Colour Profiling Set-Up Procedures

BLACKMAGIC-SERVER 8th November 2001

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Draft New COLOUR MANAGEMENT Set-Up Procedure

Important Note:

1. Creating Profiles when proofing HR screened bit-maps (single bit tiffs)
It's important to create a profile, that includes the light, film/plate, chemistry characteristic of the final imaging device therefore a Quick Calibration Strip or IT8 (ICC chart) must first be screened in at eg: 2400 dpi –150# depending on which profiling method is used. The screened data, is then used to make the final profile adjustments.

2. Creating Profiles when proofing HR screened CT/ LW formats, PostScript and PDF files
When creating profiles from CT/LW formats eg: Rampage (CTR), Scitex Brisque CT/NLW (Impose), Delta List, PCC (PSPI) etc, it's not necessary to proof from ripped, as the final data is un-screened.

3. Gradation Scales
As part of the profiling procedure for both methods you will need to build a Quick Calibration Strip which is outlined in section 1.

4. Ink-Level Controls & Ink-Override controls
a. Ink-Over-Ride check box ... or .....
b. Individual ink level controls .... then first contact Mr Bob Murphy at Sandstone Software for the latest direct driver: E-Mail: murphyrw@msn.com.au

5. Software Compatibility
Make sure you always use BlackMagic V2.5.0 with Patch 2, otherwise, the setting contained within this document will not work.

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Section 1:

Creating a Quick Calibration Test Chart:

a. Build a Quark document or PDF with a (2) 21 step grey scales using the dot percentages below. The patches should be approx the same sizes as the Quick Calibration strip within BlackMagic.

- Scale No1. 21 steps containing (3) Colours CMY only
- Scale No2. 21 steps containing Black only
- Include some solid Yellow, Magenta, Cyan and Black patches. Also add an image that can be used a reference for overall gradation, grey balance and colour balance.

21 Step Grey Balance Chart

Note: Make (2) two 21 scales from the table below

No 1: (CMY) only for proofing a 3 colour neutral grey
No 2: (BLK) only for proofing Black only

STEP	CYAN	MAGENTA	YELLOW	BLACK
1.	3	2	2	3
2.	5	3	3	5
3.	10	7	7	10
4.	15	10	10	15
5.	**20**	**15**	**15**	**20**
6.	25	19	19	25
7.	30	24	24	30
8.	35	28	28	35
9.	40	32	32	40
10.	45	36	36	45
11.	**50**	**40**	**40**	**50**
12.	55	45	45	55
13.	60	50	50	60
14.	65	55	55	65
15.	70	60	60	70
16.	75	65	65	75
17	**80**	**70**	**70**	**80**
18,	85	75	75	85
19.	90	80	80	90
20.	95	85	85	95
21.	100	90	90	100

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Note 1: Once the chart has been complete, send it to the imagesetter of platesetter rip at eg: 2400 dpi – 150# and place the rip on hold. For future use, it's a good idea to off-load these ripped files on to a CD.

Note 2: When the above (3) three colour grey scale values are proofed or printed, they should result in a neutral grey appearance throughout all the 21 steps. The (3) colour grey scales should also match closely in grey balance to the Black 21 step scale in all steps.

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Section 2.

Print Density Grey Balance Chart

The following densities represent the average CMY & BLK readings from a photomechanical proof that has been produced from 21 step grey balance chart.

STEP	CYAN	MAGENTA	YELLOW	BLACK
1.	0.02	0.01	0.01	0.01
2.	0.04	0.03	0.03	0.03
3.	0.10	0.11	0.11	0.11
4.	0.16	0.16	0.16	0.16
5.	**0.23**	**0.23**	**0.24**	**0.24**
6.	0.27	0.28	0.29	0.29
7.	0.33	0.34	0.35	0.35
8.	0.39	0.40	0.40	0.40
9.	0.45	0.46	0.46	0.46
10.	0.50	0.51	0.51	0.51
11.	**0.55**	**0.56**	**0.56**	**0.56**
12.	0.62	0.63	0.63	0.63
13.	0.68	0.69	0.69	0.69
14.	0.78	0.80	0.80	0.80
15.	0.85	0.86	0.86	0.86
16.	0.94	0.95	0.95	0.96
17	**0.99**	**1.00**	**1.00**	**1.10**
18,	1.12	1.13	1.10	1.18
19.	1.19	1.20	1.19	1.28
20.	1.32	1.28	1.28	1.45
21.	1.42	1.39	1.35	1.65

Average TARGET INK HUE ERRORS (Contamination Density Values)

Process Colour	CYAN *(Red Filter)*	Magenta *(Green Filter)*	Yellow *(Blue Filter)*	Black (Violet)
CYAN	1.35	0.41	0.23	
MAGENTA	0.18	1.35	0.76	
YELLOW	0.01	0.05 to 0.07	0.90	
BLACK				1.65
White Paper	0.00	0.00	0.00	0.00

Note 1: The values above values represent an average of the densities for process colours. For more accurate density reading that apply to the process colours being used, read and record the values from a print sample or photomechanical proof.

Note 2: Check your densitometer for correct calibration by measuring a traditional reflection grey scale. The values of grey steps, should all be within 0.01 to 0.02 of each other, through the Red, Blue and Green filters. Also check the densitometer with known solid CMYK densities.

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Section 3:

MANUAL CALIBRATION METHOD (eg: EPSON 10000)

If you do not have the facilities to generate ICC profiles then the following set-up procedure will help establish a calibration for your printer. It's necessary to have a densitometre for this purpose. There are 3 basic steps to follow using the ReplaceColour Set Editor and LUT correction curves using the gradation Editor.

