Apogee CristalRaster

User's Guide

AGFA

The complete picture.

Trademarks

AGFA and the Agfa rhombus are registered trademarks of Agfa-Gevaert AG.

Agfa Balanced Screening, AgfaProof, AgfaSet, Alliance, Calibrator, CristalRaster and Star are trademarks of Agfa-Gevaert N.V.

Adobe, Acrobat, PageMaker, Photoshop, Illustrator and PostScript are trademarks of Adobe Systems Incorporated.

Microsoft, MS, MS-DOS, Excel, Windows 95, Windows 98 and Windows NT are registered trademarks of Microsoft Corporation.

Apple and Macintosh are trademarks of Apple Computer Incorporated.

AppleTalk and LaserWriter are trademarks of Apple Computer Incorporated.

HiFi Colour is a registered trademark of Miles Davis Corporation.

MultiStar and Viper are trademarks of Agfa Corporation in the United States, and trademarks of Agfa-Gevaert N.V. in Europe.

PC is a registered trademark of International Business Machines Corporation.

QuarkXPress is a registered trademark of Quark, Incorporated.

FreeHand is a registered trademark of Macromedia Incorporated.

ArtPrinter is a registered trademark of Artwork Systems N.V.

Those names and product names not mentioned here are trademarks or registered trademarks of their respective owners.

For more information about Agfa's prepress products, contact Agfa at either the USA or European headquarters listed below.

Agfa Division, Agfa Corp.
200 Ballardvale Street
Wilmington, MA 01887, USA
Tel: (+)978 658 5600

Agfa-Gevaert N.V.
Septestraat 27
B-2640 Mortsel, Belgium
Tel: (+)32 3 444 2111

Date of Issue: July, 1999

All software and hardware described in this document are subject to change without notice.

License Agreement

You should carefully read the following terms and conditions before using this software. If you do not agree with these terms, return the package within 10 days of purchase, together with proof of purchase, and your money will be refunded.

This package includes one or more diskette(s) and/or CD-ROM(s) containing copies of computer software programs, all or part of which are owned by Agfa-Gevaert N.V. (“AGFA”). These media may also contain complete software programs, all or part of which are owned by other parties (“the Other Owners”). This package also contains documentation relating to these software programs. In this Agreement, the term “Programs” refers both to the software programs and the related documentation. AGFA and the Other Owners retain ownership of the Programs and the other contents of this package. You, and any other person acquiring the Programs pursuant to paragraph 7 (b) below, are licensed to use the Programs on the terms and conditions outlined below.

Limited Use License

1 You are granted a non-exclusive license (“the License”) to use the Programs only on the terms and conditions set in this Agreement.

2 The Programs may be used only by you.

3 You agree to use the Programs solely for your own customary business or personal purposes.

4 (a) You and your employees and agents will protect the confidentiality of the Programs.

(b) Except as provided in paragraph 7 (b) below, you will not sub-license, sell, lease, rent, distribute, disclose or otherwise make the Programs available to any other person.

5 (a) Other than for normal use of the Programs, or to make one back-up copy of the Programs in machine readable form, you may not copy or reproduce the Programs, in whole or in part, for any purpose.

(b) The Programs contain certain copyright notices. You must include all such copyright notices on any copy or reproduction you make. Further, you must acknowledge that any such copy or reproduction will be owned by AGFA and, if applicable, the Other Owners.

6 You may not alter, modify, or adapt the Programs. You may not merge all or any part of them into any other computer software programs. You may not translate, decompile or disassemble the programs or, without prior written permission of AGFA, create any computer software programs or other works derived from the Programs.

7 (a) You may not sub-license, assign or transfer this License to any other person, either in whole or in part, other than as provided in 7 (b) below.

(b) You may transfer your rights under the License to another person provided that, at the time of transfer:

(i) You pass the Programs (and all copies in your control) to the person acquiring your rights under the License.

(ii) The person acquiring your rights signs and returns to AGFA a Registration Card (thereby agreeing to be bound by the terms and conditions in the License). Registration Cards are available from AGFA upon request. Following such a transfer, all your rights under the License will pass to the person acquiring the Programs.

8 If you violate any of the above conditions, this License will be automatically terminated.

Term

The License is effective until terminated. You may terminate it at any time by notifying AGFA in writing. The License may also terminate in accordance with conditions set out elsewhere in this Agreement. You agree that upon any termination, you will immediately destroy the Programs together with all copies, and will immediately notify AGFA in writing.

Limited Warranty and Liability

1 If you discover any physical defect on the Program media, and return the media to AGFA within 90 days after purchase, together with proof of purchase, AGFA will replace the media at no charge to you.

2 Although AGFA has tested the Programs and reviewed the documentation, AGFA does not warrant that the Programs will meet your requirements, that they will function in every hardware/software environment, or that their operation will be uninterrupted or error free.

3 Except for the above express limited warranties, AGFA and the Other Owners give no warranties, guarantees or conditions whether express or implied, by statute or otherwise, in relation to the Programs, their quality, description, or fitness for any particular purpose.

Since some countries do not allow the exclusion of implied warranties, the above exclusion may not apply to you. This warranty gives you specific legal rights. You may also have other rights.

4 In no event whatsoever shall AGFA, and the Other Owners, have liability for any special, indirect or consequential losses of profit or otherwise, or for losses of recorded data, in relation to the use or any inability to use the Programs.

Since some countries do not allow the limitation or exclusion of liability for incidental or consequential damages, the above limitation may not apply to you.

5 No distributor, dealer or agent of AGFA is authorized to make any modification or addition to this statement of limited warranty and liability.

General

1 Should you have any questions about this Agreement you may contact Product Management GS by writing to:

Agfa-Gevaert N.V. at Septestraat 27, B-2640 Mortsel, Belgium.

2 This Agreement is governed by the laws of the country in which it was purchased.

3 If the Programs are used within a country of the European Community, nothing in this Agreement shall be construed as restricting any rights available under the European Community Software Directive, O. J. Eur. Comm (No. L. 122) 42 (1991).

4 If any provision of this Agreement is held invalid, the remainder of this Agreement shall continue in full force and effect.

You acknowledge that you have read this Agreement, understand all of its provisions and agree to comply fully with them. You further agree that this Agreement contains the complete and exclusive statement of the agreement between you and AGFA in relation to the Programs, and that it supersedes any proposal or prior agreement, oral or written, and any other communications relating to the subject matter of this Agreement.

About This Guide

Purpose

This Guide describes the Apogee CristalRaster halftone screening technology, and explains how to install and use Apogee CristalRaster in your PostScript prepress and offset or flexo printing environment.

CristalRaster runs on any Apogee PostScript 3 RIP that drives an Agfa imagesetter. For information on your particular Apogee RIP and Agfa imagesetter configuration, you should refer to the relevant user documentation.

Intended Audience

This document is designed for users who need to install and use Apogee CristalRaster. As a user, it is assumed that you are already familiar with Macintosh systems and PostScript-based prepress methods. You should also have experience with analog proofing systems and offset printing procedures in order to understand the chapters on proofing, platemaking and printing.

❖ Note: The screenshots included in this Guide are taken from a Macintosh workstation. Windows users may notice small differences, but all features and functionality are basically the same for both Macintosh and Windows users.

How to Use This On-line Guide

Use the following procedures to navigate through this guide:

Click on underlined text to go to the topic indicated. Underlined text indicates text that is "linked" to another part of this guide. For example, see Chapter 1 - Introduction.

Click on the Go Back button in the tool bar to return to your previous location.

Click on the Next Page button in the tool bar to go to the next page of the guide.

Click on the First Page button in the tool bar to return to the opening screen of this guide.

Click on the bookmark name to go to the topic marked by that bookmark. Click the triangle to the left of a bookmark to show and hide subordinate bookmarks. The bookmarks for this guide provide a complete list of topics.

❖ Note: Viewing this document with Acrobat Reader:
Due to rescaling, the screen shots included in this document will appear unclear when displayed at 100% magnification. You can view these screens clearly by using the Zoom tool to increase the default magnification to 166%.

Scope and Structure

Chapter 1 — Introduction

This chapter introduces Agfa's CristalRaster halftone screening technology, and highlights its main advantages and features. You should read this chapter if you are new to Apogee CristalRaster and to stochastic screening technologies in general.

Chapter 2 — Installing CristalRaster

This chapter outlines the PostScript system requirements for installing and using Apogee CristalRaster, and describes the installation procedure using AgfaSet.

Chapter 3 — Creating a Customized Compensation

This chapter explains how to obtain the best possible CristalRaster output by creating a customized compensation for your printing press. It also explains how to determine the correct dot gain compensation to use. You should read this chapter before attempting to produce any CristalRaster films.

Chapter 4 — Using CristalRaster with Your Prepress Applications

This chapter provides information on using Apogee CristalRaster with popular desktop prepress applications. It explains how to print files using CristalRaster, and how to correctly apply dot gain compensations.

Chapter 5 — Platemaking and Printing

This chapter contains recommendations and guidelines on how to select, expose and develop positive and negative offset printing plates using Apogee CristalRaster. It also includes information on how to print Apogee CristalRaster on an offset printing press.

Appendix A — The CristalRaster Screens

This appendix provides the default halftone screens that are provided with Apogee CristalRaster.

Appendix B — Using Scaling Resources

This appendix explains how to use Scaling resources for flexo printing with 42µm, 60µm, and 80µm screens.

Appendix C — Proofing with AgfaProof

This chapter contains recommendations and guidelines on how to correctly produce analog color proofs from Apogee CristalRaster films using the AgfaProof system. If you are not using AgfaProof, you should use press proofing.

Appendix D — Glossary of Terms Used

This glossary defines many of the terms used in this document with which the user may not be familiar.

Contents

About This Guide **6**
Purpose 6
Intended Audience 6
How to Use This On-line Guide 7
Scope and Structure 8

Chapter 1 — Introduction **11**
What is "Screening"? 12
Conventional Screening 12
Stochastic Screening 13
The Agfa CristalRaster Technology 15
What's New in Apogee CristalRaster? 16
A Complete Range of Dot Sizes and Screens 16
Smooth Shading with up to 4096 Grayscale Levels 17
Apogee CristalRaster Features 18

Chapter 2 — Installing CristalRaster **20**
System Requirements 21
Hardware Requirements 21
Software Requirements 21
Before You Begin 21
Installing the Apogee CristalRaster Screens 22
The Supplied CristalRaster Screen Files 22
Installation Overview 23
Downloading the CristalRaster Halftone Screens to the RIP 24
Downloading the CristalRaster Ruling Map to the RIP 28
Changing the Default Ruling Map Numbers (Optional) 30
Generating a New PPD File 31
Installing the CompareScreening.EDF File 32

Chapter 3 — Creating a Customized Compensation **33**
Introduction 34
Compensating for Differences in Tone Reproduction 34
CristalRaster Uncompensated Screens 35
Workflow Overview 36
Selecting Your Output Recording Media 36
Printing a Test Page 37
Evaluating your Print Results 39
Using Calibrator to Create a Fine-Tuned Compensation Curve 40
Downloading a Fine-tuned Compensation to the RIP 44

Chapter 4 — Using CristalRaster with Your Prepress Applications 48
Introduction 49
Setting up a Printer Driver 49
Printing from Adobe Photoshop 51
Printing Images Using the Default Halftone Screens 51
Saving EPS Files for Use with CristalRaster 52
Printing from QuarkXPress 54
Printing from Adobe PageMaker 56
Printing from Macromedia FreeHand 58
Printing from Adobe Illustrator 60
Printing from Artwork Systems ArtPrinter 62

Chapter 5 — Platemaking and Printing 64
Platemaking 65
General Recommendations 65
Positive Platemaking 68
Negative Platemaking 69
Printing 70

Appendix A — The CristalRaster Screens 71
1200 dpi Screens 72
1800 dpi Screens 72
2400 dpi Screens 73

Appendix B — Using Scaling Resources 74
Introduction 75
Creating a New Scaling Resource 75
Checking your New Scaling Resources (optional) 77
Adding the New Scaling Resource to Your Print Options 78

Appendix C — Proofing with AgfaProof 81
What is Proofing? 82
CristalRaster Dot Gain Characteristics 82
CristalRaster on AgfaProof - Proofing Guidelines 83
General Recommendations 83
Procedure with AgfaProof Negative 83
Procedure with AgfaProof Positive 84

Appendix D — Glossary of Terms Used 85

Index 92

Chapter 1 — Introduction

This chapter introduces Agfa's CristalRaster halftone screening technology, and highlights its main advantages and features. You should read this chapter if you are new to Apogee CristalRaster and to stochastic screening technologies in general.

What is "Screening"? 12

- Conventional Screening 12
- Stochastic Screening 13

The Agfa CristalRaster Technology 15

What's New in Apogee CristalRaster? 16

- A Complete Range of Dot Sizes and Screens 16
- Smooth Shading with up to 4096 Grayscale Levels 17

Apogee CristalRaster Features 18

What is "Screening"?

A printing press is a binary device, and therefore cannot reproduce continuous tone originals without using special techniques.

For the past hundred years, commercial printers have been using halftoning techniques to convert the various tone values of original artwork or photographs into geometric arrangements of "halftone dots". When viewed from a reading distance by the human eye, these halftone dots are too small to be discerned individually. Instead, the eye experiences an overall tone value that is proportional to the total surface area covered by the dots. The process by which arrangements of halftone dots are generated is called "screening".

In recent years, two distinct forms of screening have emerged:

- Conventional screening
- Stochastic screening

Conventional Screening

When conventional screening is used, the halftone dots are placed in a periodical pattern so that their number per unit of surface area is constant, Using this technology, the original tone values are simulated by changing the size of each individual dot. This method is commonly referred to as conventional, or amplitude-modulation (AM) screening.

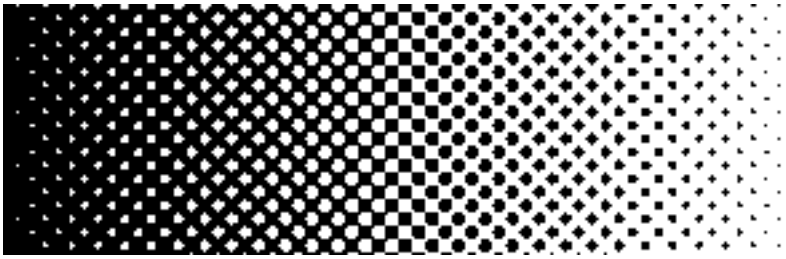


Figure 1 - Conventional (Amplitude-Modulated) screening

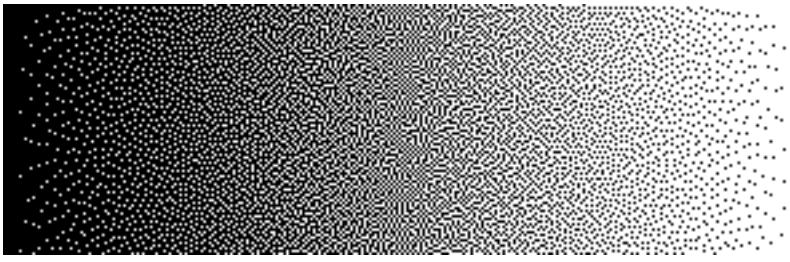


Figure 2 - Stochastic (Frequency-Modulated) screening

The halftone dot sizes in conventional screening techniques range between roughly 20 and 200 µm (micrometers or “microns”, where 1 thousand microns = 1 millimeter). Some of the coarser screens, typically used in newspaper printing, may produce halftone dots of up to 350 µm.

If conventional screening is used in color reproduction, the screen arrangement for each color separation must be rotated over an angle to prevent undesirable effects (known as moiré artefacts) resulting from the occasional overlapping of the halftone dot patterns. Unfortunately, this screen rotation can produce other undesirable microstructures, known as "rosettes", whose dimensions correspond to 1.4 times the maximum size of a single halftone cell.

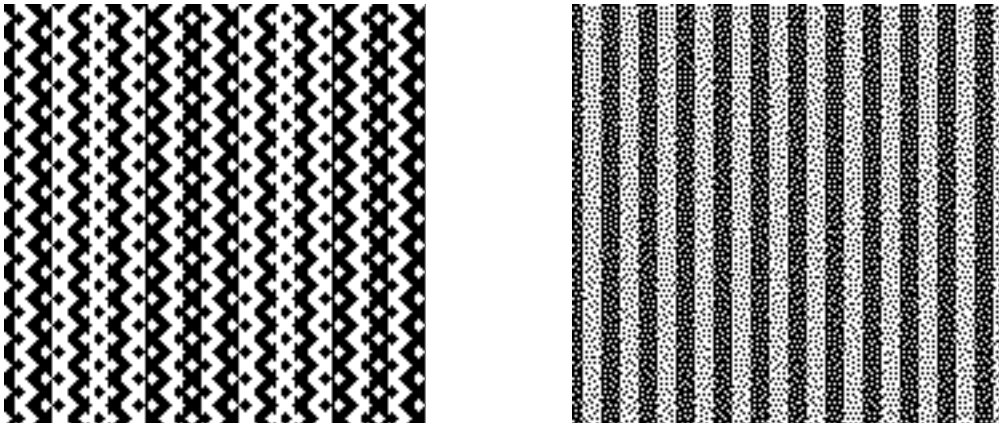
Stochastic Screening

Stochastic screening is an alternate screening method that eliminates the moiré artefacts and rosette formations produced in conventional screening.

Stochastic, or frequency-modulation (FM) screening, accomplishes the same effect as conventional screening, but uses much smaller equally-sized dots whose number per unit surface area is proportional to the tone value that must be reproduced.

