

D300e Digital Dispenser Operating Manual



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Table of Contents

INTRODUCTION TO THE DISPENSER	4
HOW THE DISPENSER WORKS.....	4
ADVANTAGES OF THE DISPENSER.....	4
SAFETY	5
SYSTEM SPECIFICATIONS	8
UNDERSTANDING THE DISPENSER	9
RUNNING A PROTOCOL	11
RUN WINDOW LAYOUT - PLATE AND FLUID PREPARATION.....	11
FLUID DISPENSING.....	18
PREVENTATIVE MAINTENANCE PROCEDURES	19
TURNING OFF THE DISPENSER	19
CLEANING THE DISPENSER	19
POGO PIN INSPECTION	20
POGO PIN CLEANING	21
A1 ALIGNMENT CHECK	22
A1 REALIGNMENT	24
PREVENTIVE MAINTENANCE COMPLETION FORM.....	25
LEGAL AND REGULATORY NOTICES	26

Introduction to the dispenser

How the dispenser works

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 molecule, 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

Using single-use dispense heads 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 and reliability of results.

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.

Advantages of the dispenser

The dispenser adds breakthrough capability to life science research workflows by offering picoliter-to-microliter, non-contact, dispensing directly into assay plates.

Dispenser advantages

- High-performance digital dispensing: Reliably dispense, drop-by-drop, from low picoliters to microliters in seconds. Easily complete even the most complex experiments, such as drug-drug co-titration or enzyme kinetic studies in minutes. Achieve excellent data resolution (0.02 log increments). Digitally randomize plate layouts to reduce edge effects and increase data integrity.
- Resource savings: Eliminate slow, error prone, and wasteful serial-dilution steps. Optimize the use of precious materials and research time. Avoid ergonomic injuries and rework associated with repetitive hand pipetting processes.
- Ease of use: Enjoy a simple, intuitive user experience with quick do-it-yourself experiment design software. Use the Enzyme Profile Wizard to aid in designing complex enzyme kinetic experiments. Boost productivity with walk-up, just-in-time, bench top convenience. Avoid carry-over and washing with single use, non-contact dispensing supplies. Add all low-volume assay components with one system.

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.



NOTE: If this unit requires servicing, 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.



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.

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.

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.

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.

Laser safety

A Class 1 laser is used in the dispenser to determine the height of the destination plate. This Class 1 Laser follows the requirements of Laser Notice No. 50 of the FDA (CDRH), Accession No. 1520094-000. This product complies with 21 CFR Part 1040.10 for laser products.



CAUTION: Do not look at the laser beam directly. Similarly, do not continue to look at laser light reflected on a highly reflective substance for a long duration

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 100-240V AC, 1 phase/3 wire, 50/60 Hertz, 1.7A full load amperage.



CAUTION: 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.

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:

1. This device may not cause harmful interference, and
2. 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 HP 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.

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 [Cleaning the dispenser](#).

Safe disposal of dispense head cassettes and pipette tips

Disposal of used pipette tips and dispense head 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.

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 dispense head. 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 dispense head.
- 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.

Additional assistance

Contact the Service Help Desk for additional assistance. The contact information can be found in the dispenser Service and Support document by navigating to the File > Documentation menu of the software.

System specifications

Intended use

The dispenser and dispenseheads are intended only for the following uses, wherein all three conditions must be met:

- Dispensing DMSO solvent or water containing surfactant with or without small molecule compounds or biomolecule(s).
- For research use only.
- Single-use (i.e., non-reusable) operation of a dispensehead.

In addition to the requirement of Intended Use, the products should not be used for any of the following: (a) applications in Bio Safety Level 3 or 4 (BSL-3 or-4), food, animal or human testing or therapeutic delivery (except solely for therapeutic delivery for in vitro research uses); (b) dispensing cells, biofluids (unless otherwise specified on product packaging), bacteria, viruses, pathogens, contagions, infectious agents, toxins, oncogenes, or radioactive substances; and (c) uses that are unsafe, bypassing any product safety features, and/or disobeying any safety instruction.

Hardware

- Dimensions of dispenser (W x D x H): 47cm x 37cm x 23cm
- Grounded electrical outlet
- 100-240V
- USB port

Environmental operating conditions

- Temperature: 20C - 30C laboratory conditions (68F - 86F)
- Humidity: 30% - 80% RH

Shipping and storage conditions

- Temperature: 10C - 32C (50F - 90F)
- Humidity: 20% - 80% RH

Compatible well plates

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

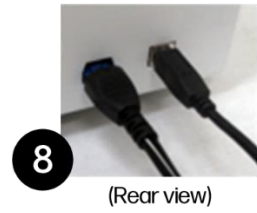
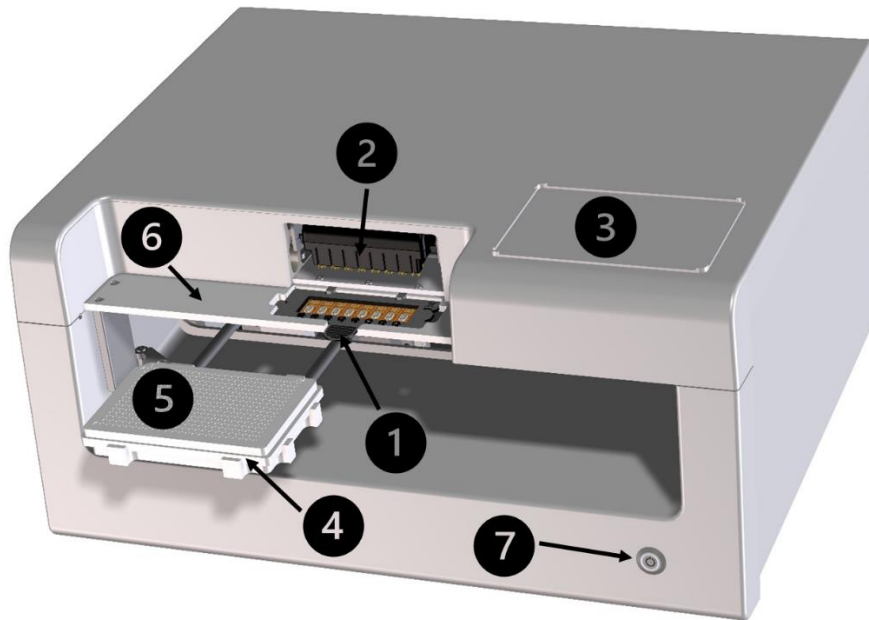
- One of the following types: 12, 24, 48, 96, 384, 1536.
- Meet ANSI specifications for footprint dimensions and well locations, if applicable.
- Between 6mm and 47mm in height.