1. Create a ReplaceColour (Set to adjust the HUE Errors / Contamination values)
2. Set the top end densities for each colour in the "Customise section of the Pagesetup
3. Adjust the CMYK LUT correction curves for the correct gradation and grey balance output

Manual Calibration Method:
Improved colour accuracy with BlackMagic, has been achieved using the manual method of calibration (LUT and ReplaceColour sets). This has been achieved by the new drivers, where-by we can now control the ink levels within the customise section of the pagesetup, without reducing the LUT top end densities. This allows use to have (more bits 0-255) to carry out the colour interpolation. Furthermore, it has been established that you must first linearize in CMYK mode first, then switch in the Lc and Lm and then adjust the Lc & Lm ink levels within the "customise" section of the Pagesetup to re-establish the grey balance.

The setting listed below are designed to be used with LUT and ReplaceColour sets (Manual Method) If your creating an ICC PRINTER profile, then simply do not enter the ReplaceColour set values.

Setup Procedure:
Setup the linearization LUT using CMYK first and make sure the ink over-ride box is ticked the customise section of the pagesetup. When the end densities are achieved and the Grey balance is correct in steps (5, 11 & 17) then and then only then switch in the Lc & Lm. Adjust the Lc & Lm values only until the grey balance comes back to neutral. Avoid using the LUT to fine tune the grey balance at this stage. You may have to add a Process Dot Gain to re-adjust the overall gradation in the shadow area's.

The shadow separation comes more naturally, without having to twist the LUT curves, furthermore it's now a lot easier to maintain the grey balance throughout the 21 steps of the grey scale.

Note: If you happen to change the Printer type in the Pagesetup, then all the ink levels (CMYK Lc Lm) in the "Customise" section of the Pagesetup will revert to (100) in each. Make sure you record the values before you change the printer type.

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EG: SETUP PROCEDURE (Step by Step)

Step 1.
Select the ReplaceColour Editor
New
Name: eg: **Epson 10000 (Dye)** ReplaceColour set
Select eg: **CYAN** and change the name from Process to Cyan
Enter the values
Cyan 100%
Magenta 10%
Yellow: 0%
Select eg: **MAGENTA** and change the name from Process to Magenta
Enter the values
Magenta 100%
Yellow 15%
Cyan: 3%
Select eg: **YELLOW** and change the name from Process to Yellow
Enter the values
Yellow 100%
Magenta: 0%
Cyan: 0%
Select eg: **BLACK** and change the name from Process to Black
Enter the values
Black 100%
Cyan: 10%
<save> ***NOTE: Double check each name values entered***

Note: The contaminated values for each colour are adjusted till they read approx the following.

Step 2.
Linearisation Procedure (Setting Top End Densities and Tone Gradation & Grey Balance)
- Create a LUT Linearisation for CMYK using the following control points.

Eg of Input / Output for the Epson 10000 only

Cyan:		**Magenta**		**Yellow**		**Black**	
100	(80%)	100	(80%)	100	(80%)	100	(80%)
88	(50%)	88	(49%)	90	(49%)	(88%)	(47%)
20	(9%)	20	(9%)	22	(10%)	(19%)	(8%)

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Configure a Pagesetup with the following eg:
- Printer Type: Epson 10000
- Resolution: 720 dpi x 720 dpi
- Screening: Stochastic
- Colour Space: **CMYK**
- Colour Management: Select the saved ReplaceColour set values for the printer.
- Colour Management: Select the saved LUT Linearisation in Step 1.
- De-Screening: RDT Smooth 1
- Customise: Select paper type eg: Dupont Semi-Gloss paper (ink weights are pre-set) or the appropriate paper setting.
- Select either Dye or Pigment based, depending on the type of inks being used
- Click the Ink Over-Ride box in the Pagesetup "customise section" and enter the following - Ink Level setting for CMYK only

720 dpi x 720 dpi	**720dpi x 1440 dpi**
Cyan (36)	Cyan (18)
Magenta (62)	Magenta (32)
Yellow (45)	Yellow (21)
BLK (41)	BLK (21)

Note: The above value are to be used as a guide only and my not suite all paper settings

Step 3.
Output the ripped 21 step grey (CMY) and BLK (2400 dpi / 150)

Step 4.
Setting Top End ink weights for CMYK
Measure and adjust the (solid / 100%) CMYK link Level setting" ONLY" in the "Customise" section of the Pagesetup till the top end densities (Solid CMYK patches) read approx:

Cyan:	**Magenta:**	**Yellow:**	**Black:**
1.35 to 1.40	1.35 to 1.40	.85 to .90	1.65 to 1.75

Note: Do not force the Yellow solid density to high, as the proofs take longer to dry and stabilise in terms of colour shift.

Step 5. Setting the Gradation and Grey balance for CMYK.
a. Adjust the LUT Linearisation between the 80% and 0% till step **(11)** of the 21 step grey scale reads approx 0.55 in the CMY and BLK
b. Adjust the LUT Linearisation between the 80% and 0% till step **(5)** of the 21 step grey scale reads approx 0.24 in the CMY and BLK
c. Adjust the LUT Linearisation between the 80% and 0% till step **(17)** of the 21 step grey scale reads approx 01.00 in the CMY and BLK

Note 1: The 21 step scale should appear neutral grey when the above densities are correct.

