Cookbook – New Washable Textiles for Decoration

for HP Latex Printers

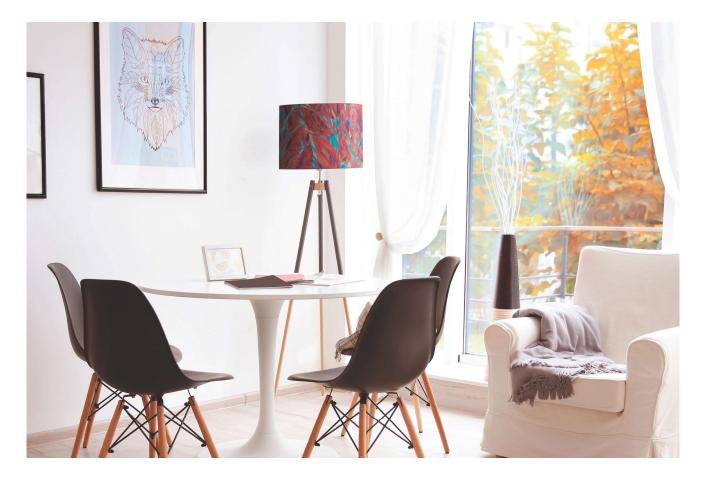




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1 Overview

Who can benefit from reading this document?

This document is intended for:

- Owners and operators of HP Latex printers, with a special focus on the HP Latex 5XX, HP Latex 1500, HP Latex 1XX, HP Latex 3XX and HP Latex 3X00.
- HP Latex customer support, marketing and sales organizations.

This document provides information about:

- Textile brands, references, types, classifications and their main applications within the scope of Decoration
- A list of textiles that have been tested to guarantee good/very good dry-rub and scratch compared to the materials we have tested so far.
- All the information and resources that we are offering for each material from the list.
 - o Whether the substrate requires an ink collector or not.
 - o The recommended media presets (per printer) that the customer must use in order to get the best results with each material (speed, amount of ink and other additional settings).
 - o The different options for customers for finding media presets and the previously mentioned information.
- The key customer requirements regarding the improved performance and/or durability as well as the regulations used in order to verify image resistance, the test results and the thresholds.
- Information about media vendor distribution.

2 An introduction to textiles

Why do we need more durable textiles/fabrics?

Today's residential spaces are full of exciting designs and customized interior decoration is in demand. HP Latex Technology is ideally suited to the task and can help you easily enter into this fast-growing market. Expand your production into high-margin home décor applications and look for new design opportunities to differentiate your business.

HP Latex Technology is ideal for printing on fabrics used for interior decoration, primarily for indoor applications. With HP Latex Technology, there's no need to invest in a dedicated solution for printing on textiles—you can print on both polyester and natural fibers, such as cotton, on a unique device. This document provides tips and tricks for getting the best results from HP Latex printers when printing on textiles.



What are the main types of textiles for decoration?

For home decoration, we can divide the textiles into two main groups:

- Natural fiber textiles They are used for a variety of home decoration applications, such as cushions, drapes or upholstery. They provide a soft-touch and a premium look. The ones presented in this document are generally made out of cotton or a mix of cotton and linen.
- **Polyester textiles** Some polyesters can be used as well for home decoration as well as retail and contract decoration (provided they are fire retardant).

Recommended list of textiles

Classification

As of October 4th, the following table offers a list of substrates usable for decoration:

Media Vendor		Decoration	
name	Material	Home Decoration	Retail and Contract Decoration
	FILMOtex Silencio 2.5 white	•	•
NESCHEN	FILMOtex Silencio 5 white	•	•
	FILMOtex Silencio 10 white	•	•
	5297 Newport	•	
	5196 Leenane	•	
	5014 Warp Satin	•	
Premex	5428 Phoenix	•	
	5196B Leenane Blockout	•	
	5966 Fine Twill	•	
	5005 Fine Satin	•	
	PrintTex Silencio 2.5	•	•
PONGS	PrintTex Silencio 5	•	•
	PrintTex Silencio 10	•	•
Serge Ferrari	Alphalia Silent AW	•	•
Jerge Ferrair	Alphalia Silent AW LUX	•	•

Media Vendor Distribution

The following table offers a list of substrates classified according to the previous chapter:

WIDTH - 3.2m (126")

