a larger view of the fluid being dispensed, with additional fluid and well information. As dispense is completed for a well, it changes to black. There is a small plate progress bar which indicates progress for all fluids on the current plate.

The current dispense plate is shown at the right, along with the next dispense plate.

The run continues until all fluid has been dispensed to all plates.

5.2.1 Plate changes

If the protocol has more than one plate, dispensing will pause when a different plate is required, and you will be prompted to change the plate.

You may need to load a plate more than once, and plates will not always be requested in order.

5.2.2 Cassette changes

As additional cassettes are needed, dispensing will pause, and you will be prompted to load a new cassette and the fluid needed for that cassette.

5.2.3 Dispensing of Aqueous fluids without surfactant

When dispensing aqueous fluids without surfactant using surfactant-free cassettes, a mechanical “tapping” will occur prior to a dispense to ensure that fluid is in the microfluidics and that a dispense is ready to proceed.

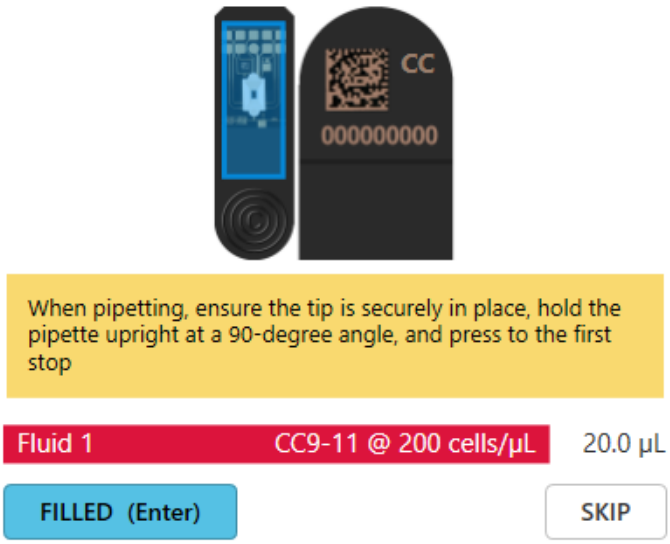
Aqueous fluids without surfactant have a high surface tension that can make it difficult for fluid to enter the microfluidics, this “tap” ensures that fluid infiltrates the microfluidics properly.

6 Running a single cell dispensing protocol

Refer to the User Manual Analytik Jena Dispenser Software for PULSEspencer RC for information about initiating and completing a protocol run.

6.1 Load sample prompt

After the cassette has been loaded, the prompt to add the cell sample will appear. The prompt indicates the required load volume to be 20.0 µL and the cell concentration to be 200 cells/µL.

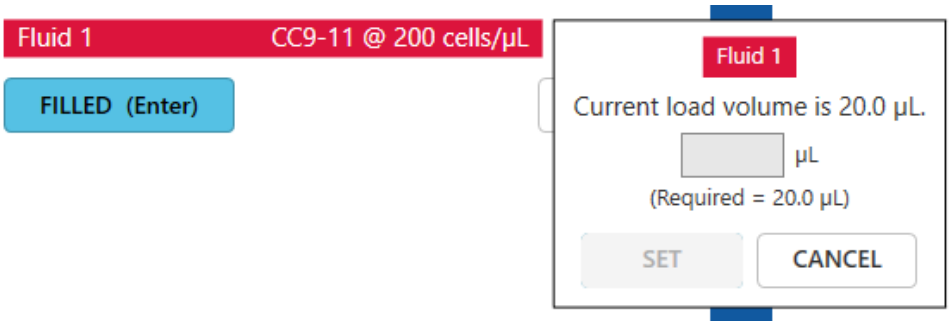


- Fill the CC cassette reservoir similarly to how fluids are added in Standard-volume and High-volume reagent cassettes. At this point, the software is waiting for you to fill the reservoir.
- Indicate that the reservoir has been filled by clicking **Filled (Enter)**. When you click **Filled**, dispensing of cells will proceed.

Modifying load volume

The load volume, which is included in reports, can be modified at the fluid prompt to match the actual volume to be loaded. Load volumes can only be increased from the required amount.

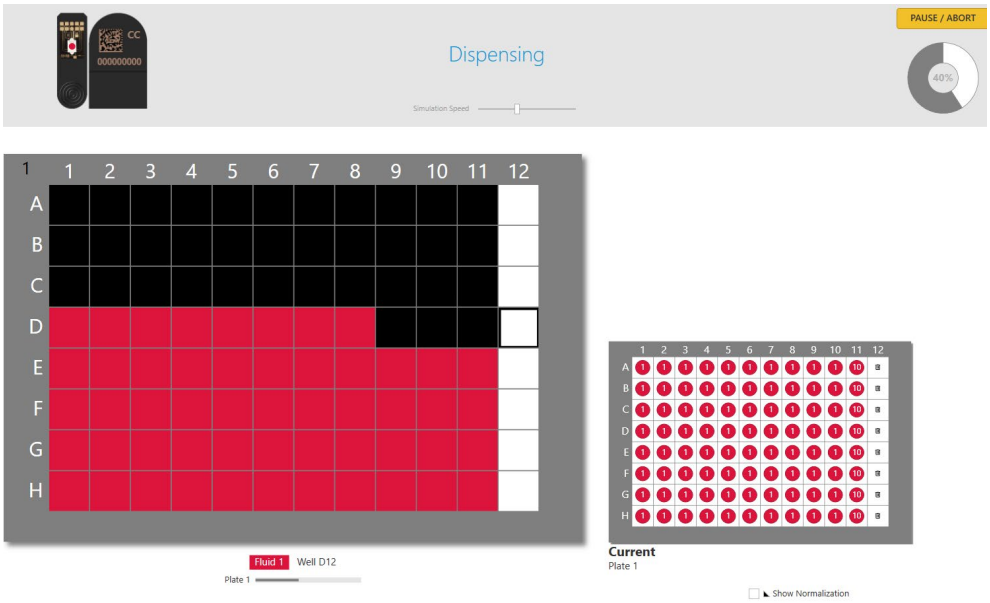
- To modify load volume, move the cursor over the volume on the monitor and click when highlighted.
- ✓ A popup box allows the dispensehead volume to be modified.



6.2 Dispensing single cells

Once you prepare the dispensing cell suspension at 200 cells/µL and load it on the cassette, begin the dispensing as soon as possible. Any delay in initiating the dispensing will cause the cells to aggregate within the microfluidics, leading to a sub-optimal run.