The dot pattern of stochastic screening can be regarded as the result of breaking up conventionally screened halftone dots into smaller fragments of equal size and randomly positioning those microdots over the same surface area.

The microdots of stochastic screening techniques are therefore smaller than the halftone dots of conventional screening, typically in the range 10 to 60 µm.



Conventional Screening (moiré)

Stochastic Screening

Figure 3 - Conventional screening versus stochastic screening (linear 25% - 75% tint pattern at 20x magnification)

How CristalRaster Handles “Noise”

The introduction of Apogee CristalRaster into your existing prepress and print production environment is a relatively smooth process. However, the microdot distribution used in stochastic screening techniques introduces a new quality parameter, known as graininess or “noise”.

Noise appears as uncontrolled (and unwanted) density fluctuations at various spatial frequencies. A complete random arrangement of black microdots against a white background would result in a continuum of frequencies, indicated as "white" noise. This is similar to what you see on your home TV screen when the cable is unplugged.

The human eye tends to filter noise in images. The eye registers high-frequency signals (known as "blue" noise) at a uniform density, which is easier to interpret than low-frequency signals (known as "pink" noise). For this reason, the CristalRaster algorithm has been designed with stochastic dot-placement characteristics that produce more blue noise than pink noise.

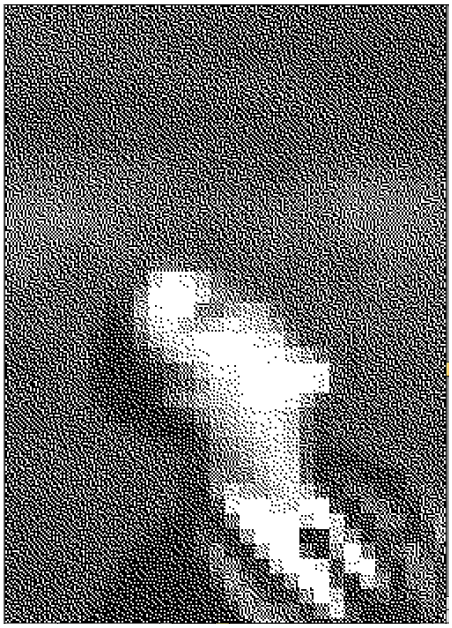


Image containing blue noise

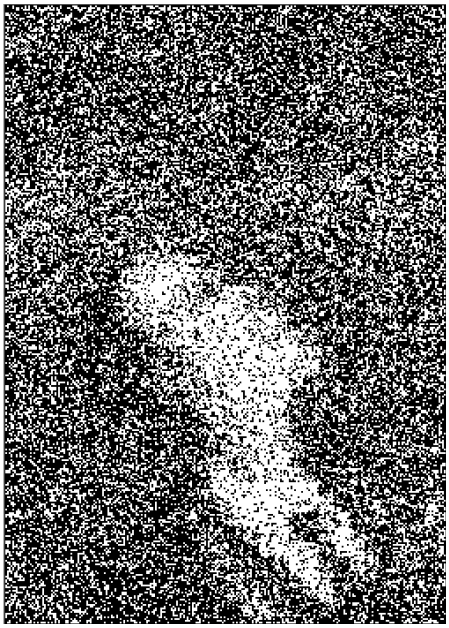


Image containing pink noise

Figure 4 - Blue Noise and Pink Noise Comparison

An increase in noise levels occurs if the smallest microdots are not reproduced, and if unwanted microdot clusters are formed. Such quality deterioration can be prevented by:

- using high quality imaging equipment (imagesetters, contact frames, platemaking equipment)
- combining this high quality imaging equipment with reliable photographic media that produces consistent results
- adhering to the reproduction guidelines explained in this manual.

Your choice of Agfa as a "complete picture" supplier guarantees you the best combination of equipment and consumables, as well as solid technical support.

❖ Note: As far as possible, you should try to preserve the favorable blue noise characteristics of the CristalRaster microdot distribution. You should take this into account throughout the photo-mechanical transfer steps between the initial film recording and the final printing on paper.

The Agfa CristalRaster Technology

The electronic implementation of stochastic screening is not quite as straightforward as simply "breaking up" conventionally screened halftone dots into smaller fragments.

Over the years, technologists have experimented with different stochastic screening algorithms. However, until 1992 none had resulted in a viable method for high quality color reproduction on offset presses. The computing complexity of the algorithms, and the lack of experience with photo-mechanical reproduction of stochastic screening microdots, held back a breakthrough in these techniques in color pre-press.

Agfa CristalRaster was introduced in 1993. The CristalRaster technology does not use the concept of a conventional halftone cell where microdots are clustered to form a halftone dot. Instead, the CristalRaster microdots are placed randomly.

Microdots corresponding to a standard imagesetter laser spot size would be too small to reproduce on press. For this reason, the microdot size of CristalRaster images is adjusted to dimensions larger than those of a single laser spot. This size adjustment of the microdots is used on images and graphics but not on type (which is output at microdot sizes corresponding to the selected imagesetter resolution).

What's New in Apogee CristalRaster?

Since Agfa CristalRaster was introduced, successive releases have made CristalRaster compatible with all current Agfa hardware and software RIPs, and with all Agfa imagesetters.

Apogee CristalRaster is the latest version, which includes the following new features:

- A complete range of dot sizes and screens.
- Fully compatible with Adobe PostScript 3, allowing smooth shading with up to 4096 grayscale levels.
- The latest version of AgfaSet is included on the CristalRaster CD. You will use AgfaSet to install the CristalRaster screens, and to download all necessary resources to the Apogee RIP. For detailed information on AgfaSet, refer to your PSE (Agfa's PostScript Environment) documentation.
- Calibrator is also included on the CristalRaster CD. The Calibrator application allows you to create your own customized compensations. These are used to counter any differences in the tone reproduction of your printing press, and are downloaded to the Apogee RIP using AgfaSet. For more information, refer to your Calibrator User's Guide.

A Complete Range of Dot Sizes and Screens

Calibrator provides you with the microdot sizes of all previous CristalRaster releases in one package.

The microdot sizes available include:

- 21µm at 2400 dpi (for commercial color)
- 28µm at 1800 dpi (for newspaper / web color)
- 31µm at 2400 dpi (for newspaper / web color)

The following larger microdot sizes are also available, and are aimed specifically at the flexo and screen printing market:

- 42µm at 1200 dpi
- 60µm at 1200 dpi
- 80µm at 1200 dpi

Smooth Shading with up to 4096 Grayscale Levels

Adobe PostScript 3 provides a range of new features including PDF printing, smooth shading, idiom recognition, enhanced color handling, improved handling of masked images, automatic in-RIP trapping, and so on. For Apogee CristalRaster users, the most significant of these new features is smooth shading.

PostScript 3 uses gradient fills (blends) such as those introduced by Adobe Illustrator 5.0 for on-screen viewing. A new operator (shfill) is used to describe these blends. This produces smooth shading by using 16-bit screens instead of the 8-bit screens used in PostScript Level 2. These 16-bit screens produce 4096 levels of gray, instead of the 256 levels of gray produced by 8-bit screens.

The result is PostScript files that are smaller than their PostScript Level 2 equivalents, print faster and more reliably, and produce higher quality output on high-resolution printing systems.

In order to use smooth shading gradient fills, your applications must be able to generate PostScript 3 files. This can be achieved in two ways:

- The application supports PostScript 3 operators to generate smooth shading fills.

  You are advised to use a PostScript 3 printer driver (such as PSPrinter 8.5 or later for the Macintosh or AdobePS 4.2 or later for Windows95/98) in order to generate the appropriate PostScript 3 output.

- The RIP uses Idiom Recognition: Many applications can generate their own PostScript, but are not yet capable of generating PostScript 3 files. In these cases, Idiom Recognition is used to allow these applications to use the new PostScript 3 features.

  The Apogee RIP is pre-installed with the following IdiomSet resources for smooth shading gradient fills:

  - AIGradients for Adobe Illustrator 5.0, 5.5, 6.0 and 7.0.
  - CorelFFills for CorelDraw! 5, 6, 7 and 8.
  - QuarkXPressBlends and AgfaExtraQXPBlends for the QuarkXPress Cool Blends XTension.
  - FreeHand7IdiomSet for Macromedia FreeHand 7.

  These resources invoke the smooth shading operator for each of the specified applications.

Apogee CristalRaster Features

As explained earlier in this chapter, the CristalRaster technology was developed to allow end users to produce PostScript film separations without the visual distraction of coarse halftone dot rosette structures, loss of detail, or degradation of the image by moiré or other halftone screening artefacts. Eliminating the rosette pattern is the first step towards eliminating the visual interference that exists between the viewer and the photo-realistic representation of a printed image on paper.

Using the CristalRaster technology, you can reproduce a continuous tone color photograph on a modern offset press with a degree of fidelity that equals direct engraving gravure printing, while also providing high resolution text rendering.

The specific advantages of using Apogee CristalRaster include:

- A wide range of microdot sizes for “showcase color”, commercial color, newspaper, web offset, and flexo and screen printing markets (see “A Complete Range of Dot Sizes and Screens”, above).
- No visible dot structures in your reproductions (rosettes or moiré), and no concerns about screen rulings and/or screen angles.
- Highly detailed reproductions which create the appearance of continuous tone or photographic quality. This enhanced detail can be noticed on quality coated stock as well as on uncoated newsprint.
- You can add numerous touch or bump plates without the risk of moiré. Apogee CristalRaster also allows the implementation of HiFi Color.
- Under certain conditions, you can produce an increased ink-film thickness, solid ink density, and higher print contrast, without sacrificing detail and image clarity in the three-quartertone and diffuse shadow areas.
- The effect of Apogee CristalRaster microdots on the ink/water balance of the printing press, and on emulsification, results in a faster press make-ready, predictable dot gain, and increased color stability throughout the duration of the press run.
- Less critical registration due to non-periodical microdot structures, resulting in a reduced risk of color shifts.
- Compatibility with existing offset printing equipment and environments. No modification or adaptation of press equipment is required.
- Compatibility with standard plates and standard platemaking equipment.
- Possibility to scan at lower resolutions, and thus produce smaller file sizes than those required for conventional screening, at a higher screen ruling (200 lpi and up).

- Note: Input scanning resolutions for CristalRaster have no relation to screen ruling, as is the case with conventional halftoning techniques (where typically you set the scan resolution to twice the screen ruling for 1:1 reproduction).
  Input scanning resolutions should however be high enough to capture all available image detail. If the original contains periodical patterns, however, the input resolution must be higher than the pattern frequency, otherwise aliasing artefacts may appear in the reproduction.

Agfa Calibrator is also provided on the CristalRaster CD. This is the latest version of Agfa's calibration tool which allows you to linearize your imagesetter, and make compensation curves for different printing press configurations.

Chapter 2 — Installing CristalRaster

This chapter outlines the PostScript system requirements for installing and using Apogee CristalRaster, and describes the installation procedure using AgfaSet.

System Requirements 21

- Hardware Requirements 21
- Software Requirements 21
- Before You Begin 21

Installing the Apogee CristalRaster Screens 22

- The Supplied CristalRaster Screen Files 22
- Installation Overview 23
- Downloading the CristalRaster Halftone Screens to the RIP 24
- Downloading the CristalRaster Ruling Map to the RIP 28
- Changing the Default Ruling Map Numbers (Optional) 30
- Generating a New PPD File 31
- Installing the CompareScreening.EDF File 32

System Requirements

This section describes the system requirements for installing CristalRaster on your Apogee RIP.

Hardware Requirements

To install Apogee CristalRaster, you will need:

- An Apogee PostScript 3 RIP.

  ❖ Note: If your Apogee RIP is connected to a MultiStar, you should upgrade the MultiStar hard disk to a 4 gigabyte or larger disk.

- An Agfa imagesetter.

  The 21µm dot size is supported only on high-end drum imagesetters.

  For best results, you should load your imagesetter with Agfa Alliance film material. Other materials may not produce acceptable results (For more information, refer to "Selecting Your Output Recording Media" in Chapter 3).

  ❖ Note: Your imagesetter may need to be adjusted for CristalRaster output.

Software Requirements

Your Apogee PostScript 3 RIP must be equipped with PSE (Agfa's PostScript Environment), and AgfaSet and Calibrator must be installed on the front-end workstation from which you are going to install CristalRaster.

Both AgfaSet and Calibrator are provided on the Apogee CristalRaster CD.

Before You Begin

Before installing Apogee CristalRaster, make sure you fill in the Registration Card and fax it back to the number mentioned on the Registration Card.

Installing the Apogee CristalRaster Screens

This section lists the screen files which are supplied on the CristalRaster CD, and describes how to install them on your Apogee RIP.

The Supplied CristalRaster Screen Files

Two sets of screen files are provided on the CristalRaster CD: One set for new users, and another set of pre-compensated screens for existing users of CristalRaster 2.5.

❖ Note: Negative platemaking results in additional dot gain, whereas positive platemaking reduces the dot size. For this reason, in addition to the uncalibrated screens, both positive and negative compensation screens are provided for the smaller microdot sizes.

Screens for New Users

Apogee CristalRaster includes the following screen files for new users:

- 3 screen files for 21µm microdots (2400 dpi): Positive, Negative, and Uncalibrated.
- 3 screen files for 28µm microdots (1800 dpi): Positive, Negative, and Uncalibrated.
- 3 screen files for 31µm microdots (2400 dpi): Positive, Negative, and Uncalibrated.
- 1 linear (uncalibrated) screen file for 42µm microdots (at 1200 dpi).
- 1 linear (uncalibrated) screen file for 60µm microdots (at 1200 dpi).
- 1 linear (uncalibrated) screen file for 80µm microdots (at 1200 dpi).

Screens for Existing Users (CristalRaster 2.5)

Apogee CristalRaster includes the following screen files for existing users:

- 8 screen files for 21µm microdots (2400 dpi):
  - Positive screens: Light, Medium, Heavy, and CristalRaster 2.1 compatible.
  - Negative screens: Light, Medium, Heavy, and CristalRaster 2.1 compatible.
- 8 screen files for 28µm microdots (1800 dpi):
  - Positive screens: Light, Medium, Heavy, and CristalRaster 2.1 compatible.
  - Negative screens: Light, Medium, Heavy, and CristalRaster 2.1 compatible.
- 6 screen files for 31µm microdots (2400 dpi):

- Positive screens: Light, Medium, Heavy.
- Negative screens: Light, Medium, Heavy.

Installation Overview

You can download any of the CristalRaster screens to the Apogee RIP using AgfaSet, which is provided on the CristalRaster CD.

The steps you must follow are:

1. Download the CristalRaster halftone screens to the Apogee RIP.

   To conserve disk space, you should download only the screens that you are going to use.

2. Download the CristalRaster Ruling Map to the Apogee RIP.

   The CristalRaster Ruling Map is a ready-made screen list which contains references to the installed Apogee CristalRaster halftone screens. When selected, this Ruling Map will ensure that any request for a certain screen ruling, or frequency at a defined output resolution, is automatically mapped to a specific predefined halftone.

   For more information on Ruling Maps, refer to your PSE (Agfa's PostScript Environment) documentation.

3. Generate a new PPD file.

   To make new resources available in your Print Options, you need to generate a new PPD file every time you download new resources to the Apogee RIP. You can do this using the PPD Generator.EDF from within AgfaSet.

❖ Note: The AgfaBalanced Ruling Map is also included on the CristalRaster CD. This Ruling Map contains both the AgfaBalanced screens and the CristalRaster screen entries, and is identical to the CristalRaster Ruling Map. If you want to download it, you can do so, but you must be aware that it will overwrite any existing AgfaBalanced Ruling Map that you may have already installed (including any modifications you might have made to it).

Downloading the CristalRaster Halftone Screens to the RIP

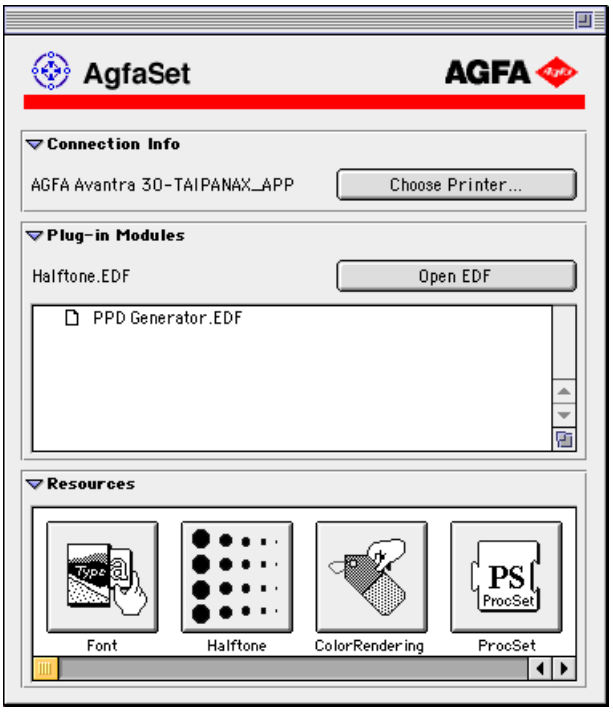
The procedure for downloading the CristalRaster screens to your Apogee RIP is described below.

Note that you can also download the screens to the RIP as regular PostScript files. You can do this either using the RIP Pilot, or by dropping the files on a predefined hot folder.

