

Roland



HI-FI JET
HIGH FIDELITY & COLOR INKJET PRINTER



HI-FI JET
HIGH FIDELITY & COLOR INKJET PRINTER

Product Overview

CANONJET
Start Making by Roland DGC Corporation



SOLJET
DON'T BE AFRAID OF THE SUN



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Inkjet Lineup

- **Hi-Fi JET PRO**
 - FJ-400/500/600 Piezo Inkjet
- **Hi-Fi JET**
 - FJ-52/42 Piezo Inkjet
- **SOLJET**
 - SC-500 Piezo Solvent Printer/Cutter
- **CAMMJET**
 - CJ-500/400 Piezo Inkjet Printer/Cutter

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Shared Features

- **Piezo print heads**
- **High fidelity (CMYK+) ink sets**
- **Paper Feed Calibration**
- **Free Roland ColorChoice Software**
- **Component Integrated Engineering**
- **Manufacturing Quality**
- **Full line of enhancements/options**

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Integrated Engineering

- **Push buttons**
- **Sheet cut features**
- **Integrated media rollers**
- **Heavy-duty stand construction**
- **Anti-static devices**
- **Adjustable head heights**

Control Panel

- **For customizing various settings, use the control panel on the right side of the machine.**
 - **Equipped with an LCD panel that offers high visibility for users**
 - **Equipped with mechanical buttons that are easy to push**
 - **Intuitive design and layout of functions**

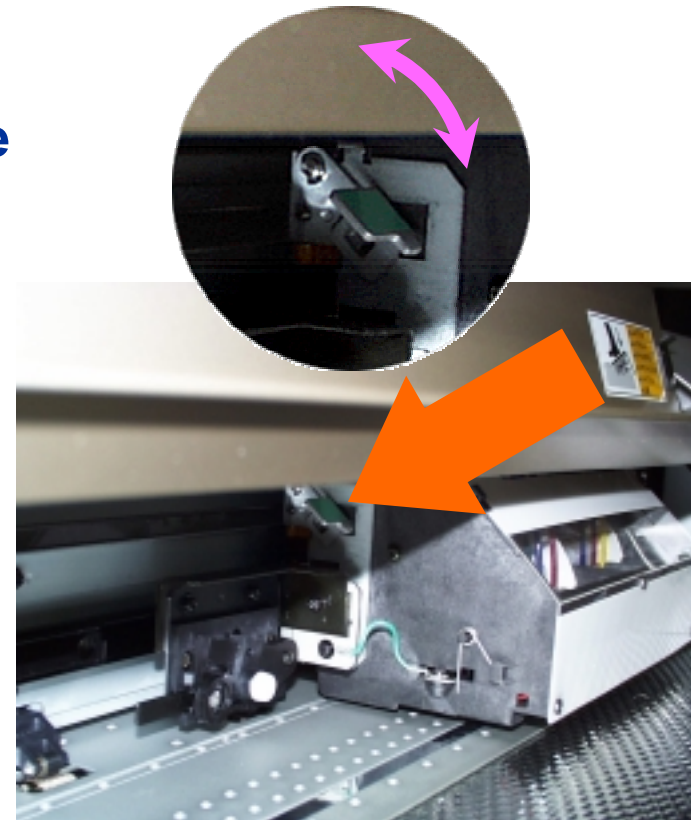


- Reliability and Simplified Operation -

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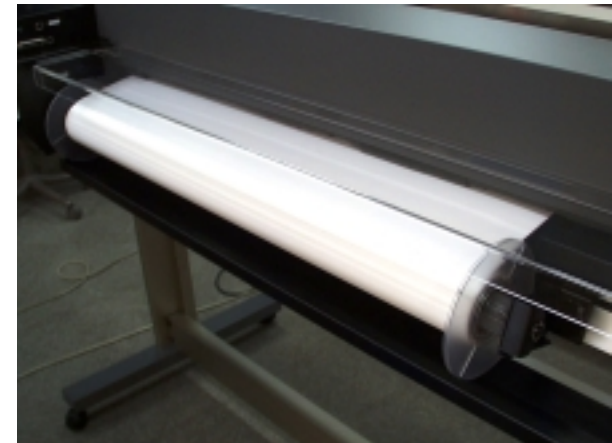
Adjustable Head Height

- **Equipped with a height adjustment mechanism for the Printing Heads.**
 - Low Position: 1.1 mm
 - Med Position: 1.6 mm
 - High Position: 2.0 mm
- **Acceptable media thickness**
 - 1.0 mm maximum
 - up to 1.3mm with Table Top Option and Dealer mod.
- **The internal sensor recognizes the height of the printing heads automatically in order to select and perform the droplet-position adjustments (single direction and bi-direction)**
 - Reliability and Simplified Operation -



Media Loading/Feeding

- The embossed front apron and rear skirt are made of stainless steel to prevent the static electricity of the media and aids in media feed
- The media-cover on the rear side keeps dust away from the surface of media. Therefore the media can be used in the best condition.



- Reliability and Simplified Operation -

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Cartridge Installation

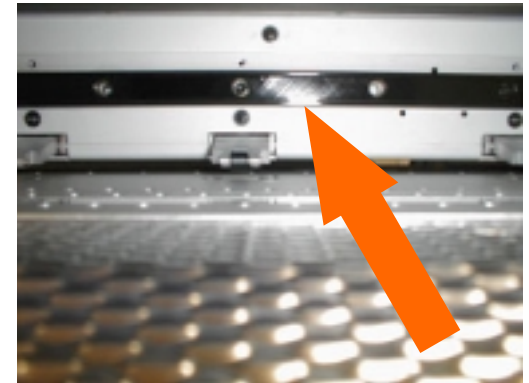
- **Cartridges are individual ink supplies and allow for a clean setup and ink replacement. Filling and changing inks is simple with the correct cleaning cartridges**
- **Each ink cartridge is equipped with a 'key' that prevents loading the incorrect cartridge in the appropriate slots**



- Reliability and Simplified Operation -

Controlling Technologies

- **Because of the precise mechanical control technology, droplets can be fired with True 1440 dpi and variable droplet.**
 - **Seamless Linear motion Guide**
 - **Stable output**
 - **Reduced head vibrations and improved accuracy of droplet placement**
 - **Precise media feeding control**
 - **9600 dpi motor resolution**
 - **Oil Damper (FJs only)**
 - **Smooth media feeding**
 - **Applies constant tension to roll**



Linear Motion Guide



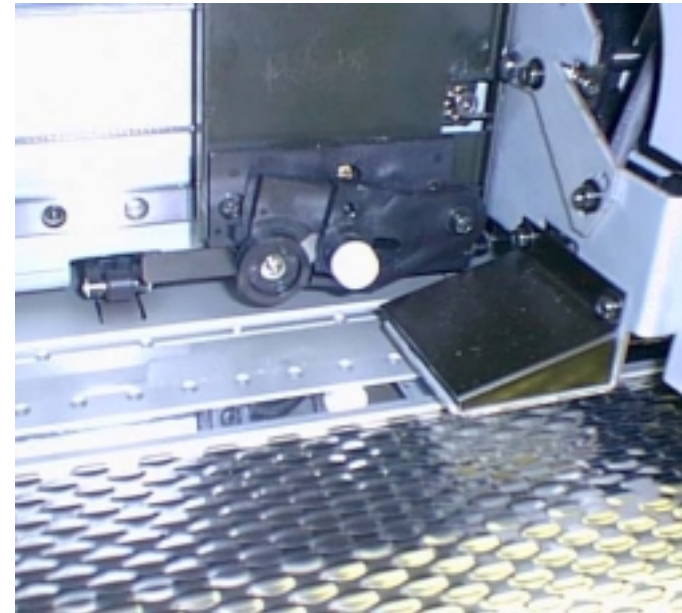
Oil Damper

Machine Engineering

- **Print engine vs. integrated design**
- **Inkjet head & media movement technology**
- **Accuracy of 'dot on paper'**
- **Anticipated engineering**
- **History of high-technology machines**
 - **Music group shared technology**
 - **CAD plotters resolving 0.004" @34"/sec**
 - **Repeatability/Accuracy with media movement**
 - **Strength of engineering**

Media Loading

- **Media edge sensing technology**
- **Single load lever**



Media Handling

- **Vacuum Power**
 - Variable vacuum power control
 - Stabilized media feeding
 - Prevents paper jamming
- **Hi-Fi JET : 11-13 wheels**
- **Hi-Fi JET Pro: 11-16 wheels**
- **CAMMJET: 3 pinch rollers**
- **SOLJET: 4 pinch rollers**

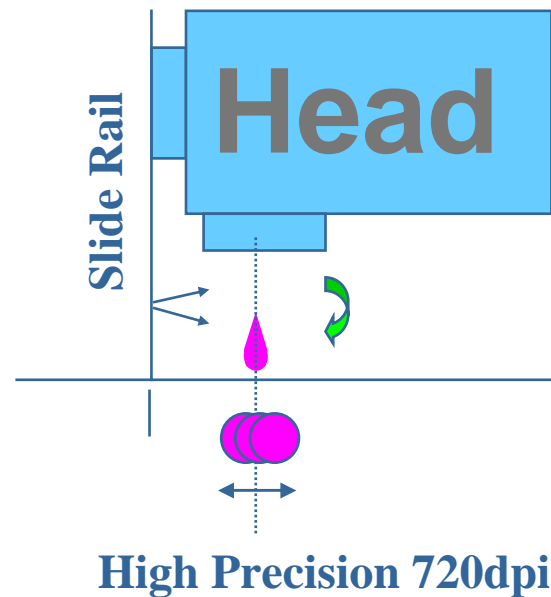
Auto Sheet Cutter

- **Controlled via front panel or software**



Improved Dot Control

- **By positioning the head 'in-board' there is less variation in dot position**



In-line heads advantages:

Accuracy

Dot placement

Calibration

Mechanically stable

Enhancements & Options

- **The take-up roller automatically re-rolls the printed media improving performance for unattended continuous printing.**
- **Model Numbers #'s**
 - TU-650: For FJ-600
 - TU-500: For FJ-500
 - TU-500: For FJ-400
 - TU-400: For CJ-400
 - TU-70: For FJ-52
SC-500
 - TU-60: For FJ-42



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Enhancements & Options

- **Table Top Extension System allows printing onto rigid medias for fine art, package prototyping and unmounted signage**
- **Installs and reinstalls quickly**
- **Handles stock up to 48” and 1.0 mm thick**
- **Dealers can raise head to handle 1.3 mm media**
- **Model Numbers #'s**
 - USFJTT-36: For FJ PROs
 - USCJTT-36: For CJ/FJ/SC



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Enhancements & Options

- Helps to flatten and stabilize media
- Designed for medias that are susceptible to environmental and ink absorbency issues
- Model Numbers #
 - US-FJMS-500
 - Other sizes are available





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Hi-Fi JET Product Overview

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Industry Firsts

First large format Inkjet to license Pantone® Hexachrome® technology



First machine to have 1440 dpi resolution in large format inkjet device



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Feature Overview

- **Sizes Available**
- **Resolution / Speed**
- **Ink Implementations**
- **Hexachrome[®] Proofing / Hi-Fi Color**
- **Head Technology**
- **Production Capabilities**
- **Connectivity**
- **Machine Design**

Resolution

- 1440 x 720 maximum resolution
- 14 Print Modes: 12 on FJ
 - Photo Mode 1440 dpi 16 pass
 - Super 720 dpi 8 pass
 - Fine 720 dpi 4 pass
 - Fine2 540 dpi 6 pass
 - Normal 360 dpi 4 pass
 - Fast 360 dpi 2 pass
 - Draft 180 dpi 1 pass
- Bi-directional printing available on all modes



Ink Implementations

- Hi-Fi JET will have 3 ink options
- 6-Color Pigment Ink:
 - CMYKOG
 - CMYKLcLm
- 6-Color Dye Ink:
 - Hi-Fi - CMYK LcLm
- Changeover requires optional cleaning cartridges



Hexachrome[®] Proofing



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Hexachrome®



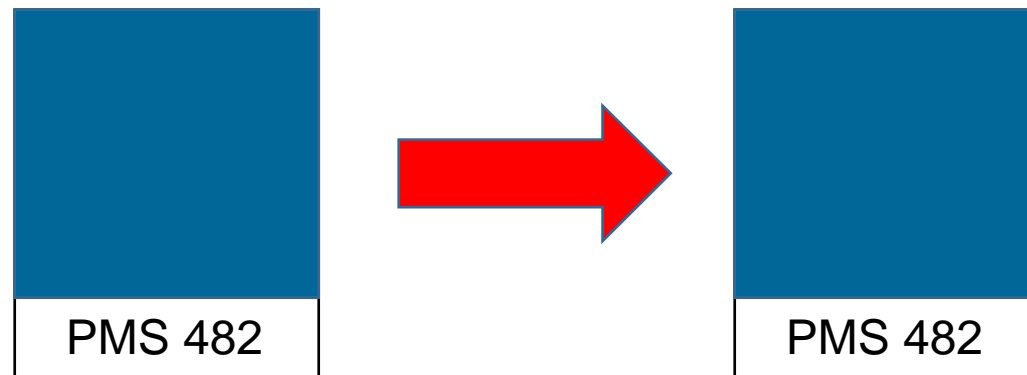
- **PANTONE® Hexachrome®†**, the recognized standard for six-color high quality process printing, dramatically improves the realism and vividness of full color reproduction. Hexachrome®† is capable of simulating over 90% of solid PANTONE MATCHING SYSTEM® Colors, almost twice the number that can be obtained using conventional four-color process printing. With Hexachrome®, designers can now more closely render in print what can be conceived in their mind.



All trademarks used herein are either the property of Pantone, Inc. or other companies.
† Hexachrome® is Pantone, Inc.'s six-color printing process. U.S. Patent No. 5,734,800

PMS Matching

- **Final Report from Pantone....**
- **97% matching of PMS colors!**
- **Exceeds Pantone's Hexachrome by 5%!**
- **Stronger in Blue, Cyan, and Violet areas**



Design application to Roland Hi-Fi JET

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Hexachrome® Workflow

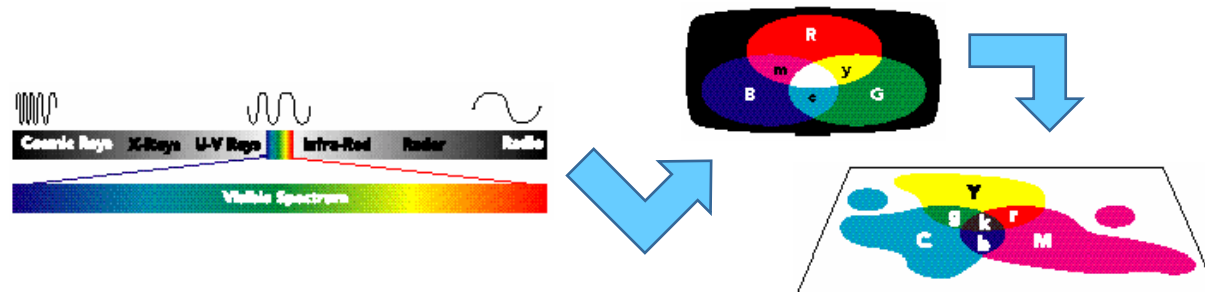
- **Spec colors in a “Pantone-enabled” application**
 - Quark 4
 - Freehand 8
 - Adobe Photoshop 5 & 6 (*with HexImage plug-in*)*
 - Adobe Illustrator 8 & 9 (*with HexVector plug-in*)*
- **Follow application specific guidelines**
- **Requires Roland ColorChoice 2.0+**
- **Use FJ, CJ or FJ-Pro with CMYK+OG inkset**
- **Use PQM-PETG-66 High Glossy Film**
- **Set print mode to Super 720x720 dpi Uni-D**
- **SC-500 is NOT certified**

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† Hexachrome® is Pantone, Inc.’s six-color printing process. U.S. Patent No. 5,734,800



High Fidelity Color (Hi-Fi)

- By definition is 4 or more colors
- Includes Pantone® Hexachrome®, Dupont Hypercolor, CMYKcm, CMYKcmyk - 8 color, etc.
- Goal is to reproduce more visible colors in subtractive color space



