

Siderotype Workshop Notes

Preparation of Digital Negatives

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Preparation of Digital Negatives

Summary and purpose

Herein follows a stepwise sequence of explicit instructions for making monochrome digital photographic negatives, using a personal computer and ink-jet printer, starting from original medium format camera negatives or transparencies, or from digital picture files. The software used for this image manipulation is Photoshop CS™ (Version 8) and Epson Scan, using an iMac, running OS 10.4. No additional software or 'latest upgrades' are required. The files are printed out onto ceramic-coated transparency material (such as Pictorico OHP Transparency Film or PermaJet Digital Transfer Film)¹ using an Epson photo-quality ink-jet printer. This provides internegatives suitably matched in ultra-violet optical density for contact printing in any of the 'alternative' photographic processes. This digital negative workflow differs significantly from the customary practices of others in several respects:

- For calibration, 100-step-tablet negatives having intervals of 1% relative opacity, are inkjet-printed onto the film, identical in all their print parameters and materials with the actual negatives to be output.² All the colours of printer's ink-set are used, mixed in a smooth greyscale.
- The Standard Printing Exposure (SPE) is found by exposing these 100-step-tablet negatives in the process of choice with the standard printing setup, so that the clear filmbase (relative opacity of 0%) produces 'nearly' the maximum print density (D_{\max}) that the process is capable of, while offering some tonal separation in the deepest shadows (0–10%).
- The correct ink density range (at UVA wavelengths) for the negative to match the exposure scale of the given process is found by adjusting the printer driver settings: trial 100-step-tablet negatives are output and test-printed at the SPE, until the 99% relative opacity step in the negative prints as 'just white' background of the paper chosen for the process.
- Having established the 'black and white' end-points for the process, when making the negatives appropriate for analogue printing, the image levels are redistributed in Photoshop simply by the gamma slider in the Levels window, which applies a suitable 'generic curve' automatically.

¹ http://www.pictorico.eu/productsshop/?no_cache=1&L=2
<http://www.permajet.com/ProductGrp/PermaJet-Digital-Transfer-Negative-Film-165u>

The .tiff file for this 100-step-tablet may be downloaded directly from:
<https://dl.dropbox.com/u/47727259/100Stepneg.tif>

Calibration of the equipment and materials

The optical density range of the ink laid down on the film depends on:

- the particular make and model of printer
- the particular ink set being used
- the choice of settings in the printer driver software
- the film substrate used to receive the negative image

If any of these are changed, it will be necessary to re-calibrate.

1) Output the digital file for the 100-step-tablet to your printer.

Load the printer with the identical film that you will use for all your negatives. As a starting point, the ink density range may be approximately provided by the printer's 'premium photo-quality' media settings for glossy or semi-glossy paper. The software for driving modern printers now usually includes a means of adjusting the maximum ink density; this control may be buried rather deeply in the options. Record its setting before outputting the 100-step-tablet files. Let the test negative dry and cure overnight before use, as inks have been observed to change density with time.

2) Use the standard print-making setup for your chosen process.

Take care that the light source, distance, and other conditions of printing and wet-processing are maintained constant throughout.

3) Use your 100-step-tablet negative to make trial contact exposures.

Increase the exposure if necessary, until you have a test print that is perceptibly overexposed. [N.B. 'Overexposure' here is judged by the analogue photographer's criterion of shadow tones beginning to 'block up' and become indistinguishable – it is NOT judged by the digital photographer's criterion of high values becoming 'blown out'.]

Call the exposure for this test print, E. If you are making timed exposures to a constant light source, E is simply the duration in minutes or seconds. If you employ an exposure system with a light integrator, E will be measured in the instrument's arbitrary 'exposure units'.

4) Examine the test print carefully when it is dry.

The lowest part will appear dense and 'blocked up' with no resolution of the sequential steps. Compare each step with the lighter one immediately *above* it – *i.e.* the one resulting from 10% less transmittance in the negative (=10% more opacity, which corresponds to an optical density difference of *ca.* 0.05, or one sixth of a 'stop').

