Calibrating

Why Calibrate

The function of Calibration Curves is to linearize output on your plates. There are several approaches on the use of the remaining curves. Generally, if you use the actual press calibration curve to linearize your press then you will be printing with linear plates that will produce flat images. For some users this will be the desirable effect, as a 10% tint on screen will reproduce a 10% tint on the printed sheet; this is preferable for spot colour users.

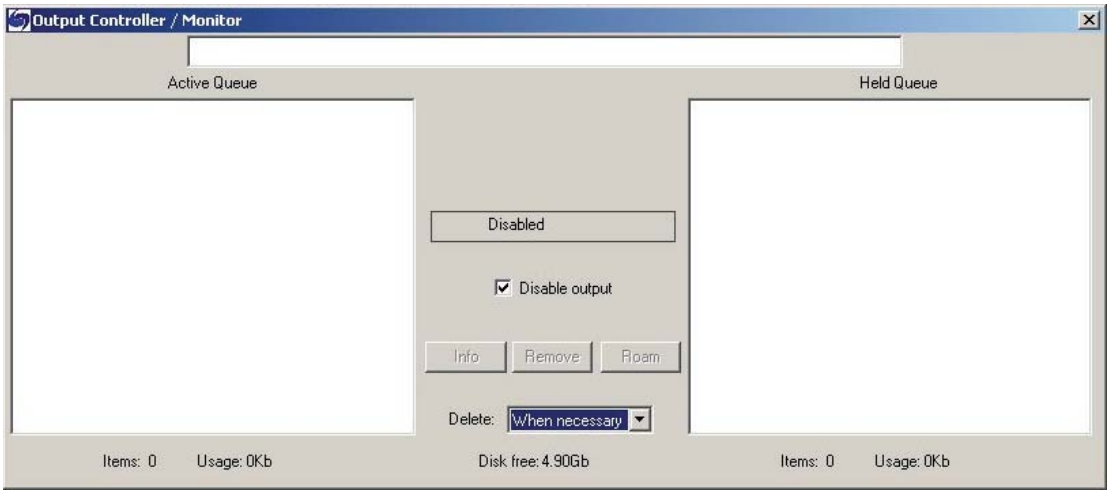
However, in CMYK (4 colour process) work, the flat image created by a linear output will give a dull uninteresting image. In these cases use of the Intended Press curve or tone curves will provide the needed correction and are used to "put back" the dot gain that is assumed in the pre-press process.

Although the calibrations that we include in the RIP installation process are reasonable starting points, you may find that it will be necessary to create calibration curves for your press, papers, and inks to produce high quality printed results.

Using Calibration to Linearize Output on Your Plates

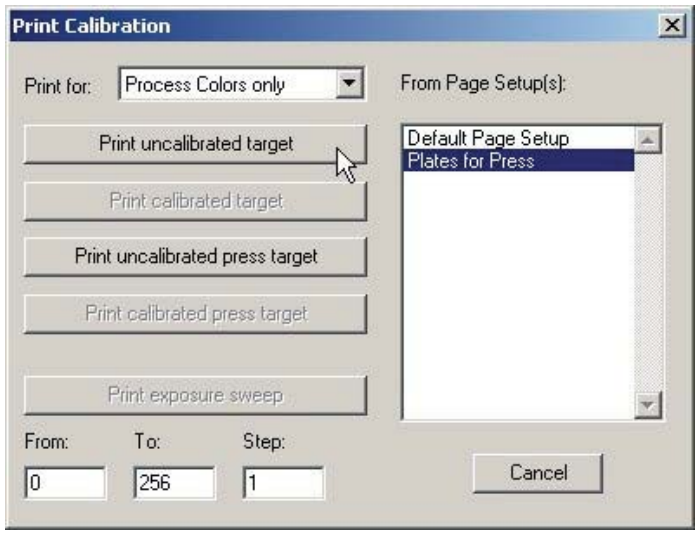
It is necessary to have an existing Page Setup to use this calibration procedure. Follow the instructions in this document to create you own Page Setup or apply the calibration procedure to one of the standard Page Setups created during RIP installation by printing the config.ps file.

- Start the **Navigator RIP**.
- If necessary, open the **Output Controller / Monitor** window by either pressing **Ctrl+O** or choosing **Output -> Output Controller** from the RIP menu.