During the run, the status indicates **Dispensing** and the progress circle begins to advance.



The lower area shows which fluid is being dispensed, with additional fluid, well, and plate information. When dispensing is completed for a given well, it changes to black. There is a small plate progress bar which indicates progress for all fluids on the current plate and the well in which a cell is currently being dispensed.

6.3 Cell dispense error

If there is a clog during the run from cell aggregates or debris, you will be prompted to load and fill a new cell cassette. When no single cells are being sensed due to a clog, the dispensing reaches a defined Time-out volume of 600 nL. After reaching the maximum volume without sensing a cell, the dispenser prompts a time-out cell dispense error. To continue dispensing requires using another cell cassette to complete the run.

It is possible that a time-out cell dispense error can occur if the cell suspension is too dilute and an insufficient number of cells cross the sensor for a given volume. If you suspect this, for example because the cell dispense before the time-out error was proceeding very slowly, check the dispense report cell concentration and prepare a new cell suspension of 200 cells/µL based on the cell concentration from the report.

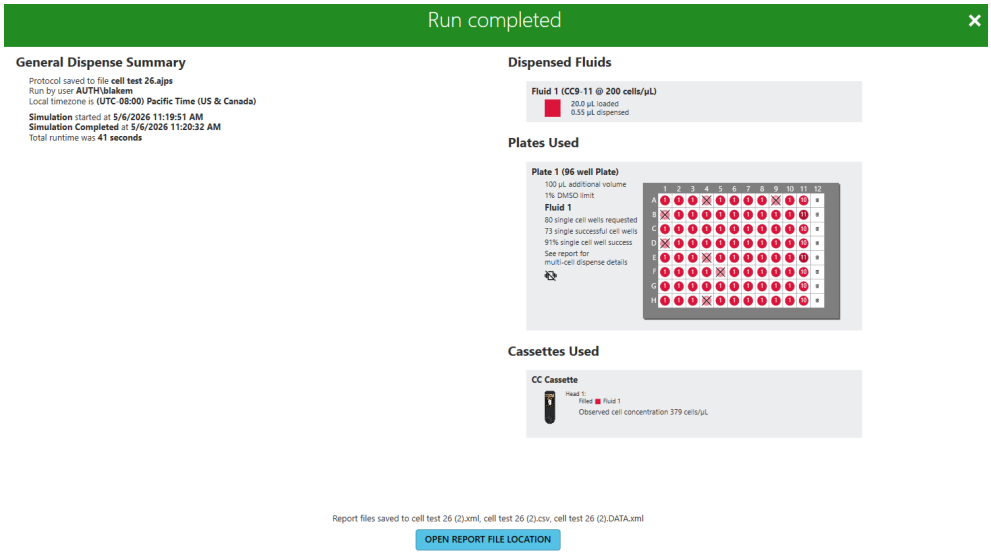
Alternatively, if a dilute or “rare” cell sample is in use, the use of the “Rare cell mode” will overcome the Time-out error. In Rare cell mode a user can increase the volume of fluid dispensed before a Time-out occurs (timeout volume). Access this feature from the Advanced Cell Features tab in the software settings or by checking the box in the Pre-run Summary screen. For a detailed description of rare cell mode see the Settings section of this document.

If a clog is suspected, further information about troubleshooting can be found in "Appendix F – Best practices for dispensing" of the User Manual Analytik Jena Dispenser Software for PULSEspencer RC.

6.4 Run completed

At the end of the run, the plate will show successful single-cell wells, and non-single-cell wells will be marked with an **X**.

The value **Counted Cell Dispense Summary** for the plate is displayed on the **Run completed** screen. Wells reported to contain single cells are shown in the plate graphic. This information can also be found in the report.



If report settings are set to generate a report on every run, a message appears to let you know that the report is being generated. For information on what to look for in your report, see Appendix A of the User Manual Analytik Jena Dispenser Software for PULS-Espencer RC.

If a report is not automatically saved, it can later be saved using the **Save Report** feature in **File** menu.

Click **Close** to return to the operating window. Click **Park Plate Holder and Close** to retract the plate holder before closing. You can always retract the plate holder from the **Run** Menu tab.

7 Preventive maintenance procedures

This section describes dispenser preventive maintenance (PM). Detailed instructions for each PM procedure are described, and a form is provided at the end to document PM completion. The completed PM form can be printed for record keeping.

Unlike many other types of laboratory equipment, there are no electrical or mechanical preventive maintenance adjustments or procedures required. The consumable supply which provides the dispense performance is used just one time prior to disposal. If dispense results are not satisfactory, the instrument will likely need to be returned for repair. Contact information can be found in the Service and Support document, which can be accessed from the **File | Documentation** menu in the dispenser software.

7.1 Turning off the dispenser

Once you have finished using the dispenser and will not use it again for an extended period of time, turn it off as follows:

- Close the dispenser software, either by clicking the **X** in the upper right corner of the main operating window or by clicking **Exit** in the **File** menu.
- Turn the dispenser off using the main power switch on the front of the dispenser. Depress and hold the power button until the light and power are off.
- Unplug both the power cable and USB cable from the back of the dispenser.
- Remove any unused dispensehead cassettes from the dispenser to avoid contamination from cleaning solutions or the laboratory environment.
- Clean the dispenser according to the cleaning procedures described in section "Cleaning the dispenser".

7.2 Cleaning the dispenser

Note

- Do not spray cleaning fluid directly onto the dispenser when a dispensehead cassette is installed. Always avoid exposing unused dispenseheads to cleaning fluids.
- Do not spray or wipe the static eliminator electrode that is mounted under the deck to the left of the cassette holder.

As with any lab instrument, it is a best practice to routinely clean areas of the dispenser that come into contact with chemicals.

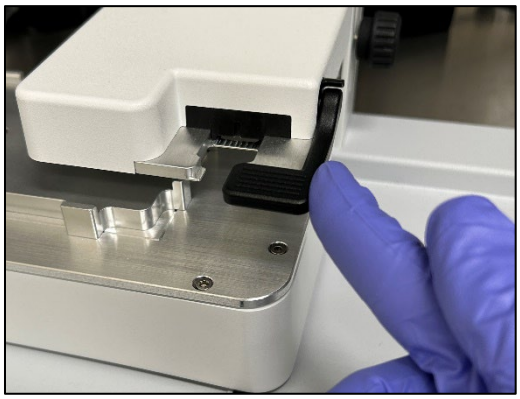
- Close the dispenser software, either by clicking the **X** in the upper right corner of the main operating window or by clicking **Exit** in the **File** menu.
- Turn off the dispenser.
- Remove any unused dispensehead cassettes from the dispenser to avoid contamination from cleaning solutions or the laboratory environment and place them back in the cassette tray.