Try to locate the first step, starting from the bottom, that is just perceptibly resolved in tone from the one above it; this lower step tells you the transmittance in this negative needed to produce your *effective* maximum print density. Call this transmittance P%.

5) Calculate the Standard Printing Exposure (SPE).

Take P% of E, the exposure for the test print made in 3):

$$\text{SPE} = E \times P/100$$

This SPE should apply approximately for all prints made in the chosen process, with your digital negatives, provided that the light-source and other printing and processing conditions are kept the same.

Note that the SPE is *not* sharply-defined, but can be varied slightly, because the *effective* maximum print density depends on how far up the shoulder of the characteristic curve of the chosen printing process it is placed. However, the higher the effective maximum density is placed, the more of the 256 image levels will need to be allocated to increasing separation in the shadow tones, so there will be fewer left for the lighter tones of the image, which compresses the contrast. Furthermore, if you seek to produce a 'maximum black' by extending the SPE excessively, the printer inks may not have sufficient UV blocking opacity to produce a 'paper base white' at all.

6) Make a contact test print of the 100-step-tablet negative at the SPE.

Inspect the test print carefully, when fully dry, to find the step that appears 'just white' – *i.e.* the first one that has no upper boundary and which precedes the step with the first perceptible print tone.

7) If *no* steps print white, adjust the printer driver settings to lay down *more* ink when making the negative.

If several steps print white, adjust for *less* ink in the negative.

8) Return to Step 1) and make a new 100-step-tablet negative.

Use the new settings, and re-test it through Steps 2) to 7). The ideal aim is to get 'just white' for the *first* step of the tablet – that having 1% transmittance or 99% opacity – but it should be satisfactory to get within 2 or 3 steps of this. Experiment carefully with your printer driver settings: change the **maximum optical density** of the ink (a control usually found in the "colour management" window) and note its value when you make each new test negative. Print each one in your process with the same SPE until you come close to the ideal highlight tones.

Fine-tuning the negative opacities

This is only necessary in case your printer driver controls do not allow you to get the first white step close to 1% transmittance or 99% opacity. If it is still significantly different from this ideal value, then it will be necessary to reset the maximum opacity of the negative file to a value equal to the opacity observed for the first white step, before you output it on transfer film, so that the negative will print the white level correctly. The Layer Opacity Slider in the layers palette provides a convenient means of making this fine adjustment. All the other opacity values will then be scaled proportionally.

Setting the Layer Opacity to less than 100% makes the tonal separation a bit coarser in principle, because the tonal scale of the image will be resolved across fewer than the full 256 levels. If the printer driver settings result in a white value close to 100%, it's unlikely the eye will notice this, so this adjustment in the following Workflow should be no more than 'fine-tuning'.

Use of the 'gamma slider' for applying tonal correction curves

There usually *is* a need to redistribute the levels of a digital image file before it can be rendered as a negative useable for analogue printing. If this is not done, a print made with the SPE will usually appear too dark in overall tonality, even though the black and white end-points print correctly. In effect, what is needed here is an approximate transformation of the linear scale of Relative Opacity %, used for digital files, into the logarithmic scale of Optical Density that is necessary for a negative to yield a visually acceptable print by any analogue photographic process having a typical characteristic response.

If we are prepared to accept an approximate transformation, it becomes unnecessary to use experimentally-derived curves, with all their burdensome and usually rather inaccurate measuring of many experimental points, because essentially the same result comes from re-setting one simple parameter in Photoshop, as follows.

This parameter is the middle slider in the Levels Histogram window, which controls the gamma (or contrast) value shown in the central box, and which always has a default value of 1.0 when the window is opened. The gamma needs to be increased to a value in the region of 1.8 to 2.2 in the **positive** image, which – be warned! – will then appear horribly overexposed in the digital sense, or ‘blown out’ on-screen. This adjustment usually suffices to re-map the relative distribution of levels from most positive digital image files to provide, **on inversion**, a negative with sufficient density to be printable by analogue processes. This one simple adjustment with the gamma slider effectively applies a built-in ‘generic Curve’ for transforming *all* digital picture files to analogue status. It agrees in practice with individually-derived personal correction curves, which have been scrupulously plotted by expert workers from point-by-point reflectance density measurements of actual step-tablet test prints, making it generally unnecessary to derive a curve for yourself.