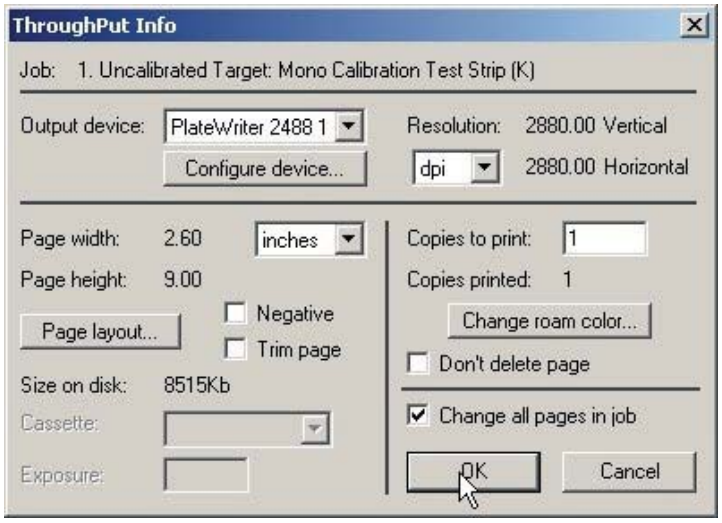


- Be sure that **Disable Output** is checked. This will allow you to control the start of printing in the next steps.

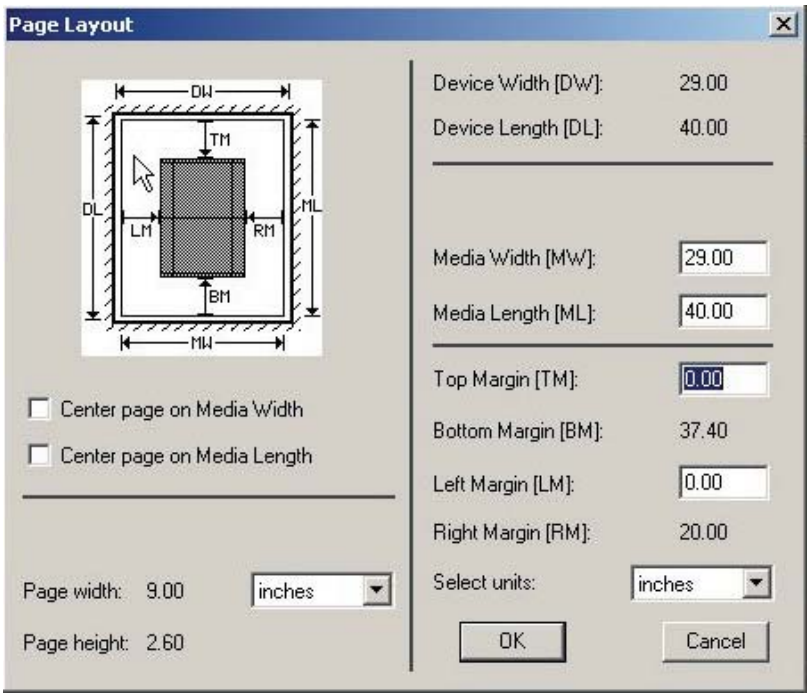
- Choose **Output -> Print Calibration** from the RIP menu.



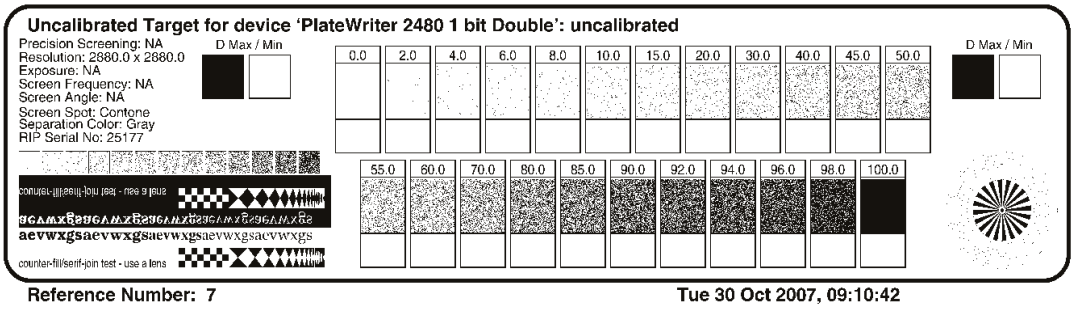
- Choose a page setup and click on **Print uncalibrated target**. The calibration target will be ripped and written to disk.
- Load a plate onto the PlateWriter's Alignment Mat and move it to the READY-position as described in “Loading Plates” earlier in this manual.
- Press and hold the [SETUP] key on the Control Panel for 1 sec.
- In the **Output Controller/Monitor** window select **Uncalibrated target** in the **Active Queue**.
  Click on the **Info** button to open the **ThroughPut Info** dialogue.



- Click on **Page layout...**.