Additional specifications

See the dispenser Dispensing Software User Guide by navigating to the File > Documentation menu of the software for more system specifications.

Understanding the dispenser

Hardware components



1. Dispensehead cassette
2. Pogo block
3. Source plate holder
4. Motorized stage and destination plate holder
5. Destination plate
6. Deck
7. Power switch and indicator light
8. Power and USB connections
9. PC with dispenser software

Assembly and startup

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



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. The contact information can be found in the dispenser Service and Support document.

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 47 cm (18 inches) wide, 40 cm (16 inches) deep, and 23 cm (9 inches) high. This does not include space for the required computer.



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

- Unpack the dispenser and remove the four pieces of the shipping bracket.
- Connect the power cord (packaged separately) to the back of the dispenser.



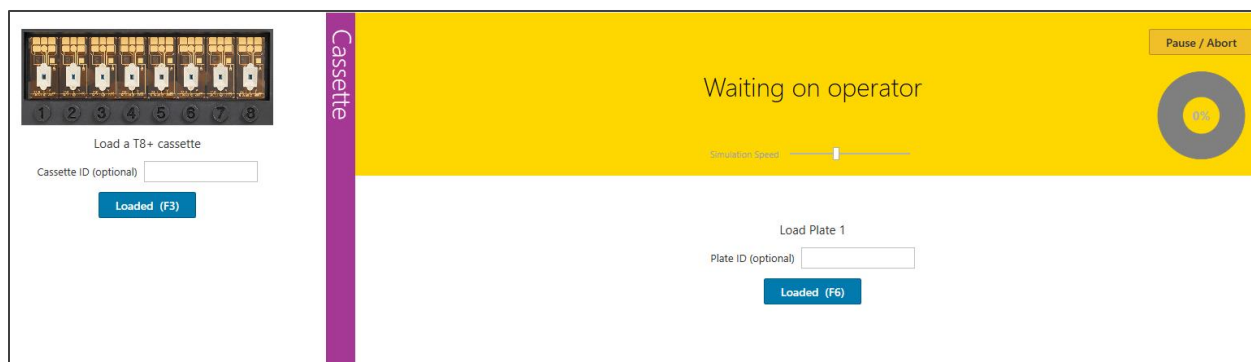
- Plug the other end of the power cord into the appropriate power outlet.
- Turn the dispenser on by depressing the main power switch on the front of the dispenser.
- The power switch will illuminate and the pogo block LEDs will flash, indicating the beginning of the dispenser initialization routine.
- Use the USB cable that came with the dispenser to connect the computer to the dispenser. The USB port is on the back of the dispenser.

Running a protocol

Refer to the Dispensing Software User Guide for information about initiating and completing a protocol run.

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

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.

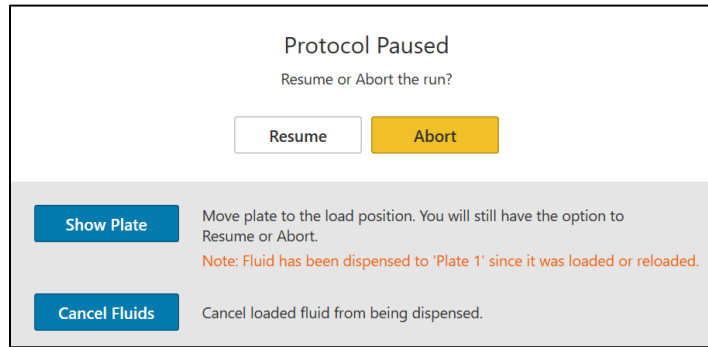
Additionally, a Pause/Abort button is available for the balance of the run. If you want to quit the run, you must click this button to leave the run before completion - you cannot exit by clicking the X in the upper right corner of the window.



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.

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 dispense head. This may be used if an incorrect fluid has been loaded into the cassette.

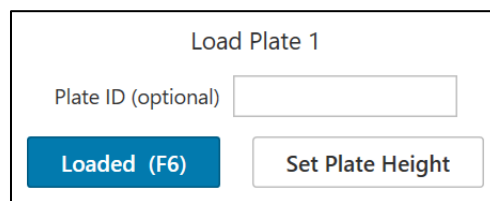
Warning status messages may be displayed for both Show Plate and Cancel Fluids.

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.