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Step 6: Ink Overlap settings for +Lc +Lm.
- Open the Pagesetup and select:
- Colour Space: CMYK +Lc +Lm
- Enter the following Ink Level setting for Lc & Lm

720 dpi x 720 dpi	720dpi x 1440 dpi
Light Cyan (40)	Light Cyan (15)
Light Magenta (70)	Light Magenta (27)

<save>

Step 7.
Re-output the 21 step scale
- Adjust the Lc & Lm Ink Level values (ONLY), till the 21 step grey scale appears neutral in the CMY scale.
- Add a Process Dot Gain (LUT) to fine tune the grey balance and overall gradation.

Note: This may take a few adjustments till the grey scale appears neutral.

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Section 4:

Examples of Ink Level Setting, ReplaceColour and LUT Gradation settings

HP 5000 (Average Paper setting)

Configure a Pagesetup with the following eg:
- Printer Type: eg: HP 5000
- Resolution: 600 dpi x 600 dpi (Variable Drop-Let supported mode)
- Screening: Stochastic
- Colour Space: **CMYK +Lc +Lm**
- Colour Management: Select the saved ReplaceColour set values
- Colour Management: Select the saved LUT Linearisation and Process Dot Gain LUT
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- De-Screening: RDT Smooth 2
- HP 5000 Front Panel Printer Settings:
  Print Quality: Best
  Media Type: Photo Satin (Low Ink Level)

HP 5000 ReplaceColour set
CYAN: Cyan 100%, Magenta 11%
MAGENTA: Magenta 100%, Yellow 5%
YELLOW: Yellow 100%
BLACK: Black 100, Cyan: 12%

Cyan:		**Magenta**		**Yellow**		**Black**	
100	67%	100	53%	100	55%	100	71%
89	38 %	95	37%	93	36%	98	57%
20	8%	89	30%	67	22%	90	37%
		22	8%	24	11%	67	23%

Process Dot Gain Values (User Dot Gain)

97	92%
90	81%
13	10%

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HP 5000: Pre-Press Proofing Paper "PPPP" Semi Gloss

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 1st November 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
  ink Level setting for CMYK +Lc +Lm
- Paper Type: "**PPPP" Semi-Gloss**

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 8%, Yellow: 0%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 10%

Linearization LUT: Input / Output Values

Cyan	**Magenta**	**Yellow**	**Black**
100 (80%).....	100 (80%)	100 (80%)	100 (80%)
87 (50)			
70 (31%)	88 (42%)	89 (41%)	..89% (41%)
		43 (21%)	
17 (4%)	14 (6%)	13 (7%)	18% (6%)

Process Dot Gain Correction Curve: **Input / Output Values**
100 (100)
97 (89)
90 (80)

Ink Level Settings (Heavy Weight Set)
BLK (65), Cyan (80) , Magenta (58), Yellow (60), Light Cyan (67), Light Magenta (48)

Ink Level Settings (Heavy Weight Set)
BLK (70), Cyan (80) , Magenta (65), Yellow (60), Light Cyan (70), Light Magenta (49)

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HP 5000: Pre-Press Proofing Paper "PPPP" Matt

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 1st November 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Paper Type: "**PPPP" Matt**

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 8%, Yellow: 0%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 10%

Linearization LUT: Input / Output Values

Cyan	**Magenta**	**Yellow**	**Black**
100 (80%).....	100 (80%)	100 (80%)	100 (80%)
87 (50)			
70 (31%)	90 (42%)	89 (41%)	..89% (41%)
	65 (30)	43 (21%)	
17 (4%)	14 (6%)	13 (7%)	18% (6%)

Process Dot Gain Correction Curve: **Input / Output Values**
100 (100)
97 (89)
90 (80)

Ink Level Settings (Heavy Weight Set)
BLK (65), Cyan (80) , Magenta (58), Yellow (60), Light Cyan (67), Light Magenta (48)

Ink Level Settings (Heavy Weight Set)
BLK (70), Cyan (80) , Magenta (65), Yellow (60), Light Cyan (70), Light Magenta (49)

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HP 5000: Pre-Press Proofing Paper "PPPP" Matt

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 4th November 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Paper Type: "**PPPP" Matt**

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 8%, Yellow: 0%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 10%

Linearization LUT: Input / Output Values
Cyan Magenta Yellow Black
100 (80%)..... 100 (80%) .... 100 (80%) 100 (80%)
91 (53)
81 (41%) .....90 (42%) .....88 (43%) 89% (36%)
70 (33%)
17 (4%) .....17 (8%) .....24 (11%) 19% (4%)

Process Dot Gain Correction Curve: **Input / Output Values**
100 (100)
97 (88)
90 (76)
31 (22)

Ink Level Settings (Heavy Weight Set)
BLK (67), Cyan (80) , Magenta (63), Yellow (66), Light Cyan (73), Light Magenta (48)

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HP 5000: Rexam DMPH 170 EN 5000

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 30th October 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Paper Type: **Rexam DMPH 170 EN 5000**
  Note: This paper type has a strong Blue Whitener, which make matching press more difficult. This stock also comes out a bit sticky and need time to dry.

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 11%, Yellow: 3%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 6%, Yellow 4%

Linearization LUT: Input / Output Values

Cyan	Magenta	Yellow	Black
100 (80%).....	100 (80%)	100 (80%)	100 (80%)
86 (45%)	89 (41%)	89 (41%)	..89% (41%)
70 (30)			
15 (5%)	14 (5%)	15 (5%)	18% (5%)

Process Dot Gain Correction Curve: **Input / Output Values**
100 (100)
97 (89)
90 (90)

Ink Level Settings (Heavy Weight Set)
BLK (75), Cyan (75) , Magenta (55), Yellow (60), Light Cyan (65), Light Magenta (50)

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HP 5000: Rexam DMPH 170 EN 5000

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 31st October 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Paper Type: **Rexam DMPH 170 EN 5000**
  Note: This paper type has a strong Blue Whitener, which make matching press more difficult. This stock also comes out a bit sticky and need time to dry.