Media Vendor name	Distribution			
Media veriuoi riarrie	APJ	EMEA	Latin America	North America
NESCHEN	WIP	•	WIP	WIP
PONGS	•	•	WIP	•
Serge Ferrari	•	• (2,7m)	•	• (2,7m)

WIDTH - ≤1.6m (64")

Media Vendor name	Distribution			
Media veridoi fiarrie	APJ	EMEA	Latin America	North America
NESCHEN	WIP	•	WIP	WIP
PremEx DuraVibe	•	•	WIP	•
PONGS	•	•	WIP	•
Serge Ferrari	•	•	•	•

Tested and validated media presets

The following table offers the print modes recommended in order to get better results. Once the media preset is installed, there will normally be two different print modes—production and quality:

^{•:} Washable textile •: Non-washable textile

Media Vendor	Material	HP Latex 3X00	HP Latex 1500	HP Latex 5XX	HP Latex 1XX, 3XX
	FILMOtex Silencio 2.5 white	14p6c200% 20p6c200%	14p6c200% 18p6c200%	16p6c200% 20p6c230%	16p6c200% 20p6c230%
NESCHEN	FILMOtex Silencio 10 white	14p6c230% 20p6c230%	14p6c230% 18p6c230%	-	-
	FILMOtex Silencio 5 white	14p6c200% 20p6c200%	14p6c200% 18p6c200%	16p6c200% 20p6c230%	16p6c200% 20p6c230%
	5297 Newport	14p6c150%	14p6c150%	12p6c130%	12p6c130%
	5196 Leenane	14p6c150%	14p6c150%	12p6c130%	12p6c130%
	5014 Warp Satin	14p6c150%	14p6c150%	12p6c130%	12p6c130%
Premex	5428 Phoenix	14p6c150%	14p6c170%	12p6c130%	12p6c130%
Duravibe	5196B Leenane Blockout	10p6c170% 14p6c260%	12p6c170% 14p6c260%	16p6c185% 20p6c200%	16p6c185% 20p6c200%
	5966 Fine Twill	14p6c150%	14p6c150%	12p6c130%	12p6c130%
	5005 Fine Satin	14p6c150%	14p6c150%	12р6с130%	12p6c130%
	PrintTex Silencio 10	14p6c230% 20p6c230%	14p6c230% 18p6c230%	-	-
PONGS	PrintTex Silencio 5	14p6c200% 20p6c200%	14p6c200% 18p6c200%	16p6c200% 20p6c230%	16p6c200% 20p6c230%
	PrintTex Silencio 2.5	14p6c200% 20p6c200%	14p6c200% 18p6c200%	16p6c200% 20p6c230%	16p6c200% 20p6c230%
Sorgo Forrari	Alphalia Silent AW	-	14p6c170% 18p6c200%	12p6c130% 16p6c170%	WIP
Serge Ferrari	Alphalia Silent AW LUX	-	14p6c170% 18p6c200%	WIP	WIP

Key test to getting durable decoration textiles

One important property of printed textiles used in applications like home decoration is their "wet rub" performance as well as their resistance to washing. The standards used to measure the wet rub test and the resistance to washing are respectively ISO 105-X12 and ISO 6330

Why is the wet rub test so important?

Home décor textiles with good wet rub test results are not only suitable for sewing, finishing and transporting without being damaged but also avoidable smudges to the customer cloth - if their clothes are not fully dried or they are sweat because of a long contact. HP is constantly analyzing new materials to even further increase the range of textiles that are excellent for use with HP Latex Inks.

How to measure wet rubbing

One of the sections of ISO 105-X12 determines the full procedure to test this property. Applying a downward force of 9 ± 0.2 Newtons, at a rate of one cycle per second, the Taber Linear Abraser rubs 10 times back and forth in a straight line (5 times forward and 5 times backward) along a track on the dry sample, using a wet bleached cotton rubbing cloth, which is evaluated to determine how it has been stained.

How to read the wet rub test result

After completing the test, three parameters are evaluated: *image damage*, *gloss change* and the *staining of the cotton rubbing cloth*. Those textiles with good or excellent results are scored as a 3 or higher. Textiles for home decoration printed with HP Latex Technology and with a wet rubbing performance equal to or better than 3 are the perfect fit for your decoration applications.



