

Operator Manual :Anapurna M²

(FW version 2.038

(Document Version 1.2)

(Document Date December 1, 2009))



:Anapurna M² Operator Manual

Any remarks and/or suggestions on the content
of this operator manual can be send to:

anapurna.support@agfa.com

©**Agfa Graphics NV. - Belgium**



A. INDEX

A. INDEX.	3
B. INFORMATION.	7
I. Safety instructions.	7
1. Warning labels.	7
2. Emergency switches.	8
3. Optical safety sensors.	8
4. Wing Sensors.	9
5. UV light.	9
6. UV inks.	10
7. Extra information.	11
II. Printer overview.	12
1. Front view, parts & locations.	12
2. Home view, parts & locations.	12
3. Capping station view, parts & locations.	13
4. Head carriage view, parts & locations.	13
5. Rear side view, parts & locations.	13
C. OPERATIONS.	14
I. Making your first print.	14
1. Wasatch SoftRIP: setting up your image.	14
2. Starting up the :Anapurna M ² .	14
3. Making your first print.	15
II. The Wasatch SoftRIP AE.	16
1. Main Window - overview.	16
a. Menu items.	16
b. Universal Controls.	17
c. Top tabs.	17
d. Left tabs.	17
2. Open an image.	18
3. Cropping, resizing an image.	18
a. Resizing.	18
b. Cropping.	18
c. Restore Original View.	19
d. Rotating.	19
e. Mirroring.	20
4. Choosing an imaging configuration.	20
5. Ripping and printing the image.	21
6. AgfaRIP 2000	21
III. The operator panel. (general overview)	23



IV. Start up & Shutdown Procedures.	24
1. Start up Procedure.	24
2. Making the engine ready for Printing.	27
3. Shutdown Procedures.	28
a. Rules and Reasons	28
b. Daily Shut Down Procedure.	29
c. Long Stand Still Shut Down Procedure	30
V. Setting up the :Anapurna M ² . (the calibration menu)	35
1. Feed Adjust (F1).	35
2. Carriage Release (F2).	35
3. Factory setting (3).	35
4. Hor Adjust (F4).	35
5. Directional Adjust.	36
6. Head Gap (F6).	36
7. Importance of the bi-directional alignment.	38
VI. Changing the parameters. (the main menu)	40
1. Information bar.	40
2. Function keys. (parameters)	41
3. Media setup. (rigids and roll to roll)	45
a. Rigid media.	45
b. Roll media.	46
c. Vacuum system.	48
D. <u>MAINTENANCE.</u>	<u>49</u>
I. Test Menu.	49
1. Prime (F1).	49
2. Prime2 (F2).	49
3. Belt test (F4).	49
4. Dir test (F5).	50
II. Alignment of the conveyor belt.	51
III. Maintenance Routines.	53
1. Purging, Flushing, Bleeding.	53
2. Capping.	55
3. The ink circuit.	55
4. Changing the temperature settings.	57
5. Print heads and negative pressure.	58
a. The print heads.	58
b. The negative pressure system.	58
6. Ink waste.	59
7. Maintenance on Sub Air tank (Over Flow Tank).	60
8. Cleaning the Encoder Strip.	61
9. Maintenance on input Air Filter.	62
10. Lubricating the Carriage Rails.	63
11. Greasing the Carriage Bearing Blocks.	64
12. Checking the UV Lamps.	65
13. Replacing the UV Lamps	66



14. Cleaning the UV Lamp Crystal Glass.	67
15. Power Shut Down or Compressor Break-Down Procedures.	68
a. Power Break Down (during printing or otherwise)	68
b. Compressor Break Down	68
16. Bleeding the ink filters.	69
17. Replacing the air filters.	70
a. On top of sub air tank.	70
b. On top of main ink tanks.	70
IV. Periodic Maintenance.	73
1. Daily Maintenance.	73
2. Weekly Maintenance.	75
3. Monthly Maintenance.	79
4. Six Monthly Maintenance.	80
5. Shutdown Maintenance Procedures.	82
a. Rules and Reasons	82
b. Daily Shut Down Procedure	83
c. Long Stand Still Shut Down Maintenance Procedure	84
d. Start Up Procedure after a Daily shut down	88
e. Start up Procedure after a long stand still.	89
f. Making the engine ready for Printing.	92
E. <u>BEST PRACTISES</u>	95
I. How to place Roll media.	95
1. The paper feed mechanism	95
a. Un-winder section on the back of the engine	95
b. Media Table and vacuum transport belt	95
c. Winder section on the front of the engine	95
2. Media Placement Procedure	96
a. Some figures:	96
b. Procedure:	96
c. Prepare the Un-winder mechanism	96
d. Prepare the Winder mechanism	99
II. How to set the optimum vacuum	101
1. Description of the Vacuum transport system	101
2. Parts involved	102
3. Description	103
4. Best practices	103
a. Basic rule	104
b. Vacuum settings	104
5. Special cases	104
a. Printing on heat sensitive media.	104



b. Printing small sized media	105
c. Rigid Media of width less than 60 cm	105
APPENDIX 1 Operator training checklist	107
APPENDIX 2 Key Operator training checklist	109
APPENDIX 3 Substrate list	112
APPENDIX 4 Tips & Tricks	113



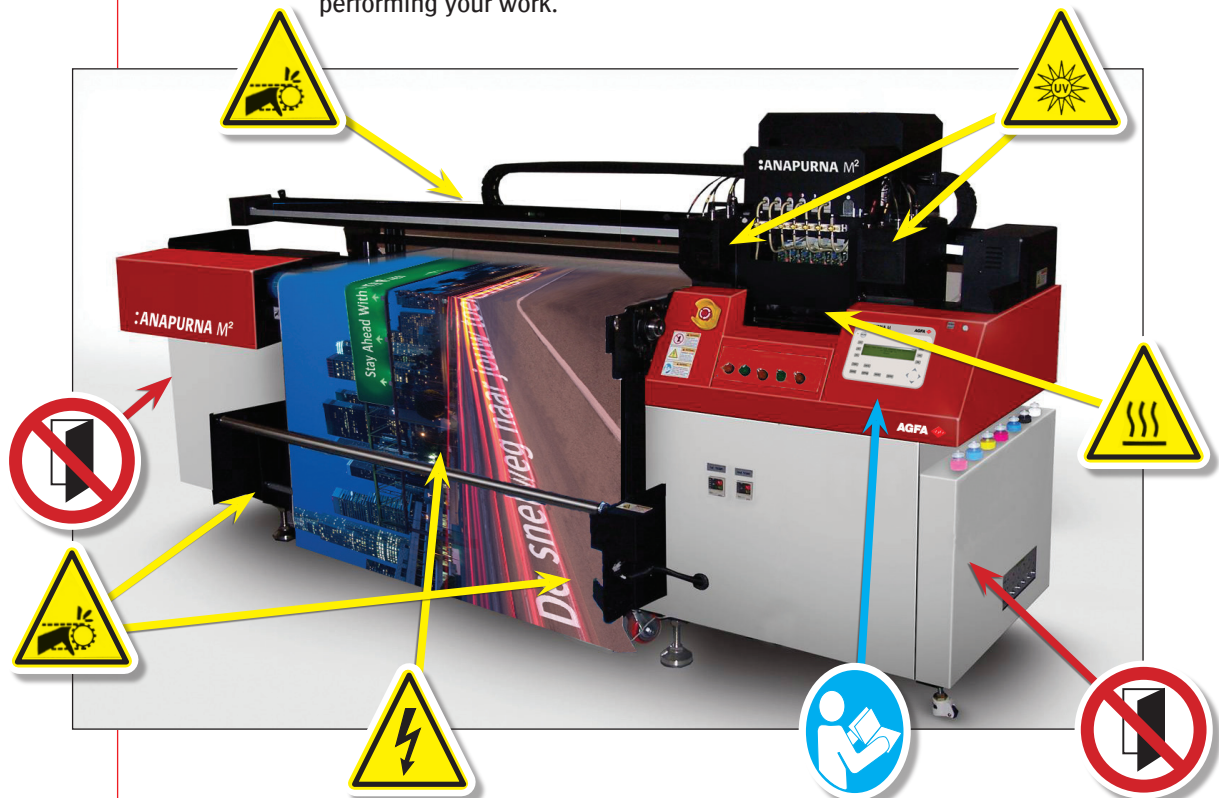
A. INFORMATION.

I. Safety instructions.

Be sure that you follow and understand all the instructions and warnings that are described in this manual when you are using the :Anapurna M². Working with an UV Printer always implies that you must be aware of the harm that the UV Radiation and the UV inks can cause.

1. Warning labels.

The printer has labels that give simple explanations of operations that require particular care. Read and understand the contents of these labels thoroughly before performing your work.



Moving parts can crush and cut.
Keep guards in place. Lock out power before servicing.



UV Light.
Do Not look directly at light.



BURN HAZARD. Do Not Touch.
TURN OFF POWER and allow to cool before servicing.

**HAZARDOUS VOLTAGE.**

Contact may cause Electric shock or burn. Turn off and lock out System before servicing.

**Avoid injury.**

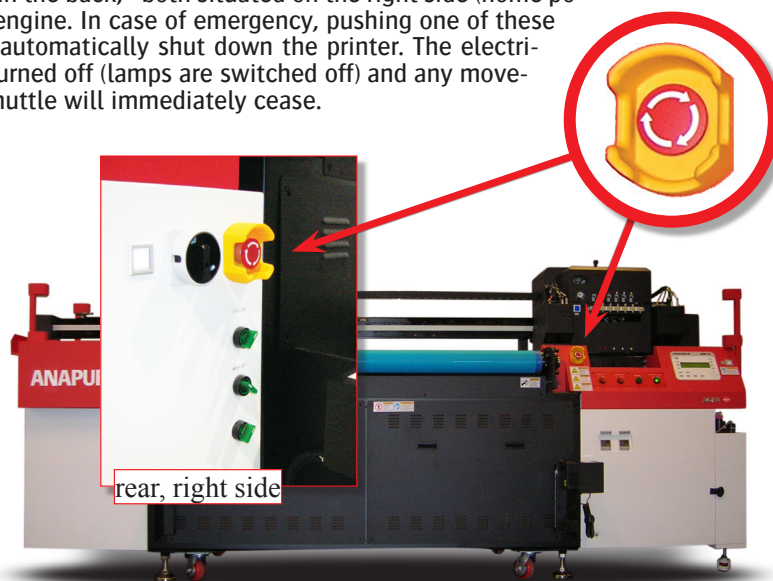
Do Not operate with doors open.
Close all doors before operating machine.



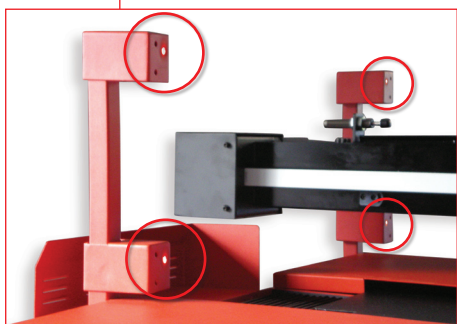
Read and understand operator's manual before using this machine. Failure to follow operating instructions could result in personal injury or damage to equipment.

2. Emergency switches.

The :Anapurna M² is equipped with two emergency switches: one in the front and one in the back, both situated on the right side (home position) of the engine. In case of emergency, pushing one of these switches will automatically shut down the printer. The electrical circuit is turned off (lamps are switched off) and any movement of the shuttle will immediately cease.



3. Optical safety sensors.



The :Anapurna M² is an industrial inkjet printer with fast moving parts and you must be aware of the risk involved. The shuttle is not provided with security sensors and therefore will not stop when it runs into an obstacle like media or body parts.

The :Anapurna M² is equipped with optical sensors around the working path of the shuttle. On each of the four corners of the engine, you will see a metal tower construction containing two optical sensor assemblies each. If the optical light path gets obstructed, the shuttle will stop at its current position and the lamps will switch off. On the control panel an error message will appear: "<<SYSTEM ERROR>> Safety Sensor".

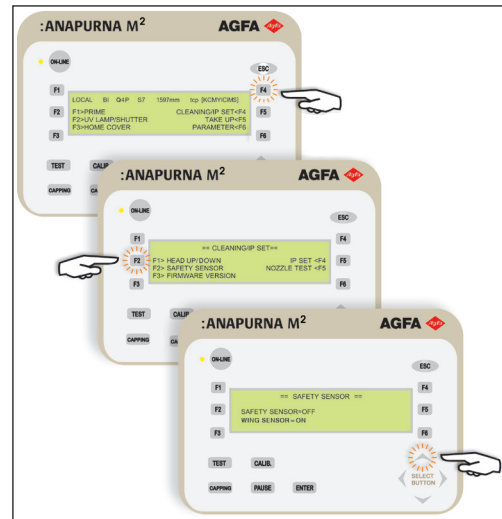


In order to reset the Anapurna M² you have to press the enter button. This will cause a system restart where the shuttle raises to its highest point and returns to its home position.

When the safety sensor is activated, the print will be canceled and the actual job cannot be restored. You have to re-spool the file by using the AgfaRIP 2000 application.

Agfa strongly advises against disabling the safety sensor since this increases the risk of getting your hands or other body parts caught between the moving parts of the engine. So, you should always make sure that the sensors are activated

The safety sensors can be disabled by going into offline mode (press escape) and by pressing CLEANING / IP SET (F4). The F2 function will now show the SAFETY SENSOR function and by hitting F2, you can use the up button to toggle the value on or off and press enter.

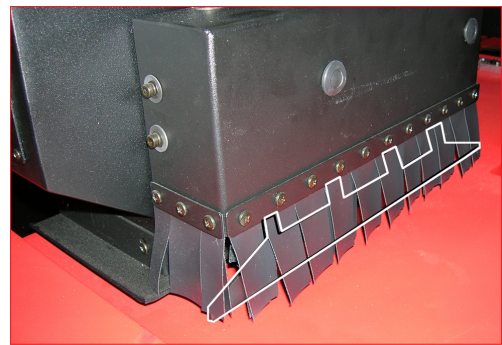


The sensors must always be activated when the engine is powered on!

4. Wing Sensors.

Both sides of the shuttle of the :Anapurna M² are equipped with wing sensors. These sensors will make the shuttle stop if they detect anything. The wing sensors will prevent that the shuttle will run into the media when it is not completely flat or when the head gap was not set properly.

When a wing sensor is activated, the shuttle will immediately stop and the lamps will be turned off. Press 'ESC' to reboot the printer. The print will be canceled and the actual job cannot be restored. You have to re-spool the file by using the AgfaRIP 2000 application.



You can enable/disable the wing sensors in the same menu as the optical sensors settings, discussed above.

5. UV light.

Working with UV light, you must keep following safety warning in mind:

- ▶ Avoid direct skin contact
- ▶ Wear protective glasses when looking in the direction of the UV light.

The UV radiation that is generated when the UV lamps are on, can be harmful. Make sure that no body parts are directly exposed to the radiation. Skin burn and irritation will be the consequence when e.g. your hands have direct contact with the radiation.

Don't look directly into the UV light, this will damage your eye sight. If you need to look in the direction of the UV light, make sure that you wear protective glasses.

a. Detail of the UV light

UV lamps emit not only ultraviolet light, but also visible light, and wavelengths in the infrared spectrum.

In fact, all lamps emit approximately

- ▶ 20% ultraviolet light (the part that creates curing is not visible; cold light);
- ▶ 20% visible light (the inactive part that we see coming out of the lamp houses);
- ▶ 60% infrared light (also an inactive part that is invisible and generates heat).

Short wavelength UV light exhibits more quantum properties than its visible and infrared counterparts. Ultraviolet light is arbitrarily broken down into three bands, according to its anecdotal effects.

- ▶ UV-A is the least harmful and most commonly found type of UV light, because it has the least energy. UV-A light is often called black light. Most photo therapy and tanning booths use UV-A lamps.
- ▶ UV-B is typically the most destructive form of UV light, because it has enough energy to damage biological tissues, yet not quite enough to be completely absorbed by the atmosphere. UV-B is known to cause skin cancer.
- ▶ Short wavelength UV-C is almost completely absorbed in air within a few hundred meters. When UV-C photons collide with oxygen atoms, the energy exchange causes the formation of ozone. Germicidal UV-C lamps are often used to purify air and water, because of their ability to kill bacteria.

6. UV inks.

Make sure that you always use following safety measures when working with UV inks:

- ▶ Wear protective gloves (single-use)
- ▶ When contacted with skin, wash off immediately
- ▶ Dispose uncured ink as chemical waste

UV inks are chemical products which contain some additives that can cause dermatitis. Dermatitis is a skin disease that can become irreversible when left untreated. It occurs when a substance penetrates the surface layer of the skin and provokes a reaction from the vulnerable skin beneath. Common symptoms include:

- ▶ skin redness or soreness;
- ▶ itching;
- ▶ rash;
- ▶ cracking or peeling.

The most commonly affected parts of the body are the fingers and the webs between the fingers, closely followed by the back of the hands.

It is very important to avoid skin contact with the UV inks. Use splash-resistant gloves when there is a risk of skin contact. Single-use nitrile gloves 0,2mm thick are acceptable. None the less, they only will give a short-term protection. Make sure that you dispose of single-use gloves every time you take them off. If you have skin contact, wash the ink off and rinse the skin with water and soap.



Dispose uncured ink as chemical waste and never mix solvent with UV ink waste. Cured UV ink don't contain any harmful products and can be disposed off as normal waste. If you spill a big puddle of ink, use an absorbent product like saw dust to clean. Little amounts of spilled ink can be cleaned using a cloth. Don't forget to treat the saw dust and cloths as chemical waste (uncured inks).

The shelf life of the :Anapurna M² inks is 18 months (the expiry date is mentioned on each bottle). Ideal storage of inks is between 4°-10° C; the temperature should not exceed 25°C at any time.



Uncured UV inks = chemical waste
Cured UV inks = normal waste

a. Curing Process.

Water based and solvent based inks

will dry by evaporation and/or penetration, leaving the colorants into the media. UV Curable ink will only harden out if UV light is exposed to the ink layer on the media. The heat that is generated by the UV lamps do not influence the curing process. On non-absorbing media, this ink layer will lay on top of the substrate. On absorbing media the ink layer will partly penetrate the media, explaining the better adhesion on porous media.



The pigmented particles are dispersed in a monomer. This monomer will stay liquid and sits in a solution together with a photo initiator and synergist.

How does it work?

- ▶ When UV light is added, the photo initiator will be activated and will create a free radical;
- ▶ This free radical will be passed onto the synergist;
- ▶ From then the synergist will be active and will bind with the monomer;
- ▶ Now a chain reaction is started and the monomers will crosslink to each other, causing the ink film to get polymerized. The pigments are captured in this chain.

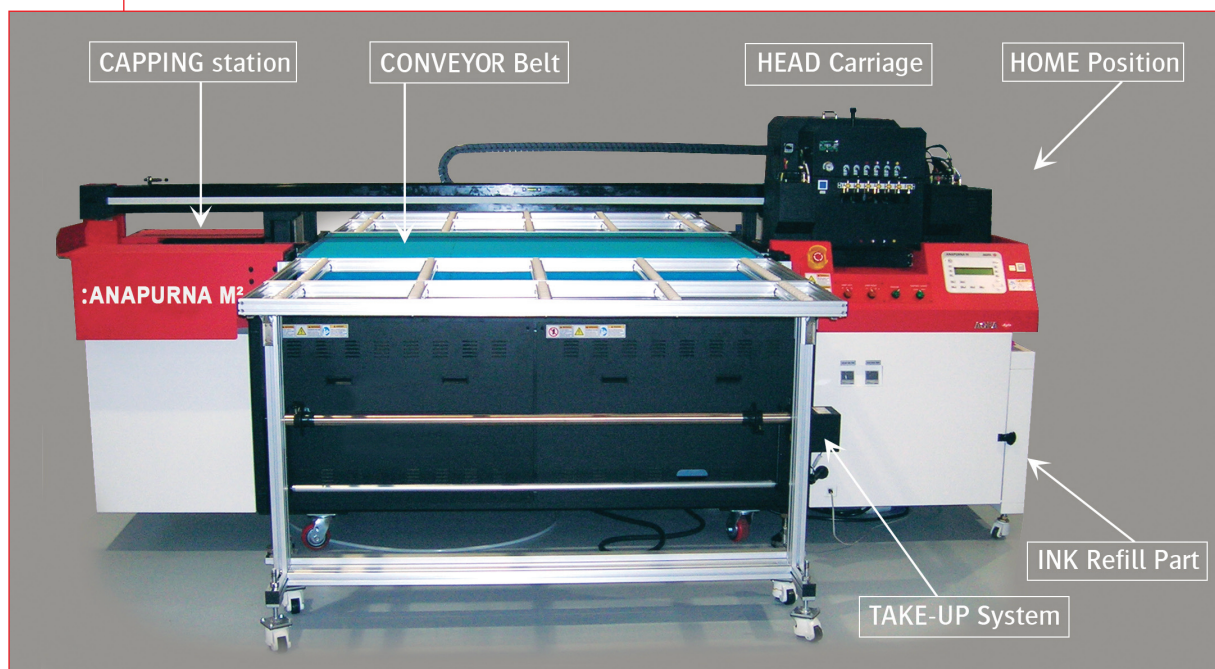
7. Extra information.

SDS-sheets (Safety Data Sheets) about Agfa UV inks and the pre-site survey document, explaining the re-commended working and installation conditions, are available through your local reseller.

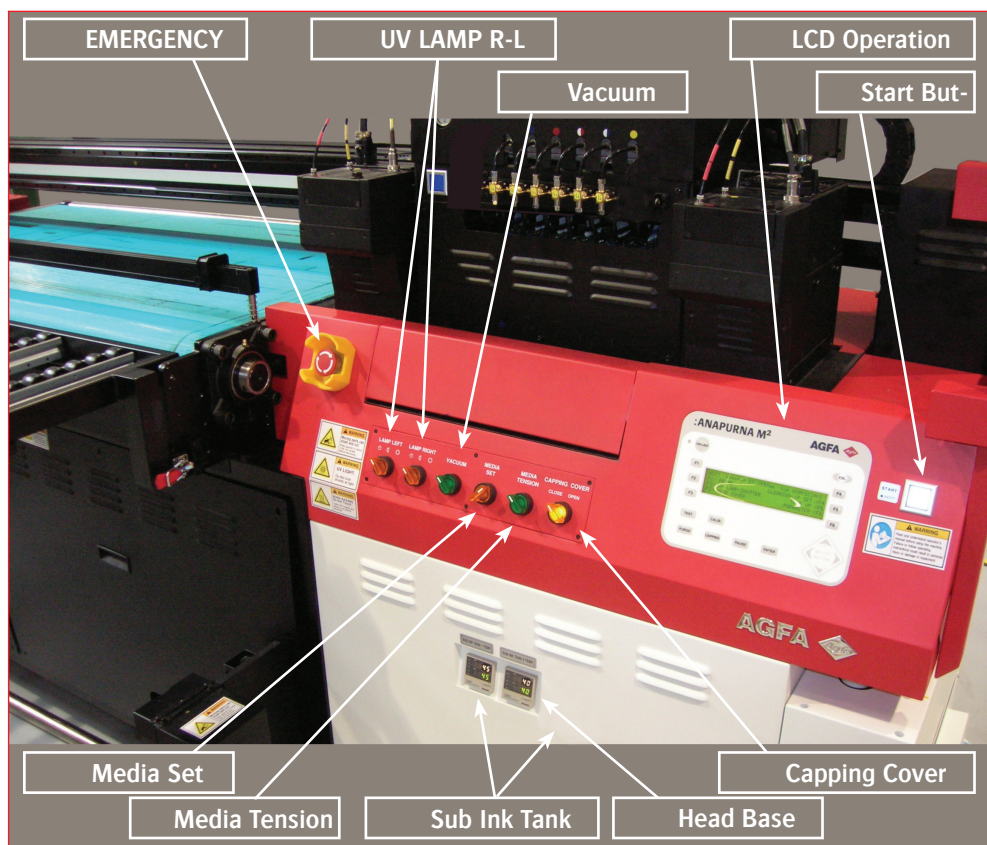


II. Printer overview.

1. Front view, parts & locations.



2. Home view, parts & locations.

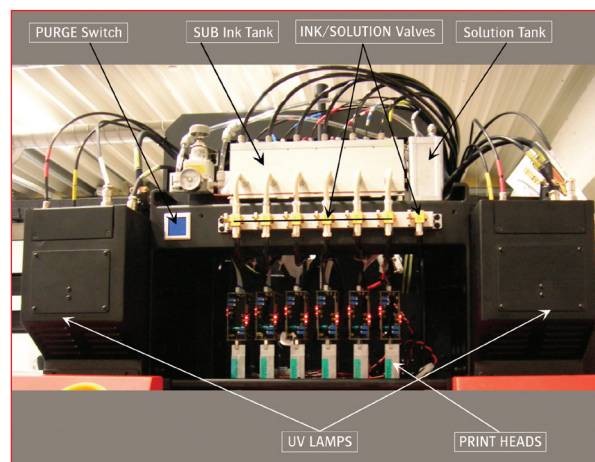




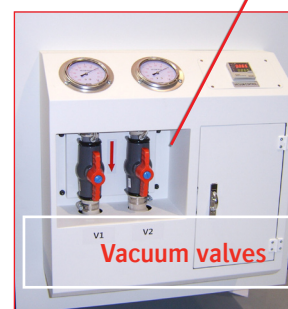
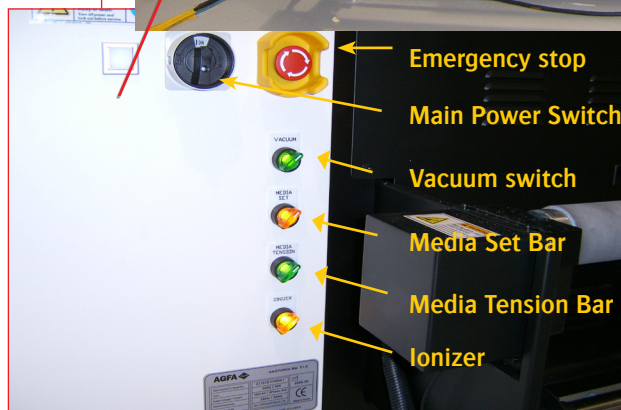
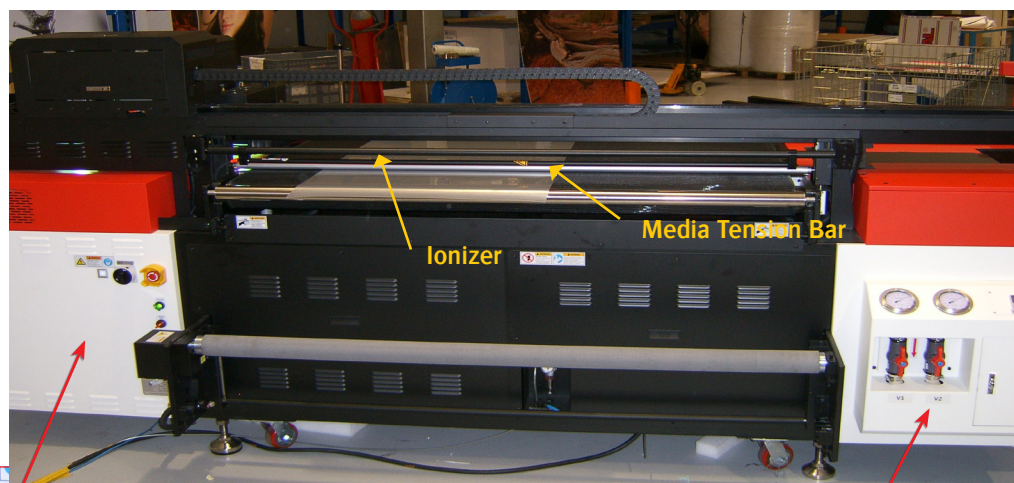
3. Capping station view, parts & locations.



4. Head carriage view, parts & locations.



5. Rear side view, parts & locations.



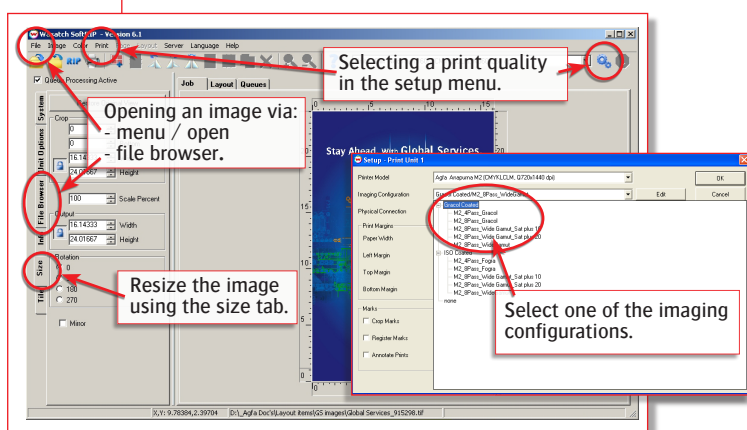


C. OPERATIONS.

I. Making your first print.

1. Wasatch SoftRIP: setting up your image.

- ▶ Start up the WasatchRIP by double clicking the shortcut icon on the desktop or by choosing: start, programs, Wasatch SoftRIP on the Windows RIP PC.
- ▶ Open your image via the file menu and the command 'open' or via the file browser tab on the left side of the main window. If you use the file browser tab, you can easily drag and drop the selected image onto the preview part of the main window.
- ▶ Make sure that the output size fits on your media. You can check and alter the dimensions of your print, using the "size" tab on the left side of the main window.



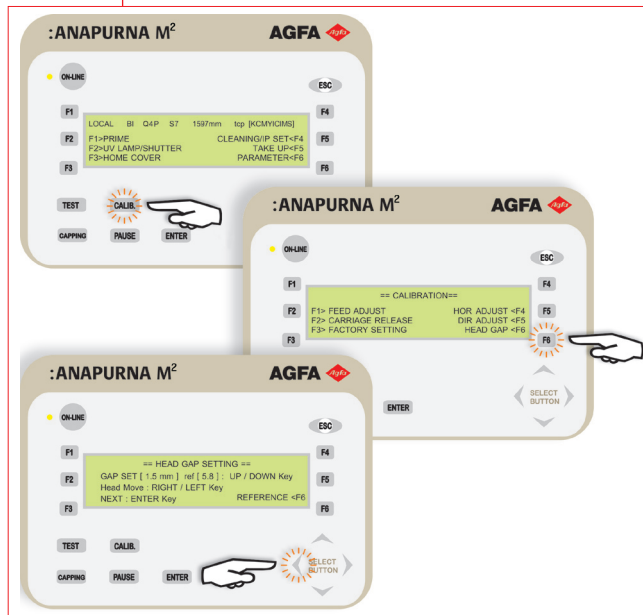
- ▶ Select the resolution of the print in the Setup window. You can access this via the print menu or via the setup icon behind the print unit on top right side of the main window. Agfa is supporting two quality modes: 720x720 dpi or 720x1440 dpi.
- ▶ Close the setup window and choose the print icon on the main window or via "rip & print only" in the print menu.
- ▶ The image will be ripped and a RTL file will be placed in the defined output folder. The Agfa 2000 RIP will send the data to the printer.