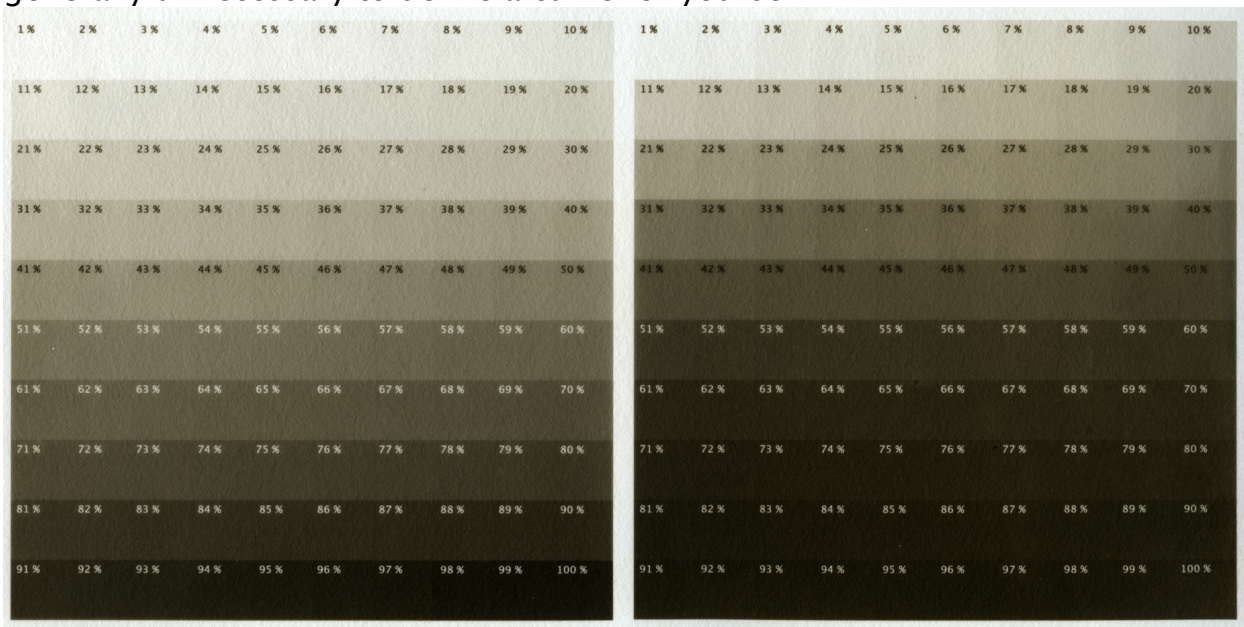


Figure 3. Scan of a palladium print of 100 step tablets made at the SPE
Gamma = 2.2 on left Default Gamma = 1.00 on right

Workflow for Making Digital Negatives in Photoshop CS:

Summary of the sequence of 'Things that may need to be done'

Phase I: Acquisition and Digitization of Image

- 1) Turn off Colour Management in Photoshop
- 2) Open Image File – if already available, or –
- 3) Scan Source – if necessary – and Save

Phase II: Preparation of Positive Image File

- 4) Preliminary Image Adjustments – if needed
- 5) Crop & Re-size Image
- 6) Monochromatize – if an RGB colour image
- 7) Burn & Dodge – if desired (a crude tool)
- 8) Set Black & White Levels
- 9) Adjust Local Contrast – in areas where needed
- 10) Retouch Flaws – where necessary
- 11) Save 'Perfected' Positive Image

Phase III: Preparation of Negative Image File

- 12) Apply Tone Correction Curve to Positive by resetting Gamma
- 13) Reverse Handedness – if image reads correctly on screen
- 14) Invert Tonality from Positive to Negative
- 15) Sharpen Image with Unsharp Mask
- 16) Mask Print Border – if desired (expensive in ink)
- 17) Flatten Layers & Save 'Adjusted' Negative Image File