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 11%, Yellow: 3%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 6%, Yellow 4%

Linearization LUT: Input / Output Values
Cyan Magenta Yellow Black
100 (80%)..... 100 (80%) .... 100 (80%) 100 (80%)
89 (44%) .....89 (42%) .....89 (44%) 89% (41%)
70 (28)
15 (5%) .....14 (6%) .....15 (5%) 18% (5%)

Process Dot Gain Correction Curve: **Input / Output Values**
100 (100)
97 (89)
90 (90)

Ink Level Settings (Heavy Weight Set)
BLK (75), Cyan (75) , Magenta (55), Yellow (60), Light Cyan (56), Light Magenta (48)

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HP 1050: Bond Paper

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 31st October 2001
- Printer Type: HP 1050
- Resolution: 600 dpi x 600 dpi
  Printer Front Panel Mode: Best
- Screening Type: Stochastic
- Colour Space: CMYK
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- De-Screening: RDT Smooth 2
- Paper Type: HP Standard Bond

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 11%, Yellow: 0%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 10%

Linearization LUT: Input / Output Values

Cyan	Magenta	Yellow	Black
100 (80%).....	100 (71%)	100 (71%)	100 (59%)
84 (42%)	84 (41%)	84 (44%)	..88% (44%)
16 (6)	16 (5)	12 (5)	17 (7)

Ink Level Settings (Heavy Weight Set)
BLK (54), Cyan (88) , Magenta (75), Yellow (65)

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HP 5000 with Epson Heavy Weight Semi-Gloss

- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 25th October 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Ink Level setting for CMYK +Lc +Lm
- Paper Type: Epson Heavy Weight Semi-Gloss
  Note: This paper has no Blue whitener and produces excellent results

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 11%, Yellow: 3%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 12%, Yellow 8%

Linearization LUT: Input / Output Values

Cyan	Magenta	Yellow	Black
100 (80%).....	100 (80%)	100 (80%)	100 (80%)
86 (45%)	89 (41%)	90 (41%)	..89% (41%)
70 (30)			
15 (5%)	13 (5%)	15 (5%)	18% (5%)

Process Dot Gain Correction Curve: Input / Output Values
100 (100)
97 (89)
90 (90)

Ink Level Settings (Heavy Weight Set STD Settings)
BLK (75), Cyan (80) , Magenta (55), Yellow (65), Light Cyan (65), Light Magenta (46)

Ink Level Settings (Greg Arter CPI - Light Weight Settings)
BLK (75), Cyan (75) , Magenta (50), Yellow (60), Light Cyan (65), Light Magenta (46)

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HP 5000 (using Kodak White Based Film)

Configure a Pagesetup with the following eg:
- Customer Name: CJM Graphics Melbourne
- Date: 25th October 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Ink Level setting for CMYK +Lc +Lm
- Paper Type: Kodak Premium White Based Film

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 11%, Yellow: 3%
MAGENTA: Magenta 100%, Yellow 5%, Cyan: 0%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 12%, Yellow 8%

Linearisation LUT: Input / Output Values
Cyan Magenta Yellow Black
100 (80%)..... 100 (80%) .... 100 (80%) 100 (80%)
86 (45%) .....89 (41%) .....90 (43%) 87% (45%)
70 (30)
21 (8%) .....24 (10%) .....21 (10%) 18% (7%)

Process Dot Gain Correction Curve: Input / Output
100 (100)
97 (89)
90 (90)
39 (35)

Ink Level Settings
BLK (75), Cyan (86) , Magenta (70), Yellow (70), Light Cyan (65), Light Magenta (61)

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BLACKMAGIC-SERVER 8th November 2001

EPSON 10000 (Pigment) (Driver Rev: New Beta version)

Configure a Pagesetup with the following eg:
- Customer Name: CPI Graphics Demo Room Melbourne
- Date: 25th October 2001
- Printer Type: Epson 10000 (Beta Version only)
- Resolution: 720 dpi x 720 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 1
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Ink Level setting for CMYK +Lc +Lm
- Paper Type: “PPPP” Semi-Gloss

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 10%, Yellow: 3%
MAGENTA: Magenta 100%, Yellow 15%, Cyan: 3%
YELLOW: Yellow 100%, Magenta: 1%, Cyan: 0%
BLACK: Black 100%, Cyan 12%, Yellow 9%, Magenta 7%

Linearisation LUT: Input / Output Values
Cyan Magenta Yellow Black
100 (80%)..... 100 (80%) .... 100 (80%) 100 (80%)
87 (49%) .....86 (49%) .....85 (55%) .... ..(88%) (50%)
13 (5%) .....14 (7%) .....14 (7%) .....(19%) (5%)

Ink Level setting for CMYK +Lc +Lm
720 dpi x 720 dpi
Cyan (50) , Magenta (50), Yellow (75), BLK (58), Light Cyan (40), Light Magenta (70)

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Epson 9000 (Epson Heavy Weight Semi-Gloss)

Configure a Pagesetup with the following eg:
- Customer Name: CPI Demo Studio
- Date: 25th October 2001
- Printer Type: Epson 10000 (Beta Version only)
- Resolution: 720 dpi x 720 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Ink Level setting for CMYK +Lc +Lm
- Paper Type: **Epson Heavy Weight Semi-Gloss**