- 1. Taber Linear Abraser
- 2. Testing a textile sample
- 3. Color fastness to rubbing is categorized from 1 to 5. The higher the number, the better the fastness.

4 How to achieve wash resistance

Only some of the media mentioned above can be categorized as washable.

Media Vendor	Material	Spin (validated RPM)
Premex Duravibe	5297 Newport	NO Spin
	5196 Leenane	NO Spin
	5014 Warp Satin	NO Spin
	5428 Phoenix	NO Spin
	5966 Fine Twill	Up to 600rpm
	5005 Fine Satin	Up to 600rpm

It is recommended to use those substrates for printing and creating home interior decoration applications such as cushions, bags, bean bags, promotional tea towels, lampshades, canvas, tabletops or tapestry.

Achieving washing resistance

The substrates listed above have a specific top-coating that is activated once exposed to a specific temperature during a specific amount of time in a heat-press. Once those parameters are achieved, the substrates will have an increased resistance to washing.

What are the different washing parameters?

Washing parameters differ in terms of: water temperature, number of spins and time.

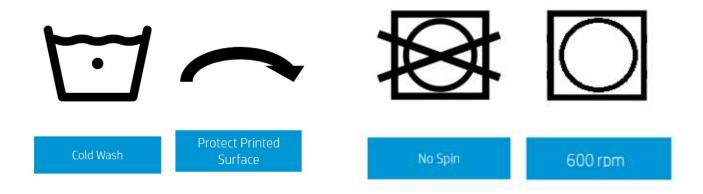
The substrates listed above have been proven to have good resistance to washing using the following parameters:

Water Temperature	Cold
Number of spins	0 – 600 (see previous table to know the recommended settings)
Time	1 hour

The tests were realized in a domestic washing machine and were conducted throughout 5 wash cycles with the above-listed parameters.

General recommendations:

Recommendations depending on the products:



Wash Test

The picture below shows the results after 5 washing cycles. The left part has been heat-fixed.



Heat-fixation parameters

The heat fixation process for substrates relies on two parameters: temperature and time. Both those parameters can be adjusted directly on the heat-press by the end-user.

In order for those substrates to achieve good resistance to washing, they need to be heat-fixed after printing using the following parameters:

Temperature	175 °C ± 5 °C (347 °F ± 40 °F)
Time	80 seconds

How to check if the temperature is correct?

Often the temperature indicated by the heat-press will vary from the actual temperature of the textiles. It is advised to ensure that the textile reaches the proper temperature using a heat-sensitive label as seen in the picture below. This process does not need to be repeated for each fixation cycle but it is advised to check regularly that the difference between the temperature indicated by the heat-press and the actual substrate temperature remains within a small range (\pm 5 $^{\circ}$ C).



Heat-press models

There are several models of heat-presses available in the market. Here are some examples of heat fixation techniques depending on how they warm the substrates:

- Clamshell heat press
- Hot air heat press
- Infrared heat presses
- Heat fixation units (electrically heated)
- Calender rotary heat press

The tests were realized in a calender rotary heat press from Monti Antonio model 853.



What happens if those substrates are not heat-fixed?

The process of heat-fixation helps increase the dry-rubbing as well as demonstrated by the table below:

Media Vendor	Material	Dry-rubbing prior to heat fixation	Dry-rubbing after heat fixation
	5297 Newport	3-4	4-5
	5196 Leenane	3-4	4
Premex	5014 Warp Satin	3-4	4-5
Duravibe	5428 Phoenix	WIP	WIP
	5966 Fine Twill	3-4	4-5
	5005 Fine Satin	3-4	4-5

However, without any heat fixation, the resistance to dry-rubbing is already acceptable.

Finishing the Textile

Cutting

HP Latex prints are compatible with all standard techniques; however, some techniques are more suitable for different kinds of materials than others.

As a general rule, the best options to cut polyester fabrics are ultrasound or pressure knife cutters.

On the other hand, textiles made out of natural fibers tend to fray more than polyester: it is advised to hand cut them or use a pressure knife cutter and afterwards sew the edges as shown in the picture below.



Sewing

To ensure that the prints are not damaged or scratched while they are sewed, it is recommended that the parts in contact with the prints be made of plastic (instead of metal) or covered with plastic protectors.