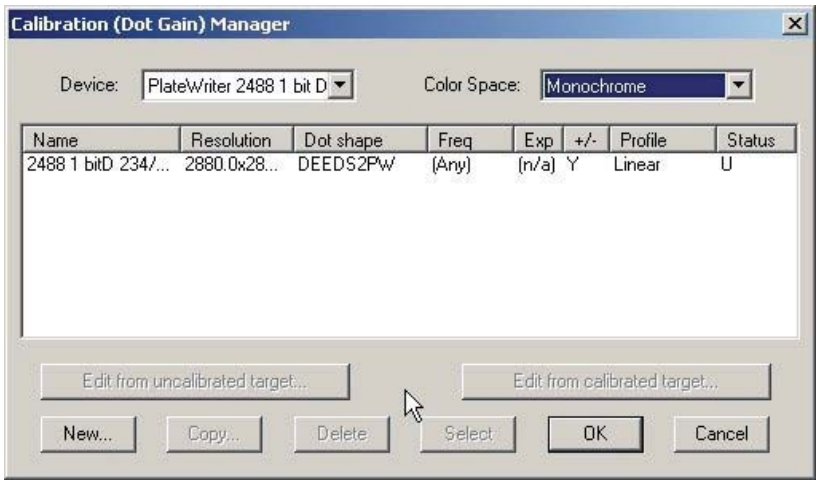


- Check that the **Media Width**, **Media Length** and **Margins** are correct for your plate. (The calibration target is pretty small, but you should check to ensure the margins will put it inside your printing area).
- Uncheck **Disable Output** in the **Output Controller / Monitor** window.
  A target similar to this illustration will be printed.

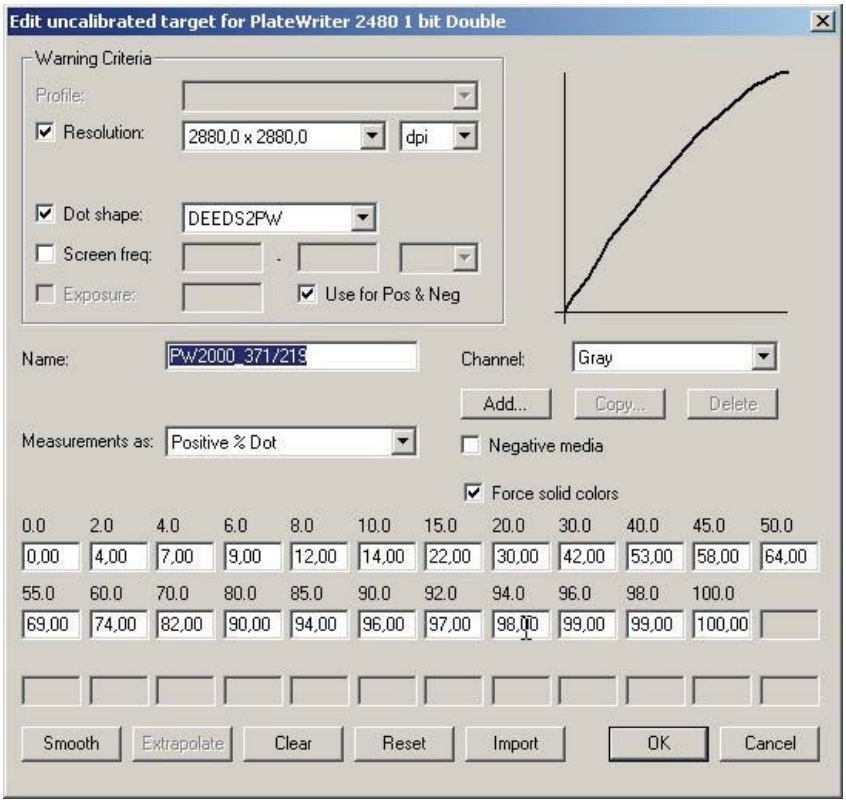


- After the target has printed, remove the plate from the PlateWriter.
- Place the plate on the front of the PlateWriter's Finishing Unit.
- Use a high quality reflection densitometer capable of reading stochastic dots, or comparable device, to measure the dot% for each of the patches on the printed calibration target.

- Choose **Output -> Calibration Manager** from the RIP menu.



- Choose the same **Device** type as was used to print the target.
- Select **Monochrome** as the **Colour Space**.
- Click on **New...**.

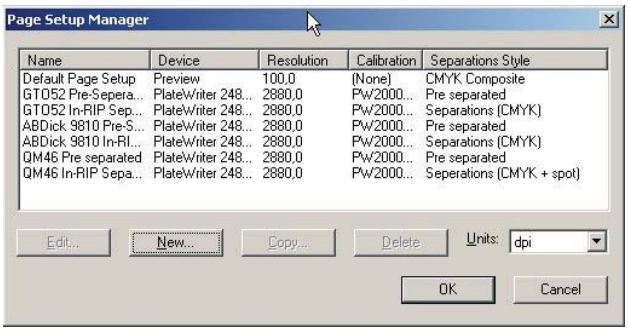


- Name the new calibration and enter the modified column of Dot% measurements in the edit boxes. You may **Smooth** the data after it is entered.
- Click on **OK** in this window and in the **Calibration Manager** window to save your profile.