1. Make sure that your Apogee RIP is running.
2. Double-click the AgfaSet application icon:

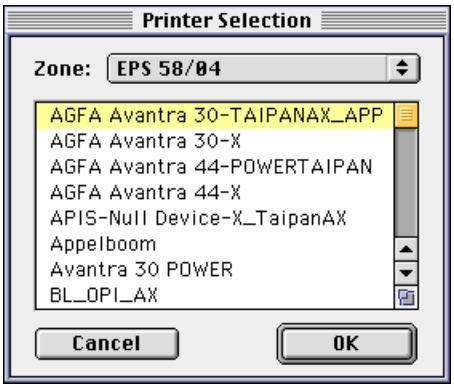
    AgfaSet

   The AgfaSet main window is displayed:



3. Click Choose Printer.

The Printer Selection dialog box is displayed.



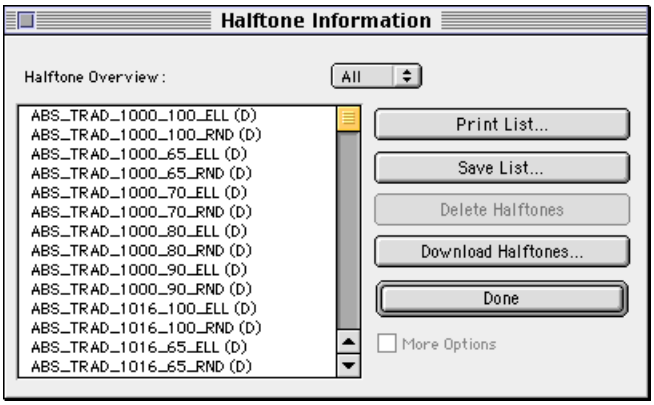
4. Select the name which corresponds to your Apogee RIP, and click OK.

   This connects AgfaSet with your RIP.

5 Click the Halftone button in the AgfaSet Resources panel:

Halftone button

The Halftone Information window is displayed:

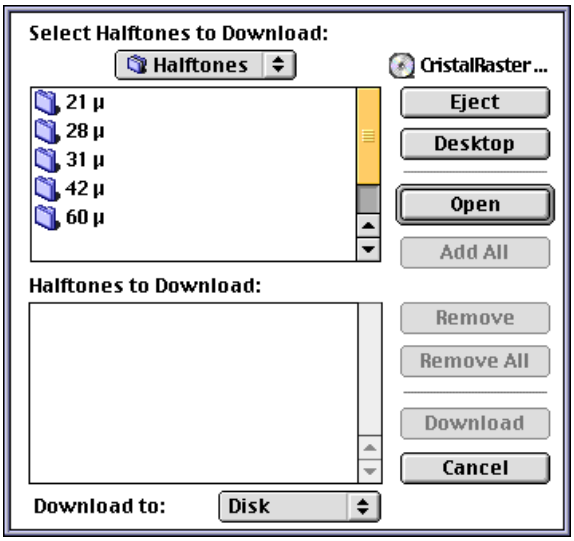


The Halftone resources that are displayed are the resources that are already pre-installed on your RIP.

6. To download the CristalRaster screens, click Download Halftone.

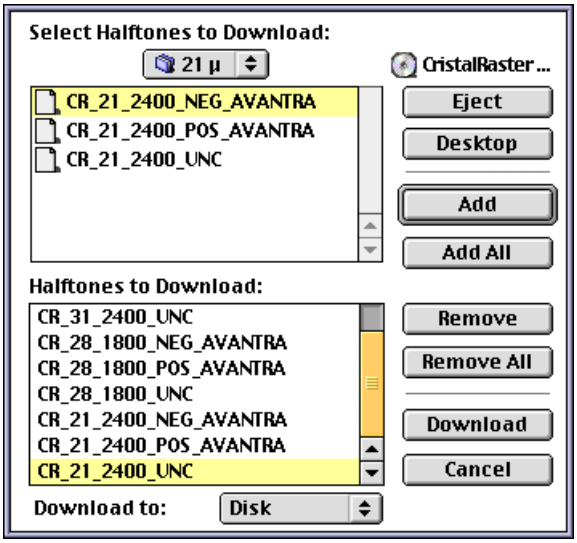
   The Select Halftones to Download dialog box is displayed.

7. Browse to the Halftones folder on the CristalRaster CD.



8. Select the screens that you want to download to the RIP, and click Add.

   The selected resources are transferred to the Halftones to Download panel.



9. Select 'Disk' from the 'Download to' popup.

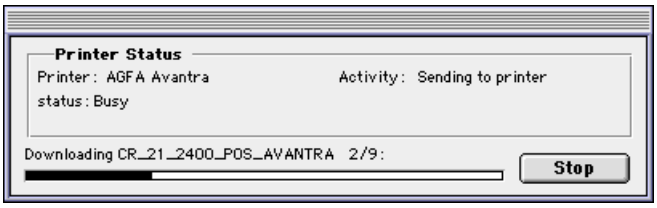
   This ensures that the screens are downloaded to the RIP's hard disk, and not simply to memory.

❖ Resources downloaded to disk are installed permanently, and will still be available after the RIP is restarted. Resources downloaded in memory are only temporarily available, and will be lost when the RIP is rebooted.

---

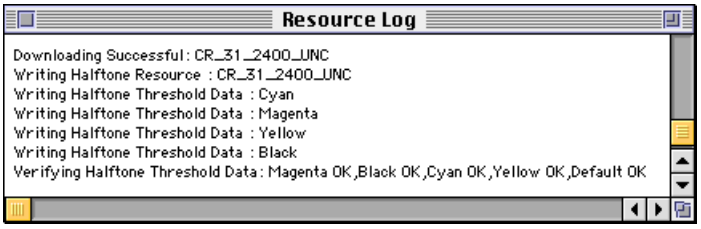
10. Click Download.

    A dialog box is displayed, showing the printer status while the screen(s) are being downloaded. The AgfaSet status bar indicates the progress of the download process.

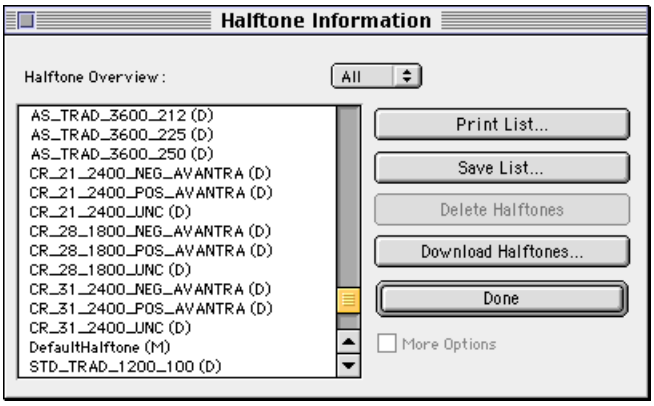


When completed, the compressed screen data is decompressed on the RIP. This process takes some time, while the progress bar remains at 100%.

The following status window is then displayed:



The Halftone Information window is updated with the new CristalRaster screens.



11. Click Done to return to the AgfaSet main window.

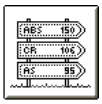
Downloading the CristalRaster Ruling Map to the RIP

Next, you must download the CristalRaster Ruling Map to the Apogee RIP.

❖ Note that you can also download the Ruling Map as a regular PostScript file. You can do this either using the RIP Pilot, or by dropping the file on a predefined hot folder.

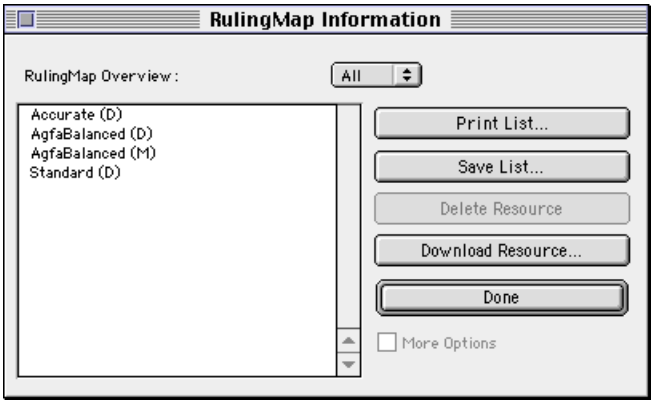
---

1. Scroll the AgfaSet Resources panel until you find the Ruling Map resource.
2. Click the Ruling Map resource button:



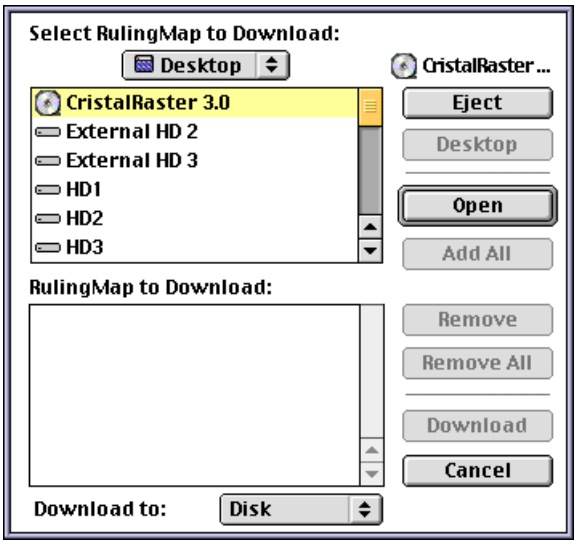
Ruling Map button

The available resources are displayed in the RulingMap Information window:

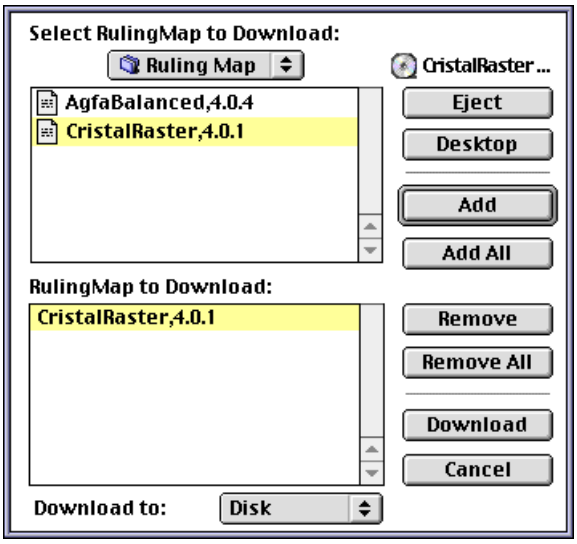


3. To download the CristalRaster Ruling Map, click Download Resource.

The Download Ruling Map window is displayed.



4. Browse to the Ruling Map folder on the CristalRaster CD.



❖ Note: The AgfaBalanced Ruling Map is also included on the CristalRaster CD. This Ruling Map contains both the AgfaBalanced screens and the CristalRaster screen entries, and is identical to the CristalRaster Ruling Map. If you want to download it, you can do so, but you must be aware that it will overwrite any existing AgfaBalanced Ruling Map that you may have already installed (including any modifications you might have made to it).

5. Select the CristalRaster Ruling Map, and click Add.

   The selected resource is transferred to the Ruling Map to download panel.

6. Select 'Disk' from the 'Download to' popup.

   This ensures that the Ruling Map is downloaded to the RIP's hard disk, and not simply to memory.

7. Click Download.

   The following status window is then displayed:

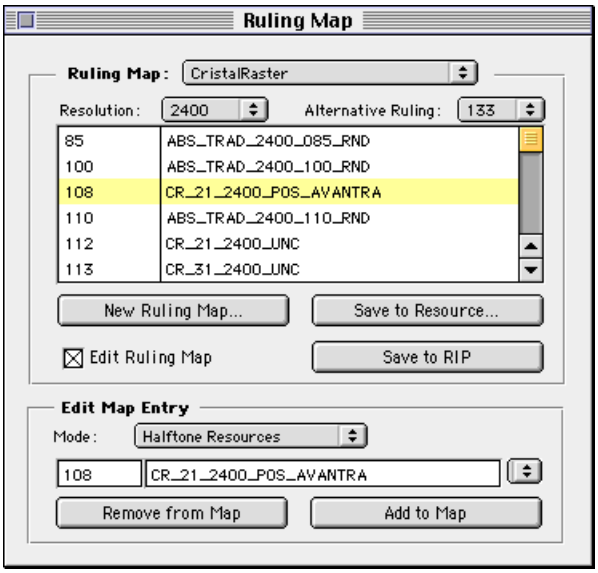
You have successfully downloaded the CristalRaster Ruling Map to the RIP.

Changing the Default Ruling Map Numbers (Optional)

At this point, you may want to change the default Ruling Map entry numbers. You can do this as follows:

1. Return to the AgfaSet main window, and select Edit Ruling Map from the Resources menu.

   The Ruling Map dialog box is displayed.



2. Select a Ruling Map entry, and enable the Edit Ruling Map checkbox to display the Edit Map Entry panel.
3. Enter another number of your choice for the selected Ruling Map entry.
4. Click Add to Map.

   The Ruling Map entry is displayed in the upper Ruling Map list, with the new map number.

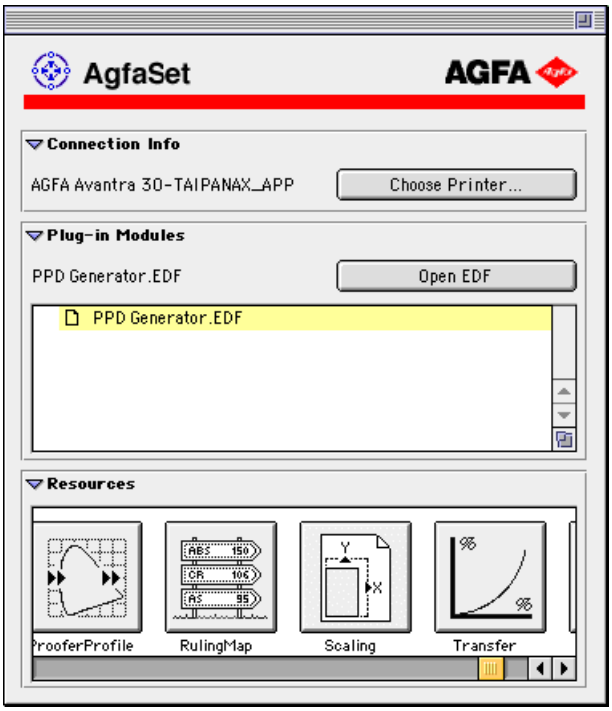
5. Click Save to RIP.

❖ Note: If you wish, you can remove any of the Ruling Map entries by selecting a map entry, and clicking Remove from Map.

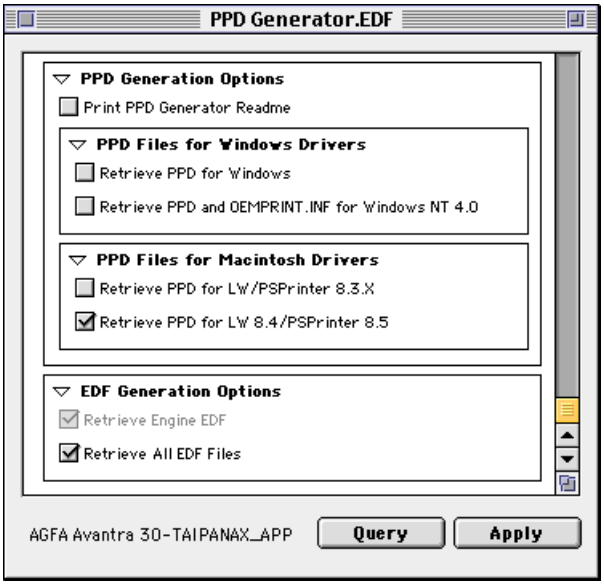
Generating a New PPD File

Each time you download resources to your RIP, you will need to generate a new PPD file. It is only after you have done this that you will be able to access the new resources from your Print Options screen.

1. Return to the AgfaSet main window.
2. Select the PPD Generator.EDF from the Plug-in Modules panel.



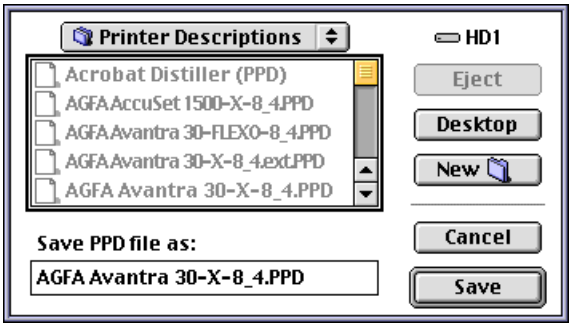
3. Open the PPD Generator.EDF.



4. Check one of the PPD Generation Options.

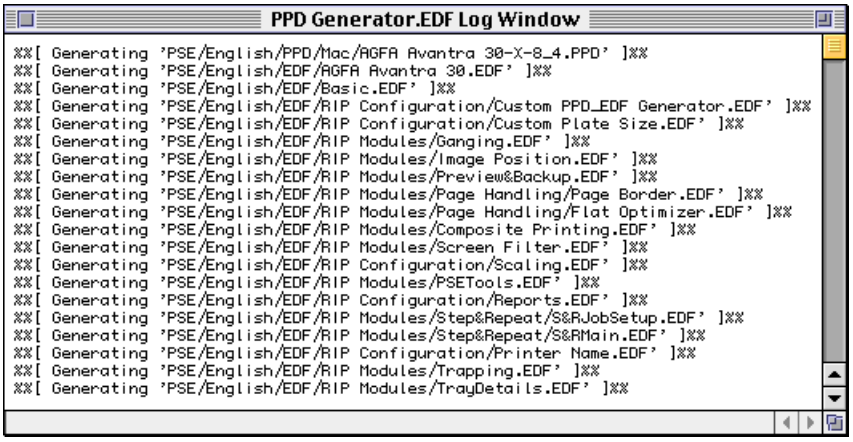
Your choice will depend on the platform (Windows or Macintosh) and the printer driver you are using.