- Spray a cleaning solution, such as bleach or a 70% ethanol solution, onto a fabric Texwipe or other cloth that does not generate particles. Wipe down all accessible dispenser surfaces, including the following:
- The top and bottom surfaces of the cassette holder
- The destination plate holder
- All the outside surfaces of the dispenser
- Clean the pogo pins (see "Pogo pin cleaning" p. 26).

7.3 Pogo pin inspection

For both the pogo pin inspection and cleaning, turn off the dispenser.

- Close the dispenser software, either by clicking the **X** in the upper right corner of the main operating window or by clicking **Exit** in the **File** menu.
- Turn off the dispenser and unplug the power and USB cables from the back of the dispenser.
- Remove any unused dispensehead cassettes from the dispenser to avoid contamination and place them back in the cassette tray.
- Place the handle in the down position to lower the pogo pins down.
- Carefully, tip the dispenser on its back so you can view under the cassette holder.
- Inspect the pogo pins through the slot in the cassette holder to ensure that all pogo pins extend fully and are not bent. Pogo pins that are bent or not fully extended must be replaced (contact Support).



- Tip the dispenser back upright and plug the cables back in.

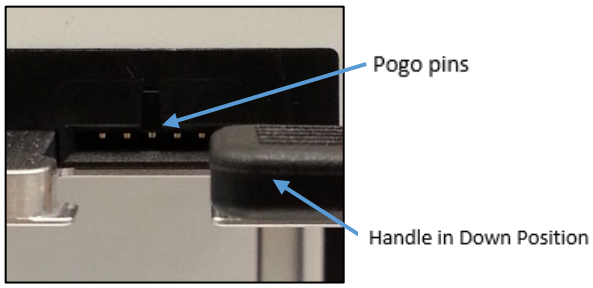
7.4 Pogo pin cleaning

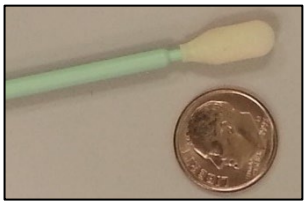
Note

Pogo pins are easily damaged by side pressure. Be careful not to bend them.

- If a cassette is in the cassette holder, remove the cassette.

- ▶ Place the handle in the down position to lower the pogo pins.
- ▶ Very gently, in order to not to bend the pogo pins, wipe the pogo pins with a non-fibrous cloth, such as a Texwipe, saturated with isopropyl alcohol. A foam-tipped applicator can also be used, but do not use a fibrous one, like a cotton swab.
- – Do not spray the pogo pins with cleaning fluid.
- – Do not wipe the pogo pins with cleaning fluid other than isopropyl alcohol.
- ▶ After wiping the pogo pins, return the handle to the up position. Allow the isopropyl alcohol to dry prior to next use.





7.5 A1 alignment check

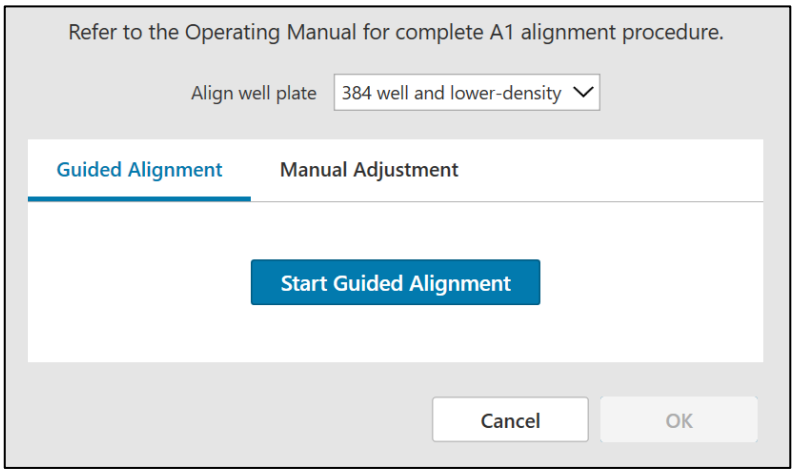
Note

It is strongly recommended to verify 1536-well plate A1 alignment before dispensing into 1536-well plates.

During shipment or movement of the dispenser, it is possible that the position of the stage assembly relative to the dispensehead cassette may change. After re-locating the dispenser, you can follow this procedure to test and modify the alignment of stage assembly to cassette. If you notice poor CVs or fluid dispensed on side walls or ribs of the destination plates, you may also want to test alignment.

Use this section only if you are comfortable with resetting computer parameters for instruments, such as the dispenser. If you are unsure about this procedure at any point, call the Service Help Desk for assistance.

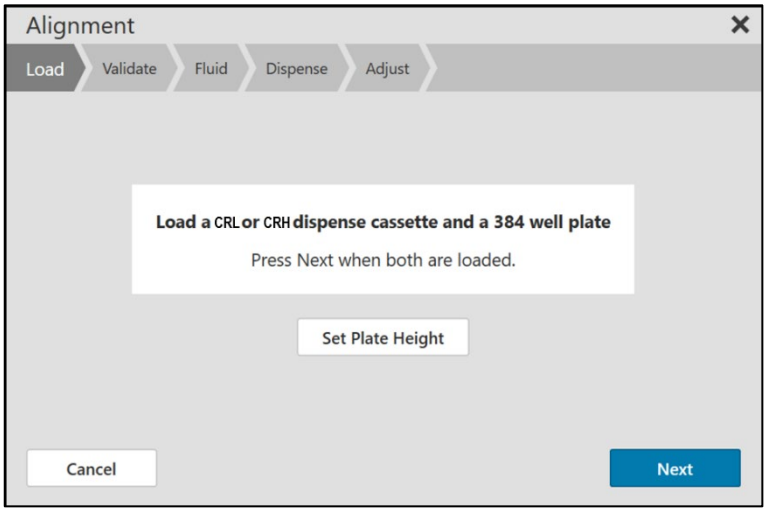
- ▶ Click **A1 Alignment** on the **Advanced** tab of the ribbon. The **A1 Alignment** dialog opens as shown below. Select the well plate type that you are aligning.



- Click on **Start Guided Alignment** to be guided through the verification and (optional) alignment process. To skip guided alignment, select the **Manual Adjustment** tab to adjust the dispense location.