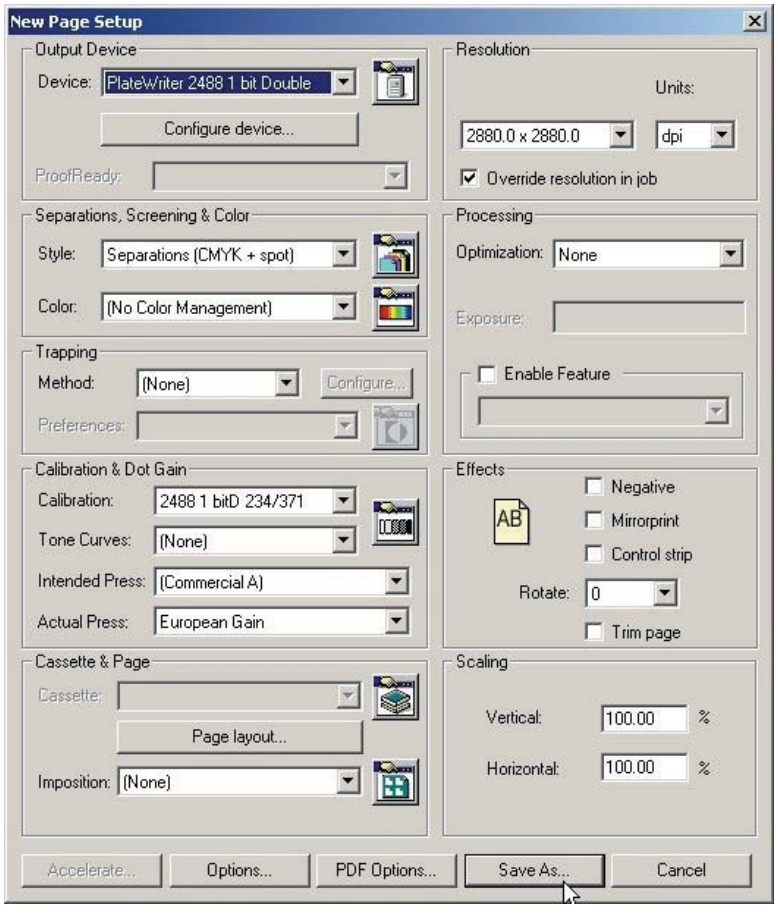
Including the Linear Calibration in Page Setups

Editing the Page Setups

- Choose **Navigator -> Page Setup Manager** from the RIP menu to open the **Page Setup Manager** window.



- Select the **Page Setup** that was used when printing the uncalibrated target and click on **Edit** to open the **Edit Page Setup** dialogue.



- In the **Calibration & Dot Gain** section select the **Calibration** you just created.
- Leave the **Tone Curve** set to **(None)**.
- Save the edited page set up by clicking on **OK** in this window and in the **Page Setup Manager** window.

Confirming your Linearization on Press

- Choose **Output -> Print Calibration…** from the RIP menu.
- In the dialogue box, choose the page setup just edited and click on **Print calibrated target**. The calibration target will be ripped and written to disk.
- Follow the procedures used for printing the uncalibrated target, and confirm that the output is linear on your plate.

Calibrating your Press

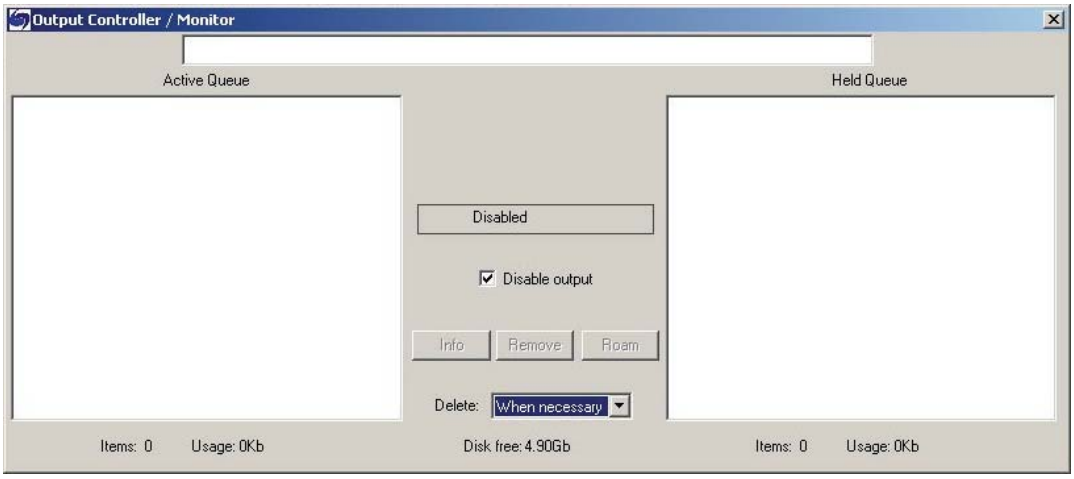
Calibrating your press using the **Actual Press Curve** function will provide you with a linear press sheet, so that 10% on screen prints as 10% on press, 50% as 50% etc.