5. Click Apply.



6. Select a name and location for your new PPD file, and click Save.

   A log window confirms that your PPD has been created:



For a description of each of the PPD file options, refer to your specific output device documentation.

Installing the CompareScreening.EDF File

Finally, you will need to install the CompareScreening.EDF file.

The latest version of this EDF file is specifically designed for use with CristalRaster, and is provided on the CristalRaster CD.

1. Locate the EDF file on the CristalRaster CD in the folder:

   ... \ AgfaSet 4.2 \ EDF

2. Copy the file to the AgfaSet \ EDF folder on your system.
3. Start AgfaSet, and select 'Refresh the EDF list' from the AgfaSet menu.

You have now finished installing CristalRaster. Your next step will be to create a customized compensation.

Chapter 3 — Creating a Customized Compensation

This chapter explains how to obtain the best possible CristalRaster output by creating a customized compensation for your printing press. It also explains how to determine the correct dot gain compensation to use. You should read this chapter before attempting to produce any CristalRaster films.

Introduction 34

- Compensating for Differences in Tone Reproduction 34
- CristalRaster Uncompensated Screens 35

Workflow Overview 36

Selecting Your Output Recording Media 36

Printing a Test Page 37

Evaluating your Print Results 39

Using Calibrator to Create a Fine-Tuned Compensation Curve 40

Downloading a Fine-tuned Compensation to the RIP 44

Introduction

Calibration enables a PostScript device, such as an imagesetter, to compensate against excessive density - which is referred to as dot gain. This process ensures that you always obtain the same stable results from the imagesetter, and helps you to produce better color reproductions.

A series of customised calibration files (or “transfer curves”) can be downloaded to your Apogee RIP. When you print jobs, the RIP then automatically applies the corresponding transfer curve to the requested halftone screen, overruling any other settings, and ensuring a consistent calibration. These linked files are referred to as “halftone-linked transfer resources”,

You can generate your own halftone-linked transfer resources using Apogee Calibrator. The file name comprises references to the required screen ruling, ruling map, resolution, screen angle, etc. (for more information on ruling maps, refer to your PSE documentation).

You can build up a library of transfer curves which are automatically applied to their halftone screens. Once they have been downloaded to the RIP, the RIP will automatically apply the corresponding transfer curve for the selected screen frequency. This method automatically ensures a consistent calibration,

To create your own customized compensation, you need to:

1. Print a sample page, using both Apogee CristalRaster (ACR) and Agfa Balanced Screening (ABS) on the same plate.
2. Using a densitometer, measure the ACR and ABS values on the output page.

If the differences between the measured values are unacceptably high (typically, more than 5% difference), then you should create your own customized compensation curve as described below.

Compensating for Differences in Tone Reproduction

Apogee CristalRaster and Agfa Balanced Screening result in different tone reproduction curves on your output press.

Small differences in tone reproduction between Agfa Balanced Screening and Apogee CristalRaster already appear on the recording film and also exist in the subsequent transfer steps (contact film, plate exposure) and on the printing press. The tone value compensation for Apogee CristalRaster must therefore be calculated from the final result on the press sheet, rather than from an intermediate result on the recording film.

When the imagesetter has been linearized for Agfa Balanced Screening (Agfa Balanced Screening has a linear signature), it is normal to obtain a non-linear Apogee CristalRaster tone curve on the imagesetter film.

The Apogee CristalRaster tone value compensation ensures that the final result on the press is properly adjusted so that all prepress image editing is independent of the screening technique that is selected (i.e. Apogee CristalRaster or Agfa Balanced Screening).

CristalRaster Uncompensated Screens

Using an uncompensated target, you can build your own customized compensation that accounts for the tone reproduction difference between Apogee CristalRaster and Agfa Balanced Screening in your printing environment.

This customized compensation will take into account the different recorder gain (dot gain on the imagesetter), dot shift during platemaking and press gain (dot gain on the printing press) as opposed to conventional screening.

There is an uncompensated screen for each microdot size. Each screen is independent of imaging polarity.

Microdot Size	21µm	28µm	31µm	42µm	60µm	80µm
Screen Frequency	112 lpi	112 lpi	113 lpi	142 lpi	160 lpi	180 lpi

❖ **Caution**: Negative platemaking results in additional dot gain, whereas positive platemaking reduces the dot size on the plate.
When imaging negative films, you must specify the negative setting on either the RIP or the imagesetter. Selecting a negative setting from your front-end application (in the Page Setup options) will have no effect, since the RIP will by default use a positive CristalRaster screen, which will result in an incorrect precompensation.

Workflow Overview

Before using Apogee CristalRaster in production, you need to create a tone compensation that accommodates your particular prepress and printing conditions, resulting in a tone reproduction equal to that of Agfa Balanced Screening.

To calculate the correct compensation for the tone reproduction of your printing system, you need to:

1. Select your output recording media.
2. Output a test page on your imagesetter using one of the Avantra screens that you have installed on your Apogee RIP.
3. Measure the dot percentage values on the printed test page.
4. Start the Calibrator application, and use the measured values to create a fine-tuned compensation curve.
5. Download the fine-tuned compensation curve to the RIP.
6. Output another test page on your imagesetter using the new fine-tuned compensated curve, which will be applied to the Avantra screen.

This process is referred to as "fingerprinting" your printing press, and is described in more detail below.

Selecting Your Output Recording Media

The photographic reproduction and printing characteristics of Apogee CristalRaster differ from traditional screening, such as Agfa Balanced Screening. For this reason, a tone value compensation must be applied (see “Compensating for Differences in Tone Reproduction” above).

Since the CristalRaster tone value compensation is applied to all photo-mechanical transfers, including film recording, you should use a recording medium with the widest production latitude. Best results will be obtained using Agfa Alliance HN film in combination with G101 rapid access processing.

Agfa Alliance HN is a regular rapid access film, with a wide exposure and developing latitude, and a maximum density well over Dmax 4.5. This is more than enough for photographic reproduction (film copying and platemaking). The Alliance HN film guarantees stable results, without needing frequent recalibration or adjustments of the imagesetter and/or film processor.

Printing a Test Page

To test the quality of CristalRaster output on your specific printing press, you are advised to print a test page. In the Testfiles folder, you will find an example of an Agfa test page (in QuarkXPress format). You are free to start from this page, or to make up your own design.

❖ Note: The page provided contains special code with links to the CompareScreening.EDF, and is intended for CristalRaster screening only.

You can use the CompareScreening.EDF to combine different rulings on one page. Test pages can be previewed and used in your page lay-out software, together with the CompareScreening.EDF, to set the correct screen rulings.

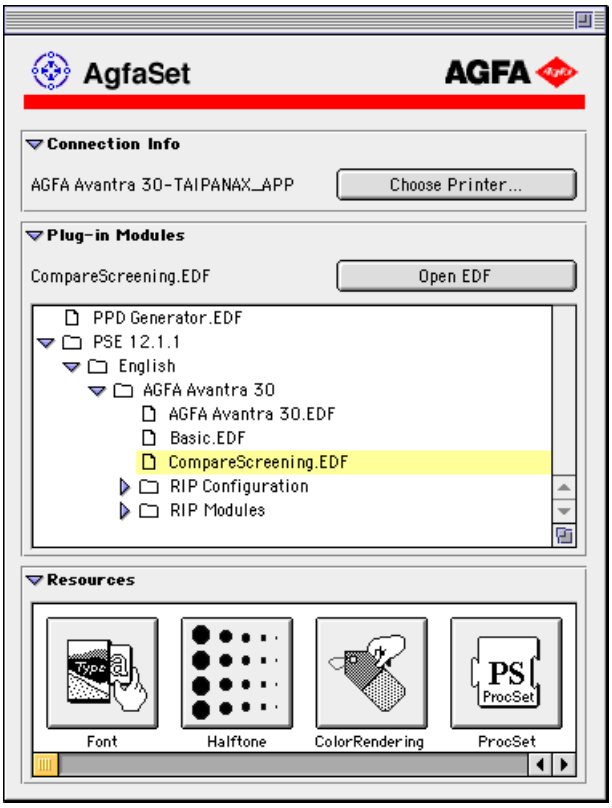
❖ Note: The CompareScreening.EDF must be downloaded to your RIP before you can start to image your testpage.
See "Installing the CompareScreening.EDF File" in Chapter 2.

Before you begin, make sure that:

- The Apogee CristalRaster screens that you are going to use are installed on your Apogee RIP.
- The imagesetter on which you want to image the precompensation target has its polarity (positive or negative) and reading (wrong reading or right reading) correctly set, so that the correct compensation is used. By default the RIP will always use positive, right reading.

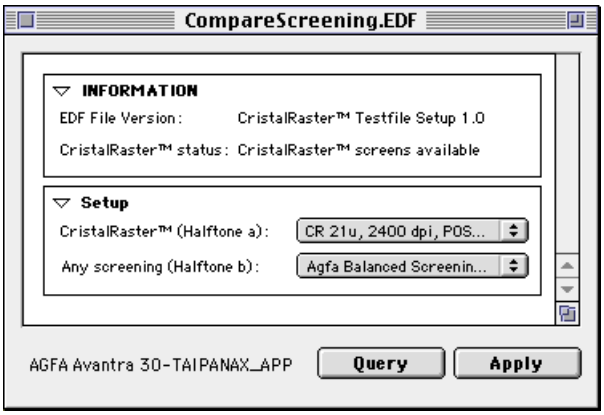
The procedure for printing a test page is as follows:

1. Launch AgfaSet.
2. In the Plug-in Modules panel, select the CompareScreening.EDF.



3. Click Open EDF.

   The CompareScreening.EDF is displayed.



4. Select your CristalRaster and AgfaBalanced screening options.
5. Click Apply.
6. Go to your page lay-out software.
7. Print the test page.

   Make sure you use In-RIP separation when outputting the test page.
8. Copy the imaged film to plate, and print it on your press.

Always use a microline target (e.g. a UGRA Plate Control Wedge or a RIT Microline Resolution Target) to monitor your plate exposure, and use a print control strip to monitor the printing press conditions. For more information, refer to Chapter 5 — Platemaking and Printing.

- Note 1: All subsequent CristalRaster jobs must be processed using the same platemaking and printing conditions. You should also print both the CristalRaster and conventionally screened wedges using the same ink densities.
- Note 2: the CompareScreening.EDF contains a link to images of your test page. Whenever you reset the RIP you must repeat this procedure.
- Note 3: Take care with imposition programs. Some imposition programs may remove your screening information, resulting in either CristalRaster-only screening, or AgfaBalanced-only screening To disable imposition, you need to make the test page the size of your plate.

Evaluating your Print Results

You should evaluate your print results both visually, and measure them using a densitometer. You will need a reflection densitometer to measure a printed sheet. Before you start, make sure that:

- your densitometer is calibrated
- you are using a color densitometer
- you are using a polarization filter
- you are measuring dot area instead of densities.

To evaluate the print results the following values are required:

- Solid ink density of each process color
- Dot area measurements of tone scale for each process color

You are advised to use spreadsheet software (such as Excel) to evaluate and interpret the measured values.

The procedure is as follows:

1. Select Densitometric readings on your densitometer.
2. Select a blank area on the printed sheet as the zero reference point. Put some unprinted run sheets under the sheet you want to measure to avoid faulty readings.
3. Measure the solid ink densities for C, M, Y, K.
4. Change to Dot area readings on your densitometer.
5. Select a blank area on the printed sheet as the zero reference point.
6. Measure each 5% of the tone scale for C, M, Y, K (these patches are provided in the Agfa test page).

Do this for both the Agfa Balanced Screen tone scale and the CristalRaster screen tone scale.

❖ Note: this procedure may differ depending on the densitometer you use. You must use a densitometer that can calculate dot areas automatically.

7. Enter the measured values for Agfa Balanced Screening and CristalRaster Screening in your spreadsheet application.
8. Calculate the averages for every measurement point across C, M, Y, K.
9. Compare the average values with each color separately, and filter out the values that deviate largely from the average.

   These values are called “misreadings”. Misreadings can be caused by incorrect placement of the densitometer, impurities on the printed sheet, etc.

❖ Note: It is normal that black ink dot gain will differ from CMY ink dot gain.

10. Compare both tone reproductions.

    For good results, the tonal behavior of both stochastic and traditional screening must be comparable. Normally, CristalRaster and Agfa Balanced Screening should behave the same on press when you use the precompensation. However, variations are still possible. Deviations in tone scale reproduction of less than 3% for a 50% tone are acceptable.

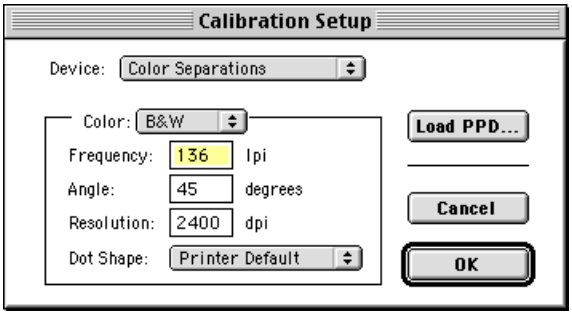
❖ Note: Occasionally, you may have larger deviations between both tone scales. In these cases, you should make an additional compensation customized to your specific production process.

Using Calibrator to Create a Fine-Tuned Compensation Curve

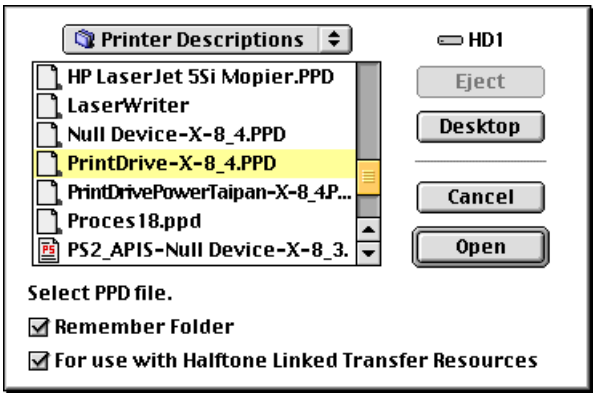
Your starting point for creating a customized compensation will be the printed test page of the precompensated CristalRaster.

1. Launch Calibrator.

   The Calibration Setup dialog box is displayed.



2. Select Color Separations as the Device, and click Load PPD.



3. Select the appropriate PPD file.

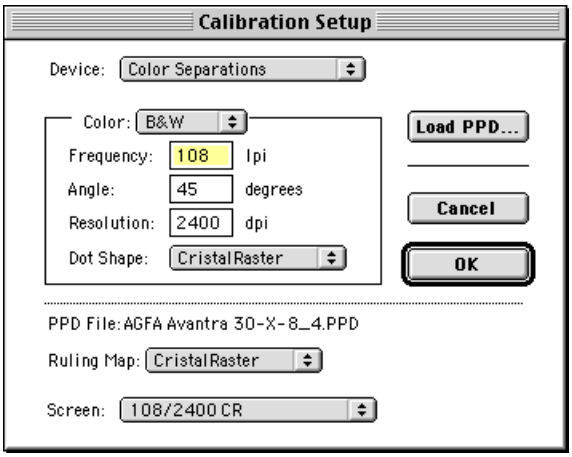
   This is the file which contains the CristalRaster entries. Normally, the PPD files are stored in the Printer Descriptions folder in the Extensions folder within the System Folder.

4. Select the “For use with Halftone Linked Transfer Resources” check box

   This will save the calibration curve as a Halftone Linked Transfer Resource (only available with Agfa’s PPD files).

5. Click the Open button.

   The screening information of the selected PPD file is displayed in the Calibration Setup dialog box:



❖ Note: If more than one screen is available within the PPD, the first screen will be displayed.

   A Ruling Map pop-up menu and a Screen popup menu are displayed at the bottom of the dialog box.

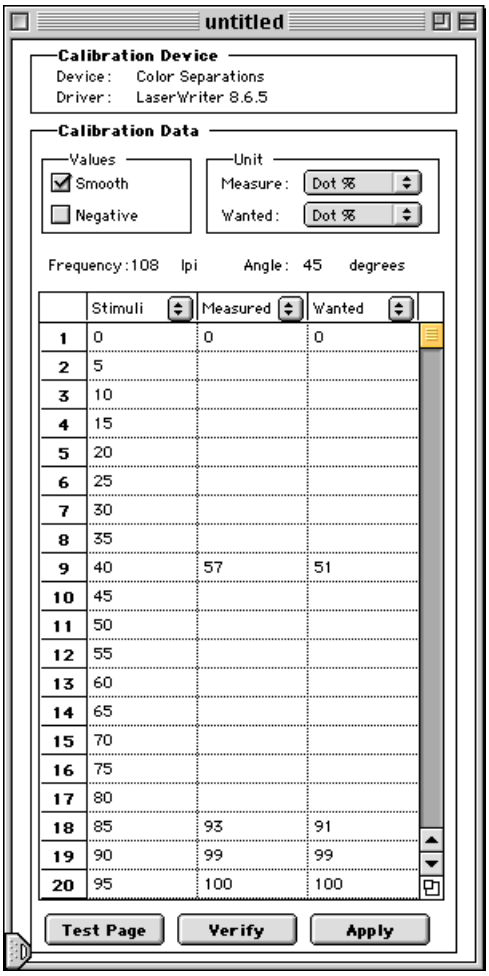
6. Select the CristalRaster Ruling Map.