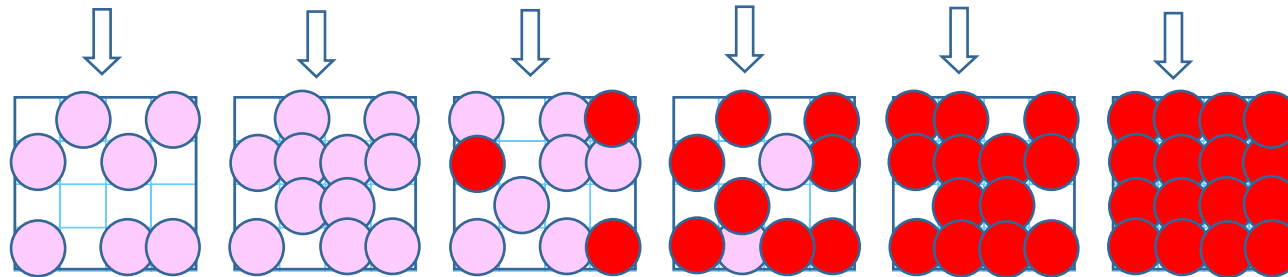
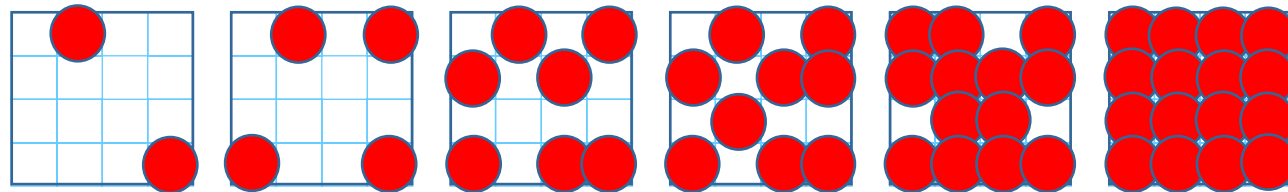
Hi-Fi 6-Color Transitions

Transitions in color with Light Magenta

Image print of 4-Color & Light Ink

○ Light Magenta
● Magenta

C,M,Y,K Only



C,M,Y,K,Lc,Lm



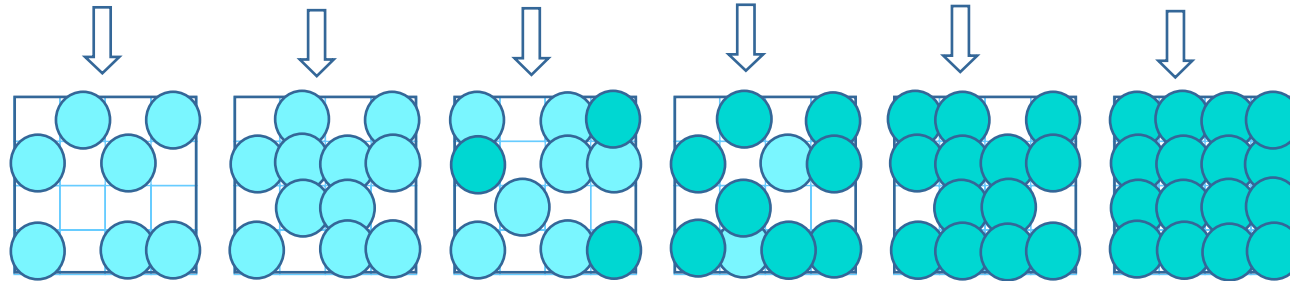
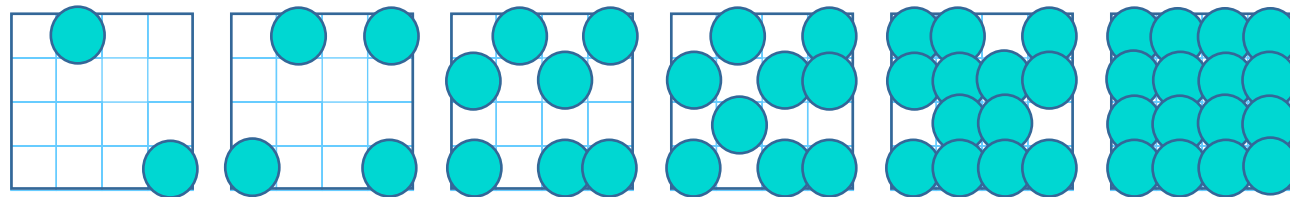
Hi-Fi 6-Color Transitions

Transitions in color with Light Cyan

Image print of 4-Color & Light Ink

Light Cyan
Cyan

C,M,Y,K Only

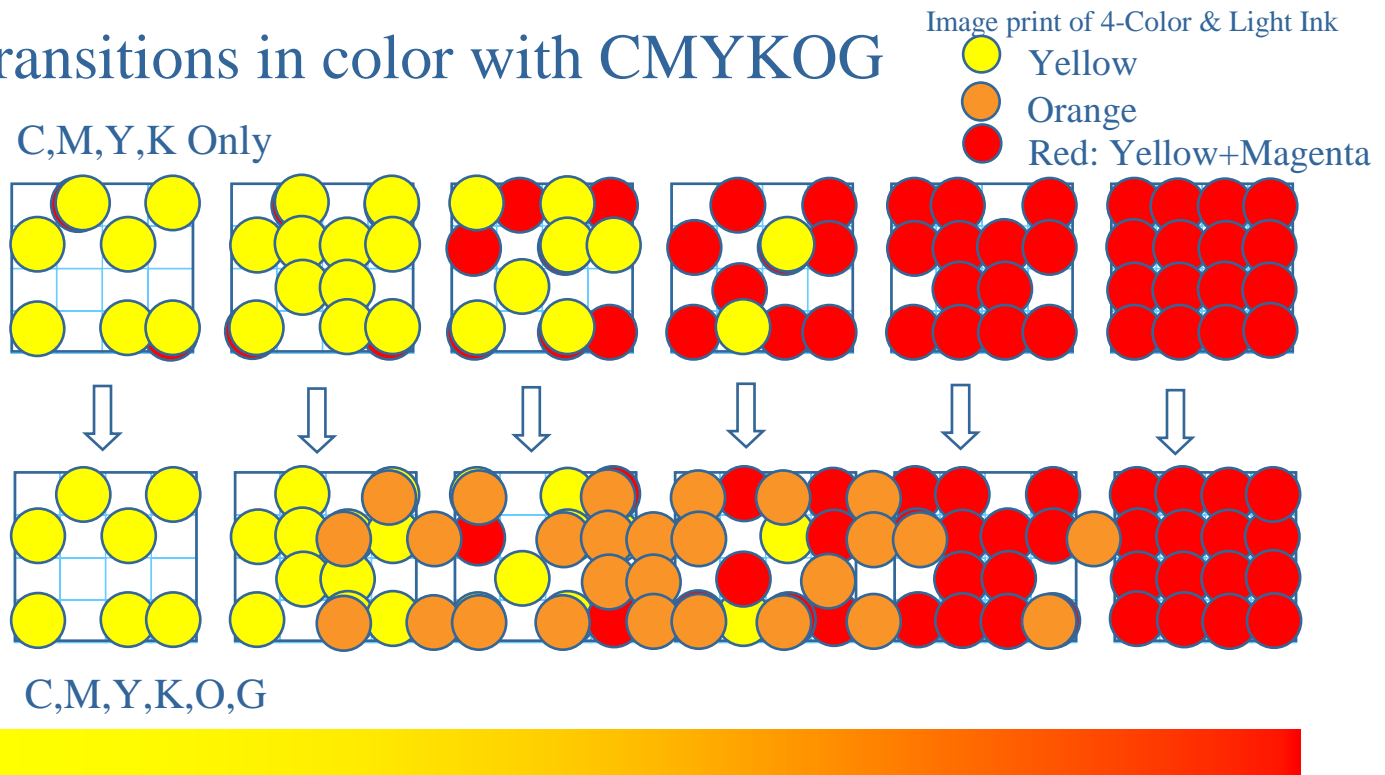


C,M,Y,K,Lc,Lm



Hi-Fi 6-Color Transitions

Transitions in color with CMYKOG



Hi-Fi vs. Hexachrome®

High Fidelity - CMYK+Lc Lm

**Offers better color transitions between colors within a given CMYK color gamut
Specifically: Skin tones, Pastels, gradients, etc**

Hexachrome® - CMYK+OG

Offers expanded gamut versus standard CMYK gamut.

Addresses problems with CMYK gamuts reaching difficult colors - specifically orange & green hues

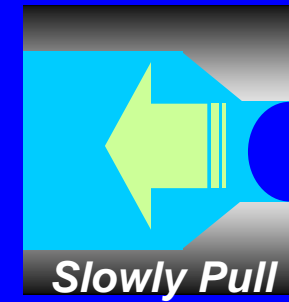
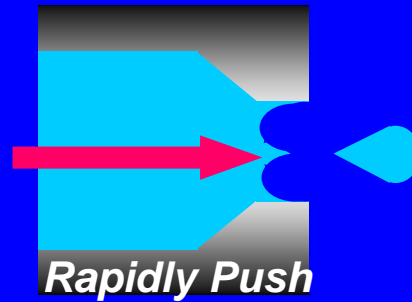
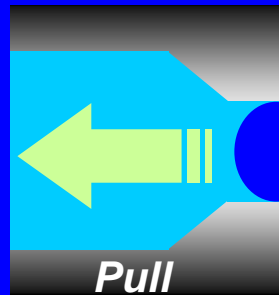
Piezo Head Technology

- The next series of slides cover:
- Piezo Dynamic Pull Ejection
- Head Firing Rate: 14.4 kHz
- Dot Size: ~ 50 μ
- Drop Volume: 20 or 25pl
- Variable Dot Capability (Multi-DOD)

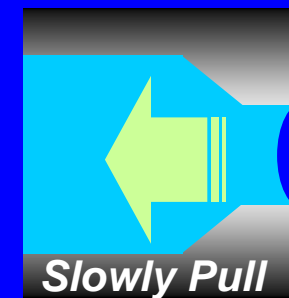
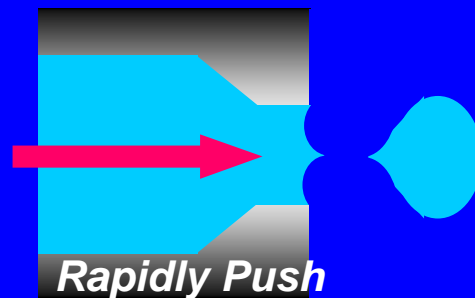
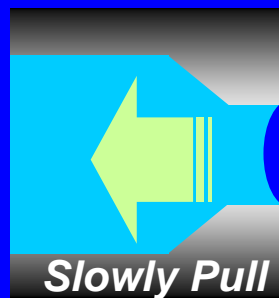
Piezo Dynamic Pull Ejection

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Small Dots



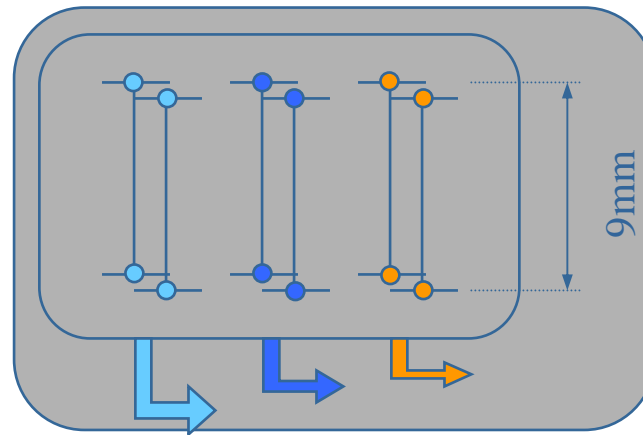
Normal Dots



Head Technology

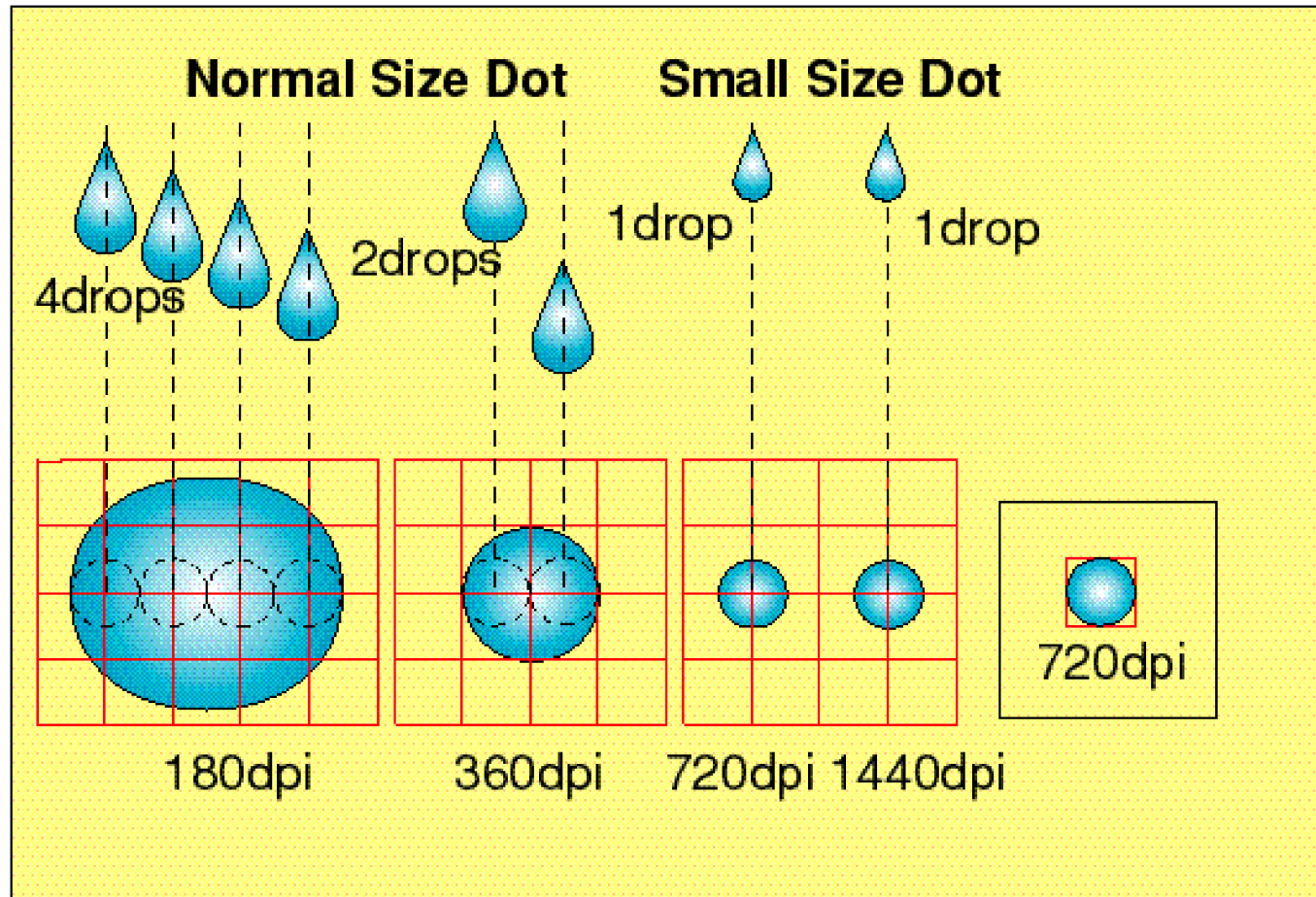
FJ-52/42

3-color supply unit per head



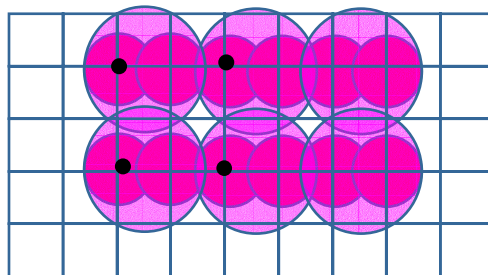
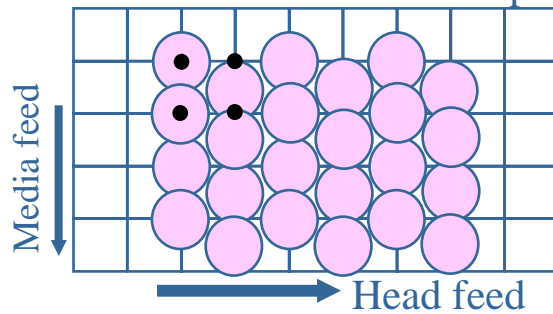
- Print width/1pass are 9mm