ReplaceColour Values:
CYAN: Cyan 100%, Magenta 9% , Yellow: 3%
MAGENTA: Magenta 100%, Yellow 16% , Cyan: 3%
YELLOW: Yellow 100%, Magenta: 0%, Cyan: 0%
BLACK: Black 100%, Cyan 10%, Yellow 7%, Magenta 5%

Linearisation LUT: Input / Output Values

Cyan	Magenta	Yellow	Black
100 (80%).....	100 (80%)	100 (80%)	100 (80%)
89 (41%)	89 (41%)	89 (41%)	..(90%) (43%)
15 (5%)	13 (5%)	15 (6%)	(18%) (6%)

Ink Level Settings: CMYK +Lc +Lm
720 dpi x 720 dpi
Cyan (68) , Magenta (65), Yellow (60), BLK (60), Light Cyan (75)

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Section 5:

Creating ICC MATCH PROFILE: SET-UP PROCEDURE

Tools required for creating MATCH and PRINTER profiles:
1. Densitometre
2. Spectrophotometer eg: X-Rite UV Strip Reader
3. G4 Macintosh networked to BlackMagic
4. ICC software and with colour editor package
5. Correct lighting or proofing viewing conditions (5000 degrees Kelvin)

Creating the MATCH Profile:

Step 1.
Make a Quark document (PROFILE TEST FORM) that contains the following:
a. ICC Target Sheets (centred) in the middle of the sheet
b. Place a variety of Images with a full range of colours around the sheet
c. Insert the 21 step grey scale into the test form as described in Section 1.

Step 2.
Send both completed Quark document to the imagesetter or platesetter rip at eg: 1800 dpi to 2400 dpi 150#. Make film and plates of the larger chart containing the ICC target, Images.

Note 1: Do not delete the ripped files from the imagesetter or platesetter queue after imaging. (keep the data as this will be used in other step of the profiling procedure.

Step 3.
Have plates made from film or imaged direct to plate. If plates are made from film, then check the Highlight burn out is at the correct exposure level. Have the ICC Target sheet and images printed in balance for general 4 colour commercial printing purposes using in-house standards. Alternatively produce a photomechanical proof

Step 4.
Make sure the press is printing evenly across the sheet.
eg: of Print Densities
- Cyan: 1.35 to 1.45
- Magenta: 1.35 to 1.45
- Yellow: 1.0 to 1.10
- Black: 1.70 to 1.90

Note 1: Also make a test using the various media type settings to establish lowest ink levels. eg: Pagesetup settings for HP 5000: 600 dpi x 600 dpi – CMYK +Lc +Lm - RDT Smooth 2 for (150#)

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Step 5.
Measure the ICC Target and create a MATCH Profile from the printed sheet or photomechanical proof using:

- GCR or UCR.
- Set Max Ink to eg: 375%
- Max Black eg: 95%
- Ensure the Black generation start point is set to eg: 75%

Note 1. If you are creating a MATCH profile from a photomechanical proofing system, then the dot gain on the chemical proof is more likely to be heavier than the printed sheet. This will in most cases reproduce a heavier weighted proof, especially in the highlight to quarter-tone area's when using the final MATCH and PRINTER profiles.

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Section 6.

Creating ICC Linearisation

This section contains two alternative methods for creating the linearization before the ICC Printer profile is measured.

Method 1.

a. Set the top end densities for each colour in the "Customise section of the Pagesetup
b. Create a **CMYK Linerarization LUT** correction curve to achieve the correct gradation and grey balance output

Method 2.

c. Set the top end densities for each colour in the "Customise section of the Pagesetup
d. Create **a Process Dot Gain** curve that effects CMYK channels together for the correct gradation and grey balance output

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Method 1.
Creating an ICC PRINTER Profile eg: EPSON 10000 (Dye)

Before producing the ICC PRINTER profile, follow the guidelines below.

Step 1. Linearisation Procedure (Setting Top Densities / Tone Gradation & Grey Balance)
Create a LUT Linearisation for CMYK using the following control points.

Input / Output

Cyan:		Magenta		Yellow		Black	
100	(80%)	100	(80%)	100	(80%)	100	(80%)
88	(50%)	88	(49%)	90	(49%)	(88%)	(47%)
20	(9%)	20	(9%)	22	(10%)	(19%)	(8%)

Note: Adjust the top end points in each of the CMYK quadrants down to 80%. This then provides the facility to add an additional Top End "BUMP" or Shadow Bust" to the CMYK solid colours, after the ICC profile has been applied.

Step 2.
Configure a Pagesetup with the following eg:
- Printer Type: Epson 10000
- Resolution: 720 dpi x 720 dpi
- Screening: Stochastic
- Colour Space: **CMYK**
- Colour Management: Do not have any ReplaceColour set values entered.
- Colour Management: Select the saved LUT Linearisation in Step 1.
- De-Screening: RDT Smooth 1
- Customise: Select paper type eg: Dupont Semi-Gloss paper (ink weights are pre-set)
- Select either Dye or Pigment based, depending on the type of inks being used
- Click the Ink Over-Ride box in the Pagesetup "customise section"
- Enter the following Ink Level setting for CMYK only

720 dpi x 720 dpi	720dpi x 1440 dpi
Cyan (36)	Cyan (18)
Magenta (62)	Magenta (32)
Yellow (45)	Yellow (21)
BLK (41)	BLK (21)

Step 3.
Output the ripped 21 step grey (CMY) and BLK (2400 dpi / 150)

Step 4.
- Setting Top End ink weights for CMYK
- Adjust the link Level setting in the customise section till the top end densities(Solid CMYK patches) read approx:

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Cyan:	Magenta:	Yellow:	Black:
1.35 to 1.40	1.35 to 1.40	.85 to .90	1.65 to 1.75

Step 5. Setting the Gradation and Grey balance for CMYK.

a. Adjust the LUT Linearisation between the 80% and 0% till step (11) of the 21 step grey scale reads approx 0.55 in the CMY and BLK
b. Adjust the LUT Linearisation between the 80% and 0% till step (5) of the 21 step grey scale reads approx 0.24 in the CMY and BLK
c. Adjust the LUT Linearisation between the 80% and 0% till step (17) of the 21 step grey scale reads approx 01.00 in the CMY and BLK

Note 1: The appearance of the 21 step scale should be neutral grey when the above densities are correct.

