

PRODUCT BULLETIN

Setting up your printers according to your HEXIS media

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Before any software or printing calibration, you must ensure that the printer operates in a **stable** and **optimal** manner, and **according to the media** on which you want to print.

The printing media has its **own properties** (thickness, liner roughness, stiffness, heating stability, etc.). The machine calibration will allow the printer to **adapt its behaviour according to the media**. This is done to accurately deposit ink drops on it in order to draw a grid that allows to obtain **quality printing**. The setting must be done very accurately to avoid printing defects such as banding, grain resolution, etc.

The main components to be calibrated are:

- Suction power
- Heating temperature
- Print heads' height
- Winding tension
- Media advance adjustment
- Bidirectional alignment of the print heads

Calibration of all these settings together enables **optimal print quality** on the HEXIS media.

These basic settings are **not time-consuming** and have a **significant impact** on the printing quality.

They are **specific to each printer** and therefore cannot be integrated into the media profiles. **The end user assumes liability and responsibility for them.**

On some machines, it is possible to save these settings depending on media.

HEXIS recommend you to refer to the methods described in your **printer is manual** to calibrate the parameters described below.



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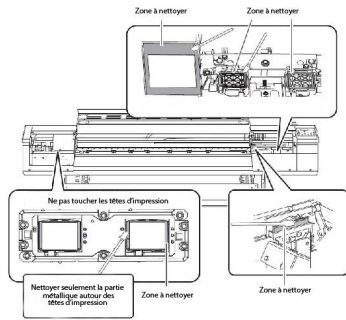


Fig. 1 Manual rod cleaning areas on a Roland printer

1. Maintaining your machine

Target:

- Avoid **premature machine wearing off**
- Prevent **breakdowns**
- Ensure **consistent printing quality**

Cleaning procedures are more or less different depending on the printers and technologies. It is mandatory to refer to the manual and create a schedule of maintenance to be carried out.

2. Leveling the printer

Target:

- Prevent a **parallelism defect** between the plate and the head motion

It is strongly recommended not to move the printer any more once the machine is installed.

Case no. 1

Even full-width tension



Case no. 2

Tension only on one side



Case no. 3

No tension



3. Adjusting the media unwinding tension

Target:

- Keep a **regular media advance**

The media must be **stretched** when inserted into the printer so as to apply an **even tension on the entire width**. (Fig. 2).

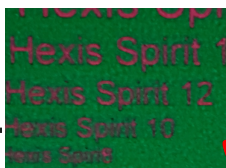
Some printers are equipped with an automatic media tensioning system, such as HP Latex for example.

Fig. 2 Charging the HEXIS media in the printer

Smooth printing



Blurred printing result



4. Height of the print heads

Target:

- Maintain an **optimal printing quality**

Irregularities obtained with a non suitable height of the heads

- Appearing of a **grain printing raster** (Fig. 3)
- Printing quality **alteration**

The higher the print head, the less accurate the depositing of the drops.

HEXIS recommend you to print with the **lowest possible head position**, except in the case where the media is thick.

Fig. 3 Printing results obtained for a height of the heads adapted and inadequate with respect to the media

5. Checking the status of the print nozzles

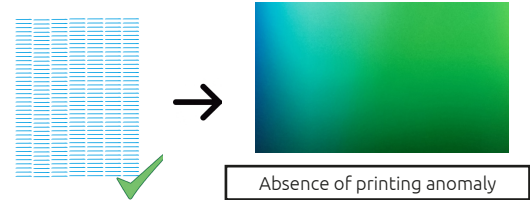
Target:

- Ensure **consistent and optimal printing quality**

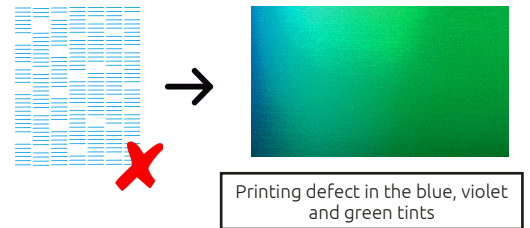
Phenomenon on related to print heads in poor condition:

- **Clear banding** only on **certain colours** (Fig. 4 and 5)
- Print quality **alteration**

The print heads of your machine are composed of several **nozzles**. In order to prevent **printing anomalies** due to **clogged nozzles**, you just have to carry out a **regular printing run and cleaning** when some nozzles are clogged.

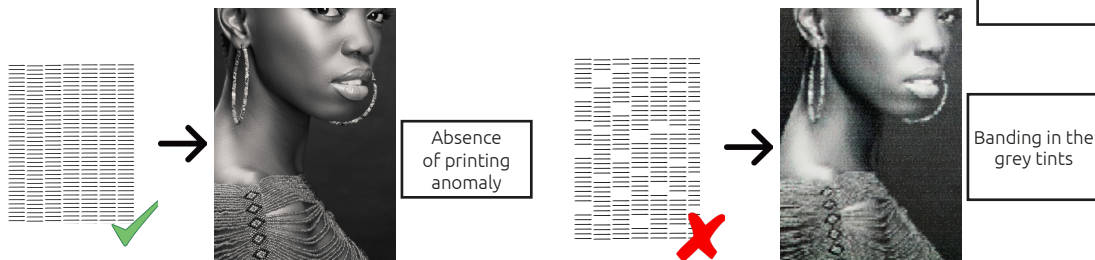


Absence of printing anomaly



Printing defect in the blue, violet and green tints

Fig. 4 Printed with a cyan head in good and bad shape



Absence of printing anomaly

Banding in the grey tints

Fig. 5 Printing obtained with a black print head in good and bad shape

6. Adjusting the suction power

Target:

- Ensure the **flatness** of the media
- Ensure a **regular media advance**

Defects related to a non suitable calibration:

- In the case of a too weak suction:
 - **Friction of the print head** against the media (Fig. 6)
 - **Appearance of non homogeneous printing zones** (Fig. 7)
- In the case of a too strong suction:
 - **Appearance of an irregular banding in the flat tints** (Fig. 8)

When using HEXIS print media, we recommend you to set the suction power to the **high position**.