Variable Dot Capability



Variable Dot Spread

Photo Print are 1440 x 720dpi
Data is 720x720 dpi

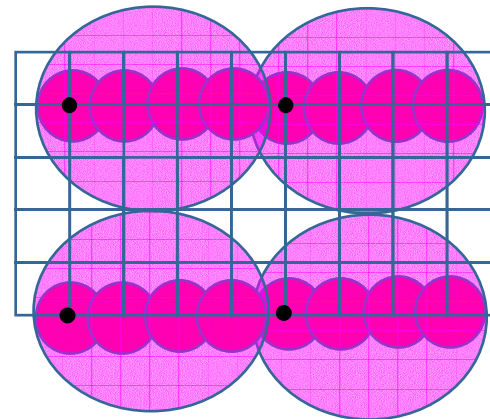
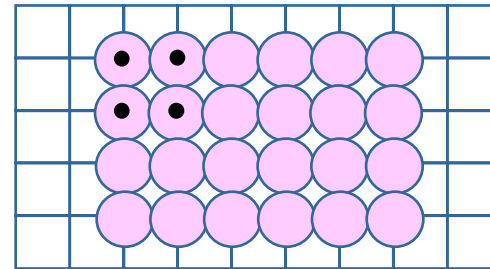


Fast / Normal

Print is 720 x 360 dpi
Data are 360 x 360 dpi

Super / Fine

Data & print are 720 x 720dpi

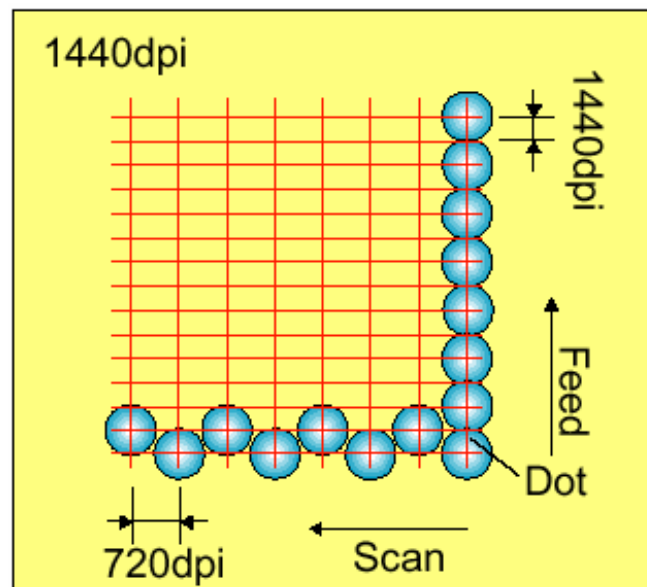


Draft

Print is 720 x 180 dpi
Data are 180 x 180 dpi

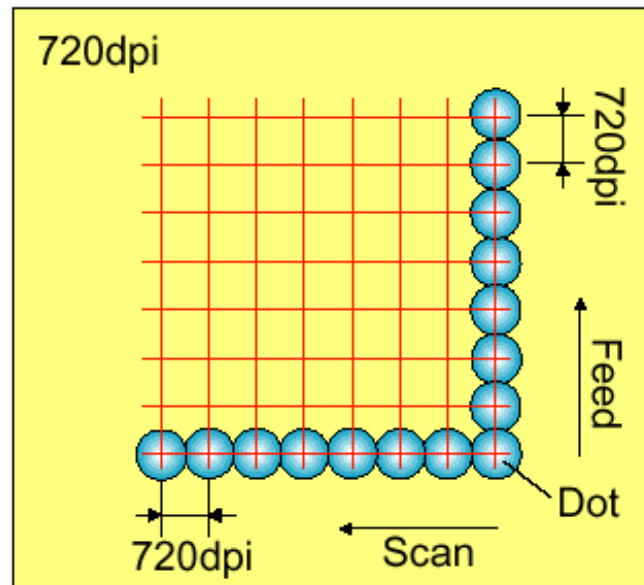
1440 dpi mode

- **Printing Pattern**
 - PHOTO (1440dpi x 720dpi / 16pass)



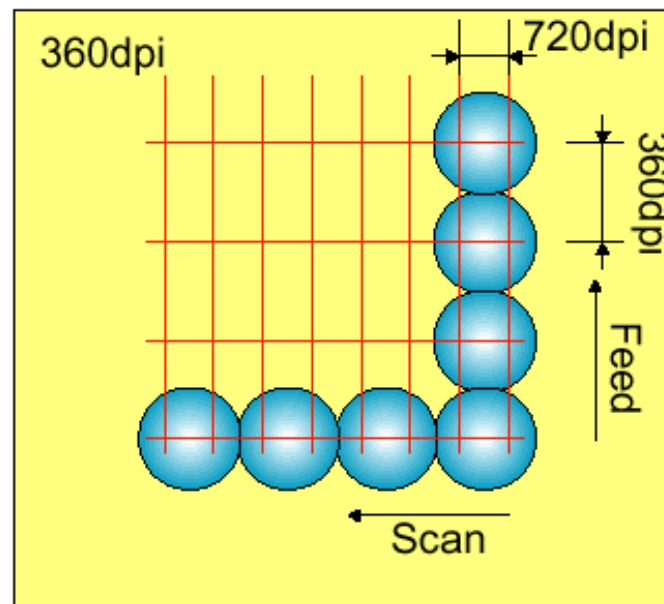
720 dpi mode

- **Printing Pattern**
 - **SUPER (720dpi x 720dpi / 8pass)**
 - **FINE (720dpi x 720dpi / 4pass)**



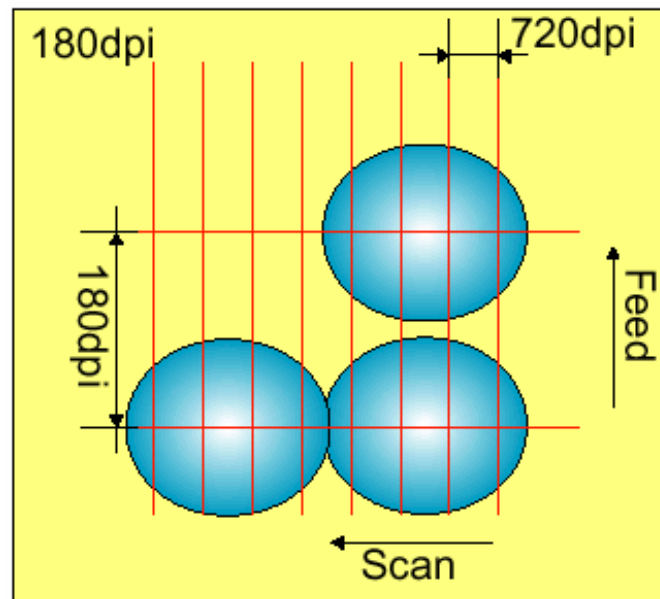
360 dpi mode

- **Printing Pattern**
 - **NORMAL (360dpi x 360dpi / 4pass)**
 - **FAST (360dpi x 360dpi / 2pass)**



180 dpi mode

- **Printing Pattern**
 - **DRAFT (180dpi x 180dpi / 1pass)**



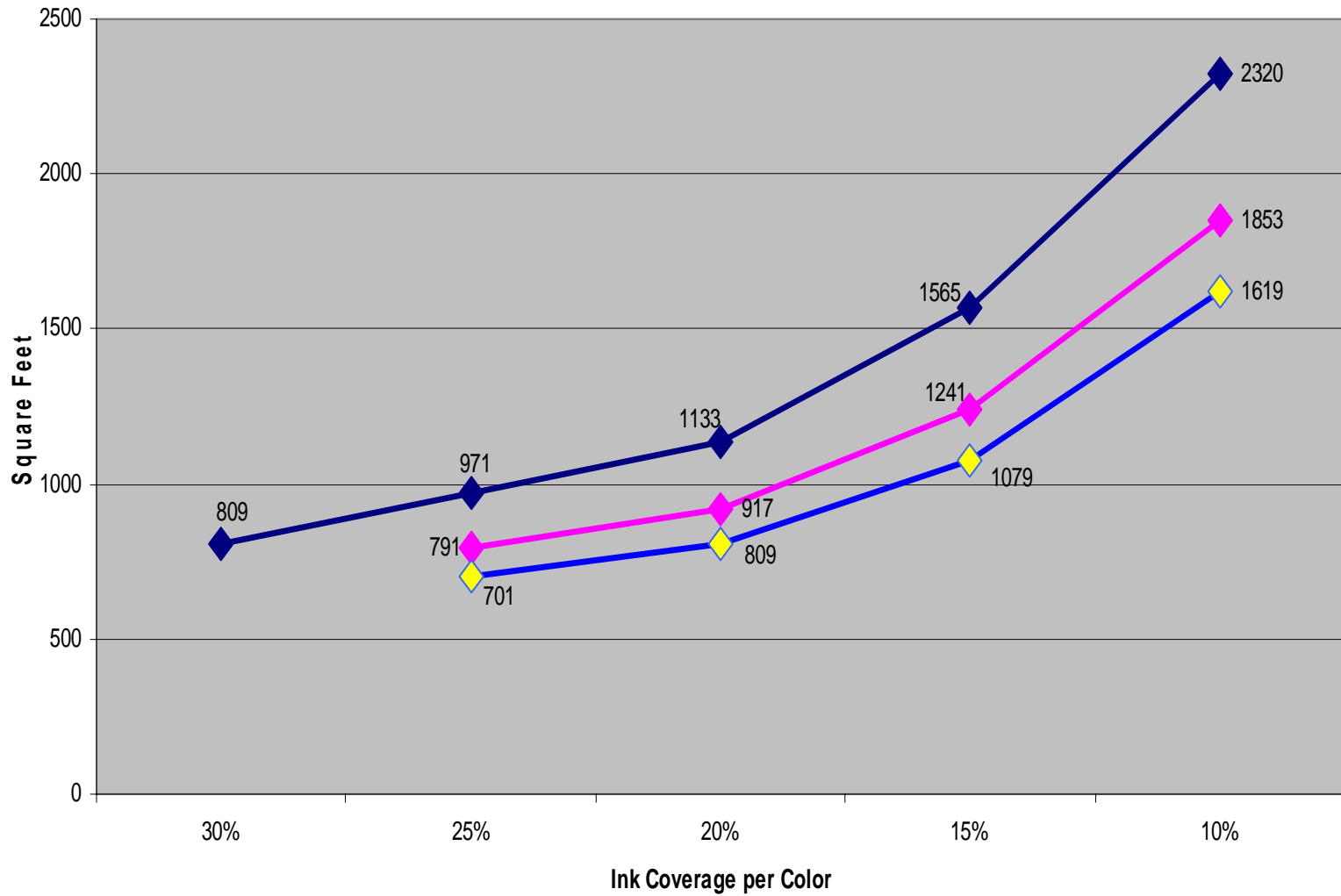
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Sizes Available

- **Roland Hi-Fi JET FJ-52**
 - Designated a “50 inch” printer
 - Maximum Print Width: 52 inches
 - Media width: 8-5/16 to 53-1/8 inches
 - Available media: 50 inches
 - Printable Area on 50 inch media: 49-5/8
- **Roland Hi-Fi JET FJ-42**
 - Designated a “40 inch” printer
 - Maximum Print Width: 42 inches
 - Media width: 8-5/16 to 44 inch
 - Available media: 42 inches
 - Printable Area on 42 inch media: 41-5/8

FJ Production Capacity

Same as CJ 400 and 500



Running Cost

| Ink Type | Set Cost | Mode | Yield | CPSF | Avg |
|-----------|----------|------|-------|--------|--------|
| Dye | | | | | |
| \$ 99.95 | \$599.70 | 720 | 810 | \$0.74 | |
| | | 540 | 918 | \$0.65 | \$0.64 |
| | | 360 | 1133 | \$0.53 | |
| Pigment | | | | | |
| \$ 111.95 | \$671.70 | 720 | 810 | \$0.83 | |
| | | 540 | 918 | \$0.73 | \$0.72 |
| | | 360 | 1133 | \$0.59 | |

Based on 20% per color or 120% total coverage





Print Speeds – All Modes

| Mode | Direction | Passes | Resolution | Sq.Ft/hour |
|--------|-----------|--------|------------|------------|
| Draft | bi | 1 | 180dpi | 95 |
| | uni | 1 | 180dpi | 67 |
| Fast | bi | 2 | 360dpi | 52 |
| | uni | 2 | 360dpi | 37 |
| Normal | bi | 4 | 360dpi | 29 |
| | uni | 4 | 360dpi | 19 |
| Fine2 | bi | 6 | 540dpi | 27 |
| | uni | 6 | 540dpi | 17 |
| Fine | bi | 4 | 720dpi | 27 |
| | uni | 4 | 720dpi | 19 |
| Super | bi | 8 | 720dpi | 17 |
| | uni | 8 | 720dpi | 11 |
| Photo | bi | 16 | 1440dpi | 8 |
| | uni | 16 | 1440dpi | 5 |

Connectivity

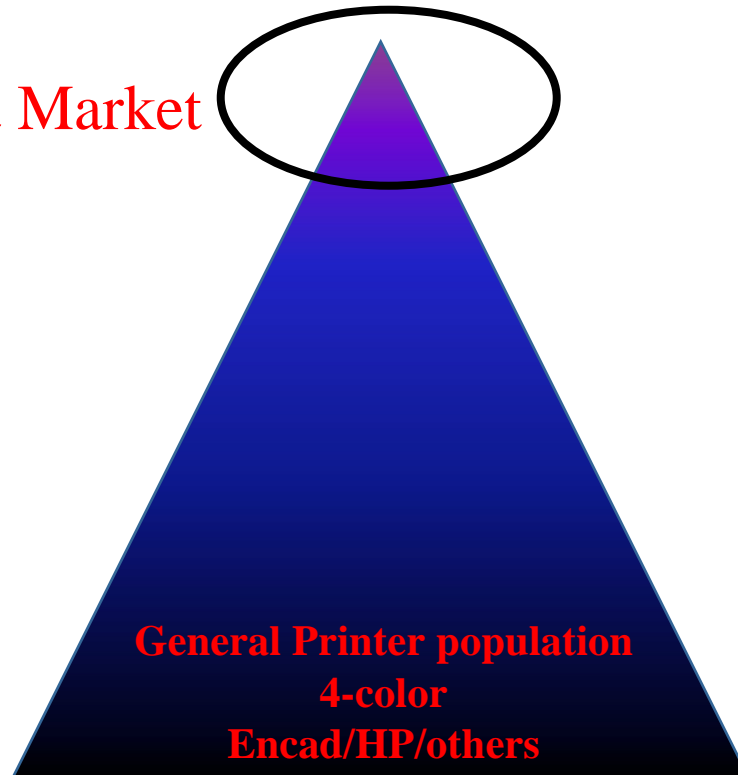
- **PC Parallel**
 - ECP or Standard Parallel*
 - Can use USB-to-Parallel
 - Ethernet support with ColorChoice[®] driver and Ethernet-to-parallel box (e.g.: Troy XCD)
 - Ships with 10 ft. ECP IEEE 1284 Parallel cable
- **Mac**
 - PCI card w/ Parallel cable
 - USB-to-Parallel release w/ RCC 2.0 + cable

** Standard parallel may slow print times*

Hi-Fi JET Market Strategy

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Target Market



- Premium product
- Feature rich
- Differential from competition
 - Durable pigment ink
 - Pantone[®] Hexachrome[®] / PMS
 - Color critical
 - 16 different media
 - Superior Engineering
 - Comprehensive support

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Summary

- High resolution 1440 max dpi
- Expanded gamut printing
- Pantone® Hexachrome® & high fidelity ink
- 50" & 40" sizes
- Bundled ColorChoice® software
 - Adobe® Postscript® 3
- Low ink cost: \$0.64/dye - \$0.72/pig CPSF
- Superior Engineering & Design
- Excellent market position



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CAMMJET
Sign Maker by Roland DG Corporation



Product Overview

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Feature Overview

- **Product Overview**
- **Positioning**
- **History**
- **Competition**
- **Sizes Available**
- **Features & Specs**