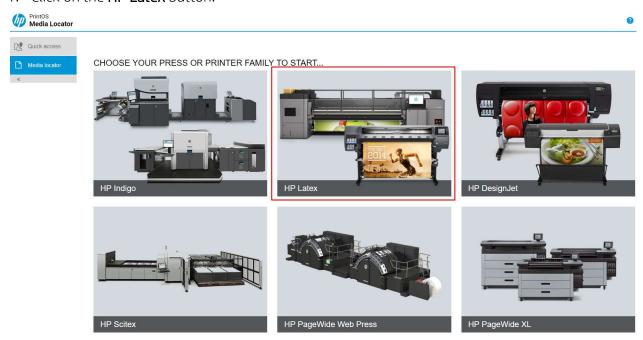
5 Where to find the media presets

There are different ways to search, find and install the media presets:

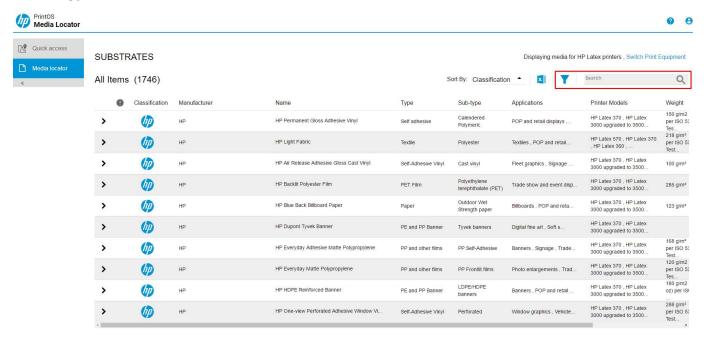
Using the Media Locator

All the profiles are available at the HP Media Solutions Locator, which is an application within PrintOS: https://www.printos.com/ml/#/medialocator.

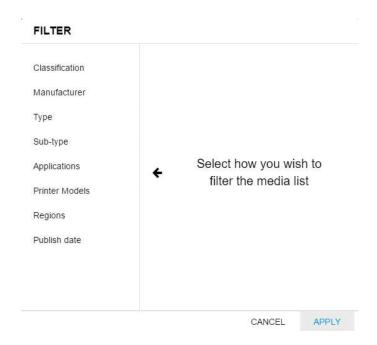
1. Click on the **HP Latex** button.



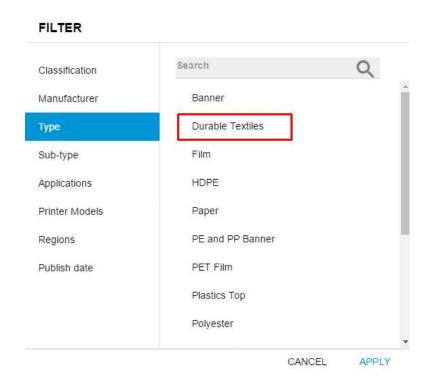
2. The Filter button or the Search field can be used to find the textiles recommended on the previous list.



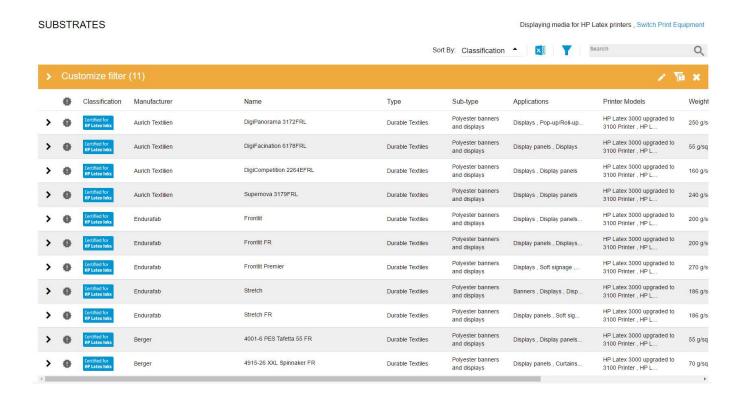
3. If the filter button is pressed, a drop-down list will be shown; it can be filtered by: classification, manufacturer, type, sub-type, application, printer model, etc.