Phase IV: Printing the Negative Image onto Film

- 18) Fine-tune Negative Opacity to Match Exposure Scale – if needed
- 19) Connect Printer. Load Film & Check Inks
- 20) Select Printer & Page Setup
- 21) Reduce Image File to 8 bits per channel
- 22) Set Printer Driver & Maximum Ink Density & Output the Negative
- 23) Number the Negative & allow ink to cure

Workflow for Making Digital Negatives in Photoshop CS:

Phase I: Acquisition and Digitization of Image

Key	Menu or Tool	Procedure
Keys are Shortcuts to Tools and Menus: my F6, F7, F8 are re-defined: Edit>Keyboard Shortcuts		

1) Turn Off Colour Management in Photoshop

⌘ ↑ K	Photoshop>Colour Settings>	In order to turn Colour Management OFF:-
	RGB:	'Monitor RGB - iMac'
	CMYK:	'Euroscale Coated v2' or other suitable choice
	Gray:	'Gray Gamma 1.8'
	Spot:	'0% Dot Gain' or as low as possible
	Colour Management Policies:	All OFF

2) Open Image File - if already available

⌘ O	File>Browse...>Open>	Acquire raw image, preferably 16 bit/channel
	If colour profiles mismatch:	Negative or positive, preferably RGB
		Discard any embedded colour profile

3) Scan Source - if necessary

File>Import>Epson Scanner	Use Epson Scan Software in Professional Mode
Settings:	Save the following settings:
Document Type:	'Film (with Film Holder)' if a negative or slide
Film Type:	'Positive Film'
Image Type:	'48-bit Color'
Scanning Quality:	Best
Resolution for 360 ppi negs:	Final Format:
(Use higher if heavy crop)	Source Format:
	10x8 in. 300 425 600 ppi
	5x4 in. 600 900 1250
	9x6 cm 900 1300 1850
	6x6 cm 1300 1850 2700
	35 mm 2100 3050 4350
Check Document Size:	10x8 in. 9.69x7.68 in. 246x195mm
	5x4 in. 4.72x3.70 in. 120x94 mm
	9x6 cm 3.25x2.20 in. 82x56 mm
	6x6 cm 2.20x2.20 in. 56x56 mm
	35 mm 1.417x0.945in. 36x24 mm
Target Size:	'Original'; Trimming: Off
Click Zoom button in Preview panel	for enlarged preview image of 6x9 etc
Set marquee	cropping as little as possible
Click Histogram button	to open histogram adjustment window
Check Output Levels	full range 0 to 255
Set Input Levels B&W sliders	on histogram; RGB channels; beware clipping
Click & Hold Show Output button	to see if there's any clipping bars at ends
Tone Adjustment	none: linear, centre slider gamma = 1.00
Auto Adjustments	none: turn off any
Densitometer	is useful to check B&W levels before scan
Click Close button	in histogram window
Click Scan button	to scan image and import into Photoshop
⌘ ↑ S	File>Save As>'Raw Scans'
	Save scan as .tif file in folder 'Raw Scans'
	no compression

Phase II: Preparation of Positive Image File

4) Preliminary Image Adjustments – if needed

	Double Click 'Background' layer	to select it in Layers palette
	Click OK button in New Layer window	Converts Background to Layer 0 for adjusting
	<u><i>IF not suitably oriented:-</i></u>	
	Image>Rotate Canvas>...	to rotate image for normal viewing
	<u><i>IF a negative:-</i></u>	
⌘I	Image>Adjustments>Invert	to invert tonality to positive for easy viewing
⌘O	(zero) View>Fit on Screen	Gives optimum image window size
	<u><i>OR:-</i></u>	
Z	Select 'Zoom' tool	Click 'Fit on Screen' button