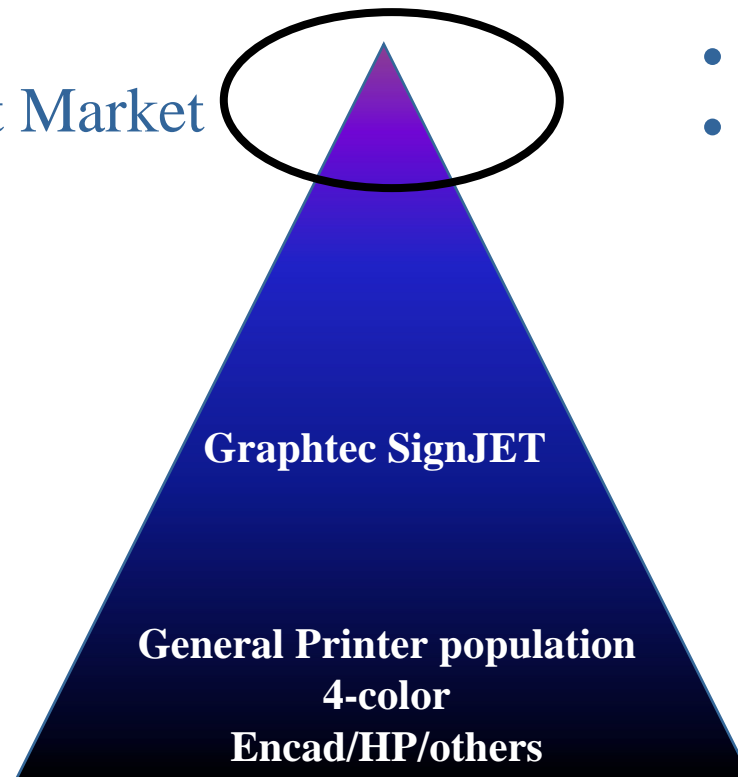
CAMMJET v. Hi-FiJET

- **All the features of Hi-FiJET**
- **Adds new features:**
 - **540 dpi**
 - **Contour cutting**
 - **Automatic Optical Crop Mark recognition**

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Market Position

Target Market



- Premium product
- Feature rich
- Differential from competition
 - Durable pigment ink
 - Hexachrome / PMS
 - New 540 DPI Mode
 - 16 different media
 - Superior Engineering
 - Print & Cut!
 - Comprehensive support

Roland

CAMMJET 1996

- Introduced in Nov. 1996
- 1st Print/Cut device ever!
- Competition developed:
 - Encad NovaCut (*discontinued*)
 - Graphtec SignJet Pro
 - Summagraphics/CalComp SummaPaint
- 4-color, 360 dpi head technology



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Competition – Graphtec

- **Strengths: Cutting technology is exceptional, brand name recognition, HP Partnership**
- **Weaknesses: Thermal print head technology, 600 DPI max, 4 color only**
- **Opportunities: Capitalize on high speed 4 color print options**
- **Threats: The CAMMJET**

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Sizes Available

- **Roland CAMMJET CJ-500**
 - Designated a “50 inch” printer/cutter
 - Maximum Print Width: 52 inches
 - Media width: 8-5/16 to 54 inches
 - Available media: 50 inches
 - Printable Area on 50 inch media: 49-5/8
- **Roland CAMMJET CJ-400**
 - Designated a “40 inch” printer
 - Maximum Print Width: 42 inches
 - Media width: 8-5/16 to 44 inch
 - Available media: 42 inches
 - Printable Area on 42 inch media: 41-5/8

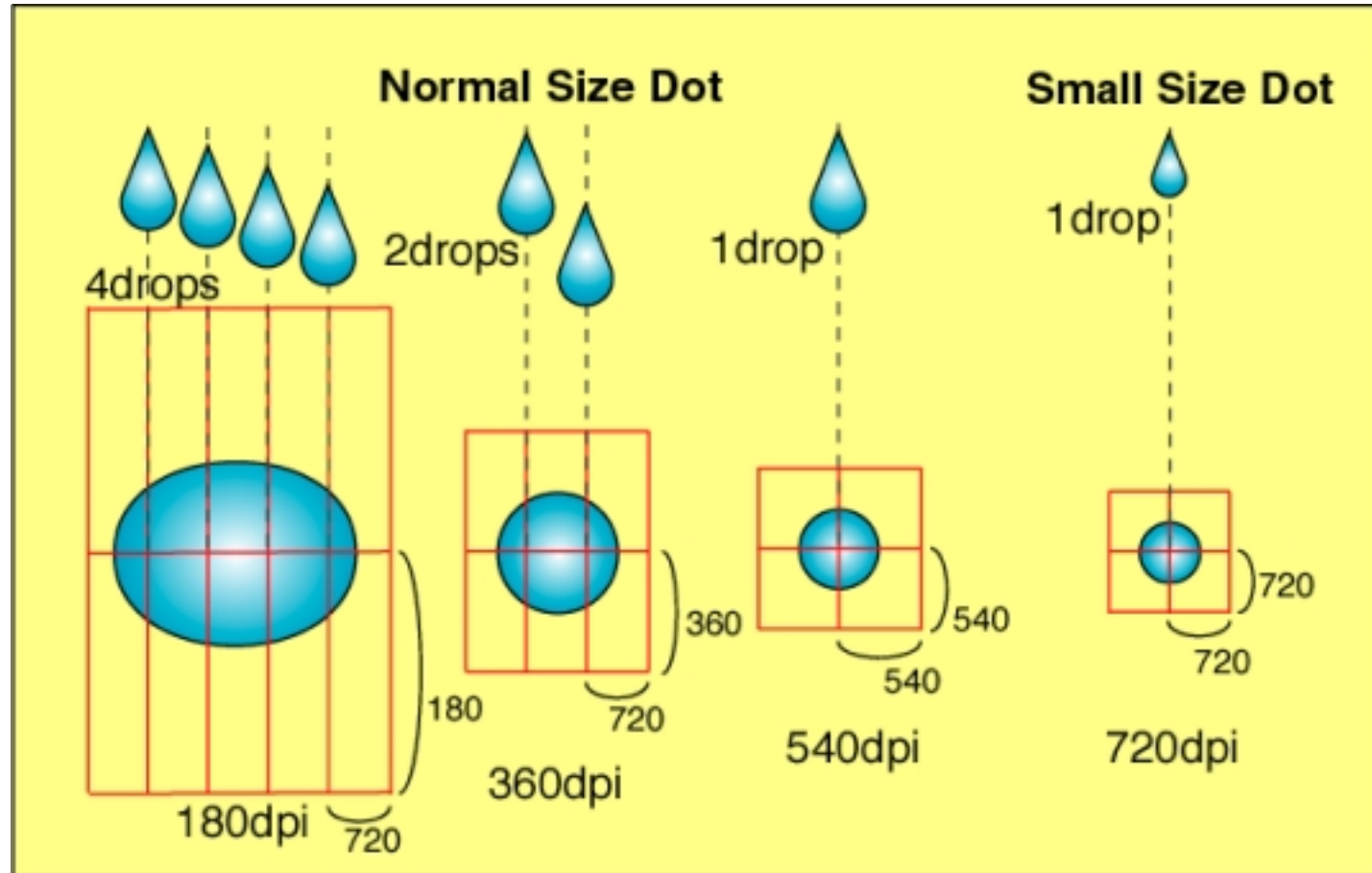
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New 540 dpi mode

- **New with the introduction of CAMMJET – Fine2 mode**
- **Uses larger dot size (25pl)**
- **6 passes/band**
- **Perfect trade-off between speed & quality.**
- **Requires ColorChoice 3.0+ to rip**
- **Smaller file sizes**

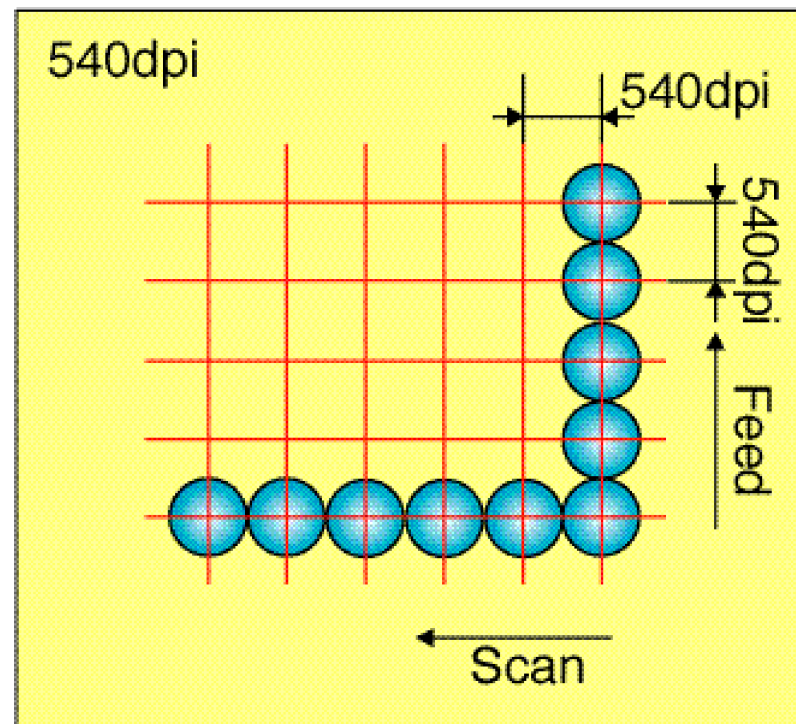
Droplets, Dots & Resolution

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New 540 dpi mode

- **FINE 2 (540dpi x 540dpi / 6pass)**

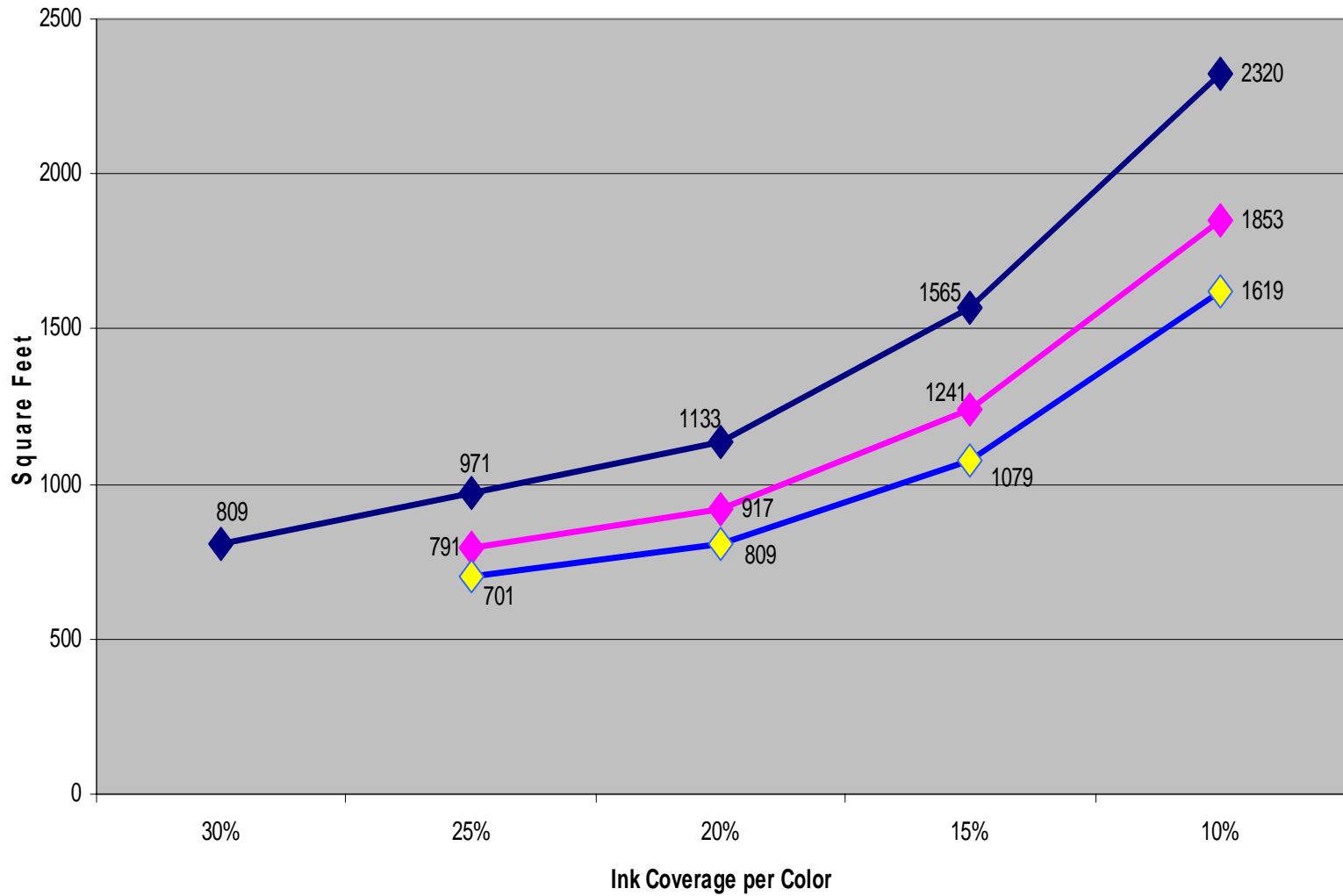


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Print Speed – 540 dpi

- **Carriage Speed changes**
- **720dpi, 360dpi, 180dpi**
 - **Printing Speed : 500mm/s**
 - **Fire Rate : 14.2KHz**
- **540dpi**
 - **Printing Speed : 660mm/s**
 - **Fire Rate : 14.2KHz**

Production Capacity





Running Cost

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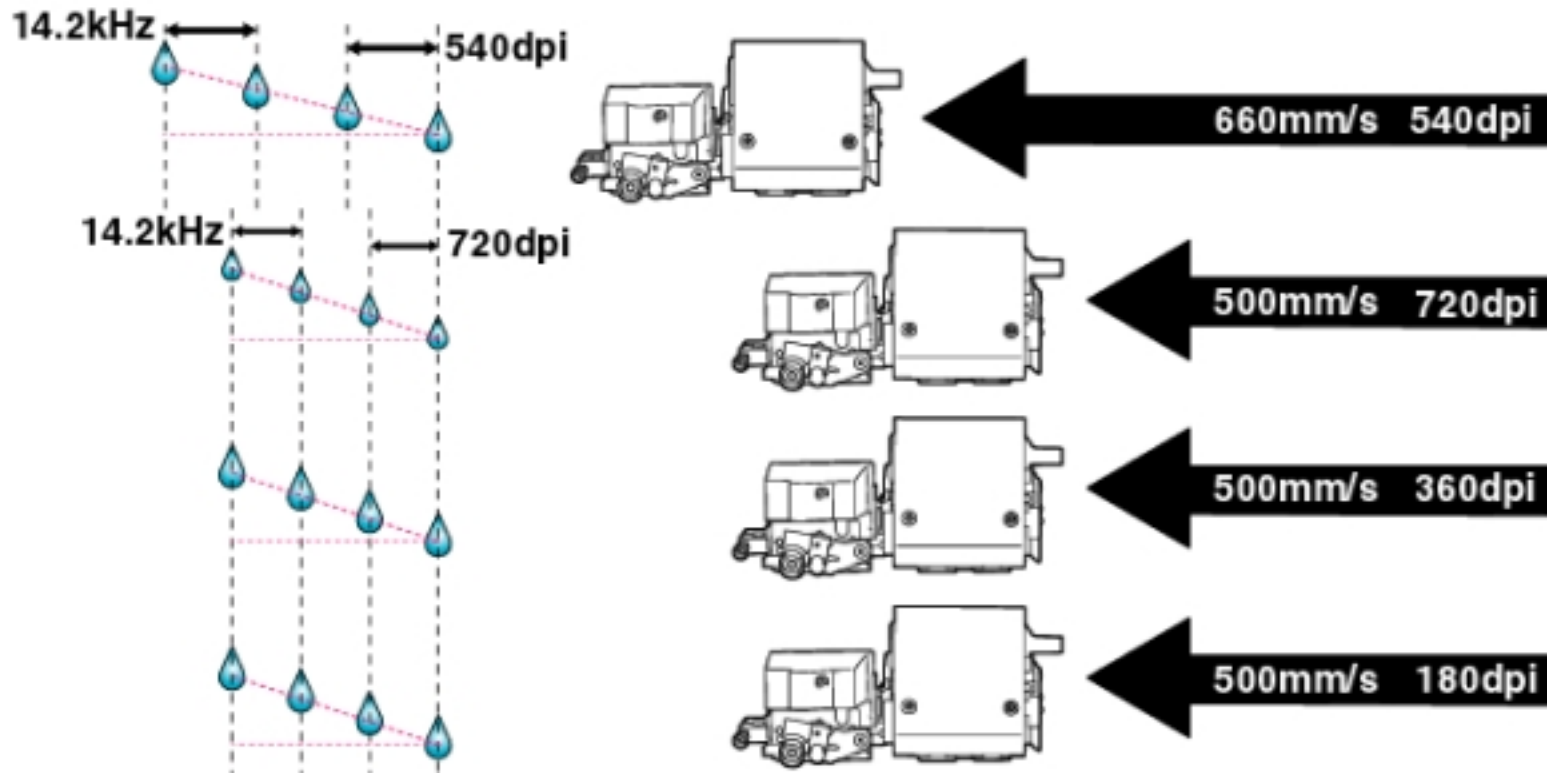