   This Ruling Map contains the CristalRaster entries.

7. Select 136/2400 Cri from the Screen popup menu.

8. Check that the correct frequency, angle, resolution and dot shape (CristalRaster) are selected, and click OK if all the displayed data is correct.

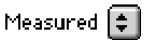
The following untitled dialog box is displayed.



	Stimuli	Measured	Wanted
1	0	0	0
2	5		
3	10		
4	15		
5	20		
6	25		
7	30		
8	35		
9	40	57	51
10	45		
11	50		
12	55		
13	60		
14	65		
15	70		
16	75		
17	80		
18	85	93	91
19	90	99	99
20	95	100	100

Apogee CristalRaster (ACR) output corresponds to the “Measured” values, and Agfa Balanced Screening (ABS) output corresponds to the “Wanted” values. Although the measured ACR values are already compensated, you may want to fine-tune them further.

9. In the Measured column, click the Measured pop-up and select Clear Array.



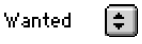
10. Enter the CristalRaster data you have collected from the press.

    You can simultaneously display the graph in Calibrator, in order to check that the curve remains smooth while you enter your CristalRaster data.

❖ Note: You are advised to enter a minimum number of points to avoid non-uniform tone scales, and to produce a smooth curve. Start by entering values for the dot area with the largest divergence. Continue entering values until you have produced a good reconstruction of the tone scale that was measured.

---

11. In the Wanted column, click the Wanted pop-up and select Clear Array.



12. Enter the ABS data you have collected from the press.

    See also the Note above.

13. Check the Smooth box.

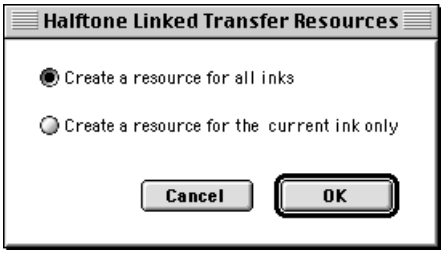
14. In a negative workflow, make sure you check the Negative checkbox (after all data has been input).

    The will need to do this, because measurements are always made in positive mode.

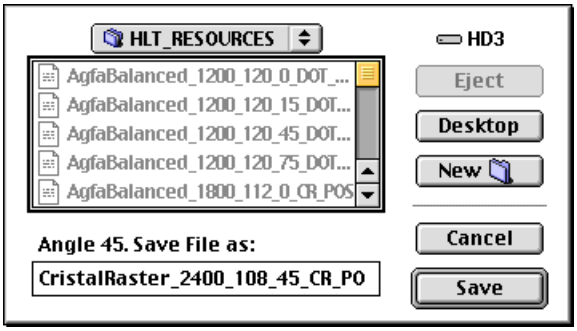
15. Click Apply.

    The Apply Setup dialog box is displayed:

16. Select “Halftone Linked Transfer Resource” from the pop-up menu as the file format in which you want to save the calibration, and click OK.



17. Select “Create a resource for all inks”, and click OK.



18. Enter the name of the Halftone Linked Transfer Resource in the ‘Save File as:’ field.

    This is the name of the Halftone Linked Transfer Resource as it will be saved on the Macintosh hard disk, and is limited to 31 characters.

19. Click Save.

The calibration curve is saved as a unique Halftone Linked Transfer Resource. You can save the calibration curve in the folder of your choice.

Downloading a Fine-tuned Compensation to the RIP

You can use AgfaSet to download your fine-tuned Halftone Linked Transfer Resource to the RIP. The procedure is as follows:

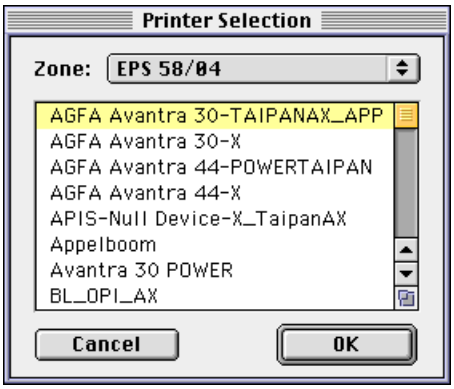
1. Make sure that your Apogee RIP is running.
2. Double-click the AgfaSet application icon:

    AgfaSet

   The AgfaSet main window is displayed:

3. Click Choose Printer.

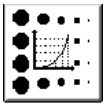
   The Printer Selection dialog box is displayed.



4. Select the name which corresponds to your Apogee RIP, and click OK.

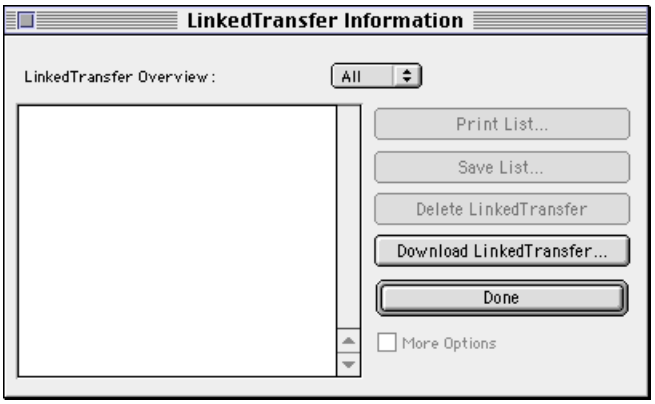
   This connects AgfaSet with your RIP.

5 Click the LinkedTransfer button in the AgfaSet Resources panel:

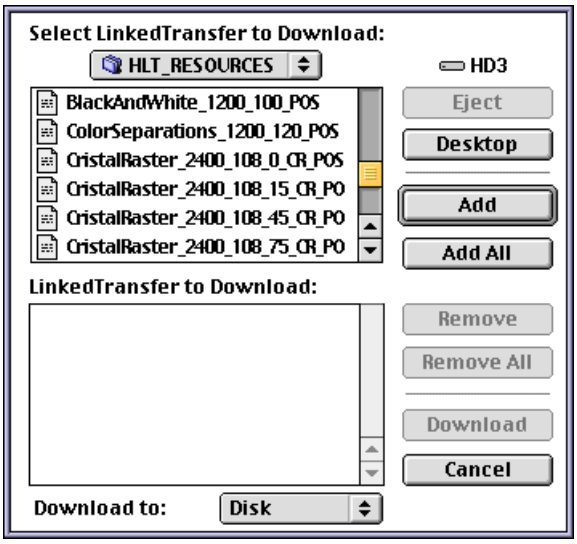


LinkedTransfer button

The LinkedTransfer Information window is displayed:

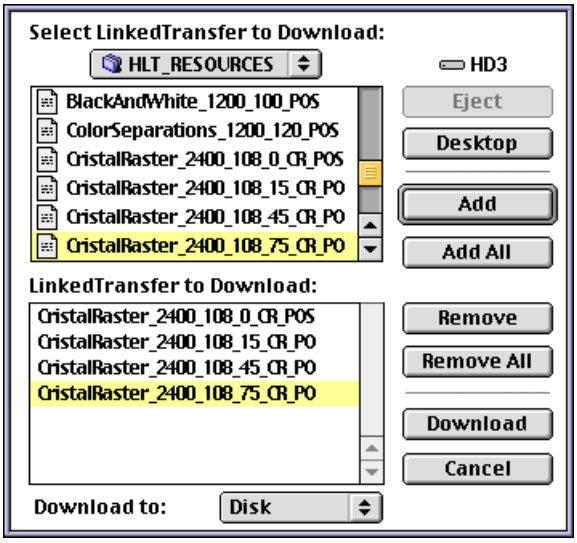


6. Click Download LinkedTransfer.



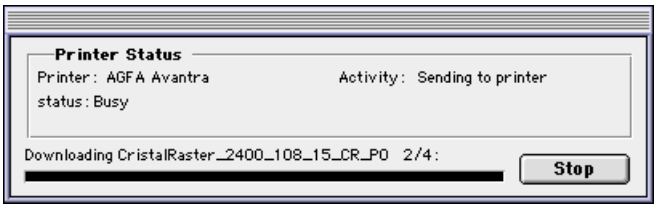
7. Select the LinkedTransfer files that you want to download to the RIP, and click Add.

   The selected resources are transferred to the “LinkedTransfer to download” panel.

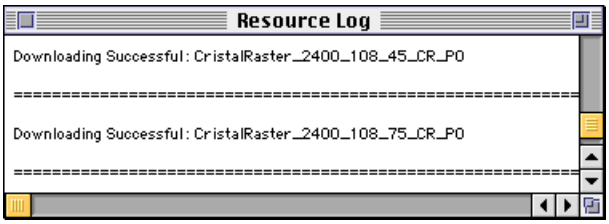


8. Click Download.

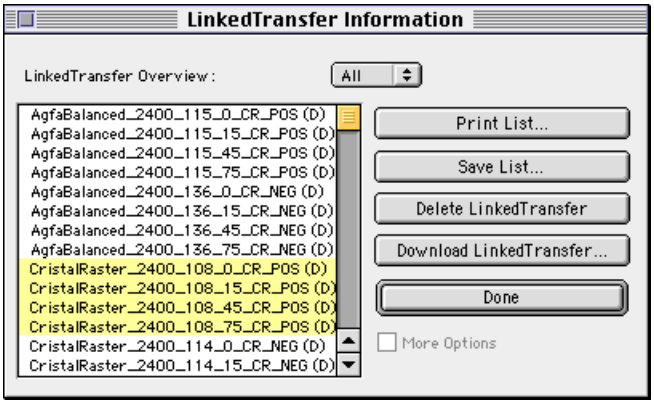
   A dialog box is displayed, showing the printer status while the files are being downloaded.



When the resources have finished downloading, a status window is displayed:



The LinkedTransfer Information window is then updated with the new resources.



9. Click Done.
10. To activate the Halftone Linked Transfer resources that have been downloaded to the RIP you can either:
    - Activate the setting Auto Linking On in the Screen Filter.EDF.
    - Activate the setting Auto Linking On in your Print Options.

    You are now ready to start using CristalRaster within your production workflow.

Chapter 4 — Using CristalRaster with Your Prepress Applications

This chapter provides information on using Apogee CristalRaster with popular desktop prepress applications. It explains how to print files using CristalRaster, and how to correctly apply dot gain compensations.

Introduction 49

Setting up a Printer Driver 49

Printing from Adobe Photoshop 51

- Printing Images Using the Default Halftone Screens 51
- Saving EPS Files for Use with CristalRaster 52

Printing from QuarkXPress 54

Printing from Adobe PageMaker 56

Printing from Macromedia FreeHand 58

Printing from Adobe Illustrator 60

Printing from Artwork Systems ArtPrinter 62

Introduction

This chapter describes how to set up a printer driver, and how to print from your front-end application using CristalRaster screens.

When imaging negative films, you must specify the negative setting on either the RIP or the imagesetter. Selecting a negative setting from your front-end application (in the Page Setup options) will have no effect, since the RIP will by default use the positive CristalRaster screen, which will result in an incorrect precompensation.

It is assumed that there is no transfer function active. If there is already a transfer function active, then the active transfer function and the new transfer function must be combined into one. The transfer curve that will be applied using the procedures in this chapter is applied to all page-elements, except when noted.

The following screen rulings will activate Apogee CristalRaster:

Microdot Size	21 μm	28 μm	31 μm	42 μm	60 μm	80 μm
Uncompensated Screen Frequency	112 lpi	112 lpi	113 lpi	142 lpi	160 lpi	180 lpi
Avantra Compensated	108 lpi	108 lpi	128 lpi	N/A	N/A	N/A

Table 1 - Apogee CristalRaster Screen Rulings

Setting up a Printer Driver

Many applications use the Apple LaserWriter 8.x or Adobe PSPrinter 8.x printer drivers for printing to PostScript printers and imagesetters. However, before you start printing, you must set up these printer drivers for use with Apogee CristalRaster.

1. Use the PPD Generator to create a PPD file for your particular imagesetter.

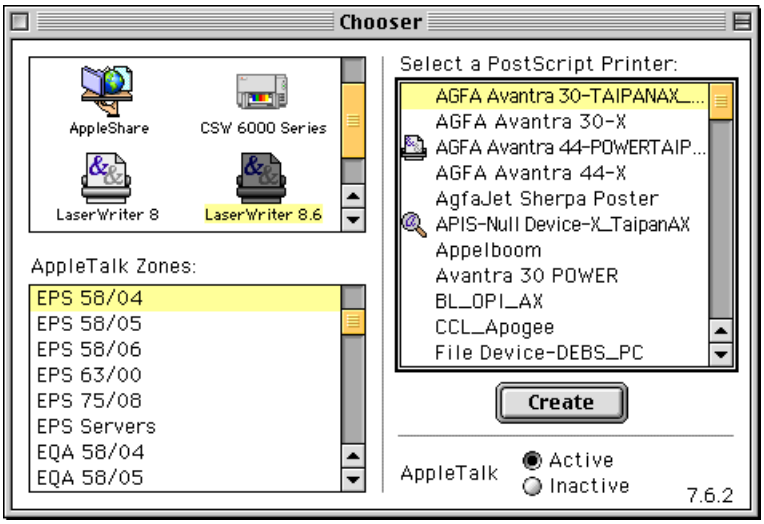
   You can do this using the procedure described in "Generating a New PPD File" in Chapter 2.

2. Copy the PPD file to the Printer Descriptions folder in the Extensions folder in the System Folder on your Macintosh.

   The Apple LaserWriter or Adobe PSPrinter PostScript driver needed for printing from your application is then able to recognize the PPD file.

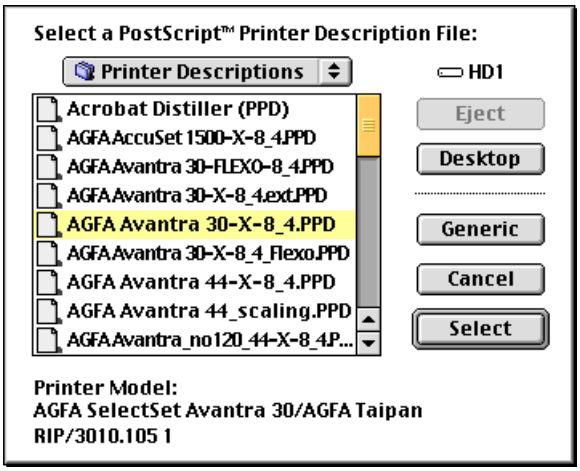
3. Select Chooser from the Apple menu on the menu bar at the top of your screen.

The Chooser dialog box is displayed.



4. Select the LaserWriter 8.x or PSPrinter 8.x icon in the upper left panel.
5. Select the AppleTalk zone where the imagesetter you are going to use is located from the lower left panel.
6. Select the imagesetter you are going to use from the right panel.
7. Select AppleTalk Active in the lower right part of the dialog.
8. Click Create.

   The following dialog box is displayed:



9. Select the PPD that you generated for your imagesetter from the list.
10. Click Choose.

    The Chooser dialog box is redisplayed. A magnifying glass icon (LaserWriter 8.x) or PSPrinter icon (PSPrinter 8.x) is displayed next to the name of your printer.

Printing from Adobe Photoshop

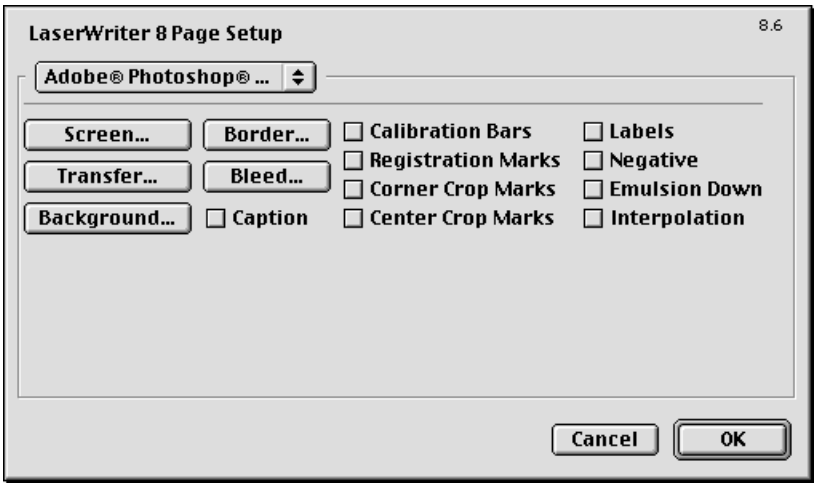
There are two ways to print CristalRaster images from Adobe Photoshop:

- Printing using the default halftone screens.
- Saving to file with the included halftone screens/transfer curve.

Printing Images Using the Default Halftone Screens

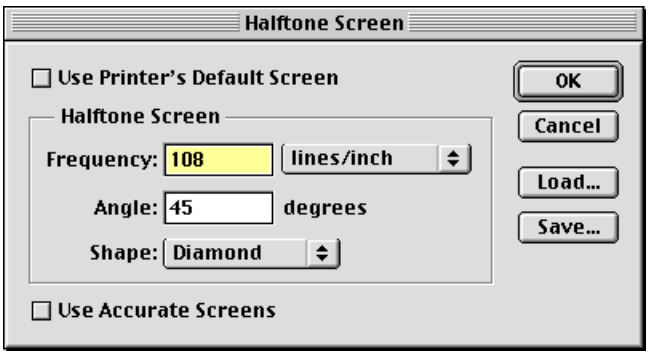
1. Start Photoshop, and open the file that you want to print.
2. Select Page Setup from the File menu.