Step 6.

- Open the Pagesetup and select:
- Colour Space: CMYK +Lc +Lm
- Enter the following Ink Level setting for Lc & Lm

720 dpi x 720 dpi	720dpi x 1440 dpi
Light Cyan (40)	Light Cyan (15)
Light Magenta (70)	Light Magenta (27

<save>

Step 7.

- Re-output the 21 step scale
- Adjust the Lc & Lm Ink Level values ONLY, till the 21 step grey scale appears neutral in appearance. *Note: This may take a few adjustments till the grey scale appears neutral.*

Step 8.

- Proof the ripped (2400 dpi x 150#) IT 8 or (ICC Target sheet) and create a printer profile.

Note 1: be sure to set the BLK generation start point back to eg: (75%) or higher, so as to reduce the appearance of any BLK spotting or BLK peppering effect.

***Note 2:* If the balance is not exactly correct, then the ICC profile will correct the automatically**

Note 3: If you move the values within the Linearisation, then output the 21 step scale and check the solid CMYK solid, so they still read what is listed in step 3

Note 4: Repeat the above until correct.

Step 9.

- Open the Pagesetup then:
  - Check the ICC box
  - Select the MATCH Profile
  - Select the PRINTER profile
  - <save>

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Note 1: If you want to proof Black as pure Black, then check the appropriate box in the colour management section of the pagesetup.

Step 10.

- Proof the ICC target sheet with the images and grey scales using in both 3 colours (CMY) and 4 colour (CMYK) with:
  A: Perceptual
  B: Saturation
  C: Relative
  D: Absolute Calorimetric

Note: By proofing the file in 3 colours (CMY), this allows you to visually see what effect the BLK plate is having on the final proof.

Step 11.
Grey Balance Correction
Add an LUT correction curve to adjust the grey balance or add a process dot gain curve to adjust the overall gradation if necessary.

Step 12.
Overall Dot Gain Correction
Add a Process Dot Gain correction curve to adjust the overall gradation of all CMYK curves equally together.

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Method 2.

Alternative ICC Linearization Method

The concept behind this method, is to create:
A: Linearisation LUT, setting the CMYK top levels to 80%
B. Add a Process Dot Gain curve to control the Gradation

The individual ink levels are controlled through the "Customise section of the Pagesetup to achieve the correct solid ink weights. If the three quarter tone appear slightly green (lacking in Magenta), then it may be necessary to bend up LUT correction curve (UP) in the Magenta channel only. Your feed back on using this method would very much be appricated

Listed below are the steps for setting up the new linearization method, when using ICC profiles.

Step 1.
Create a linear LUT Curve CMYK
- Set the top end to 80% (Straight line to the zero base line)

Cyan:	Magenta	Yellow	Black
100 (80%)	100 (80%)	100 (80%)	100 (80%)
	76 (69%)		
	49 (40)		

Note: the Magenta correction values, should only be added if the grey scale goes a little green in the shadow end.

Step 2. Process Dot Gain Input / Output Values
100 (100)
64 (36)
<Save>

Step 3.
Open the pagesetup
- Select: Colour Space: CMYK
- Resolution: 720dpi x 720 dpi (eg: Epson 10000 Printer)
- Screening: Stochastic
- De-Screening: RDT "Smooth 1
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Set the CMYK Ink Levels to eg:
  BLK (58), Cyan (50) , Magenta (77), Yellow (75), Light Cyan (40), Light Magenta (70)

<save>

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Step 4.
Output the 150 # Quick Cal Bit-Map
Measure and adjust the ink Levels within the Pagesetup "Customise" section, till you achieve the correct top end densities eg:
Cyan: 1.35
Magenta: 1.35
Yellow: 1.1
Black: 1.65
Note: If the top end densities fall short of the target, the first raise the ink levels. If the top end densities still fall short, then you have to go back to the User Dot Gain and raise the level from 80% to eg: 90%

Step 5.
Once the top end densities are correct, adjust the Process Dot Gain control, till in the Midtone in (step 11) reads approx 0.55. Also take note of the values within step (5) eg should read approx 0.23 in the CMY channels and Step (17) approx 1.0 in the CMY. Once you have achieved the best possible top end densities and a good Grey Balance in the Midtone (Step 11), then and only then select ColourSpace: CMYK + Lc +Lm <save>

Step 6.
Re-run the 150# Quick Cal using CMYK +Lc +Lm.
- only adjust the Lc & Lm values only, till the Grey Balance comes back to neutral.
- Avoid using the LUT Gradation controls at this stage, just focus on re-aligning the Grey Balance between the Highlight end and (step 11) by only adjusting the LC and Lm values.

Note; you may notice that the upper part (three Quarter tones) of the Grey scale goes a little green. If so, then add a LUT correction curve in the Magenta quadrant, so as the correct the scale back to neutral.