2. Starting up the :Anapurna M².

When the :Anapurna M² is in a normal shutdown mode (overnight standstill), the shuttle will be stationed on the right side (home position).

- ▶ Unlock the emergency switches: you find the e-switches on the right side of the engine. One at the back and one in the front, release by turning them.
- ▶ Push the start button; While the shuttle starts rising to its most upwards position, the display will show you some information about the :Anapurna M² (software version, etc.).
- ▶ When the shuttle is lifted, it checks its home position and lowers itself to a default height. The engine goes to the offline mode.





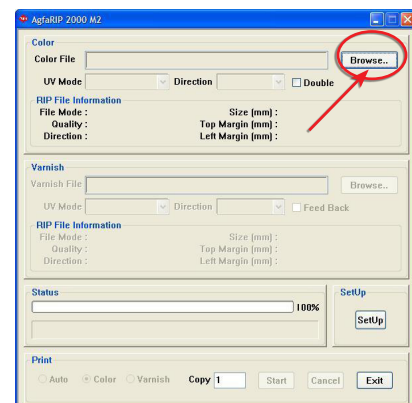
- ▶ Adjust the negative pressure by turning the valve on the top of the shuttle. Make sure that you reach a value of -.035. The value is displayed on the left side of the shuttle;
- ▶ Switch all the ink valves back to the “I” position;
- ▶ Lower the media set bar by turning the media set button;
- ▶ Position the left side guide, using the scale on the inside of the media set bar;
- ▶ Load your media onto the conveyor belt and position it against the media set bar;
- ▶ Turn the vacuum on and raise the media set bar (switch the media set button);
- ▶ Press “Calibration” button and choose F6 “Head Gap” to set the shuttle to the correct reference height as for the media. Press the left arrow to move the shuttle to the desired position. Make sure that you position the shuttle so the height calibration will be done between the two red dots on the beam;
- ▶ When the shuttle is in position, press “Enter” and the shuttle will lower itself to the reference height. This is a default value and is not the same as the actual head height. Press “Enter” a second time to lower the shuttle to the head gap distance;
- ▶ Move the shuttle back to the home position by pressing “Enter”. The “head gap” procedure is now completed and the shuttle is set to the desired distance;
- ▶ Check the state of the print heads by performing a prime print. Turn on the UV lamps and press “F1” in the main menu. The lamps will start warming up and after 60 sec. the :Anapurna M² will print a jet test;
- ▶ Close the capping station by turning the switch to “close”;
- ▶ The :Anapurna M² is ready to print when the temperature of the head base plate and the inks have reached the desired values;
- ▶ Press the “Online” button and make sure that the green LED is ‘ON’.

3. Making your first print.

If the :Anapurna M² is online and all nozzles are clear, the engine is ready to print. Make sure that your media is loaded and the vacuum is on. Set the UV lamps to the desired strength (half or full power).

Start up the AgfaRip 2000 by double clicking the icon on the desktop. Select the desired RTL file by clicking ‘Browse’ in the top part of the window. Once you have selected the file, a preview of your image will pop-up. Check all the settings in the AgfaRip 2000. Press start at the bottom of the window to start your print.

As the engine is in ‘online’-mode, the :Anapurna M² will start printing the job if the uv lamps are ready.

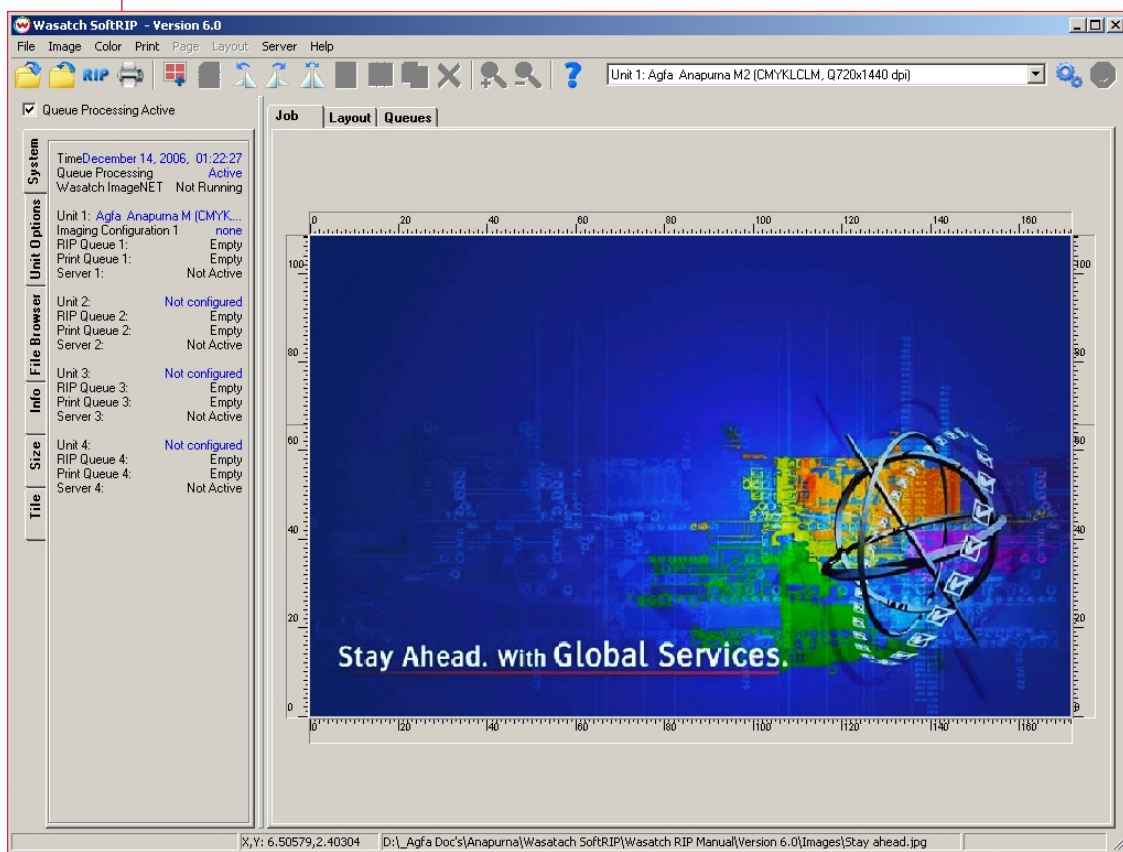




II. The Wasatch SoftRIP AE.

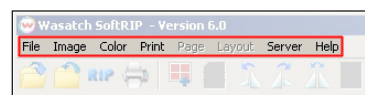
1. Main Window - overview.

SoftRIP's Main Screen is briefly described below. These menus and controls are covered in more detail in the wasatch manual.



a. Menu items.

- File:** Use the File menu for opening files saved on disk or network. Files opened here are automatically displayed as screen previews when the Job tab is active, or imported to the current layout when the Layout tab is active. This menu also provides access to the Print Archive tool, and the Preferences window for changing optional settings.
- Image:** The Image menu contains tools for modifying the image currently open in the Job tab, or currently selected in the Layout tab.
- Color:** The Color menu contains key SoftRIP color tools for managing spot colors, color gamut, correction curves etc.
- Print:** Access to printer and Imaging Configuration set up, RIP/processing options and job queues.
- Page:** When active, enables switching among different pages of a multi-page PostScript file.
- Layout:** The Layout menu accesses automated Smart Nesting™ tools, and other features to speed the process of creating efficient layouts.
- Server:** Set up and activation for Hot Folders and Wasatch ImageNET.
- Language:** When enabled, the Language menu selects among non-English languages.
- Help:** Accesses online Help, program info, Service Data Uploader and online product registration.



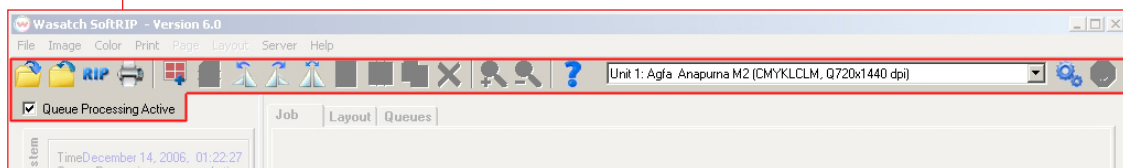


b. Universal Controls.

Unit Window: Selects the printer to use for current job or layout processes. SoftRIP drives up to four printers.

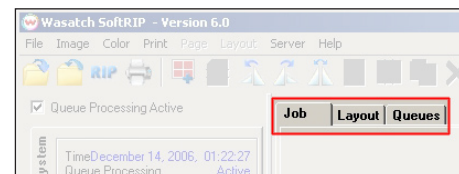
Queue Processing Active: Unchecking this check box will completely shut down all new jobs from processing in the queues! Under normal conditions, this box is checked. When unchecked it flashes red. All processing stops when Queue Processing Active is unchecked. Uncheck the box to stop all printing in order to change system configurations or re-prioritize jobs.

Tool Bar: Buttons on the tool bar are active or grayed-out depending on various selections of the tabs found below them on the main window. All tool bar operations can also be accessed from menu selections within the program, and all are documented with tool tips.



c. Top tabs.

The tabs along the left and upper edges of the main window include many of the key file preparation and workflow tools in SoftRIP. Based on your top tab selections, tabs along the left of the screen may appear, disappear, or modify.



Job Tab: When the Job tab is selected, you can open an individual input file, or job, to be prepared for printing. With the Job tab selected, a full set of options for sizing, cropping, scaling, and tiling appear.

Layout Tab: When the Layout tab is selected, you use the full width of your media as a digital canvas upon which you can prepare images to print as part of your complete production run. With this workflow, you can easily drag and drop images into the layout, manipulate them, and nest them to fit efficiently as part of your overall print run. The entire Layout can then be submitted to RIP and print.

Queues Tab: When the Queues tab is selected the view becomes the master production control station of the RIP. On the Queues tab, all RIP and Print queues are displayed with the status of each job updated in real time.

d. Left tabs.

System Tab: Displays the status of all printers and job queues.

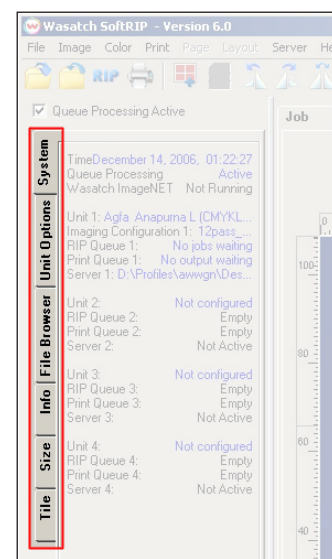
Unit Options Tab: Includes settings for immediate or delayed nesting printing, annotations, crop marks, and registration marks.

File Browser Tab: Lets you quickly drag and drop files into the Job, Layout, or Queues windows.

Info Tab: Displays information about an open job, including real-time values for input and output color at any point on the previewed image.

Size Tab: Controls sizing, cropping, rotation, and mirroring for the current image on the Job tab.

Tile Tab: Provides controls for “paneling” or “tiling” print jobs that are too wide for the current printer.

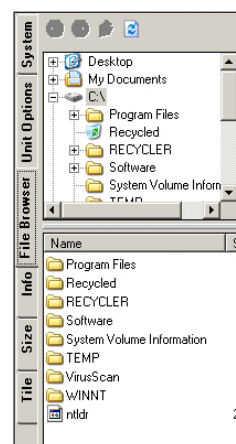


2. Open an image.

You can open image in Wasatch via the 'file' menu and the command 'open' or via one of the left tabs: the file browser.

Using the file browser tab, you can quickly search and open images. You can simply select an image in the file browser tab and drag onto the preview window. If an image does not require any file preparation, you can drag and drop it directly from the file browser tab to a RIP Queue. You will be asked whether or not you would like to generate a preview. If you select not to generate a preview, the image will display as "Preview not available" when added to a layout.

Wasatch supports different kinds of file types: ps, prn, pdf, eps, tif, jpg, gif, png, psd, bmp, csf.



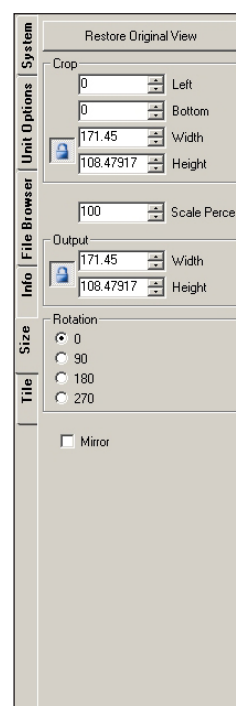
3. Cropping, resizing an image.

The Size tab contains several key features that scale and otherwise transform images prior to printing. The Size tab automatically appears on the Main Screen whenever a file is opened. These utilities are found on the Size tab: Sizing (or scaling), cropping, rotating and mirroring.

a. Resizing.

To enlarge or reduce an image, enter a new value in the window next to the Scale Percent heading. Your ENTER or TAB key activates the change. The new dimensions are displayed in the Width and Height windows in the Output area, while the original dimensions are displayed next to Width and Height in the Crop area. If your scaling percentage will produce an image larger than the printer's maximum output format, SoftRIP alerts you by marking the surplus area with a red and black flashing crosshatch. You must either reduce the scaling percentage, or use the Tiling feature.

Computing Scaling Percentage Automatically: SoftRIP will size an image if you enter the desired width or length of the final print in either the Width or Height windows in the Output area. For example, you can enter the printable width of your print media or one dimension of a light box or display hardware. Make sure the Constrain Proportions box to the left of the Width and Height boxes is checked, then press ENTER or TAB to activate the change.



The new percentage appears in the Scale Percent window, while the other dimension (either Width or Height) is displayed in the appropriate window. A cropping marquee also appears around the entire image (see Cropping, below). You only need to enter one dimension in an Output window (Width or Height); if you attempt to enter a value in the other, SoftRIP activates the automatic scaling process. For automatic scaling to work, the Constrain Proportions box next to the Output windows must be checked.

b. Cropping.

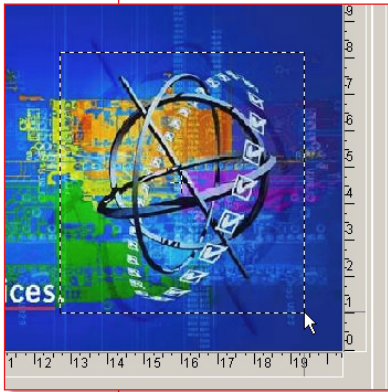
This tool defines a smaller area of the original image and prints only that area. This is true cropping, because only the selected area will be RIP'd. This saves RIPing time and is an excellent tool for printing test strips for color evaluation. The cropping tool can also be used to magnify selected areas of the image (see below under Zoom into Crop Box).

Adjustment modes: There are two options for adjusting marquee borders: free or proportional. Free means that the marquee edge you select moves independently of other edges. Proportional means the width and length stay proportional to the original dimensions of the marquee. The mode of marquee adjustments is selected in the Constrain Proportions boxes, the same way that image width and height are locked during scaling. Check the Constrain Proportions boxes to select a proportional mode; uncheck them for free mode. You may also right-click inside of the



marquee, which will open a popup menu (the other selections on this menu are described below). Selecting **Constrain Proportions On** corresponds to the proportional mode, and automatically places check marks in the boxes.

► **Left-click on the preview image: activate crop area.**



Activate the crop area by left-clicking anywhere in the image and dragging your mouse to create a dotted line "marquee" box. The marquee defines the area to print, or an area to zoom into. Re-position the borders of the cropping marquee by holding down the left mouse key and dragging. The Width and Height windows in the Crop area display the size of the marquee dimensions on the original image. The Width and Height windows in the Output area display the size of the crop marquee dimensions. Only the area inside the marquee will print.

Matching specific display dimension requirements: For more precise adjustments, enter new dimensions in either the Width or Height windows in the Output area. This must be done in the Free mode (Constrain Proportions turned off). The dimensions of the marquee will not change until you press ENTER or TAB.

Changing marquee position manually and numerically: The entire marquee area can be re-positioned by clicking in the centre of the marquee and dragging the marquee box. The position of the marquee's left and bottom edges are displayed in the windows labeled Left and Bottom in the Crop area. The numbers shown represent the distance in inches or centimeters, measured from the respective edge of the original image to the outside border of the marquee.

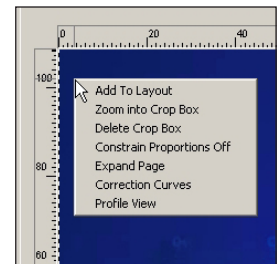
Change the marquee position more precisely by hand-entering new values in these windows. When you enter new numbers to position the marquee, the marquee will not move until the ENTER or TAB key is pressed.

When a crop marquee is "live" on an image preview, right clicking within the marquee launches the popup menu.

► **Right-click on the preview image: pop up menu.**

Right-clicking on the image, will open a pop up menu which offers you the next options:

- **Zoom Into Crop Box:** eliminates areas outside the marquee and allows you to zero in on specific elements of the image. Especially useful for color correction and spot color replacement.
- **Delete Crop Box:** makes the marquee go away and resets the Crop and Output dimensions.
- **Constrain Proportions On or Constrain Proportions Off:** toggles between free and proportional repositioning of the marquee borders.
- **Expand Page:** places a white border around the edges of the image.
- **Replace Spot Color:** launches the Special Colors menu and spot color management features.
- **Correction Curves:** launches the Correction Curves menu.
- **Profile View:** launches the Profile View Utility.



c. Restore Original View.

This option takes you back to the original view of the image.

d. Rotating.

Rotating a landscape image 90° into a portrait format may allow you to print the image in a larger size without tiling. The other rotation degrees allow you to re-position an

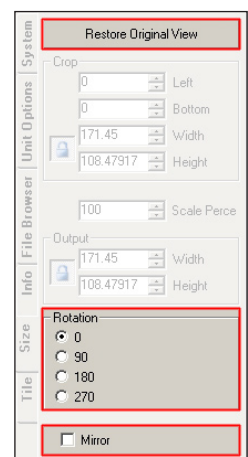


image that is upside down or otherwise incorrectly oriented. To select a rotation value, click the corresponding radio button. The effect is immediate (does not require pressing the ENTER or TAB key). Rotation in SoftRIP always works counter-clockwise and is not cumulative. Whatever value you select will be applied based on the original position of the image.

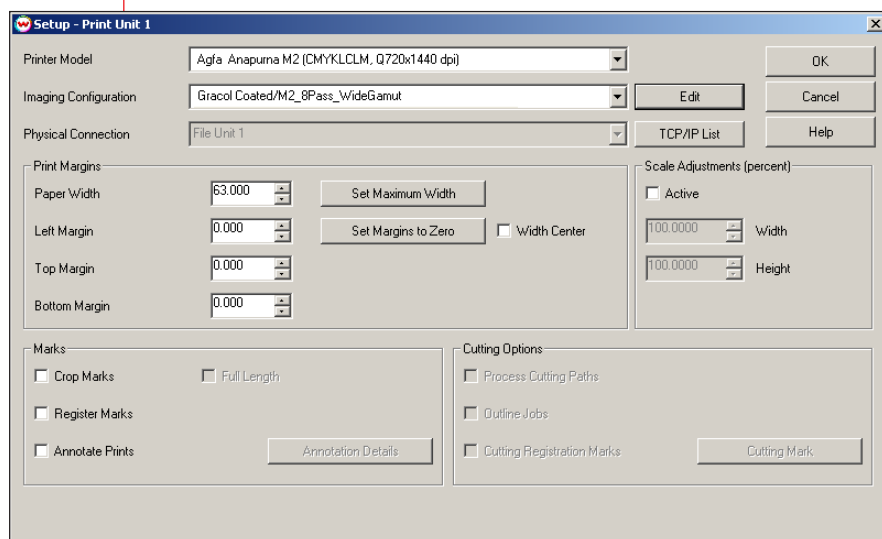
e. Mirroring.

This feature flips the image over. It is used primarily for printing backlit transparencies or other second surface applications. It is also used for images to be transferred to another substrate, such as fabric.

4. Choosing an imaging configuration.

Once your image has been adapted to the right output size, you only have to select an imaging configuration before you can start printing. This imaging configuration is the print strategy which will determine the output resolution and the possible use of color management.

You can select the imaging configuration in the setup screen. Launch the Setup screen from the Print menu at the top of the Main Screen.



In the drop down box of the imaging configuration, you find 4 different folders containing 10 print strategies in total:

- ▶ ISO-Fogra HD Backlit:
 - » M2_1440_DS_HD
 - » M2_720_DS_HD
- ▶ ISO-Fogra ND
 - » M2_1440_Uni
 - » M2_720_BiDir
 - » M2_720_DS
- ▶ GRACol HD BackLit:
 - » M2_1440_DS_HD
 - » M2_720_DS_HD
- ▶ GRACol ND
 - » M2_1440_Uni
 - » M2_720_BiDir
 - » M2_720_DS

The ISO coated imaging configurations will map the colors to the european standard for offset printing: the ISO fogra color space. The Gracol coated print strategies will map the colors to a US standard color space.

The “HD Backlit” will boost up the colors. In this way, you can reach more vivid and saturated colors.



5. Ripping and printing the image.

You can select one of the rip/print icons or use the print menu on top of the main window. You can choose between:

▶ RIP AND PRINT.

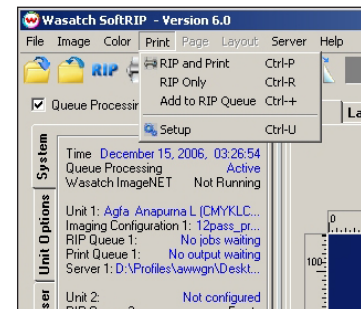
A PostScript Interpreter bar launches on your task bar during RIPing, then a Print Spooler bar. Clicking on these bars opens windows that provide information regarding the progress of the job. Once your image is ripped, the Wasatch SoftRIP will start spooling the file and generate a RTL file that will be saved in the defined output folder.

▶ RIP ONLY.

To RIP a job without printing it, select RIP ONLY from the Print menu. The job will be RIP'd and added to both the RIP and Print Queue listings on the Master Queues screen (more below). If you want to generate a RTL file, you have to select the job in the print queue and hit the print button.

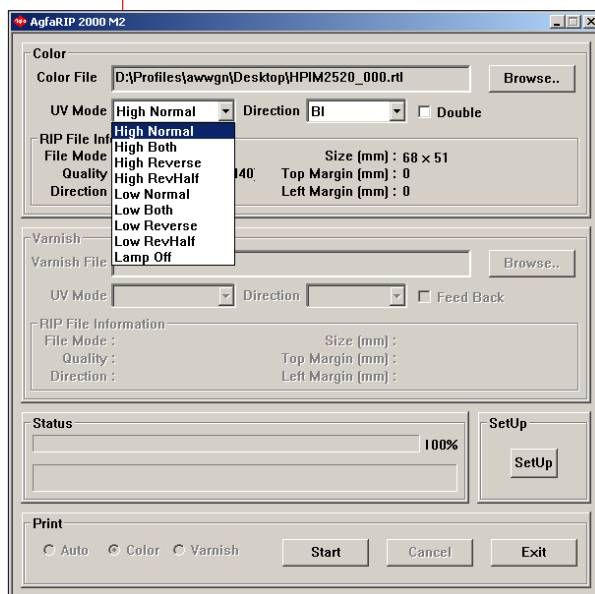
▶ ADD TO RIP QUEUE.

To add a job to the RIP Queue to be RIP'd later, select ADD TO RIP QUEUE from the Print menu. It will be added to the RIP Queue but not RIP'd.



6. AgfaRIP 2000

The AgfaRIP 2000 is a stand alone application which will transfer the RTL data to the printer. It will allow you to select; open RTL data and control some printing settings like UV power, uni or bi-directional printing and the choice between single or double strike.



Double Click on the AgfaRip 2000 icon placed on the desktop; the application will be launched and the control panel will pop up. Click on Browse and open the .rtl file from the pre-defined output folder.

You can control the UV power in the UV mode drop down menu. You can choose between 9 different settings.

- ▶ High Normal
- ▶ High Both
- ▶ High Reverse
- ▶ High RevHalf
- ▶ Low Normal
- ▶ Low Both
- ▶ Low Reverse
- ▶ Low RevHalf
- ▶ Lamps off

High stands for full power UV and will switch the lamps to their maximum capacity. The Low settings will put the UV lamps at half power.

The second part of the naming is referring to which lamp mode will be used and how it will be used:

- ▶ Normal: shutters of the trailing lamp will open.
- ▶ Both: shutters of both lamps will open.
- ▶ Reverse: shutters of the leading lamp will open.

These settings always override the UV lamp button setting on the :Anapurna M², therefore, always have the lamps to Full Power selection at the :Anapurna M² Control Panel.

The direction mode offers you the possibility to choose between uni or bi-directional printing.



Always switch the UV lamps to full power on the :Anapurna M² control panel



The 'double' check box will enable the double strike functionality of the :Anapurna M². The printer will print the same information in both directions, meaning that it will fire two drops of ink on the same position. This will result in a higher density of the inks but it will also slow down the printing speed. This functionality is mainly used for backlit applications.

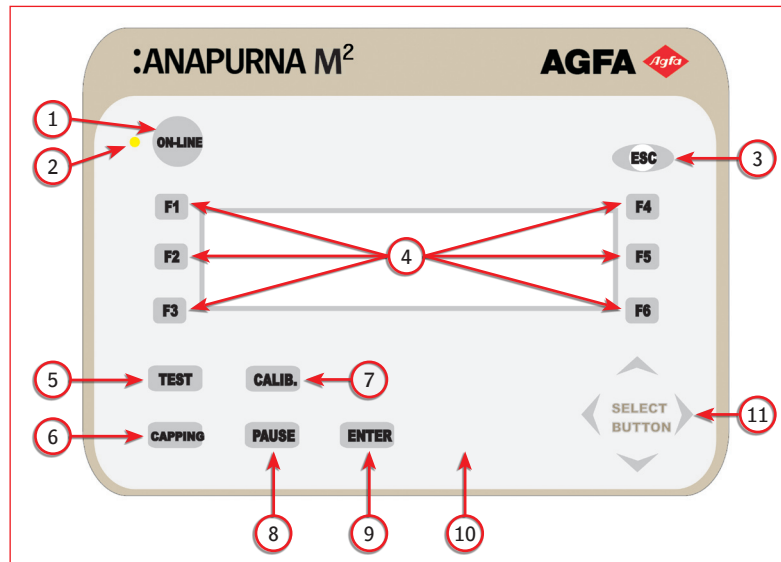
See also the Application Technote on Double Strike

The print mode at the bottom of the AgfaRIP 2000 will automatically be set on 'color'. Press start to send the data to the :Anapurna M².



III. The operator panel. (general overview)

The operator panel on the right side of the :Anapurna M², gives you access to all the different settings of the printer. It allows you to perform cleaning routines, to determine working procedures and to enable safety and quality settings.



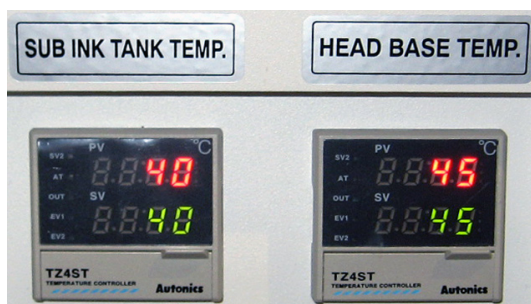
- | | |
|-----------------|--|
| (1) ON-LINE : | When the LED (2) is on, the system is On-line and is ready to print. Pressing the ESC (3) button will change the status to Off-line, the LED will go out. If you send a job when the engine is in the Off-line status, the LED will start blinking. the job waits until you push the On-line button. |
| (2) LED : | Indicates On-Line or Off-Line status. |
| (3) ESC : | Use this button to CANCEL a print and to RETURN from a menu. |
| (4) F1~F6 : | Function keys to access different menu's and settings. |
| (5) TEST : | Printing test, F1: Prime, F2: Vert. Alignment, F3: Hor. Alignment. |
| (6) PURGE : | Similar functions to capping. |
| (7) CALIB : | Nozzle alignment, head gap. |
| (8) CAPPING : | To position the head over the capping station. |
| (9) PAUSE : | To temporarily stop printing, press again to resume. |
| (10) ENTER : | To save any settings you've changed in a menu. |
| (11) Dir. Key : | Navigate through the different menu's. |



IV. Start up & Shutdown Procedures.

1. Start up Procedure.

- ▶ Turn the compressor ON. Wait for the compressor tank to fill up and compressor motor to cut-off.
- ▶ Turn the Air Drier ON (In some countries an Air drier is used to take the moisture out of the compressed air).
- ▶ Check the input air pressure on the rear right side of the engine (the gauge should read 0.5 MPa/5 Bar/73 PSI).
- ▶ Clear the table of the :Anapurna Engine.
- ▶ Check if the Mains are ON (electrical circuit at the premises).
- ▶ Turn the Main power Switch 'ON' from the :Anapurna Engine (Rear Side - Left).
- ▶ Make sure that the Emergency Switches are 'OUT'.
- ▶ Push the ON/OFF Switch; the engine will start booting up
 - » At this moment, the carriage will start moving up. The carriage will then move towards the Home Side & move downIf the Safety Sensors were not activated; you will get a message on the Control Panel informing that 'The Safety is OFF' (the safety sensors are OFF). You will have two options, Press F2 & the sensors will stay OFF or Press F5 & the Sensors will activate.
 - » Press F5 (the sensors will get activated) & the carriage will start moving up. The carriage will then move towards the Home Side & move down.**!!! Agfa recommends that Safety Sensors should stay 'ON' !!!**
- ▶ After the boot up, the engine will go into 'OFF-LINE' Mode.
- ▶ Press F3 to push the Home Cover in.
- ▶ Clean the Capping Station (if required) & close the Capping Cover.
- ▶ Check:
 - » Wait for the system to warm upThe Sub Ink Tank temperature must be set to 40 degrees Celcius.
The Head Base Temperature must be set to 45 degrees Celcius.