   The Page Setup dialog box is displayed:



3. Click Screen.

   The Halftone Screen dialog box is displayed:



4. In the Frequency field, enter the appropriate screen frequency for CristalRaster for each separation (refer to the "Introduction", at the beginning of this chapter).

   You must use the CristalRaster screen that was determined when "fingerprinting" your press.

   ❖ Note: You must enter the frequency for **each** of the separation inks.

5. Make sure 'Use Accurate Screens' and 'Use Printer's Default Screens' are NOT checked.

   The other settings are discarded by CristalRaster.

6. Click OK.

7. Click OK again in the Page Setup dialog, after selecting the options typical for your environment.

8. Select Print under the File menu and print the image.

Saving EPS Files for Use with CristalRaster

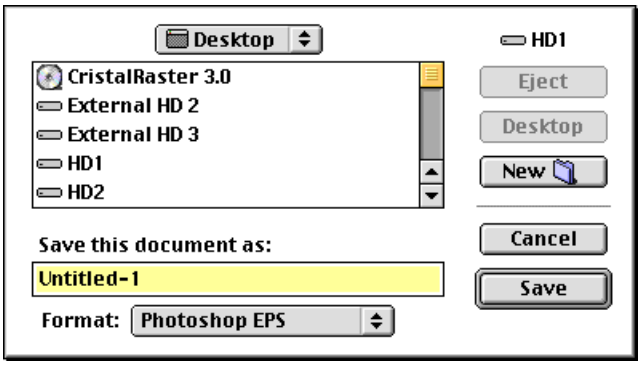
You can also save an image as an EPS (Encapsulated PostScript) file, with the halftone screen included in the image. This will ensure that the image is output using the CristalRaster screen that you specified, even if another screen ruling is specified in the printing application.

Using this method, it is possible to mix Agfa Balanced Screening and Apogee CristalRaster images on one page.

The procedure is as follows:

1. Follow steps 1 to 7 as described in the previous procedure.

2. Select Save As from the File menu.



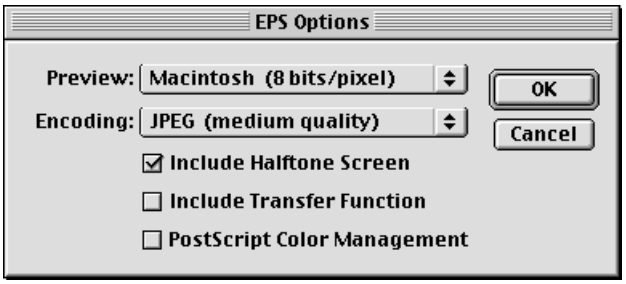
3. Select Photoshop EPS format.

4. Select a folder where the file is to be saved.

5. Enter a filename.

6. Click Save.

The EPS Options dialog is displayed.



7. Check ‘Include Halftone Screen’.

   This will always output the image using the halftone screens specified earlier.

8. Click OK.

   The EPS file is saved with the halftone screens included.

Printing from QuarkXPress

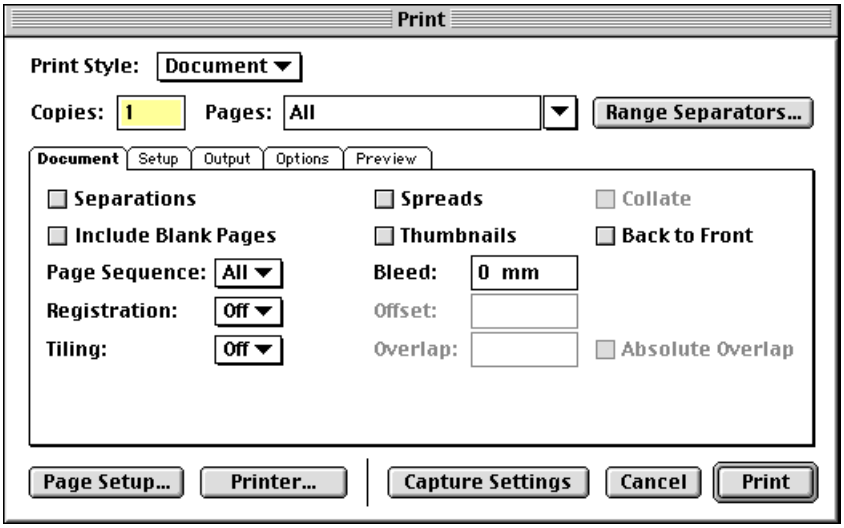
To use CristalRaster with QuarkXPress, proceed as follows:

1. Make sure you have installed the correct PPD file for your particular imagesetter.

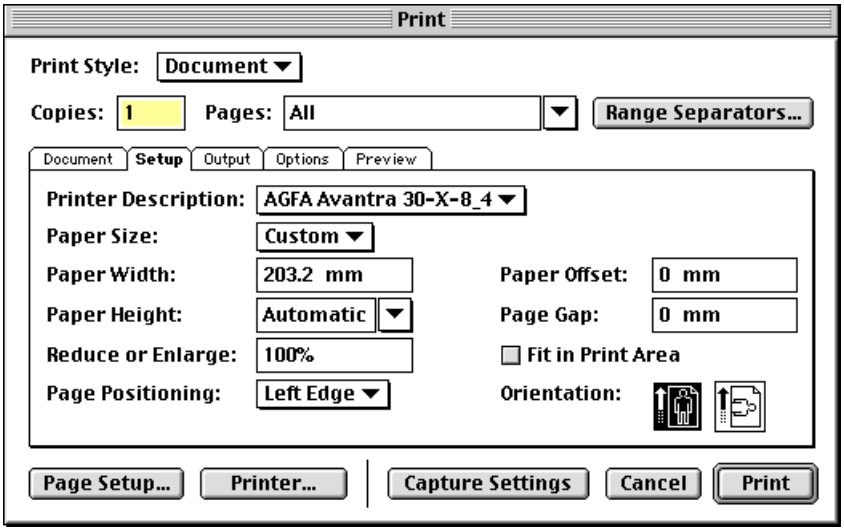
   If necessary, you can do this using the procedure described in "Generating a New PPD File" in Chapter 2.

2. Open the file that you want to print.
3. Select Print from the File menu.

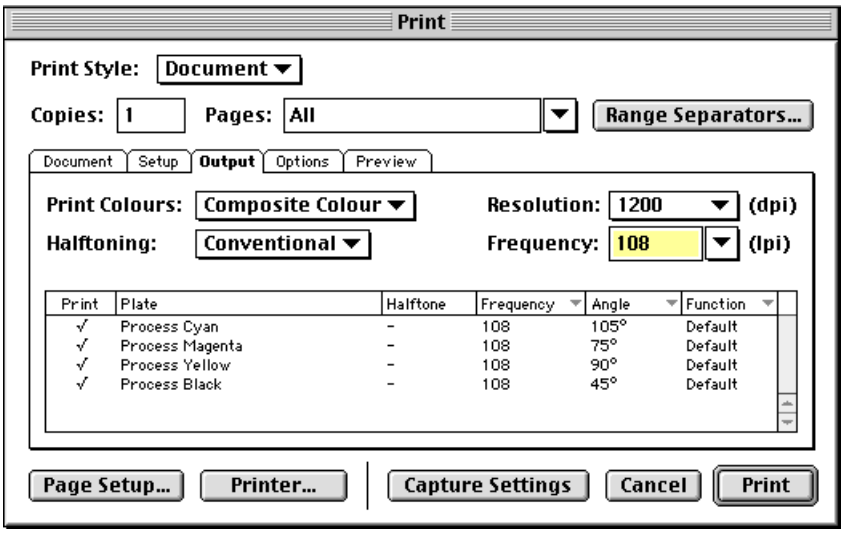
   The Print dialog box is displayed.



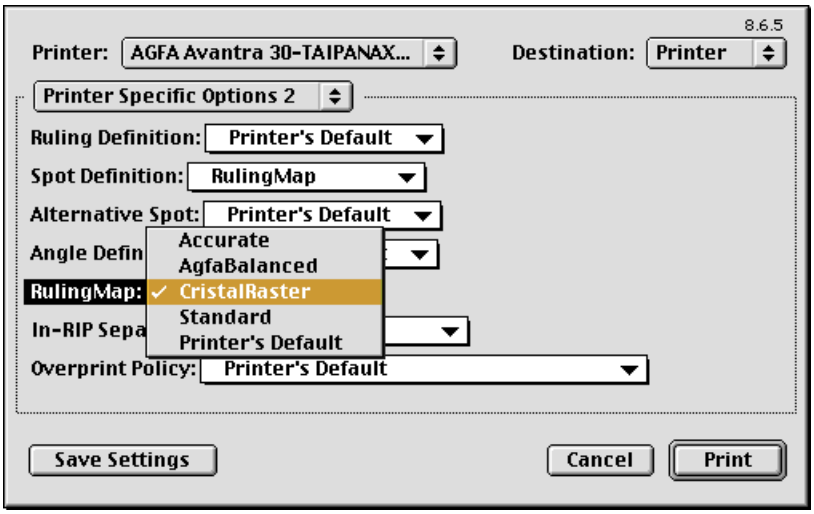
4. Select the Setup tab.



5. Select the appropriate Printer Description.
6. Select the Output tab.



7. In the Frequency field, enter a CristalRaster ruling which is available in the selected Ruling Map.
8. Click the Printer... button and enter your own settings.



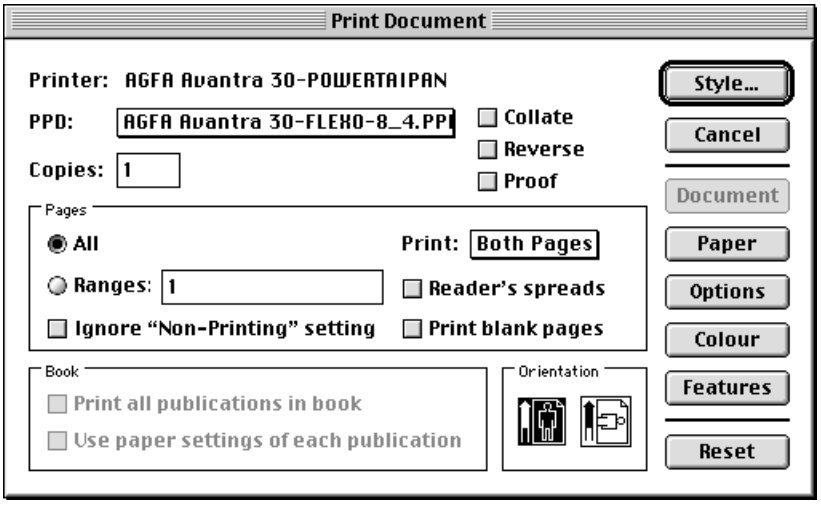
9. Click Print to print your file.

Printing from Adobe PageMaker

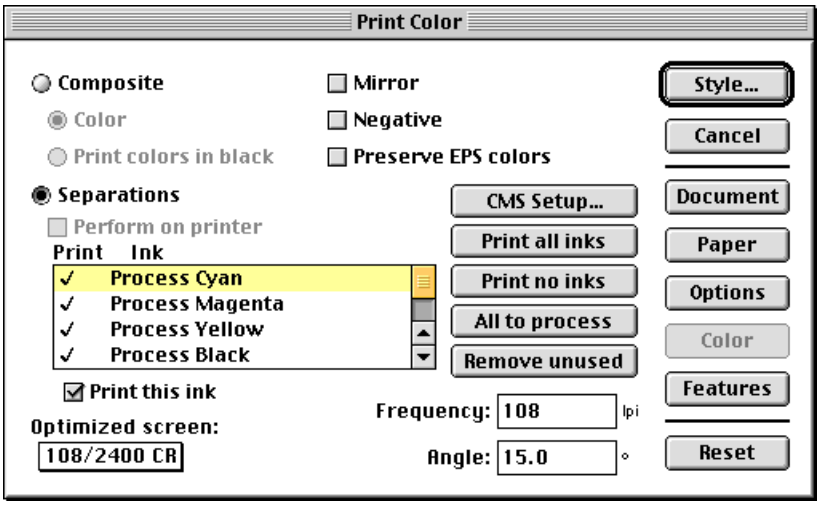
Before starting PageMaker, create a new PPD file as described in "Generating a New PPD File" in Chapter 2). The PPD must be created without selecting "Include Optimized Screen Entries".

1. Start PageMaker, and open the file you want to print.
2. Select Print from the File menu.

   The Print Document dialog box is displayed.

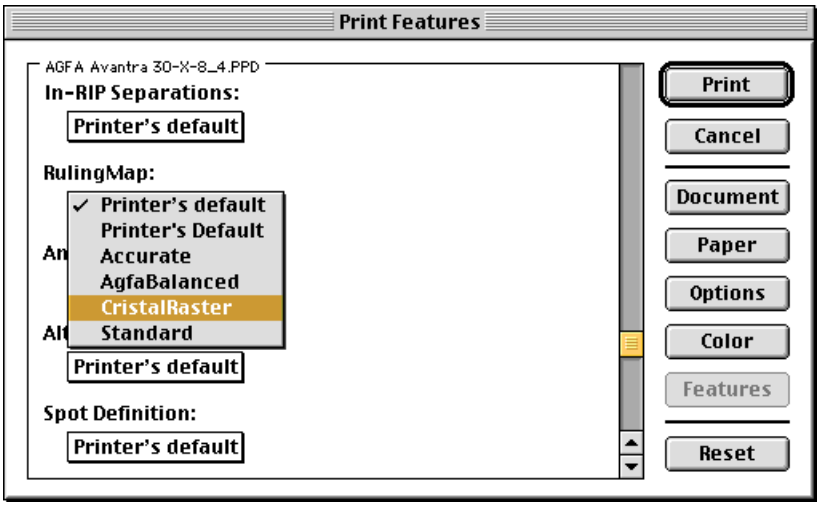


3. Select the new PPD for your imagesetter in the PPD popup menu.
4. Click the Colour button.



5. Click the 'Optimized screen' popup, and select the appropriate ruling for CristalRaster.
6. Click the Features button.

   The Print Features dialog box is displayed.



7. Select the CristalRaster Ruling Map and specify all settings typical for your application.

   The document is now ready for printing using the CristalRaster screens.

Printing from Macromedia FreeHand

To use CristalRaster with Macromedia FreeHand, proceed as follows:

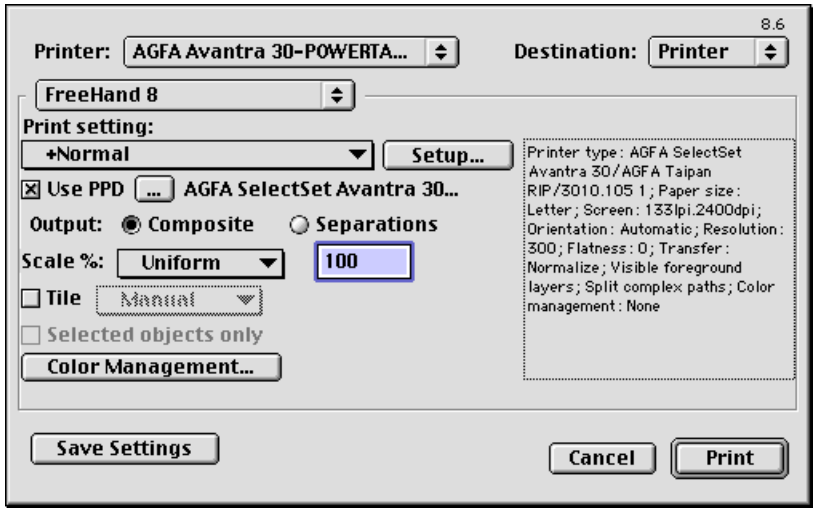
1. Make sure you have installed the correct PPD file for your particular imagesetter.

   If necessary, you can do this using the procedure described "Generating a New PPD File" in Chapter 2.