5) Crop & Re-size Image

	Image>Image Size...	Check re-sizing parameters correctly selected
	Tick boxes for	Scale Styles; Constrain Props; Resample: Bicubic
C	Select 'Crop' Tool	to frame and re-size the image:-
	Click Tool preset picker bar top left (allowing margin of ~0.15")	Select tool to re-size image at 360 ppi
		A5: 8.0 x 5.6 in 203x142mm 2880x2016px
		A4: 11.4 x 8.0 in 290x203mm 4104x2880px
		A3: 16.3 x 11.4in 414x290mm 5868x4104px
⌘R	View>Rulers	to show rulers, if desired
⇧	Shift Lock	to replace crop icon cursor with crosshairs
⌘⇧ ;	View>Snap	to switch 'snap to edge' on/off as desired
	Click & Drag within image	to generate a marquee defining image
⌘'	View>Show>Grid	to generate grid – if useful for placement
↔	Keys	move whole marquee finely: it rotates about Registration point – can be dragged to re-align
	<u><i>IF desired to correct perspective:-</i></u>	
	Tick perspective box in toolbar	to transform marquee:-
	Click & Drag corners of marquee	onto a would-be rectangle for the image
	Pull edge centres of marquee	to resize – keeping corners within frame (only possible if crop undimensioned)
✓	Click ✓ button	to execute Crop
	<u><i>OR:-</i></u>	
∅	Click ∅ button	to cancel and re-set

6) Monochromatize – if an RGB colour image

F8*	Image>Adjustments>Channel Mixer	opens window to convert to monochrome
	Click Load... button	for preset channels file
	Select 'mono.cha' file	saved file from Documents:
	Click Load	L = 30%R + 59%G + 11%B (visual response)
	Tick Monochrome box	Output Channel: Gray
	Click OK button	to apply channel mix and close window
	<u><i>OR if desired to set channels manually:-</i></u>	
⇧⇩	Click each RGB channel	Study them for noise, or use as filter, then:-
	Arrow Keys to set channels	as preferred; total must sum to 100%
	Click OK button	to apply channel mix and close window
	Image>Mode>Grayscale	to revert image to grayscale (for smaller files)

7) Burn & Dodge – if desired (a crude tool)

O	Choose 'Burn' or 'Dodge' Tool Tool Options Bar>Brush Preset: Tool Options Bar>Range: Tool Options Bar>Exposure: Click & paint with tool <i>IF correction needed:-</i> Edit>undo	as required – alt click switches between them Brush Diam: 100–1000 pixels; Hardness: 0 Select from: Shadows, Midtones, Highlights Exposure slider: Try ca. 10–20% for intensity to burn or dodge areas of image. Can repeat or step back in History Palette and delete
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8) Set Black & White Levels

⌘L	Image>Adjustments>Levels Alt Click B&W level sliders Click OK button	opens Histogram window: Set B&W levels: to view effect on image areas for Dmax & Dmin points. Keep <u>all</u> image levels: don't clip to execute Levels adjustments – or Cancel
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9) Adjust Local Contrast – in areas where needed

⌘altO	View>Zoom In or Zoom Out <i>EITHER use 'Magnetic Lasso' Tool:-</i>	Magnify area, and select it:-
L	Choose 'Magnetic Lasso' Tool Click cursor on edge to select start	Feather: 3–5 px; Antialias: off; Width: 10 px Edge Contrast: 10–20%; Frequency: 100 Move mouse slowly round area to be selected Can back-delete anchors; Click to set anchor Use wider for smooth edges when returned to the starting point
[]	Keys change Width in use Click to get marquee <i>OR use 'Magic Wand' Tool:-</i>	
W	Choose 'Magic Wand' Tool Select>Grow	Contiguous; \pm Tolerance = range of levels Increases range
⌘L	Image>Adjustments>Levels Re-set Slider for Centre Level Check Preview box to see effect Click OK button	Accesses Histogram window: Re-set gamma <1.00 to increase contrast Match densities using eyedropper if need be in Levels window to apply contrast – or Cancel
⌘D	<i>OR ESC</i>	to deselect Lasso, or Click within marquee

10) Retouch Flaws – where necessary

⌘altO	(zero)	Zooms magnification to 100%. Seek defects:-
	Click & Drag in scroll bars	Scan frames from top left, raster-like manner
J	Choose 'Healing Brush' Tool Click Brush menu	Blending mode: Replace; Source: Sampled Aligned; Brush Size: Off; Brush Spacing: 25% Brush Diameter: Try 12 pixels; Hardness: 0
	Alt Click cursor on nearby area Click & paint	to locate sampling of replacement density Repair defects with Healing Brush. Continue.
⌘O	(zero)	to revert Zoom to normal when finished