Fig. 6 Marks of friction due to the print head



Fig. 7 Localised areas featuring irregular printing



Fig. 8 Irregular banding in the burgundy flat tints

7. Setting the heating temperature

Target:

- Ensure **suitable drying time**
- Optimize **ink/media affinity**
- Obtain a **better homogeneity** in the flat tints
- **Control the ink diffusion**

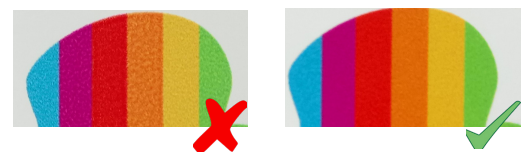
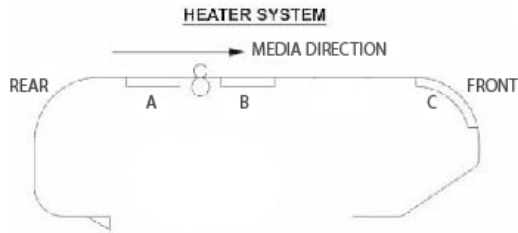


Fig. 9 Impact of the temperature on the drying of the printer



	Vinyl	PVC Banner	Satine/glossy media	Mat media
A	40 °C	43-45 °C	40-45 °C	35-40 °C
B	40 °C	40 °C	45 °C	35-40 °C
C	40-45 °C	45-50 °C	45-50 °C	40-45 °C

Fig. 10 Indicative temperatures for solvent/eco-solvent printing depending on the type of media used.

Printing anomalies originated from uncalibrated heating:

- In terms of printing media:
 - Risk of **curling**
 - Change of **media stiffness**
- In terms of printing:
 - Wet printing** when leaving the printer (Fig. 9)
 - Appearance of a **grain printing raster**

Most printers are equipped with **several heating plates**, in pre and post printing. (Fig. 10)

When downloading the «print media profile» on the **HEXIS website**, the values corresponding to the heating temperatures are **already integrated**.

8. Customising the media advance adjustment

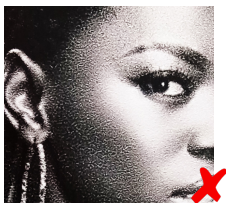
Fig. 11 Grain printing result



Fig. 12 Clear printed image



Fig. 13 Grain printing raster



Target:

- Keep an **accurate printing raster**
- Ensure a **print size** corresponding to the requested theoretical length

Printing anomalies originated from an incorrect media advance:

- In the case of a too weak advance
 - Printing quality **alteration** (Fig. 11)
 - Reducing the size** of the printed pattern (Fig. 14)
- In the case of a too high advance
 - Printing quality **alteration** (Fig. 13)
 - Increasing the size** of the printed pattern (Fig. 16)

The printer operates two motions in the printing process, the **lateral motion of the print head** and the **vertical drive motion of the media**. There is a **nominal advance speed** of the media according to the printing mode. However, depending on the **physical features of each media**, it must be **compensated**.

Case no. 1



Fig. 14 Size of printed pattern: **11.1 cm**

Case no. 2

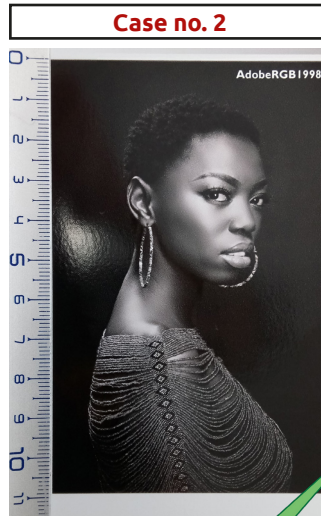


Fig. 15 Size of printed pattern: **10.9 cm**

Case no. 3



Fig. 16 Size of printed pattern: **10.7 cm**

9. Setting the bidirectional alignment of the print heads

Objective:

- Keep an **accurate printing raster**

Irregularities due to a lag between the two printing directions:

- Printing quality **alteration** (Fig. 17)
- **Appearance of a blur and grain phenomenon**

Most printers do **unidirectional** or **bidirectional** printing depending on the requested printing accuracy. The bidirectional mode ensures a significantly **lower** manufacturing time (approximately cut in half) than the unidirectional mode.

However, it must be **adjusted** according to the thickness of each media to **avoid a slight lag** between the ink drops corresponding to the **first and second run of the print heads**. (Fig. 18)



Fig. 17 Printing lag between an adjusted and an incorrect bidirection

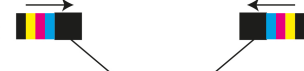
Print direction: bidirectional

Fall's angle of ink drops:

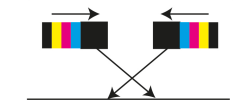
• situation 1: right



• situation 2: wrong



• situation 3: wrong



With thickness change:

• situation 1: right



• situation 2: wrong



• situation 3: wrong

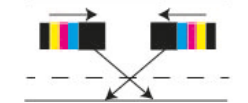


Fig. 18 Diagram of the general principle of bidirectional adjustment of the print heads