2. Start FreeHand and open the file you want to print.

3. Select Print from the File menu.

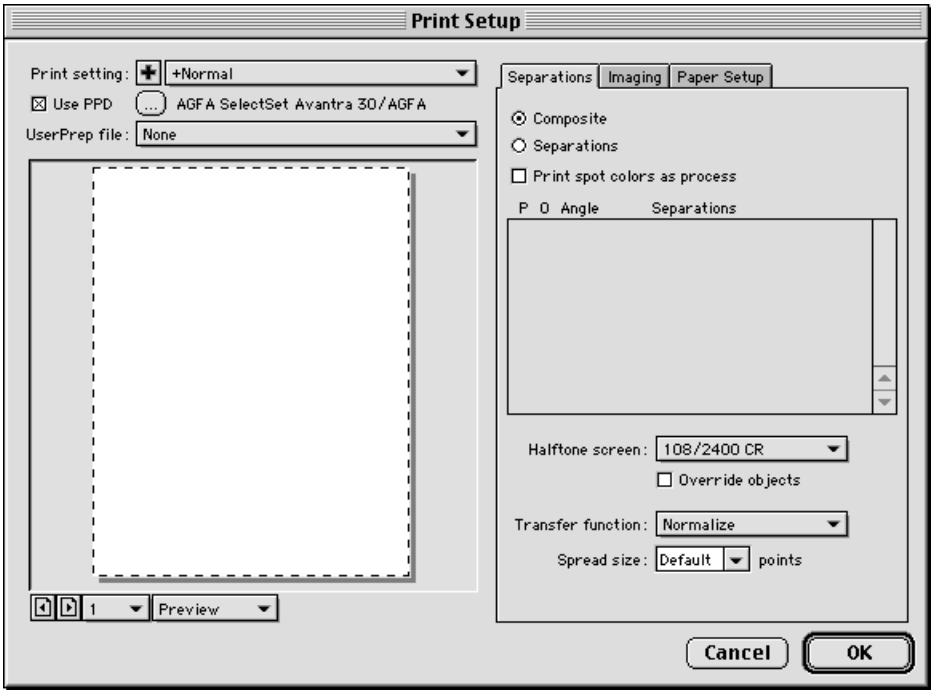
   The Print dialog box is displayed:



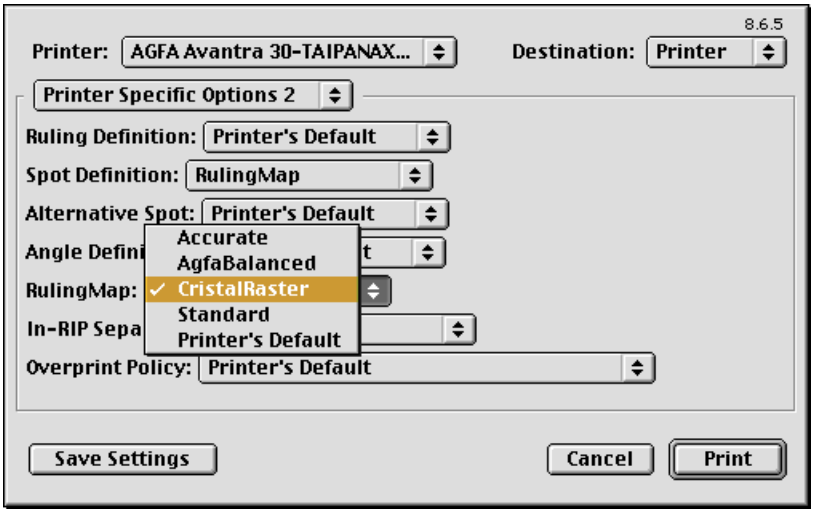
4. Click the Use PPD check box and select the appropriate PPD file.

5 Click the Setup... button.

The Print Setup dialog box is displayed.



6. In the Halftone Screen popup menu, choose a CristalRaster ruling which is available in the selected Ruling Map and click OK.
7. In the Print dialog box, select Printer Specific Options.



8. Set your print options.
9. Click the Print button.

The document is printed using the selected CristalRaster screen.

Printing from Adobe Illustrator

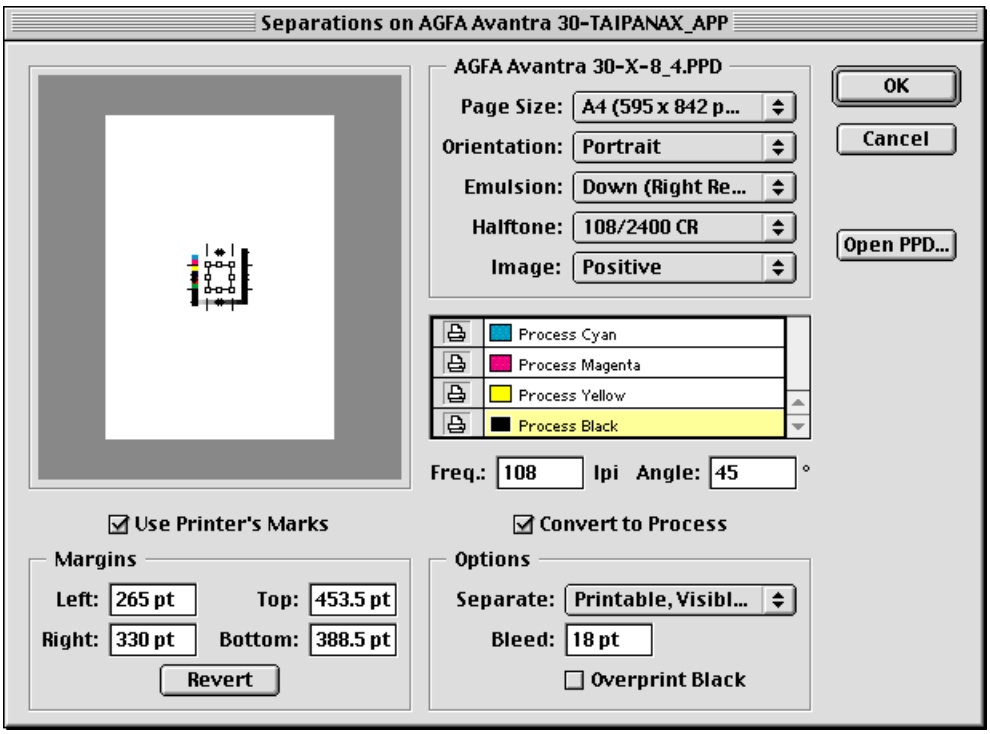
To use CristalRaster with Adobe Illustrator, proceed as follows:

1. Make sure you have installed the correct PPD file for your particular imagesetter.

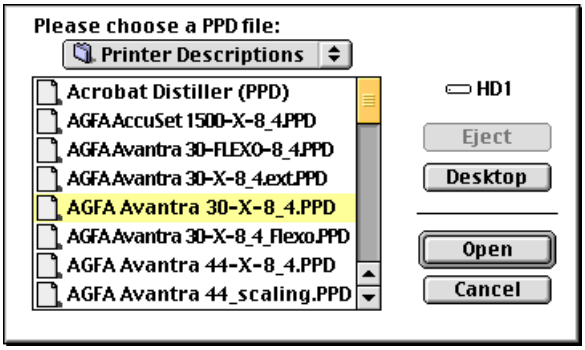
   If necessary, you can do this using the procedure described in "Generating a New PPD File" in Chapter 2.

2. Start Illustrator and open the file you want to print.
3. Select Separation Setup from the File menu.

   The Separations dialog box is displayed.

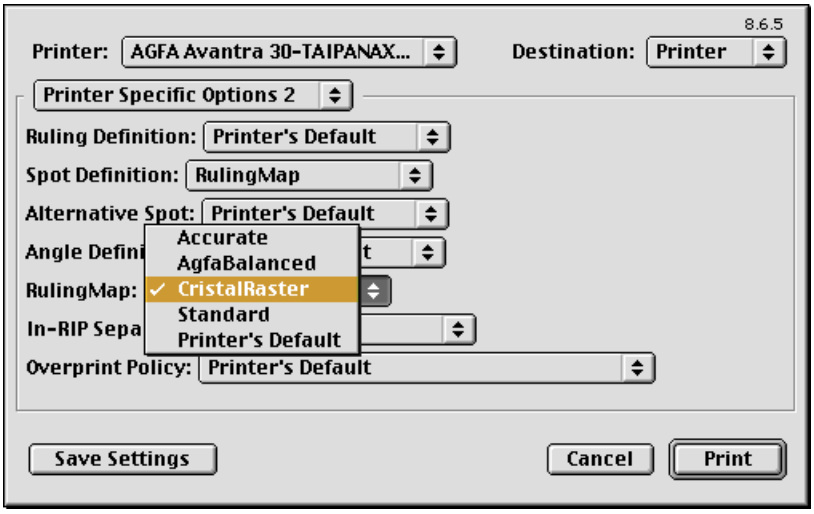


4. Click the Open PPD button.



5. Select the appropriate PPD for your imagesetter, and click Open.
6. In the Halftone popup menu, choose a CristalRaster ruling.

7. Select Print from the File menu.



8. Open Printer Specific Options.
9. Open the Ruling Map popup menu, and select the options typical for your application.
10. Click the Print button.

Printing from Artwork Systems ArtPrinter

To use CristalRaster with ArtPrinter, proceed as follows:

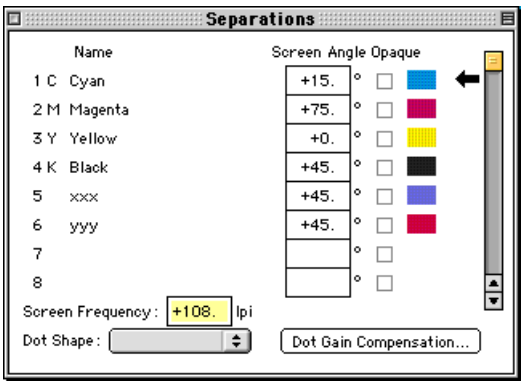
1. Make sure you have installed the correct PPD file for your particular imagesetter.

   If necessary, you can do this using the procedure described in "Generating a New PPD File" in Chapter 2.

2. Start ArtPrinter and open the file you want to print.

3. Select Separations from the View/Separations menu.

   The Separations dialog box is displayed.

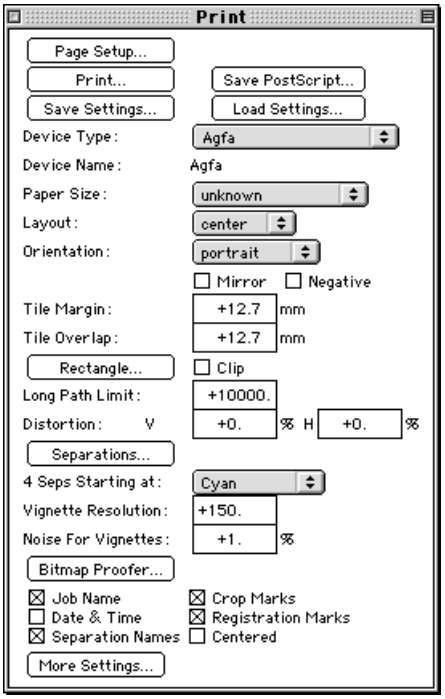


4. Enter a CristalRaster ruling in the Screen Frequency field.

   Choose a CristalRaster ruling which is available in the selected Ruling Map.

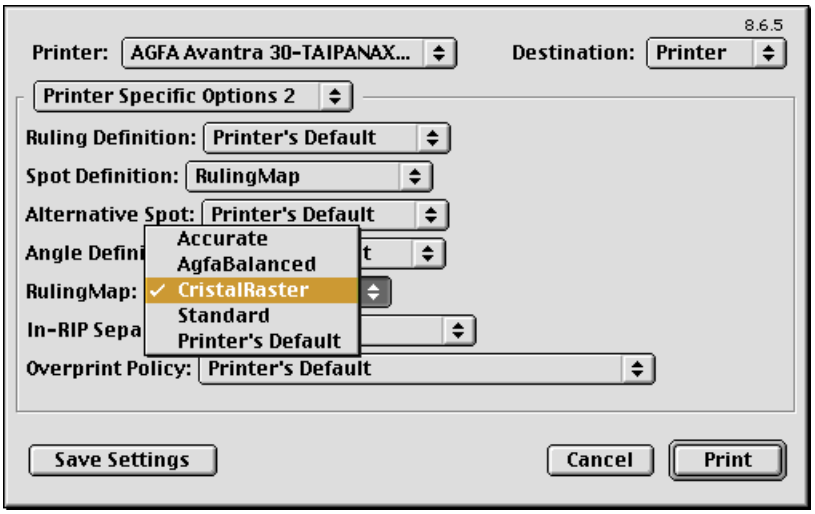
5. Select Print from the File menu.

   The Print dialog box is displayed.



6. Click the Print... button.

   The Print dialog box is displayed.



7. Open the Ruling Map popup menu, and select CristalRaster.
8. Click the Print button.

   The file is printed using Apogee CristalRaster.

Chapter 5 — Platemaking and Printing

This chapter contains recommendations and guidelines on how to select, expose and develop positive and negative offset printing plates using Apogee CristalRaster. It also includes information on how to print Apogee CristalRaster on an offset printing press.

Platemaking 65

- General Recommendations 65
- Positive Platemaking 68
- Negative Platemaking 69

Printing 70

Platemaking

General Recommendations

No special offset plates are required for CristalRaster. However, we recommend that you use plates with high resolutions, and with micro-pigmented emulsions for improved vacuum draw-down. For this reason, we recommend you use the following Agfa plates:

Negative Plates

- Enco SF1 long run sheet-fed one-sided plate (only available in the US)
- Enco WEB long run sheet-fed one-sided plate (only available in the US)
- Enco SF2 sheet-fed two-sided plate (only available in the US)
- Howson HPN
- N61 commercial sheet-fed plate

Positive Plates

- Ozasol P5S commercial sheet-fed plate

The plate type you choose depends on your particular requirements, such as run-length, processing latitude, storage capacities, etc. You should refer to your plate dealer before making a final choice of the plates you will use.

All of the plates listed above are suitable for stochastic work.

❖ Note: Plates coated with a vacuum assist layer can cause problems, and should therefore be avoided.

The most important factors that can affect plate tone scale rendering are as follows:

- vacuum frame efficiency
- your imagesetter density level setting
- your image processor settings
- exposure lamp position and reflector design
- exposure time
- plate processor condition

Vacuum Frame Efficiency

Vacuum frame efficiency is the single most important factor in faithfully and consistently producing dots on the plate. Inadequate or inefficient vacuum will cause inconsistent dot size reproduction and excessive dot gain on the plate. For CristalRaster, or indeed any other screening process, the vacuum frame condition must be assessed and optimum draw-down time established. As with other fine-line screening, slightly longer draw-down times are to be expected.

1. We recommend that you use a flat CristalRaster screen tint of 40% tone value (positive) in a first assessment of the vacuum.
2. Using an AgfaProof Magenta foil laminated to SLC base, visually check for any halation ("hot spots") or out of contact areas.
3. Correct the vacuum frame to eliminate any hot spots or out of contact areas before proceeding.
4. Using the same screen tint, establish the minimum draw-down time required to produce an even appearance of the tint.
5. Make an exposure at the correct exposure setting established for the proof.

   This should result in a proof without areas of halation.

Selecting and Using a Control Strip

For performance measurement and comparison between vacuum frames, we recommend the FOGRA Contact Control Strip KKS (Kontakt-Kontrollstreifen). The KKS target consists of three calibrated concentric circular targets. The center of each target has spacers beginning with 75 µm (0.03 inch) in target #1 to 225 µm (0.09 inch) in target #3. Each target will produce correspondingly greater amounts of halation or image loss.

Follow the procedure as outlined in FOGRA Praxis Report No. 32 included with the FOGRA KKS strip.

- Positive working - At optimum exposure, you will produce satisfactory results if the following maximum values are obtained:
  - In target #2: Line 14 is 50% visible and line 19 is not affected.
  - In target #3: Line 20 is 50% visible and line 25 is not affected.
- Negative working - Satisfactory results for CristalRaster 3600 with AgfaProof BN laminated to SLCp base can be obtained if the vacuum frames do not produce halation beyond the 20th ring of target #3.

Maintaining your Imagesetter Density Level

When using Apogee CristalRaster, you should perform an imagesetter density intensity test every three or four days. To ensure good quality, you need to maintain a density level of 4.3 to 4.4.

❖ Note: Your imagesetter may need to be adjusted for CristalRaster output.

Image Processor Settings

Check that the processor is set to the manufacturers recommendations. Roller pressure and the condition of rollers and brushes may effect the consistency of tones reproduced on the plate. You should inspect the operation of developer, wash and finisher sections.

We recommend that the chemical condition be checked before producing plates for CristalRaster reproduction. If there is any doubt, plates can be hand processed and compared against machine results.

You should change the processor and film filters at the intervals recommended by the manufacturer. The use of a pre-exposed rapid-access filter is recommended.

Exposure Sources and Lamp Position

Most existing platemaking exposure systems will produce excellent results with CristalRaster.

For best plate quality, and to ensure optimum image formation of the plate coating, you should use an exposure lamp with the spectral energy distribution recommended by the plate manufacturer. The lamp should be positioned to provide even illumination and a satisfactory level of collimated light rays to avoid undercutting.

Self-contained exposure systems are usually designed with the lamp fixed in a position to evenly illuminate the exposure surface. Due to the short lamp distance, however, results may be affected by undercutting.

Overhead exposure systems allow you to adjust the position of the lamp. The best position is at the shortest repeatable exposure with the most even illumination.

A UV light meter, such as the Agfa UV meter or equivalent, can be used to determine the evenness of an exposure. Alternatively, CristalRaster tone scales can be positioned in the four corners of the frame and in the center. The image can then be exposed, and evaluated to determine evenness.

You can use the FOGRA KKS target to check for directional effects from the light source caused by non-parallel position or reflector condition. Evaluate the circularity of halation observed in target #3 around the periphery of the circles.

Any problems you encounter can be corrected by:

- cleaning the reflector
- raising the lamp height (i.e. top light units)
- levelling the lamp.

Contact your exposure system supplier or your Agfa Technical Sales Representative should problems persist.

Positive Platemaking

Minimizing Over-Exposure

In practice over-exposure, beyond that used to achieve maximum resolution, is applied to positive plates in order to eliminate cut lines and dust imaging.

However, it is essential that the exposure is minimized to avoid excessive undercutting of the CristalRaster microdot. To this end, you should observe the following recommendations:

- Minimize dust imaging by using antistatic mounting foils and antistatic cleaning cloths, and by thoroughly cleaning the glass plate.
- Position your foils using tape. Never use a spray to position your mounting foils, since this may produce undesirable results.
- Use a supplementary non-image exposure through a burn-out mask.
- Do not use diffusion foils: They increase the halation effect.

Determining Optimum Exposure and Maximum Resolution

Positive plates should have a minimum resolution of 6 µm when using CristalRaster. You can determine the optimum exposure and maximum resolution using microline targets such as the ones listed below:

- UGRA Plate Control Wedge PCW 1982
- RIT Microline Resolution Target

The procedure for using the UGRA Plate Control Wedge can be found in FOGRA Praxis Report No. 34.