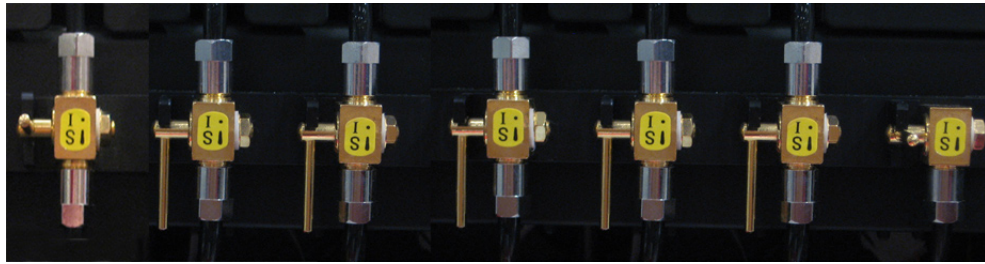
- » Turn the vacuum gauge to restore set the under pressure Vacuum to -0.35



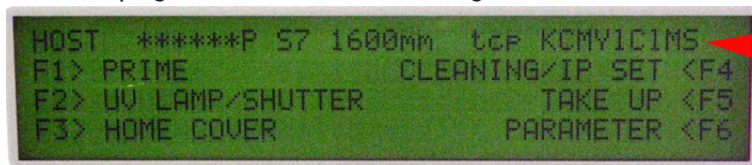
- ▶ With all the 2-way valves on "S" flush all the heads with Cleaning Solution.



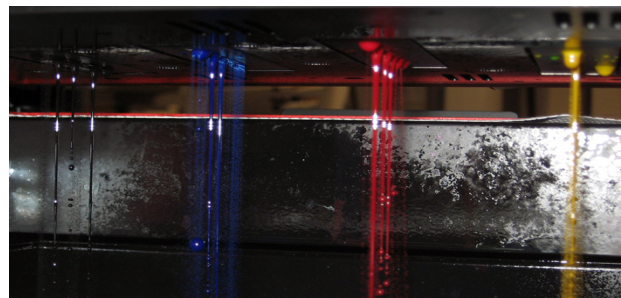
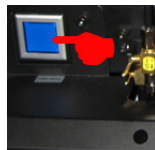
- ▶ Switch the 2-way ink valve for Black to 'I' position, leave all the other colors 2-way valves on "S" and the solution valve to 'I'.



- ▶ Perform a Purge for the Black head
Pulsate the "Purge" button (with short intervals) till ink is coming out of the print head.
Take care that the Sub ink tank has enough time to be refilled.
Check the Color indication on the display.
Capital "K" means that tank is full, small "k" means refilling.
Do not purge while Sub Ink Tank is being refilled.



- ▶ Repeat this purge for all the other heads from left to right.



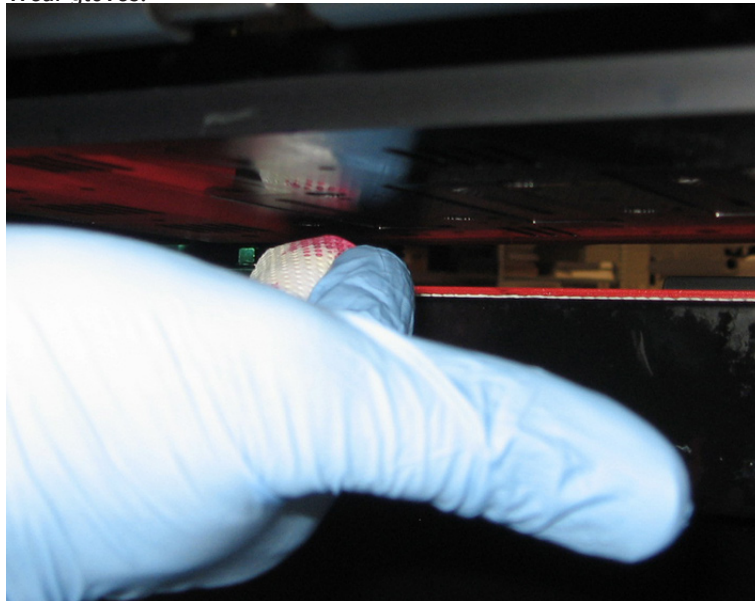
- ▶ Turn the Vacuum Gauge to zero and leave the ink dripping for about 3 minutes:



Tip : To reset the Display to zero
Press the left and the right button together for about 2 seconds



- ▶ Restore the Vacuum Gauge settings.
Put it back to -0,035
- ▶ Perform another ink purge.
- ▶ Take a new lint free cloth and clean the ink residue from the print heads
Wear gloves.



Gently clean; wipe from back to front.

REMARK : Always use a new lint free cloth
Never re-use a used cloth.



2. Making the engine ready for Printing.

- ▶ Put some media (preferably banner media) on the bed and turn the Vacuum ON (make sure the media sits flat on the bed).
- ▶ Do a Head Gap:
 - ▶▶ Press 'Calib' and then press F6 (for Head Gap).
 - ▶▶ Press the Left Cursor Key (the carriage will move UP and then left wards). Press 1 or 2 times the left arrow to position the carriage above your media.
 - ▶▶ Press Enter 3 times (with intervals) to complete the Head Gap
When Enter is pressed the first time, do a visual check if the Head Gap Sensor has come down.
Also make sure that the media is under the Head Gap Sensor (otherwise the media height will be recorded incorrectly).
 - ▶▶ Press ESC to go back to OFF LINE MODE screen.
- ▶ Check & adjust the Parameters (margins):
 - ▶▶ Put the Media Set Bar to down position.
 - ▶▶ Press F6 (for Parameters).
 - ▶▶ Go down to 'Margins' & put in the correct values (specially for Left Margin)
 - ▶▶ Also adjust N-point to 'N' & Top Margin to 'zero'
 - ▶▶ Press 'Enter' & move the Media Set Bar back to 'up' position

Turn the Lamps 'ON' (may be, to Half Strength).

- ▶ Press the F1 to do a Prime Test (Nozzle Test).
 - ▶▶ If all the nozzles look good, you are ready for printing.
 - ▶▶ If not, you need to do some more purges (Ink Purge) making sure that Home Cover is in.
 - ▶▶ If the print heads do not come good with Ink Purges, you might have to clean the print heads with Cleaning Solution (using the Solution Valve button on the rear side of the carriage).
 - For this, you need to turn the Solution 2-way valve to 'S' position
 - Turn the Ink 2-way valve to 'S' position
 - Press the Solution Valve button (rear side)
 - Purge Ink after this procedure

For more information on cleaning routines; see Section D - Maintenance.



3. Shutdown Procedures.

a. Rules and Reasons

Rule : AIR pressure must be available at all times.

The air pressure mechanism is necessary to avoid:

- ▶ Dripping of heads during stand still
- ▶ Unwanted color mixing in the ink provision mechanism.

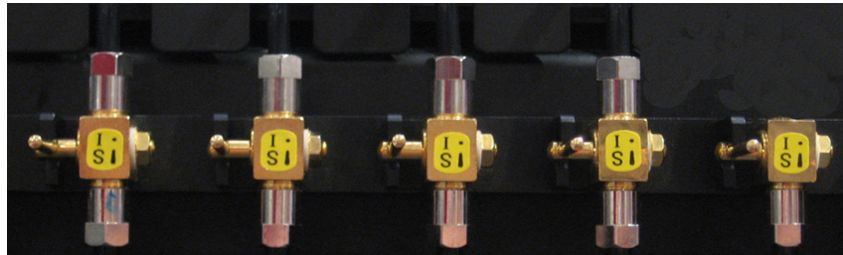
For this reason we have foreseen the following situations.

- ▶ Air Pressure always available
 - » Overnight situation
Use "Daily shut down Procedure
 - » For a period longer than 3 nights
Use the "Long stand still procedure.
- ▶ Air pressure is switched Off overnight
This situation should be AVOIDED at all times.
 - » When there is a possible risk of Air Presssure loss
Use the "Long stand still procedure.



b. Daily Shut Down Procedure.

- ▶ The carriage is at the Home Position (after printing).
 - ▶ It is better to check if all the print heads are in good shape (by doing a Prime Test).
- ▶ Turn the Lamps 'OFF'.
- ▶ Let the Lamps cool down (wait for Lamp Fans to go off).
- ▶ In a normal overnight situation, the compressor has to stay "On" 24 h/7 days
 - ▶ Keep the Ink valve levers on "I"
 - ▶ Keep the Solution valve lever on "I"



- ▶ Push the Emergency Button 'IN'; the engine will now be switched off
- ▶ In order to cut the power completely, switch off the "Main Power" switch at the rear of the engine.



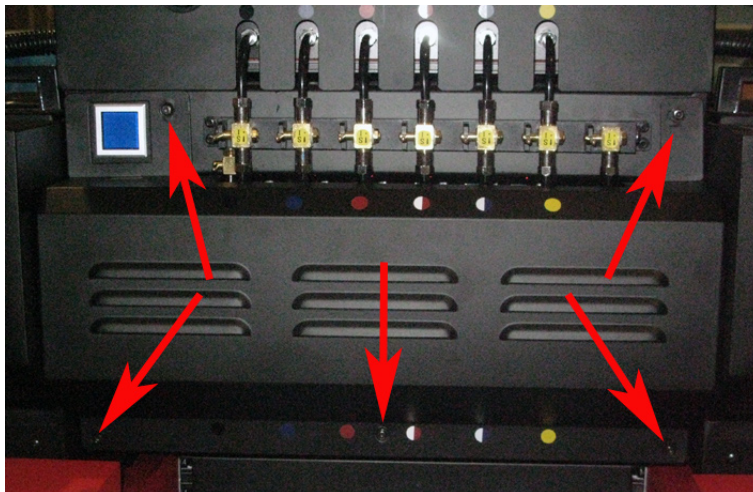
- ▶ Make sure the engine gets uninterrupted compressed air supply throughout the night, otherwise follow the Long Stand Still Shut Down procedure.



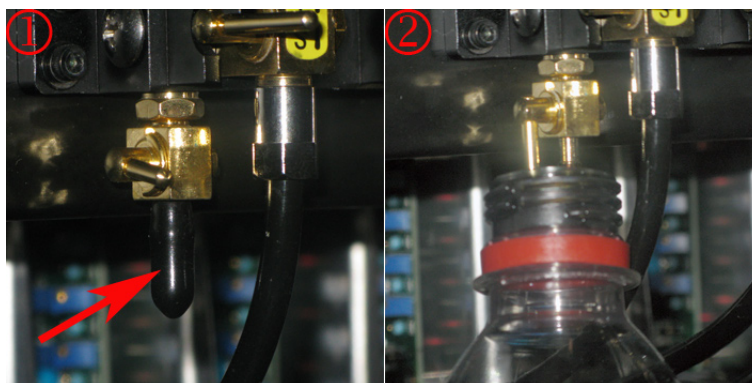
c. Long Stand Still Shut Down Procedure (More than 3 days)

If not possible to keep Compressor On or if the engine will be not used for more than two weeks:

- ▶ Drain Solution Bar with cleaning solution.
 - ▶▶ Remove the Front Panel (5 screws).



- ▶▶ Remove the black tube-end from the mini-valve (1) and place an empty bottle (2) under it.
- ▶▶ Open the mini valve and press the Solution Button until clear clean solution will come out the mini-valve.



- ▶▶ Close the mini-valve, remove the bottle and re-install all the parts.



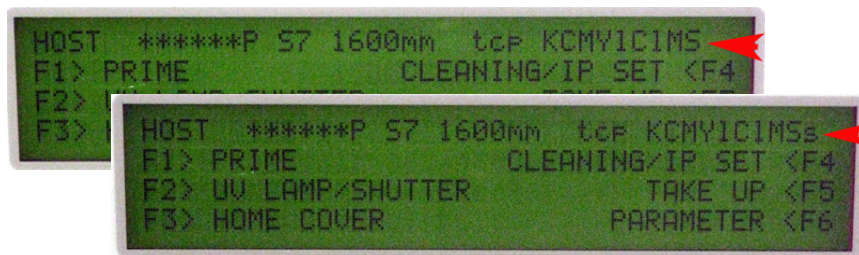
- ▶ The Print heads must be flushed with Solution.

NOTE: never use solvent or detergent (e.g. Acetone, Isopropyl, etc.)

- ▶ First clean the Black head by moving the Black 2-way Ink Valve on "S"
- ▶ Push the Solution Valve Switch, to build pressure in the cleaning solution tank.



- ▶ Open Solution Valve for 2 seconds (position "S") to flush the Black head with solution.
Close the solution Valve again. (position "I")
Check on the Display if the solution tank is refilled.
A small "s" means that the Solution is being filled.
A Capital "S" means that the Solution is filled
Wait for the "S" before opening the solution valve again.
- ▶ Then repeat this procedure head by head from left to right.
When pushing the Solution Valve Switch again check on the control panel the status of Solution

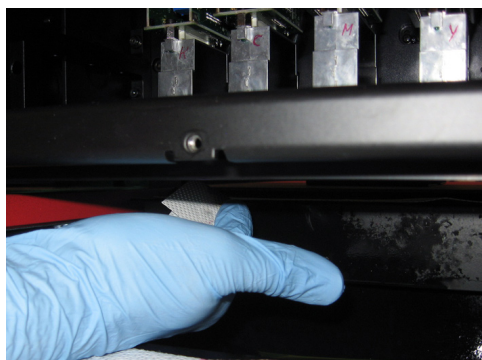


NOTE: Flushing with an empty sub tank will introduce air into the circuit.

- ▶ Once all the heads have been cleaned,
flush again cleaning solution through all the heads together until you can see only Cleaning Solution coming out from the heads.



- ▶ Switch the 2-way ink valve for Solution back to 'I' position.



- ▶ Clean the residue of the cleaning solution on the print heads (wipe gently from back to front)
- ▶ Clean the base plate.
- ▶ Turn the Vacuum Gauge to zero.

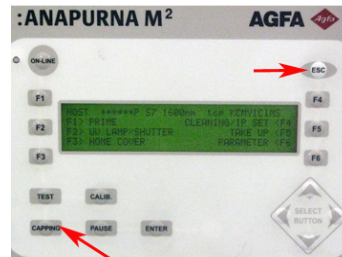


- ▶ Repeat this procedure after 2 hrs.
- ▶ And repeat this procedure again after 12 hrs.
- ▶ Move the shuttle to Capping Station:
NOTE: Clean first all the cups of the capping station with a clean white cloth. Make sure it is dry and free from dust and particles.
 - ▶ Open the cover of the capping station moving the Capping Cover Switch to "OPEN".





- ▶ On the control panel press “ESC” to go Off-Line and than press “Capping Station” to move the shuttle to the capping station.



- ▶ Push the Red Emergency Button to switch off the engine
- ▶ Turn the Power Switch 'OFF' (rear side of the :Anapurna) to cut the power completely



- ▶ Turn the Power Switch 'OFF' (from rear side of the :Anapurna).
- ▶ Turn the Mains of the premises 'OFF'.
- ▶ Turn the Compressor & Drier 'OFF'.

NOTE: This procedure has to be followed to avoid:

- ▶ Ink contamination inside the 2-way valves and the Solution Bar. This can cause color pollution resulting in wrong colors





V. Setting up the :Anapurna M². (the calibration menu)

Before you can access the different settings, make sure that the printer is offline. If not, press the 'ESC' button to switch the :Anapurna M² offline.

When you press the 'CALIB.' button (control panel n° 7), the different calibration settings will pop up on the screen. By choosing a corresponding function key (F1, F2, F3,...), you can change that parameter.

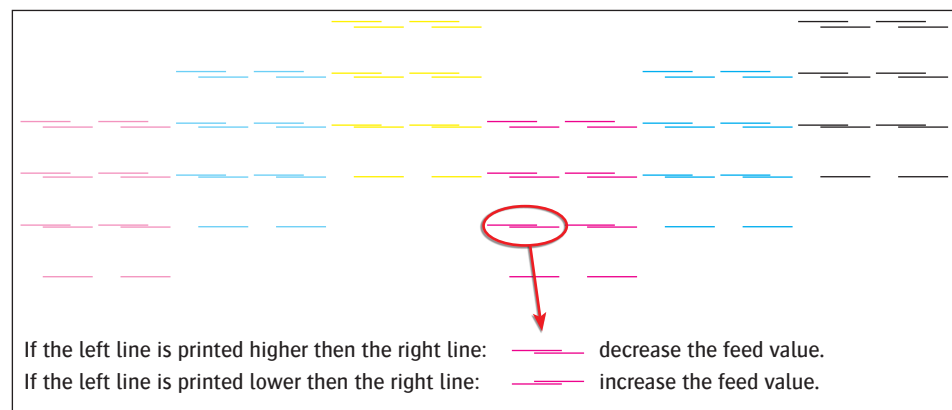
- ▶ F1 : FEED ADJUST
- ▶ F2 : CARRIAGE RELEASE
- ▶ F3 : FACTORY SETTING
- ▶ F4 : HOR ADJUST
- ▶ F5 : DIR ADJUST
- ▶ F6 : HEAD GAP

In order to achieve the best quality, you have to make sure that these parameters are carefully set. A deviation in one of these parameters, can cause loss of quality. Make sure the head gap procedure has been followed before conducting any calibrations.

1. Feed Adjust (F1).

The feed adjust is the parameter which controls the size of each step the conveyor belt will move between different print passes. If this settings is too high, white lines will start to appear between every printing pass. Entering a value that is too low, will make different passes overlap each other. This results in dark lines in your print.

If you want to check the feed adjust, press F1 to enter the feed calibration menu. Select F2 to start the print. In the first pass the printer will print 2x 4 lines of every color. Every pass that follows, a new line will be printed besides one of the first 4. In case that the printed lines are not aligned as one line, you need to adjust the feed value.



size test chart: 17 x 8 cm

2. Carriage Release (F2).

You can unlock the shuttle by pressing F2. The servo motor will be turned off and you can move the shuttle by hand. If you want to switch the servo motor back on, choose F1 'servo on and home check'. The shuttle will reposition itself in the home position.

3. Factory setting (3).

In this menu the head voltage, etc. are managed. This setting is protected with a password and can only be accessed by a service engineer.

4. Hor Adjust (F4).

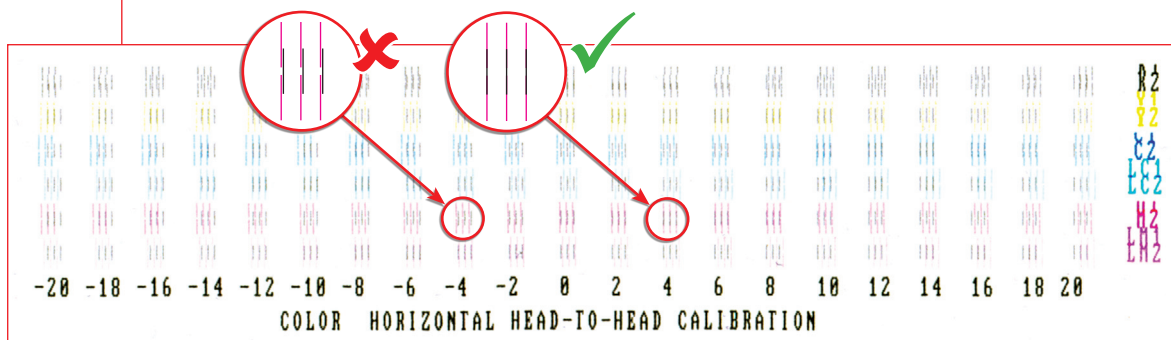
The horizontal head-to-head calibration is a tool to align the colored print heads in reference to the black head. It is a software parameter that controls the timing of the firing of the heads.

Every print head is an assembly of two nozzle rows which are steered separately. Every nozzle row has its own timing. The test chart is made up of different blocks, containing



three lines for every nozzle row. For every color, 21 blocks are printed with different firing timings, going from -20 to +20 in steps of 2.

Between the colored lines of the different nozzle rows, black lines are printed. Choose the value per color and per nozzle row (f.e. LM1 & LM2), where the black and colored lines are perfectly aligned.



size test chart: 15 x 4 cm

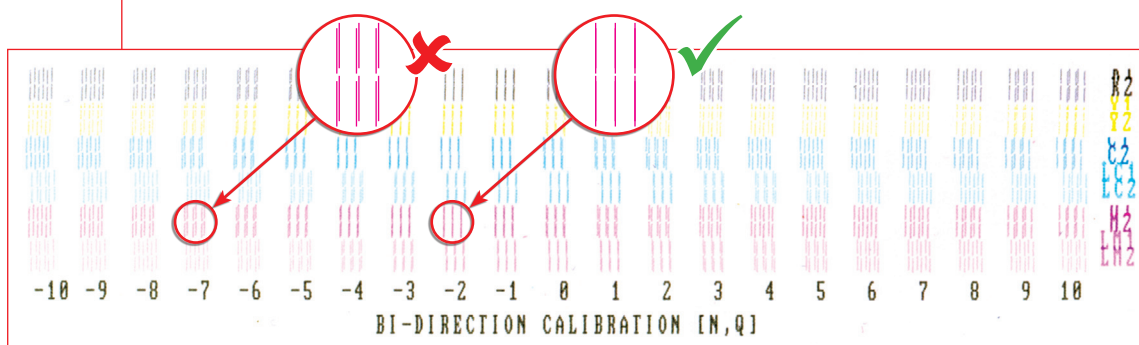
5. Directional Adjust.

The bi-direction calibration chart is a tool to determine the firing time from the shuttle when it prints bi-directional. Because of the head gap and the speed of the shuttle, ink drops will be fired with a different angle if the shuttle goes from left to right or from right to left (firing time delay).

Like in the horizontal head-to-head calibration, blocks of three lines are printed per color and per nozzle row. This chart is printed bi-directional and only the block with the correct setting will show three lines. In all the other blocks and values, you will see 6 lines per color and per firing row. 3 lines are printed from left to right, 3 lines are printed from right to left.

Choose the correct value for every color and every nozzle row and enter these values into the dir. adjust window.

Make sure that you always check the bi-directional alignment when you change the head gap (for e.g. 1,6 mm instead of 1,3 mm) of the shuttle.



size test chart: 15 x 4 cm

6. Head Gap (F6).

By pressing F6, the head gap setting procedure opens. It allows you to set the gap between the base plate and the media which you are using. Make sure that you follow this procedure every time you use a different media and after every start up procedure.

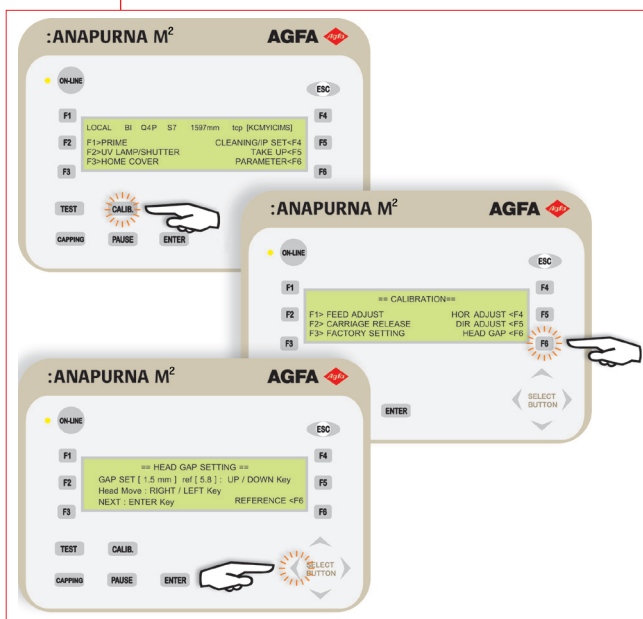
The head gap setting window allows you to enter a value for the head gap. Default setting is 1,3 mm. Increasing this value will also increase the risk of printing artefacts. Printing in a bi-directional mode also influences artefacts in a negative way. So if you want to print with a bigger head gap, it would be advisable to print uni-directional. Make sure that you never use a head gap >2,5 mm.

The reference height (ref) is the height to which the shuttle will move right before lowering itself to the actual head height. This value was measured and entered in the



factory. It can only be changed by a service engineer by pressing F6. It is also protected by a password.

The head gap procedure is activated by pressing the left arrow on the control program. The complete procedure looks as follows:



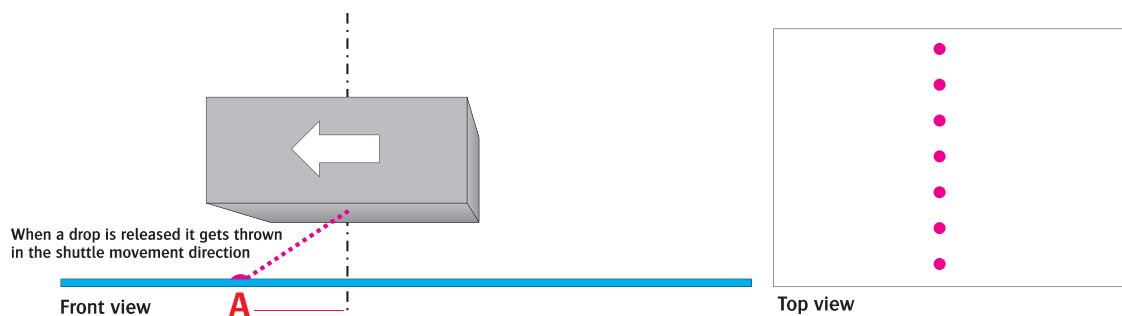
- ▶ Press the “Calibration” button and choose F6 “Head Gap” to set the shuttle to the correct height. Press the left arrow to move the shuttle to the desired position. Make sure that you position the shuttle so the height calibration will be done between the two red dots on the beam.
- ▶ When the shuttle is in position, press “Enter” and the shuttle will lower itself to the reference height. This is a default value and is not the same as the actual head height. Press “Enter” a second time to lower the shuttle to the head gap distance.
- ▶ Move the shuttle back to the home position by pressing “Enter”. The “head gap” procedure is now completed and the shuttle is set to the desired distance.

Make sure that you follow this procedure every time you use a different media, after every start up procedure and after each new gap value.





7. Importance of the bi-directional alignment.



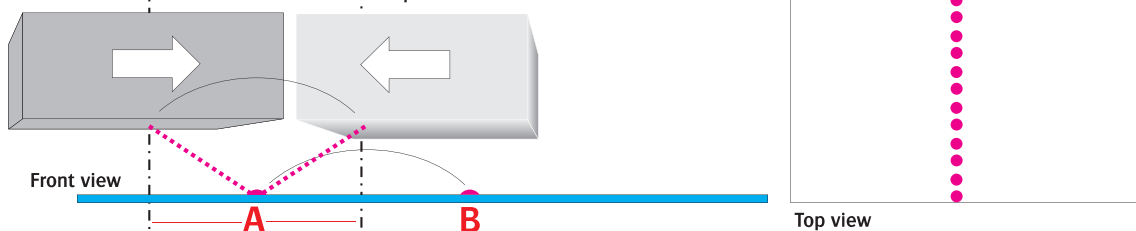
1. Shuttle moves from home to purge

Drop is released at exact same position as situation 1.
Due to the forward trajectory it will land at location B instead of intended location A



2. Shuttle moves from purge to home

If the drop is released at an earlier position in the return pass compared to situation 2
It will now land inline with position A



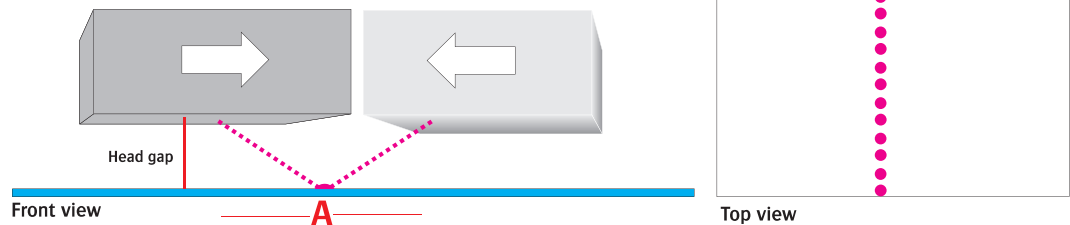
3. Impact of bidirectional alignment

Fire position

Fire position

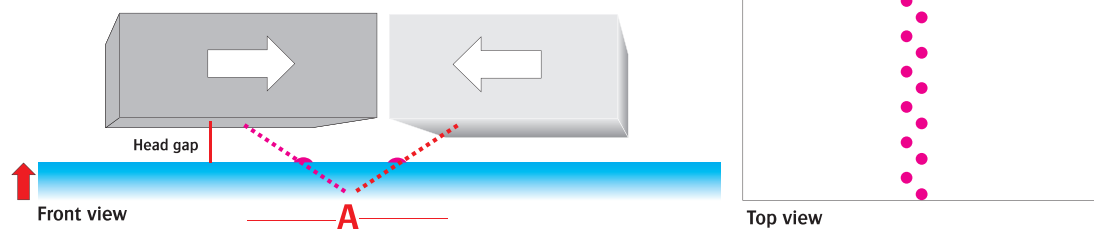


This situation shows a correct bidirectional alignment for this particular media and head gap



4. Impact of gap and media thickness

In situation 5 we have loaded a thicker media without adjusting the head gap. This results in a smaller gap and a shorter travel path for the dots. If we do not adjust the bidir alignment the dots will not line up



5. Change in head gap without adjusting bidir



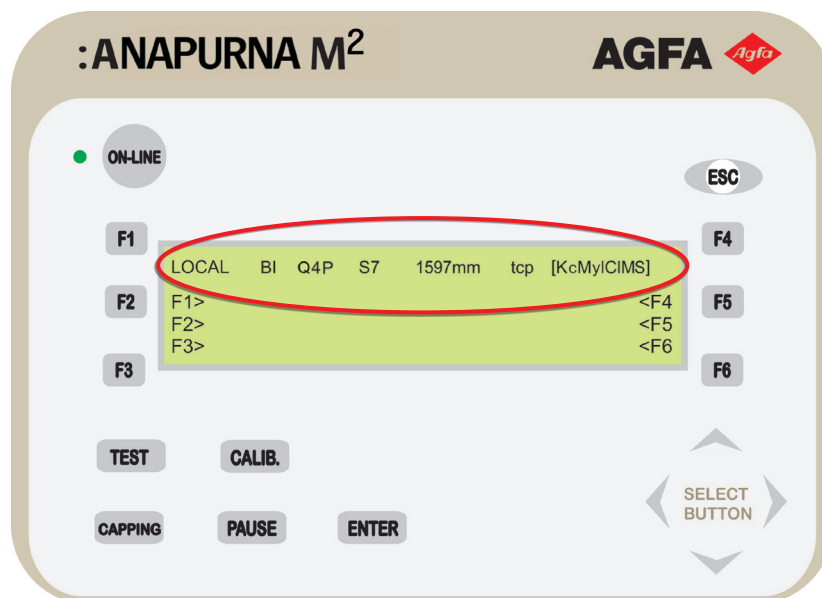
A correct bi-directional alignment is crucial for an accurate dot placement. The bi-directional alignment is depending on the shuttle speed and the head gap. Whenever one of those changes, the bi-directional alignment needs to be checked.

