



# HP Latex Cutter Series

User Guide

Edition 3

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# 1 Introduction

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## Welcome to your cutter

Your cutter is a drag-knife contour cutter designed to cut flexible substrates accurately. Some major features of the cutter are shown below:

- Optical Positioning System (OPOS X) and HP Barcode System for precise and unattended cutting
- Different cutting modes, with the ability to cut completely through some substrates
- Compatible with blade, pen, and pounce tools
- High-speed cutting head, for reliable and effortless vinyl cutting
- Intuitive control panel to modify settings easily
- Intelligent substrate system to keep substrates on track, even when cutting at top speed
- Ethernet (LAN) connectivity
- Substrate basket included

To send print jobs to your printer, you will need Raster Image Processor (RIP) software, which should be run on a separate computer. RIP software is available from various different companies. Included in the box is a license for the HP FlexiPrint and Cut RIP, supporting Print and Cut and Direct Cut workflows.

## Cutter models

| HP 54 Basic Cutter, HP Latex 54 Cutter, and HP Latex 64 Cutter |   |
|--|---|
| Supplied with the cutter                                       | HP standard blades (2)<br>HP cut-off knife<br>HP 3-in substrate flanges<br>HP FlexiPrint and Cut RIP license                  |
| Optional accessories   | HP Latex Cutter Extended Kit<br>HP Latex 2-in Media Holder Kit<br>HP Latex Standard Blade Kit<br>HP Latex Specialty Blade Kit |
| Consumables  | HP Latex Standard Blade Kit   |

## Documentation

The following documents can be downloaded from <http://www.hp.com/go/latex115printandcut/manuals/>:

- Introductory information
- Site preparation guide
- Assembly instructions
- User guide
- Legal information
- Limited warranty

The Quick Response (QR) code images found in some parts of this user guide provide links to additional video explanations of particular topics.

## Safety precautions

Before using your cutter, read the following safety precautions to make sure you use the equipment safely.

You are expected to have the appropriate technical training and experience necessary to be aware of hazards to which you may be exposed in performing a task, and take appropriate measures to minimize the risks to yourself and to other people.

This equipment is not suitable for use in locations where children are likely to be present.

### General safety guidelines

- There are no operator-serviceable parts inside the cutter except those covered by HP's Customer Self Repair program (see <http://www.hp.com/go/selfrepair/>). Refer servicing of other parts to qualified service personnel.
- Turn off the cutter and call your service representative in any of the following cases:
  - The power cord or plug is damaged.
  - The cutter has been damaged by an impact.
  - There is any mechanical or enclosure damage.
  - Liquid has entered the cutter.
  - There is smoke or an unusual smell coming from the cutter.
  - The cutter has been dropped.
  - The cutter is not operating normally.
- Turn off the cutter in either of the following cases:
  - During a thunderstorm
  - During a power failure
- Take special care with zones marked with warning labels.
- Ventilation measures for your location, whether office, copy room, or printer room, should meet local environmental health and safety (EHS) guidelines and regulations.

### Electrical shock hazard

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 **WARNING!** The internal circuits of the built-in power supplies operate at hazardous voltages capable of causing death or serious personal injury.

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The cutter uses one power cord. Unplug the power cord before servicing the cutter.

To avoid the risk of electric shock:

- The cutter must be connected to earthed mains outlets only.
- Do not remove or open any other closed system covers or plugs.
- Do not insert objects through slots in the cutter.
- Take care not trip over the cables when walking behind the cutter.

- Insert the power cord securely and completely into the wall socket and cutter inlet.
- Never handle the power cord with wet hands.

## Fire hazard

To avoid the risk of fire, take the following precautions:

- The customer is responsible for meeting the cutter's requirements and the Electrical Code requirements according to the local jurisdiction of the country where the equipment is installed. Use the power supply voltage specified on the nameplate.
- Connect the power cords to a line protected by a branch circuit breaker according to the information detailed in the site preparation guide. Do not use a power strip (relocatable power tap) to connect the power cord.
- Use only the power cord supplied by HP with the cutter. Do not use a damaged power cord. Do not use the power cord with other products.
- Do not insert objects through slots in the cutter.
- Take care not to spill liquid on the cutter. After cleaning, make sure all components are dry before using the cutter again.
- Do not use aerosol products that contain flammable gases inside or around the cutter. Do not operate the cutter in an explosive atmosphere.
- Do not block or cover the openings of the cutter.

## Mechanical hazard

The cutter has moving parts that could cause injury. To avoid personal injury, take the following precautions when working close to the cutter:

- Keep your clothing and all parts of your body away from the cutter's moving parts.
- Avoid wearing necklaces, bracelets, and other hanging objects.
- If your hair is long, try to secure it so that it will not fall into the cutter.
- Take care that sleeves or gloves do not get caught in the cutter's moving parts.
- Do not touch gears or moving rolls during printing.
- Do not operate the cutter with covers bypassed.

## Light radiation hazard

Light radiation is emitted from the LED status indicators and front panel. This illumination is in compliance with the requirements of the exempt group of IEC 62471:2006, *Photobiological safety of lamps and lamp systems*. However, you are recommended not to look directly at the LEDs while they are on. Do not modify the module.

## Heavy substrate hazard

Special care must be taken to avoid personal injury when handling heavy substrates:

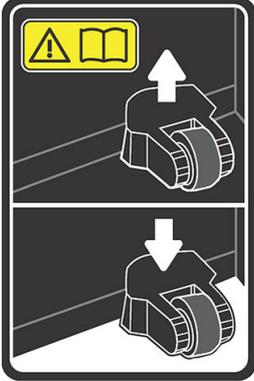
- Handling heavy substrate rolls may require more than one person. Care must be taken to avoid back strain and/or injury.
- Consider using a forklift, pallet truck, or other handling equipment.
- When handling heavy substrate rolls, wear personal protective equipment including boots and gloves.

## Warnings and cautions

The following symbols are used in this manual to ensure the proper use of the cutter and to prevent the cutter from being damaged. Follow the instructions marked with these symbols.

-  **WARNING!** Failure to follow the guidelines marked with this symbol could result in serious personal injury or death.
-  **CAUTION:** Failure to follow the guidelines marked with this symbol could result in minor personal injury or damage to the cutter.

## Warning labels

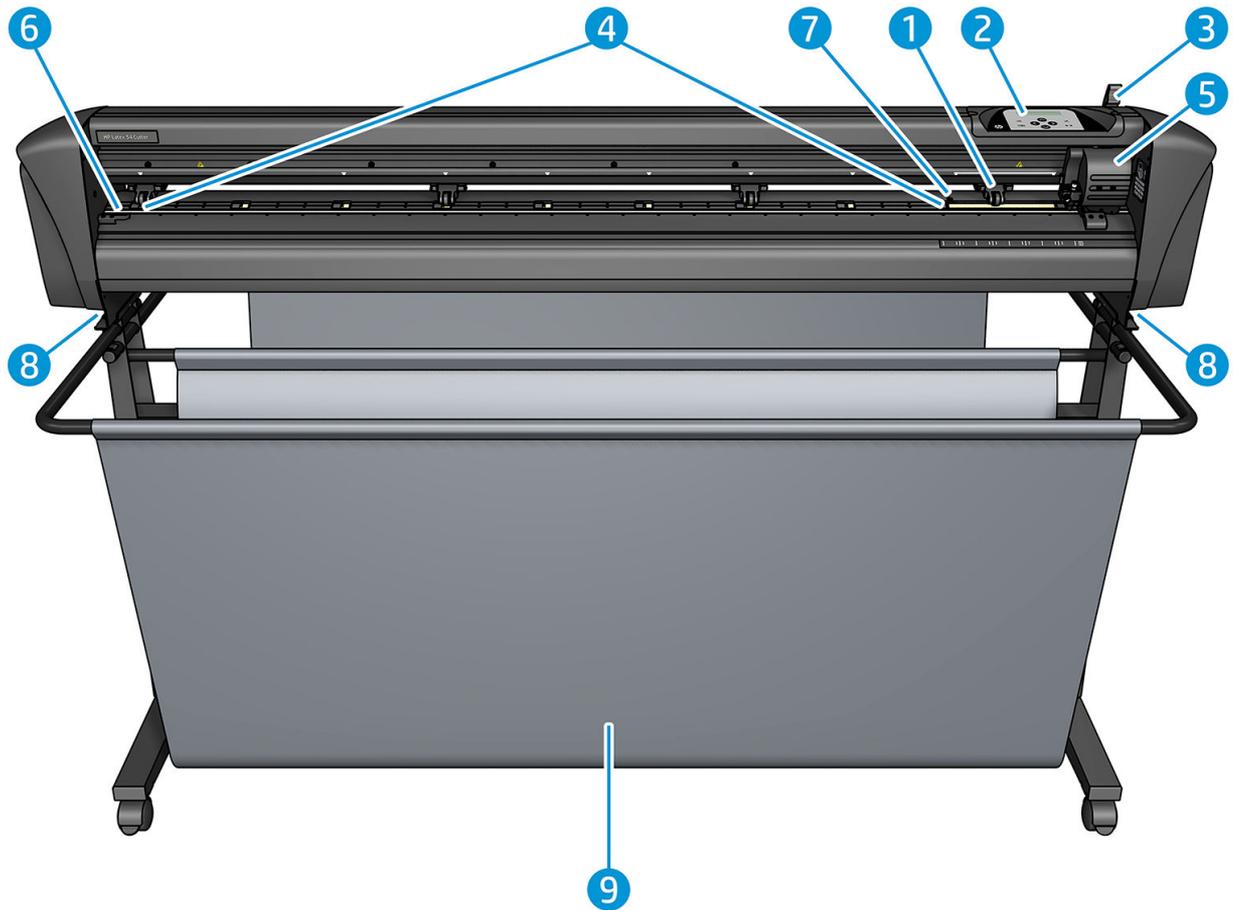
| Label   | Explanation  |
|---|--|
|    | <p>Hazardous moving part. Keep your fingers and other body parts away from this area.</p> <p>This label is located on the scan axis.</p>   |
|   | <p>Fuse caution label. For continued protection against risk of fire, replace the fuse only with one of the same rating.</p> <p>Double pole/Neutral fusing</p> <p>This label is located near the power inlet, at the rear.</p> |
|  | <p>Caution: Always leave the pinch rollers in the upper positions when the cutter is not in use.</p> <p>This label is located on the side of the scan axis.</p>  |

-  **NOTE:** The final label position and size may vary slightly, but should always be visible and close to the potential risk area.

## Main cutter components

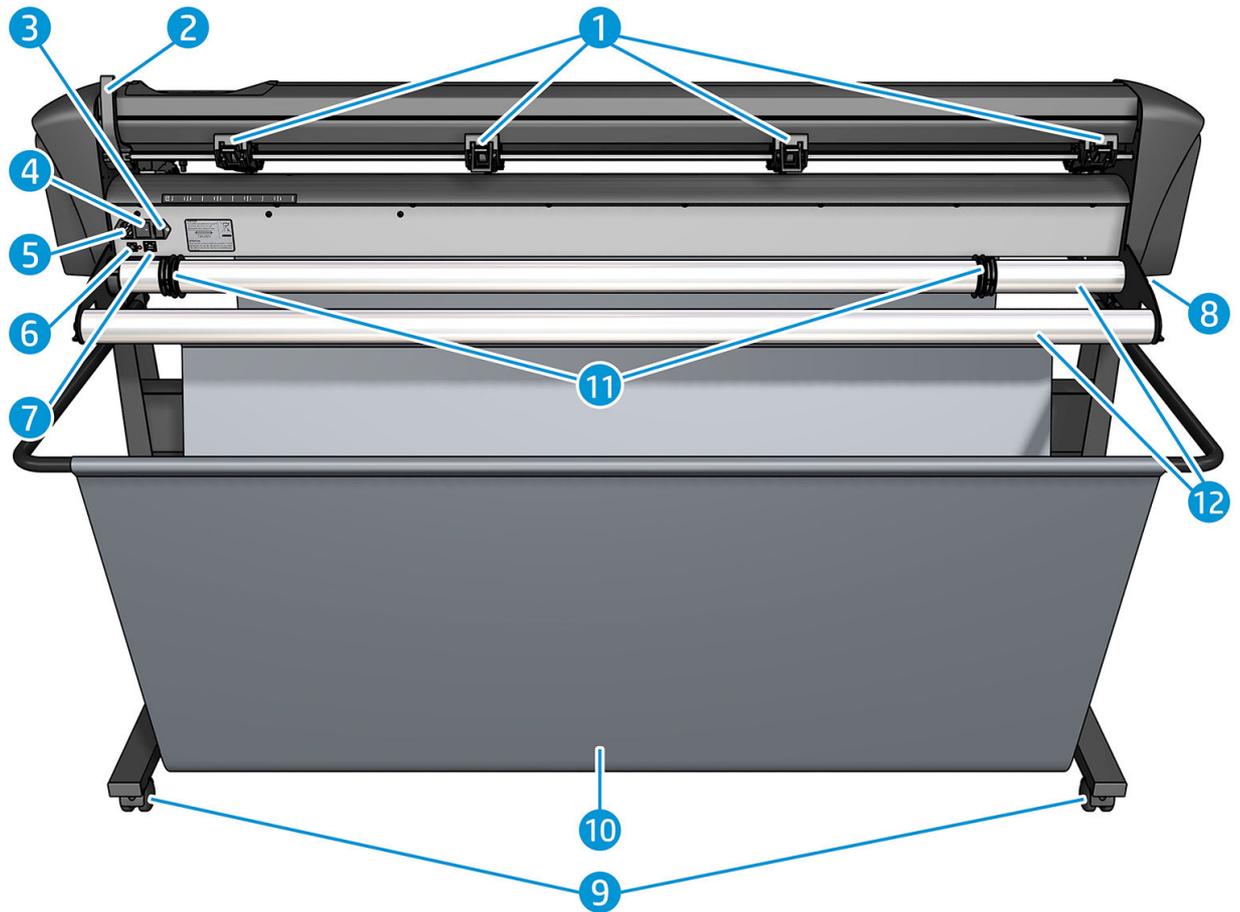
The following views of the cutter illustrate its main components.