Step 7.
Once the grey scale is all OK in terms of top end densities and Grey balance using CMYK +Lc +Lm, you then print the ripped ICC Printer Target and create a new ICC PRINTER profile. As always, make sure you set the correct Black generation point, so you reduce the Black Spotting or Black peppering effect to a minimum.

Step 8.
Note: If the top end densities are effected, after the ICC profile is applied, then you can boost the top end by either.
a: moving the LUT correction curves up above the 80% mark sharply .... or .....
b. increase the appropriate ink levels in the pagesetup by eg: 5 units at a time and re-run a test.

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Method 3.

Alternative ICC Linearization Method

The concept behind this new method, is to use a single Process Dot Gain curve and control the ink levels through the “Customise section of the Pagesetup. If the three quarter tone appear slightly green (lacking in Magenta, then it may be necessary to add a LUT correction curve in the Magenta channel only.

Note: The down side of this technique is that you do not have the facility to boost the top end CMYK densities, if the ICC profile happens to clip the solid ink weights. Your feed back on using this method would very much be appreciated

Listed below are the steps for setting up the new linearization method, when using ICC profiles.

Step 1.
Create a Process Dot Gain Curve (User Dot Gain)
Note this is a single curve representing CMYK)
- Set the top end to 80%
- Bend the Gradation curve by pulling down at the 86% mark:

EG: Input / Output Values
100 (80)
86 (45)
11 (4)
<Save>

Step 2.
Open the pagesetup
- Select: Colour Space: CMYK
- Resolution: 720dpi x 720 dpi (eg: Epson 10000 Printer)
- Screening: Stochastic
- De-Screening: RDT "Smooth 1
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Set the CMYK Ink Levels to eg:
  BLK (58), Cyan (50) , Magenta (77), Yellow (75), Light Cyan (40), Light Magenta (70) <save>

Step 3.
Output the 150 # Quick Cal Bit-Map
Measure and adjust the ink Levels within the Pagesetup "Customise" section, till you achieve the correct top end densities eg:
Cyan: 1.35
Magenta: 1.35
Yellow: 1.1
Black: 1.65

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Note: If the top end densities fall short of the target, the first raise the ink levels. If the top end densities still fall short, then you have to go back to the User Dot Gain and raise the level from 80% to eg: 90%

Step 4.
Once the top end densities are correct, adjust the Process Dot Gain control, till in the Midtone in (step 11) reads approx 0.55. Also take note of the values within step (5) eg should read approx 0.23 in the CMY channels and Step (17) approx 1.0 in the CMY. Once you have achieved the best possible top end densities and a good Grey Balance in the Midtone (Step 11), then and only then select ColourSpace: CMYK + Lc +Lm <save>

Step 5.
Re-run the 150# Quick Cal using CMYK +Lc +Lm.
- only adjust the Lc & Lm values only, till the Grey Balance comes back to neutral.
- Avoid using the LUT Gradation controls at this stage, just focus on re-aligning the Grey Balance between the Highlight end and (step 11) by only adjusting the LC and Lm values.

Note; you may notice that the upper part (three Quarter tones) of the Grey scale goes a little green. If so, then add a LUT correction curve in the Magenta quadrant, so as the correct the scale back to neutral.

Step 6.
Once the grey scale is all OK in terms of top end densities and Grey balance using CMYK +Lc +Lm, you then print the ripped ICC Printer Target and create a new ICC PRINTER profile. As always, make sure you set the correct Black generation point, so you reduce the Black Spotting or Black peppering effect to a minimum.

Step 7.
Note: If the top end densities are effected, after the ICC profile is applied, then you can only boost the top end ink weights by increase the appropriate ink levels in the pagesetup by eg: 5 units at a time and re-run a test.

Listed below are a few examples of ICC Process Dot Gain Linearization settings.

HP 5000 ICC Linearisation "PPPP" Matt
- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 4th November 2001
- Printer Type: HP 5000 (Beta Version only)
  Printer Front Panel Mode: Best (Highest Quality Setting)
  Printer Front Panel "Media mode: Photo Gloss Satin
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 2
- Click the Ink Over-Ride box in the Pagesetup "Customise Section"
- Paper Type: “PPPP” Matt

Ink Level Settings (Heavy Weight Set)
BLK (67), Cyan (80) , Magenta (63), Yellow (66), Light Cyan (73), Light Magenta (48)

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Process Dot Gain Correction Curve: Input / Output
100 (80)
86 (45)
11 (4)

EPSON 10000 ICC Linearisation "PPPP" Matt
- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 4th November 2001
- Printer Type: Epson 10000 (Beta Version only)
- Resolution: 720 dpi x 720 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT Smooth 1
- Click the Ink Over-Ride box in the Pagesetup "Customise" section"
- Paper Type: **"PPPP"** Matt

Ink Level Settings
BLK (58), Cyan (50) , Magenta (77), Yellow (75), Light Cyan (40), Light Magenta (70)

Process Dot Gain Correction Curve: Input / Output
100 (80)
86 (45)
11 (4)

HP 1050 ICC Linearisation "HP Standard Coated Bond"
- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 4th November 2001
- Printer Type: HP Large/ Small (Beta Version only)
  Printer Front Panel Mode: Best
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT
- Click the Ink Over-Ride box in the Pagesetup "Customise" section"
- Paper Type: HP Standard Coated Bond

Ink Level Settings
BLK (54), Cyan (88) , Magenta (75), Yellow (65)

Process Dot Gain Correction Curve: Input / Output
100 (80)
86 (45)
11 (4)

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Section 7.