Load and Validate

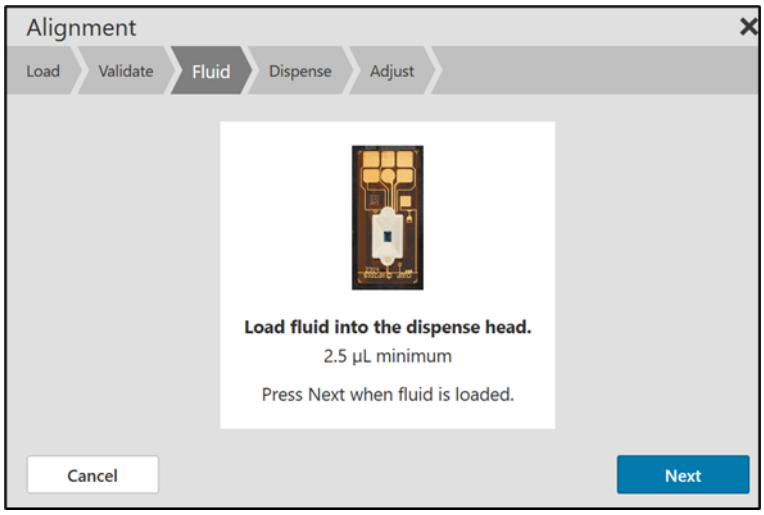
- Load a dispense cassette and plate. Any unused cassette can be used for alignment. Place a clear lid or plate seal on the plate.



- After the cassette and plate are loaded, click **Next** and they will be validated. If necessary, you will be prompted again for cassette and/or plate load.

Fluid and Dispense

DMSO or an aqueous fluid with surfactant can be used for dispensing. Colorant (not more than 10% food coloring in DMSO) may be added to the fluid may make it easier to verify alignment.

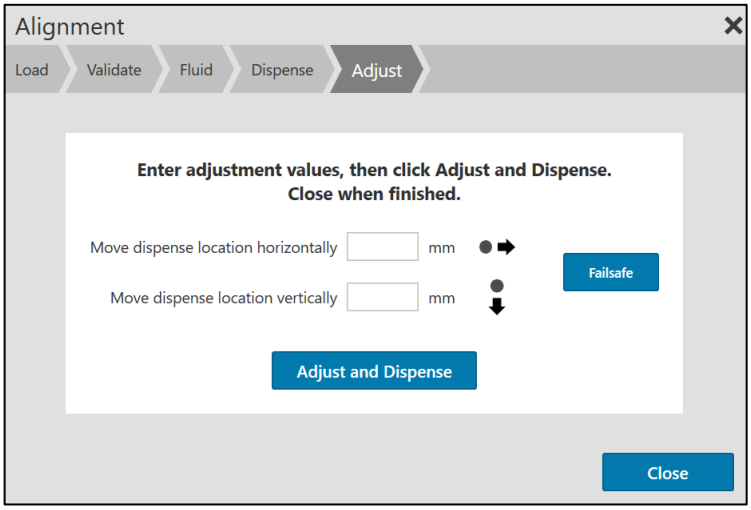


After loading the fluid and clicking **Next**, fluid will be dispensed to the centers of the 4 corner wells.

Adjust

After dispensing, the plate will move to a position where it can be examined or removed for closer examination.

- If the alignment is correct, you can exit the procedure by clicking the **Close** button.



7.6 A1 realignment

If the dispense alignment is not correct, it may be helpful to make a sketch showing where the drop landed relative to the well outline. This will help you to remember which direction the drop landed relative to the center of the well.

- Measure the approximate offset of the fluid from the center of the well using a metric ruler. Measure to within about a quarter millimeter, noting the offsets.

Note

If the fluid in any one corner is off by more than 1.0 mm in a different direction than the other corners, the stage assembly is not square, and you need to contact the Service Help Desk. The contact information can be found in the dispenser Service and Support document.

In the example above, the alignment is off by about 1 mm horizontally and 0.5 mm vertically. The drop position must be moved to the left and down.

- Move the drop position 1 mm to the left and 0.5 mm down.
  Typing a negative number in the entry box moves the drop in the opposite direction to the arrow – that is, either left or up.
- Clean the plate cover or seal before re-dispensing.
- Click **Adjust and Dispense**. The alignment will adjust as specified. Then the fluid will be dispensed to the four corners again.
- The usual procedure is to adjust and re-dispense to verify the adjustment until alignment is good.

7.7 Static Bar Emitter cleaning procedure

The static bar (static eliminator electrode) can accumulate debris on the emitter tips and will need periodic cleaning. The frequency of cleaning is highly dependent on the environment that the dispenser is in, and the frequency of use. Conducting this cleaning annually is a good baseline for the average instrument.

Cleanroom environments will require less maintenance, whereas office space, or dirtier environments will require more frequent cleaning.

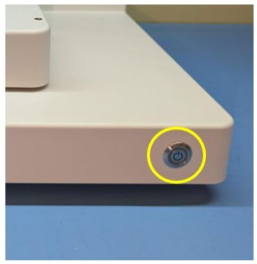
High usage instruments will require more frequent cleaning vs. low usage.

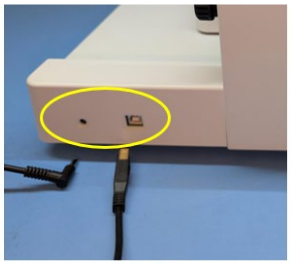
- Power off instrument (power switch on front).
- Unplug DC power (back of instrument).
- Unplug USB cable (back of instrument).
- Static bar emitters (2x) are located at the front, left side of the cassette holder under the aluminum deck. Clear the workspace under the emitters:
  Grasp the well plate holder, using firm, steady pressure, move it to the front and right corner of the instrument.

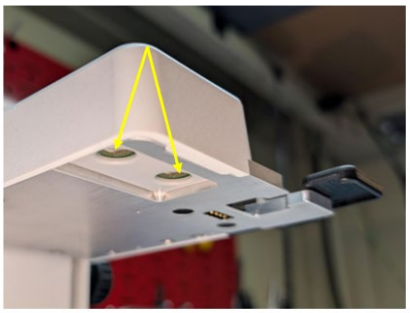
NOTE: Wear gloves while performing all procedures. Do not contaminate the instrument or emitters with skin oils or other.