## Front view



1. Pinch roller (the number of rollers depends on the model)
2. Front panel
3. Pinch roller lever
4. Substrate drive sleeves (the number of sleeves depends on the model)
5. Tool carriage and OPOS sensor
6. Cutting strip
7. Substrate sensor
8. Screws to secure the cutter base
9. Substrate basket

## Rear view



1. Pinch rollers
2. Pinch roller lever
3. Fuse box
4. Power on/off switch
5. AC power socket
6. USB port
7. LAN port
8. Screws to secure the cutter base
9. Casters
10. Substrate basket
11. Roll guide bushes

## Turn the cutter on and off

The power switch is located on the cutter's rear panel.

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 **CAUTION:** Before connecting the power cord, ensure that the power switch is turned off (to the position marked '0').

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To turn on the printer, turn the power switch to the position marked 'I'.

When the cutter is turned on, the touchscreen activates and the cutter initializes itself. If substrate is loaded, the cutter checks its size.

## Connect the cutter to a computer

The cutter has bidirectional USB and LAN ports for connection to a computer. If both ports are connected, the port that receives data first remains active, and the other port is deactivated.

### LAN connection (recommended)

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 **IMPORTANT:** Use the LAN cable provided: HP cannot guarantee good communication with other cables.

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Connect the LAN cable at the back of the cutter and connect the other end to the network.

By default, the cutter has DHCP activated, so the server automatically assigns an IP address to the cutter. To check the IP address, press , then **System Setup > Configuration > IP Config > DHCP** or **Static**. If you select **Static**, you must enter an IP address and network mask.

### USB connection

The USB cable should be no longer than 5 m (16 ft).

#### Procedure for Microsoft Windows

1. Turn off the cutter.
2. Ensure that you have administrative rights on the computer, and that User Account Control is deactivated or set to its lowest level.
3. Click **Install USB driver**, and wait for the driver to install. The HP FlexiPrint and Cut RIP is also installed automatically.
4. Connect one end of the USB cable to a USB port on the computer. This end of the cable should have a 4-pin USB series A connector.
5. Connect the other end of the cable to the USB port at the back of the cutter. This end of the cable should have a 4-pin USB series B connector.
6. Turn on the cutter (see [Turn the cutter on and off on page 8](#)) and return to the computer.

To connect more than one cutter to the same computer, see [USB class on page 41](#).

#### Procedure for Apple Mac OS X

1. Turn off the cutter.
2. Connect one end of the USB cable to a USB port on the computer. This end of the cable should have a 4-pin USB series A connector.

3. Connect the other end of the cable to the USB port at the back of the cutter. This end of the cable should have a 4-pin USB series B connector.
4. Turn on the cutter (see [Turn the cutter on and off on page 8](#)).

Most cutting software for Mac OS X can control the cutter without the installation of a driver.

## Front panel

The front panel features eight command keys and a display area capable of displaying one line of text, which is used to display menu options and status information.



A parameter or parameter value preceded by an asterisk (\*) is the currently selected parameter or parameter value. If you see a value displayed without an asterisk, it is not the saved value.

The various menu and submenu items are always presented in a loop, which means that, when the last menu or submenu item is displayed, pressing the appropriate key will automatically take you back to the first item of the same menu or submenu.

**⚠ WARNING!** Whenever you press a key, it may initiate an internal test or movement of the head or substrate. Keep fingers and other body parts away from the cutting area, where there are hazardous moving parts.

### Keys

- Press  to reach the most common menu items quickly.
- Press  to read the HP barcode.
- The use of the arrow keys  ,  ,  , and  depends on the context and what appears on the screen.
- Press  to cancel the current process.
- Press  to confirm a selection or a changed value, or to start or pause a job.

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## 2 Useful links

Visit the HP Latex Knowledge Center at <http://www.hp.com/communities/HPLatex>, where you can find detailed information about our HP Latex products and applications, and use the forum to discuss anything related to the business.

Product documentation: <http://www.hp.com/go/latex115/manuals/>.

User training (quick guide) is already installed in your computer. To reinstall: <http://www.hp.com/go/latex300/quickguide/>.

Videos about how to use the cutter: <http://www.hp.com/supportvideos/> or <http://www.youtube.com/HPSupportAdvanced>.

For more complete training program, see <http://www.hp.com/go/latex300printandcut/training> and <http://www.hp.com/go/latex115printandcut/training>.

Information about software RIPs, applications, solutions, inks, and substrates: <http://www.hp.com/go/latex300/solutions/> and <http://www.hp.com/go/latex115/solutions/>.

HP Support: <http://www.hp.com/go/latex115/support/>.

Registration and communication with HP: <http://www.hp.com/communities/HPLatex/>.

The Quick Response (QR) code images found in some parts of this guide provide links to additional video explanations of particular topics.

## When you need help

In most countries, support is provided by HP support partners (usually the company that sold you the product). If this is not the case in your country, contact HP Support on the Web as shown above.

Help is also available to you by telephone. What to do before you call:

- Review the relevant parts of this guide.
- Review your software documentation, if relevant.
- Please have the following information available:
  - The product you are using: the product number and serial number.

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 **NOTE:** These numbers are on a label at the rear of the cutter.

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- If there is an error code on the front panel, note it down.
- The RIP you are using, and its version number.
- If relevant, the substrate you are using.

## Telephone number

Your HP Support telephone number is available on the Web: see [http://welcome.hp.com/country/us/en/wwcontact\\_us.html](http://welcome.hp.com/country/us/en/wwcontact_us.html).

## Customer Self Repair

HP's Customer Self Repair program offers our customers the fastest service under either warranty or contract. It enables HP to ship replacement parts directly to you (the end user) so that you can replace them. Using this program, you can replace parts at your own convenience.

### Convenient, easy to use

- An HP Support Specialist will diagnose and assess whether a replacement part is required to address a defective hardware component.
- Replacement parts are express-shipped; most in-stock parts are shipped the very same day you contact HP.
- Available for most HP products currently under warranty or contract.
- Available in most countries.

For more information about Customer Self Repair, see <http://www.hp.com/go/selfrepair/>.

## 3 Load the substrate



 **IMPORTANT:** You are strongly recommended to load the substrate before preparing the job on the computer.

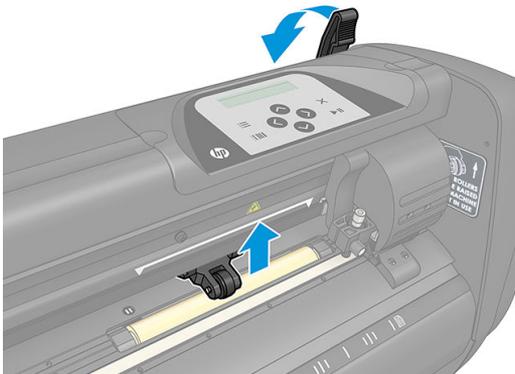
The loading process is the same, whether the job is a print-and-cut job or just a cut job.

You can load both rolls and sheets of substrate into the cutter. Sheets can be loaded from the front or the rear; rolls must be loaded from the rear.

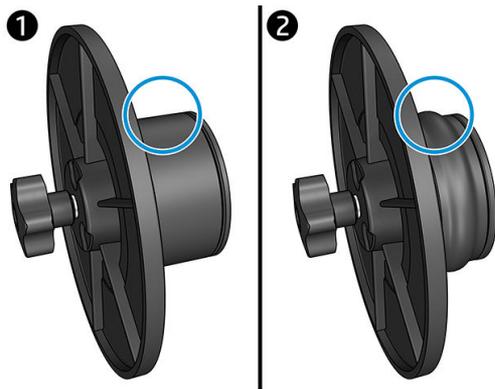
 **NOTE:** There are different cutter models. Your cutter may not correspond exactly to the model shown in the illustrations.

### Load a roll

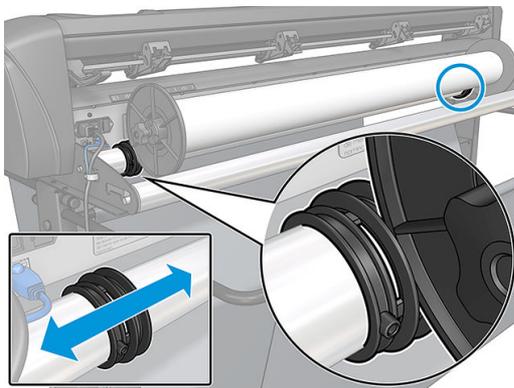
1. Raise the pinch rollers with the pinch-roller lever arm, which is located at the right-hand side of the cutter, next to the front panel.



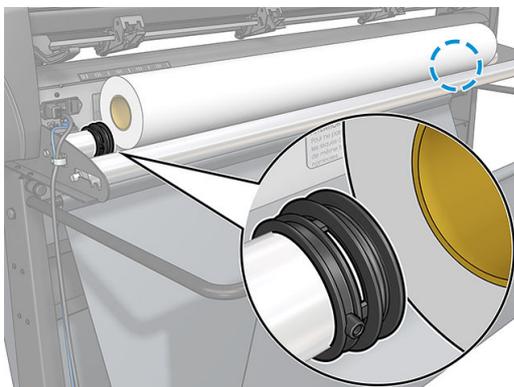
2. Loosen the knobs on the two substrate flanges. The following illustration shows a loosened flange (1) and a tightened flange (2).



3. Insert a loosened flange into one end of the substrate roll and tighten the knob. Verify that the flange is secure. Then do the same at the other side of the roll.
4. Place the flange-equipped roll on the substrate supply rollers. Set the flanges inside the groove of the flange guide. The flange guides can be moved laterally on the roller.



If the flanges are not used (this is not recommended, because then tracking is not guaranteed), then make sure that the roll is situated between the two flange guides.



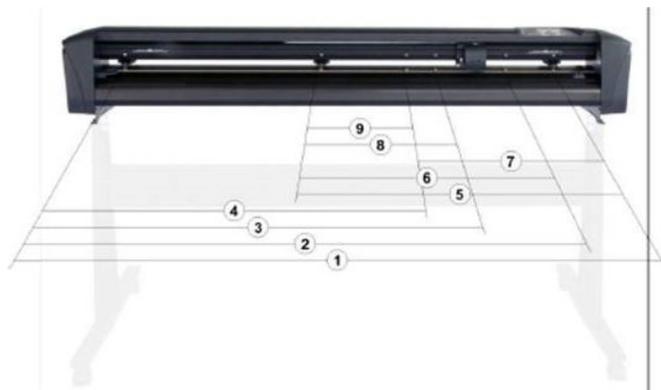
5. Start feeding the substrate in from the rear of the machine. Pass the substrate underneath the pinch rollers towards the front of the cutter.
6. Position the left substrate edge on the leftmost drive sleeve and check that the right substrate edge is positioned over the long drive sleeve.

 **NOTE:** If you have the HP 54 Basic Cutter, load the substrate as shown in the table below.

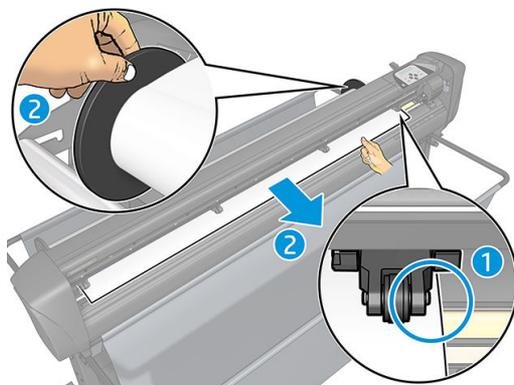
## HP 54 Basic Cutter loading positions

| Position | Substrate width in mm (inches) | Margin width in mm (inches) |
|----------|--------------------------------|-----------------------------|
| 1        | 1372 (54)                      | 24 (1.0)                    |
| 2        | 1220 (48)                      | 23 (0.9)                    |
| 3        | 1000 (40)                      | 23 (1.2)                    |
| 4        | 914 (36)                       | 25 (1.0)                    |
| 5        | 762 (30)                       | 21 (0.8)                    |
| 6        | 610 (24)                       | 20 (0.8)                    |
| 7        | 500 (20)                       | 23 (1.1)                    |
| 8        | 400 (16)                       | 25 (1.1)                    |
| 9        | 280 (11)                       | 10 (0.4)                    |
| 10*      | 105 (4.1)                      | 10 (0.4)                    |

\* Position 10 is at the extreme right, not shown in the illustration below. The substrate sensor should be disabled when using this position.