If we stop here, there are many circumstances where this, whilst being accurate, is not really desirable.

Typically older press work produced by film will suffer press gain at around 20% and this gives a warm, strong image. A linear calibration will often produce a very flat-looking result. However, linearising your press is important since it provides a starting point and removes the variables caused by varying press gains and worn press rollers which can be created in a multi-press environment.

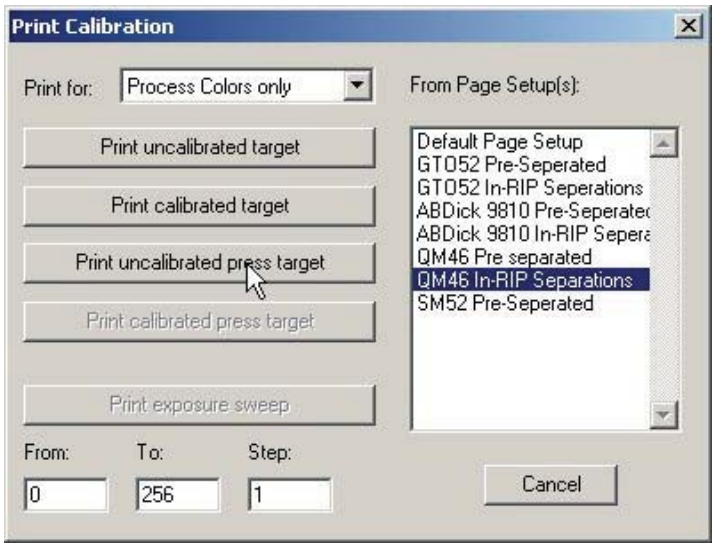
Once you have linearised your press and have created a calibration which we call the "Actual Press" calibration, we can then add an intended press calibration curve, thus enabling a print shop with multiple presses to create a more consistent and even calibration across all its work.

- Start the **Navigator RIP**.
- If necessary, open the **Output Controller / Monitor** window by either pressing **Ctrl+O** or choosing **Output -> Output Controller** from the RIP menu.

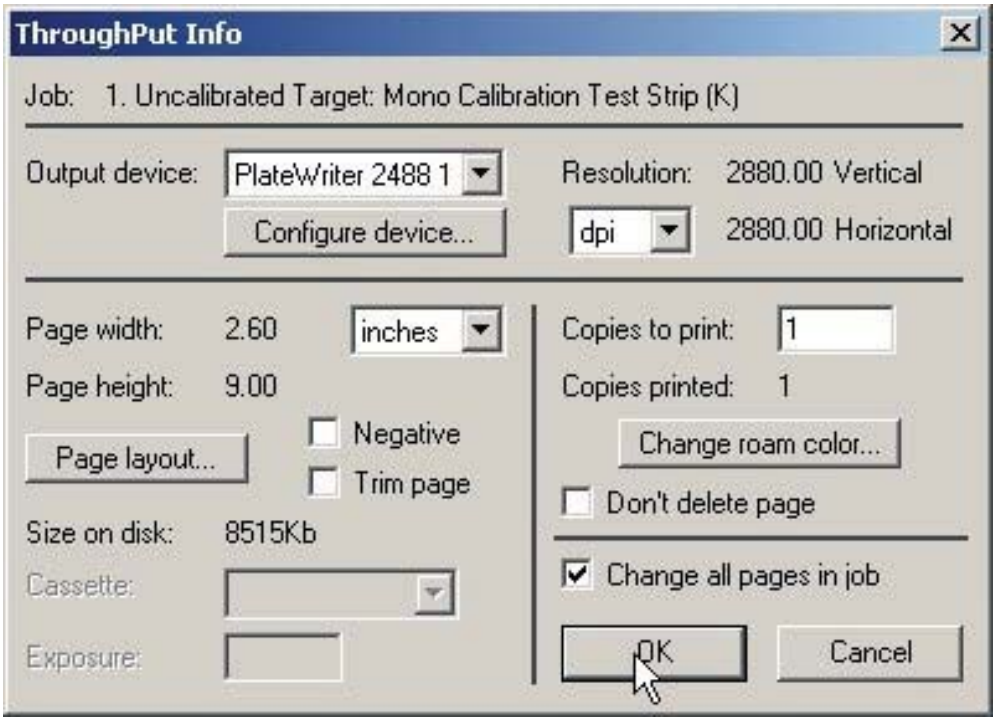


- Make sure that **Disable Output** is checked. This will allow you to control the start of printing in the next steps.
- Ensure that you have applied a Plate calibration to the page setup you wish to create a press calibration for (see earlier in this chapter).