VI. Changing the parameters. (the main menu)

The main menu gives you information about the selected printing strategy. It also allows to change certain parameters like roll to roll or rigid settings, UV lamp settings,...

1. Information bar.

On the top of the main menu, you find different parameters telling you something about the selected printing options:

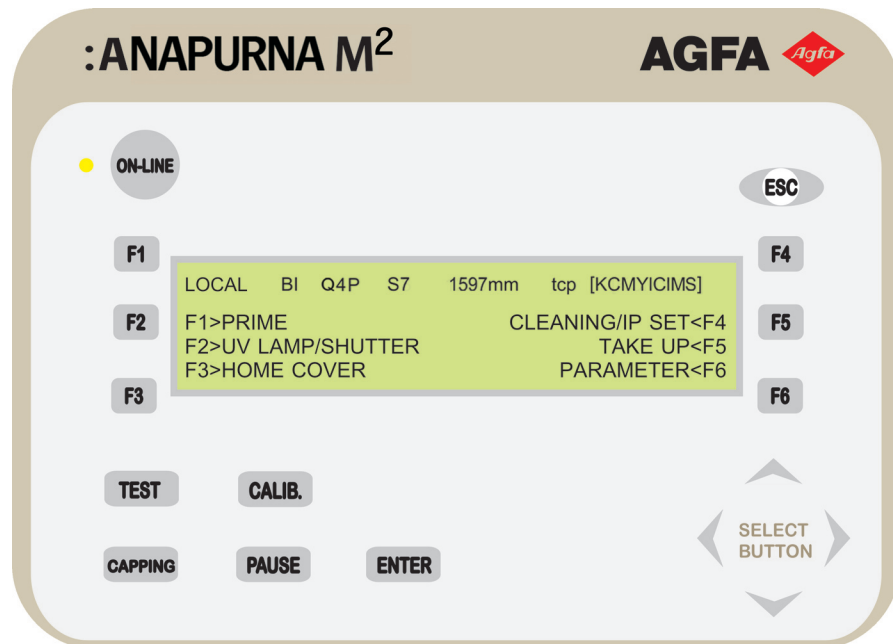


- ▶ **LOCAL / HOST** : The printer control mode tells you which parameters are going to be used. If the printer is set on host, the parameters coming out of the Wasatch SoftRIP will be respected. If the local mode is selected, the setting information coming out of the Wasatch SoftRIP will be overruled and will be replaced by the settings determined on the :Anapurna M² itself.
- ▶ **BI / UNI** : In the bi-directional mode, the printer will be print in two directions: from left to right and from right to left. In uni-directional mode, the shuttle will return to home position without printing. The drops are only fired when the shuttle moves from left to right.
- ▶ **Q4P** : The number of passes are related to quality mode that was selected. It are the number of passes that the shuttle needs to complete one printing line (720 dpi = Q4P / 1440 dpi = Q8P).
- ▶ **S7** : The speed of the shuttle can be changed by a value between 1 (slow) and 10 (fast). The default setting S7 is the most optimized speed. If you increase the speed of the shuttle, the quality will be negative influenced and the risk of artefacts will increase. Decreasing the speed will not provide better quality and will only limit your production capacity.
- ▶ **1597mm** : The standard setting will be 1597mm, which is the maximum printing width of the :Anapurna M². If you change the media width in the Wasatch SoftRIP f.e. to 1000mm, the control panel will display this value (if the control mode is set to HOST).
- ▶ **tcp / TCP** : The tcp parameter gives you information about the status of your LAN communication link. If TCP is displayed in capital letters, data is being received by the printer. Lower case letters mean that the printer is waiting for data.
- ▶ **[KcMyICIMS] / [kcmylclms]** : The condition of the sub ink tanks are indicated by the letters KcMyIClMVS. Every sub ink tank (color, solution) has its own sensor and if the letter of corresponding color is displayed as a capital, the sub ink tank contains enough ink. If the level in the sub ink tank is too low, a lower case letter will appear. Normally, the corresponding pump will start pumping new ink or solution into the sub ink tank.



2. Function keys. (parameters)

The main menu gives you access to 6 features via the 6 function keys.



► F1 > Prime

These prime tests are the best way to check if all the nozzles are firing. By pressing F1, a warm up time for the UV lamps will be initiated when the lamps are not already online. The test chart looks like a fence per print head. You can immediately see if one or more nozzles are missing.



Be aware that the test chart has the opposite sequence than the position of the print heads on the shuttle.

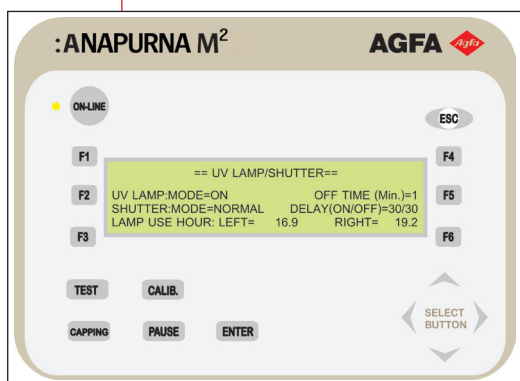
Make sure that a left margin (p.45) is set before you do a prime test. You can also use other test charts to check the condition of the print heads (p.36).

► F2 > UV LAMP / SHUTTER

By pressing F2, you enter the panel which controls the UV lamps settings. The bottom line shows you the burning hours of the UV lamps. This counter can be reset only by a service engineer. The other settings can be changed by using the arrows on the control panel. Pressing left or right will make the cursor move between the different parameters. Pressing up or down will change the value of that one setting. You can change these parameters:

► UV LAMP: MODE= ON (default) / OFF

If ON has been selected for this mode, the lamps will come online when a print is started. If set to off, the print will start without turning the lamps on.



» **SHUTTER: MODE= NORMAL** (default) / BOTH / REVERSE
Changing the value from normal to both or reverse, will change the timing of the shutters. If “both” is selected, both shutters will open at the same time. The printer will use both lamps during one printing pass. If the “normal” mode is selected, only the tale lamp will open the shutter. The printer will first print and then immediately cure with the lamp that follows the print heads. The “reverse” setting will do the opposite, the leading lamp will open. In this case, the ink gets 1 pass the time to bleed before it’s cured. This will result in a more glossy print.

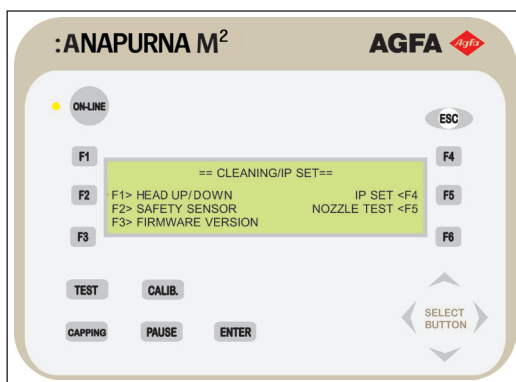
» **OFF TIME (MIN)=20** (default) (value between 0 and 60)
This indicates the number of minutes the UV lamps will stay on after a printed job is finished. This value ranges from 0 to 60 minutes.

If this value is set to 0, the lamps will immediately turn of when the print is finished. The advised time for this setting is 20 minutes. Every lamp loses 30 minutes of its lifetime whenever it is switched on, so it would be better to leave the lamps burning between two jobs (if the time between these jobs is not more then 30 minutes).

» **DELAY (ON/OFF)= 30/30** (default) (value between 0 and 99)
This value enables you to delay the point where the shutter of the lamps opens and closes vs first / last nozzle that will be printed. The value is expressed in centimeters and ranges from 0 to 99.

» **F3 > HOME COVER**
By pressing F3, the home cover protection plate slide backwards. This gives you easy access underneath the print heads.

» **F4 > CLEANING / IP SET**
The cleaning/ip set window contains information and parameters about safety, network connection and the capping function.



» **F1 > HEAD UP/DOWN**
By pressing F1, the shuttle will raise to the most upward position and the home cover will open. You can easily access the heads for inspection or cleaning. To close the cover and lower the shuttle to the last defined height, press the head up/down function again.

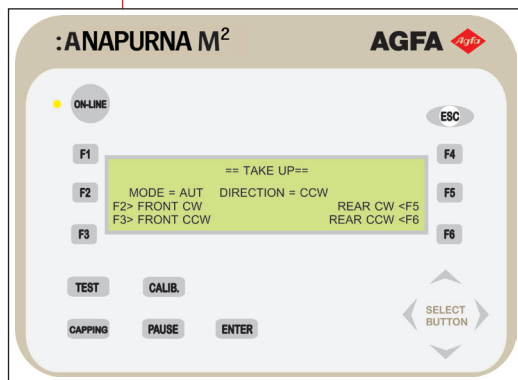
» **F2 > SAFETY SENSOR** (default = ON)
This function allows you to enable or to disable the optical sensors surrounding the engine and the wing sensors on the shuttle. Use the arrows to toggle between safety sensors and wing sensors (left/right) and to switch them from ON to OFF (up/down).



The sensors must always be activated when the engine is powered on!



- » **F3 > FIRMWARE VERSION**
If you want to check the version of the firmware that is running on the engine, press F3. The necessary information will be displayed.
- » **F4 > IP SET**
The ip set control enables you to set and change the :Anapurna's IP address. The default IP address is set to 192.168.1.5. Make sure that the :Anapurna M² and the Wasatch working station are configured in the same ip range (port 5000).
- » **F5 > Nozzle test**
Pressing F5 enables you to execute a nozzle test. All nozzles of a specific head will fire for a few seconds. If you watch closely you can see a cloud of ink appear underneath the nozzle face. You can choose to test the nozzles of one head (F1 -> F6) or all heads at once (press ENTER).
- » **F5 > TAKE UP**
If you want to use the roll to roll feature of the :Anapurna M², the take up window will give you access to the controls of the front and rear motor. Use the left and right arrows to move the cursor from the mode to the direction settings.
- » **MODE = AUT (default) / MAN**
You can toggle between AUTO and MANUAL, using the up and down arrows. The auto setting means that the winder and unwinder motors will be driven by the optical sensors underneath the print table. In the manual mode, the motor will be driven by the function keys F2,F3,F5 and F6.
- » **DIRECTION = CW / CCW**
This feature toggles between CW and CCW rotation direction of the motor roller, defining the way motor will turn.

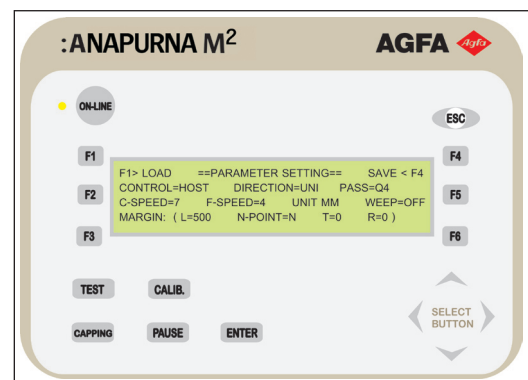


When the mode is set to manual, you can move the roll to roll system by using the function keys F2, F3, F5 & F6. Press and hold down the key for as long as you want the motor to rotate.

- » **F2 > FRONT CW** : the front motor will turn clock wise.
- » **F3 > FRONT CCW** : the front motor will turn counter clock wise.
- » **F5 > REAR CW** : the rear motor will turn clock wise.
- » **F6 > REAR CCW** : the rear motor will turn counter clock wise.

- » **F6 > PARAMETER**
The function key F6 will give you access to the parameter setting menu. This menu contains general printer setup and print controls. You can save up to 10 different sets of parameters.

- » **F1 > LOAD**
If you press F1 to load up a set of parameters, you can only choose between the numbers which have a set available. Use the up and down arrow to toggle between the different numbers, press ENTER to activate the selected set.
- » **F4 > SAVE**
F4 gives a save command, dedicate a number between 0 and 9 to your set of parameters. Use the up and down arrow to toggle between the different numbers, press ENTER to activate the selected set.





The different controls in the second part of the control panel are parameters to set the printing quality, printing speed and margin values. Use the left and right arrow to move the cursor between the different controls, press up or down to change the values. Press enter to save a changed value.

» **CONTROL = HOST (default) / LOCAL**

The printer control mode tells you which parameters are going to be used. If the printer is set on host, the parameters coming out of the the Wasatch SoftRIP will be respected. If the local mode is selected, the setting information coming out of the Wasatch SoftRIP will be overruled and will be replaced by the settings determined on the :Anapurna M² itself.

» **DIRECTION = UNI / BI**

In the bi-directional mode, the printer will be print in two directions: from left to right and from right to left. In uni-directional mode, the shuttle will return to home position without printing. The drops are only fired when the shuttle moves from left to right.

» **PASS = Q4 / Q8**

The number of passes is related to the quality mode. You can choose between two qualities, resolutions: 720 x 720dpi (Q4) or 1440 x 720dpi (Q8).

» **C-SPEED = 1 to 10 (default : 7)**

The speed of the shuttle can be changed by a value between 1 (slow) and 10 (fast). The default setting (7) is the optimum speed. If you increase the speed of the shuttle, the quality will be influenced and the risk of artefacts will increase. Decreasing the speed will not provide better quality and will only limit your production capacity.

» **F-SPEED = 1 to 5 (default : 1)**

The feed speed setting is the speed which the conveyor will move forward between printing passes. This value can be changed between 1 (slow) and 5 (fast). If the shuttle starts to print the next pass when the conveyor belt is still moving, you should increase the speed of the belt.

» **UNIT MM / INCH**

You can choose between millimetres or inches and change the units of the margins.

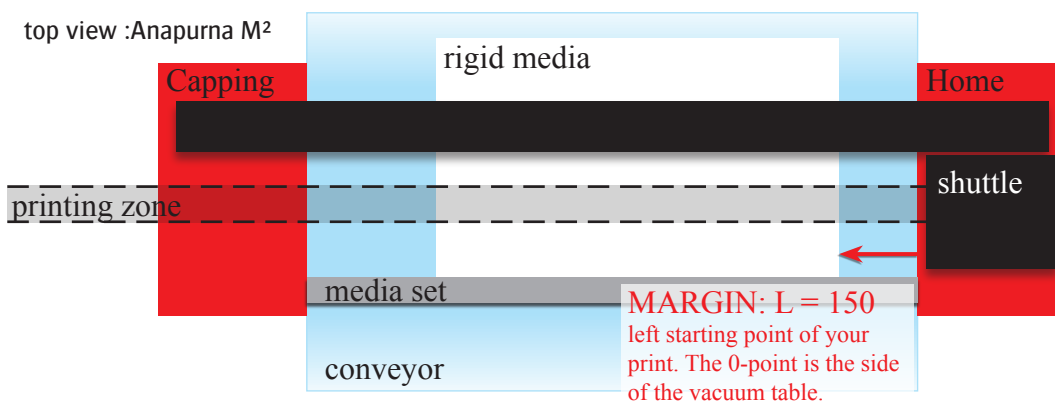
» **WEEP = OFF (default) / ON**

The automatic weeping function will make the print heads fire with a certain time gap when the carriage is at the home position. You can select an interval between 0 and 99 seconds. This feature can be turned off because the nozzles KM512MN print heads will not be blocked during stand still. This feature is especially developed for the use of solvent inks and has to prevent the curing of ink inside the print nozzles.

» **MARGIN: L = 150**

You can enter a left margin, a starting point where the shuttle starts printing. If the margin is set to 0, the :Anapurna M² will start printing on the right side of the vacuum table.

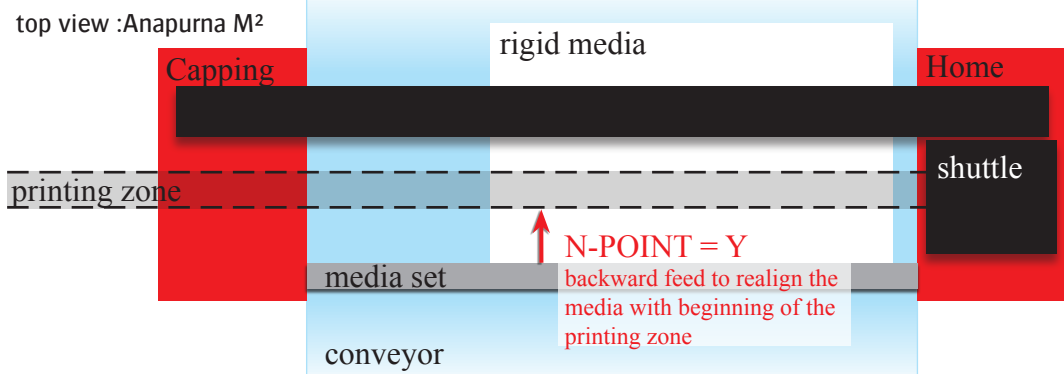
This is also important when you want to perform a prime test. Insert the distance on the table where you want to perform the test print.





» **N-POINT = Y / N**

This enables (Y) or disables (N) the backward feed at the start of your print. When you print on rigids, you use the media set bar to align the rigid at the front of the print table. After raising the media set bar, the rigid needs to be fed backwards in order to be properly aligned with the starting point of the shuttle.

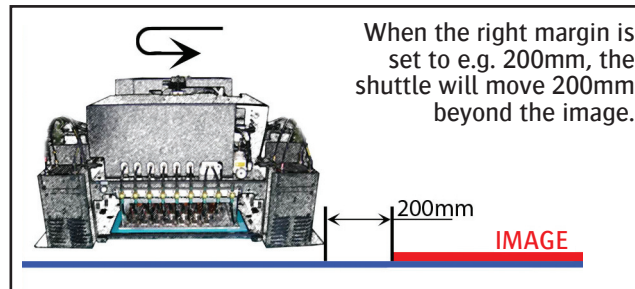


» **T = 0**

The top margin is the distance that the media will be fed before printing. This value is set in mm or inches, according to the units that are defined in the unit control setting.

» **R = 0**

The R parameter sets the right margin in mm or inches. The right margin is distance the shuttle goes past the last printed point. This is useful for heat sensitive media to avoid the lamps sitting over the edges for longer times.



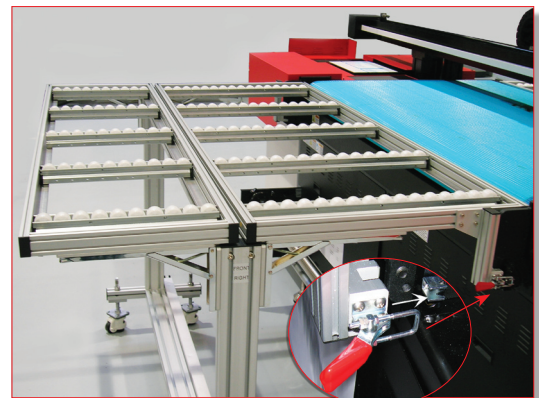
3. Media setup. (rigids and roll to roll)

The :Anapurna M² offers you the choice between handling rigids or roll media. You can print one or more rigids at the same time or use the automatic winder and unwinder system for roll fed media.

a. Rigid media.

The media set bar will help you to position the rigids on the printing table. Lower the media set bar by turning the media set switch (front or rear side at the home position). When you use the media set bar, the n-point and left margin have to be correctly set.

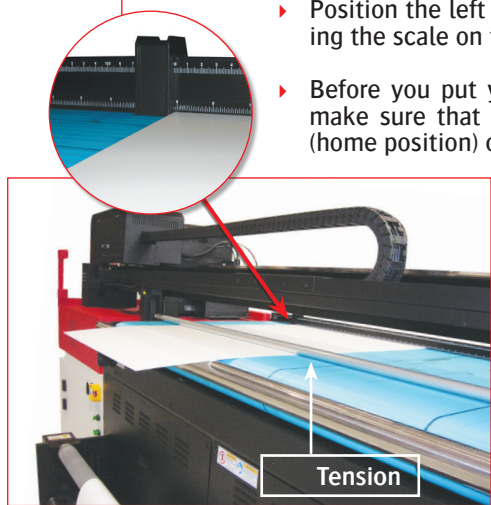
The two support tables that are delivered with the engine, will help you to process rigid material. The tables can be locked to the engine with a clip on system which you can find on the left and right side of the tables. Both tables have a width of 1m60 and are 1m20 long.





You can load rigid media very easily following the next steps:

- ▶ Lower the registration bar by turning the 'media set' button.
- ▶ Position the left guide on the registration bar using the scale on the inside of the registration bar.
- ▶ Before you put your rigid on the vacuum table, make sure that the shuttle is on the right side (home position) of the printer.

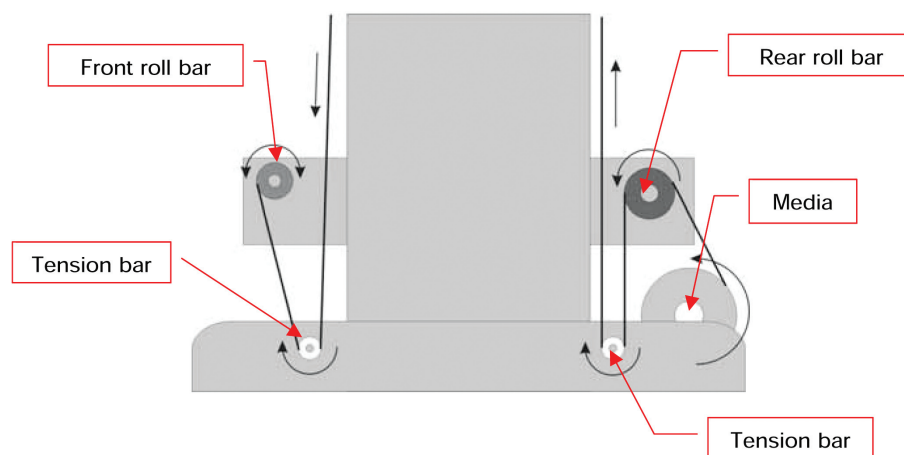


- ▶ Position your media against the registration bar and side guide and turn on the vacuum.
- ▶ Raise the registration bar by switching the 'media set' button back.
- ▶ You can lower the tension bar to apply pressure on the media.
- ▶ Follow the head gap procedure (P.37) to make sure that the shuttle is set on the correct height.

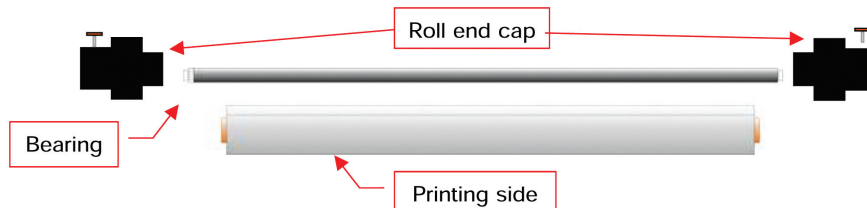
- ▶ Check the left margin and n-point parameters (p.45) so that the :Anapurna will start printing on the right spot.
- ▶ Push the online button and the printer is ready to print.

b. Roll media.

If you work with roll media, you can use the auto feed system of the :Anapurna M². It contains two tension bars, a front and rear roll bar and a media roll bar.



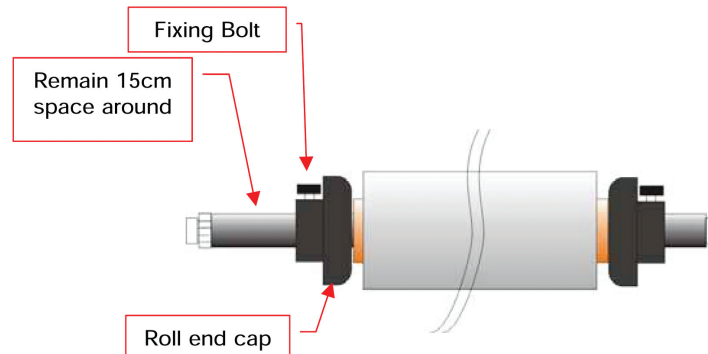
The tension bars prevent distortion and waves on the media by applying a constant tension. The rear roll bar will unwind the media and is steered by a motor which get impulses from the signal sensors. The front roll bar can be steered in two direction. It will rewind your printed media, holding a constant tension to reduce distortion. Make sure that you always insert the tension roll bars in a correct way. The ball



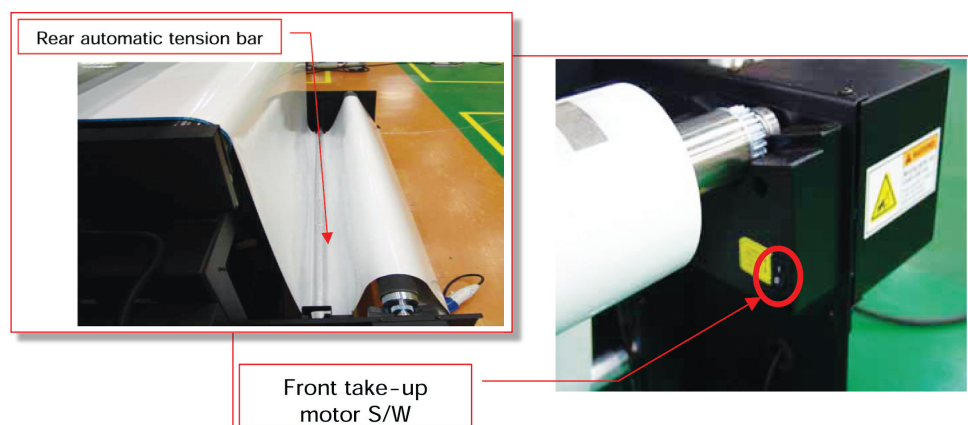


bearing must be placed inside the guide. When you position the bars, make sure that the both sides are positioned as high as possible into the left and right unit. Gently lower both sides so that the bars stay completely horizontal for the best use.

Loading roll media can easily be done by using the next procedure:



- ▶ Mount your media in the center of the media roll bar. Use the end caps to fix the position of the roll on the bar. Make sure that the bearing of the roll bar is positioned on the left side of the printer and put the media roll bar in its holders.
- ▶ Unwind a part of the media and position it, over the rubber rear roll bar, on the conveyor belt and switch on the vacuum. If the auto feed system is on, the rubber roller will start to feed media until it hangs in loop blocking the beam of the optical sensor.
- ▶ Position the rear tension bar and make sure that it is positioned horizontal to keep an even media tension
- ▶ Go to the front of the engine, switch of the vacuum and pull the media so you can attach it to the rewinder system. The media has to be aligned with the side of the conveyor belt, so it will run straight. Mount your media on the front roll bar (attach the left, right and center of your media) and switch on the front take-up motor.



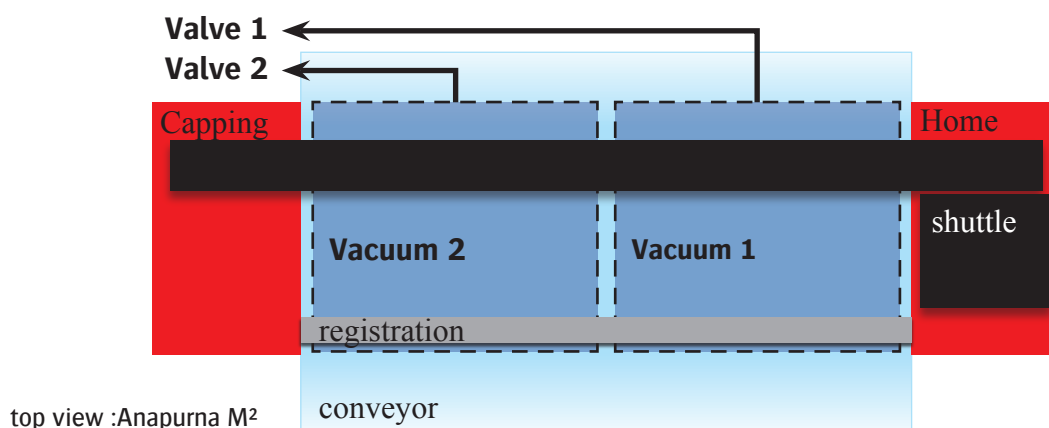
- ▶ Make sure that the distance between the edge of the media and the edge of the vacuum table is the same at the front and rear side (difference <1mm).
- ▶ Position the front tension bar and keep it as horizontal as possible, ensuring an even tension from left to right. Switch on the vacuum again and the media is ready to be printed.



c. Vacuum system.

The vacuum table of the :Anapurna M² is divided in two equal parts. Each part of the table gets the vacuum from an independently controlled valve. The vacuum pump (ring blower) is controlled by a single switch (front or rear side) but the output can be controlled by two separate valves. These valves are positioned at the rear of the enige on the capping side. Valve 1 controls the part of the table at the right side (home position), valve 2 is connected to the left side (purge position).

Depending on the position and size of the media, the vacuum can be controlled through these valves.



If the media only covers one of the two parts of the vacuum table, e.g. vacuum 1, the suction underneath your media can be increased by closing the valve of the unused part of the table.