7. Position the pinch rollers over the drive sleeves about 3 to 15 mm (0.1 to 0.6 in) away from the substrate's outer edges (1). Then pull the substrate while holding the flange at the back, so that the substrate is tight.



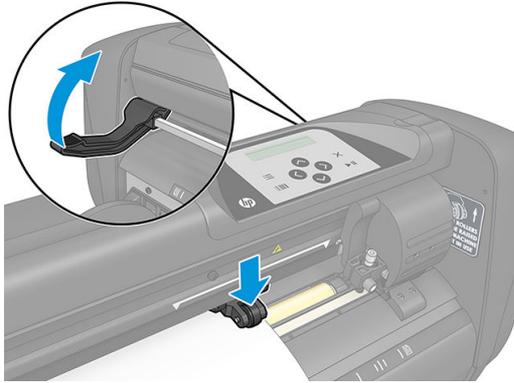
If this procedure does not work, because the substrate is too narrow to reach the long drive sleeve, position the left substrate edge over the second left drive sleeve and position the right substrate edge somewhere over the long drive sleeve. Continue moving the left pinch roller towards the long drive sleeve until both pinch rollers are in their designated position and directly over the edges of the vinyl.

In all cases, both edges of the substrate must cover a drive sleeve. If this is not the case, reposition the roll to cover the drive sleeve.

8. Make sure the substrate follows a straight path from the roll. If necessary, slide the roll and flange guides from left to right along the substrate support rollers.

**⚠ WARNING!** Keep fingers and other body parts away from the cutting area, where there are hazardous moving parts.

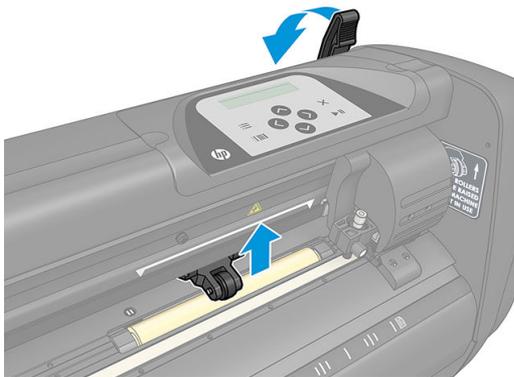
9. Lower the pinch-roller lever to press the substrate firmly against the drive sleeves. After one second the tool carriage automatically moves from right to left to measure the usable substrate width.



**📝 NOTE:** You are not recommended to unroll the substrate manually from the roll. The cutter will unroll the substrate automatically as needed.

### Load a sheet

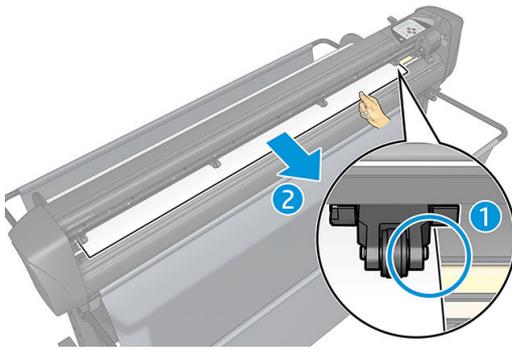
1. Place the sheet in front of the cutter, and make sure that it is correctly aligned, using the alignment marks at front and rear.
2. Raise the pinch rollers with the pinch-roller lever arm, which is located at the right-hand side of the cutter, next to the front panel.



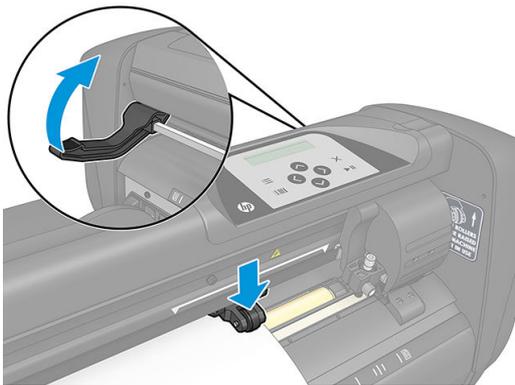
3. Start feeding the substrate in from the rear of the machine. Pass the substrate underneath the pinch rollers towards the front of the cutter.
4. Position the left substrate edge on the leftmost drive sleeve and check that the right substrate edge is positioned over the long drive sleeve.

**📝 NOTE:** If you have the HP 54 Basic Cutter, load the substrate as shown in [HP 54 Basic Cutter loading positions on page 14](#).

5. Position the pinch rollers over the drive sleeves about 3 to 15 mm (0.1 to 0.6 in) away from the substrate's outer edges (1).



6. Lower the pinch-roller lever to press the substrate firmly against the drive sleeves. After one second the tool carriage automatically moves from right to left to measure the usable substrate width.



 **NOTE:** You are not recommended to unroll the substrate manually from the roll. The cutter will unroll the substrate automatically as needed.

While the cutter is activated, it will automatically start executing a minimal loading procedure as soon as the pinch rollers are lowered. The load procedure will also start if the cutter is switched on while substrate is already in the cutter and the pinch rollers are in the down position (this is not recommended). Always keep the pinch rollers in the up position while the cutter is not being used.

The cutter's minimal loading procedure consists of the following actions, for every kind of job:

- It measures the width of the substrate.
- It unwinds the substrate for a length equal to the width between the two pinch rollers.
- It makes a simultaneous 45° axial move of the drive drum (sleeves) and cutting head.

The cutter is now ready to receive jobs from the computer.

When receiving a job from the computer, the cutter automatically pulls the required substrate from the roll. It does this in steps, and the length of the vinyl used is equal to a number of times the measured width of the substrate.

This load procedure is sufficient in most cases. However, there are some extra load features available.

 **NOTE:** Tracking of longer signs can be guaranteed only when the full load procedure is performed.

## Position the pinch rollers

Proper movement of the substrate will occur only if the substrate is driven by the two outer pinch rollers, which are correctly located over two drive sleeves.

The pinch rollers are lowered or raised simultaneously by means of the pinch roller lever arm, located on the right-hand side of the cutter. The pinch rollers must be lifted to allow vinyl loading, during which the substrate is fed from the rear of the cutter to the front. When raised, the pinch rollers can be moved manually to the left or the right along the pinch roller shaft.

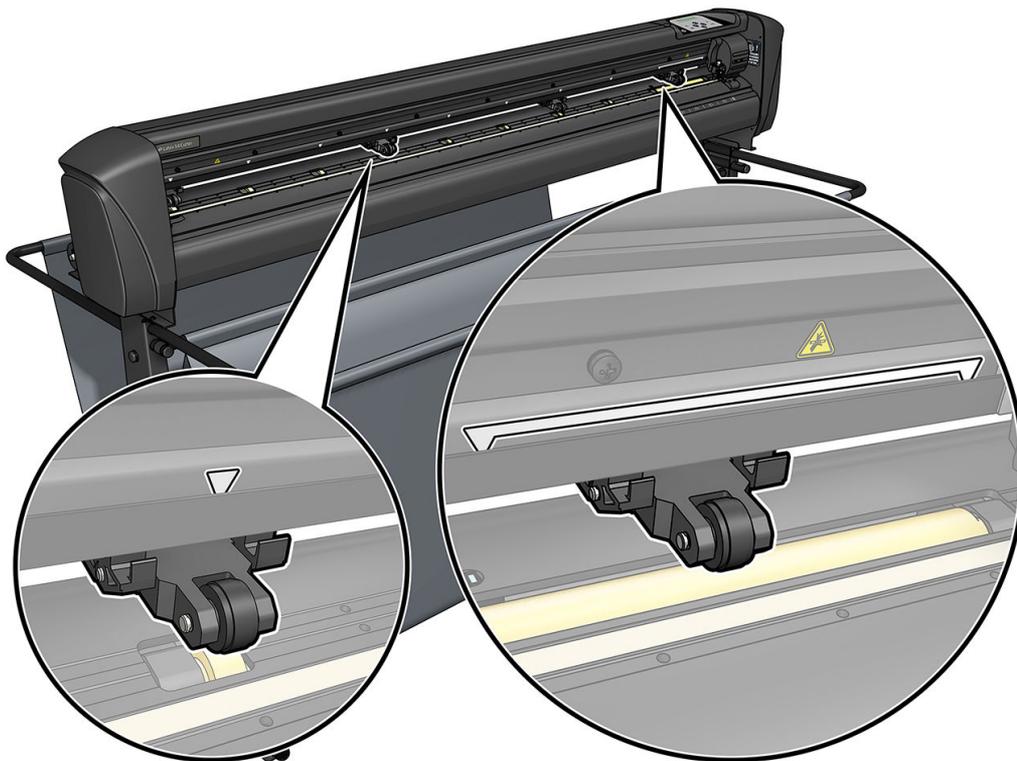
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**CAUTION:** Always make sure that the pinch rollers are fully raised before sliding them to the left or right.

**CAUTION:** Always hold the assembly at the side of the pinch roller to move it from left to right. Do not reposition the pinch roller by holding the assembly at the rear of the machine.

---

The pinch rollers **must** be positioned correctly and lowered onto the substrate before an automatic load sequence is initiated. Make sure all the pinch rollers are positioned above a drive sleeve. The outer left pinch roller should be positioned in one of the detents (click positions), situated under a white triangular label. The outer right pinch roller should be positioned somewhere over the long drive sleeve. Click positions are located at the edges of the sleeve (area marked with a white triangular label).



---

**CAUTION:** Always leave the pinch rollers in the up position when the cutter is not in use. Leaving the pinch rollers in the down position for a long time will create a flat spot on the pinch rollers, which will seriously degrade tracking performance and cutting quality.

**NOTE:** When the pinch rollers are raised during a job, the cutter will immediately stop and move the carriage to the right side.

---

## Calibrate the substrate

Substrate calibration ensures that the sensor is able to recognize the HP barcode and the markers. OPOS is calibrated at the factory to work on a wide range of substrates. However, certain substrates—such as those with a high gloss, or transluents—may not work with the default settings. Before working with such materials, perform a substrate calibration. This alters OPOS's sensitivity so that it can read the markers with greater reliability.

Print a calibration plot measuring 12 × 48 cm (4.7 × 18.9 in) on the substrate that will be used, by clicking **Setup > Printer Cutter Calibration Chart** in the RIP software. Be sure to use the same ink that will be used when creating the registration markers.

---

 **IMPORTANT:** In most cases, substrate calibration is not recommended for OPOS. If you perform the calibration and results do not improve, reset the substrate calibration value to its default setting of 30 (see below).

---

1. Turn on the cutter and load the substrate with the calibration plot.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  until **Calibrations** appears on the screen, then press  to confirm.
5. Press  or  to scroll through the menu until you reach **Cal media**. Press . **Measure** appears on the screen.

The cutter allows you to choose whether to measure the substrate or fill in a previously recorded value. Press  when finished.

---

 **NOTE:** If a combination of substrate color and marker color has already been calibrated and recorded, press  and then . Now use , and  to enter this value directly, without having to measure it again. Press  to confirm.

---

6. Press  again. The cutter lowers the sensor. **Put the sensor on the white area** appears on the screen.
7. Use , , , and  to maneuver the knife on top of a white area, which should be at least 3 × 3 cm (1.2 × 1.2 in).
8. Press  to confirm.
9. Use , , , and  to maneuver the knife on top of a black area, approximately in the middle and slightly to the bottom right.
10. Press  to confirm. The cutter makes a circular movement while it measures the reflection of the marker color. It briefly displays the measured values and then shows a value that is characteristic for this substrate color and marker color combination. Store this value for future reference.

---

 **NOTE:** An error message may appear if the sensor cannot differentiate between black, grey, and white. Make sure the test has been performed correctly. If OPOS cannot sense the markers, one of the manual alignment methods must be used.

---

 **TIP:** Remember to reset the calibration before printing on a standard substrate.

---

## Adjust cutting parameters

Some parameters should be reset whenever a new substrate is loaded.

### Set knife depth and pressure

1. Ensure that substrate is loaded in the cutter.

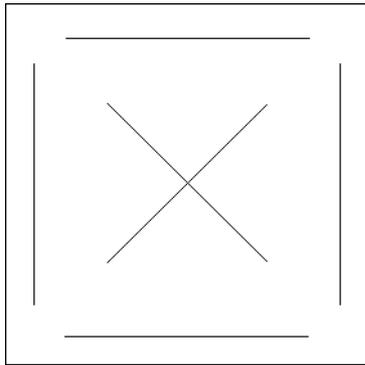
---

**⚠ WARNING!** Each icon below can initiate an internal test or movement of the head or substrate. Keep fingers and other body parts away from the cutting area, where there are hazardous moving parts.

---

2. Press .
3. Press . **Current knife pressure** appears on the screen. Press  again.
4. Press  or  to change the knife pressure. The value changes.
  - Press , then  to perform the internal pressure test.
  - Press  to confirm the chosen pressure.
  - Press  to leave the pressure unchanged.