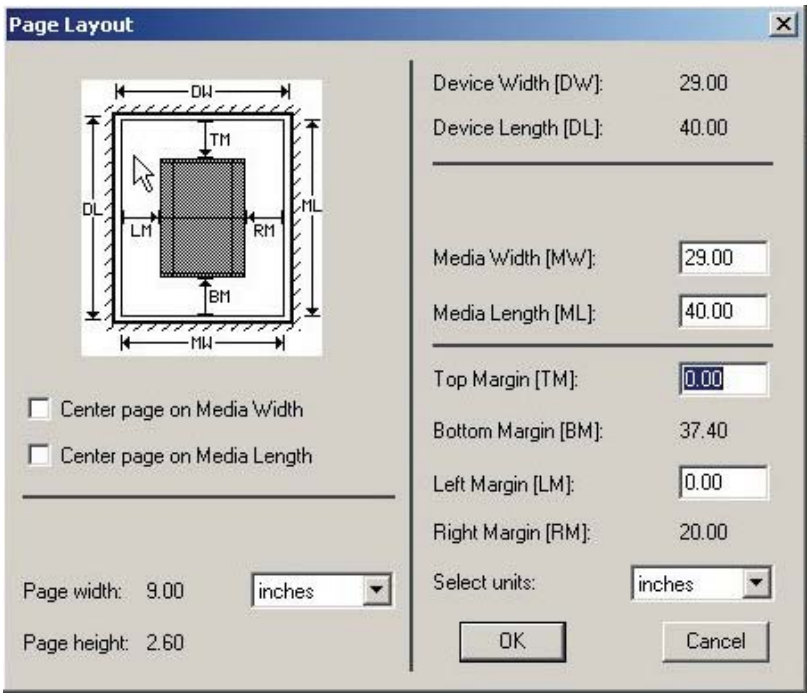
- Choose **Output -> Print Calibration** from the RIP menu.



- Choose a page setup and click on **Print uncalibrated target**. The calibration target will be ripped and written to disk. You should get four separations.
- Load a plate
- In the **Output Controller/Monitor** window select **Uncalibrated target** in the **Active Queue**.
  Click on the **Info** button to open the **ThroughPut Info** dialogue.

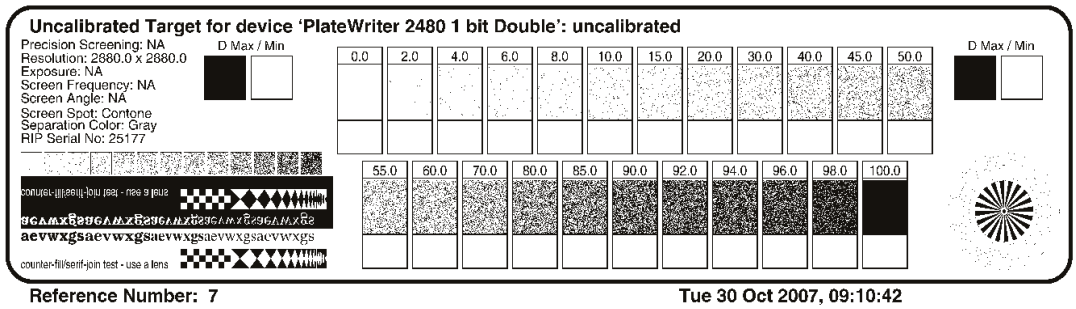


- Click on **Page layout...**.



- Check that the **Media Width**, **Media Length** and **Margins** are correct for your plate. (The calibration target is rather small, but you should check to ensure the margins will put it inside your printing area).

- Uncheck **Disable Output** in the **Output Controller / Monitor** window.
  Once the **Throughput** window shows activity, re-check the **Disable Output** checkbox.
  A target similar to this illustration will be printed.



- After the target has printed, remove the plate from the PlateWriter.
- Place the plate on the front of the PlateWriter's finishing unit.
- Load the next plate and repeat the above procedure for each plate.
- Each plate should then be put on the printing press, and an even ink density should be achieved before printing reference sheets.