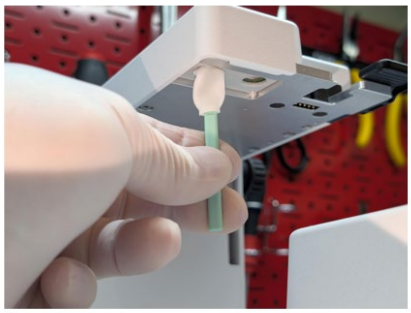
- Use a lint free synthetic fiber swab (*example: Texwipe TX714A*).
- Insert the swab into the opening of each of the two emitters.
- With gentle upward force, rotate the swab clockwise and counter-clockwise, two or three times.

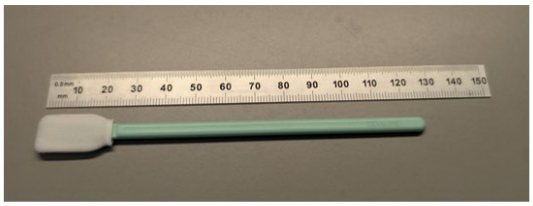
NOTE: Do not use any solvents or other fluids to clean the emitters. A clean dry swab is sufficient to clean off the debris.










10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

7.8 Preventive maintenance completion form

This page can be printed for record keeping.

Instrument Information	
Company/Location:	
Instrument Name:	
Instrument Serial Number:	
Installation Date:	
Instrument Building /Floor/ Room:	/ /
Dispenser Software Version:	

Preventive Maintenance Procedures	Done
Cleaning the Instrument	☐
Pogo Pin Inspection	☐
Pogo Pin Cleaning	☐
Static Bar Cleaning	☐
A1 Alignment Check	☐
A1 Realignment	☐

The undersigned confirms that these Preventive Maintenance procedures have been performed:

PM(s) Performed By	Email
Signature	Date

8 System specifications

Hardware

Dimensions of dispenser (W x D x H)	38.5 cm x 28 cm x 19 cm (15.2 in x 11.0 in x 7.5 in)
Weight	Approx. 4.8 kg (10.58 lb)
Mains voltage	100 to 240 V Grounded electrical outlet
Data connections	USB port

Environmental operating conditions

Temperature	20 to 30 °C (68 to 86 °F) laboratory conditions
Humidity	30 to 80% RH
Indoor use only	
Maximum Altitude	3000 m
Pollution degree	2

Shipping and storage conditions

Temperature	10 to 32 °C (50 to 90 °F)
Humidity	20 to 80% RH

Compatible well plates

Well plates that meet the following criteria are compatible with the dispenser:

- One of the following types: 12, 24, 48, 96, 384, 1536.
- Custom well plates ANSI specifications for footprint dimensions, no more than 2000 wells, well-to-well spacing > 250 µm Between 4 mm and 47 mm in height.

9 Legal and regulatory notices

HP is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at: http://www.hp.com/go/reach.

This product does not contain any of the RoHS materials above the applicable threshold levels and is therefore eligible for the China RoHS “e” label:

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

[English meaning: Republic of Turkey: In conformity with the WEEE Regulation]

This product, as well as its related consumables and spares, complies with the reduction in hazardous substances provisions of the "India E-waste Rule 2016." It does not contain lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers in concentrations exceeding 0.1 weight % and 0.01 weight % for cadmium, except where allowed pursuant to the exemptions set in Schedule 2 of the Rule.

Disposal of Wast Equipment by Users

English

Disposal of Waste Equipment by Users in Private Households in the European Union

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Français

Evacuation des équipements usagés par les utilisateurs dans les foyers privés au sein de l'Union européenne

La présence de ce symbole sur le produit ou sur son emballage indique que vous ne pouvez pas vous débarasser de ce produit de la même façon que vos déchets courants. Au contraire, vous êtes responsable de l'évacuation de vos équipements usagés et à cet effet, vous êtes tenu de les remettre à un point de collecte agréé pour le recyclage des équipements électriques et électroniques usagés. Le tri, l'évacuation et le recyclage séparés de vos équipements usagés permettent de préserver les ressources naturelles et de s'assurer que ces équipements sont recyclés dans le respect de la santé humaine et de l'environnement. Pour plus d'informations sur les lieux de collecte des équipements usagés, veuillez contacter votre mairie, votre service de traitement des déchets ménagers ou le magasin où vous avez acheté le produit.

Deutsch

Dieses Symbol weist darauf hin, dass Sie Ihr Produkt nicht über den Hausmüll entsorgen dürfen. Bitte geben Sie Ihr Altgerät zum Schutz der menschlichen Gesundheit und der Umwelt an einer dafür vorgesehenen Sammel- bzw. Annahmestelle für Elektro- und Elektronik-Altgeräte zur getrennten Sammlung und zum Recycling ab. Für weitere Informationen wenden Sie sich bitte an Ihren zuständigen kommunalen Entsorgungsbetrieb oder besuchen Sie http://www.hp.com/recycle.

Altbatterien, die nicht vom Altgerät umschlossen sind, sowie Lampen, die zerstörungsfrei aus dem Altgerät entnommen werden können, sind vor der Abgabe an einer Erfassungsstelle vom Altgerät zerstörungsfrei zu trennen. Eine unsachgemäße Entsorgung von Batterien erhöht das Brandrisiko und kann dazu führen, dass gefährliche Schadstoffe wie Blei, Cadmium oder Lithium in die Umwelt gelangen und Boden sowie Wasser verunreinigen.

Bitte beachten Sie, dass Sie für die Löschung personenbezogener Daten von Ihrem Altgerät selbst verantwortlich sind.

Für Nutzer außerhalb privater Haushalte bietet HP über das HP Planet Partners Programm die Möglichkeit der Rücknahme von Altgeräten an. Alle Details zu den Rücknahmeservices finden Sie unter: http://www.hp.com/recycle.

Italiano

Smaltimento delle apparecchiature elettriche ed elettroniche a fine vita nell'Unione Europea

Questo simbolo, riportato sull'apparecchiatura o sulla confezione, indica che il prodotto alla fine della propria vita utile deve essere smaltito separatamente dagli altri rifiuti domestici. L'utente dovrà quindi portare l'apparecchiatura giunta a fine vita agli appositi centri di raccolta differenziata per rifiuti elettrici ed elettronici. L'adeguata raccolta differenziata e il successivo riciclo contribuiscono a evitare possibili effetti negativi sull'ambiente e sulla salute e favoriscono la conservazione delle risorse naturali. Per ulteriori informazioni sui punti di raccolta delle apparecchiature a fine vita, contattare il proprio comune di residenza, il servizio di smaltimento dei rifiuti locale o il negozio presso il quale è stato acquistato il prodotto.