When you press , the current knife pressure is set to the new value and the cutter cuts the knife pressure test pattern.



Peel out the rectangle and inspect the substrate backing.

The knife depth is set correctly when the test pattern cuts completely through the vinyl, the vinyl is removed and the blade tip visibly scratched the front side of the substrate backing. The blade should never cut through the backing; just slightly scratch the silicon coating and first few fibers of the backing material.

Because the knife pressure setting depends on the thickness and type of substrate to be cut, adjusting the knife pressure will require some practice. In general, the knife depth must be increased when using thicker types of vinyl and decreased when using thinner types of vinyl.

5. Press  twice to leave the knife pressure menu.

After setting the cutting depth and/or the knife pressure, perform a thorough visual check of the knife blade protruding from the knife holder, and test the cutting results on a scrap of vinyl substrate.

---

**⚠ CAUTION:** Do not operate the cutter if the knife blade cuts through the substrate backing, as this will seriously damage the cutter's rubber cutting strip and the knife.

**CAUTION:** For most vinyl cutting operations, the knife blade tip should be barely visible at the bottom of the knife tool. If the knife blade tip is clearly visible, the cutting depth should be readjusted.

To prevent damage to the cutter, check the depth of the knife blade tip and the quality of the cut each time you load a different type of vinyl into the cutter.

---

## Set the cutting speed

The speed at which the tool moves is determined by four different parameters: speed and acceleration while the tool is down; speed and acceleration while the tool is up. These four parameters have been represented by just one parameter so that you can change the speed quickly and easily.

This parameter is called *velocity*; it is the speed of the cutter when the tool is down. If the velocity is raised or lowered, the other parameters are also raised or lowered accordingly.

---

 **NOTE:** The speed at which the cutter pulls the substrate from the roll is fixed at 200 mm/s (8 in/s).

---

### Set the velocity

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  to **Settings**, then press .
5. Press  to change the velocity, then press  to confirm. An asterisk appears by the velocity, indicating that it is now the selected value.
6. Press  twice to leave the menu.

### Set the speed parameters separately

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **Settings**.

---

 **NOTE:** Velocity is the main speed parameter. The default value for the three other parameters is AUTO. This means that they are linked to velocity (which is the speed when the tool is down). The AUTO parameters can be set individually, but will then cease to be linked to the velocity parameter.

---

## Perform length calibration

The cutter has been calibrated in the factory for standard 2-mil cast or 3-mil calendared vinyl. A different calibration factor can be associated with each of the four users. This is particularly helpful for multi-colored signs: it ensures that the parts in different colors match up, even if different types of vinyl are used.

For standard use, it is not necessary to calibrate the cutter. With standard vinyl, the accuracy is within 0.2%. However, if high accuracy between different vinyls or colors is needed, then calibration is necessary.

1. Turn on the cutter, load substrate, and mount the knife.

---

 **NOTE:** The wider and longer the substrate, the more accurate the calibration will be. Use a piece of vinyl of maximum width and a length that is approximately 1.5 times the width.

---

2. Press .

3. Press . **System setup** appears on the screen.
4. Press .
5. Press  or  to scroll through the menu until you reach **Calibrations**. Press .
6. Press  or  to scroll through the menu until you reach **Cal. length**. Press .
7. Press  again. The cutter reloads the substrate and starts the length calibration. Take out the substrate and measure the length of the cut line. The length to be entered is the distance between line 1 and line 2, as shown below.




---

 **NOTE:** The cutter can only be as accurate as the accuracy of the calibration itself. If your measuring device is inaccurate, then re-calibrating may reduce the cutter's accuracy. For maximum accuracy, you are recommended to set the cutter to **Metric** units of measurement for the calibration.

---

8. Use , , , and  to change the value on the screen to the length that you measured between the two lines along the length of the vinyl roll.
9. Press  to confirm.
10. Use , , , and  to change the value on the screen to the length that you measured between the two lines across the width of the vinyl roll.
11. Press  to confirm.
12. Press  twice to leave the menu.

## Change the user

There are four user configurations, all of which have the same parameters. The parameters can be set to different values for each user, so that you can reconfigure the cutter for a different type of job or substrate quickly and easily by selecting a different user.

---

 **NOTE:** Initially, the parameters are set to the same values for all users.

---

These are the most important cutting parameters that can be saved for different users:

- Speed | Pressure | Offset | Tool
- FlexCut settings
- Substrate and length calibration values
- Overcut
- Paneling

## Change parameter values for a user

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **Configuration**. Press .
5. Press  or  to scroll through the menu until you reach **User**. Press .
6. Press  again. The currently selected user name appears on the screen.
7. Press  or  to change the user.
8. Press  to confirm. An asterisk appears by the user name, indicating that it is now selected.
9. Press  twice to leave the menu.

---

 **NOTE:** Velocity is the main speed parameter. The default value for the three other parameters is AUTO. This means that they are linked to velocity (which is the speed when the tool is down). The AUTO parameters can be set individually, but will then cease to be linked to the velocity parameter.

---

---

# 4 Cut the substrate

## Introduction

Contour cutting is made possible by the highly accurate Optical POSitioning system (OPOS).

The OPOS sensor, which is mounted underneath the tool carriage, detects the various registration marks printed on the substrate. Using these marks, OPOS can determine the exact position of the printed graphic.

---

 **NOTE:** This registration process works only with cutting jobs prepared using the software provided.

---

The sensor drops automatically while registering the markers and rises again after completing this task. The improved sensor can read virtually any kind of substrate-marker combination.

## HP barcode

The HP barcode is the group of elements printed on the substrate to be cut, that allow the OPOS sensor to identify what cuts should be made and where.

It consists of the following items:

- Registration marks: Small squares that help the cutter to locate the job accurately, and to compensate for skew and deformation.
- Frame: Top and bottom lines that help to compensate for bow deformation and identify the job to be cut.

## Automate tasks

During normal OPOS jobs you need only set the tool above the first mark to start the job. OPOS allows you to automate certain tasks, thus reducing user intervention and production time. There are several types of automation.

- **Automatic start of the OPOS job**

This is controlled by the parameter **OPOS origin**. A combination of this parameter setting and/or a special origin setting during loading of the substrate can mean that you don't need to set the tool above the first mark to start an OPOS job.

- **Multiple copies of the same job**

When cutting multiple graphics, you need only maneuver the OPOS sensor above the origin mark of the first graphic. You do not need to do this for subsequent graphics.

There are two situations in which this can be done:

- When cutting multiple graphics, or multiple copies of a graphic, on the same roll of substrate.
- When cutting the same graphic on multiple sheets of substrate.

Most automated tasks are organized from within the cutting software. However, when the same graphic contour needs to be cut out, the automatic tasks may also involve some manual manipulation.

Before using the automation features, note the amount of your cutter's RAM. If the cutter's RAM is greater than the job's file size, then the automating features can be used. If the cutter's RAM is less than the job's file size, the automation features should not be used.

## OPOS origin

The parameter **OPOS origin** was created to automate the start of the OPOS procedure. This parameter has four settings. Its usage depends on the chosen OPOS mode. It can be found in the system submenu **OPOS parameters**. If the OPOS mode is **OPOS barcode** or **OPOS sheet**, then **OPOS origin** has no effect. The useful combinations are mentioned in the table below.

|                     | OPOS X           |
|---------------------|------------------|
| Mark                | Indicate mark    |
| XY correction line  | –                |
| Current position    | Current position |
| Center of substrate | –                |

### In combination with OPOS X mode

- **OPOS origin is set to 'Mark'**

This is the default setting. On receiving an OPOS job from the computer, the cutter prompts you to set the tool above the first mark and press . The cutter then starts searching for the OPOS mark around that position.

- **OPOS origin is set to 'Current position'**

On receiving an OPOS job from the computer, the cutter immediately starts looking for the mark when it gets an OPOS job from the computer, without waiting for you to move the tool. Therefore, you have to position the tool above the first mark while loading the substrate.

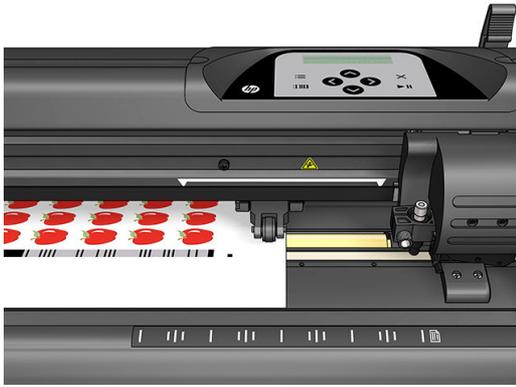
If OPOS origin is set to either **XY correction line** or **Center of substrate**, the cutter reacts as though the parameter were set to **Indicate mark**.

## Read the HP barcode

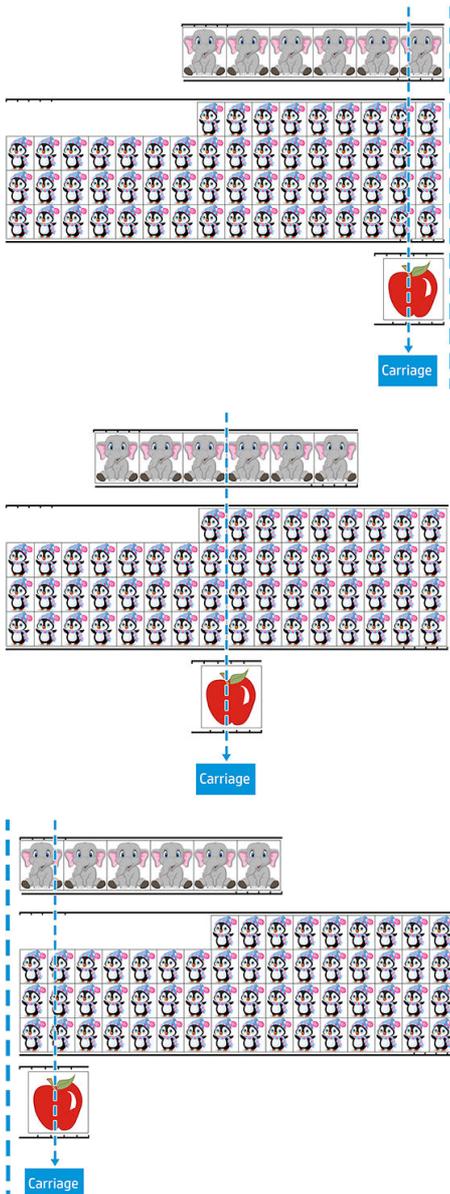
Some RIPs can print a barcode together with the OPOS markers. This barcode can then be used to identify the job and retrieve the cut data automatically from the computer.

The complete procedure is normally started from the computer. The cutting software usually has a button or a command called **Scan a barcode**. First make sure the substrate is loaded.

Using the arrows, place the carriage before the HP barcode.



If there are different jobs on the same sheet or roll, with different justifications, the carriage should be placed as shown below.



You can start the procedure from the computer or from the cutter's front panel.

To start from the cutter's front panel:

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **Actions**. Press .
5. Press  or  to scroll through the menu until you reach **Media alignment**.
6. Press . The current align mode appears on the screen.
7. Press  or  to change the value to **OPOS barcode**.
8. Press  to confirm. An asterisk appears by the value, indicating that it is now selected.
9. Now load the substrate as described in [Register the markers on page 29](#).

The cutter reads the barcode and sends the barcode data to the computer.

The cutting software then automatically sends the correct cutting data to the cutter.

The cutter starts sensing the OPOS markers, then cuts out the job.

The OPOS sensor now searches for another job after the one that has just finished, and continues to contour-cut.

This is repeated until all contour-cut jobs on the loaded roll are done.

## Job types

There are different kinds of jobs: mainly, print-and-cut jobs and direct-cut jobs; both are prepared at the computer with the software provided.

When you start a direct-cut job, the cutter will start to cut immediately, so make sure you have the substrate loaded before sending it to cut.



Print-and-cut jobs include an HP barcode as part of the print. This is read by the OPOS to find out where the cuts should be made. See [Read the HP barcode on page 24](#).

## Calibrations

To ensure that OPOS is working accurately, two calibrations are necessary: the OPOS calibration (see [Calibrate the OPOS sensor on page 50](#)) and the substrate calibration (see [Calibrate the substrate on page 17](#)). The OPOS calibration is the calibration of the distance between the knife tip and the sensor. The substrate calibration teaches the cutter the reflection levels of the marker color and the substrate color.

---

 **NOTE:** Although the OPOS sensor has been calibrated in the factory, HP recommends doing a test to determine how well the factory-set parameters work with the materials you are using. If the accuracy is not satisfactory, then do the OPOS calibration.

---

## Change the origin

- Press , , , or  to change the origin.

The substrate moves to the new origin, and values appear on the screen. The X value is the distance from the original origin; the Y value is the maximum cutting width.

- Press  to toggle the Y value between the maximum cutting width and distance from the original origin.

- Press  to toggle between the maximum cutting length and the distance from the original origin.

The X and/or Y value toggles.

- Press  if you have reached the desired origin.

The cutter comes online and is ready to receive data from the computer.

- Or press  to cancel.

The cutter moves to its original origin and comes online.