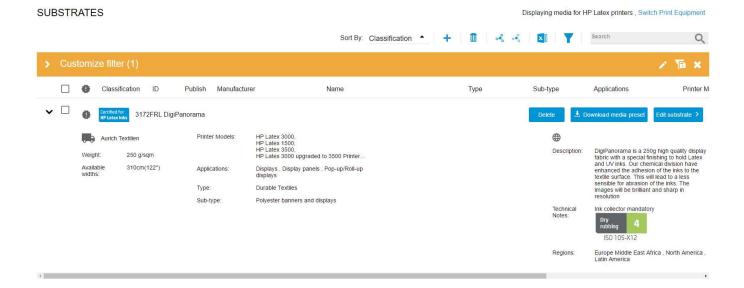
4. The materials from the list have their own Media Type, called 'Durable Textiles.'



5. The list with the materials that this document is referring to will be shown.



6. By clicking the "Show details" button on the left side of a row, information about the ink collector needed and the results of the ISO 105-X12 dry rubbing test can be seen in the technical notes area.



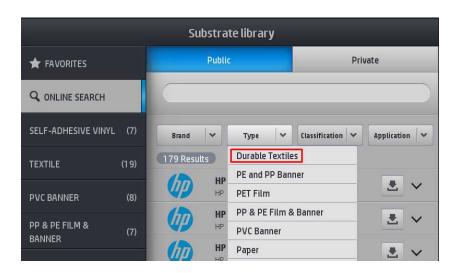
HP Latex 1XX, 3XX and 5XX printer front panels

The media presets can also be installed through the front panels of the printers:

1. Click on the **Online Search** button.



2. Filter by type and select **Durable Textiles** from the drop-down list in order to see the recommended materials.

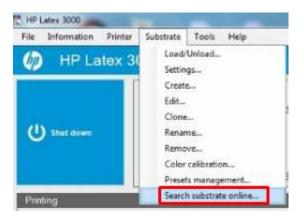


3. Click on the **Download** button to install the media preset; the RIP will automatically synchronize with the printer.

HP Latex 3X00 and 1500 printer IPSs

A media preset can also be installed through the IPS (the printer's PC):

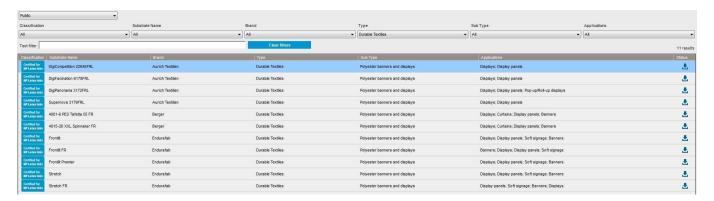
1. Click on **Substrates** and select **Search substrate online** from the drop-down list.



2. Filter by type and select **Durable Textiles** from the drop-down list in order to see the recommended materials.



3. Click the **Download** button (it can be found on the right side of the window), then the **Status** column, and wait until the installation process is finished (the icon will change to).



6 Ink collector installation and usage recommendations

Before printing on porous textiles, the Ink Collector Kit should be installed, which is not available for the HP Latex 110, 115, 310, 315, 330 and 335, standard in the HP Latex 360, 365, 370, 375 and 3000, it is an accessory for the HP Latex 1500, in order to protect the printer from the ink that falls through the substrate. The kit should be removed before printing on non-porous substrates.

To find out how to install the Ink Collector Kit, please read the user guide:

- **HP Latex 1500** Chapter 9 Accessories.
- **HP Latex 3000 series** Chapter 3 Handle the substrate.
- **HP Latex 500 series** Chapter 3 Handle the substrate and troubleshoot substrate issues.
- **HP Latex 36X and 37X only** Chapter 3 Handle the substrate and troubleshoot substrate issues.

Ink collector usage required per material

The recommendation per media and all the HP Latex printers can be found in the following table.

Media Vendor	Material	Is the ink collector required?
NECCHEN	FILMOtex Silencio 10 white	NO
NESCHEN	FILMOtex Silencio 5 white	NO
	5297 Newport	YES
	5196 Leenane	YES
	5014 Warp Satin	YES
Premex	5428 Phoenix	YES
	5196B Leenane Blockout	NO
	5966 Fine Twill	YES
	5005 Fine Satin	YES
	PrintTex Silencio 2.5	NO
PONGS	PrintTex Silencio 5	NO
	PrintTex Silencio 10	NO
Serge Ferrari	Alphalia Silent AW	YES
Jerge i errali	Alphalia Silent AW LUX	YES