D. MAINTENANCE.

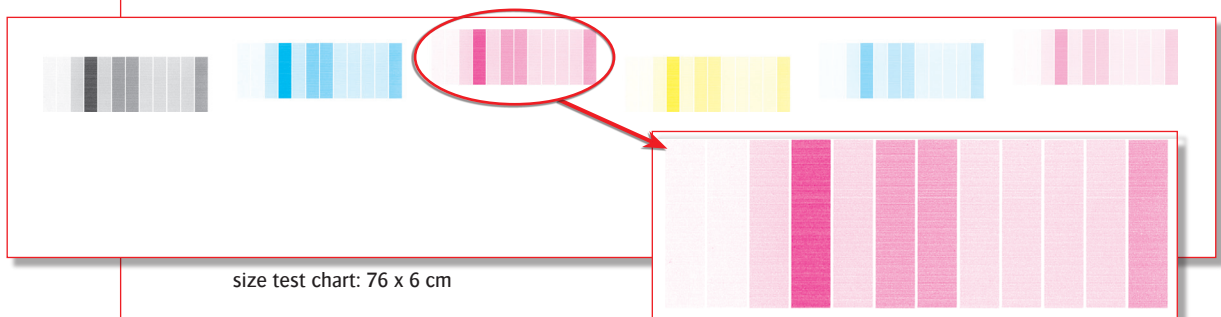
I. Test Menu.

Before you can access the different settings, make sure that the printer is offline. If not, press the 'ESC' button to switch the :Anapurna M² offline. The test button on the control panel (control panel n° 9) gives you access to 4 different test features:

- ▶ F1 : PRIME
- ▶ F2 : PRIME2
- ▶ F4 : BELT TEST
- ▶ F5 : DIR TEST

1. Prime (F1).

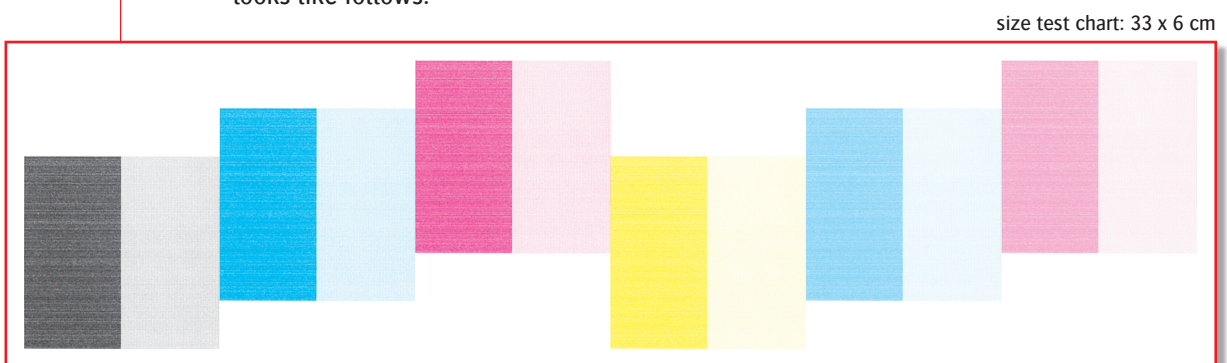
Make sure that a left margin (p.45) is set before you do a prime test. If you press the F1 function key, you will print the following test chart:



For every color a patch will be printed which contains 12 different blocks. Every block shows you a certain quality and resolution setting or a certain nozzles that are being fired.

2. Prime2 (F2).

Make sure that a left margin (p.45) is set before you do a prime test. The prime2 test looks like follows:



Two blocks are printed per color. The first block is a solid block showing you the physical resolution that is printed in one pass (360 x 360 dpi). The second block is built up out of lines of 360 dpi, so all the nozzles are firing at the same time with a certain interval.

3. Belt test (F4).

The belt test will allow you to check the positioning of the belt by letting it turn continuously. Pressing F1 will start the conveyor belt motor, F2 will stop the movement of the belt. Don't let the belt test run for more than 3 minutes to eliminate the risk of



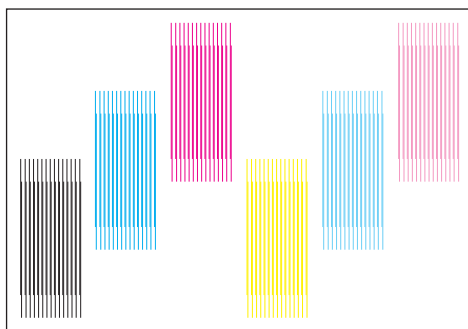
overheating the conveyor motor. Make sure you give a break of 1 minute before starting the next belt test.

- ▶ F1 : RUN
- ▶ F2 : STOP

4. Dir test (F5).

The direction test is a quick test to check the bi-directional alignment of your shuttle. It will print 15 lines per color from right to left and from left to right. Per block you will have to see 15 clear lines. If they start looking double and you can count 30 lines, the bi-directional setting is not correct. Adjusting the bi-directional alignment is discussed in Section B - 5.4.

The F5 function will print the bi-directional test file in 720 dpi.



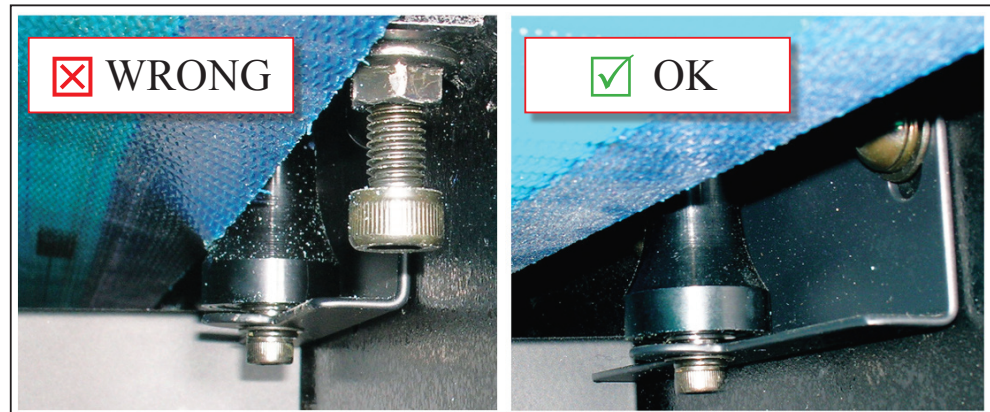
size test chart: 39 x 4 cm



II. Alignment of the conveyor belt.

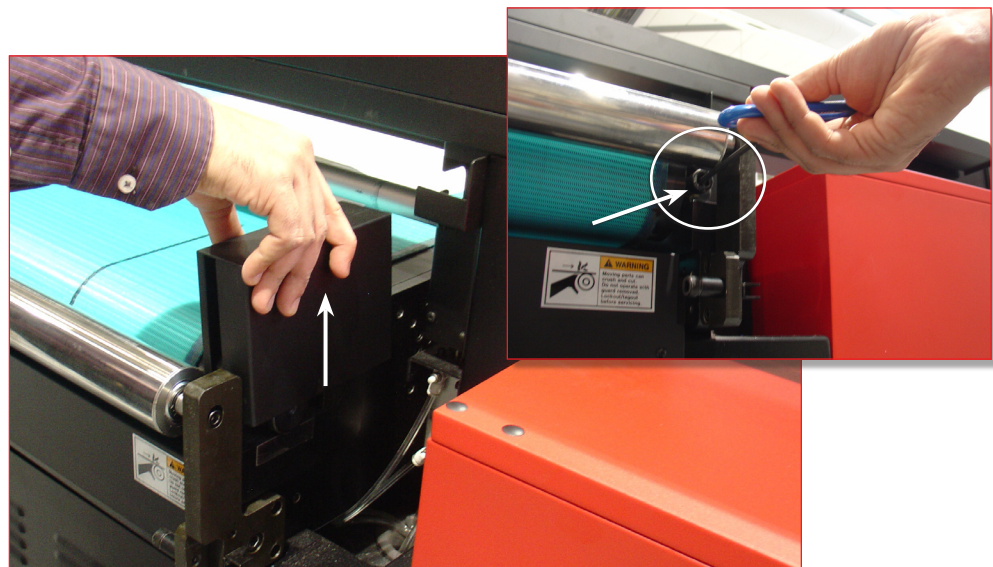
The woven conveyor belt is transported by a step-motor. It lies on top of a vacuum table with a honey grid structure. It is very important to have a perfect aligned conveyor belt. It should have a linear movement without any side deviations.

On the bottom of the vacuum table, you see a tool in the shape of an hour glass. If the conveyor belt touches this device, it should be realigned.



Procedure:

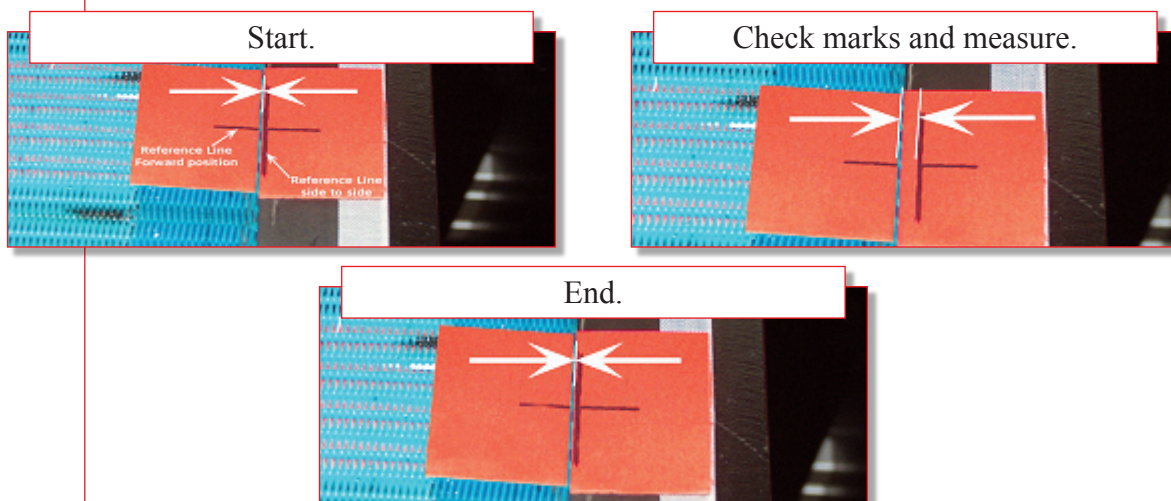
- ▶ Loosen the conveyor belt. Remove the metal covers on the backside (both left and right), completely unscrew left and right bolt.



- ▶ Position the conveyor belt:
 - ▶ The belt's joint need to be positioned in the middle underneath the printing table.
 - ▶ Measure the distance on the left/right side of the printing table; start vs. end of the conveyor belt. This measured distance should be equal, on front- as well as on rear-side of the engine.
- ▶ Tighten the conveyor belt: Screw left and right bolt, alternate between left and right bolt, with maximum 1 complete turn each at a time.



- ▶ Transport test:
 - » Mark belt vs. printing table.
 - » Move conveyor belt for at least 10 minutes.
 - » Check marks on belt and printing table and measure the difference.



- ▶ Adjust the belt tension:
 - » Loosen the conveyor belt completely.
 - » Re-Position the conveyor belt and use the same marks on the belt vs. the printing table.
 - » Tighten the conveyor belt, taking in account the measured difference. Adjust belt tension by the same amount as the measured difference.
 - » When the measured difference is smaller than 0,5cm: Enhance tension with the same amount on the side where belt was moving to.
 - » When the measured difference is higher than 0,5cm: Enhance tension with half of the measured difference on the side where belt was moving to and reduce the tension with half of the measured difference on the side where belt was moving from.
- ▶ Transport test
 - » Move conveyor belt for at least 10 minutes
 - » Check marks on belt and printing table
 - » If needed, adjust position of belt.
 - » The position of the belt should not move more than 2mm. Rotate the bolts at the REAR stand to CW or CCW to control the tension. Those small adjustments can be done while belt is moving.

Remark : The position of the conveyor belt can still move a little bit during daily production.

Always make sure, when printing "border less" that the belt is masked, so printing on the belt is reduced to a minimum. When you have printed onto the conveyor belt, try to remove the ink with some cleaning solution.

The amount of vacuum can become insufficient when the belt is completely printed. The ink will block the air channels in the woven structure of the belt. This also effects the condition of the vacuum table. The build-up of ink underneath the belt can cause loss of vacuum and head strikes.

You can order the conveyor belt as a spare part.



III. Maintenance Routines.

Before you start printing, you should perform a nozzle check to see if all nozzles are present and firing. After loading the media, follow the head gap procedure (P.37) so the head height is correctly set.

Check the condition of the print heads by performing a prime test. Press F1 in the main menu of the control panel (p.50). If one or more nozzles are missing, you will have to clean the heads with one of the following procedures:

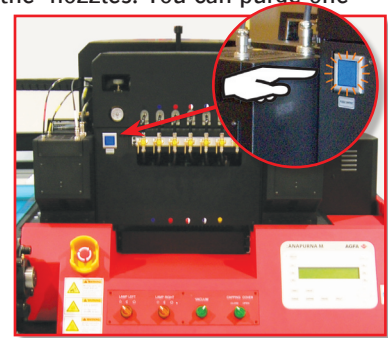
1. Purging, Flushing, Bleeding.

Do NOT use acetone to clean the print heads. It will damage the print heads unreparably !

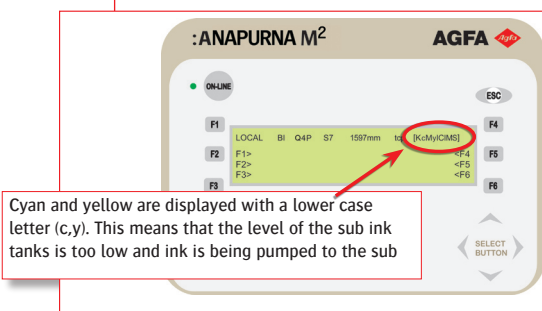
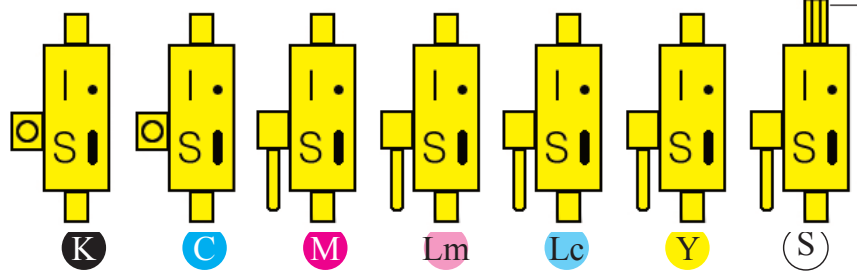
► Purge (using ink).

If you purge the print heads, you are going to apply air pressure in your sub ink tanks. By doing this, you will force ink through the nozzles. You can purge one or more heads at the same time.

Make sure that the valves of the print heads which you want to purge are set to "I". The other valves have to be switched to "S" (solution valve : "I"). Push the purge button to apply pressure. Use short intervals or one longer push.



The black and cyan print head will be purged when pressure is applied.



Cyan and yellow are displayed with a lower case letter (c,y). This means that the level of the sub ink tanks is too low and ink is being pumped to the sub

A quick purge is an impulsive purge (press and release the purge button very quick). You press the purge button no longer than one second.

With a long purge, you press the purge button for up to 3 seconds. This is done to ensure that there is enough ink in the print heads.

If you purge too long, the ink refill system will not be able to keep up. This may result in air being introduced in your system. You can check the condition of the sub ink tanks in the main



window of the control panel. On the right top of the panel, you can read out the different colors. If the color is mentioned with a capital letter, the sub ink tank is full. If it is a lower case letter, ink is being pumped to the sub ink tank. When you purged the heads with ink, wipe the heads with a fiber free cloth to remove the excess ink. Turn all the ink valves back into the "I" position and redo the prime test.

The refill system is protected with a timer. If the system has to pump too long, it will stop to prevent overflowing in case of a leak.

The control panel will give you a warning:

<<Pause System refill>>

Press the pause button to continue the refilling of the sub ink tanks.

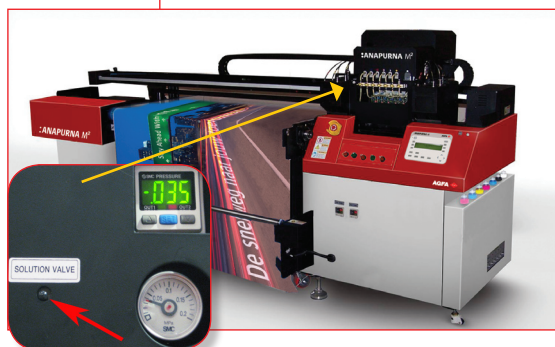
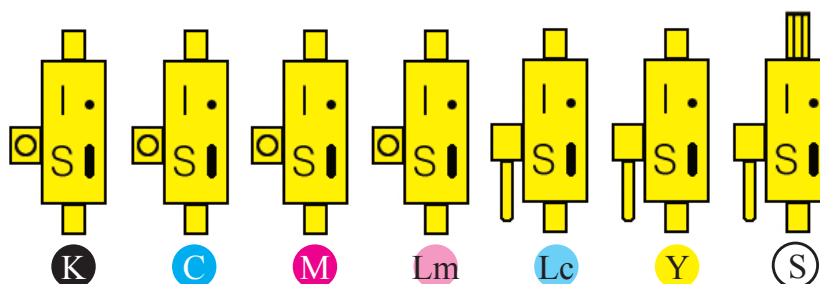


► **Flush (using solution).**

If purging the heads does not resolve the blocked nozzles, you can use the flushing procedure to treat the print heads with cleaning solution.

Switch the right valve to "S". This is the solution valve and solution liquid can now start running into the grey bar towards the ink valves. Switch the valves of the heads which have to be flushed to "S". The solution liquid can now run via the gray bar and the valve into the print heads.

The light cyan, yellow and solution valves are switch to "S".



On the left frontside of the shuttle, you can find the solution valve. By pressing this button, air pressure will be applied onto the solution sub ink tank and pressure will be build in the solution tank.

Open en Close the solution valve by switching it from "I" to "S" and back to "I". Use a fibre free cloth to clean the

heads by wiping them from back to front.

This will flush the heads with solution.

Refilling the flushed heads with ink again can be done with the purge procedure. Make sure that only the flushed heads will be purged, so switch all other valves to "S".

► **Bleed (negative pressure to -.000).**

Bleeding the print heads is performed

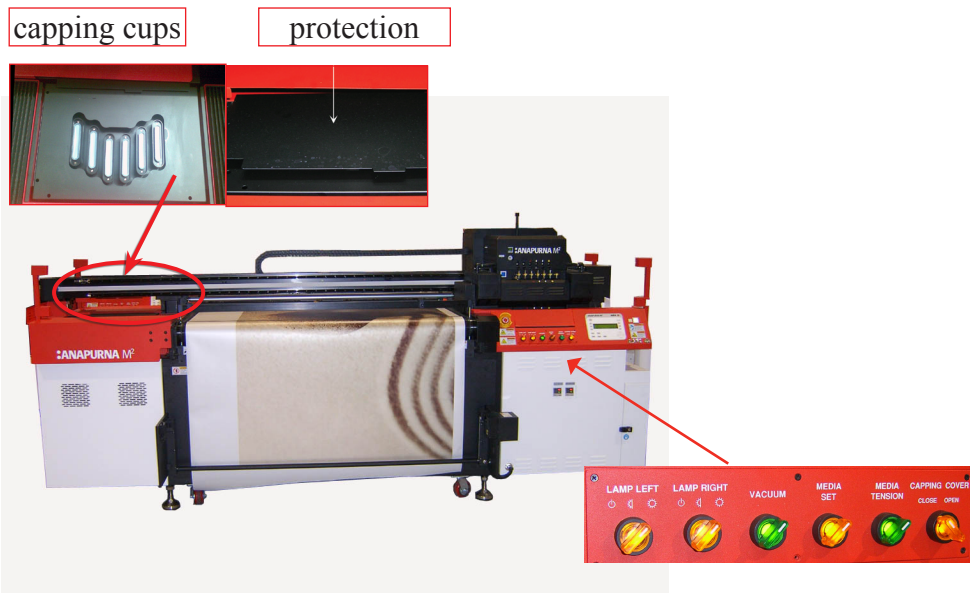
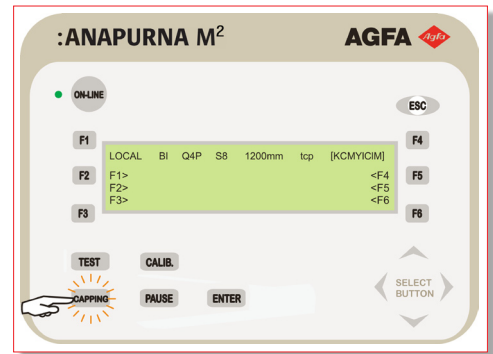
to get rid of any air in the ink system. You turn the negative pressure system to a value around -.010 (make sure that the home cover is open). The print heads will start leaking. Let them drip for several minutes, turn the negative pressure back to -.035 and perform a quick purge routine.

The head bleed can also be performed after a weekend or long stand still of the engine.



2. Capping.

By pressing the capping button, the shuttle will move to the left side of the printer. Make sure that the capping plate is open by turning the green switch on the control side. The shuttle will lower itself so the head base plate touches the capping station. The cups of the capping station will seal themselves on the print heads. The print heads are now shielded from dust and sunlight (UV radiation). This procedure can be performed on weekends and is required for long stand stills.



3. The ink circuit.

The inks in the :Anapurna M² are transported via a pumping mechanism through the different components of the ink circuit:

ink tank → pump → filter → energy chain → sub ink tank → 2 way-valve → print head

- ▶ The main ink tanks are located in the door on the right side of the printer. Every ink tank can contain 1,6 liter of ink and has a low level detection at 0,3 liter. When a low level is detected, the engine will not print the next job until the empty tank is refilled.



The main ink tanks can be refilled during printing. Open the door and refill the tanks, keeping the door in clean condition. You should only refill a color when the low level alarm goes off. Shaking the bottle is not necessary and you should pour the complete ink bottle in the tank.

Always pour the complete ink bottle in the ink tank.

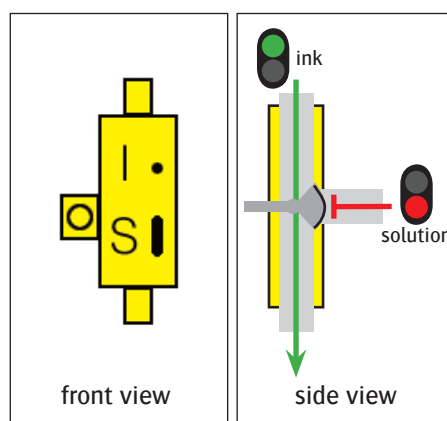
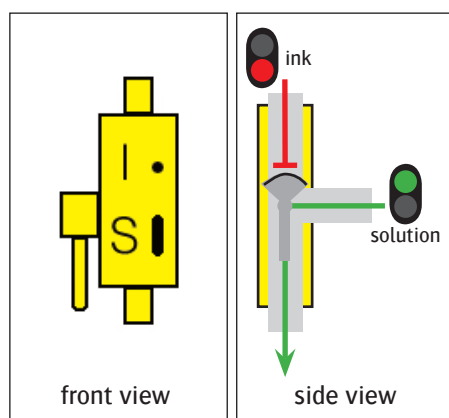




When the alarm goes off, you can check the ink level indicators on the refill panel which color is running empty. The top row lights are the ink level indicators.

- ▶ The inks are pumped via the ink pumps, the ink filters and the energy chain into the sub ink tanks. These sub ink tanks have a volume of 35 ml per color and are temperature controlled. You can read out the temperature of the sub ink tanks on the display on the right side of the printer
- ▶ .
- ▶ The temperature display has two values. The upper value (red) is the actual temperature measured in the sub ink tank. The second value is the requested value or the target temperature.
- ▶ The normal temperature setting for the sub ink tanks on the :Anapurna M² is 40°C while the temperature on the head base plate is set to 45°C.
- ▶ The inks will flow via a 2 way valve in the print heads. These valves will allow you to switch between ink or solution that has to run to the print head. They are used for cleaning the print heads or when you switch of the engine.

When the valve is in horizontal position ("I"), ink can flow through. Solution, which is coming from the right (solution bar) is stopped.



When the valve is in vertical position ("S"), solution can flow through. Ink, which is coming from the top is stopped.

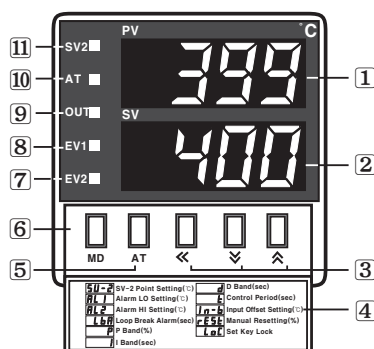
- ▶ The print heads are mounted on a base plate which is also temperature controlled. The ideal temperature for the head base plate of the :Anapurna M² is 45°C. A display on the right side of the printer (home position) shows you the actual and target values for the head base plate. You can change the target value as follows (cfr. sub ink temperature display).



4. Changing the temperature settings.

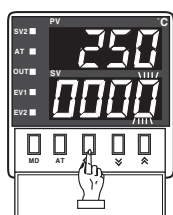
To change the target temperature, open the small lid on the display and use the setting controls:

Temperature settings are defined by Agfa HQ, they are fixed and should not be changed



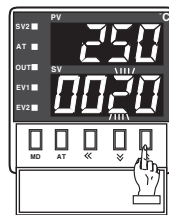
- ① PV : Processing value indicator(Red)
- ② SV : Setting value indicator(Green)
- ③ << >> : Key shifting the display
- ④ Information for operation mode
- ⑤ AT Key : The mode key to excite Auto tuning function
- ⑥ MD Key : Mode key
- ⑦ EV2 : Event 2 output signal lamp
- ⑧ EV1 : Event 1 output signal lamp
- ⑨ OUT : Output signal lamp
- ⑩ AT : The signal lamp flickers while Auto tuning is being executed
- ⑪ SV2 : SV2 lamp for SV2 operation

How to change the value:

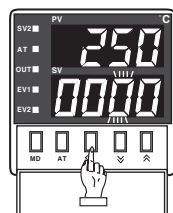


- ① In case of changing the set value at status of RUN, press << key.

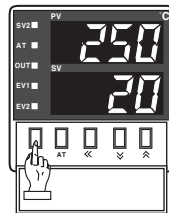
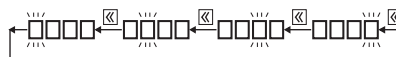
10⁰ digit will flash at SV.



- ③ Press >> or << at the flicker digit, and then change the set value.



- ② Press << key, and then the flicker will be shifted step by step.



- ④ Press [MD] key when the setting is completed. It will stop flickering, then return to RUN mode.

5. Print heads and negative pressure.

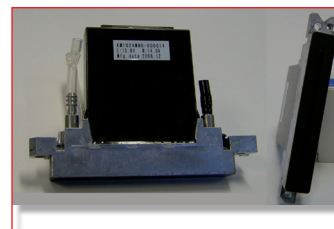
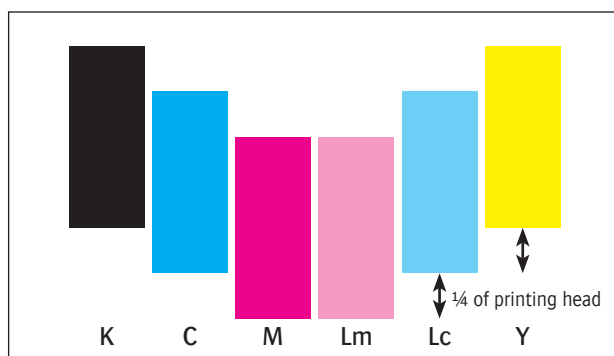
a. The print heads.

The :Anapurna M² is equipped with 6 Konica Minolta heads.

The KM1024 product range consists of type L, M, S, corresponding to unit drop volume capabilities of 50pl, 12 pl and 6pl respectively. Further more, the KM1024 is also divided into H type and N type, which stands for “with heater” and without “heater”.

The :Anapurna M² is using the “KM1024MN” heads (12pl without heater), suitable for high quality 720 dpi multi-pass printing. Every print head is made up of two nozzle rows, each containing 512 jets, resulting in a physical resolution of 360 dpi.

The different print heads are positioned on the head base plate in a V-shape, every color having its own designated place:

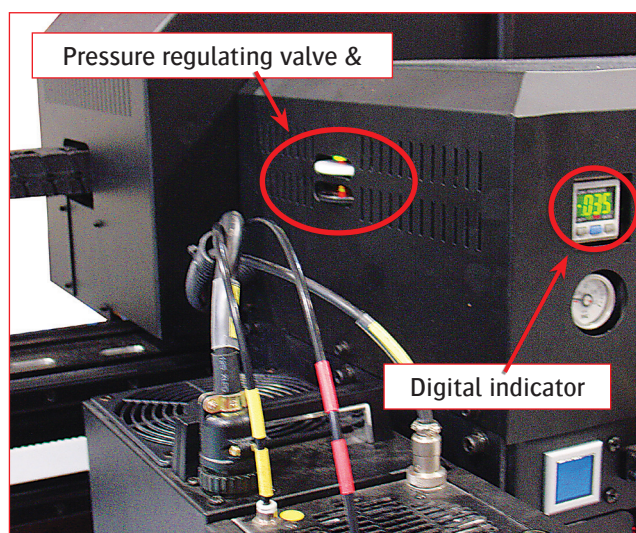


b. The negative pressure system.

The negative air pressure system is keeping the print heads from dripping. Without this system, the laws of gravity will make sure that the ink will flow out of the print heads and you will not be able to print.

The negative pressure is generated by a venturi system which converts positive pressure in negative pressure. The amount of pressure is controlled by the pressure regulating valve and is displayed on the pressure gauge. Both are located on the left side of the shuttle. The normal pressure setting for the :Anapurna M² is -.035.

A too high setting will cause one or more missing nozzles. The ink will be sucked in side the printhead. If the pressure is too low, gravity starts doing its job and ink will start dripping out of the heads, possible creating pooling. This is a condition of a pool of ink that has been formed underneath the head. If the head fires more ink, the drops will not be able to get through the pool causing failing nozzles.



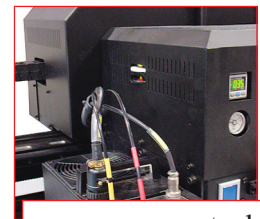


6. Ink waste.

Cleaning, purging and flushing your print heads always creates some waste: contaminated cloths and gloves, purged ink and solution,... Make sure that uncured UV ink waste is always treated as hazardous, chemical waste.

The ink and solution waste that is created during purging or flushing, ends up in a waste tank. This tank is located inside the left compartment of the printer. When the waste tank is almost full, the control panel will display a warning. You can drain it via the tap underneath the tank.