## Extended load

The extended load function makes it possible to define the limits of the Y axis so that the cutter can cut outside the pinch rollers. Substrate has to be loaded before this function can be used.

1. Press .
2. Press . **System setup** appears on the screen. Press .
3. Press  > **Actions**. Press .
4. Press  or  to scroll through the menu until you reach **Extended load**.
5. Press  or  to define the new limit at the right (origin). The head moves to its new origin.
6. Press . **Size** appears on the screen.
7. Press  or  to define the new limit at the left.
8. Press .

---

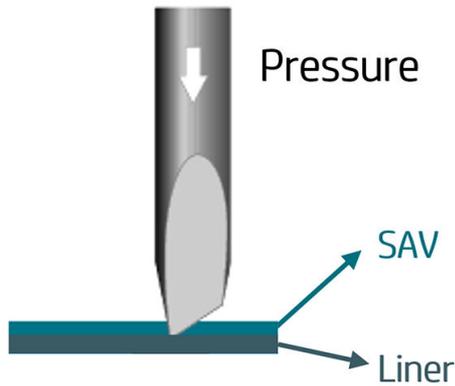
 **NOTE:** Tracking is not guaranteed when using this mode.

---

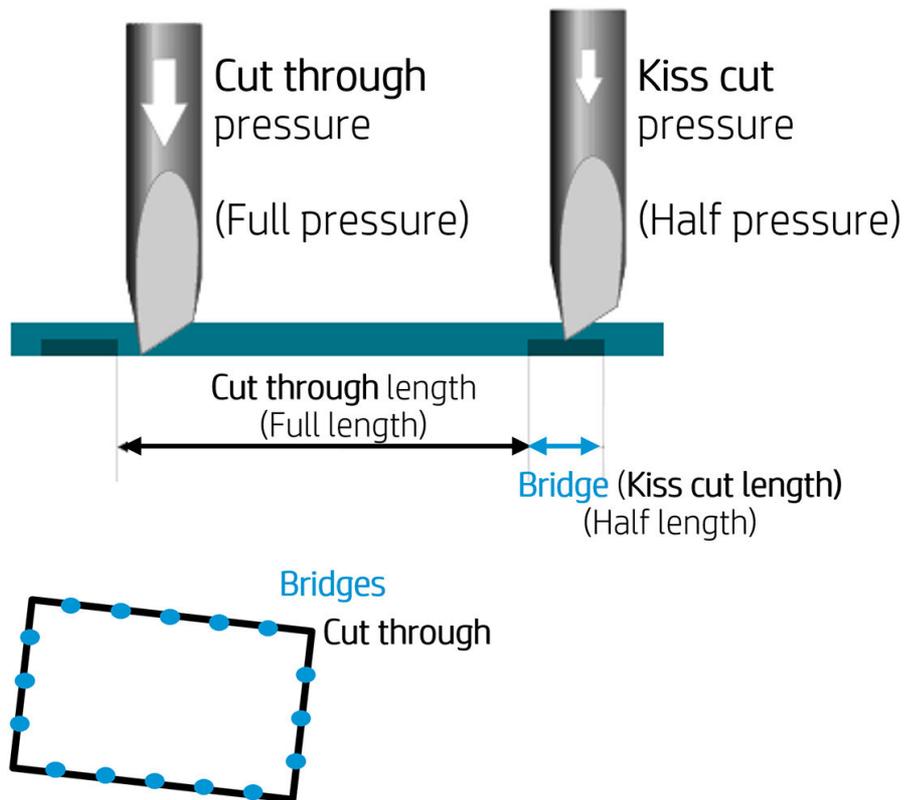
## Cut types

The cutter is designed to make two kinds of cut:

- Kiss cut: This cuts only the substrate, and not the liner



- Cut through (called FlexCut in the cutter's front panel): This cuts all the way through the substrate and liner. Small pieces left uncut (bridges) allow the substrate to remain connected together; when the job is finished, the cut pieces can be torn out. Although this can be done with any shape, it is reliable only with simple shapes. See [Cut through on page 30](#).



## Detailed OPOS operations

### Load the print into the cutter

Load the print into the cutter as usual (see [Load the substrate on page 12](#)). Make sure the marker, indicating the origin, is situated at the bottom right corner of the cutter.

## Change the OPOS settings manually

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **Configuration**. Press .
5. Press  or  to scroll through the menu until you reach **OPOS parameters**. Press .
6. Press  or  to choose the parameter to be changed or checked. The available parameters are **OPOS origin**, **Sheet mode**, and **Panels**.
7. Press  to confirm. The value of the chosen parameter appears on the screen.
8. Press  or  to change the parameter value.
9. Press  to confirm. An asterisk appears by the value, indicating that it is now selected.
10. Press  once to choose another parameter, or twice to leave the menu.

## Register the markers

Most cutting software will initiate the special load procedure after the parameters are sent. If the software does not do this, initiate the loading sequence from the cutter's front panel.

### Register the markers manually

1. Turn on the cutter and load the substrate.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **Actions**. Press .
5. Press  or  to scroll through the menu until you reach **Media alignment**. Press . A message prompting you to set the knife above the first marker scrolls across the screen.
6. Use , , , and  to position the knife.
7. Press . The cutter reload the substrate to check that the loaded length matches the OPOS parameters. Then it reads the markers.

---

 **NOTE:** If a marker cannot be read, you can reposition the knife and try again, or cancel the operation.

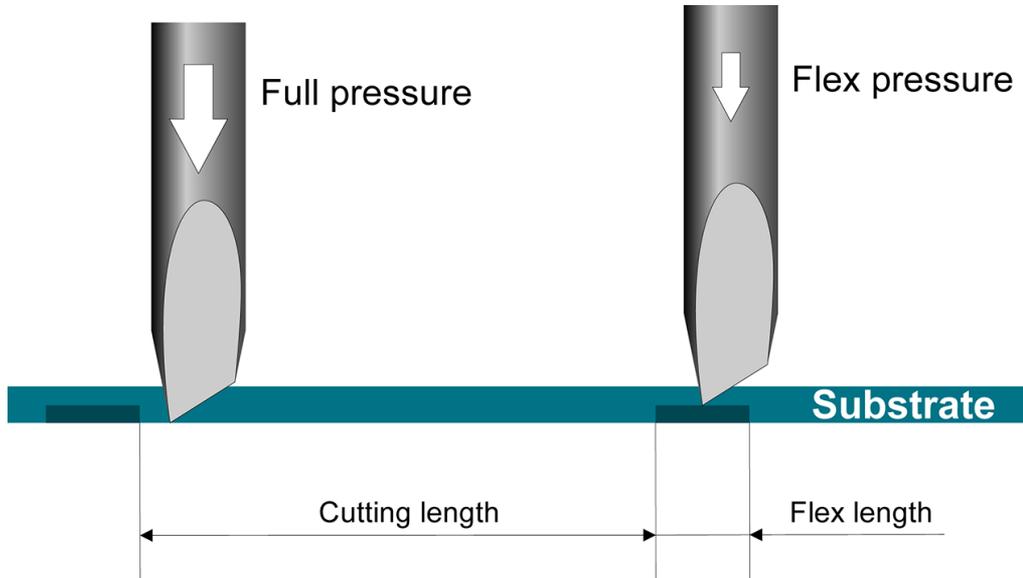
 **NOTE:** If an error occurs or the cutter cannot read the markers after three attempts, the following message is displayed: **Markers could not be sensed, press  to continue.**

---

## Cut through

The cutting-through functionality is focused on cutting simple shapes (such as rectangles). It is mostly used in combination with contour cutting.

An interrupted cutting line (with small bridges) enables the substrate to stay together. When the job is finished, the cut pieces can be torn out.



### Set the parameters

1. Turn on the cutter.
2. Press .
3. Press . **System setup** appears on the screen. Press .
4. Press  or  to scroll through the menu until you reach **FlexCut**. Press .
5. Press  or  to choose the FlexCut parameter. The available parameters include **Full pressure**, **Full length**, **Full velocity**, **Half pressure**, and **Half length**.
6. Press  or  to change the value of the chosen parameter.
7. Press  to confirm. An asterisk appears by the value, indicating that it is now selected.

 **NOTE:** FlexCut does not have to be set to **On** if the cutting software can distinguish between contour-cut lines and FlexCut lines.

 **TIP:** It is difficult to give recommended settings for FlexCut. For a standard self-adhesive vinyl, the following settings are recommended. **FlexCut mode:** **Accurate**; **Full pressure:** 160 g; **Full pressure cut-length:** 10 mm; **Flex pressure:** 80 g; **Flex pressure cut-length:** 0.8 mm.

8. You can press  at any time during parameter setting, to check the results. The cutter cuts out a pattern to check whether the settings are usable.

9. Check that the result is satisfactory. If not, change one of the above parameters. Reducing the velocity can improve the result. You are recommended never to use cutting speeds greater than 400 mm/s (16 ips) with cutting pressures above 170 g.

---

 **NOTE:** It is not always easy to find the correct balance between cutting deep enough (ensuring that the pieces can be taken out easily) and not cutting too deep (ensuring that the substrate keeps its strength while cutting). Sometimes this balance does not exist, meaning that this substrate cannot be cut through with satisfactory results.

 **NOTE:** FlexCut parameters are always metric, regardless of the value of the **Units** parameter.

 **TIP:** When cutting through, parallel lines are recommended to be at least 1 cm away from each other. Otherwise, while cutting the second line, the first line may come loose and cause trouble.

---

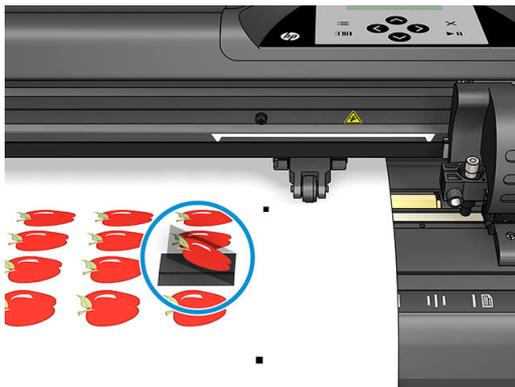
10. Press  to confirm.
11. Press  to leave the FlexCut menu.
12. Press  or  to scroll through the menu until you reach **Panels**. Press .
13. Press  or  to choose the panel parameter to be changed.
14. Press  or  to change the value of the chosen parameter.