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| Fine2 | bi | 6 | 540dpi | 27 |
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| Fine | bi | 4 | 720dpi | 27 |
| | uni | 4 | 720dpi | 19 |
| Super | bi | 8 | 720dpi | 17 |
| | uni | 8 | 720dpi | 11 |
| Photo | bi | 16 | 1440dpi | 8 |
| | uni | 16 | 1440dpi | 5 |

Carriage Speed

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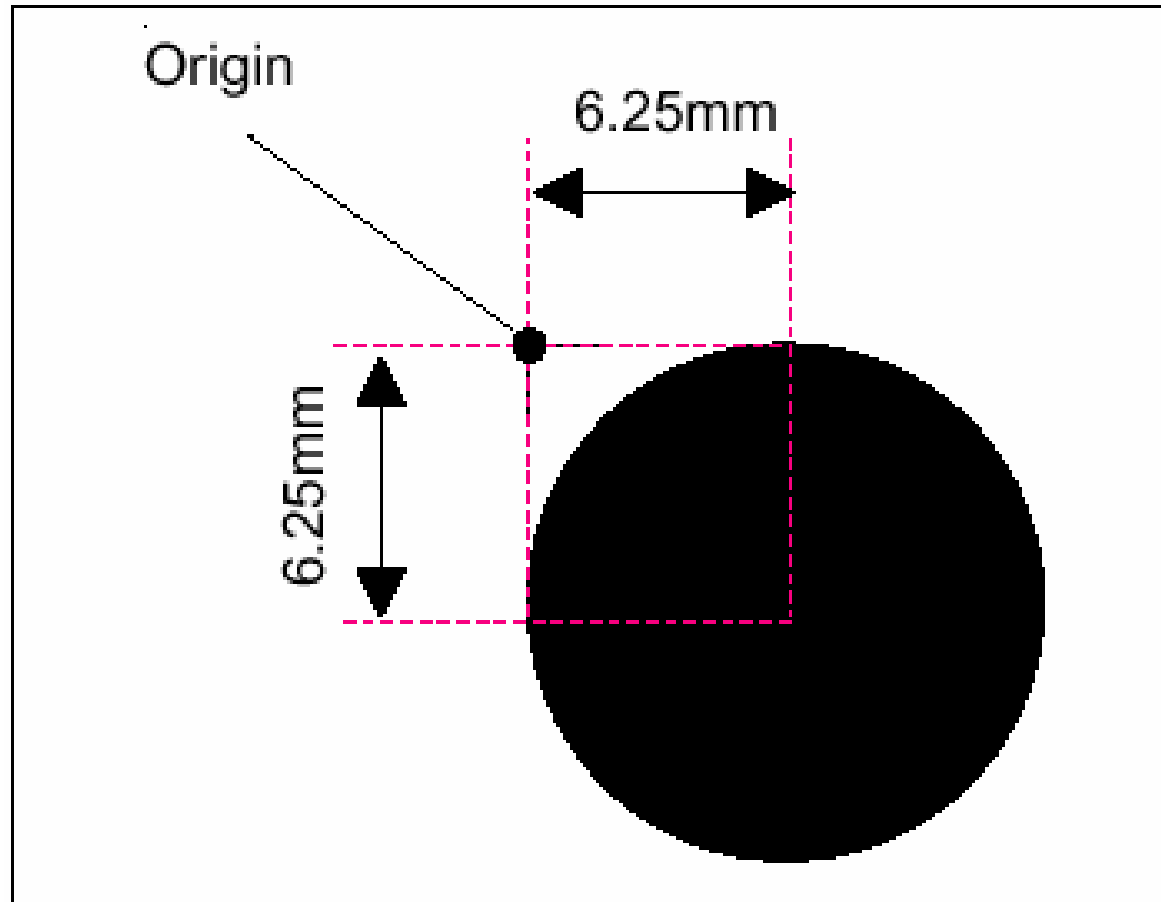


Roland

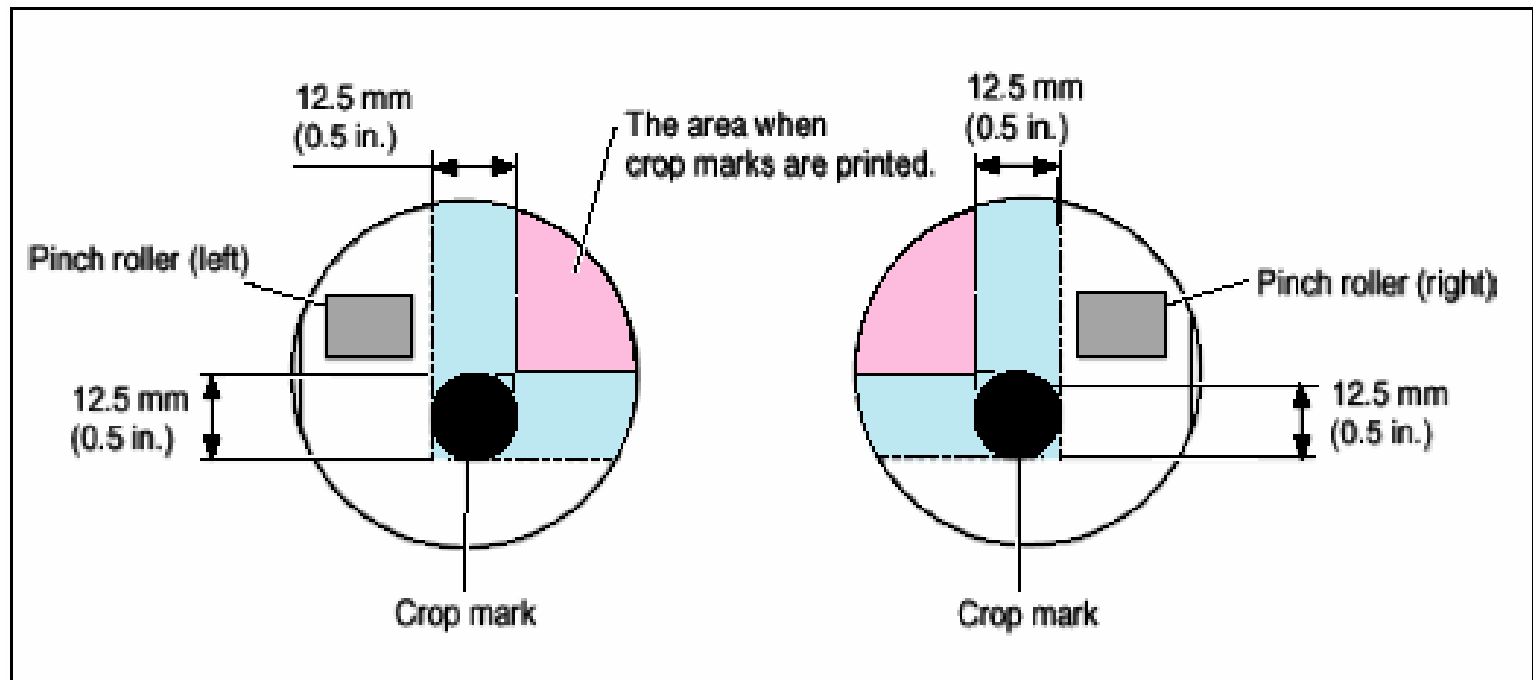
Optical Crop Mark Recognition

- **Automatic Optical Crop Mark Recognition**
- **Allows Print, Laminate & cut**
- **Prints “O” marks**
- **Head recognizes marks**
- **Automatically adjusts for Skew**