Español

Eliminación de residuos de aparatos eléctricos y electrónicos por parte de usuarios domésticos en la Unión Europea

Este símbolo en el producto o en el embalaje indica que no se puede desechar el producto junto con los residuos domésticos. Por el contrario, si debe eliminar este tipo de residuo, es responsabilidad del usuario entregarlo en un punto de recolección designado de reciclado de aparatos electrónicos y eléctricos. El reciclaje y la recolección por separado de estos residuos en el momento de la eliminación ayudará a preservar recursos naturales y a garantizar que el reciclaje proteja la salud y el medio ambiente. Si desea información adicional sobre los lugares donde puede dejar estos residuos para su reciclado, póngase en contacto con las autoridades locales de su ciudad, con el servicio de gestión de residuos domésticos o con la tienda donde adquirió el producto.

Български

Изхвърляне на отпадъчни уреди от потребители на домакинства в Европейския съюз

Този символ на продукта или на опаковката му обозначава, че продуктът не трябва да се изхвърля заедно с другите битови отпадъци. Напротив, ваша отговорност е да изхвърлите отпадъчното оборудване до определено място за рециклиране на електрическо и електронно оборудване. Разделното събиране и рециклиране на отпадъчно оборудване в момента на изхвърлянето му помага да се съхранят природните ресурси и да се гарантира, че то ще бъде рециклирано по начин, който предпазва човешкото здраве и околната среда. За допълнителна информация относно местата за предаване на отпадъчното оборудване за рециклиране се свържете с общинската служба, службата за събиране на битовите отпадъци или магазина, откъдето сте закупили уреда.

Česky

Likvidace vysloužilého zařízení uživateli v domácnosti v zemích EU

Tato značka na produktu nebo na jeho obalu označuje, že tento produkt nesmí být likvidován prostým vyhozením do běžného domovního odpadu. Odpovídáte za to, že vysloužilé zařízení bude předáno k likvidaci do stanovených sběrných míst určených k recyklaci vysloužilých elektrických a elektronických zařízení. Likvidace vysloužilého zařízení samostatným sběrem a recyklací napomáhá zachování přírodních zdrojů a zajišťuje, že recyklace proběhne způsobem chránícím lidské zdraví a životní prostředí. Další informace o tom, kam můžete vysloužilé zařízení předat k recyklaci, můžete získat od úřadů místní samosprávy, od společnosti provádějící svoz a likvidaci domovního odpadu nebo v obchodě, kde jste produkt zakoupili.

Dansk

Bortskaffelse af affaldsudstyr for brugere i private husholdninger i EU

Dette symbol på produktet eller på dets emballage indikerer, at produktet ikke må bortskaffes sammen med andet husholdningsaffald. I stedet er det dit ansvar at bortskaffe affaldsudstyr ved at aflevere det på dertil beregnede indsamlingssteder med henblik på genbrug af elektrisk og elektronisk affaldsudstyr. Den separate indsamling og genbrug af dit affaldsudstyr på tidspunktet for bortskaffelse er med til at bevare naturlige ressourcer og sikre, at genbrug finder sted på en måde, der beskytter menneskers helbred samt miljøet. Hvis du vil vide mere om, hvor du kan aflevere dit affaldsudstyr til genbrug, kan du kontakte kommunen, det lokale renovationsvæsen eller den forretning, hvor du købte produktet.

Nederlands

Afvoer van afgedankte apparatuur door gebruikers in particuliere huishoudens in de Europese Unie

Dit symbool op het product of de verpakking geeft aan dat dit product niet mag worden afgevoerd met het huishoudelijk afval. Het is uw verantwoordelijkheid uw afgedankte apparatuur af te leveren op een aangewezen inzamelpunt voor de verwerking van afgedankte elektrische en elektronische apparatuur. De gescheiden inzameling en verwerking van uw afgedankte apparatuur draagt bij tot het sparen van natuurlijke bronnen en tot het hergebruik van materiaal op een wijze die de volksgezondheid en het milieu beschermt. Voor meer informatie over waar u uw afgedankte apparatuur kunt inleveren voor recycling kunt u contact opnemen met het gemeentehuis in uw woonplaats, de reinigingsdienst of de winkel waar u het product hebt aangeschaft.

Eesti

Eramajapidamistes kasutuselt kõrvaldatavate seadmete käitlemine Euroopa Liidus

Kui tootel või toote pakendil on see sümbol, ei tohi seda toodet visata olmejäätmete hulka. Teie kohus on viia tarbetuks muutunud seade selleks ettenähtud elektri- ja elektroonikaseadmete utiliseerimiskohta. Utiliseeritavate seadmete eraldi kogumine ja käitlemine aitab säästa loodusvarasid ning tagada, et käitlemine toimub inimeste tervisele ja keskkonnale ohutult. Lisateavet selle kohta, kuhu saate utiliseeritava seadme käitlemiseks viia, saate küsida kohalikust omavalitsusest, olmejäätmete utiliseerimispunktist või kauplusest, kust te seadme ostsite.

Suomi

Hävitettävien laitteiden käsittely kotitalouksissa Euroopan unionin alueella

Tämä tuotteessa tai sen pakkauksessa oleva merkintä osoittaa, että tuotetta ei saa hävittää talousjätteiden mukana. Käyttäjän velvollisuus on huolehtia siitä, että hävitettävä laite toimitetaan sähkö- ja elektroniikkalaiteromun keräyspisteeseen. Hävitettävien laitteiden erillinen keräys ja kierrätys säästää luonnonvaroja. Näin toimimalla varmistetaan myös, että kierrätys tapahtuu tavalla, joka suojelee ihmisten terveyttä ja ympäristöä. Saat tarvittaessa lisätietoja jätteiden kierrätyspaikoista paikallisilta viranomaisilta, jäteyhtiöiltä tai tuotteen jälleenmyyjältä.