---

 **TIP:** Recommended settings are: **Panels: On; Panel size: 3–10 cm; Recut: Off; Sorting: On.**

---

15. Press  to confirm. An asterisk appears by the value, indicating that it is now selected.
16. Press  twice.



---

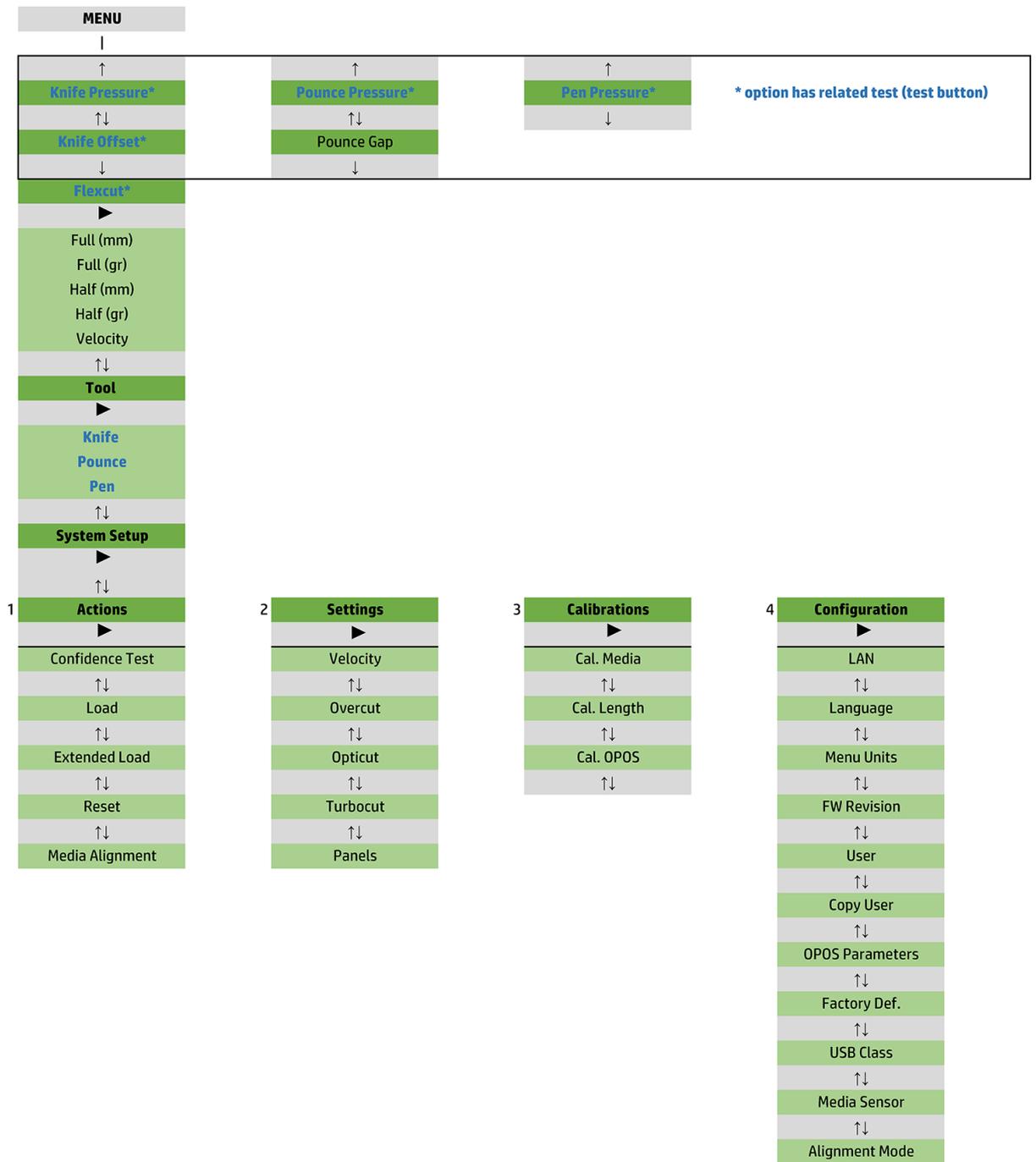
# 5 Detailed operation of the cutter

## Introduction

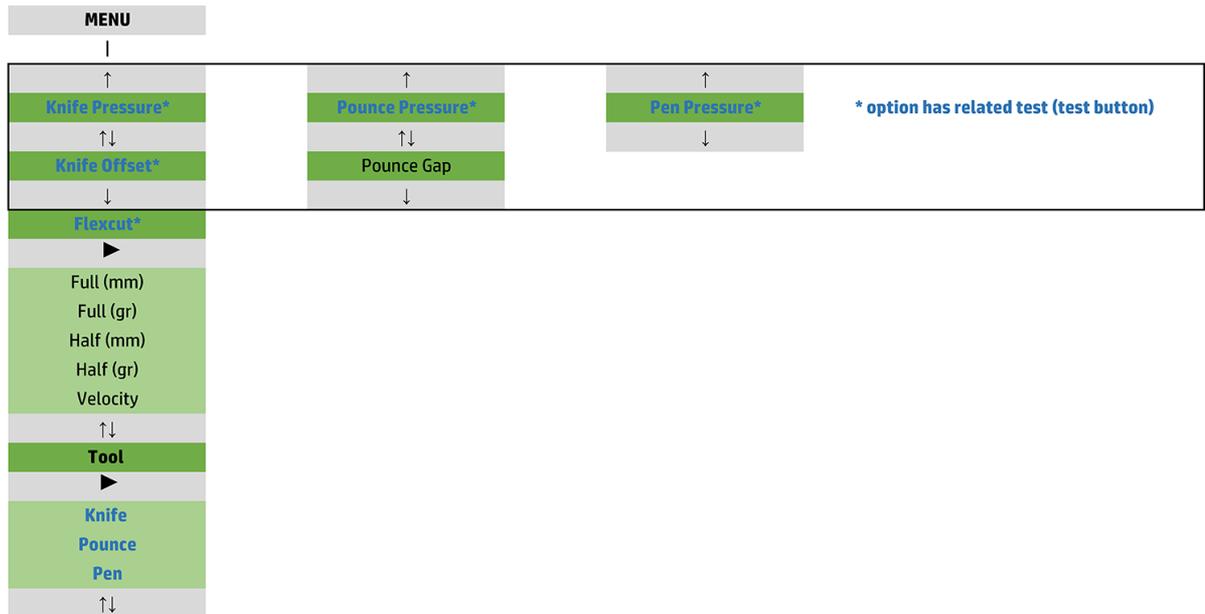
This chapter contains a detailed list of all parameters that can be changed and tests that can be initiated from the cutter's front panel.

The commonly used front-panel operations have already been described in this guide. This chapter may be used as a reference to locate a particular parameter setting or test, including the less frequently used items.

The menu system consists of the main menu and the four system setup menus.



## Main menu



## Pressure

Pressure is preceded by its tool name. This parameter is explained in [Set knife depth and pressure on page 18](#).

## Knife offset

This parameter is explained in [Change the drag knife offset on page 46](#).

## Pounce gap

This parameter applies to an optional accessory.

The pouncing gap submenu is used to set or modify the distance between the pounced holes. The default pouncing gap value is 1 mm.

After pressing , press  or  until the desired pouncing gap is displayed on the screen, then press  to confirm.

The value can be set between 1 mm and 50 mm.

## FlexCut

FlexCut can be set to **Off**, **Fast**, or **Accurate**. When the cutter is set to **Fast** or **Accurate**, it will alternately cut a certain length with full pressure and a certain length with reduced pressure. The advantage of the FlexCut feature is that it cuts completely through the substrate. Moreover, it also allows the material to stay together by means of the small substrate bridges.

- **Fast** is the quickest mode, but it is less precise due to the pressure changes during the cutting procedure.
- **Accurate** is much slower, but much more precise because the cutter stops at every change of pressure.

There are five typical FlexCut parameters:

- **Full pressure:** This parameter determines full pressure, used during FlexCut mode.
- **Full pressure cut length:** This parameter determines the length that is cut with full pressure, usually the length that will be cut all the way through.
- **Flex pressure cut length:** This parameter determines the length that will be cut with reduced pressure or without pressure. This is usually a much smaller value than the full pressure cut length: the length of the substrate bridges.
- **FlexCut pressure:** This parameter determines the pressure of the Flex pressure cut length. This is usually a reduced pressure, so that the knife only scratches the substrate or cuts it only halfway through.
- **FlexCut velocity:** FlexCut uses higher knife pressures. Higher knife pressures need lower cutting speed. With this parameter the velocity of FlexCut can be set independently from the normal cutting velocity.

See [Cut through on page 30](#) for more details.

## Tool

How to change tools is explained in [Set the tool type on page 52](#).

## System setup

Press  to access the remaining parameters and internal tests.

### Actions

|   |   |
|---|---|
| 1 | <b>Actions</b>  |
|   |  |
|   | Confidence Test   |
|   | ↑↓  |
|   | Load  |
|   | ↑↓  |
|   | Extended Load   |
|   | ↑↓  |
|   | Reset   |
|   | ↑↓  |
|   | Media Alignment   |

### Confidence test

The confidence test performs a quick electrical and mechanical test of the cutter to make sure it is fully operational. A sheet of substrate of at least A3/B size should be used for this test. The sheet is always cut on the left side. Press  to start the test.

### Load

This menu can be used when loading a substrate sheet. During loading, the maximum substrate length can be set.

### Extended load

This parameter is explained in [Extended load on page 27](#).

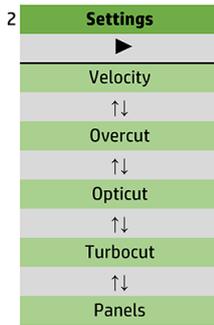
### Reset

The **Reset** instruction performs a complete reset of the cutter. Press  to execute a reset.

### Media alignment

**Align load** is a special loading procedure to register markers, so that pre-printed jobs can be contour-cut. This parameter is explained in [Register the markers on page 29](#).

## Settings

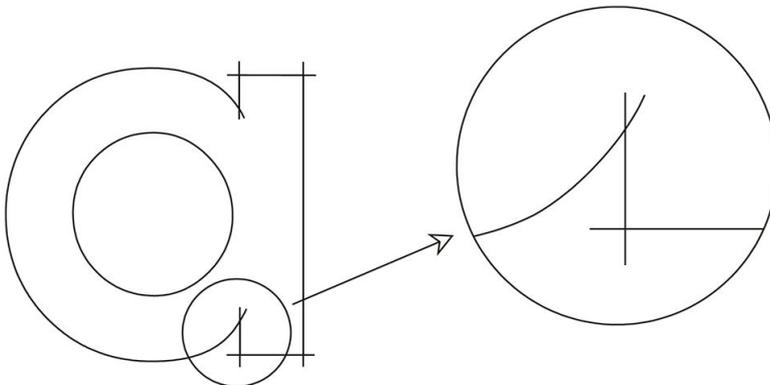


### Velocity

This menu groups all the parameters that affect the throughput of the cutter. The velocity and acceleration settings are explained in [Set the cutting speed on page 20](#).

### Overcut

The **Overcut** submenu enables you to generate an overcut to facilitate weeding the cut. Each time the knife goes up or down, the cutter cuts a bit further. The illustration below shows what overcut can do with a tangential knife. A sample cutout with a drag knife would show fewer overcuts as there would be fewer up/downs (usually only one per curve/letter). The overcut setting can be disabled (=0) or set to any value between 0 (=off) and 10. One unit is about 0.1 mm (0.004 in).



Press **▶||**. Use **◀** or **▶** to change the value. Press **▶||** to confirm or **✕** to cancel. The default overcut is set to 1.

### OptiCut

**OptiCut** improves the cutting quality if the knife is worn out or not calibrated correctly.

Press **▶||**. Use **◀** or **▶** to set **OptiCut** on or off. Press **▶||** to confirm or **✕** to cancel. **OptiCut** is off by default.

### TurboCut

TurboCut increases throughput by speeding up the drag movement but without raising the overall speed of the cutter. The cutting time reduction is significant, especially when cutting small, detailed designs. However, some thicker materials may not cut well with this feature turned on.

Press the TurboCut button, then use **◀** or **▶** to activate or deactivate TurboCut. Press **▶||** to confirm or **✕** to cancel. TurboCut is activated by default.

## Panels

There are four parameters in the Panels submenu:

- **Panels:** This parameter switches panels on or off.
- **Panel size:** This parameter determines the length of the panel.
- **Panel replot:** This parameter determines whether the design is to be cut more than once, panel per panel. Panel replot is used for substrates that are thick or difficult to cut. The value of this parameter is disregarded if paneling is set to off. If this parameter is set to 0, the cutter cuts each panel once only. If it is set to 1, the cutter cuts each panel twice.
- **Sort vectors:** See below.

## Sort vectors

Sorting vectors is a submenu of the Panels menu, but because of its importance it is explained separately. There are three options in this menu:

- **Off:** When vector sorting is set off, the cutter does no optimizing of the vectors. This is used when the intelligence of the cutter driver is preferred.
- **Directional:** If set to directional, the vectors are optimized for the cutting direction (substrate advance). This is used when the cutting pressure has to be set relatively high (for example during cutting through).
- **Starting point:** This option optimizes the starting point for closed curves. This is used when the users sees that the curves do not close as they should.

Paneling is used for various different applications. Below are the typical settings for the two most common applications:

- Cutting through: This is explained in [Cut through on page 30](#). Typical settings for the parameters are: **Panels: On; Panel size: 5–10 cm; Panel replot: Off; Vector sorting: Directional.**
- Tracking difficult substrates: Typical settings for the parameters are: **Panels: On; Panel size: 3–10 cm; Panel replot: On/Off**, depending on the thickness of the substrate. **Vector sorting: Directional/Off**, depending on the required knife pressure and the substrate backing.

## Calibrations

|   |                     |
|---|---------------------|
| 3 | <b>Calibrations</b> |
|   | ▶                   |
|   | Cal. Media          |
|   | ↑↓                  |
|   | Cal. Length         |
|   | ↑↓                  |
|   | Cal. OPOS           |
|   | ↑↓                  |

### Calibrate media

Substrate calibration helps the sensor to recognize the markers. It is explained in [Calibrate the substrate on page 17](#).

### Calibrate length

Length calibration allows the length of the cut lines to be adjusted within specifications. For instance, if a cut line should measure 100 mm exactly, the cutter can be adjusted for any discrepancy.

This calibration is explained in [Perform length calibration on page 20](#).

### Calibrate OPOS

OPOS calibration calibrates the distance between the OPOS sensor and the knife tip. It is explained in [Calibrate the OPOS sensor on page 50](#).

## Configuration

|   |                      |
|---|----------------------|
| 4 | <b>Configuration</b> |
|   | ▶                    |
|   | LAN                  |
|   | ↑↓                   |
|   | Language             |
|   | ↑↓                   |
|   | Menu Units           |
|   | ↑↓                   |
|   | FW Revision          |
|   | ↑↓                   |
|   | User                 |
|   | ↑↓                   |
|   | Copy User            |
|   | ↑↓                   |
|   | OPOS Parameters      |
|   | ↑↓                   |
|   | Factory Def.         |
|   | ↑↓                   |
|   | USB Class            |
|   | ↑↓                   |
|   | Media Sensor         |
|   | ↑↓                   |
|   | Alignment Mode       |

### LAN

This option displays the cutter's LAN settings.

### Language

This submenu is used to select the language to be used on the front panel. When the cutter is new, it asks you to choose a language; but you can change it at any time with this option.

The available languages include English, Spanish, French, Dutch, Italian, German, and Polish.

Press . Use or to select a language. Press to confirm or to cancel. The default language is chosen when the cutter is turned on for the first time.

### Menu units

This option determines whether the speed and size values are displayed in the metric system or in the English/US system of measurement.

Press . Use or to select the units of measurement. Press to confirm or to cancel. The default units are chosen when the cutter is turned on for the first time.

### Firmware revision

This option allows you to view the cutter's firmware version number, which is often helpful to technicians when diagnosing problems over the telephone.