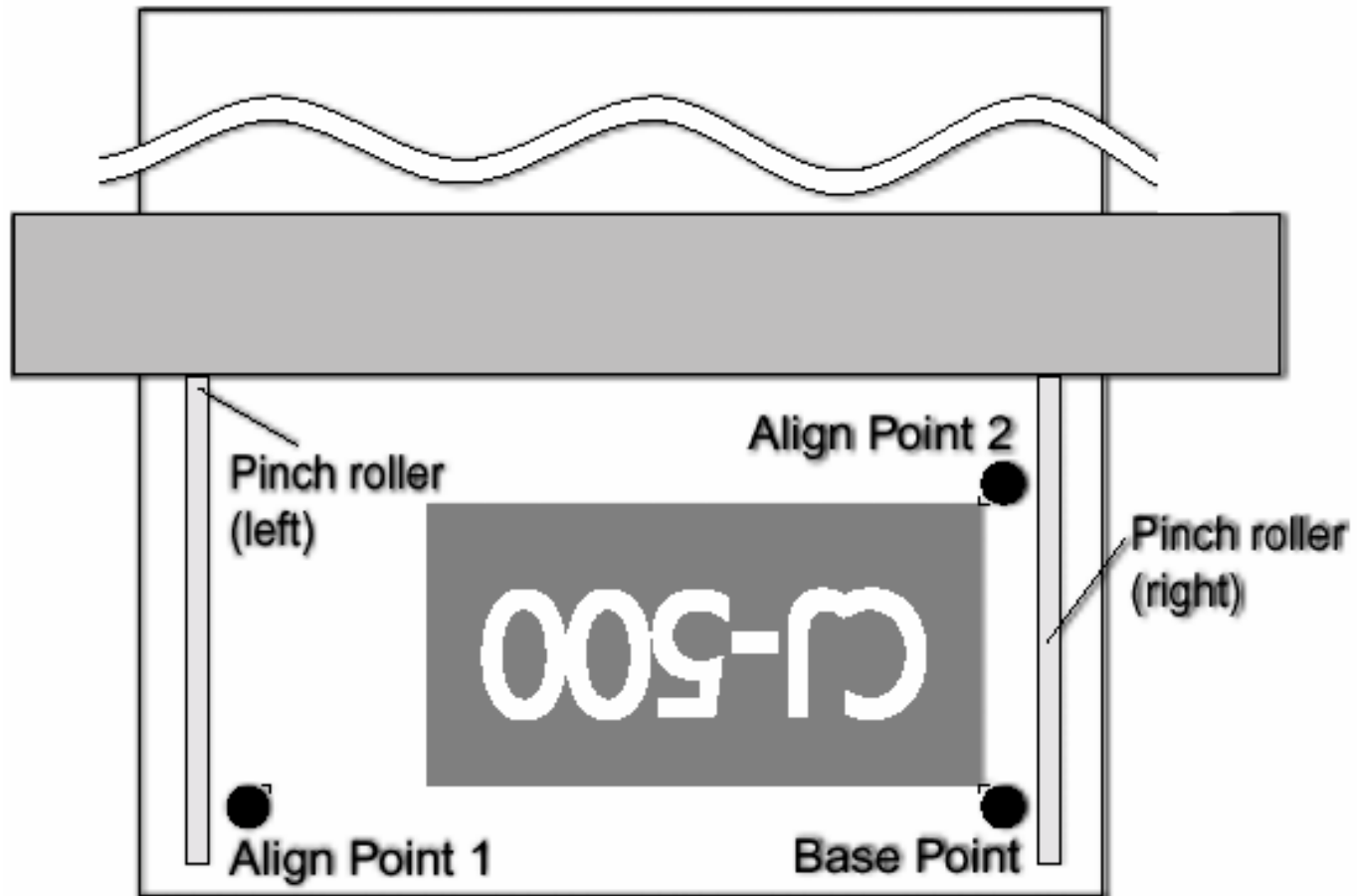
Crop and Origin Markings



Crop & Align Markings

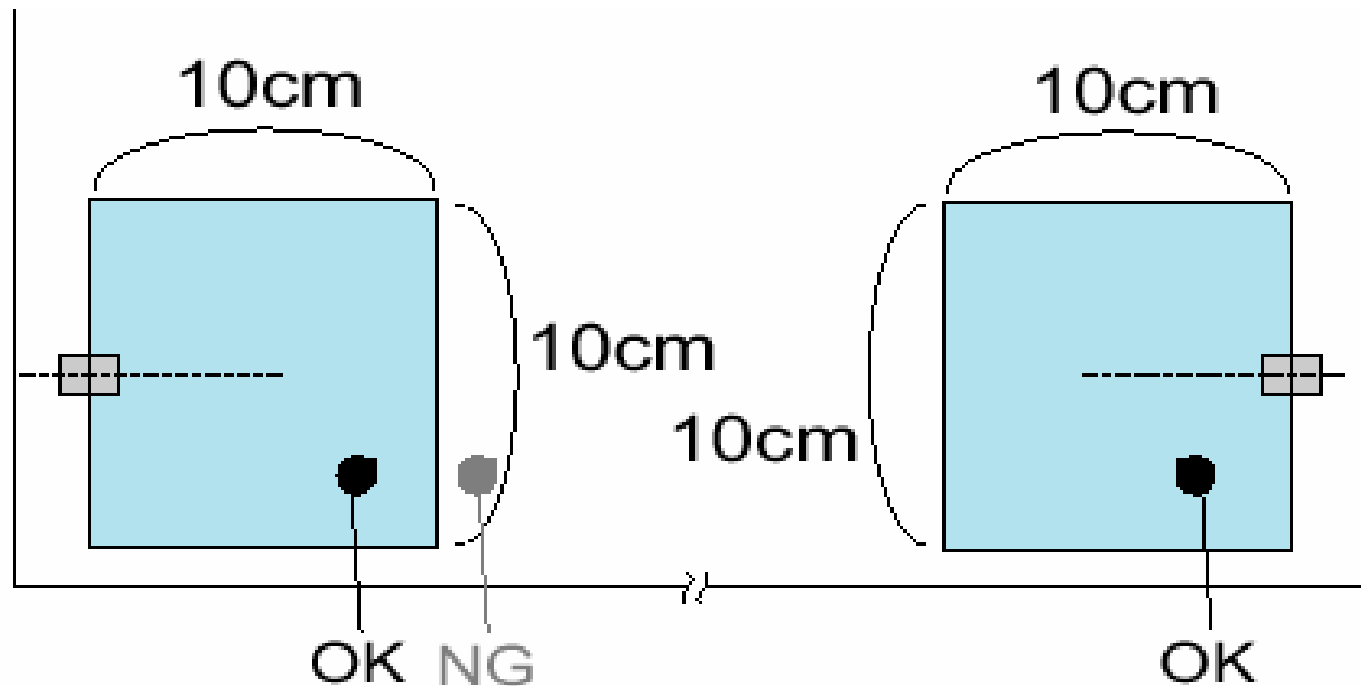


Base/Align

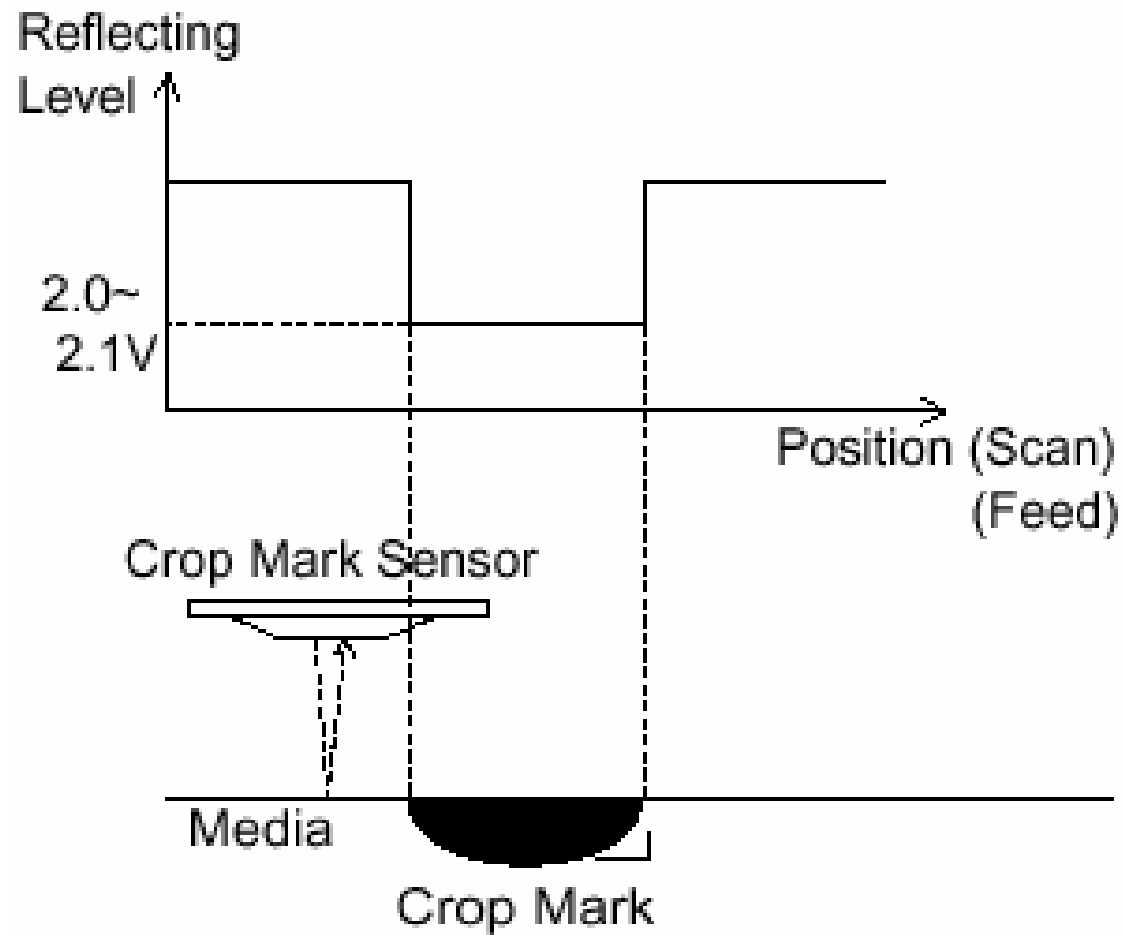


Crop Mark Positioning

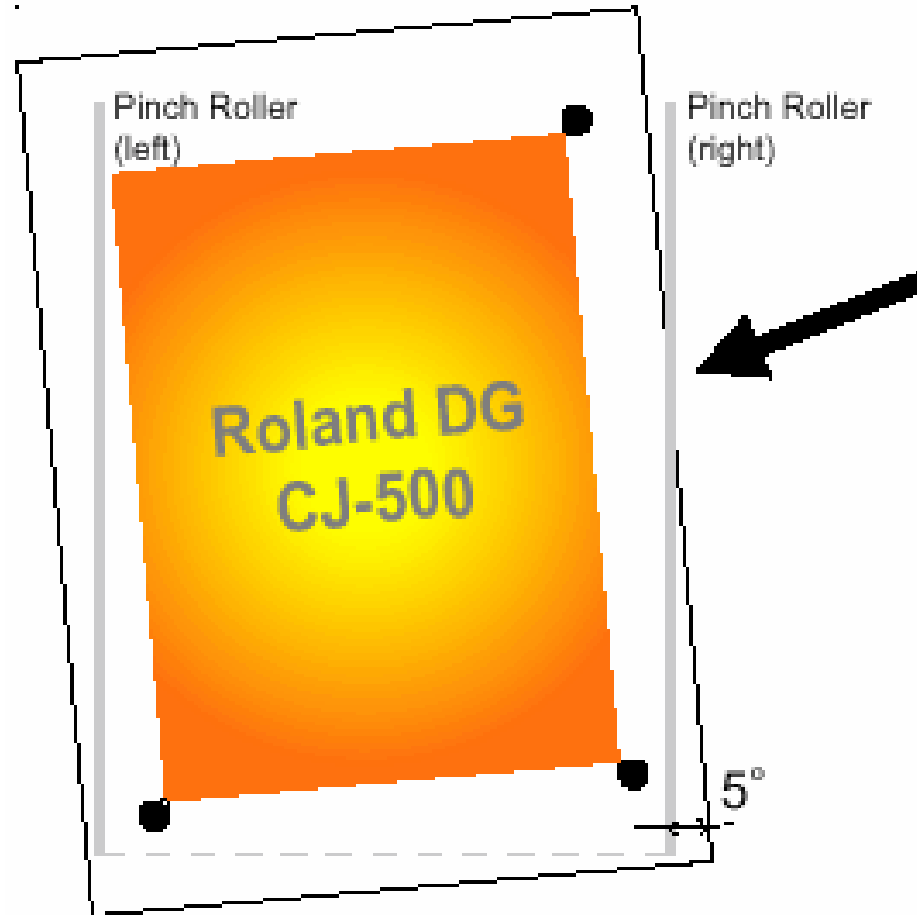
- Re-loading must be within 4" (10cm)



How Sensing Works?



Automatic Skew Adjustment



 Roland

Selecting Base-Align

- **Purpose for Selecting BASE- ALIGN:
(Detecting 3 points)**
 - It is mainly used when media is removed from the machine between printing and cutting for other processing such as lamination.
 - As the media is removed, position of the image will be different between before and after the removal of the media.
 - Therefore, it is necessary to detect 3 points.

Selecting Base Only

- **Purpose for Selecting BASE.**
 - It is mainly used when the other processing is done without removing the media from the machine such as applying UV spray.
 - As the media is still on the machine, it is only necessary to setup the base point again.

Cutting Specifications

- **Finer Motor control because of high-resolution media moving technology**
- **Scan direction : 24 IPS (600mm/s)**
- **Feed direction : 12 IPS (300mm/s)**
- **20-200grams Downforce**
- **0.025" software resolution**



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Hi-Fi JET
HIGH FIDELITY & COLOR INKJET PRINTER

Hi-Fi JET PRO FJ-500



Roland

Industry Firsts

- **First large format inkjet to license Pantone Hexachrome technology**



- **First machine to have 1440x1440 dpi resolution in large format inkjet devices**
- **First inkjet to be approved for use with True Giclee Standard**



Feature Highlights

- **V8 Technology**
- **8 Colors or 4c² Double CMYK**
- **Variable Droplet capability**
- **1440 x 1440 dpi resolution**
- **Pantone Hexachrome**
- **Brilliant Dye or UV-Stable Pigment ink options**
- **Roland ColorChoice[®] 4.0**
- **Twin Head & Twin CMYK ink**
- **Ethernet 100Base-TX TCP/IP**
- **Roland ColorChoice**
 - **New Color engine – linearization**
 - **RIP & Print**
- **64", 52" & 42" printer platforms**
- **Media Feed Calibration**



Droplet Control Technology

- **Hi-Fi JET FJ-500 controls the droplet in two ways, adapted to both the quality and speed.**
 - Variable Droplet Control
 - **Various sizes of droplets can be made in the same resolution.**
 - Multi Drop-on-Demand (DOD) Dot Control
 - **The suitable fixed droplets can be made according to the print mode.**

- Image and Color Reproduction -

Variable Droplet Control - III

- **Variable SUPER**
 - High quality mode with variable droplet control. Suited for high-end graphic arts.
- **Variable PHOTO**
 - Excellent quality mode with True 1440 dpi and Variable droplet mode. Suited for fine art / photography

| Print mode | Resolution (dpi) | Pass | Application |
|--------------------|------------------|------|----------------------|
| Variable SUPER ●●● | 720 x 1440 | 16 | Digital Proof, Photo |
| Variable PHOTO ●●● | 1440 x 1440 | 32 | Photo, Fine Art |

*Resolution: Vertical x Horizontal

- Image and Color Reproduction -

Multi Size Dot Control - II

- **DRAFT:**
 - Ultra-high speed mode. Suited for big signs, and mass production.
- **NORMAL:**
 - High-speed mode. Suited for billboards and banners.
- **SUPER:**
 - Good quality and quick printing mode. Suited for poster production and digital proof.

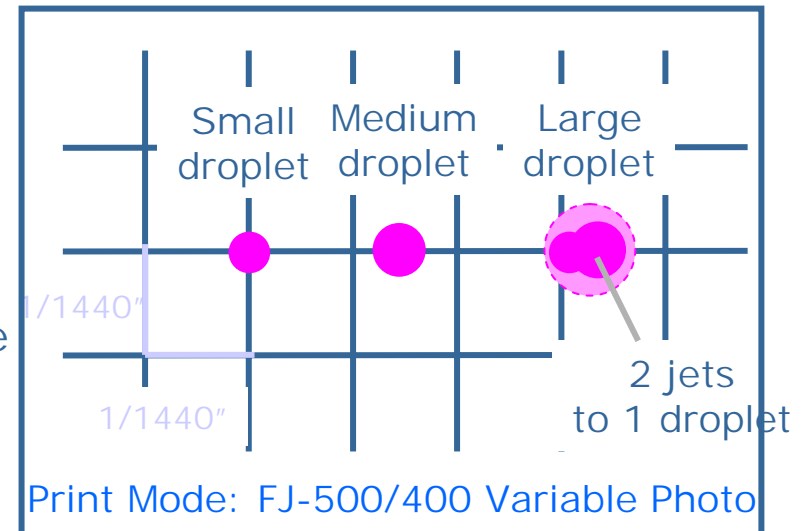
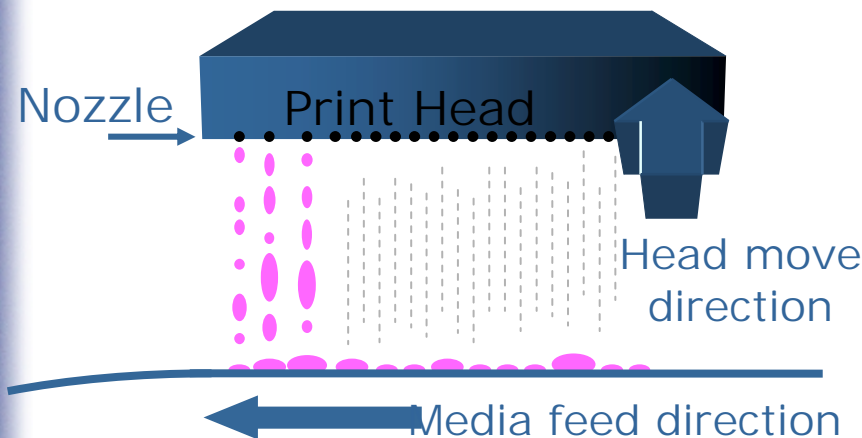
| Print mode | Resolution (dpi) | Pass | Application |
|----------------|------------------|------|----------------------|
| DRAFT ●●●● | 540 x 360 | 3 | Sign, Display |
| NORMAL ●●●●●● | 720 x 720 | 8 | |
| SUPER ●●●●●●●● | 1080 x 1080 | 18 | Digital Proof, Photo |

*Resolution: Vertical x Horizontal

- Image and Color Reproduction -

Variable droplet Control - I

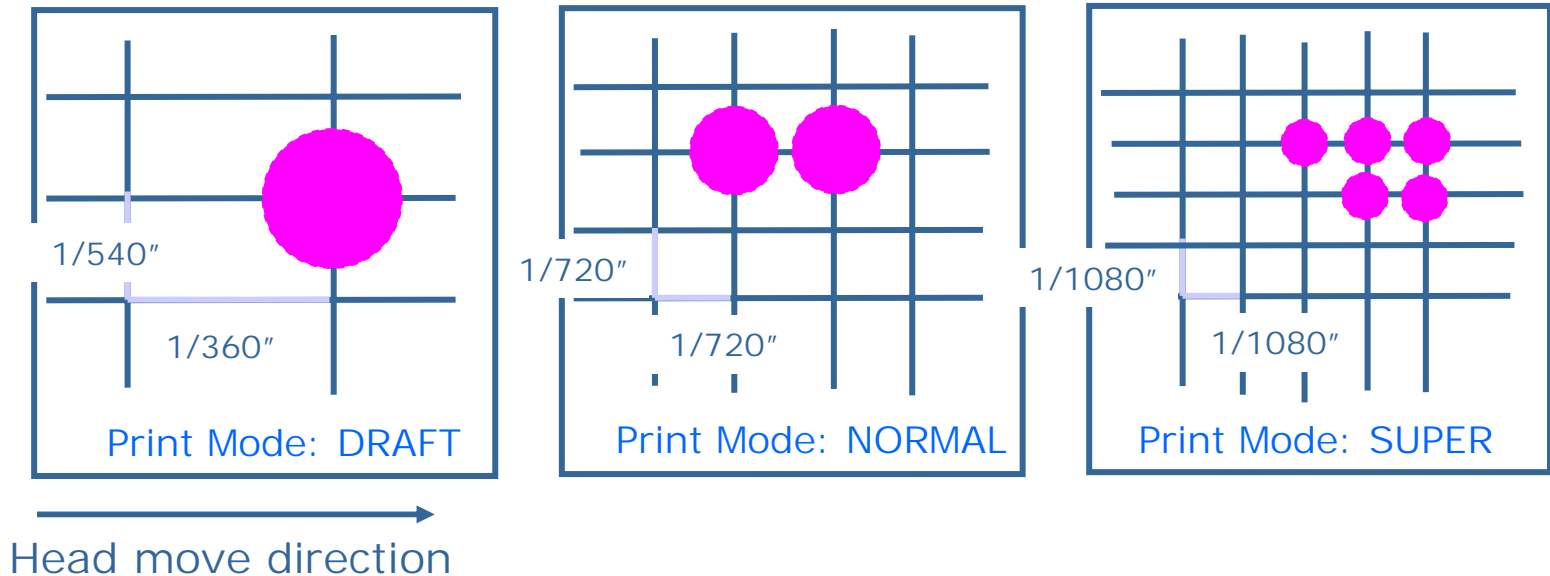
- Piezo technology enables variable ink droplet control.
- Various sizes of ink droplets (small, medium and large) are discharged and coupled in the air.
- Depending on print mode there are 3 different size droplet sets



- Image and Color Reproduction -

Multi Size Dot Control - I

- **FJ-500/400 is always making the most fitted dots in response to both the quality and speed.**



- Image and Color Reproduction -

Variable Droplet Control - II

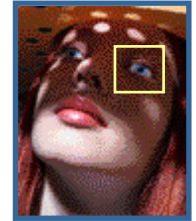
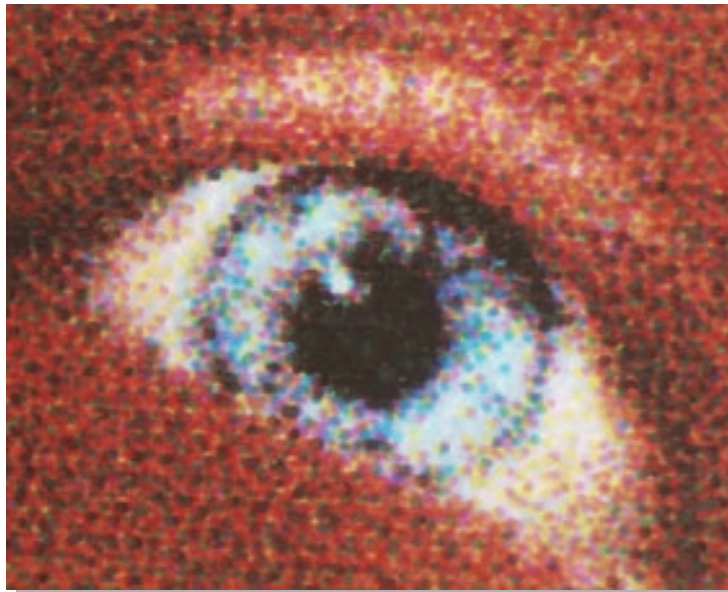
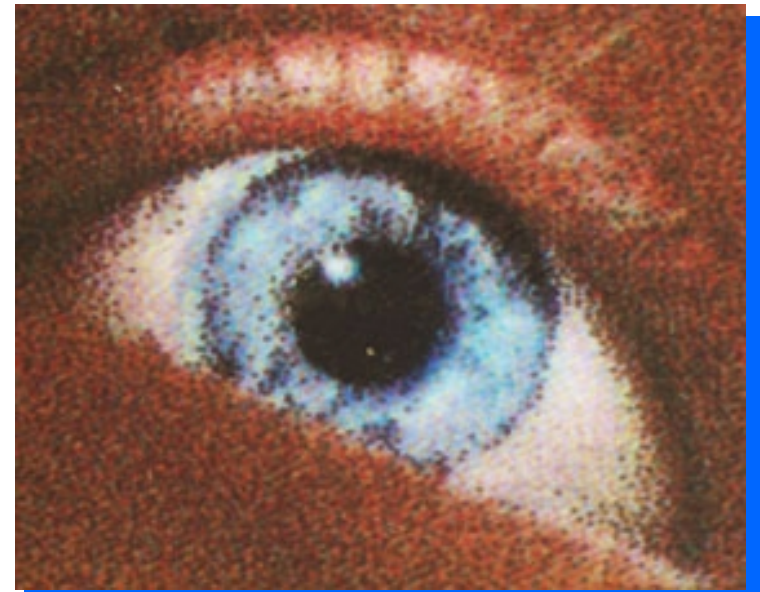


photo enlarged by 20 times
(actual output size: 30 mm x 47 mm)