11) Save 'Perfected' Positive Image

⌘↑S	Layer>Flatten Image File>Save As>'Positives360'	Flattens image to Background Layer (smaller) Save positive as .tif file in appropriate folder no compression; Mac byte order
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Phase III: Preparation of Negative Image File

12) Apply Tone Correction Curve to Positive by Resetting Gamma

	Double Click Background Layer	to select it in Layers palette
	Click OK button in New Layer window	to convert 'Background Layer' to 'Layer 0'
	<u><i>EITHER use Centre-point gamma slider:-</i></u>	
⌘ L	Image>Adjustments>Levels	opens Levels window & Histogram
	Re-set Slider for Centre Level	Set Gamma to ca. 2.2 Record the value used
	Check Preview box to see effect	Positive image will look ~2 stops overexposed
	Click OK button	to apply curve & close Levels window – or Cancel
	<u><i>OR use a Stored Curve:-</i></u>	
⌘ M	Image>Adjustments>Curves	opens adjustment curves control window:-
	Alt Click on grid	to improve coordinate grid to 10 divisions
	Load a selected .acv Curve	options stored for adjusting as desired by:
↓ ↑	Keys move any selected control point	'open' or 'close' highlights, midtones or shadows
	<u><i>OR Generate a Custom Curve: -</i></u>	by placing cursor on image area to modify:-
⌘ M	Image>Adjustments>Curves	opens adjustment curves control window:-
	⌘ Click the image area	to set a control point on the Curve
↓ ↑	Keys	darken or lighten this area, respectively
	⌘ Click in another area	to set a point to be further adjusted likewise
	Click & Hold eyedropper in an area	to see where that area lies on the Curve
	ctrl-Tab moves selected point	through control points on Curve
	shift ctrl-Tab	moves through in reverse
	shift-Click	enables multiple points to be selected
	Click OK button	to apply Curve & close curves window – or Cancel

13) Reverse Handedness – if image reads correctly on screen

F7*	Edit>Transform>Flip horizontal	Laterally reverses picture to a mirror image
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14) Invert Tonality from Positive to Negative

⌘ I	Image>Adjustments>Invert	Inverts image tonality to negative scale
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15) Sharpen Image with Unsharp Mask

F6*	Filter>Sharpen>Unsharp Mask	Amount: 100–250% usually 200%
		Radius: 0.5–1.5 pixels usually 0.8 pixel
		Threshold: 2–4 levels usually 3 (skin ~6)
	Tick Preview box	to see effect of USM when image clicked
	Click OK button	in USM window to apply USM – or Cancel

16) Mask Print Border – if desired (expensive in ink)

	Image>Canvas Size...	8.0x5.6 in. A5: 8.28x5.85 in. 210x149 mm
		11.4x8.0 in. A4: 11.70x8.28 in. 297x210 mm
		16.3x11.4in A3: 16.65x11.7 in. 421x297 mm
W	Choose 'Magic Wand' Tool	Antialiased; Contiguous; Tolerance 0
	Click with Wand in border area	to select border area to be masked
↑ F5	Edit>Fill...	Colour: Black; Blending Mode: Normal
⌘ D		to deselect border mask

17) Flatten Layers & Save 'Adjusted' Negative Image

⌘ ↑ S	Layer>Flatten Image	Flattens image to Background Layer (smaller)
	File>Save As>'Diginegs'	Save negative as Tiff file in folder 'Diginegs'
	Click OK button	Tiff Options: No compression; Mac byte order