In Europe the Fogra Standard suggests selecting three typical types of paper stocks:

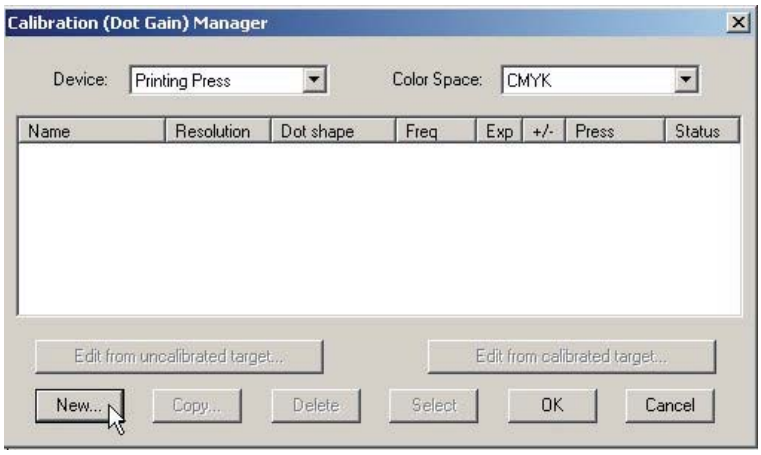
- Gloss Art: Set the ink densities to C=1.37 D, M=1.4 D, Y=1.03D, K=1.53 D
- Silk/Matt: Set the ink densities to C=1.16 D, M=1.24 D, Y=1.01 D, K=1.46 D
- Unbolted: Set the ink densities to C=0.76 D, M=0.93 D, Y=0.75 D, K=0.97 D

Each paper stock reacts differently to the press ink and changes the gain achieved on press. Similarly the amount of ink laid down will impact results. So if you do not wish to adhere to the Fogra standards, then ensure you have some consistent densities that you will to continue to work with.

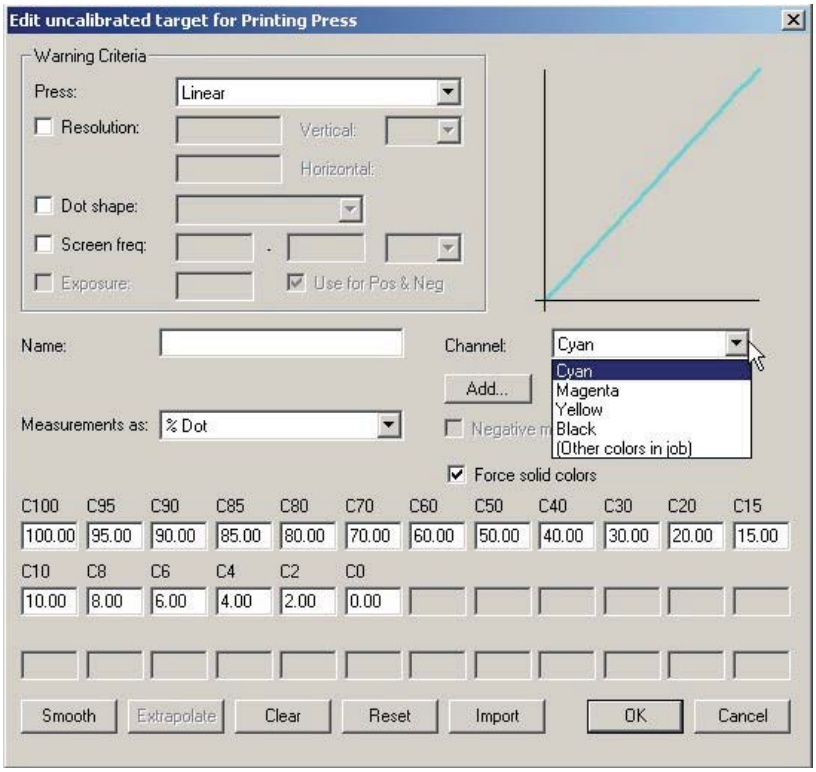
For example, standard Commercial Work in the USA would typically see the ink densities set to C=1.37 D, M=1.38 D, Y=1.06D, K=1.75 D

- Run each stock through the press, ensuring your reference sheet achieves the correct ink density.
- Once the sheets are dry, use a high quality reflection densitometer capable of reading stochastic dots, or comparable device, to measure the dot percentage for each of the patches on the printed calibration target. It is not unusual for each ink to achieve a different gain characteristic, so you will need to separately measure each colour printed.

- Choose **Output -> Calibration Manager** from the RIP menu.



- Choose **Printing Press** as the **Device** type.
- Select **CMYK** as the **Colour Space**.
- Click on **New...**.

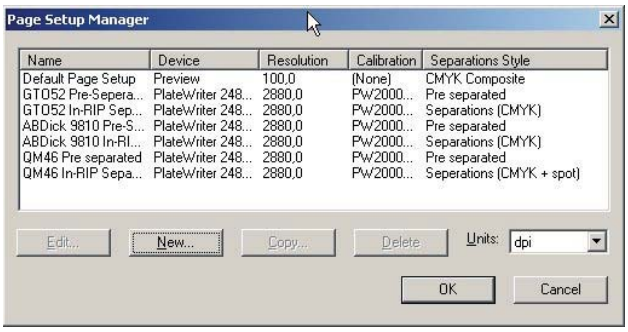


- Name the new calibration in relation to the press and paper type that was used.
- Select the press type as linear and select the first colour channel **Cyan** to enter the cyan data into.
- Enter the modified column of Dot percentage measurements in the edit boxes.
- Once you have entered the **Cyan** data select the **Magenta** channel and enter the data measure for the magenta output.
- Repeat the above for the remaining colours.
- Click **OK** in this window and in the **Calibration Manager** window to save your profile.