Ελληνικά

Απόρριψη άχρηστων συσκευών στην Ευρωπαϊκή Ένωση

Το παρόν σύμβολο στον εξοπλισμό ή στη συσκευασία του υποδεικνύει ότι το προϊόν αυτό δεν πρέπει να πεταχτεί μαζί με άλλα οικιακά απορρίμματα. Αντίθετα, ευθύνη σας είναι να απορρίψετε τις άχρηστες συσκευές σε μια καθορισμένη μονάδα συλλογής απορριμμάτων για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Η χωριστή συλλογή και ανακύκλωση των άχρηστων συσκευών θα συμβάλλει στη διατήρηση των φυσικών πόρων και τη διασφάλιση ότι θα ανακυκλωθούν με τρόπο ώστε να προστατεύεται η υγεία των ανθρώπων και το περιβάλλον. Για περισσότερες πληροφορίες σχετικά με το πού μπορείτε να απορρίψετε τις άχρηστες συσκευές για ανακύκλωση, επικοινωνήστε με τις κατά τόπους αρμόδιες αρχές ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Magyar

A hulladékanyagok kezelése a magánháztartásokban az Európai Unióban

Ez a szimbólum, amely a terméken vagy annak csomagolásán van feltüntetve, azt jelzi, hogy a termék nem kezelhető együtt az egyéb háztartási hulladékkal. Az Ön feladata, hogy a készülék hulladékanyagait eljuttassa olyan kijelölt gyűjtőhelyre, amely az elektromos hulladékanyagok és az elektronikus berendezések újrahasznosításával foglalkozik. A hulladékanyagok elkülönített gyűjtése és újrahasznosítása hozzájárul a természeti erőforrások megőrzéséhez, egyúttal azt is biztosítja, hogy a hulladék újrahasznosítása az egészségre és a környezetre nem ártalmas módon történik. Ha tájékoztatást szeretne kapni azokról a helyekről, ahol leadhatja újrahasznosításra a hulladékanyagokat, forduljon a helyi önkormányzathoz, a háztartási hulladék begyűjtésével foglalkozó vállalathoz vagy a termék forgalmazójához.

Latviski

Lietotāju atbrīvošanās no nederīgām ierīcēm Eiropas Savienības privātajās mājsaimniecībās

Šis simbols uz ierīces vai tās iepakojuma norāda, ka šo ierīci nedrīkst izmest kopā ar pārējiem mājsaimniecības atkritumiem. Jūs esat atbildīgs par atbrīvošanos no nederīgās ierīces, to nododot norādītajā savākšanas vietā, lai tiktu veikta nederīgā elektriskā un elektroniskā aprīkojuma otrreizējā pārstrāde. Speciāla nederīgās ierīces savākšana un otrreizējā pārstrāde palīdz taupīt dabas resursus un nodrošina tādu otrreizējo pārstrādi, kas sargā cilvēku veselību un apkārtējo vidi. Lai iegūtu papildu informāciju par to, kur otrreizējai pārstrādei var nogādāt nederīgo ierīci, lūdzu, sazinieties ar vietējo pašvaldību, mājsaimniecības atkritumu savākšanas dienestu vai veikalu, kurā iegādājāties šo ierīci.

Lietuviškai

Europos Sąjungos vartotojų ir privačių namų ūkių atliekamos įrangos išmetimas

Šis simbolis ant produkto arba jo pakuotės nurodo, kad produktas negali būti išmestas kartu su kitomis namų ūkio atliekomis. Jūs privalote išmesti savo atliekamą įrangą atiduodami ją į atliekamos elektronikos ir elektros įrangos perdirbimo punktus. Jei atliekama įranga bus atskirai surenkama ir perdirbama, bus išsaugomi natūralūs ištekliai ir užtikrinama, kad įranga yra perdirbta žmogaus sveikatą ir gamtą tausojančiu būdu. Dėl informacijos apie tai, kur galite išmesti atliekamą perdirbti skirtą įrangą, kreipkitės į atitinkamą vietos tarnybą, namų ūkio atliekų išvežimo tarnybą arba į parduotuvę, kurioje pirkote produktą.

Polski

Utylizacja zużytego sprzętu przez użytkowników domowych w Unii Europejskiej

Symbol ten umieszczony na produkcie lub opakowaniu oznacza, że tego produktu nie należy wyrzucać razem z innymi odpadami domowymi. Użytkownik jest odpowiedzialny za dostarczenie zużytego sprzętu do wyznaczonego punktu zbierania zużytych urządzeń elektrycznych i elektronicznych. Zbieranie osobno i recykling tego typu odpadów przyczyniają się do ochrony zasobów naturalnych i są bezpieczne dla zdrowia i środowiska naturalnego. Dalsze informacje na temat sposobu utylizacji zużytych urządzeń można uzyskać u odpowiednich władz lokalnych, w przedsiębiorstwie zajmującym się usuwaniem odpadów lub w miejscu zakupu produktu.

Português

Descarte de equipamentos por usuários em residências da União Européia

Este símbolo no produto ou na embalagem indica que o produto não pode ser descartado junto com o lixo doméstico. No entanto, é sua responsabilidade levar os equipamentos a serem descartados a um ponto de coleta designado para a reciclagem de equipamentos eletro-eletrônicos. A coleta separada e a reciclagem dos equipamentos no momento do descarte ajudam na conservação dos recursos naturais e garantem que os equipamentos serão reciclados de forma a proteger a saúde das pessoas e o meio ambiente. Para obter mais informações sobre onde descartar equipamentos para reciclagem, entre em contato com o escritório local de sua cidade, o serviço de limpeza pública de seu bairro ou a loja em que adquiriu o produto.

Română

Scoaterea din uz a echipamentelor uzate de către utilizatorii persoane fizice din Uniunea Europeană

Prezența acestui simbol pe produs sau pe ambalajul acestuia indică faptul că nu poate fi aruncat împreună cu gunoiul menajer. În schimb, este răspunderea dvs. să scoateți din uz echipamentul uzat predându-l la punctul de colectare indicat pentru reciclarea echipamentelor electrice şi electronice uzate. Colectarea şi reciclarea separată a echipamentelor uzate la scoaterea din folosință ajută la conservarea resurselor naturale şi asigură reciclarea acestora într-un mod care protejează sănătatea oamenilor şi mediul înconjurător. Pentru informații suplimentare despre locațiile în care puteți preda echipamentele uzate pentru reciclare, contactați primăria locală, serviciul de salubrizare care deserveşte gospodăria dvs. sau magazinul de la care ați cumpărat produsul.