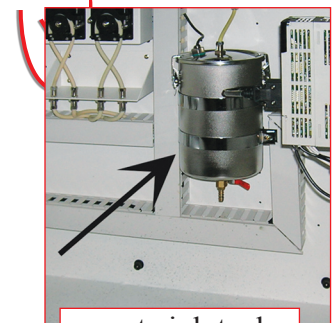
Make sure that the drained waste is processed as chemical waste. Don't mix the UV waste with solvent inks.



pressure control



right ink door



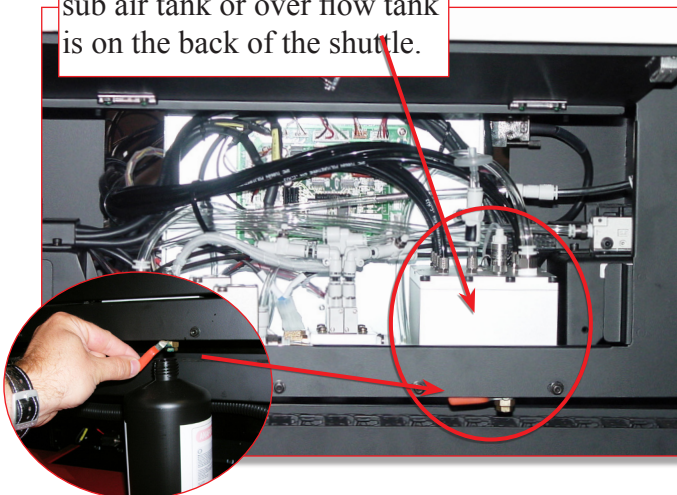
waste ink tank

7. Maintenance on Sub Air tank (Over Flow Tank).

The sub air tank is the buffer which will prevent that any ink will be sucked into the air system. It is important to make sure that this container is empty.

- ▶ Turn all the ink 2 way valves to 'S' position.
- ▶ Keep the Solution 2-way valve to 'I' position.

sub air tank or over flow tank is on the back of the shuttle.



- ▶ Drop the Negative Vacuum down to zero (with the negative vacuum gauge).
- ▶ Wear gloves, get an empty ink bottle and a rag.
- ▶ Go to the rear side of the carriage, place the rag under the Sub Air Tank.
- ▶ Open the rear carriage door (if required).
- ▶ Put the empty bottle under the drain valve (of Sub Air Tank)

- ▶ Open the (orange handle) drain valve on the Sub Air Tank and check if any ink comes out.
- ▶ Let all the ink flow out, remove the bottle, clean the drain valve with the rag and close the valve.
- ▶ Return to the front side of the carriage and turn the Negative Vacuum back to normal value (approx -.036).
- ▶ Turn all the ink 2-way valves back to 'I' position.
- ▶ Perform a Quick Purge.
- ▶ Clean the print heads with a lint free cloth (a gentle tap, no wiping).
- ▶ Perform a PRIME TEST to check if all print heads are working well.

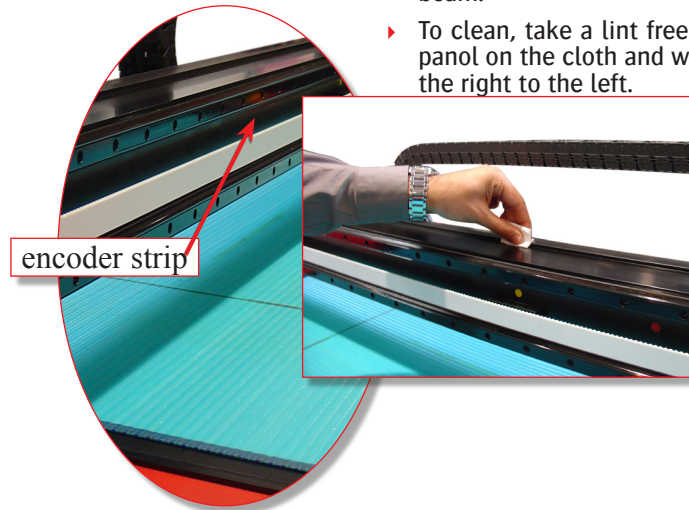


8. Cleaning the Encoder Strip.

The encoder strip is the part that defines the x-position of the carriage (position of the firing pulse). If the strip is dirty, wrong signals will be sent to the shuttle resulting in printing artefacts.

- ▶ The Encoder Strip is a transparent plastic strip located on top of the carriage beam.

- ▶ To clean, take a lint free cloth, put some isopropanol on the cloth and wipe the strip gently from the right to the left.

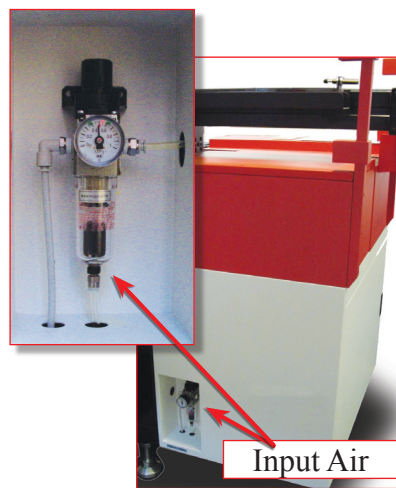


- ▶ To clean the strip on the Home Side, perform the Carriage Release (p.36) function to move the carriage away (to access the Encoder Strip).



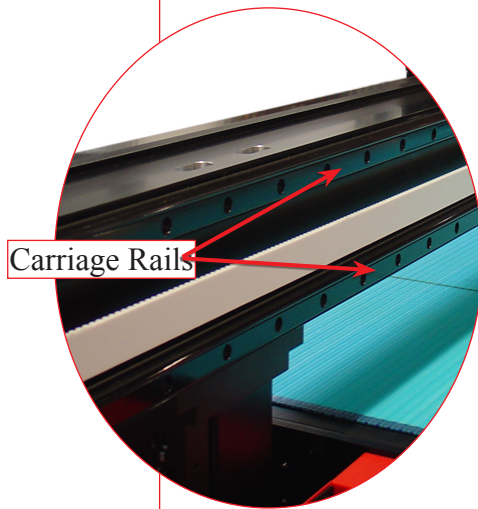
9. Maintenance on input Air Filter.

- ▶ Go to the rear right side of the engine.
- ▶ The input compressed hose goes into an Air Filter.
- ▶ There might be some moisture sitting on the bottom side of the Air Filter.
- ▶ Rotate the black screw at the bottom of the filter to release the moisture/water present in the Air Filter.
- ▶ Once drained, thighten the screw.

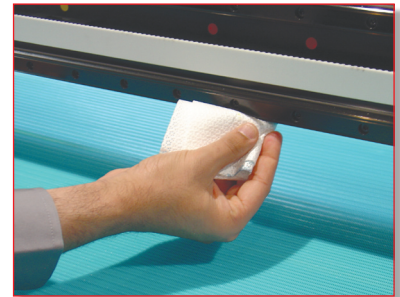




10. Lubricating the Carriage Rails.



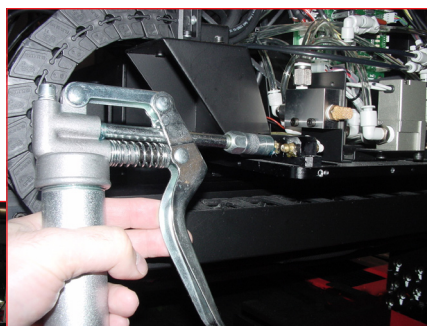
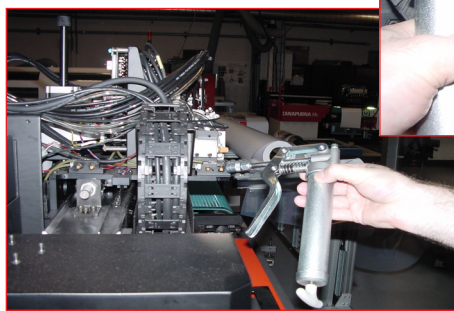
- ▶ The carriage moves on two rails.
- ▶ Dust settles on these rails which is then dragged onto the carriage bearings.
- ▶ For effective movement of the carriage, the operator should clean & lubricate the rails.
- ▶ Take a clean cloth, put some lubricating oil (3 in 1 machine oil or sewing machine oil) and clean both the rails.
- ▶ To clean the rails on the Home Side, use the Carriage Release function.
- ▶ Once the rails are free of any dust and grease build-up, apply very little amount of lubrication oil onto the rails with the help of a cloth.
- ▶ Make sure that the oil does not drip down (the applied quantity should be minimum).
- ▶ The operator needs to make sure that when he feels the rail with his finger, it should not be dry.
- ▶ To lubricate the rail on the Home Side, use the Carriage Release (p.36) function.
- ▶





11. Greasing the Carriage Bearing Blocks.

- ▶ Type of Grease: Lithium Based or Urea Based (JIS No.2).
- ▶ Application Quantity: 1.5 to 2.0 gms approx. per block.
- ▶ Perform 'Lubricating the Carriage Rails' procedures before applying grease to the bearings.
- ▶ Use a grease gun with a flexible extension to apply grease through the nipples on the Bearing Blocks.
- ▶ There are two nipples, one if for the X movement (Right / Left) of the carriage and the other is for the Y movement (Up / Down) of the carriage; both nipples need to be greased.
- ▶ Do not run the engine straight away, move the carriage manually a few times so that the grease can spread over the guide (moving the carriage manually by using the Carriage Release function).
- ▶





12. Checking the UV Lamps.

- ▶ UV lamps are consumable and have a certain life.
- ▶ Once the UV lamps reach their life, the operator will observe that the curing power of the lamps have gone down (resulting in poor adhesion to those media which were performing well before).
- ▶ Customer needs to order a set of UV lamps (Part # E26HX) so that when needed, these could be replaced.

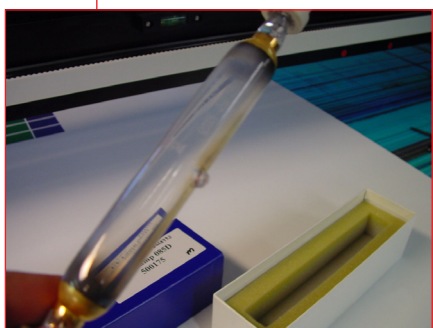
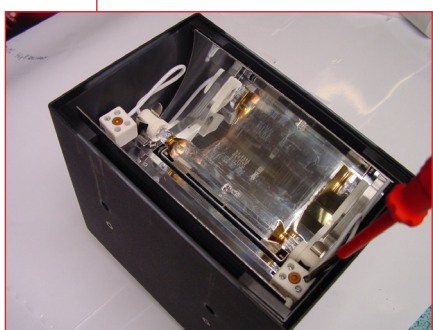
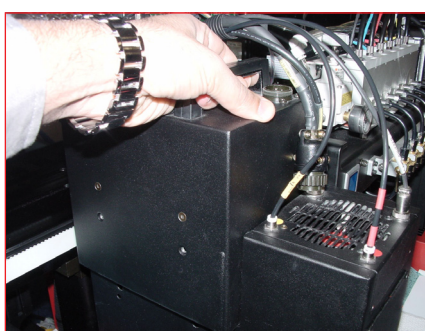
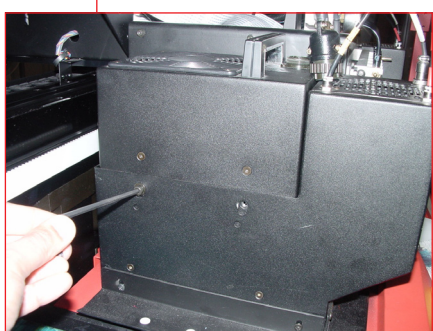
How to analyze that lamps are nearing their life ???

- ▶ Through printing:
For example, if the adhesion on Metamark 5 is not good (with lamps at Full Power, Carriage Speed 7, 8 Pass Bi Direction mode); then its fair to say that lamps need replacement.
- ▶ Visual Check:
For this purpose, you need to take the lamp assembly out (Refer to Changing the Lamps) and visually check the condition of the lamp (without touching the lamp surface); the glass of the lamp should be clear. If it has turned white of dark yellow / brown; the lamps need replacement.

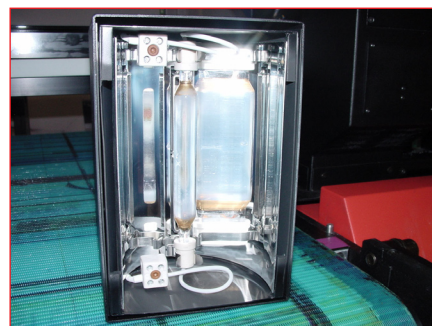


13. Replacing the UV Lamps

- ▶ Tools Required: 4 mm L –key, a small flat screw driver & cotton gloves.
- ▶ Parts Required: 2 x E26XH (UV Lamps for :Anapurna M²).
- ▶ Power the engine down (Power OFF by pushing in the Emergency Button).
- ▶ Make sure the lamps are not warm (let the lamps cool down).
- ▶ Remove the data connector going in the lamp assembly.
- ▶ Take the 2 L-key screws out (using the 4 mm L-key).
- ▶ Lift the lamp assembly out of the housing using the handle on the top of the lamp assembly.
- ▶ Tilt the lamp assembly and you will be able to access the lamp.
- ▶ Unscrew the 2 flat screws connecting the lamp wires to the



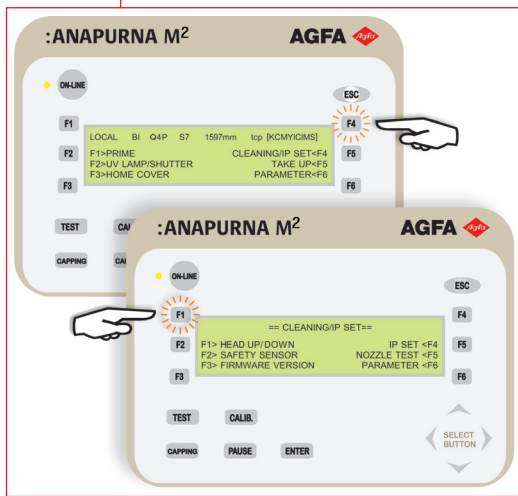
- connector (one on each side).
- ▶ Wear Cotton Gloves while handling the lamp.
 - ▶ Take the lamp out of the housing.
 - ▶ The new lamp comes with a isopropyl tissue; before putting the new lamp in, wipe / clean the lamp with the isopropyl tissue making sure there are no finger marks / grease marks left on the glass.
 - ▶ Do not touch the lamp glass while putting it in the housing; if you do, please clean the lamp glass again with the isopropyl tissue.
 - ▶ The bubble on the lamp glass should stay on the inner side (should not face the media while printing).
 - ▶ Put the wires back into the connectors and make sure they are secure.
 - ▶ Put the lamp assembly back into the carriage housing.
 - ▶ Reconnect the UV data cable on the top of the lamp assembly.
 - ▶ Turn the Power 'ON' & the engine is ready for printing.





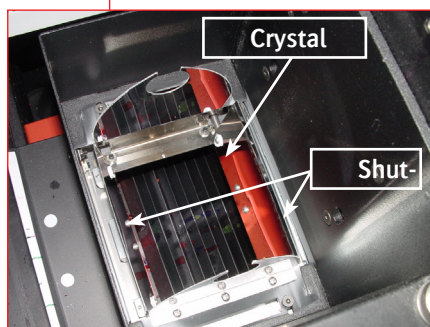
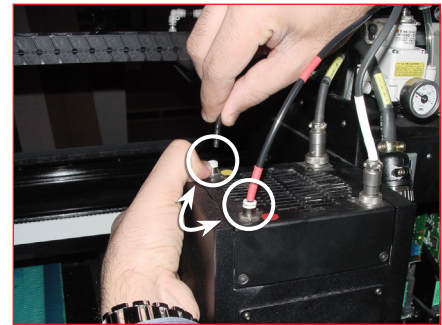
14. Cleaning the UV Lamp Crystal Glass.

- ▶ Turn the lamps OFF and wait till they cool down.
- ▶ Press ESC so that engine is in OFFLINE mode.



- ▶ Press F4 (Cleaning/ IP Set).
- ▶ Press F1 (Head UP/DOWN) : The carriage will move up (to the maximum possible position).
- ▶ Press the Emergency Button to power OFF the engine.
- ▶ Turn all the 2 way Ink Valves to 'S' Position; leave the Solution Valve to 'I' position.
- ▶ Take a clean rag, put some isopropyl on the rag and clean the glass under the lamp housing (you can access the glass as the carriage is at the top most position).
- ▶ Make sure the glass is clean, if not you might need to use a scraper very gently to take out any ink residue.
- ▶ To clean the glass from the inner side, take the lamp assembly out of the housing (as described in 3.13 Replacing the uv lamps).

- ▶ Observe: there are two pneumatic tubes going into the lamp housing at the top; one of them has a red sticker and the other has a yellow sticker (We will call them the Yellow Tube and the Red Tube).
- ▶ Take the yellow tube out of the connector by pressing the connector in and pulling the tube out.
- ▶ Also, take the red tube out and put it in place of the Yellow tube. Please be aware, when you take the Red tube out, the compressed air will start leaking – no need to worry, just insert the Red tube in place of Yellow Tube; keep the Yellow Tube hanging outside.
- ▶ The moment you put the Red Tube in, the shutters will open and you can access the glass from the top.
- ▶ Take a clean rag with some isopropyl and clean the glass from the inner side; making sure the glass is clean.



- ▶ Put the Red tube back to its position (the shutters will close), put the Yellow tube back to its position.
- ▶ Put the UV lamp assembly back in the housing : Put the data connector back on the UV lamp assembly and put the 4 mm screws back on.
- ▶ Switch back all the 2 way ink valves to 'I' position.
- ▶ Take the Emergency Switch out and turn the Engine ON; do some Quick Ink Purge.
- ▶ Follow the procedures to perform a Prime Test before you start printing.



15. Power Shut Down or Compressor Break-Down Procedures.

In an uneventful situation of power shut down or compressor break-down, please follow the following procedure:

a. Power Break Down (during printing or otherwise)

- ▶ Turn all the ink valves to 'S' position.
- ▶ Keep the Solution valve to 'I' position.
- ▶ Move the carriage very slowly towards the home position (manually).
- ▶ When the power is reinstated, power the engine ON and perform a solution 'flush' on all the print heads.
- ▶ Purge the ink, making sure all print heads have got rid of the solution.
- ▶ Follow the procedures to do a Prime Test before printing a job.

b. Compressor Break Down

- ▶ Make sure carriage is at home position.
- ▶ Turn all the ink valves to 'S' position.
- ▶ Keep the Solution valve to 'I' position.
- ▶ Push the Emergency Button to power the engine down.
- ▶ When compressor is up and running, turn the engine ON and perform a large ink purge.
- ▶ Follow the procedures to do a Prime Test before printing a job.



During printing when the compressed air pressure drops down (insufficient) the carriage will move towards the home position and the control panel will display an error message:

<<ERROR / AIR PRESSURE LOW>>



16. Bleeding the ink filters.

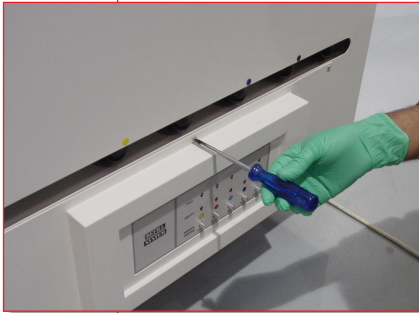
The print technology used on the Anapurna range of printers, uses a closed ink circuit that should be free of air. Even a small amount of air can cause printing artefacts, such as missing nozzles or leaking print heads.

Missing nozzles is mostly caused by air built up in the print heads. You can get rid of it by purging or bleeding the print heads.

If your ink circuit is already contaminated with air before the ink reaches the shuttle, the air build-up will happen in the ink filter. These filters are positioned in the ink door of the engine. Bleeding the ink filters will force the air out of the ink circuit.

procedure:

- ▶ Take the 6 screws of the refill system panel (on ink door) and remove the panel.
- ▶ Put it gently on the floor, making sure that the data cable is not disconnected and you can still reach the manual feeding buttons.
- ▶ Place some cleaning towels underneath the air filters.
- ▶ Wear rubber gloves.
- ▶ Loosen the white air cap on top of the filter
- ▶ Wait until ink is coming out. You can press the manual feeding button to speed up the process.
- ▶ Tighten the white air cap.
- ▶ Make sure that you clean up all the ink that came out.



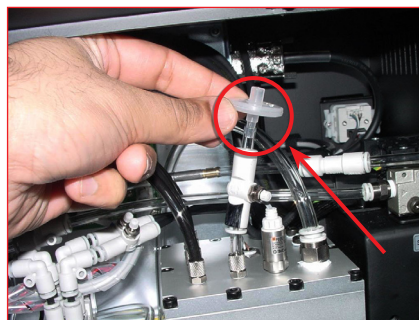


17. Replacing the air filters.

Clogged air filters can result in ink drop out during printing. The air filters can be found at two locations
(Part # : D2+7360103-001) :

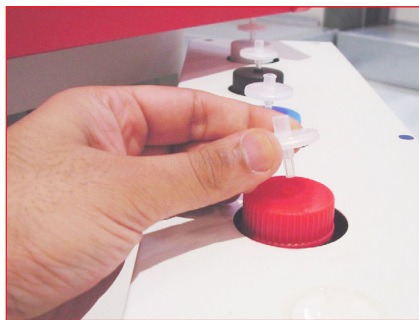
a. On top of sub air tank.

- ▶ The air filter on top of the sub air tank should be replaced after 6 months. The filter is plugged into the tube so you can just pull it off.



b. On top of main ink tanks.

- ▶ The air filters of the main ink tanks should be checked every 6 months and replaced if dirty and clogged.







IV. Periodic Maintenance.

1. Daily Maintenance.

- ▶ General cleaning of the printing area (Safety).



- ▶ Dusting the :Anapurna, making sure its clean (general cleaning).
- ▶ Clean the Capping Station

- ▶ Clean the Home Side (using Carriage Release function).

Switch Off the system

Press [CALIB] to enter the Calibration menu and

Press [F2] to unlock the carriage. Now it is set free to be moved.

After cleaning, Press [F1] to reposition the carriage to its home position.

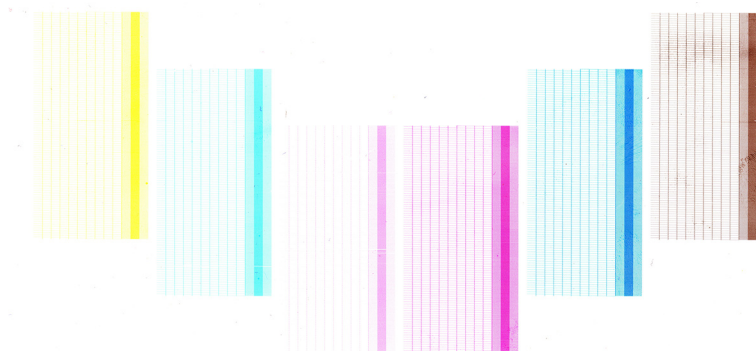


Tip :

use a moistened cloth to clean the :Anapurna casing
use Isopropyl Alcohol for more aggressive cleaning

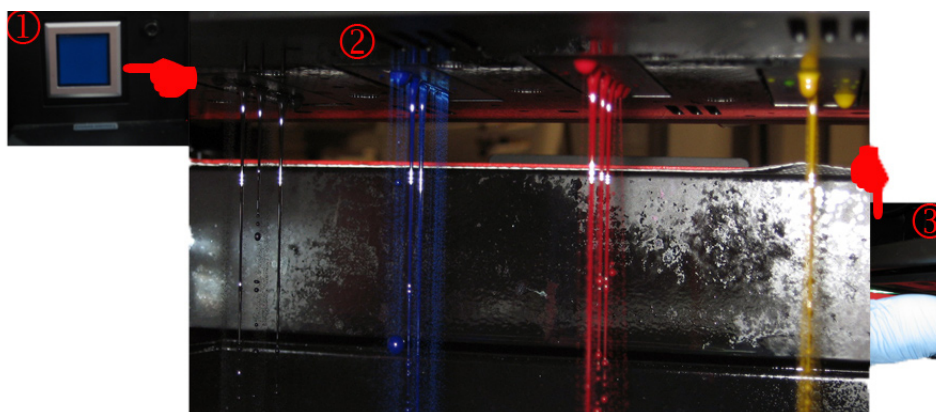


- ▶ Check print heads by doing a Prime Test (F1 from Control Panel) [p.50]



In case of missing nozzles, the heads must be cleaned

- ▶ Cleaning the heads.
 - » Purge (intermittent) and clean the print heads with lint free cloth
 - » Close the all ink taps except the one for the color that has missing nozzles
Press the 'Purge' button shortly
Wipe the head with a dust free cloth in a gentle move from back to front
 - » Reopen the taps and check with a prime test
 - » If necessary, repeat the above steps till all nozzles are open.]



- ▶ It is advised to do a Prime test at the end of the day to check Print heads.



2. Weekly Maintenance.

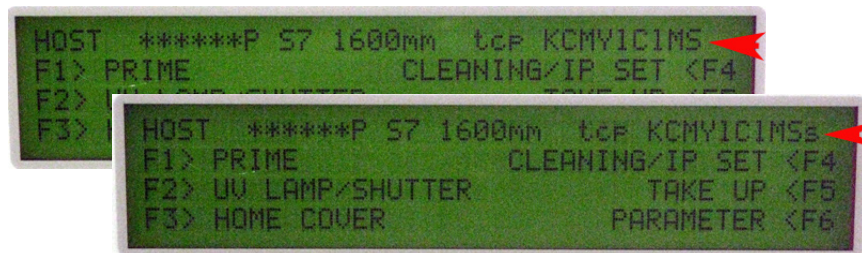
a. Perform Daily maintenance checks.

b. Perform a ' Head Flush' on all the print heads.

- ▶ Open the Home Cover.
- ▶ Switch the 2-way ink valve for Black to 'S' position.
- ▶ Push the Solution Valve Switch, to build pressure in the cleaning solution tank.



- ▶ Open Solution Valve for 2 seconds (position "S") to flush the Black head with solution.
Close the solution Valve again. (position "I")
Check on the Display if the solution tank is refilled.
A small "s" means that the Solution is being filled.
A Capital "S" means that the Solution is filled
Wait for the "S" before opening the solution valve again.

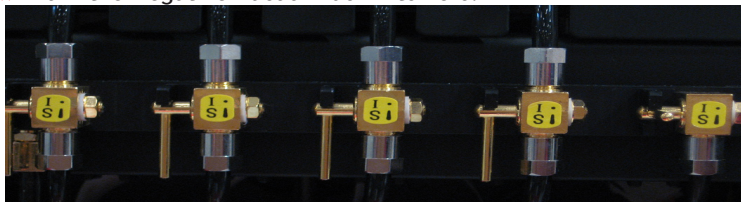


- Wait for the "S" before opening the valve again.
- ▶ repeat this open - close action on the solution valve a few times till the head only leaks Solution.
- ▶ Switch the 2-way ink valves for Black back to 'I' position.
- ▶ Repeat this procedure head by head from left to right.
When pushing the Solution Valve Switch again check on the control panel the status of Solution



c. Check the sub air tank (over flow tank) for any ink [p.61].

- » Turn all the Ink Valves to 'S' position.
- » Keep the Cleaning Valve to 'I' position.
- » Turn the Negative Vacuum down to zero.



- » Reset display if necessary by pressing the 2 grey buttons for 3 seconds
- » Clear the sub air tank from any ink



- » Open the valve on the back of the shuttle and capture the ink in a plastic bottle.

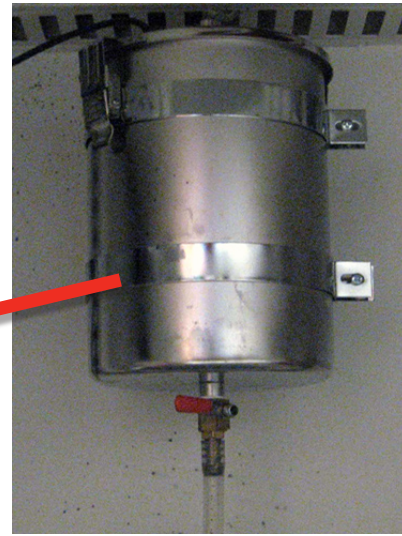


Tip : Verify that the valve is not jammed by dried ink particles
use a pin or paperclips to free the valve outlet



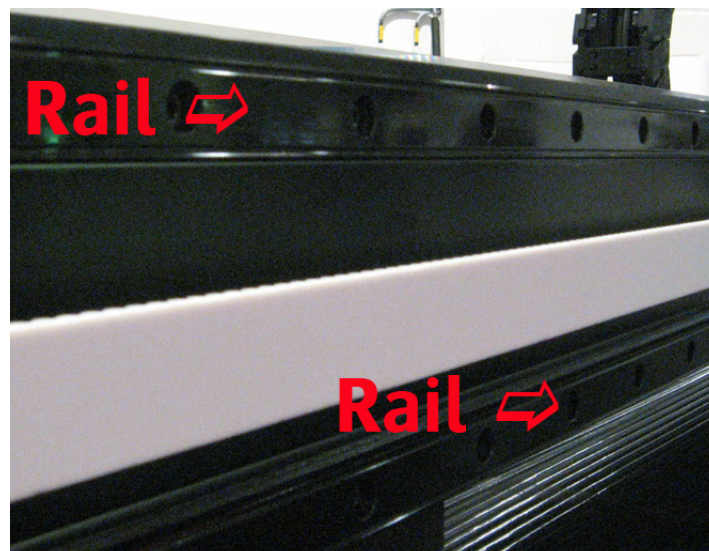
d. Drain the compressor (make sure there is no water in the tank)

- e. Drain the Air Filter for any moisture (on the :Anapurna Engine) [p.63].
- f. Check and empty the Waste Tank (:Anapurna Engine) [p.60].