Plate prompt and loading a plate

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



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

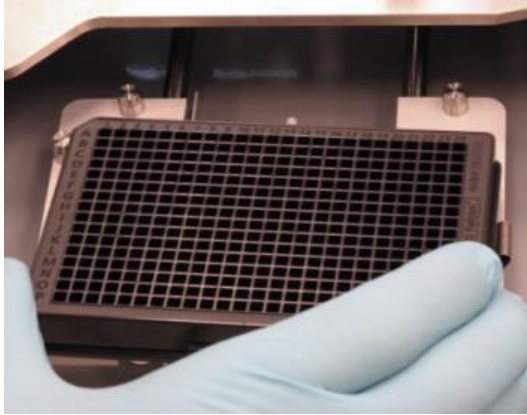
If the plate has an identification code you want to track, scan the bar code on the plate using a USB bar code reader attached to your computer, or enter its identification number manually into the Plate ID (optional) field.



NOTE: 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

Place the well plate on the plate holder. Ensure the plate sits within the metal guides on all sides. The plate clamp at the top left of the holder will close automatically when the plate moves from the “load” position.

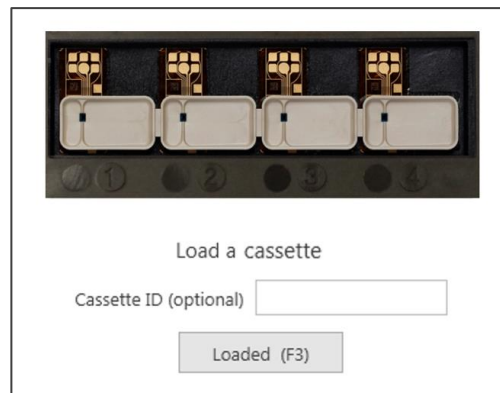
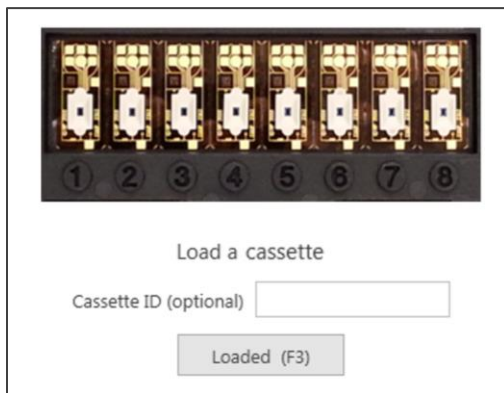


- Make sure the plate is completely level and down on the destination plate holder.
- Ensure that the A1 well position (upper-left-most well in the grid) is at the top-left corner of the destination plate holder.

Click Loaded (or F6) to proceed.

Cassette prompt and loading a cassette

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



Loading a cassette

When prompted, load a dispensehead cassette as shown.



- If a used cassette is in the dispenser, lift the tab and pull the cassette out of the deck.
- Lift a new cassette out of the clamshell container and place it into the cutout on the dispenser deck.

- Make sure the cassette is fully inserted so that the top surface is the same height as the top of the deck all the way around the cassette.

Once you have confirmed that the cassette has been loaded, click Loaded (or F3).

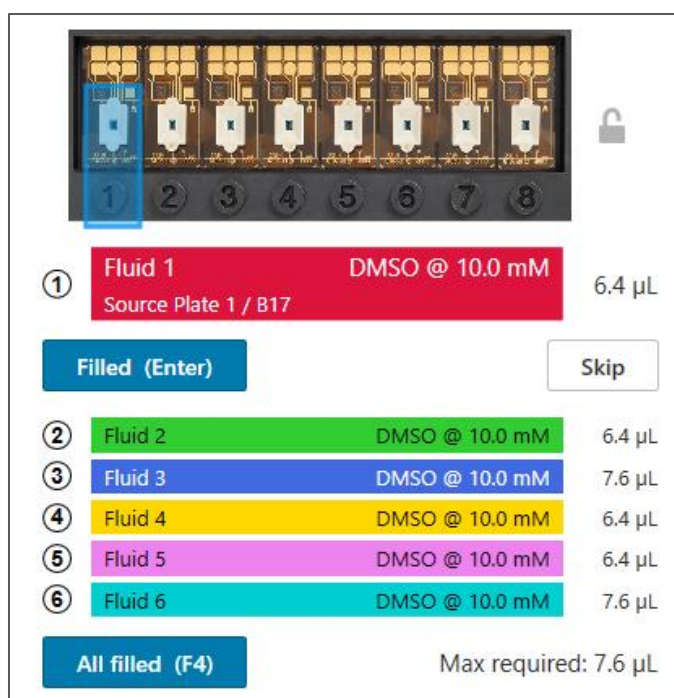


NOTE: If the cassette has an identification code you would like to track, scan or enter its identification number manually into the Cassette ID (optional) field.

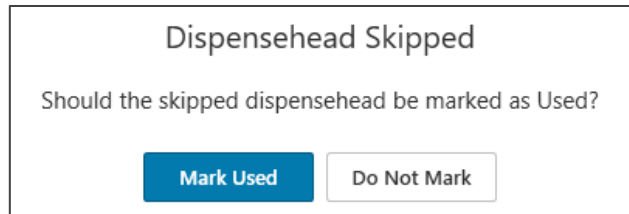
If the cassette was used in a previous run, the used dispenseheads will be marked as unavailable. A blue LED illuminates the first available dispensehead.

Load fluid prompt

After the cassette has been loaded, the Load Fluid prompt will appear. The prompt has an entry for fluids used in the protocol. These are color- and number-coded (and associated with the numbered cassette reservoirs) with stock concentration and the required load volume.