Slovenčina

Postup používateľov v krajinách Európskej únie pri vyhadzovaní zariadenia v domácom používaní do odpadu

Tento symbol na produkte alebo na jeho obale znamená, že nesmie byť vyhodený s iným komunálnym odpadom. Namiesto toho máte povinnosť odovzdať toto zariadenie na zbernom mieste, kde sa zabezpečuje recyklácia elektrických a elektronických zariadení. Separovaný zber a recyklácia zariadenia určeného na odpad pomôže chrániť prírodné zdroje a zabezpečí taký spôsob recyklácie, ktorý bude chrániť ľudské zdravie a životné prostredie. Ďalšie informácie o separovanom zbere a recyklácii získate na miestnom obecnom úrade, vo firme zabezpečujúcej zber vášho komunálneho odpadu alebo v predajni, kde ste produkt kúpili.

Slovenščina

Ravnanje z odpadno opremo v gospodinjstvih znotraj Evropske unije

Ta znak na izdelku ali embalaži izdelka pomeni, da izdelka ne smete odlagati skupaj z drugimi gospodinjskimi odpadki. Odpadno opremo ste dolžni oddati na določenem zbirnem mestu za recikliranje odpadne električne in elektronske opreme. Z ločenim zbiranjem in recikliranjem odpadne opreme ob odlaganju boste pomagali ohraniti naravne vire in zagotovili, da bo odpadna oprema reciklirana tako, da se varuje zdravje ljudi in okolje. Več informacij o mestih, kjer lahko oddate odpadno opremo za recikliranje, lahko dobite na občini, v komunalnem podjetju ali trgovini, kjer ste izdelek kupili.

Svenska

Kassering av förbrukningsmaterial, för hem- och privatanvändare i EU

Produkter eller produktförpackningar med den här symbolen får inte kasseras med vanligt hushållsavfall. I stället har du ansvar för att produkten lämnas till en behörig återvinningsstation för hantering av el- och elektronikprodukter. Genom att lämna kasserade produkter för återvinning hjälper du till med att bevara våra gemensamma naturresurser. Dessutom skyddas både människor och miljön när produkter återvinns på rätt sätt. Kommunala myndigheter, sophanteringsföretag eller butiken där varan köptes kan ge mer information om var du lämnar kasserade produkter för återvinning.

简体中文

欧盟国家/**地区用**户在私人住宅中对废旧设备的处理

产品或包装上包括此标志表示此产品不得作为住宅垃圾来处理。而且您有责任将废旧设备送到指定的废旧电力电子 设备回收点，通过这种方式来处理废旧设备。废旧设备的分类收集与回收有助于节约自然资源，**保**证以有利于人类 **健康和**环保的方式回收废旧设备。有关废旧设备回收的详细信息，请与当地市政机关、家庭垃圾处理站或购买产品 **的商店**联系。

产品中有害物质或元素的名称及含量

根据中国《电子信息产品污染控制管理办法》

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电缆 / 电线	O	O	O	O	O	O
机壳	O	O	O	O	O	O
消耗品	O	O	O	O	O	O
外壳面板	X	O	O	O	O	O
激光检测仪	O	O	O	O	O	O
媒体（CD）	O	O	O	O	O	O
电机组件	O	O	O	O	O	O
印刷电**路**组**件** / 电**气元件**	X	O	O	O	O	O
电**源适配器**/电**源**	X	O	O	O	O	O
传**感器**	O	O	O	O	O	O
静电**消除棒**	X	O	O	O	O	O

本表格依据SJ/T 11364 **的**规定编制。

O：**表示**该有害物质在该部件所有均质材料中的含量均在GB/T 26572 规定的限量要求以下。

X：**表示**该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572 规定的限量要求。

此表中所有名称中含 “X” 的部件均符合欧盟 RoHS 立法。

注：环**保使用期限的参考**标识**取决于**产**品正常工作的温度和湿度等条件**

The Table of Hazardous Substances/Elements and their Content

as required by China's
Management Methods for Controlling Pollution by Electronic Information Products

Part Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Cable / Wiring	O	O	O	O	O	O
Chassis	O	O	O	O	O	O
Consumable	O	O	O	O	O	O
Outer Cover Panel	X	O	O	O	O	O
Laser Detector	O	O	O	O	O	O
Media (CD)	O	O	O	O	O	O
Motor Assembly	O	O	O	O	O	O
PCA / Electrical Component	X	O	O	O	O	O
Power Adapter / Supply	X	O	O	O	O	O
Sensor	O	O	O	O	O	O
Static Elimination Bar	X	O	O	O	O	O

This form has been prepared in compliance with the provisions of SJ/T 11364

O: Indicates that the content of said hazardous substance in all of the homogenous materials in the component is within the limits required by GB/T 26572

X: Indicates that the content of said hazardous substance exceeds the limits required by GB/T 26572 in at least one homogenous material in the component.

All parts named in this table with an "X" are in compliance with the European Union's RoHS Legislation.

Note: The referenced Environmental Protection Use Period Marking was determined according to normal operating use conditions of the product such as temperature and humidity.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

SCC Accredited CB-PS OCPS Accredite CCN

America

CERTIFICATE

No. U8 123046 0006 Rev.

Holder of Certificate: **HP Inc.**
1000 NE Circle Blvd.
Corvallis OR 97330
USA

Certification Mark:

Product: **Laboratory Equipment (Digital Dispenser)**

This product was voluntarily tested to the relevant safety requirements referenced on this certificate. It can be marked with the certification mark above. The mark must not be altered in any way. This product certification system operated by TÜV SÜD America Inc. most closely resembles system 3 as defined in ISO/IEC 17067. Certification is based on the TÜV SÜD "Testing, Certification, Validation and Verification Regulations (TCVVR)". TÜV SÜD America Inc. is an OSHA recognized NRTL for USA and a Standards Council of Canada ISO/IEC 17065 accredited Certification body for Canada.

Test report no.: 095-721009784-100

Date, 2026-08-01

Mandy Zhao

(Mandy Zhao)

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

No. U8 123046 0006 Rev.

Model(s):	CRVSD-1008 (Regulatory Model Number)
Brand Name:	**Analytik Jena**
Tested according to:	UL 61010-1:2012/R:2024-11 UL 61010-2-081:2019/R:2023-12 CSA C22.2 No. 61010-1:2012/U4:2024-11 CSA C22.2 No. 61010-2-081:2019

Parameters:

Input Voltage	19.5 VDC, 1.2 A (Powered by external AC/DC power supply model:TPN-CA18 made by Chicony Power Technology Co LTD)
Protection Class	Class I (PE Connected Power Supply)
Maximum Altitude:	3000 m
Maximum room Ambient:	40°C Max.

License Conditions or Model Matrix:

Trademark	Regulatory Model Number	HP Model Number
Analytik Jena	CRVSD-1008	B8NG2A