### Copy user

This option copies all the settings of user 1 to the other three users.

## OPOS parameters

The OPOS settings submenu is used to change the various OPOS parameters from the front panel. It is explained in [Change the OPOS settings manually on page 29](#).

### Extra parameters

- **Sheet mode.**
- **Panels** allows the markers to be read in panels. Using this option, the OPOS sensor reads markers according to panel size, instead of loading them all.  
  
**Panels** can be set to **On** or **Off**. When set to **On**, the sensor will load only two markers in the X direction when loading OPOS. Other markers will be read when unrolling substrate.  
  
The panel size is automatically set to the distance between two markers in the X direction.
- **OPOS origin** is explained in [OPOS origin on page 24](#).

### Factory defaults

This option restores all parameters to the values originally set in the factory.

### USB class

USB class can be set to **USB port 1**, **Printer uni** (unidirectional), **Printer bidi** (bidirectional), **USB port 2**, **USB port 3**, or **USB port 4**.

**Printer uni** and **Printer bidi** are for use with printer adaptors with either network or wireless connection.

Because of the different USB ports, the computer can distinguish between up to four cutters attached to it.

Press . Use  or  to change the USB class. Press  to confirm or  to cancel. The default setting is **USB port 1**.

---

 **NOTE:** A change in USB class takes effect only after restarting the cutter.

 **NOTE:** The USB class in the cutting software and should match the USB class in the cutter. Each time a new USB class is selected for the cutter and connected for the first time to the computer, Windows starts a wizard to install the driver.

---

### Media sensor

This option turns the substrate sensor **On** or **Off**.

The substrate sensor detects whether substrate is loaded. It also detects the end of the substrate. Use of the sensor can prevent damage to the cutting strip and knife tip.

The cutter stops during the loading procedure or while it is cutting as soon as the rear sensor detects the end of the substrate.

Press . Use  or  to turn the sensor **On** or **Off**. Press  to confirm or  to cancel. The sensor is **On** by default.

### Alignment mode

The OPOS settings are explained in detail in the previous chapter, except for the alignment mode. There are three additional alignment methods available: X alignment, XY alignment, and XY adjustment.

These alignment methods can be used if the combination of marker color and substrate color cannot be read by the OPOS sensor.

They require you to register markers manually, using the cutter's front panel. Most cutting software can put these markers around the printed graphic automatically.

- X alignment compensates for errors in substrate alignment, and therefore graphic rotation, by rotating the graphic's contour. This alignment method requires you to specify the origin and one point along the X axis. Distance parameters are not required. X alignment is the easiest alignment method.
- XY alignment compensates for errors in graphic rotation and skew. Skew errors occur when the graphic's X and Y axes are not perpendicular. This alignment method requires you to specify the origin and one point along both the X and Y axes.
- XY adjustment compensates for errors in graphic rotation, skew, and scale. Scale errors occur when the graphic's printed size is different from the graphic's original size, as created in the imaging software. X-distance and Y-distance parameters are required. These parameters define the distance between the origin and X-axis point and between the origin and Y-axis point. XY adjustment is the most accurate manual alignment method.

Press . Use  or  to change the alignment method. Press  to confirm or  to cancel. The default alignment method is OPOS.

## 6 Maintenance

### Clean cutter surfaces

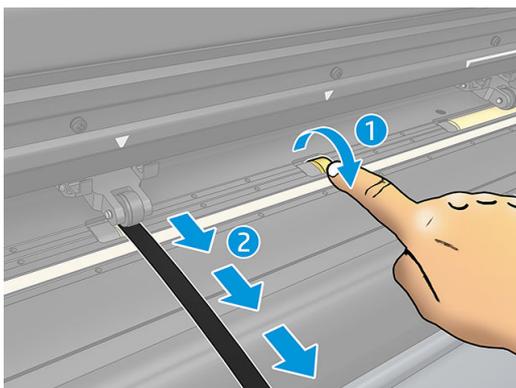
The cutter has a number of sliding surfaces, made of smooth metals and plastics. They are virtually friction-free and require no lubrication. They will, however, collect dust and lint that may affect the cutter's performance. Keep the cutter as clean as possible by using a dust cover. When necessary, clean the unit with a soft cloth, dampened with isopropyl alcohol or mild detergent. Do not use abrasives.

 **NOTE:** If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.

### Clean the drive system

Over time, the sleeves of the drive drum may become clogged with accumulated residue from the substrate liner. This may cause the substrate to slip between the pinch rollers and the drive sleeves, resulting in decreasing traction.

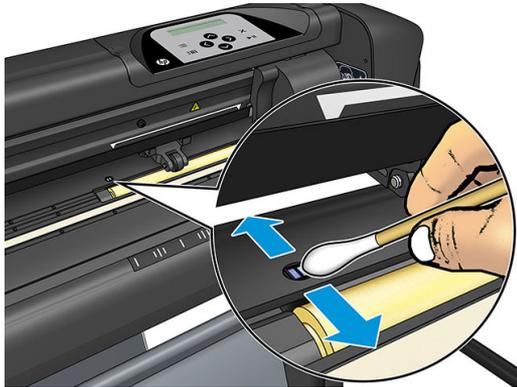
1. Make sure there is no substrate loaded in the cutter.
2. Turn off the cutter and disconnect it from the mains. Raise the pinch rollers.
3. Put a pinch roller above the sleeve that needs to be cleaned. Make sure it is the outer left or the outer right pinch roller (otherwise there is not enough pressure).
4. Remove the backing from a piece of vinyl. Place the piece of vinyl between a pinch roller and a drive sleeve with the tacky side down. Lower the pinch roller.
5. Turn another yellow drive sleeve manually, so that the piece of vinyl is winding on the sleeve for at least one turn.
6. Pull the piece of vinyl from underneath the pinch roller.
7. Repeat several times until all residue is removed from the drive sleeves.



## Clean the substrate sensor

Over time, the substrate sensor may become dirty with accumulated residue from the substrate, which may cause the cutter to malfunction.

Clean the sensor by wiping it with a cotton swab.

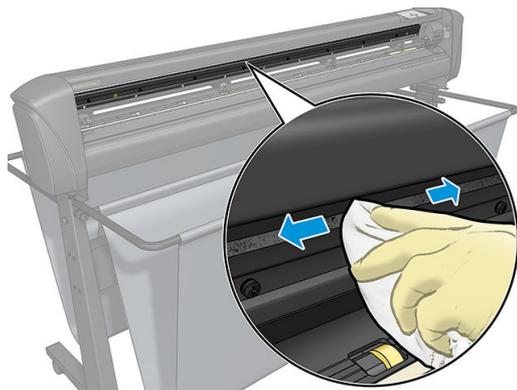


## Clean the Y-guide rail

There are two V-shaped areas on the Y-guide rail on which the tool carriage slides from left to right. The areas are on the top and on the bottom of the front of the Y guide.

Although the shape of the Y-guide rail may differ from model to model, the areas are located in the same place at the top and bottom of the guide.

The illustration below shows the top of the Y guide.



Over time, there may be some accumulated residue on these sliding surfaces and on the rollers of the tool carriage.

### Clean the sliding surfaces

1. Turn off the cutter.
2. Take a soft cloth, dampened with isopropyl alcohol or mild detergent.

---

 **NOTE:** If you are in an area (such as California) that regulates VOC cleaning and maintenance fluids, instead of isopropyl alcohol use a VOC-certified cleaner such as a properly diluted Simple Green All-Purpose Cleaner.

---

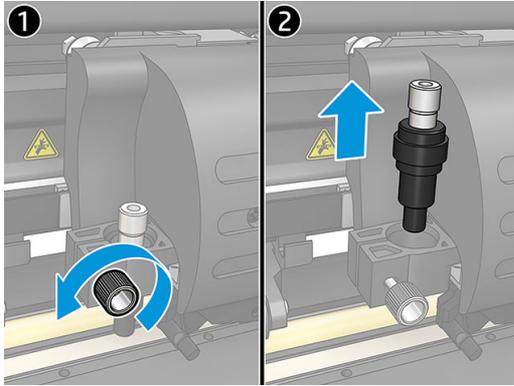
3. Clean the surfaces. When the tool carriage is in the way, push it gently to the left or right.

# Replace the knife

**⚠ WARNING!** The cutter uses razor-sharp knives. To avoid serious injury, be careful when installing, removing, or handling the knife.

## Remove the drag knife

1. Loosen the head clamp screw (1), swing the clamp arm back, and remove the knife holder from the clamp (2).



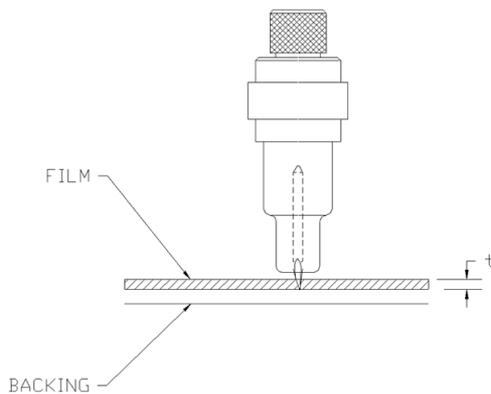
2. Turn the knurled adjustment knob (3) clockwise to push the knife (4) out of the holder (5).



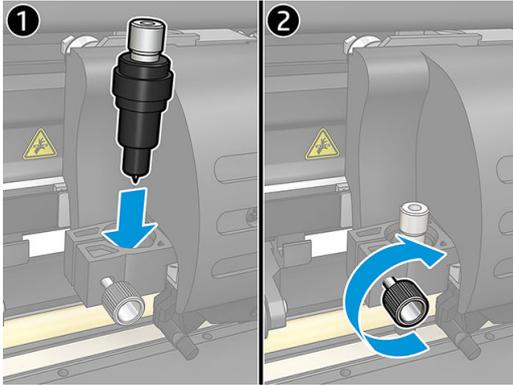
3. Carefully pull the knife from the holder.

## Install the drag knife

1. Remove the aluminum piece from the plastic knife holder (5) by turning the knurled adjustment knob (3) counterclockwise until the aluminum piece comes out of the holder.
2. Insert the conical, non-cutting end of the knife into the opening in the narrow end of the holder. Gently push the knife all the way in.
3. Turn the holder upside down and tap it lightly on a solid surface to ensure the knife is completely inserted.
4. Slowly turn the knurled knob clockwise until the tip of the blade extends the distance required for the desired cutting substrate ( $t$ ), as shown in figure below.



5. Insert the knife holder into the head clamp and push it all the way down (1).



6. Tighten the clamp screw (2).

**WARNING!** Take care not to cut yourself.

After installing a new knife, you should set the knife offset (see below) and recalibrate the OPOS sensor (see [Calibrate the OPOS sensor on page 50](#)).

## Change the drag knife offset

The offset is the distance between the center of the knife and its tip. The offset should be set whenever the knife is changed, and should be checked if the knife shows signs of wear.

### Typical offsets

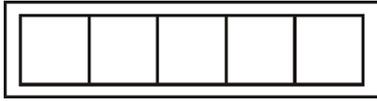
- 0.41–0.45 for standard knives
- 0.49–0.52 for the 60 degree knife
- 0.90–0.97 for sandblast knives

**NOTE:** A sandblast knife should be used when the substrate is thicker than 0.25 mm (0.01 in).

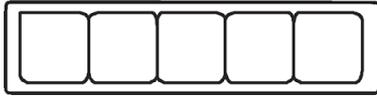
### Change the offset

1. Turn on the cutter, load substrate, and mount the tool.
2. Press .
3. Press  or  to scroll through the menu until you reach **Knife offset**. Press . The current offset appears on the screen.
4. Press  or  to change the offset.
  - Press  to perform the internal knife offset test.
  - Press  to confirm the chosen offset.
  - Press  to leave the offset unchanged.

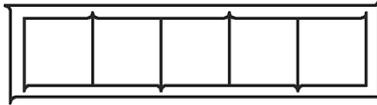
When the offset is correct, the test pattern looks like this:



When the offset is too low, the test pattern looks like this:



When the offset is too high, the test pattern looks like this:



## Change the fuse

**⚠ WARNING!** Before changing the fuse, turn off the cutter and ensure that it is completely disconnected from its power source.

**⚠ WARNING!** For continued protection against risk of fire, replace only with the same type and rating of fuse: T2.0A, 250V Schurter SPT or equivalent.

1. To remove the fuse (3), lightly pry the fuse holder release clip (2) in the direction opposite the power switch. The fuse holder will pop free.



2. Remove the fuse holder.
3. Pull the fuse from the holder.
4. Put the new fuse in the holder and clip the holder back into place.