- For each fluid, you must fill the fluid's associated cassette reservoir (see [Loading](#) for the description of the physical loading). At this point, the software is waiting for you to fill a reservoir and then indicate that the reservoir has been filled by clicking Filled (or Enter).
- If you need to skip over a dispensehead and instead add fluid to the next available dispensehead, you can click Skip. Skipping a dispensehead shifts down by one dispensehead all the fluids in the list that have not yet been loaded.



A skipped dispensehead should usually be marked as Used so it cannot be used if the cassette is re-loaded.

- Click the All Filled (F4) button to indicate that all fluids on the cassette have been filled and are ready for dispensing. You have the option to fill each reservoir one at a time, with dispensing occurring as soon as you click Filled for each fluid, or you can fill all the reservoirs prior to initiating dispensing by clicking on All Filled.



NOTE: For aqueous fluids, it is recommended that fluids not be pre-filled due to evaporation.



Continue filling reservoirs until all the dispenseheads have been filled with the requested fluids.

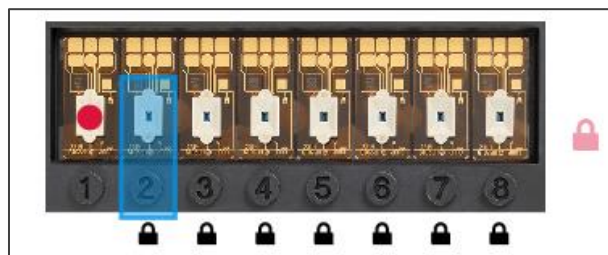
If the dispenser was waiting for a reservoir to be filled with fluid, when you click Filled, dispensing of that fluid will proceed.





NOTE: 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 dispense head 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 dispense heads (see Appendix E - Dispense Specifications in the Dispensing Software User Guide).

Locking dispenseheads

The dispenseheads can be locked and unlocked. When the red icon  is displayed, the dispensehead is 'locked.' When the gray icon  is displayed, the dispensehead is 'unlocked.' Click on the icon to change the status.

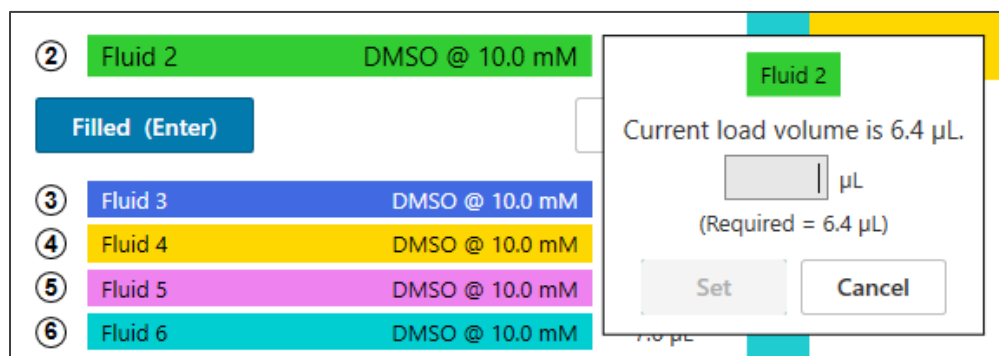


If you are loading the cassette and click the gray icon  to the right of the cassette graphic, this changes the status of the current fill dispensehead and all remaining dispenseheads on the cassette to 'locked.' You can continue to fill the remaining dispenseheads, but no fluid will be dispensed from the locked dispenseheads until the red icon  is clicked to change the status to 'unlock.'

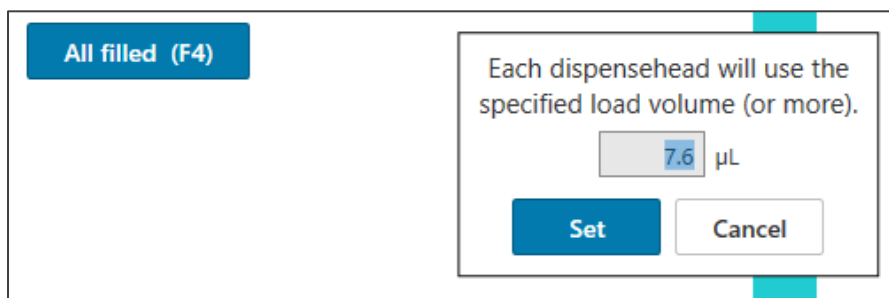
Modifying load volume

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 dispense head volume to be modified.



To change the volume for all dispenseheads, move the cursor over the “Max required” volume prompt at the bottom of the dispensehead list. All dispensehead volumes will be changed to the volume entered (if above the required volume).



Loading fluids

Fill a pipette with at least the amount of fluid that is indicated in the Load Fluid prompt, or fill a multichannel pipettor with the appropriate number of fluids in the proper order as shown in the Load Fluid prompt.

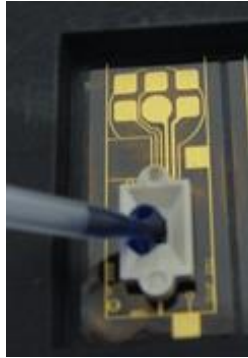
Load fluid into the dispensehead position indicated in the Load Fluid prompt when prompted. This dispensehead will be indicated on the dispenser by a blue illuminated LED and on the monitor screen with a blue rectangle. Be sure to load the proper fluid into the proper dispensehead.



NOTE: Using a multichannel pipette enables the loading of multiple dispenseheads simultaneously. Make sure that you fill the dispenseheads with the LARGEST load volume of the set of dispenseheads you are loading, which is noted as the Maximum load volume in the bottom right corner of the Fluid load prompt.