- g. Clean the Carriage Rails using a cloth with some lubrication oil [p.64].
- » Make sure the oil does not drip down on the belt.
 - » You can use '3 in 1' lubrication oil or 'sewing machine' oil.
 - » Use 'Carriage Release' function to clean the rails on the Home Side area

Press [CALIB] to enter the Calibration menu and
Press [F2] to unlock the carriage. Now it is set free to be moved.
After cleaning, Press [F1] to reposition the carriage to its home position





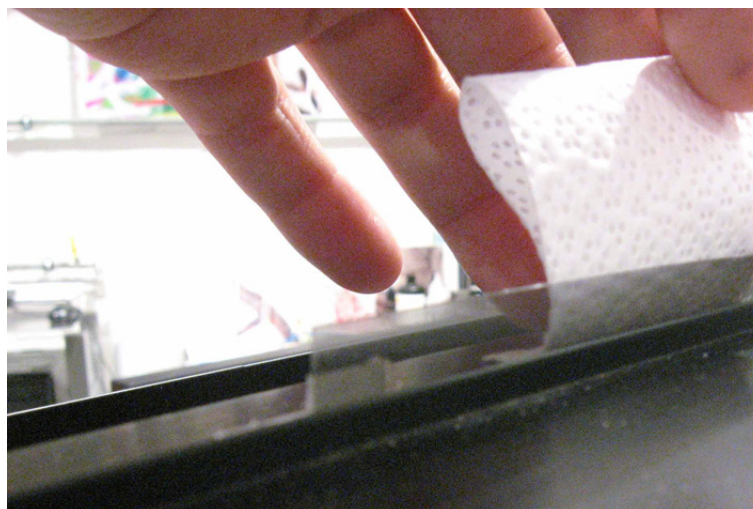
- h. Clean the Encoder Strip with a clean lint free cloth [p.62].
- ▶ Preferably use a dry lint free cloth. If some solvent is necessary, only use isopropyl alcohol.
 - ▶ Do not use Cleaning Solution or any Solvents.
 - ▶ Use 'Carriage Release' function to clean the Encoder Strip on the Home position area

Switch Off the system

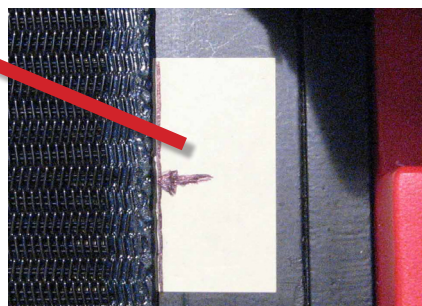
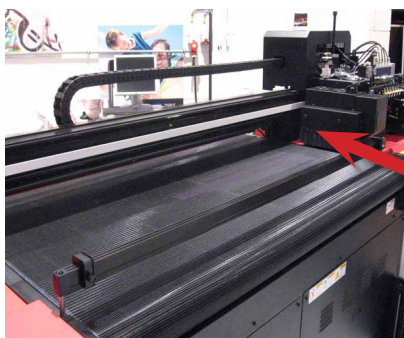
Press [CALIB] to enter the Calibration menu and

Press [F2] to unlock the carriage. Now it is set free to be moved.

After cleaning, Press [F1] to reposition the carriage to its home position



- i. Check Conveyor Belt for alignment (running a Belt Test) & adjust if required
- ▶ Press [ESC] to go Offline
In Menu [TEST] press [F4] Belt Test
Use [F1] and [F4] to start the belt motor
Check for abnormal belt shifting.



- j. Check for Conveyor Belt surface (prints on the surface resulting in poor vacuum and ink build up on the belt surface).
If the belt is too contaminated, it should be replaced

REMARK : Follow the Restart procedure to prepare the engine for printing.



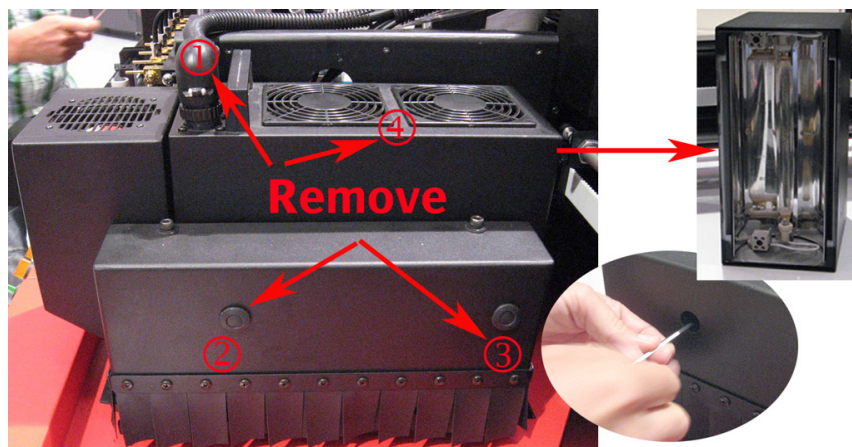
3. Monthly Maintenance.

- ▶ Perform Daily & Weekly maintenance checks.
- ▶ Grease the Carriage Bearings [p.65].
 - ▶▶ Type of Grease: Lithium Based (JIS No.2) or Urea Based (JIS No. 2).
 - ▶▶ Quantity : 1.5 – 2.0 gms for each Bearing block.

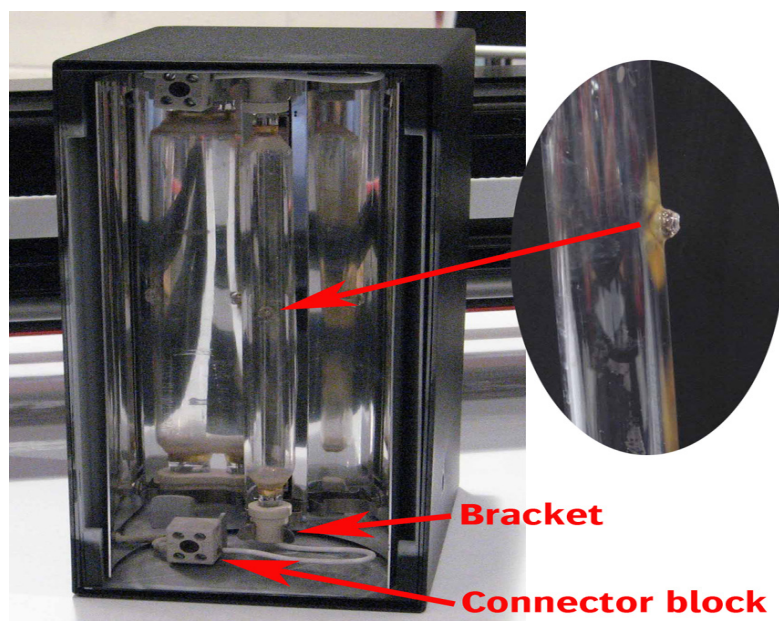


4. Six Monthly Maintenance.

- ▶ Perform Daily, Weekly & Monthly maintenance checks.
- ▶ Check the conditions of UV Lamps & replace if necessary.
Replacement is performed by operator.
Part # for UV lamps : E90DY (Qty : 02).



- ▶ UV lamp replacement procedure
 - Remove the lamp house from the shuttle.
 - » Remove the rubber caps
 - » Loosen the 2 screws with an Allen key (xxx)
 - » Disconnect the power connector from the lamp house.
 - » Gently lift the out UV lamp house.



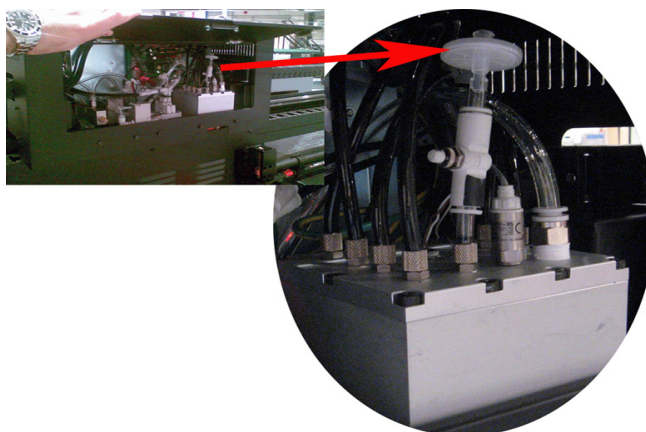
- 1 - Turn the UV lamp box upside down.
- 2 - Unscrew the two wires out of the connector blocs.
- 3 - Lift the UV lamp out of the brackets without touching.
- 4 - Take the new UV lamp out of the foil.
- 5 - When placing the lamp , keep the bulb pointed to the reflector.
- **CAUTION:** Do not touch the glass part of the UV lamp with your bare hands.
Wear gloves when necessary.
If residue of your hands gets on the glass, the lifetime of the UV lamp will be reduced significantly.



- ▶ Replace the Air Filters [p.71]
 - ▶▶ On top of the Main Ink Tanks.



- ▶▶ On top of the Sub Air Tank (Air Tank).





5. Shutdown Maintenance Procedures.

a. Rules and Reasons

Rule : AIR pressure must be available at all times.
The air pressure mechanism is necessary to avoid:
Dripping of heads
Unwanted color mixing in the ink provision mechanism.

For this reason we have foreseen the following situations.

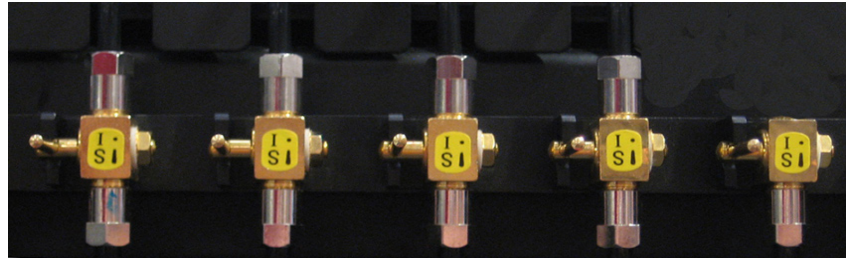
- ▶ Air Pressure always available
 - » Overnight situation
Use "Daily shut down Procedure
 - » For a period longer than 3 nights
Use the "Long stand still procedure.
- ▶ Air pressure is switched Off overnight
This situation should be AVOIDED at all times.
 - » When possible risk of Air Pressure loss
Use the "Long stand still procedure.



b. Daily Shut Down Procedure

Air pressure is available at all times.

- ▶ The carriage is at the Home Position (after printing).
 - ▶▶ It is better to check if all the print heads are in good shape (by doing a Prime Test).
- ▶ Turn the Lamps 'OFF'.
- ▶ Let the Lamps cool down (wait for Lamp Fans to go off).
- ▶ In a normal overnight situation, the compressor has to stay "On" 24 hres/7 days
 - ▶▶ Keep the Ink valve levers on "I"
 - ▶▶ Keep the Solution valve lever on "I"



- ▶ Push the Emergency Button 'IN'; the engine will now be switched off
- ▶ In order to cut the power completely, switch off the "Main Power" switch at the rear of the engine.



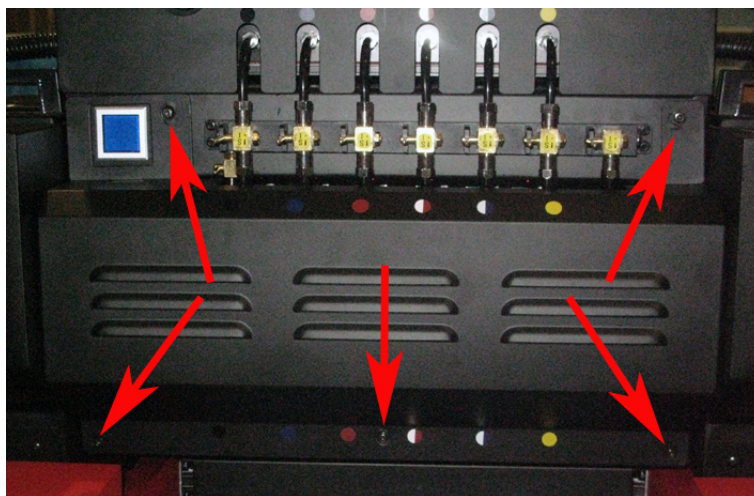
- ▶ Make sure the engine gets uninterrupted compressed air supply throughout the night, otherwise follow the "Long Stand Still" shut down procedure.



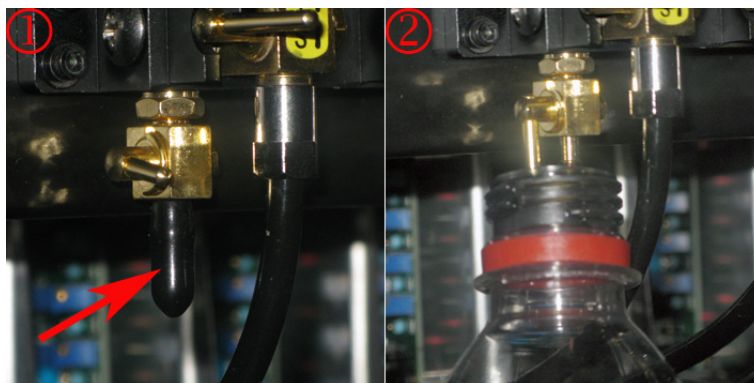
c. Long Stand Still Shut Down Maintenance Procedure

Negative air under pressure is **NOT** available at all times or will be switched **OFF**.

- ▶ The carriage is at the Home Position (after printing).
 - ▶ It is better to check if all the print heads are in good shape (by doing a Prime Test).
- ▶ Turn the Lamps 'OFF'.
- ▶ Let the Lamps cool down (wait for Lamp Fans to go off).
- ▶ Make sure that there is plenty of Cleaning Solution in the Main Tank and an extra 1 liter bottle in stock.
- ▶ Drain Solution Bar with cleaning solution.



- ▶ Remove the Front Panel (5 screws).
- ▶ Remove the black tube-end from the mini-valve (1) and place an empty bottle (2) under it.



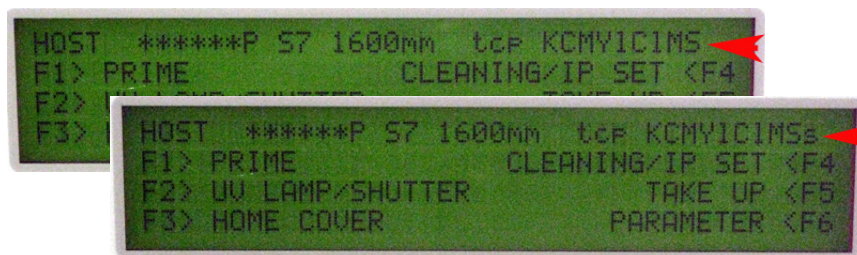
- ▶ Open the mini valve and press the Solution Button until clear clean solution will come out the mini-valve.
- ▶ Close the mini-valve, remove the bottle and re-install all the parts



- » The Print heads must be flushed with Solution
NOTE : never use solvent or detergent (e.g. Acetone, Isopropyl, etc)
- » First clean the Black head by moving the Black 2-way Ink Valve on "S"
- » Push the Solution Valve Switch, to build pressure in the cleaning solution tank.



- » Open Solution Valve for 2 seconds (position "S") to flush the Black head with solution.
 Close the solution Valve again. (position "I")
 Check on the Display if the solution tank is refilled.
 A small "s" means that the Solution is being filled.
 A Capital "S" means that the Solution is filled
 Wait for the "S" before opening the solution valve again.
- » Then repeat this procedure head by head from left to right.
 When pushing the Solution Valve Switch again check on the control panel the status of Solution

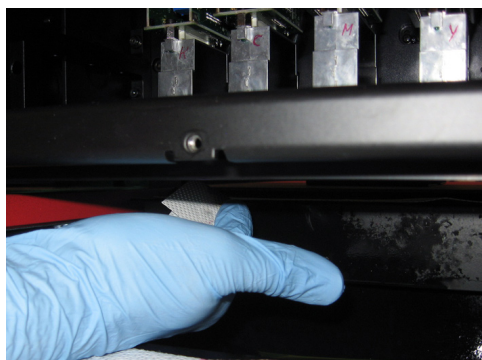


NOTE: Flushing with an empty sub tank will introduce air into the circuit.

- » Once all the heads have been cleaned,
 flush again cleaning solution through all the heads together until you can see only Cleaning Solution coming out from the heads.



- ▶ Switch the 2-way ink valves for solution back to “I” position



- ▶ Clean the residue of the cleaning solution on the print heads (wipe gently from back to front using a lint free cloth
- ▶ Clean the base plate.
- ▶ Turn the Vacuum Gauge to zero.

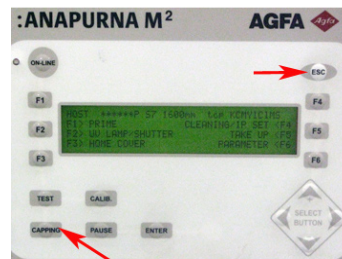


- ▶ Repeat this procedure after 2 hrs.
- ▶ And repeat this procedure again after 12 hrs.
- ▶ Move the shuttle to Capping Station:
NOTE: Clean first all the cups of the capping station with a clean white cloth. Make sure it is dry and free from dust and particles.
 - ▶ Open the cover of the capping station moving the Capping Cover Switch to “OPEN”.





- ▶ On the control panel press “ESC” to go Off-Line and than press “Capping Station” to move the shuttle to the capping station.



- ▶ Push the Red Emergency Button to switch off the engine
- ▶ Turn the Power Switch 'OFF' (rear side of the :Anapurna) to cut the power completely



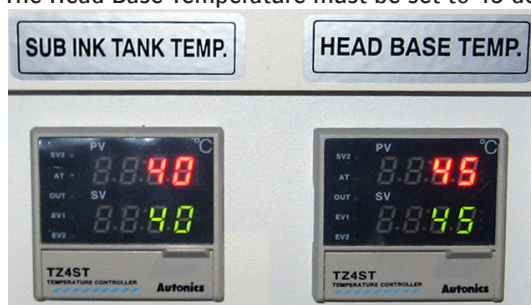
- ▶ Turn the Power Switch 'OFF' (from rear side of the :Anapurna).
- ▶ Turn the Mains of the premises 'OFF'.
- ▶ Turn the Compressor & Drier 'OFF'.

NOTE: This procedure has to be followed to avoid:

- ▶ Ink contamination inside the 2-way valves and the Solution Bar. This can cause color pollution resulting in wrong colors

d. Start Up Procedure after a Daily shut down

- ▶ Clear the table of the :Anapurna Engine.
- ▶ Check if the Mains are ON (electrical circuit at the premises).
- ▶ Turn the Main power Switch 'ON' from the :Anapurna Engine (Rear Side - Left).
- ▶ Make sure that the Emergency Switches are 'OUT'.
- ▶ Push the ON/OFF Switch; the engine will start booting up
 - ▶▶ At this moment, the carriage will start moving up. The carriage will then move towards the Home Side & move down
If the Safety Sensors were not activated; you will get a message on the Control Panel informing that 'The Safety is OFF' (the safety sensors are OFF). You will have two options, Press F2 & the sensors will stay OFF or Press F5 & the Sensors will activate.
 - ▶▶ Press F5 (the sensors will get activated) & the carriage will start moving up. The carriage will then move towards the Home Side & move down.
- ▶▶ **!!! Agfa recommends that Safety Sensors should stay 'ON' !!!**
- ▶ After the boot up, the engine will go into 'OFF-LINE' Mode.
- ▶ Press F3 to push the Home Cover in.
- ▶ Clean the Capping Station (if required) & close the Capping Cover.
- ▶ Check:
 - ▶▶ Wait for the system to warm up
The Sub Ink Tank temperature must be set to 40 degrees Celcius.
The Head Base Temperature must be set to 45 degrees Celcius.



- ▶▶ Turn the vacuum gauge to restore set the under pressure Vacuum to -0.35

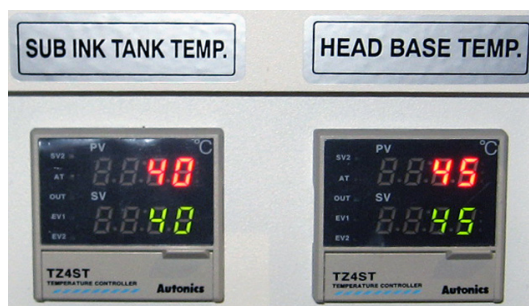


- ▶ Perform a Head Gap
- ▶ Perform a Prime to check the nozzles
- ▶ In case of a missing nozzle,
 - ▶▶ Put the valves on Position "S" except for the head with the missing nozzle, leave the solution valve to "I"
 - ▶▶ Purge the head by pressing the "purge button" pulsatory.
 - ▶▶ Put all the valves back to position "I"
 - ▶▶ Clean the head with a lint free cloth.
Wipe gently from back to front



e. Start up Procedure after a long stand still.

- ▶ Turn the compressor ON. Wait for the compressor tank to fill up and compressor motor to cut-off.
- ▶ Turn the Air Drier ON (Air drier is used to take the moisture out of the compressed air).
- ▶ Check the input air pressure on the rear right side of the engine (the gauge should read 0.5 MPa/5 Bar/73 PSI).
- ▶ Clear the table of the :Anapurna Engine.
- ▶ Check if the Mains are ON (electrical circuit at the premises).
- ▶ Turn the Main power Switch 'ON' from the :Anapurna Engine (Rear Side - Left).
- ▶ Make sure that the Emergency Switches are 'OUT'.
- ▶ Push the ON/OFF Switch; the engine will start booting up
 - ▶▶ At this moment, the carriage will start moving up. The carriage will then move towards the Home Side & move down
If the Safety Sensors were not activated; you will get a message on the Control Panel informing that 'The Safety is OFF' (the safety sensors are OFF). You will have two options, Press F2 & the sensors will stay OFF or Press F5 & the Sensors will activate.
 - ▶▶ Press F5 (the sensors will get activated) & the carriage will start moving up. The carriage will then move towards the Home Side & move down.
!!! Agfa recommends that Safety Sensors should stay 'ON' !!!
- ▶ After the boot up, the engine will go into 'OFF-LINE' Mode.
- ▶ Press F3 to push the Home Cover in.
- ▶ Clean the Capping Station (if required) & close the Capping Cover.
- ▶ Check:
 - ▶▶ Wait for the system to warm up
The Sub Ink Tank temperature must be set to 40 degrees Celcius.
The Head Base Temperature must be set to 45 degrees Celcius.
 - ▶▶ Turn the vacuum gauge to restore set the under pressure Vacuum



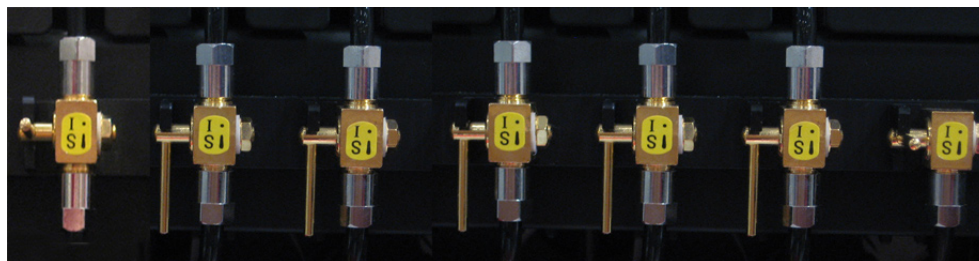
to -0.35



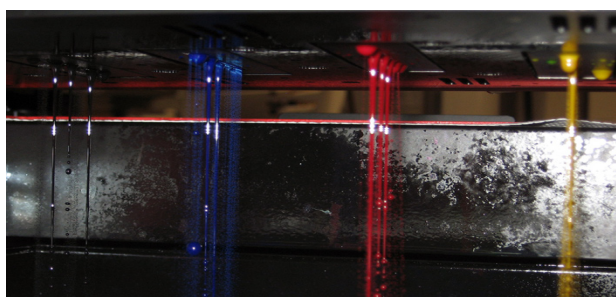
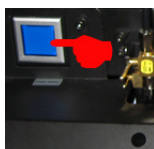
- ▶ With all the 2-way valves on "S" flush all the heads with Cleaning Solution.



- ▶ Switch the 2-way ink valve for Black to 'I' position, leave all the other colors 2-way valves on "S" and the solution valve to 'I'.



- ▶ Perform a Purge of the Black head
Pulsate the "Purge" button (with short intervals) till ink is coming out of the print heads.
Take care that the Sub ink tank has enough time to be refilled.
Check the Color indication on the display.
Capital "K" means that tank is fill, small "k" means refilling.
Do not purge while Sub Ink Tank is being refilled.



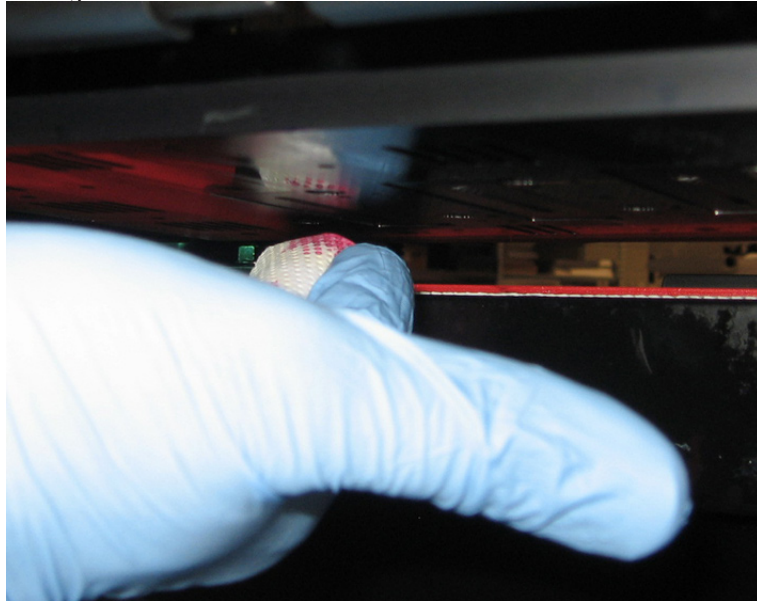
- ▶ Repeat this purge for all the other heads from left to right.
- ▶ Turn the Vacuum Gauge to zero and leave the ink dripping for about 3 minutes:



Tip : To reset the Display to zero
Press the left and the right button together for about 2 seconds



- ▶ Restore the Vacuum Gauge settings.
Set to -0.35
- ▶ Perform another ink purge.
- ▶ Take a new lint free cloth and clean the ink residue from the print heads
Wear gloves.



Gently clean wipe from back to front.

REMARK : Always use a new lint free cloth
Never re-use a used cloth.



f. Making the engine ready for Printing.

- ▶ Put some media (preferably banner media) on the bed and turn the Vacuum ON (make sure the media sits flat on the bed).
- ▶ Do a Head Gap:
 - ▶▶ Press 'Calib' and then press F6 (for Head Gap).
 - ▶▶ Press the Left Cursor Key (the carriage will move UP and then left wards). Press 1 or 2 times the left arrow to position the carriage above your media.
 - ▶▶ Press Enter 3 times (with intervals) to complete the Head Gap
When Enter is pressed the first time, do a visual check if the Head Gap Sensor has come down.
Also make sure that the media is under the Head Gap Sensor (otherwise the media height will be recorded incorrectly).
 - ▶▶ Press ESC to go back to OFF LINE MODE screen.
- ▶ Check & adjust the Parameters (margins):
 - ▶▶ Put the Media Set Bar to down position.
 - ▶▶ Press F6 (for Parameters).
 - ▶▶ Go down to 'Margins' & put in the correct values (specially for Left Margin)
 - ▶▶ Also adjust N-point to 'N' & Top Margin to 'zero'
 - ▶▶ Press 'Enter' & move the Media Set Bar back to 'up' position

Turn the Lamps 'ON' (may be, to Half Strength).

- ▶ Press the F1 to do a Prime Test (Nozzle Test).
 - ▶▶ If all the nozzles look good, you are ready for printing.
 - ▶▶ If not, you need to do some more purges (Ink Purge) making sure that Home Cover is in.
 - ▶▶ If the print heads do not come good with Ink Purges, you might have to clean the print heads with Cleaning Solution (using the Solution Valve button on the rear side of the carriage).
 - For this, you need to turn the Solution 2-way valve to 'S' position
 - Turn the Ink 2-way valve to 'S' position
 - Press the Solution Valve button (rear side)
 - Purge Ink after this procedure





E. BEST PRACTISES

I. How to place Roll media.

1. The paper feed mechanism

The roll to roll feed mechanism contains 3 major parts

a. Un-winder section on the back of the engine

- ▶ Un-winder roller that carries the roll media.
- ▶ Rubber roll bar. (motor driven)
- ▶ Balance roller



a. Media Table and vacuum transport belt

- ▶ Silver Media Guide Roller
- ▶ Media transport Belt
- ▶ Media Tension Bar

a. Winder section on the front of the engine

- ▶ Balance roller
- ▶ Winder roller for the printed media.



- ▶ **REMARK:** A correct registration and feed result will be obtained when the rollers are aligned properly by the technician.



2. Media Placement Procedure

The media should be aligned to the center of the machine in order to get the optimum result

a. Some figures:

- ▶ Un-winder roller length = 1735mm
- ▶ Flange width : 35 mm
- ▶ Media width :
example MetaMark Roll width = 1520 mm

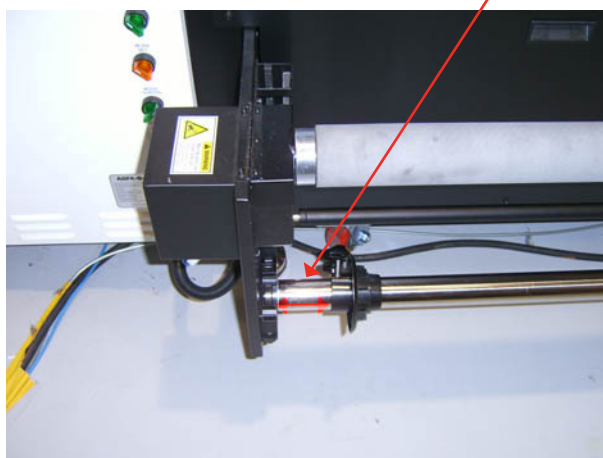
b. Procedure:

c. Prepare the Un-winder mechanism

- ▶ Put the left flange on the un-winder roller on the following distance from the left edge (shuttle home position when standing behind the :Anapurna).
Distance = (Un-winder roller length / 2) – (roll media width / 2) – Flange width

e.g. $1735/2 - 1520/2 - 35 = 72.5$ mm

- ▶ Fix the left flange on the un-winder roller ± 72.5 mm from the left.