FJ-50/40(52/42)
Enlarged Fixed dots
Photo Uni-direction

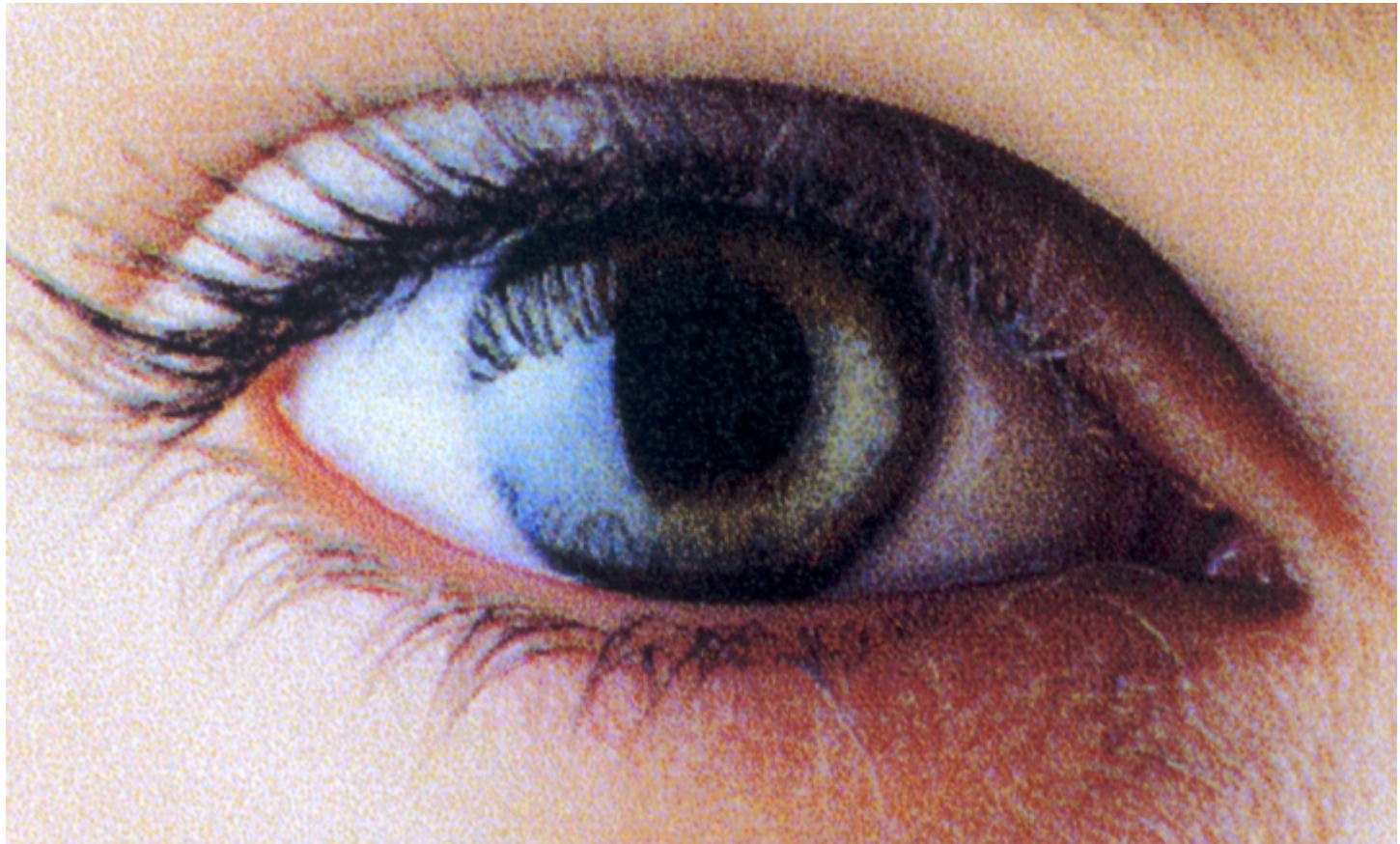


FJ-500/400
Enlarged variable droplets
Variable Photo Uni-direction

- Image and Color Reproduction -

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Fixed droplet zoom



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Variable droplet zoom



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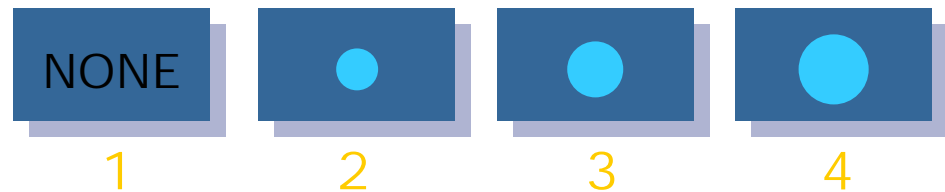
Variable Droplet

- Variable droplet printing allows smoother gradations with improved subdivision of hues
- Gradations is 2 times better than FJ-50/40 at the same printing resolution.

FJ-50/40(52/42)
Super mode



FJ-500/400
Variable super mode



Improved Gradations

- Owing to the improvement of the resolution and the use of light inks, FJ-500/400 has become able to provide you a smooth and natural gradation.
- Gradation image
 - FJ-50/40 super mode

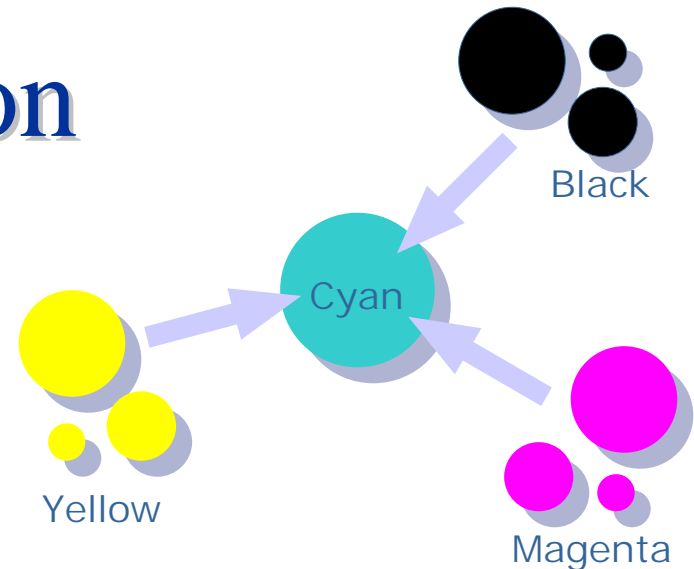


- FJ-500/400 Variable PHOTO mode



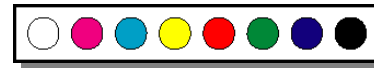
Color Reproduction

- FJ-500/400 has greatly improved in the accuracy of color reproduction by using 64 colors per dot, 8 colors per dot by FJ-50/40(52/42).

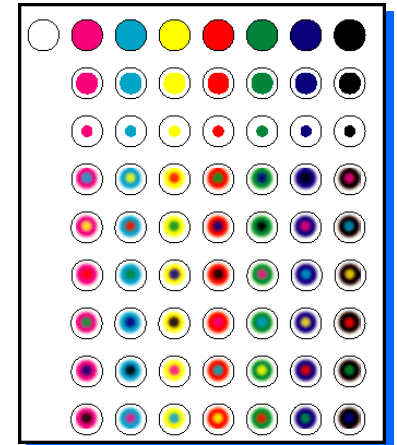


- By using Variable PHOTO mode (CMYK), 512 colors are available because of printing resolution.
- By using 8-color mode (CMYKLcLmOrGr), the number of color gets bigger than CMYK mode printing.

FJ-50/40 CMYK mode



FJ-500/400 CMYK mode



- Color Reproduction per 1dot at same printing resolution (image) -

- Image and Color Reproduction -

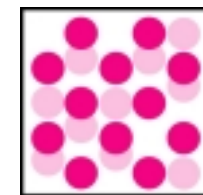
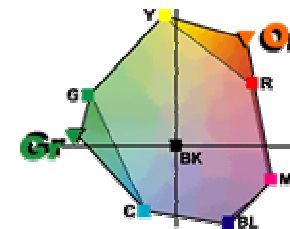
8-color Printing

- **Continuous Tonal Printing has been realized due to the support of 8-color printing capabilities.**
- **The adoption of smaller size ink droplets (when compared with FJ-50/40) coupled by the 8-color ink printing capability has enabled the printer to produce a highly expressive gradation in a wide color gamut.**

Inkset Advantages

LcLm - Smooth Tone

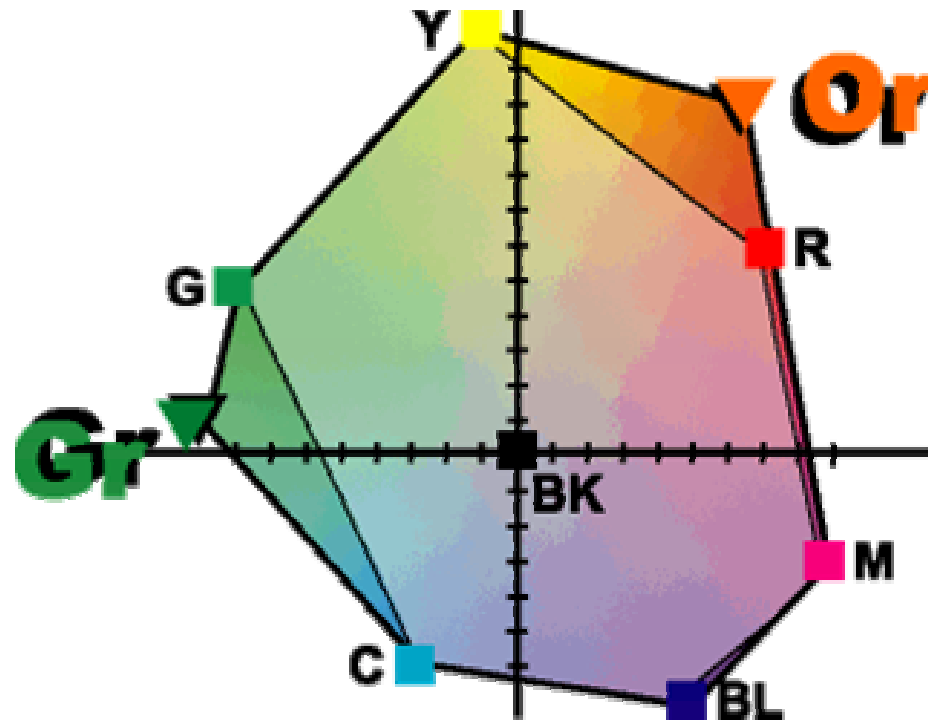
OrGr - Wide Color Gamut



- Image and Color Reproduction -

Wide Color Gamut

- Traditional CMYK plus Orange and Green ink-- the FJ 500/400 capable of expressing profound colors in a wide color gamut-- almost as wide as the color gamut of RGB colors.



- Image and Color Reproduction -

The Roland logo consists of a stylized 'R' symbol above the word 'Roland'. The 'R' is composed of a vertical bar on the left and a horizontal bar at the top, with a small gap between them. The word 'Roland' is written in a bold, sans-serif font. The entire logo is white and set against a dark blue background.

Roland

Section 2

Productivity

Versatile Ink Combination

- Ink used for the FJ-500/400 is same as FPG and DYE ink for other FJ and CJ series printers.
- Using the ink-cleaning cartridges (CJ-CL) to change ink type – dye vs. pigment as well as loaded colors.

Pigment 8c 

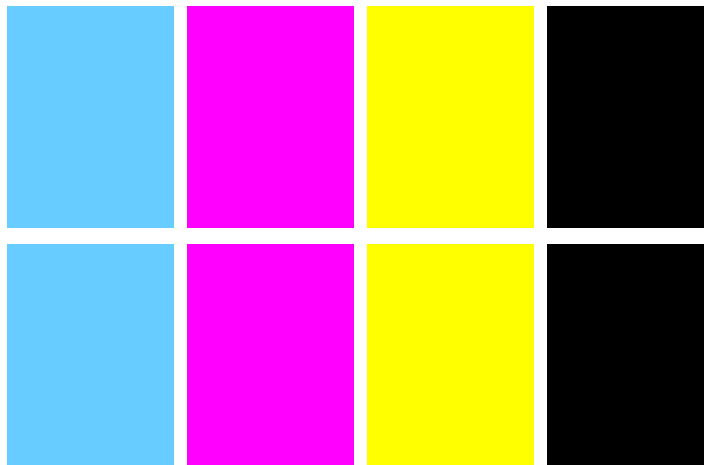
Pigment 4c x 2 

Dye 4c x 2 

Pigment 4c / Dye 4c 

4-color printing

- High speed printing has been achieved for 4-color process printing using CMYK ink:
 - Twin print heads
 - 192 nozzles per color (total 768 nozzles.)
 - Large capacity of ink : Total of 440 cc for each color



220 cc x 2 each
= TOTAL 440cc

Pigment & Dye

- **One option combines 4-c pigment & dye**
- **Dye ink offers lower price, short run applications.**
 - **Low cost**
 - **Quick change**



*Pigment ink and Dye ink can be used exclusively.
(Not available for printing on the same print.)



Print Modes

- 4 & 8 Color modes
- Different speeds on Fixed vs. Variable

| Color Mode | Print mode | Resolution (dpi) | Pass | Printing time |
|------------|-----------------|------------------|------|---------------|
| 4 | DRAFT | 540x360 | 3 | 127 sqft/hr |
| 4 | NORMAL | 720x720 | 8 | 75 sqft/hr |
| 4 | SUPER | 1080x1080 | 18 | 36 sqft/hr |
| 4 | VARIABLE PHOTO | 1440x1440 | 32 | 16 sqft/hr |
| 8 | DRAFT | 540x360 | 3 | 79 sqft/hr |
| 8 | NORMAL | 720x720 | 8 | 42 sqft/hr |
| 8 | VARIABLE NORMAL | 540x1080 | 9 | 30 sqft/hr |
| 8 | SUPER | 1080x1080 | 18 | 20 sqft/hr |
| 8 | VARIABLE SUPER | 720x1440 | 16 | 17 sqft/hr |
| 8 | VARIABLE PHOTO | 1440x1440 | 32 | 6 sqft/hr |

High-speed Printing

- **Printing speed is 4.5 times faster using 4 colors compared with FJ-50/40.**
 - **Nozzles: from 64 to 96 -- 1.5 times**
 - **Head moving speed: Max. 2 times**
 - **Throughput of CMYK printing: 2 times -- using 192 nozzles (96 x 2 sets) when compared with FJ-50/40.**

| | Nozzle per Color | Head Speed | Total Performance |
|--------------------------|------------------|-----------------|-------------------|
| FJ-50/40 | 64 | 1x | 1x |
| FJ-52/42 | 64 | 1.5x | 1.5x |
| FJ-500/400 8c | 96 | 1.4 - 2x | 2 - 3x |
| FJ-500/400 4c x 2 | 192 | 1.4 - 2x | 4 - 5x |

*Because of the amount of processing data, not all the nozzles are used by Variable PHOTO mode.

- Productivity -

The logo consists of a stylized 'R' symbol, which is a square with a horizontal bar extending from the bottom left corner, positioned above the word 'Roland'.

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Section 3

Connectivity

Interface

- **Parallel ECP mode**
 - IEEE 1284 Full support
 - The adoption of ECP mode for the parallel port has realized faster data transmission.
- **Support of 100 BASE-TX**
 - The standard network server (100 BASE-TX/10 BASE-T) has enabled the FJ-500/400 to be used as a network printer.
 - Protocol: TCP/IP



Parallel ECP Mode

- In order to secure high-speed data transmission firmly for large volume data, the ECP mode is fully supported.

- FJ-50/40, FJ-52/42

- 300 kb/sec.