Blue LED illuminates the dispensehead on the cassette



Pipette directly into the opening

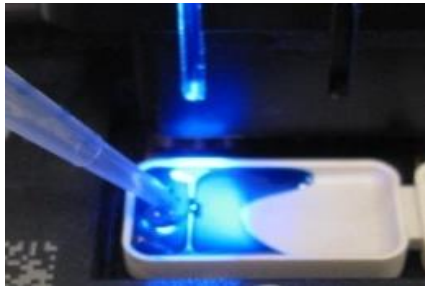


Good load Bad load
Examples of good and bad load



TIP: Make sure to load the fluid into the opening on top of the dispense head 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 dispense head.

When loading the high-volume dispenseheads, position the pipette tip in the slot at the bottom/left side of the fluid reservoir. Pipette slowly to prevent fluid from spilling out of the 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.

Beneath the Load Fluid prompt, a Help panel illustrates the best practice for loading the reservoirs.

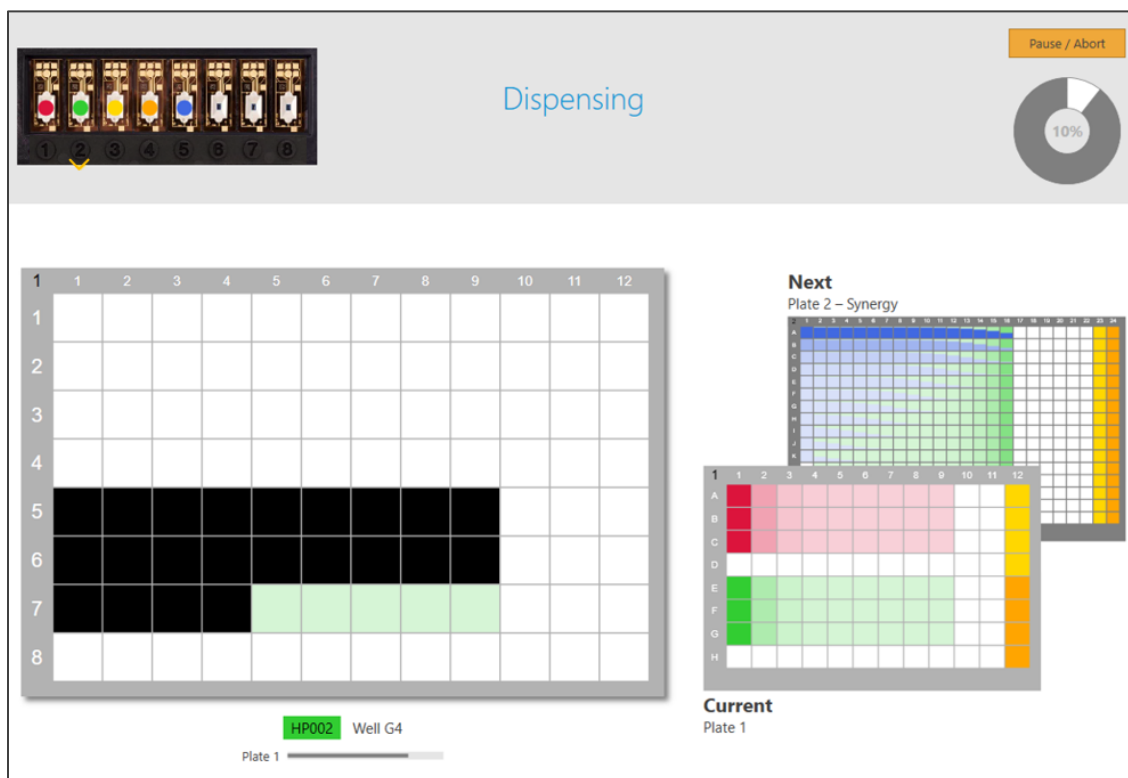


Best practice

Position the pipette tip in the slot at the bottom of the fluid reservoir.
Do NOT depress the pipette plunger to the second “blow out” stop.

Fluid dispensing

In the Status Area, the status says Dispensing and the progress circle begins to advance. At the left, an indicator shows which dispensehead is currently dispensing.



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. Note that the next dispense plate is only indicated for fluids dispensed from the current cassette. The run continues until all fluid has been dispensed to all plates.

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.



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

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.

Preventative maintenance procedures

This section describes dispenser preventative 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 preventative 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.

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, and place them back in the cassette tray.

Clean the dispenser according to the cleaning procedures described in the [Cleaning the dispenser](#) section.

Cleaning the dispenser

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

WARNING: Observe the following cautions when cleaning the dispenser:



- 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 ionizer that is mounted under the deck to the left of the cassette holder.
- Do not spray or wipe the sensors under the dispenser deck. Doing so could cause the sensors to become misaligned.

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 remove the power and USB cables from the back of 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 dispenser deck, avoiding the ionizer bar in the cutout on the right side of the bottom of the deck and the sensors at the front corners of the bottom of the deck
- The destination plate holder
- The top surface of the bottom cover, below the destination plate holder
- All the outside surfaces of the dispenser
- The pogo mechanism housing, excluding the pogo pin area (circled in red, below)
 - Do not spray the pogo pins with cleaning fluid.
 - Do not wipe the pogo pins with cleaning fluid other than isopropyl alcohol.



Clean the pogo pins (see [Pogo pin cleaning](#)).