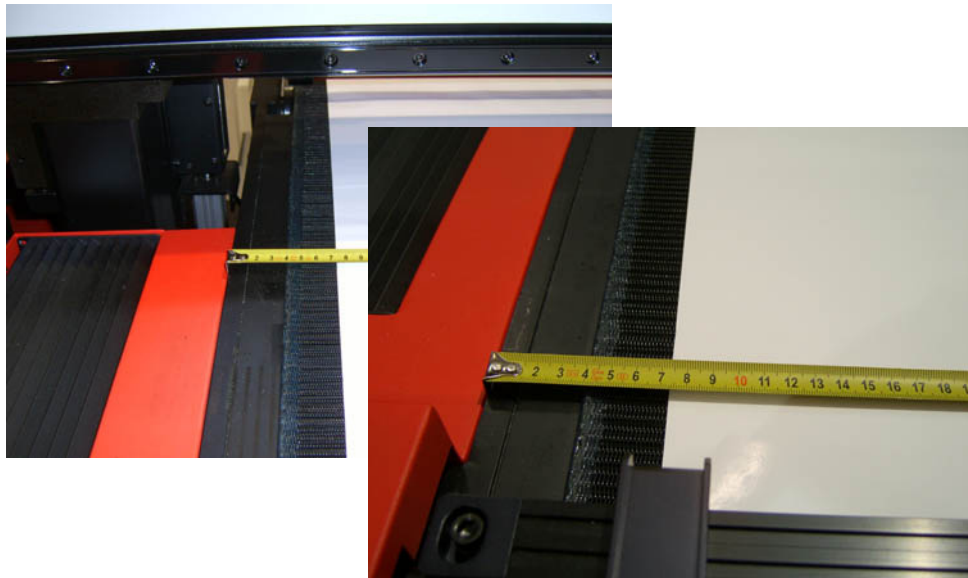
- ▶ Place the roll media onto the Un-winder roller.
- ▶ Remove the balance roller



- ▶ Fix the right flange onto the un-winder roller and make sure the roll media is carried by the flanges.
- ▶ Place the un-winder roller + roll media in the holder



- ▶ Unroll the media a little and place it onto the Media transport belt.
- ▶ make sure that the paper tension is almost equal between left and right. When going over the silver media guide roller.
- ▶ Switch on the vacuum and feed the to front of the media transport belt.
- ▶ Use a ruler to measure the distance between the left of the Media transport table and the left side of the media.
- ▶ Perform this on the back and the front of the table.



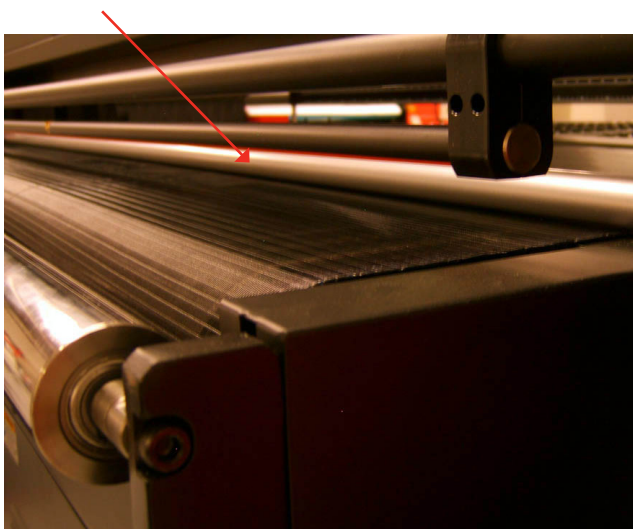
- ▶ Adjust the media till the distance table-media is equal for front and back measurement.



- ▶ Insert the balance roller from the un-winder section on the back off the engine and switch on the motor for the Rubber Roll bar .
The balance roller should be placed in such a way that the white dots point to each other.
- ▶ When the paper Feed stops (=lowest position of balance roller), switch off the motor and remove the balance roller.
- ▶ Start printing
Watch the paper transport.
- ▶ After a printed distance of ± 20 cm,
 - ▶ Interrupt the printing by pressing [ESC] button.
 - ▶ insert the balance roller again on the un-winder section.
 - ▶ The balance roller will be held in the upper position by the paper.
 - ▶ Switch on the motor for the Rubber Roll bar again.
 - ▶ Paper will be fed and the balance roller will keep the paper tension equal.
 - ▶ Resume printing by pressing the [ESC] button again.



Switch on the tension bar.

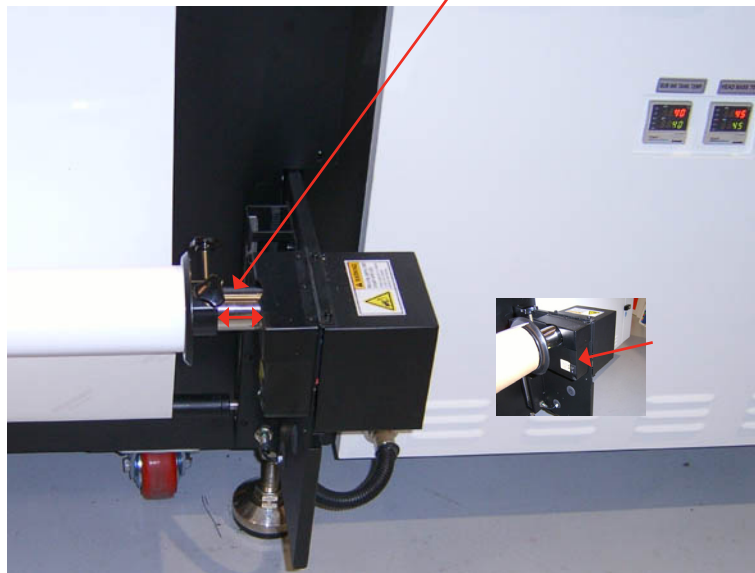




d. Prepare the Winder mechanism

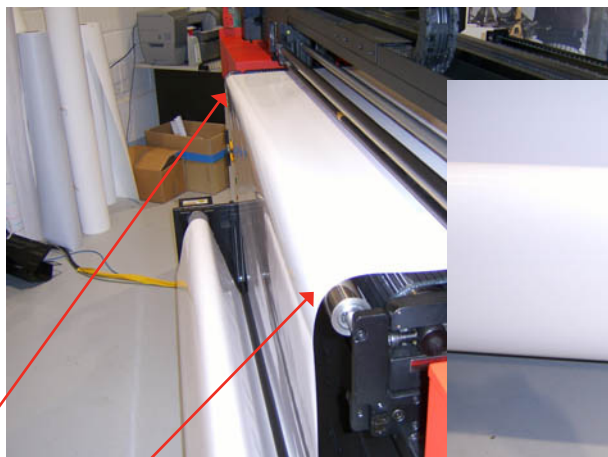
- ▶ Winder roller length = 1715 mm
- ▶ Put the flange at the right side of winder roller. (when standing in front of the :Anapurna)
Distance = distance from the flange on the back - (minus) 20 mm because the winder roller is 20 mm shorter than the un-winder roller

In this case the distance = $72.5 - 20 = 52.5$ mm

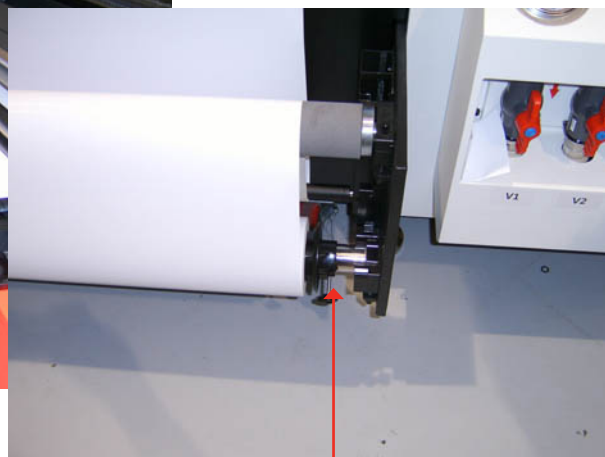


- ▶ Place the right flange (e.g 52.5 mm from the right)
- ▶ Place an empty core on the winder roller.
- ▶ Attach the media to the core.
- ▶ Switch on the winder motor.

- ▶ Verify the paper transport during printing.
in case a bulb occurs on the Silver media guide roller on the back,
- ▶▶ interrupt the printing process and unlock the flanges in order to move the roll media a little on the un-winder roller till the bulb disappears.



Paper tension left - right must be equal



Adjust the flange

- ▶ Fix the flanges and continue printing.
- ▶ **Note :** Perform the same adjustment on the Winder if necessary



II. How to set the optimum vacuum

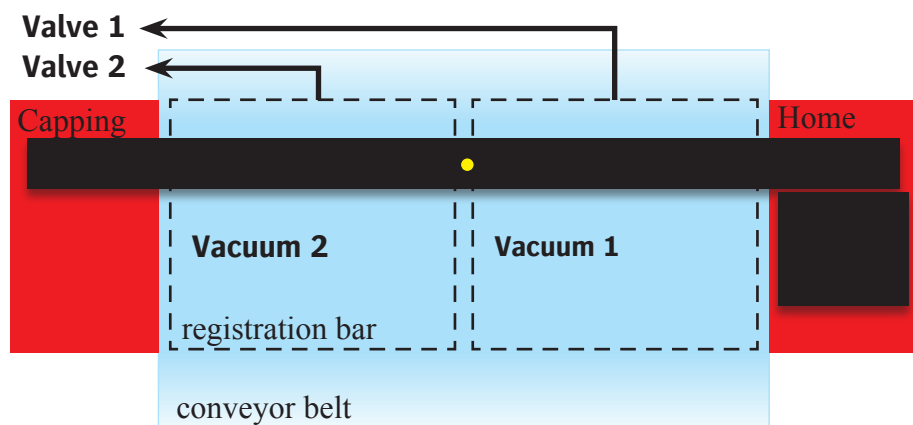
1. Description of the Vacuum transport system

The :Anapurna M series 2nd generation use a vacuum belt transport mechanism to feed the media.

The vacuum applied on the media and the media feed system depends on the ratio between the area covered by the media and the open, non covered, area.

In order to obtain a constant vacuum a vacuum inverter is added to the :Anapurna vacuum transport mechanism.

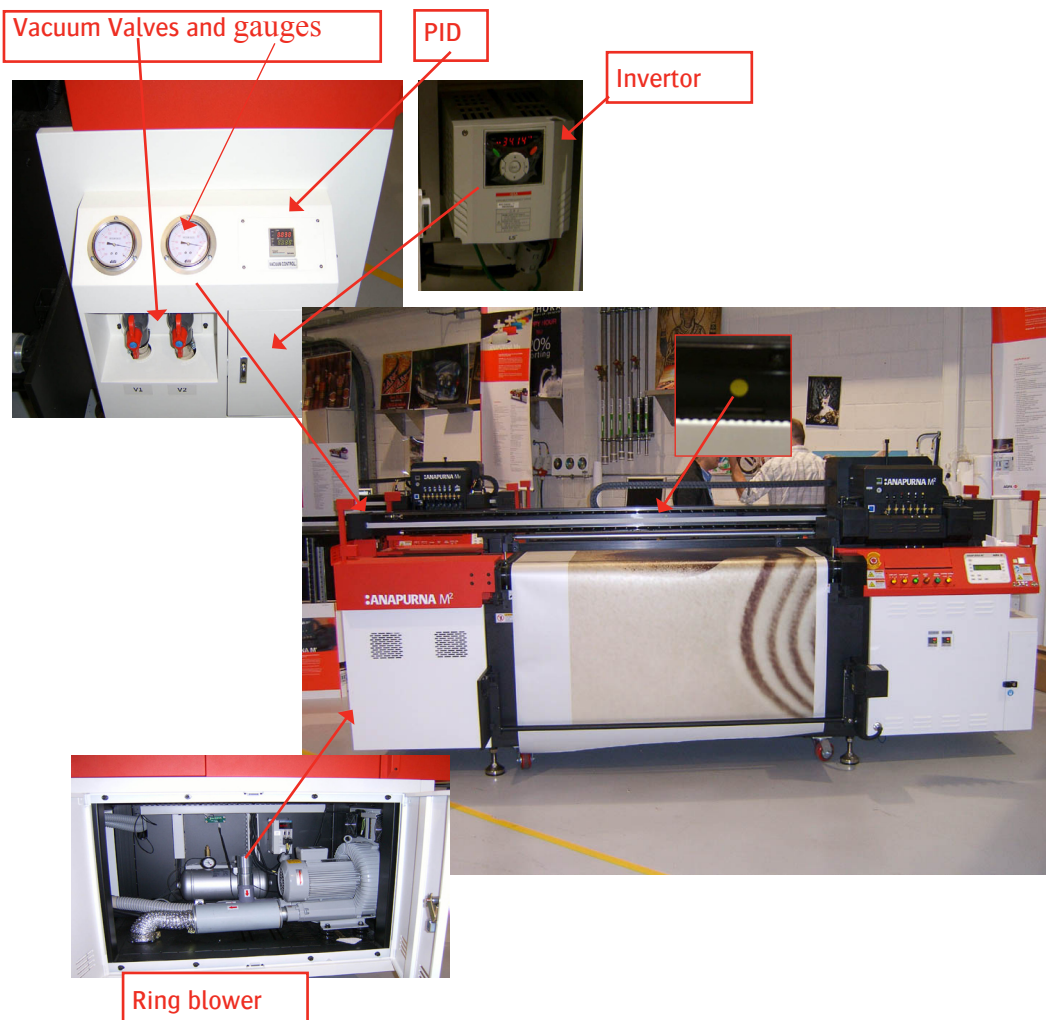
This inverter system senses the effective generated vacuum and holds this constant while the media is moving over the vacuum table and compensates for the changed amount of covered area.



top view :Anapurna M²

2. Parts involved

- ▶ Vacuum table with 2 separate vacuum channels Indicated by a yellow dot
- ▶ The transport belt
- ▶ Ring blower
- ▶ Vacuum inverter
- ▶ PID to adjust the desired vacuum.





3. Description

Via the vacuum settings PID we can set the nominal required vacuum to hold the media on the media transport belt.

If the table is not 100% covered, there is always an area around the media. These open areas will have a different vacuum than on the covered part and this will also result vacuum difference between the edges of the media and the middle of the media.

The inverter will control the ring blower in order to equalize the vacuum in the 2 vacuum channels.

4. Best practices

a. Basic rule

All media should be centered over the width of the transport belt.

- ▶ Roll-to-roll media always has to be centered over the width of the belt, irrespective the width it has.
- ▶ Rigid media has to be centered over the width of the belt except in these cases where the media is smaller than 1 vacuum channel.



Rule of thumb:

if the media width is smaller than 60 a 70 cm, only one vacuum channel can be used in order to keep a good ratio between covered / non-covered area.

b. Vacuum settings

The lower the vacuum, the lower the media feed tolerances per printing pass.
For most cases, a value of 30 set on the PID –controller of the inverter is a good starting value.
This way, the value read on the round gauge at the back of the engine, will also indicate around 30.



5. Special cases

a. Printing on heat sensitive media.

Heat sensitive media is media that expands due to the heat of the passing UV-lamps.
This expansion can cause some movement of the media onto the belt between the print passes.

In first instance, this media extension has to be reduced by choosing the right print mode:

- ▶ half UV power instead of full UV power
- print unidirectional instead of bidirectional
- print 4-pass mode instead of 8-pass mode
- cover the free area in front and behind the media plate, to avoid vacuum leakage that reduce the amount of vacuum around the media plate edges.

Prior to the above, the vacuum has to be increased in order to fix the media as strong as tight as possible on the belt and to minimize the movement during print.

This has a drawback: the risk of banding will go up with higher vacuum settings, so a balance has to be found between the 2 risks.



Tip : increasing the value to 40 or 45 can create a good balance.



b. Printing small sized media

Media is wide and short

If only the media length is short (42 cm or larger) but the width covers most of the belt

- ▶ stay with the base value of 30 but cover the free area in front of and behind the media plate with a paper or a plate with a similar thickness.

REMARK: the thickness of the material used to cover the free area must be smaller or equal than the print media thickness.

Media width is between 80 and 120 cm

- ▶ The set value can be increased to 40 without any negative influence on banding.
A higher value will compensate for the vacuum leakage left and right of the media.

Rigid Media of width 60 to 70 cm

- ▶ Place it on one half of the vacuum belt and close the vacuum valve of the non-used vacuum table. The length of the media will determine the value to be set :
length > 60cm, set value 30 to 40
length < 60cm : set value 40 to 50



c. Rigid Media of width less than 60 cm

- ▶ Media smaller than 60 cm is not supported by the print engine (minimum size A2 landscape).



TIP:

IN CASE OF VACUUM INVERTOR PROBLEMS, RESET THE INVERTOR BY PRESSING THE "RED" BUTTON







APPENDIX 1. Operator training checklist.

(This document is an overview of all topics that should be explained clearly by a certified engineer to an operator. If all topics are checked, the operator is certified to work with the :Anapurna M²).

All boxes →
should be
checked by
the operator.

A. INFORMATION.

1. Safety Instructions.

- a. :Anapurna Engine.
 - Know the Emergency 'Stop' buttons.
 - Make sure that the 'Safety Sensors' are working (turned 'ON'). (While at OFFLINE Mode, Press F4 & then F2).
 - Before printing, make sure no one is around the engine.
 - After printing, always put the engine to 'OFF LINE'.
- b. UV Light.
 - Do not look directly into the UV Light when printing.
 - Don't expose your skin directly to UV light.
 - If you need to look at the direction of s.
- c. UV Inks.
 - UV Inks (and waste) are chemicals, when handling the ink, wear protective gloves to protect your skin. Also wear protective glasses to avoid splashes.
 - Storage of inks. Ideal between 4° & 10° C. No more than 25° C at any time
 - Shelf Life of inks.
 - Take care when filling the main ink tank / cleaning tank.
 - Keep waste separate from the ink bottles.
 - Dispose off waste as per local council regulations.
 - Never mix solvent waste or aqueous waste with UV waste (as per local council regulations).

2. Printer Overview.

- a. Terminologies used (Home Side, Purge side or Capping side etc).
- b. :Anapurna Shuttle (carriage) Layout.
 - Print Heads, sub tanks etc.
 - 2 way ink valves / solution valve.
 - UV Lamps.
- c. Purge Button (Ink), Flushing Button (Cleaning Solution).
- d. Negative Vacuum 'Gauge' & 'Digital Indicator'.
- e. Ink Supply System.

B. OPERATIONS.

1. Wasatch SoftRIP AE.

- a. Wasatch basics.
 - Printing Modes (4 pass, 8 pass, bi-dir, uni-dir).
 - Imaging Configurations.
 - Media Width.
- b. Ripping & Printing.
 - Supported File formats.
 - File preparation: size, scale, crop, mirror, rotate, tiling.
 - Selection of correct Imaging Configuration (print mode).
 - Printing to an output folder and using the AgfaRIP 2000.

2. :Anapurna M² – Start Up Sequence.

- a. Compressor & Drier (to get compressed dry air)
- b. Exhaust (of the room)
- c. Main Switch (Power), Circuit Breakers (if applicable), Power switch.
- d. Emergency Buttons on :Anapurna Engine.
- e. Power 'ON' (Start Button).

3. :Anapurna Control Panel.

- a. 'ON Line' & 'OFF Line'.
- b. Local & Host.
- c. Head Gap (Calib).
- d. Parameters: Left, Top & Right Margins + Null Point (Y or N).
- e. Nozzle Check (Prime).
- f. 'Pause' function.
- g. Cancelling a print.

4. Setting up the :Anapurna M² & changing the parameters.

- a. Print Head Test (Prime : Menu F1 on Control Panel).
- b. Roll to roll print.
 - Media Loading.
 - Vacuum Settings on the bed.
 - Set Gap (Head Height Calibration in regard to the media thickness).
 - Set Margins (Parameters).
 - UV Lamps (Power settings: Full / Half and Mode settings: Normal / Both).
- c. Rigid media printing.
 - Media Set Bar.
 - Vacuum Settings of the table.
 - Set Gap (Head Height Calibration).
 - Left & Top Margins.
 - Input / output Support Tables.
 - UV Lamps (Power settings: Full / Half and Mode settings: Normal / Both).
- d. Negative Pressure Settings.

C. MAINTENANCE.

1. Print Head Purging / Cleaning (Function of 2 way valve).
 - a. 'Quick' Purge if 'Prime Test' (nozzle test) not good.
 - b. 'Long' Purge.
 - c. Head 'Bleeding' (drop the negative pressure down to -.010).
 - d. Head Cleaning using Cleaning Solution.

2. Periodic Maintenance.

- a. Daily, Weekly, Weekend, Long Break engine preparation.
- b. Maintenance on print heads.

D. MISCELLANEOUS.

1. Consumables Required (How to order).
 - a. Inks, Cleaning Solution.
 - b. Recommended Media (Appendix 3 - Substrate list).
2. Have you received the Operator Manual?
3. Have you received the :Anapurna M² Ink MSDS?
4. Have you printed samples on :Anapurna engine using flexible & rigid media.
5. You are comfortable and you have received sufficient information to work with the :Anapurna M².

 Trainer's Name + Signature

 Operator's Name + Signature



APPENDIX 2. Key operator training checklist.

(This document is an overview of all topics that should be explained clearly by a certified engineer to an operator. If all topics are checked, the key operator is certified to work with the :Anapurna M²).

A. INFORMATION.

1. Safety Instructions.

- a. :Anapurna Engine.
 - Know the Emergency 'Stop' buttons.
 - Make sure that the 'Safety Sensors' are working (turned 'ON'). (While at OFFLINE Mode, Press F4 & then F2).
 - Before printing, make sure no one is around the engine.
 - After printing, always put the engine to 'OFF LINE'.
- b. UV Light.
 - Do not look directly into the UV Light when printing.
 - Don't expose your skin directly to UV light.
 - If you need to look at the direction of the light, wear protective glasses.
- c. UV Inks.
 - UV Inks (and waste) are chemicals, when handling the ink, wear protective gloves to protect your skin. Also wear protective glasses to avoid splashes.
 - Storage of inks. Ideal between 4° & 10° C. No more than 25° C at any time
 - Shelf Life of inks.
 - Take care when filling the main ink tank / cleaning tank.
 - Keep waste separate from the ink bottles.
 - Dispose off waste as per local council regulations.
 - Never mix solvent waste or aqueous waste with UV waste (as per local council regulations).

2. Printer Overview.

- a. Terminologies used (Home Side, Purge side or Capping side etc).
- b. :Anapurna Shuttle (carriage) Layout.
 - Print Heads, sub tanks etc.
 - 2 way ink valves / solution valve.
 - UV Lamps.
- c. Purge Button (Ink), Flushing Button (Cleaning Solution).
- d. Negative Vacuum 'Gauge' & 'Digital Indicator'.
- e. Ink Supply System.

B. OPERATIONS.

1. Wasatch SoftRIP AE.

- a. Wasatch basics.
 - Printing Modes (4 pass, 8 pass, bi-dir, uni-dir).
 - Imaging Configurations.
 - Media Width.
- b. Ripping & Printing.
 - Supported File formats.
 - File preparation: size, scale, crop, mirror, rotate, tiling.
 - Selection of correct Imaging Configuration (print mode).
 - Printing to an output folder and using the AgfaRIP 2000.
- c. Advanced settings (Wasatch SoftRIP AE manual).
 - Color related info (color curves, color replacement,...).
 - Use of ink restrictiona and ink limits.
 - Setting up an Imaging configurations (the standard Agfa configurations).
 - Print Strategies (immediate printing, manual layout,...).
 - Hot folder set-up.
- d. Hardware setup (Wasatch SoftRIP AE manual).
 - Do not load any design software (DTP applications).
 - Never download anything from the internet.
 - Make sure the network card is 100/1000 Mbps.

All boxes
should be
checked by
the operator.

- Make sure of a high speed hub or switch (if printing through hub / switch). Recommended to have 2 network cards in the CPU; one for the office network & the other for the :Anapurna engine (cross over network cable).
 - How to connect Wasatch with the :Anapurna M².
- 2. :Anapurna M² – Start Up Sequence.
 - a. Compressor & Drier (to get compressed dry air)
 - b. Exhaust (of the room)
 - c. Main Switch (Power), Circuit Breakers (if applicable), Power switch.
 - d. Emergency Buttons on :Anapurna Engine.
 - e. Power 'ON' (Start Button).
- 3. :Anapurna Control Panel.
 - a. 'ON Line' & 'OFF Line'.
 - b. Local & Host.
 - c. Head Gap (Calib).
 - d. Parameters: Left, Top & Right Margins + Null Point (Y or N).
 - e. Nozzle Check (Prime).
 - f. 'Pause' function.
 - g. Cancelling a print.
- 4. Setting up the :Anapurna M² & changing the parameters.
 - a. Calibrating the engine.
 - Horizontal Alignment.
 - Bi Direction Alignment.
 - Step Size (Feed).
 - Carriage Speed.
 - b. Print Head Test (Prime : Menu F1 on Control Panel).
 - c. Roll to roll print.
 - Media Loading.
 - Vacuum Settings on the bed.
 - Set Gap (Head Height Calibration in regard to the media thickness).
 - Set Margins (Parameters).
 - UV Lamps (Power settings: Full / Half and Mode settings: Normal / Both).
 - d. Rigid media printing.
 - Media Set Bar.
 - Vacuum Settings of the table.
 - Set Gap (Head Height Calibration).
 - Left & Top Margins.
 - Input / output Support Tables.
 - UV Lamps (Power settings: Full / Half and Mode settings: Normal / Both).
 - e. Negative Pressure Settings.
- C. MAINTENANCE.
 - 1. Print Head Purging / Cleaning (Function of 2 way valve).
 - a. 'Quick' Purge if 'Prime Test' (nozzle test) not good.
 - b. 'Long' Purge.
 - c. Head 'Bleeding' (drop the negative pressure down to -.010).
 - d. Head Cleaning using Cleaning Solution.
 - 2. Heater Settings (How to change settings on the digital controls).
 - a. Sub Ink Tanks.
 - b. Head Base.
 - 3. Advanced Scheduled Maintenance.



- a. Adjustment of the conveyor belt.
- d. UV lamp replacement.
- e. Cleaning of crystal glass.
- f. Cleaning / Lubricating the Carriage Rail & Greasing the Carriage Bearings.



- 4. Periodic Maintenance.
 - a. Daily, Weekly, Weekend, Long Break engine preparation.
 - b. Maintenance on print heads.

D. MISCELLANEOUS.



- 1. Consumables Required (How to order).
 - a. Inks, Cleaning Solution.
 - b. Recommended Media (Appendix 3 - Substrate list).
- 2. Have you received the Operator Manual?
- 3. Have you received the :Anapurna M² Ink MSDS?
- 4. Have you printed samples on :Anapurna engine using flexible & rigid media.
- 5. You are comfortable and you have received sufficient information to work with the :Anapurna M².

Trainer's Name + Signature

Operator's Name + Signature

APPENDIX 3. Substrate list.

(The substrates in the list are used by Agfa Graphics as reference media in the demo centres. The adhesion indicator is just a reference as there are more than one variables which influence curing/adhesion characteristics.)

Family	Type	Chemistry	Manufacturer	Adhesion
Wet Strength Paper	Grey Back Coated Paper	Paper	Marchi	+
Banner Vinyl	Seemee Backlit	PVC	Verseidag	+
Self Adhesive Vinyl	Metamark MD5	PVC	Metamark	+
Card Board	Eclipse Opaque	Paper	Burgo (IT)	+
White Liner Top Coated Display Board	Eska Screen 1250g	Paper	Kappa Attica	+
Foam PVC Board	Forex Classic 3 mm	PVC	Alcan Airex	+
Polypropylene Sheet	Priplak Classic	PP	Pripalk	+/-
Textile	Textile Seemee light	Polyester	Verseidag	+
Metal Plate	Dibond Digital	Alu Composite	Alcan Singen	+
Foam OVC Board	Foamlux	PVC	Brett Martin	+
Polypropylene Fluted Display Board	Bi Print 650 gms 3.5 mm	PP	IPB	-
Polypropylene Fluted Display Board	Buplex PP 3mm	PP	TBD	-



APPENDIX 4. Tips & Tricks .

Gloss Banding.

Gloss banding is a phenomena present in all UV inkjet systems. This happens when we try to print bidirectional (specially solid colors). To avoid gloss banding, print jobs in uni-direction mode.

Winder/Unwinder sensors.

When loading a roll of media, always put the roll in the centre of the bed. If the roll is 1370 mm (54 inches) wide or 1270 mm (50 inches) wide, it will have no issues regarding the feed sensors. This is mostly to do with media with shorter widths.

When the media width is lower than (say like 1000 mm (39 inches) & the media is loaded in the centre), the sensor can not "sense" the tensioning bar presence (or the media presence) and the unwinder motor will not operate.

Solution is to put a piece of paper core on the tensioning bar so that the sensor can see the paper core instead of the media and stop feeding (the feed motor stops).

Vacuum Pump Control.

When printing on wider media (1.4 meters / 55 inches or wider) with normal vacuum (both vacuum valves open to 100%), there might be a situation that media will not move properly on the bed because of high suction (more vacuum then required as there are no bleed holes left on the bed). This might also cause ripples on the media as it advances & feeds towards the suction area.

Solution is to turn the vacuum valves to approx. 45 degrees so that only partial vacuum is available on the table; allowing the media to feed properly.

Media.

Always check if the media is qualified (compatible) for UV inkjet printing. Please contact media supplier and ask questions.

Before printing, check if the media is not damaged. The rigid media should be able to sit flat on the table otherwise you will not be able to print (head crashes). Also handle the media in a way to avoid finger prints on the surface. Observe heat and static sensitivity of the substrate.

Efficient use of UV Lamps.

UV lamp life includes printing hours + warm up time of the lamps + cool-down time of the lamps. For e.g. if you have printed an image for 5 minutes and shut the engine down, you have consumed 30 minutes (warm up time) + 5 minutes (printing time) + 30 minutes (cool-down time) = 1 hour & 5 minutes (65 minutes). The efficient use will ensure longer lamp life.

Also, if you are printing a job in Half Power (throughout the day), it will be good that you run a Prime Test in the morning, afternoon and evening at Full Power and leave the lamps ON at Full Power for 3 – 5 minutes. It has been observed that lamps perform better this way.

Border less Printing / Dual Board Printing.

When printing border less or with extra bleed (to print on the whole area), always put a frame like structure around the media. This can be done by putting some masking tape on all sides of the media. If this is not done, the ink will go onto the belt and eventually cause vacuum blockage / head crashes.

Dual board printing requires the setup to be done in Wasatch (Manual Layout or Template). Always make sure that you include all margins (left, centre, right) before putting the media on the table.