Phase IV: Printing the Negative Image onto Film

18) Fine-tune Negative Opacity to Match Exposure Scale – if needed

If White ~99% Opacity skip this whole box:	ink density will be adjusted in printer settings 22)
Double Click Background Layer	to select it in Layers palette
Click OK button in New Layer window	to convert 'Background Layer' to 'Layer 0'
Click Image Layer Opacity button	to reveal Opacity Slider in Layers palette
Adjust Image Layer Opacity slider	to a value matching process to be used:
	step % prints just white when 0 % prints near Dmax
Record the step % value used	See: calibration of equipment & materials
Click Image Layer Opacity button	to close the Opacity Slider
Layer>Flatten Image	Flattens image to Background Layer

19) Connect Printer, Load Film & Check Inks

Connect Printer & Switch ON	Load Printer with one sheet digital transfer film
Launch Printer Utility	Ensure correct Printer selected from List
Click Status Monitor	to check ink levels & recharge if needbe
Choose Nozzle check	if printer long-dormant: head clean if needbe
Close Printer Utility window	

20) Select Printer & Page Setup

⌘↑P File>Page Setup...	Format for selected printer & paper size & Aspect
Click OK button	in Page Setup window
Click in Doc: edge area	to see fit of image on page
Alt Click in edge area	to see size of image, resolution, etc.

21) Reduce Image File to 8 Bits per Channel

Image>Mode>8 bits/channel	to prepare for sending to printer – if 8 bit
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22) Set Printer Driver & Maximum Ink Density & Output the Negative

⌘altP File>Print with Preview...	Check page settings:- Check centred image
Colour Management:	Document; Profile: Same as Source
Click Print... button	to access Print Settings window:-
Printer:	Check printer choice correct
Presets:	Use tested & saved Printer Driver settings file:
Print Settings>Media Type:	Appropriate paper choice (photo or matte)
Colour:	Colour ON
Advanced Mode:	Premium Photo Quality: highest resolution dpi
	High speed OFF; Mirror image OFF
Colour Management:	Mode: Epson Standard sRGB
Colour Controls:	All sliders centred; gamma = 2.2
	Advanced B&W mode: Neutral & 'Normal' tone
	Adjust maximum ink density to give White~99%
Extensions:	Normal paper (not thick)
Paper Configuration:	Colour density & head drying time – defaults
Click Print button	to print out the negative on transparency film
	Don't 'Save Changes' on closing file

23) Number the Negative & Allow Ink to Cure

Number the negative indelibly	Allow negative to dry in dust-free environment for at least 12 hours before use. Do not stack.
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A 'Short' Version of the Workflow

The previous detailed workflow was designed to cope with most eventualities, but it has necessarily become so lengthy that it is "hard to see the wood for the trees". If we are working with preformatted and 'perfected' positive images, the following are the only essential steps needed to prepare a tonally-corrected and density-adjusted negative.

Numbers refer to the original 'Things that May Need to be Done' boxes.

- 1) **⌘↑K** Photoshop>Colour Settings> Colour management **OFF**
- 4) **Double Click 'Background'** in Layers palette
Click OK New Layer 0
- 6) **F8*** Image>Adjustments>Channel Mixer
Load 'mono.cha' file: L = 30%R + 59%G + 11%B
Image>Mode>Greyscale
- 8) **⌘L** Image>Adjustments>Levels
Alt Click Sliders & Set B&W levels
- 12) **Set Middle Slider to Gamma $\approx 1.8 - 2.4$** for desired contrast
- 13) **F7*** Edit>Transform>Flip horizontal
- 14) **⌘I** Image>Adjustments>Invert
- 15) **F6*** Filter>Sharpen>Unsharp Mask
- 18) **IF** maximum ink density *cannot* give White for the 99% Opacity step in (22):
Adjust Image Layer Opacity to the % Opacity of the first 'white step'
Layer>Flatten Image
- 19) **Launch Printer Utility**: Ensure Printer connected, loaded, and switched on
Click Status Monitor to check ink levels etc
- 20) **⌘↑P** File>Page Setup... Format for Printer, Page, Paper size & aspect ratio
- 22) **⌘altP** File>Print with Preview...
Click Print... Print Settings: **Advanced B&W mode**, Neutral & 'Normal' tone
Adjust Maximum Ink Density to the value that gives ~99% Opacity step in the negative printing as the 'just white step'.
Click Print

* reassigned function keys