Editing ICC Profiles

Step 1.
If your editing a profile using an editing package, then create a tiff 6.0 image at 300 dpi from a section of the ripped data that you fell would relate to the area's being changed. Send the file to the Macintosh, so it can be used as an editing reference. By do this, you will actually be editing a know values which include (Laser/ Film/Plate Chemistry) characteristics.

Step 2.
Compare to the proof to the MATCH target proof in both 3 colours and in 4 colours under standard lighting conditions. Visually make your assessments using the following guidelines.

- Check the top end densities: (ie: Solid CYMK values)
- Check HUE Errors: CMY
- Check the overall Gradation
- Check for any overall colour casts
- Check Grey Balance: HL/ Midtone, Three Quarter Tones area's
- Check Black Gradation: HL / Midtone / Three Quarter Tones area's

Check the following Colours in the order provided and record your comments.

- Check Reds: CMY content
- Check Yellow: CMY content
- Check Green: CMY content
- Check Cyan: CMY content
- Check Violet: CMY content
- Check Magenta: CMY content
- Check Pastel's area's
- Check Mid-Range flesh tones
- Check Browns

Note 1: from experience you should find the overall result is very close, however in most instances the Cyan content the solid (100%) Yellow area's has to be reduced to zero %.

Note 2: Before using any edit package, use an attached LUT Correction profile, to make tonal and grey balance adjustments or alternatively use the Process Dot Gain correction LUT, which allows all colours to be moved in balance with each other.

Step 3.
Use a Profile Editor package to make any necessary adjustment to specific colour areas. Note: be systematic and do one adjustment at a time.

Step 4.
Generate a new ICC PRINTER profile and re-proof the TARGET ripped data.

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Conclusion & Observations:

The final result using ICC profiles is always dependent on the quality of both the MATCH and PRINTER profiles combined.

If you are proofing from one rip to several proofing devices that are of the same model & type or be of a different type, then use the Pagesetup Pools with AutoProofing activated. By using Pagesetup Pools, the BlackMagic system will first look for the next available printer and ensure the correct colour PRINTER profile is attached to the next incoming files to be processed.

Note 1: The only benefit by using pigment inks over dye based inks, is that Pigment inks dry almost instantly. Large colour shifts can be seen when viewing proofs under different lighting conditions. If your using Pigment inks, then make sure the proofs are always viewed under standard 5000 degrees Kelvin lighting conditions. Pigment based proofs are also easy to scuff (scratch)

Note 2: Dye based inks are more commonly used and accepted as the proofs do not change in colour appearance as much when viewed under general lighting conditions. The down side of Dye based inks, is that the proof takes time to dry and settle. Proofs produced using dye based tend to change changing (colour shift) after printing. With this in mind, always leave you proofs sufficient time to stabilise and dry. The amount of shift can vary depending on the paper type being used.

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Section 8.

Creating an ICC profile for Newsprint

Step 1.
Use a white bond stock on the HP 1050 that has less absorption than newsprint to create the initial Linearisation settings

Step 2.
Adjust the end densities till they read

- Cyan: 1.1 to 1.2
- Magenta: 1.1 to 1.2
- Yellow: 1.0 to 1.1
- Black: 1.4 to 1.5

Note 1: Do not have any ReplaceColour set values entered.

Step 3.
At the 80% mark along the bottom scale of the CYMK gradation sectors, pull down the gradation curve in each colour. Output a quick cal and adjust the 80% curve section until step 11 achieves 0.45 in the CMY channels. Also adjust the Black in step 11 until it reads approx. 0.45

Step 4.
Once the densities in step 11 are ok, re-check the top end densities. Adjust if necessary.

Note 1: If your proofing from CT/LW file formats and creating SuperCell halftone screening (eg: 150#), and using the indirect method, then you can further add a LUT correction or Process Dot Gain correction curve to further expand the shadow area's.

Note 2: If your proofing from CT/LW formats and creating SuperCell halftone screening, using the direct screening method, then only use printers that support printer that use CMYK +Lc +Lm, otherwise the max screening that can be achieved using the direct screening method will be reduced to approx. 85# to 120#

Note 3: Printer that support "Variable Drop-Let Technology" like the HP 5000 at 600 dpi x 600 dpi and the new Epson 10000 and Roland FJ-500, provide an extended range of SuperCell halftone screening using the direct method.

Step 5.
Proof the target sheet on the white bond stock using the above LUT Linearisation settings.

Step 6.
Measure the ICC target sheet.

Note 1: You will notice that all the steps of the ICC target sheet are now well defined. This will allow the spectrophotometer to read the strips more accurately.

Step 6. Load the ICC PRINTER and MATCH profiles into: eg: C:/Program File/blackmagic/lib/icc

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Step 7.
Insert the newsprint into the HP 1050 printer.

Step 8.
Proof the ICC target sheet with images and grey scales and compare.

Step 9.
Add an LUT correction curve to adjust the grey balance or add a process dot gain curve to adjust the overall gradation if necessary.

HP 1050 ICC Linearisation "Standard HP coated Bond Paper"
- Customer Name: CPI Graphic Melbourne Demo Show Room
- Date: 4th November 2001
- Printer Type: HP Large/ Small (Beta Version only)
  Printer Front Panel Mode: Best
- Resolution: 600 dpi x 600 dpi
- Screening Type: Stochastic
- Colour Space: CMYK +Lc +Lm
- De-Screening: RDT
- Click the Ink Over-Ride box in the Pagesetup "Customise" section"
- Paper Type: HP Standard Coated Bond

Ink Level Settings
BLK (54), Cyan (88) , Magenta (75), Yellow (65)

Process Dot Gain Correction Curve: Input / Output
100 (80)
86 (45)
11 (4)

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