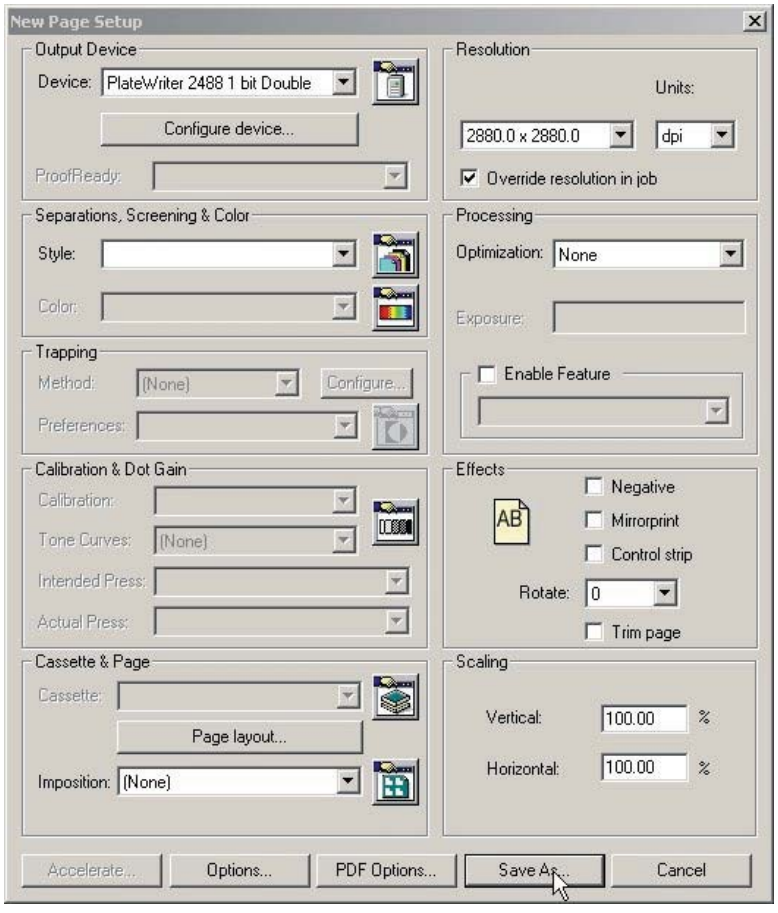
Including the Press Calibration in Page Setups

Editing the Page Setups

- Choose **Page Setup Manager** from the RIP menu to open the **Page Setup Manager** window.



- Select the **Page Setup** that was used when printing the uncalibrated target and click **Edit** to open the **Edit Page Setup** dialogue.



- In the **Calibration & Dot Gain** section select the **Calibration** you just created from the **Actual Press** calibration list.
- Leave the **Tone Curves** and the **Intended Press** curve set to **(None)**.
- Save the edited Page Setup by clicking **OK** in this window and in the **Page Setup Manager** window.

Why Use Intended Press or Tone Curves?

The calibration process we have outlined is used to linearize the printing process using the PlateWriter 2000.

Linear printing means that a nominal 50% dot (gray level) will print as 50% on press. Typically this will result in light or "washed out" looking print since most images are pre-compensated for 20% dot gain. This means that images are generally prepared expecting a nominal 50% dot to print as 70%.

Intended Press Curves are used to add the expected gain back into the press profile. Tone Curves are used to modify this further to create cool looking images or warm images. We have not included any tone curves so this section details the use of the Intended Press Curve to create the expected dot gain from conventional film etc.

We have included curves for Standard (20%), 15%, and 22% dot gain along with Commercial, SWOP and Forgra curves with the Navigator RIP. These values are a good starting point.

You may need to fine tune these Intended Press Curves to meet your particular requirements. However to use one of the existing Intended Press curves, follow the procedure below to implement the Intended press curve in your Page Setups.

Including the Intended Press Curves in Page Setups

- Choose **Page Setup Manager** from the RIP menu to open the **Page Setup Manager** window.
- Select the **Page Setup** that was used when printing the uncalibrated target and click **Edit**.
- In the **Calibration & Dot Gain** section select as the **Intended Press** curve one of the curves included in the Navigator RIP installation or one of the curves loaded when printing the **config.ps** file, or any custom **Intended Press** curve you may have created.
- Save the edited Page Setup by clicking **OK** in this window and in the **Page Setup Manager** window.
- You can confirm if the output of your intended curves achieves the results you required by printing a Calibrated Press Target.