Pogo pin inspection

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

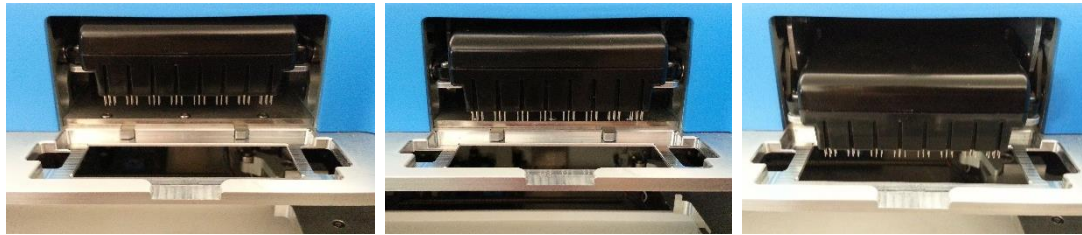
- Close the dispenser software, either by clicking the X in the upper right corner of the main operating window or by clicking Exit in the File Menu.
- Turn off the dispenser.

Remove any unused dispensehead cassettes from the dispenser to avoid contamination and place them back in the cassette tray.

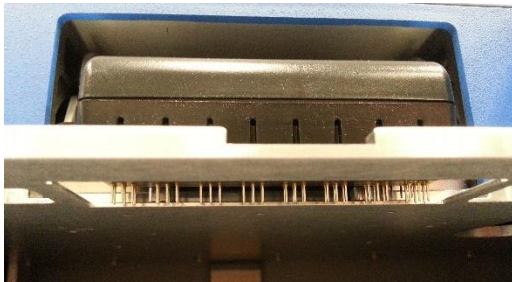
Manually move the well plate to the back-right corner.



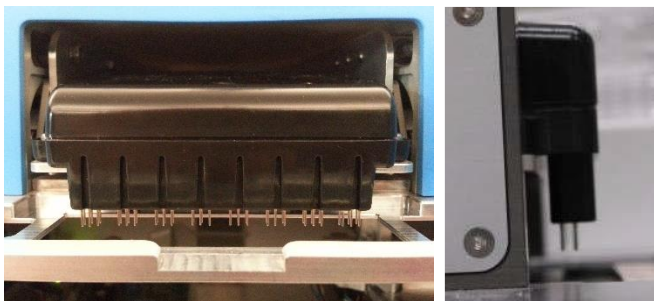
Using gloves, gently extend the pogo block out of the instrument and gently pull it down.



Pull the pogo block down so that the pogo pins extend slightly below the deck.



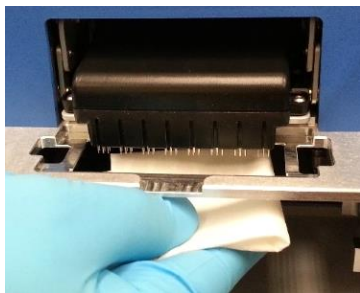
Inspect the pogo pins from the front and side to ensure that all 48 pogo pins are not bent and extend fully.



Pogo pin cleaning

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.

After wiping the pogo pins, push the pogo block back into the instrument. Allow the isopropyl alcohol to dry prior to next use.



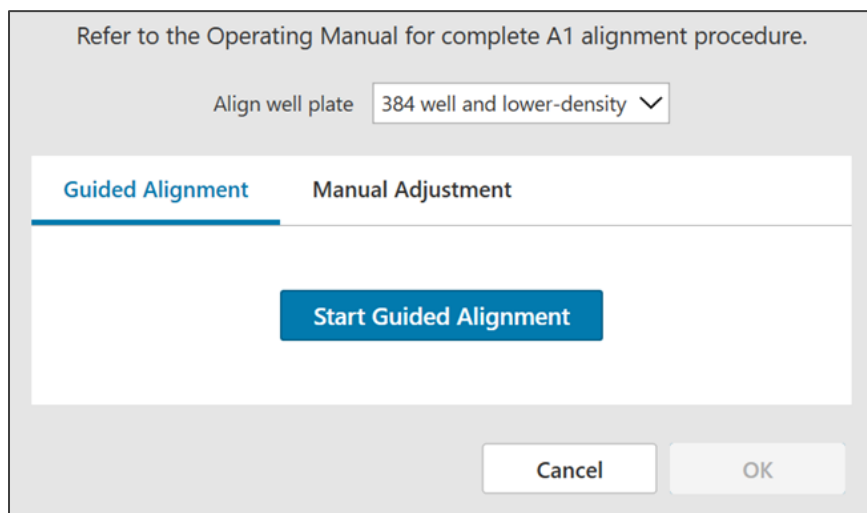
WARNING: Pogo pins are easily damaged by side pressure. Be careful not to bend them.

A1 alignment check

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 the stage assembly to the cassette. If you notice poor CVs or fluids dispensed on the side walls or ribs of the destination plates, you may also want to test alignment.

Please 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. The contact information can be found in the dispenser Service and Support document.

1. 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.



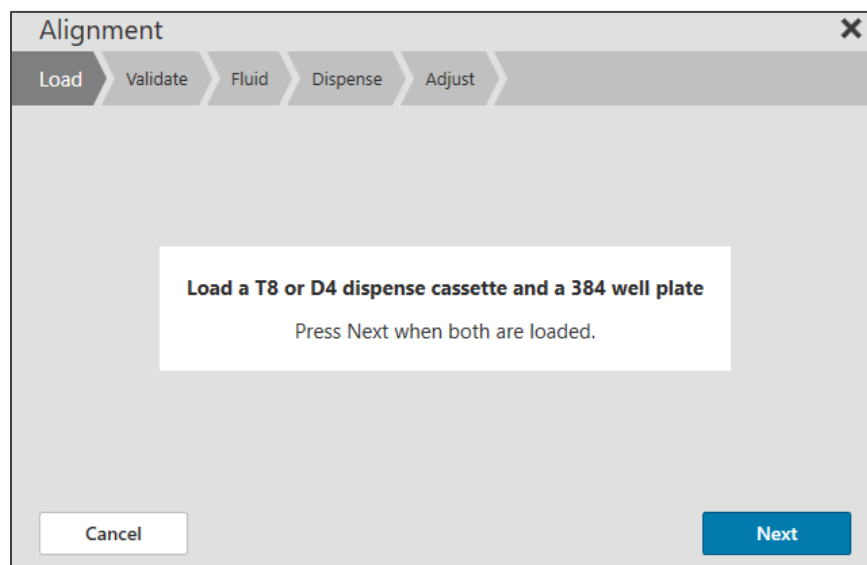
TIP: It is strongly recommended to verify the 1536-well plate A1 before dispensing into 1536-well plates.