- FJ-500/400 (ECP Mode)

- 750 kb/sec.

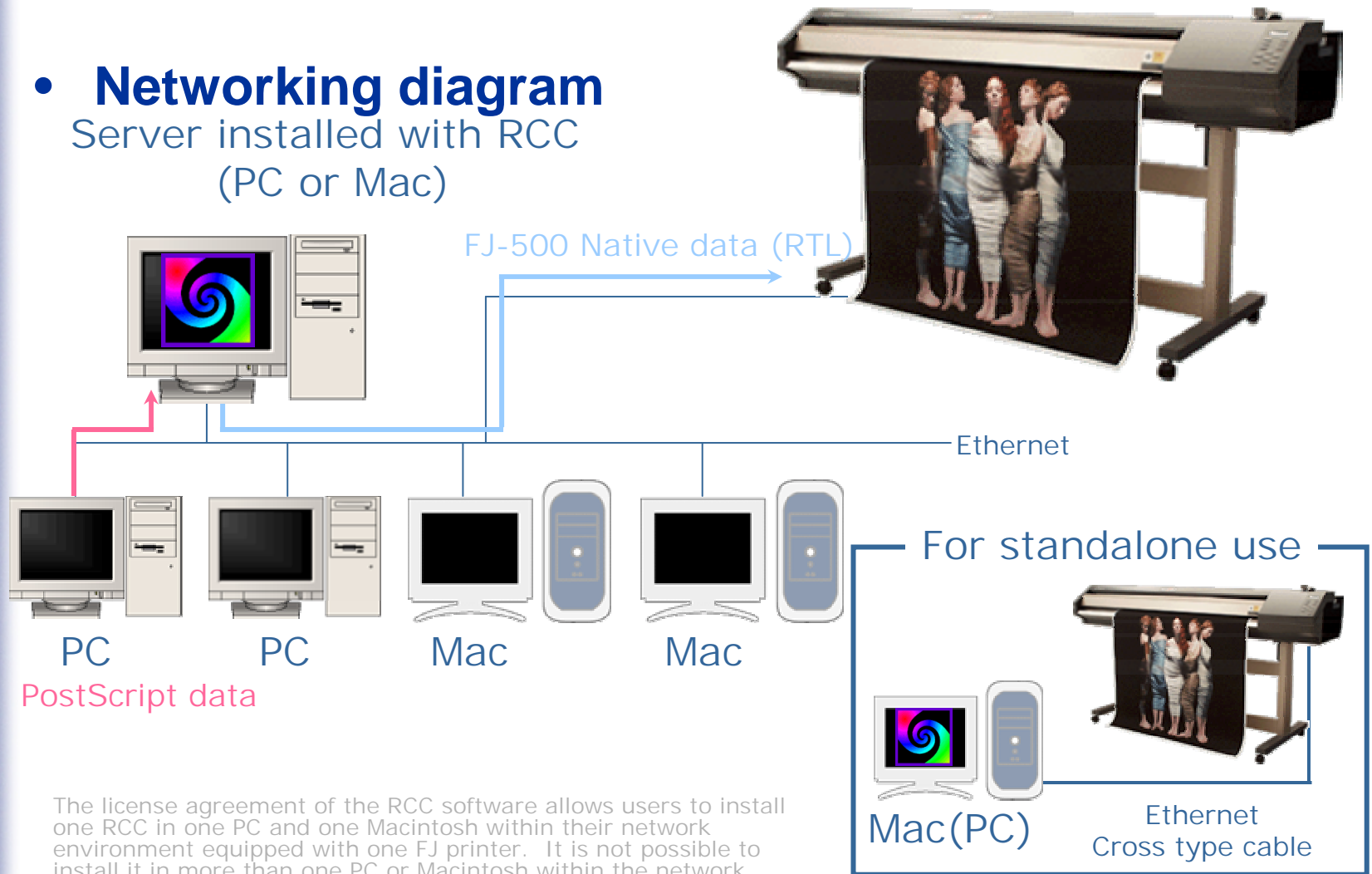


100 BASE-TX

- **The standard equipment of Network Server**
 - TCP/IP
 - High-speed data transmission
 - 1.1 Mb/sec. (100BASE-TX)
 - Settings can be easily done with the bundled software CD-ROM.
 - Settings accessible through internet browser
 - Bundled with Ethernet setting utility.

Networking through TCP/IP

- **Networking diagram**
Server installed with RCC
(PC or Mac)



The license agreement of the RCC software allows users to install one RCC in one PC and one Macintosh within their network environment equipped with one FJ printer. It is not possible to install it in more than one PC or Macintosh within the network environment with one FJ printer.

- *Connectivity* -

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Network advantages

- **Easy to share FJ-500/400**
- **Multi-Application Support**
 - Illustrator
 - Photoshop
 - QuarkXpress
- **Multi-Platform**
 - Windows 98/95
 - Windows NT/2000
 - Mac OS
- **Multi-Client, Multi-User**

- Connectivity -

Roland

Summary

- **V8 Technology**
- **8 Colors or 4c² Double CMYK**
- **Variable Droplet capability**
- **1440 x 1440 dpi resolution**
- **Pantone Hexachrome**
- **Brilliant Dye or UV-Stable Pigment ink options**
- **Twin Head & Twin CMYK ink**
- **Ethernet 100 Base-TX TCP/IP**
- **64", 52" & 42" printer platforms**
- **Roland ColorChoice**
 - **New Color engine – linearization**
 - **RIP & Print**





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Product View



Roland

Industry Firsts

- **Revolutionary SOL INKs**
 - Roland's own solvent inks
 - Not Oil-based - this is a unique formulation
- **Low-volatility**
 - No ventilation needed
 - Virtually odorless
 - No heating elements needed
- **Output can last up to 3 years without lamination**
 - SOLJET Certified Media (SCM) under development
 - SCM product is both UV and Water Resistant
 - Should still laminate Vehicle and Floor Graphics
- **First Solvent based machine to offer contour cutting capability**
- **Under \$25,000**

Roland

Feature Overview

- **SOLJET & SOL INKs**
- **Unprecedented Easy Maintenance**
- **History**
- **Competition**
- **Sizes Available**
- **Features & Specs**



SOLJET v. CAMMJET

- **SOLJET adds new features:**
 - **New SOL INKs**
 - **4 Pinch Rollers (instead of 3)**
 - **Key Top Panel**
 - **Backlit LED**
 - **New Silver color**
 - **SOLJET Logo**
 - **Comes with two waste bottles**
- **SOLJET does not have automatic optical cropmark recognition**
- **SOLJET does not require lamination for outdoor output**

Installation/Transport

- **Requires 3 SL-CL Cleaning Cartridges**
 - Different from CAMMJET or Hi-Fi JET cleaning cartridges
 - Must flush with SL-CL Cartridges prior to installing SOL INKs
 - Menu will prompt you to insert/remove cartridges
- **Install process takes about 45 minutes**
- **Always drain SOL INKs when transporting the SOLJET**

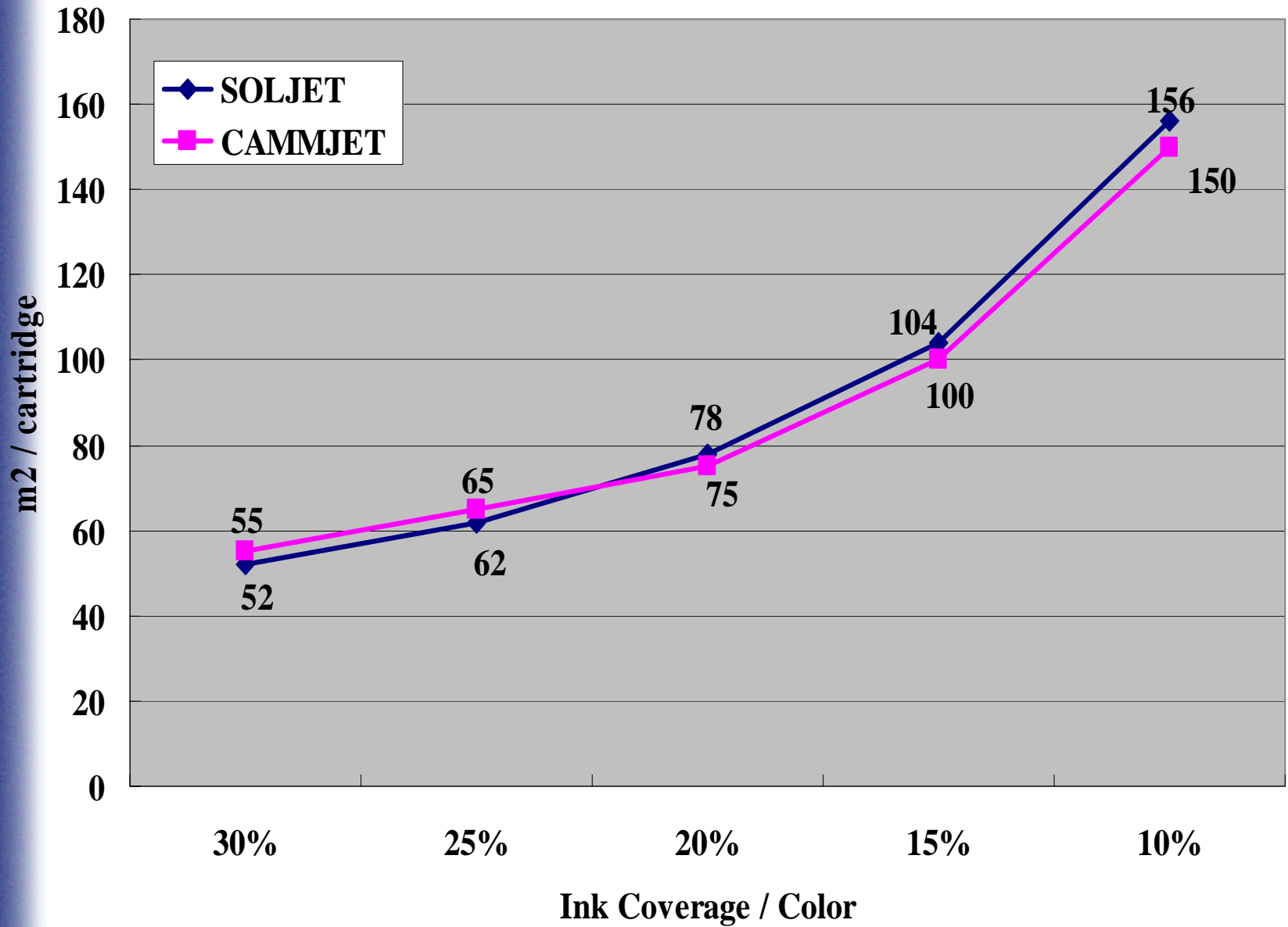
Environment

- **Operating Temperature is 59 - 86 F**
 - Non-operating Temp is 41 - 104 F
 - If internal thermostat reaches 104F, error message appears and machine will stop printing
- **Avoid Direct Sunlight**
- **SOLJET should be in a room equipped with ventilation**

SOLJET Ink System

- **Changes have been made to portions of the ink system to accommodate the new SOL INK chemistry**
- **New firmware with different firing rates to accommodate different physical and color characteristics**
- **Cartridge Holder material changed**
- **Drain Bottle Screw changed**
- **CJ-500 can not be converted to a SC-500**
- **SOLJET uses less ink per dot than CAMMJET**
- **SOLJET flushes with every pass**
 - **17% slower than CAMMJET**

SOLJET vs CAMMJET



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Easy Maintenance

- **Two service calls are included with purchase of every SOLJET**
 - 6 and 12 months after purchase
- **Heads, Wiper and Capping Station replaced with each call**
- **Unprecedented service schedule in solvent industry - once a month is very typical**
- **Opportunity to sell additional service plan**

The Roland logo is displayed vertically on a dark blue background. It features the word "Roland" in a white, bold, sans-serif font. Below the text is a white graphic element consisting of a square with a horizontal line through its center, resembling a stylized 'R' or a printer's symbol.

Size Available

- **Roland SOLJET SC-500**
 - **Maximum Print Width: 52 inches**
 - **Media width: 8-5/16 to 54 inches**
 - **Available media: 50 inches**
 - **Printable Area on 50 inch media: 49-5/8**

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Production Capacity

Running Cost



| Saturation | Set Cost | Mode | Yield | CPSF | Avg |
|------------|-----------|------|-------|---------|---------|
| Low | | | | | |
| \$ 99.95 | \$ 599.70 | 720 | 810 | \$ 0.34 | |
| | | 540 | 918 | \$ 0.50 | \$ 0.37 |
| | | 360 | 1133 | \$ 0.28 | |
| High | | | | | |
| \$ 111.95 | \$ 671.70 | 720 | 810 | \$ 0.70 | |
| | | 540 | 918 | \$ 1.02 | \$ 0.76 |
| | | 360 | 1133 | \$ 0.56 | |

Based on 20% per color or 120% total coverage



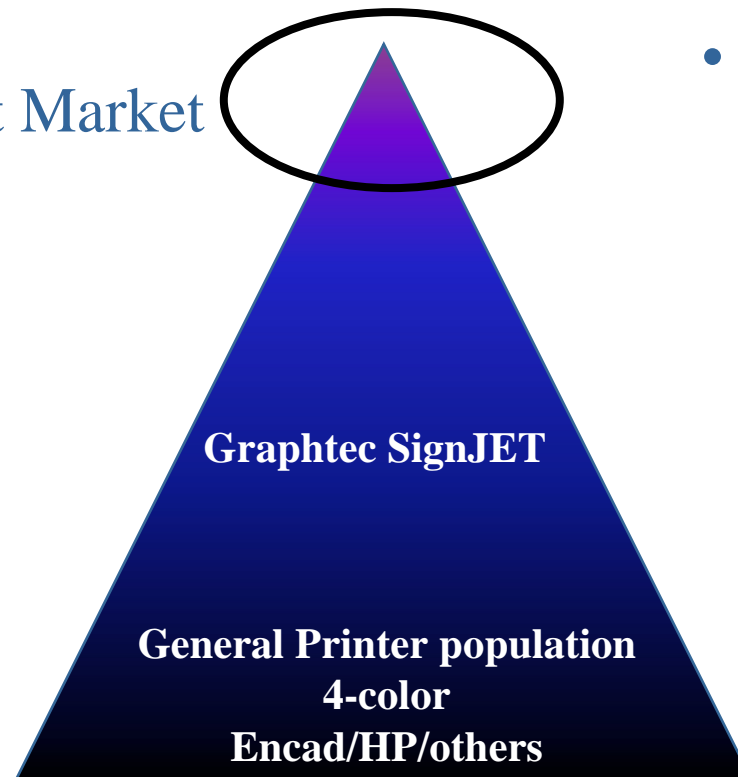
Print Speeds – All Modes

| Mode | Direction | Passes | Resolution | Sq.Ft/hour |
|--------|-----------|--------|------------|------------|
| Draft | bi | 1 | 180dpi | 81 |
| | uni | 1 | 180dpi | 54 |
| Fast | bi | 2 | 360dpi | 43 |
| | uni | 2 | 360dpi | 29 |
| Normal | bi | 4 | 360dpi | 22 |
| | uni | 4 | 360dpi | 15 |
| Fine2 | bi | 6 | 540dpi | 21 |
| | uni | 6 | 540dpi | 13 |
| Fine | bi | 4 | 720dpi | 22 |
| | uni | 4 | 720dpi | 15 |
| Super | bi | 8 | 720dpi | 13 |
| | uni | 8 | 720dpi | 9 |
| Photo | bi | 16 | 1440dpi | 7 |
| | uni | 16 | 1440dpi | 4 |

Roland

Market Position

Target Market



- **Feature rich**
- **Differential from competition**
 - Low volatility SOL INKs
 - Print & Cut!
 - No ventilation
 - No heating elements
 - Superior resolution
 - Low Maintenance
 - Co-exists with SolventJET
 - Low Cost



Competition – Arizona

- **Strengths:**
 - Low Consumable Cost (print on uncoated medias)
 - Faster Print Speeds
- **Weaknesses:**
 - Expensive (ranges from 55K to 250K)
 - High Volatility Solvent - Special Ventilation Required
 - 360 DPI max
 - Heating Elements
 - High Maintenance Schedule and Costs
 - No contour cutting
- **Opportunities:** Capitalize on low cost, Roland branded Solvent solution with contour cutting and easy maintenance.
- **Threats:** SOLJET, SolventJET, Tiara Sapphire