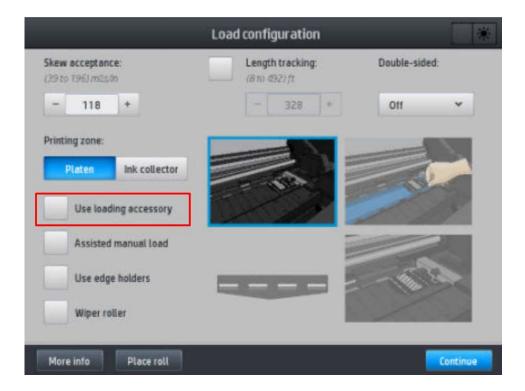
7 How to use the media loading accessory with the HP Latex 500 and 300 series

The loading accessory is designed to help you with loading banner/textile/mesh substrates. It is recommended when loading such substrates, but not obligatory.

To find out how to use the media loading accessory, please read the user guide:

• **HP Latex 500 series** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.

IMPORTANT — Click the **Use loading accessory** button on the front panel so that printer is able to change the force of the pinchwheels in order to prevent wrinkles on flimsy materials.



• **HP Latex 36X and 37X only** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.

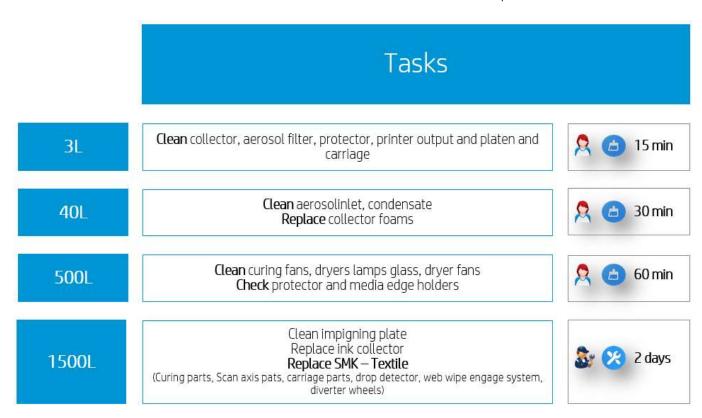
8 Additional maintenance operations when printing on porous materials

HP Latex 3X00

The following is a part of the "Summary of maintenance operations" section that can be found in the user guide within **Chapter 8 – Hardware maintenance**, where typical maintenance operations are explained as follows:

- Weekly cleaning
- 125 liter maintenance
- 500 liter maintenance
- 1,500 liter maintenance

When printing on textiles, since most of them are porous, they require print modes with a higher number of passes and more ink compared to other substrates that can be printed on with HP Latex inks. The following table describes the additional maintenances*that the customer will need to perform.



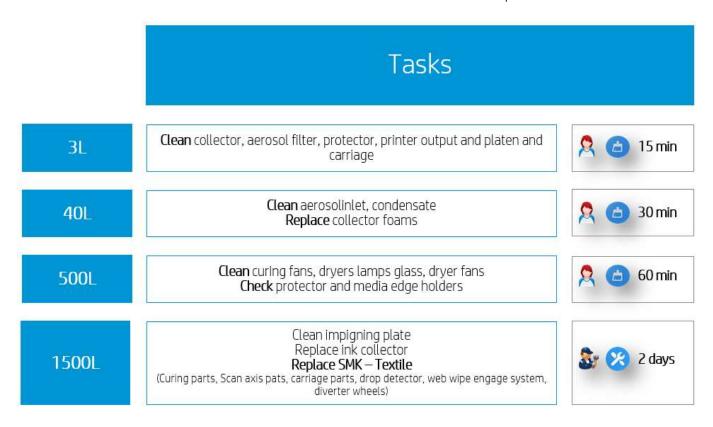
^{*} These maintenances are scheduled within HP Print Care (also explained in chapter 7 of the user guide) together with other maintenance tasks.

HP Latex 1500

The following is a part of the "Summary of repair kits and maintenances" section that can be found in the user guide within **Chapter 10 – Hardware maintenance**, where the usual maintenance operations are explained as follows:

- Weekly cleaning
- 450 liter maintenance
- 900 liter maintenance
- 1,500 liter maintenance
- 3,000 liter maintenance

When printing on textiles, since most of them are porous, they require print modes with a higher number of passes and more ink compared to other substrates that can be printed on with HP Latex inks. The following table describes the additional maintenances*that the customer will need to perform.