2. Press 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

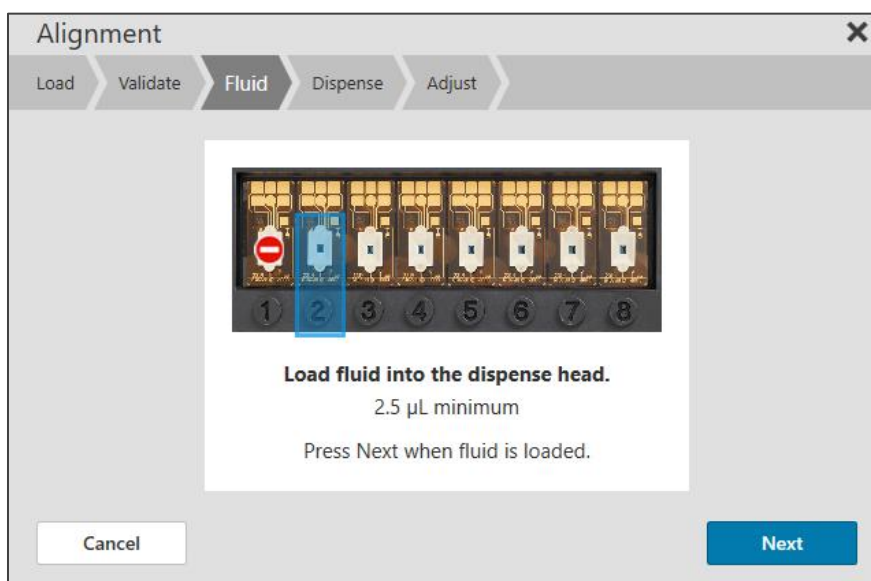
A dispense cassette and plate are loaded in the first step. Any type of cassette can be used for alignment. Place a clear lid or plate seal on the plate.

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.

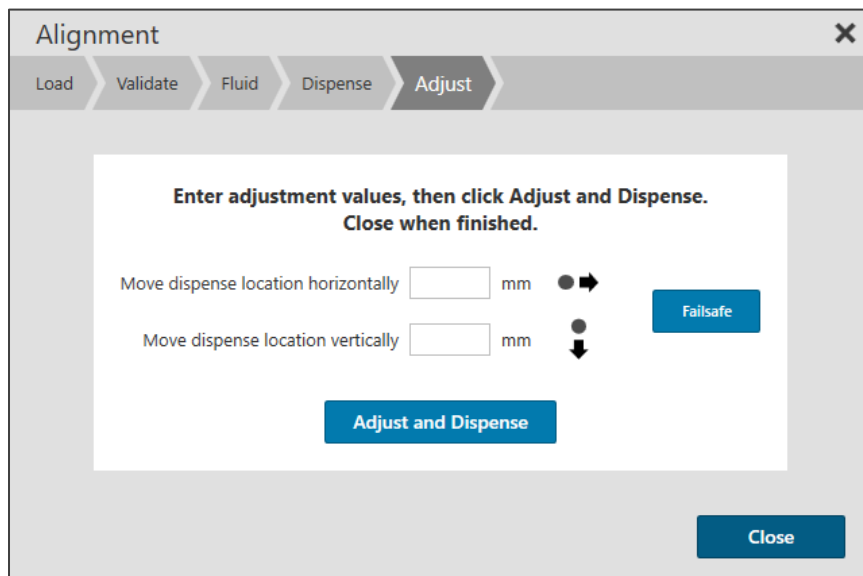


After loading the fluid and clicking Next, fluid will be dispensed to the centers of the 4 corner wells.

Adjust

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

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



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. Typing a negative number in the entry box moves the drop in the opposite direction to the arrow - that is, either left or up.

Clicking Adjust and Dispense will adjust the alignment (as specified) and then dispense to the four corners again. Remember to clean the plate cover or seal before re-dispensing. The usual procedure is to adjust and re-dispense to verify the adjustment until alignment is good.