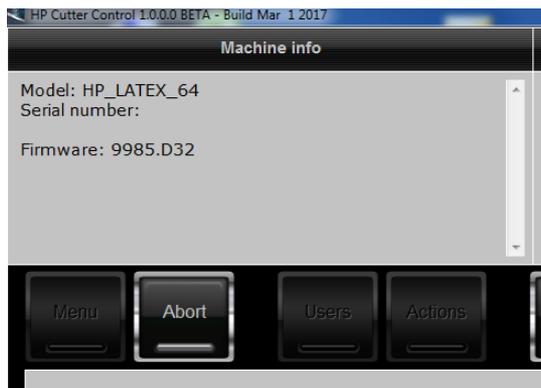
## Update the firmware

**📄 IMPORTANT:** Do not turn off the cutter during the firmware update process.

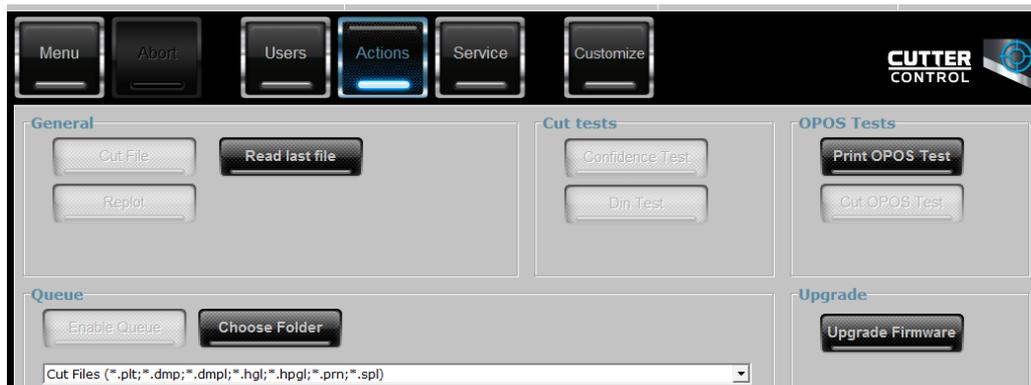
1. Ensure that you have HP Cutter Control installed. It is installed automatically during Print and Cut setup; if you have uninstalled it, you can download and reinstall it.
2. Run HP Cutter Control by double-clicking its icon.



3. In HP Cutter Control, search for the cutter. The application searches the LAN by default; if that fails, you can connect by USB cable. The cutter details should appear in the Machine Info screen.



4. Click **Actions** > **Upgrade firmware**.



5. Download the firmware update file.
6. Restart the cutter.

You can alternatively download the latest firmware from <https://support.hp.com/us-en/drivers>.

---

# 7 Troubleshooting

## Cutting quality is not satisfactory

1. Perform the confidence test, and check whether quality issues are also visible in this internal test. If not, perhaps the problem is in the file.
2. Perform the knife pressure test, and replace knife if it is worn out. For regular vinyl, the knife pressure should be around 60–80 g for kiss cutting. When the knife starts to wear down, the pressure will increase.
3. Check that the knife is assembled correctly and doesn't stick out too much from its holder. The knife should protrude only slightly.
4. Check that the knife holder is assembled correctly, and pushed far enough into the head clamps. The distance between the bottom of the knife holder and the cutting strip should be close to 3 mm.
5. Check the knife offset value. Every knife has its own offset value. The offset is the distance from the knife tip to the center of the knife. When the offset is not set correctly, the corners of the cut job will be of low quality.
6. Check other parameters such as OptiCut, TurboCut, Overcut, and FlexCut, which could also influence the cutting quality.
7. Replace the knife.
8. Check the cutting strip. The cutting strip will also wear down, because the knife is always cutting in the same, central position of the cutting strip. A small dent is created in places on the cutting strip when the strip needs to be replaced.

## Substrate is drifting and you have tracking issues

1. Ensure that the substrate flanges are used with substrate rolls.
2. Ensure that the substrate flanges are both positioned on the substrate flange guides.
3. Ensure that the outside pinch rollers are always positioned 5 mm over the edge of the substrate.
4. Try reducing the cutting speed.

## Substrate jams

1. Try reducing the cutting pressure.
2. If you are using FlexCut, the parameters may not be set up correctly, so that the substrate starts to lose integrity or falls apart. Experiment with FlexCut parameters until you find ones that work.
3. You may be using FlexCut for shapes that are too complex. It should be used for simple shapes only.

4. Try reducing the cutting speed. If you cut too fast, the substrate may not have time to fold correctly in the basket.
5. Your jobs may be too long, causing problems in the basket. Try dividing jobs into shorter segments, such as one-meter panels.

## Cutter cannot detect HP barcode or registration marks

1. Ensure that you position the cutting head correctly when the cutter prompts you to do so. Carefully read the instructions on the cutter's screen when starting a cutting job.
2. This problem most often occurs with substrates that are colored or have certain laminations. Remember to calibrate the substrate before using it. See [Calibrate the substrate on page 17](#).
3. Check whether the sensor touches the substrate during barcode and marker detection.

## Calibrate the OPOS sensor

1. Turn on the cutter and load black vinyl with white backing.

---

 **IMPORTANT:** Black vinyl with white backing **must** be used when calibrating OPOS. The substrate calibration setting should be set to the default value.

---

2. Set the head's origin above a clean, blank part of the vinyl.
3. Press .
4. Press . **System setup** appears on the screen. Press .
5. Press  or  until you reach **Calibrations**. Press .
6. Press  or  to scroll through the menu until you reach **Cal OPOS**. Press . The cutter cuts out a square measuring approximately 9.5 × 9.5 mm and move the square forward. **Weed rectangle** appears on the screen.
7. Carefully weed the square, making sure the edges stay intact. Press . OPOS reads the edges of the square and calibrates itself accordingly.

---

 **NOTE:** To maintain the accuracy of the OPOS sensor, repeat this calibration whenever you install a knife.

---

# 8 Accessories

There are two alternative ways to order supplies or accessories:

- Visit <http://www.hp.com/> on the Web. There you will also see the latest list of supplies and accessories for your cutter.
- Contact HP Support (see [When you need help on page 10](#)), and check that what you want is available in your area.

The rest of this chapter lists the available supplies and accessories, and their part numbers, at the time of writing.

## Order accessories

The following accessories can be ordered for your cutter.

### Accessories

| Name                           | Part number |
|--------------------------------|-------------|
| HP Latex Standard Blade Kit    | 1UP44A      |
| HP Latex Specialty Blade Kit   | 1UP45A      |
| HP Latex 2-in Media Holder Kit | 1UP27A      |
| HP Latex Cutter Extended Kit   | 1UP26A      |

### HP Latex Standard Blade Kit

HP Latex Standard Blades are used to cut most common print-and-cut substrates, such as self-adhesive vinyl. This kit contains five blades and a cutting strip.

### HP Latex Specialty Blade Kit

HP Latex Specialty Blades are used to cut some transfer substrates, and are also useful to produce rhinestone applications. This kit contains five blades and a cutting strip.

### HP Latex 2-in Media Holder Kit

HP Latex 2-in Media Holders are available for loading rolls of substrate. This kit contains a set of two holders, one for each side of the substrate roll.

## HP Latex Cutter Extended Kit

This kit contains the following items:

- Sandblast blades and holder

Sandblast blades are used for some very specific applications such as gravestones. These blades need a special blade holder.

- Pouncing kit, pin, and strip

The pouncing pin can be used if you prefer to pierce the substrate instead of cutting it. It comes together with a pouncing kit and a cutting strip.

- Black pen and pen holders

The pen can be used if you want to use the contour cutter as a drawing device. It comes with two pen holders.

## Set the tool type

The cutter is supplied with a knife, and alternative tools are available as accessories. All tools have one parameter in common: the pressure. Other parameters are specific to the tool. Tool parameters can be changed by changing them for the current user, or by changing the user.

---

**NOTICE:** The cutter will perform as specified only if a genuine HP tool is installed. Do not replace the standard knife with products from other manufacturers.

---

1. Turn on the cutter.
2. Press .
3. Press  or  until you reach **Tool**. Press .
4. Press  or  to change the tool.
5. Press  to confirm. An asterisk appears by the name of the tool, indicating that it is now selected.
6. Press  twice to leave the menu.

# 9 Specifications

## Cutter dimensions

|        | HP 54 Basic Cutter | HP Latex 54 Cutter | HP Latex 64 Cutter |
|--------|--------------------|--------------------|--------------------|
| Height | 1145 mm (45.1 in)  |                    | 1145 mm (45.1 in)  |
| Width  | 1750 mm (68.9 in)  |                    | 1980 mm (77.9 in)  |
| Depth  | 680 mm (26.8 in)   |                    | 680 mm (26.8 in)   |
| Weight | 42 kg (92 lb)      |                    | 54 kg (119 lb)     |

## Shipping dimensions

|        | HP 54 Basic Cutter | HP Latex 54 Cutter | HP Latex 64 Cutter |
|--------|--------------------|--------------------|--------------------|
| Height | 670 mm (26.4 in)   |                    | 670 mm (26.4 in)   |
| Width  | 1880 mm (74.0 in)  |                    | 2110 mm (83.1 in)  |
| Depth  | 480 mm (18.9 in)   |                    | 480 mm (18.9 in)   |
| Weight | 69 kg (152 lb)     |                    | 78 kg (172 lb)     |

## Substrate dimensions

|                                   | HP 54 Basic Cutter | HP Latex 54 Cutter | HP Latex 64 Cutter |
|-----------------------------------|--------------------|--------------------|--------------------|
| Minimum width                     | 280 mm (11.0 in)   | 180 mm (7.1 in)    | 180 mm (7.1 in)    |
| Maximum width                     | 1372 mm (54.0 in)  | 1410 mm (55.5 in)  | 1635 mm (64.4 in)  |
| Pinch rollers                     | 3                  | 4                  | 4                  |
| Maximum working width             | –                  | 1350 mm (53.1 in)  | 1575 mm (52.1 in)  |
| Maximum working width (oversized) | –                  | 1380 mm (54.3 in)  | 1605 mm (63.2 in)  |

| HP 54 Basic Cutter                 |                |
|------------------------------------|----------------|
| HP Latex 54 and 64 Cutters         |                |
| Maximum working length             | 50 m (164 ft)  |
| Front and rear margins             | 30 mm (1.2 in) |
| Side margins                       | 25 mm (1.0 in) |
| Margin between prints (no cut-off) | 30 mm (1.2 in) |
| Margin to cut off                  | 30 mm (1.2 in) |

| HP 54 Basic Cutter, HP Latex 54 and 64 Cutters |   |
|--|---|
| Tracking performance                           | Up to 8 m (26 ft) within guaranteed specifications for substrates less than 762 mm (30 in) wide<br>Up to 4 m (13 ft) within guaranteed specifications for substrates more than 762 mm (30 in) wide<br>Longer substrates can be handled, but then compliance with specifications is not guaranteed |
| Thickness                                      | 0.05 to 0.25 mm (0.002 to 0.01 in) with standard knife<br>Up to 0.8 mm (0.03 in) with optional sandblast knife  |

 **NOTE:** Tracking performance is not guaranteed in oversized mode.

## Performance

This performance is achieved with wax-backed vinyl 0.05 mm (0.002 in) thick, total thickness not more than 0.25 mm (0.01 in).

|               |   |
|---------------|---|
| Cut type      | Drag-knife with TurboCut and Tangential emulation modes   |
| Cut width     | 135 cm (53.1 in) for the HP Latex 64 Cutter<br>158 cm (62.2 in) for the HP Latex 54 Cutter            |
| Cut speed     | Up to 113 cm/s (44 in/s) diagonal<br>Up to 84 cm/s (33 in/s) for substrates wider than 736 mm (29 in) |
| Acceleration  | Up to 3 G diagonal<br>Up to 0.9 G for substrates wider than 736 mm (29 in)                            |
| Accuracy      | 0.2% of movement or 0.25 mm (0.01 in), whichever is greater   |
| Repeatability | ±0.1 mm (0.004 in)  |
| Cut force     | 0 to 400 g of downforce, in 5 g steps   |
| Cut thickness | 0.05 to 0.25 mm (0.002 to 0.01 in)<br>0.8 mm (0.03 in) with optional sandblast blade                  |

 **NOTE:** The repeatability and accuracy specifications are valid within the guaranteed tracking length (see previous table), but not in oversized mode.

## Firmware

|                          |  |
|--------------------------|--|
| Language                 | DM/PL, HP-GL (758x emulation), HP-GL/2 |
| Supported character sets | Standard ASCII                         |
| Supported fonts          | Sans serif (single stroke and medium)  |
| ROM-based plots          | Confidence plot, DIN plot              |

## Environment

These specifications are for the cutter without substrate.

|                       |                            |
|-----------------------|----------------------------|
| Operating temperature | 15 to 35°C (59 to 95°F)    |
| Storage temperature   | -30 to 70°C (-22 to 158°F) |
| Relative humidity     | 35 to 75%, non-condensing  |

 **TIP:** The use of dimensionally stable substrate is an essential pre-requisite to obtain high cut quality. Additionally, substrate expansion or contraction may occur as a result of temperature variations. To improve the dimensional stability of substrate, let it stabilize to the current environmental conditions before use, for a minimum period of 24 hours.

## Electrical

The power entry module detects the line voltage and switches automatically between 100 V and 240 V.

|                      |                   |
|----------------------|-------------------|
| Input voltage        | 100–120/200–240 V |
| Input frequency      | 50/60 Hz          |
| Maximum load current | 2 A               |
| Power consumption    | 85 VA             |
| Fuses                | T2.0A 250V        |

 **WARNING!** For continued protection against risk of fire, replace fuses only with the same type and rating of fuse.

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