^{*} These maintenances are scheduled within HP Print Care (also explained in chapter 8 of the user guide) together with other maintenance tasks.

HP Latex 1XX, 3XX and HP Latex 5XX

Due to the porous nature of textile media, the ink on the media tends to evaporate differently than with other materials. Evaporated components of the ink may condensate on cold surfaces of the printer, leaving an oily finish.

- To prevent condensate under the printed material from transferring into the printed job, always use the output platen protector accessory as described in **Chapter 3 Handle the substrate and troubleshoot substrate issues** of the user guide.
- To prevent drops of condensate from falling into subsequent jobs, perform the following user maintenance after any intensive usage of textiles (approximately after every roll):

Clean the curing system internal cover lip

- 1. Turn off the printer.
- 2. Open the main window.
- 3. With a soft cloth or piece of paper, remove any oily drops that have formed on the edge of the cover's internal lip.





Clean the output platen

- 1. Turn off the printer.
- 2. Remove the output platen protector accessory.
- 3. With a soft cloth or piece of paper, clean any oily drops that may have condensed under the accessory.
- 4. Make sure to properly clean all the steps, screws and features of the platen.



Help yourself by wrapping the cloth around a soft tool to reach the inner parts of the output platen.

With certain textile materials, due to rougher media edges, an increased distance to the material and particular aerodynamic effects, it is more likely that the line sensor gets dirty and loses sensitivity. If the line sensor is dirty, you may notice that:

- An opaque media cannot be found or its width cannot detected: The printer uses the line sensor to "find" the media's edges. If the sensor is dirty it may not be able to discriminate between the print platen and the media itself.
- The printer is unable to determine the level of usage of the maintenance cartridge: The printer uses the line sensor to read a special pattern on the maintenance cartridge to determine its usage. If the sensor is dirty it may not be able to read the pattern.

If the problems above start to occur frequently, you may need to clean the line sensor in order to regain the full functionality of the printer.

Cleaning the line sensor

From the front panel, perform a maintenance cartridge replacement and remove the maintenance cartridge.



- 1. Turn off the printer.
- 2. With the printer off, open the window and manually move the carriage to the side.



You will have access to the line sensor from the maintenance cartridge door.



- 3. With a soft cloth or piece of paper, clean the line sensor. Be careful not to touch the printheads.
- 4. Close the window and the maintenance cartridge door and turn on the printer.
- 5. Finish replacing the maintenance cartridge.

IMPORTANT: It is not required to perform any maintenance on the line sensor if you do not see the problems described above. An excessive cleaning of the sensor may lead to undesired issues and the risk of damaging the printheads.

HP Latex 1XX and 3XX only

Due to hardware differences, the 3XX series printers are more susceptible than the 5XX series ones to the accumulation of condensation and aerosol when printing on all media, especially textiles. The procedures described above may need to be performed more frequently or more intensively on the 3XX series.

In addition to the procedures described above, perform the following two maintenance cleanings after an intensive use of textiles:

Clean the vapor removal array

With a soft cloth or piece of paper, clean any oily drops under the vapor removal array (the outer array of fans).



Pay special attention to the left and right corners.

Clean the front of the carriage

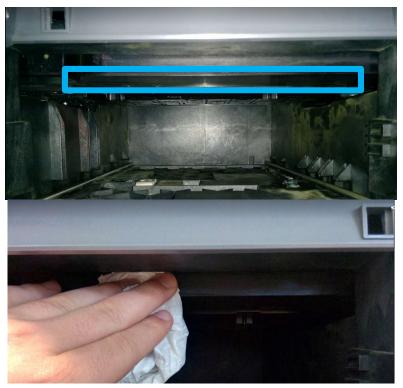
From the front panel, perform a maintenance cartridge replacement and remove the maintenance cartridge.



- 1. Turn off the printer.
- 2. With the printer off, open the window and manually move the carriage to the side.



You will have access to the carriage from the maintenance cartridge door.



- 3. With a soft cloth or piece of paper, clean the exterior of the carriage.
- 4. Be careful not to touch the line sensor or the printheads.
- 5. Close the window and the maintenance cartridge door and turn on the printer.
- 6. Finish replacing the maintenance cartridge.