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 Waste Equipment by Users



English	<p>Disposal of Waste Equipment by Users in Private Households in the European Union</p> <p>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.</p>
Français	<p>Evacuation des équipements usagés par les utilisateurs dans les foyers privés au sein de l'Union européenne</p> <p>La présence de ce symbole sur le produit ou sur son emballage indique que vous ne pouvez pas vous débarrasser 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.</p>
Deutsch	<p>Entsorgung von Elektrogeräten durch Benutzer in privaten Haushalten in der EU</p> <p>Dieses Symbol auf dem Produkt oder dessen Verpackung gibt an, dass das Produkt nicht zusammen mit dem Restmüll entsorgt werden darf. Es obliegt daher Ihrer Verantwortung, das Gerät an einer entsprechenden Stelle für die Entsorgung oder Wiederverwertung von Elektrogeräten aller Art abzugeben (z.B. ein Wertstoffhof). Die separate Sammlung und das Recyceln Ihrer alten Elektrogeräte zum Zeitpunkt ihrer Entsorgung trägt zum Schutz der Umwelt bei und gewährleistet, dass sie auf eine Art und Weise recycelt werden, die keine Gefährdung für die Gesundheit des Menschen und der Umwelt darstellt. Weitere Informationen darüber, wo Sie alte Elektrogeräte zum Recyceln abgeben können, erhalten Sie bei den örtlichen Behörden, Wertstoffhöfen oder dort, wo Sie das Gerät erworben haben.</p>
Italiano	<p>Smaltimento delle apparecchiature elettriche ed elettroniche a fine vita nell'Unione Europea</p> <p>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.</p>
Español	<p>Eliminación de residuos de aparatos eléctricos y electrónicos por parte de usuarios domésticos en la Unión Europea</p> <p>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.</p>
Български	<p>Изхвърляне на отпадъчни уреди от потребители на домакинства в Европейския съюз</p> <p>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.</p>
Česky	<p>Likvidace vysloužilého zařízení uživateli v domácnosti v zemích EU</p> <p>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.</p>

Dansk	<p>Bortskaffelse af affaldsudstyr for brugere i private husholdninger i EU</p> <p>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.</p>
Nederlands	<p>Afvoer van afgedankte apparatuur door gebruikers in particuliere huishoudens in de Europese Unie</p> <p>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.</p>
Eesti	<p>Eramajapidamistes kasutuselt kõrvaldatavate seadmete käitlemine Euroopa Liidus</p> <p>Kui tootel või toote pakendil on see sümbol, ei tohi seda toodet visata olmejäätmete hulka. Teie kohus on viia tarbetuks muutunud seade selleks ettenähtud elektrilise 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 utiliseerimispunkti või kauplusest, kust te seadme ostsite.</p>
Suomi	<p>Hävittävien laitteiden käsittely kotitalouksissa Euroopan unionin alueella</p> <p>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 varvittaessa lisätietoja jätteiden kierrätyspaikoista paikallisilta viranomaisilta, jätteyhdistä tai tuotteen jälleenmyyjältä.</p>
Ελληνικά	<p>Απόρριψη άχρηστων συσκευών στην Ευρωπαϊκή Ένωση</p> <p>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 συμβάλει 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.</p>
Magyar	<p>A hulladékanyagok kezelése a magánháztartásokban az Európai Unióban</p> <p>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.</p>
Latviski	<p>Lietotāju atbrīvošanās no nederīgām ierīcēm Eiropas Savienības privātajās mājāsaimniecībās</p> <p>Šis simbols uz ierīces vai tās iepakojuma norāda, ka šo ierīci nedrīkst izmest kopā ar pārējiem mājāsaimniecības atkritumiem. Jūs esat atbildīgs par atbrīvošanos no nederīgās ierīces, to nododot norādītajā savākšanas vietā, lai tiku 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, lūdz, sazinieties ar vietējo pašvaldību, mājāsaimniecības atkritumu savākšanas dienestu vai veikalu, kurā iegādājāties šo ierīci.</p>
Lietuviškai	<p>Europos Sąjungos vartotojų ir privačių namų ūkių atliekamos įrangos išmetimas</p> <p>Šis simbolis ant produkto arba jo pakuotės nurodo, kad produktas negali būti išmestas kartu su kitomis namų ūkių 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 išteklių 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 ūkių atliekų išvežimo tarnybą arba į parduotuvę, kurioje pirkote produktą.</p>
Polski	<p>Utylizacja zużytego sprzętu przez użytkowników domowych w Unii Europejskiej</p> <p>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.</p>
Português	<p>Descarte de equipamentos por usuários em residências da União Europeia</p> <p>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 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.</p>

Română	<p>Scoaterea din uz a echipamentelor uzate de către utilizatorii persoane fizice din Uniunea Europeană</p> <p>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 și electronice uzate. Colectarea și reciclarea separată a echipamentelor uzate la scoaterea din folosință ajută la conservarea resurselor naturale și asigură reciclarea acestora într-un mod care protejează sănătatea oamenilor și mediul înconjurător. Pentru informații suplimentare despre locațiile în care puteți preda echipamentele uzate pentru reciclare, contactați primăria locală, serviciul de salubritate care deservește gospodăria dvs. sau magazinul de la care ați cumpărat produsul.</p>
Slovenčina	<p>Postup používateľov v krajinách Európskej únie pri vyhadzovaní zariadenia v domácom používaní do odpadu</p> <p>Tento symbol na produkte alebo na jeho obale znamená, že nesmie byť vyhodенý 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 zabezpečiť 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.</p>
Slovensčina	<p>Ravnanje z odpadno opremo v gospodinjstvih znotraj Evropske unije</p> <p>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.</p>
Svenska	<p>Kassering av förbrukningsmaterial, för hem- och privat användare i EU</p> <p>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.</p>
简体中文	<p>欧盟国家/地区用户在私人住宅中对废旧设备的处理</p> <p>产品或包装上包括此标志表示此产品不得作为住宅垃圾处理。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。</p>

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	○	○	○	○	○	○
机壳	○	○	○	○	○	○
消耗品	○	○	○	○	○	○
外壳面板	X	○	○	○	○	○
激光检测仪	○	○	○	○	○	○
媒体 (CD)	○	○	○	○	○	○
电机组件	○	○	○	○	○	○
印刷电路组件 / 电气元件	X	○	○	○	○	○
电源适配器/电源	X	○	○	○	○	○
传感器	○	○	○	○	○	○
静电消除棒	X	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○: 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.

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