❖ Note: Make sure test exposures are made without the use of mounting foil.

The maximum resolution can be determined on both the UGRA and RIT strips by making a stepped series of exposures. Use of the FOGRA PMS 1 strip may be misleading due to directional effects. The optimum plate resolution will be at the micrometer position where the positive and negative circular microline halves are of equal size appearance.

For optimum reproduction of the 28 µm and 31 µm CristalRaster microdots, expose the plate as follows:

- positive 10 µm (black lines) circular half is broken.
- positive 12 µm (black lines) circular half is reproduced.

This exposure is similar to the ideal exposure time for conventionally screened films.

❖ Note: For more accurate results, we recommend that you create your own control wedge, using an application such as Photoshop or QuarkXPress. When creating such a wedge, you should explicitly concentrate on highlights and shadows by including individual density steps from 1% - 15% and from 95% - 100% respectively. A customised wedge is a more accurate gauge than the UGRA wedge, which is not specifically designed for use with CristalRaster, and which may “lose” some of the highlights or shadows.

Negative Platemaking

In general, the exposure of negative plates cannot be controlled in the same way as positive plates. The resolution and run length of a negative plate depends on the coating design. For maximum durability and run consistency, negative plates should be exposed using the procedures and settings recommended by the manufacturer.

The factors which most affect negative plate tone scale rendering are:

- Vacuum efficiency
- Exposure
- Plate processor condition
- Processor chemical condition

Exposure

With most negative plates, the maximum run length and chemical resistance can only be achieved if the plate is exposed at its optimum exposure level. This optimum exposure is determined by exposing a transparent photographic step wedge at a specific density step.

Examples of transparent step wedges include:

- Agfatrans Wedge (GFCAN) (18 step transparent wedge, 0.15 density increments)
- Stouffer Sensitivity Guide #T2115 (21 steps wedge, 0.15 density increments)
- UGRA Plate Control Wedge PCW 1982 (13 steps wedge, 0.15 density increments)

Exposure at a level below the manufacturers' recommendation of no more than one grey scale step (0.15 log E) may be used on many brands of plates without serious run length or chemical resistance problems.

This may allow some users to obtain the necessary tone reproduction in automatic processing systems using plates that have run length coatings which normally require more aggressive processing.

❖ Note: Over-exposure of the plate can increase the amount of halation and dot gain.

Although microline targets are not primarily used for exposure control on most plates, we would recommend that you use them to check the plate exposure for Apogee CristalRaster following these guidelines for 28 µm and 31 µm microdots:

- positive 10 µm (black lines) circular half is broken.
- positive 12 µm (black lines) circular half is reproduced.

On some plates, the run length can be extended by post exposure or heat treatment. In some cases, manufacturers recommend lower exposures and use post treatment to compensate for halation effects caused by the coating characteristics. Some manufacturers claim that dot gain can be reduced by lowering the primary exposure and then post treating the plate to "bring back" the run length. This technique may also allow you to slightly lower the exposure and retain the extreme shadow tones.

For full tonal reproduction on properly prepared CristalRaster negatives which use the built-in compensation, it is usually necessary to reduce the dot gain.

Following these guidelines ensure constant, repeatable plate results with optimum tone rendering and maximum run length.

Printing

No special printing conditions must be observed when using CristalRaster. You simply need to control your process, and maintain the printing press according to the manufacturer's recommendations.

The procedure is as follows:

- First, you must "fingerprint" the press (see Chapter 3 — Creating a Customized Compensation. Ideally, the test file should also contain patches to control the grey balance on the press.
- Measure a test file to check, and if necessary adjust, the CristalRaster compensation curve (see earlier sections).
- Print all CristalRaster jobs using consistent printing settings (ink density, ink/water balance, printing pressure, etc) for each of the printing colors. Higher ink densities can be used to increase color saturation without undue press gain in the mid-tones, or plugging in the shadows.

Appendix A — The CristalRaster Screens

This appendix provides the default halftone screens that are provided with Apogee CristalRaster.

1200 dpi Screens 72

1800 dpi Screens 72

2400 dpi Screens 73

1200 dpi Screens

Resolution	Ruling	Halftone
1200 dpi	142	CR_42_1200_UNC
1200 dpi	160	CR_60_1200_UNC
1200 dpi	180	CR_80_1200_UNC

1800 dpi Screens

Resolution	Ruling	Halftone
1800 dpi	102	CR_28_1800_NEG_COMP2.1
1800 dpi	107	CR_28_1800_NEG _HEAVY
1800 dpi	105	CR_28_1800_NEG _LIGHT
1800 dpi	106	CR_28_1800_NEG_MEDIUM
1800 dpi	102	CR_28_1800_POS_COMP2.1
1800 dpi	107	CR_28_1800_POS_HEAVY
1800 dpi	105	CR_28_1800_POS_LIGHT
1800 dpi	106	CR_28_1800_POS_MEDIUM
1800 dpi	108	CR_28_1800_NEG_AVANTRA
1800 dpi	108	CR_28_1800_POS_AVANTRA
1800 dpi	112	CR_28_1800_UNC

2400 dpi Screens

Resolution	Ruling	Halftone
2400 dpi	102	CR_21_2400_NEG_COMP2.1
2400 dpi	107	CR_21_2400_NEG _HEAVY
2400 dpi	105	CR_21_2400_NEG _LIGHT
2400 dpi	106	CR_21_2400_NEG_MEDIUM
2400 dpi	102	CR_21_2400_POS_COMP2.1
2400 dpi	107	CR_21_2400_POS_HEAVY
2400 dpi	105	CR_21_2400_POS_LIGHT
2400 dpi	106	CR_21_2400_POS_MEDIUM
2400 dpi	108	CR_21_2400_NEG_AVANTRA
2400 dpi	108	CR_21_2400_POS_AVANTRA
2400 dpi	112	CR_21_2400_UNC
2400 dpi	127	CR_31_2400_NEG _HEAVY
2400 dpi	125	CR_31_2400_NEG _LIGHT
2400 dpi	126	CR_31_2400_NEG_MEDIUM
2400 dpi	127	CR_31_2400_POS_HEAVY
2400 dpi	125	CR_31_2400_POS_LIGHT
2400 dpi	126	CR_31_2400_POS_MEDIUM
2400 dpi	128	CR_31_2400_NEG_AVANTRA
2400 dpi	128	CR_31_2400_POS_AVANTRA
2400 dpi	113	CR_31_2400_UNC

Appendix B — Using Scaling Resources

This appendix explains how to use Scaling resources for flexo printing with 42µm, 60µm, and 80µm screens.

Introduction 75

Creating a New Scaling Resource 75

Checking your New Scaling Resources (optional) 77

Adding the New Scaling Resource to Your Print Options 78

Introduction

For flexo printing with 42µm, 60µm, and 80µm CristalRaster screens, you can automatically scale your output by simply selecting the required scaling factor from your Print Options screen. Before you can do this, you will need to adapt the resources that are available on your RIP. This process involves:

- Creating a new Scaling resource
- Downloading your new Scaling resource to the RIP
- Adding the new Scaling resource to your Print Options

Using this 3-step procedure, you can set up as many different scaling resources as you require.

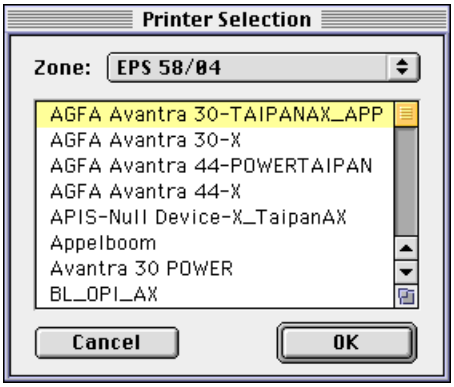
Creating a New Scaling Resource

1. Make sure that your Apogee RIP is running.
2. Double-click the AgfaSet application icon:

    AgfaSet

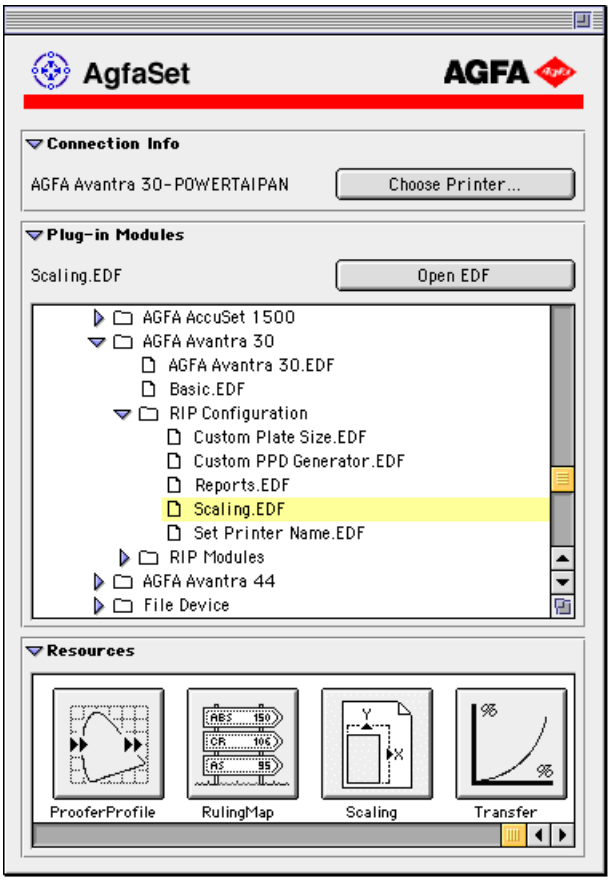
   The AgfaSet main window is displayed.
3. Click Choose Printer.

   The Printer Selection dialog box is displayed.

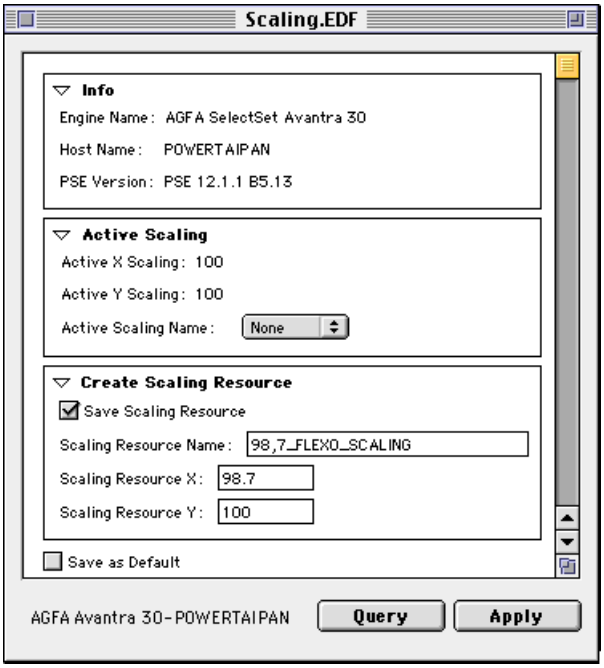


4. Select the name which corresponds to your Apogee RIP, and click OK.

   This connects AgfaSet with your RIP.
5. Open the Plug-in Modules panel in the AgfaSet main window.



2. Open the Scaling.EDF, which is located in the RIP Configuration folder. The Scaling.EDF dialog box is displayed.



3. Click the Save Scaling Resource check box.

4. Enter an appropriate name for your Scaling Resource.
5. Enter the required scaling values for the X and Y coordinates.

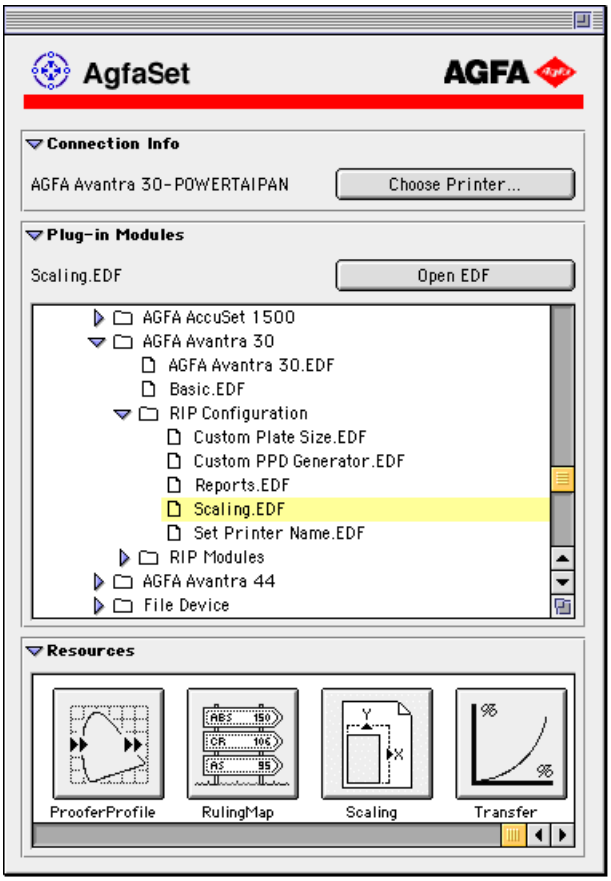
   Note that you should not use percentage signs (%) in the Scaling Resource fields.
6. Click Apply.

   The scaling resources are downloaded to the RIP.

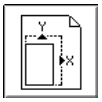
Checking your New Scaling Resources (optional)

If you wish, you can check that your scaling resources are available on your RIP as follows:

1. Return to the AgfaSet main window, and browse through the resources in the Resources panel.

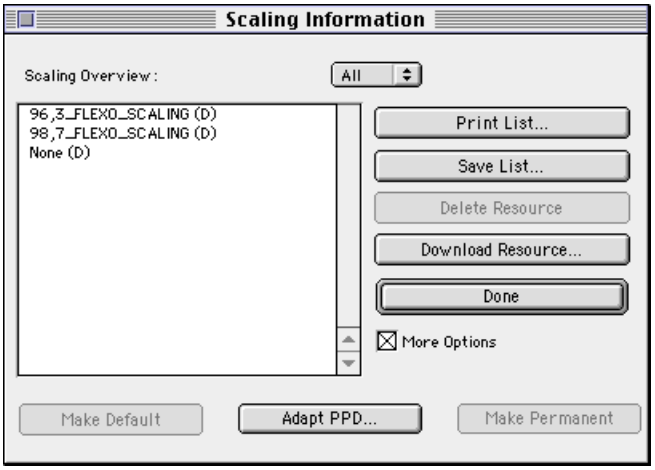


2. Locate the Scaling resource, and click the Scaling button.



Scaling button

The Scaling Information dialog box is displayed.

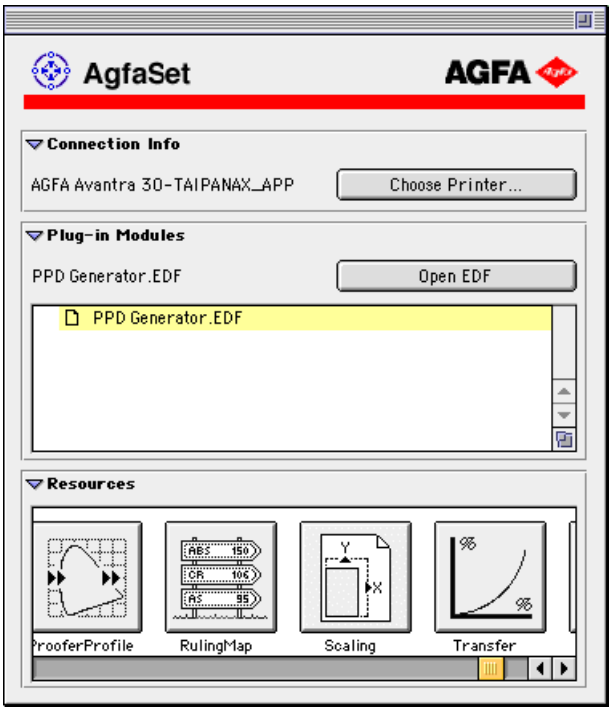


3. If necessary, delete any undesired scaling resources from the Scaling Overview panel.

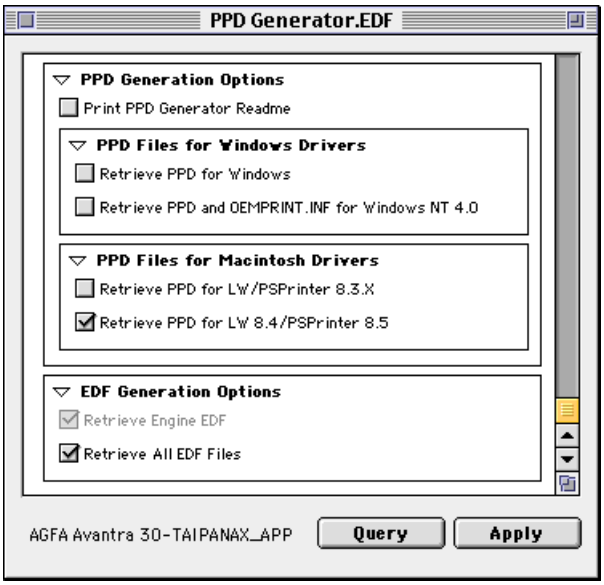
Adding the New Scaling Resource to Your Print Options

Each time you download resources to your RIP, you will need to generate a new PPD file. It is only after you have done this that you will be able to access the new Scaling resources from your Print Options screen.

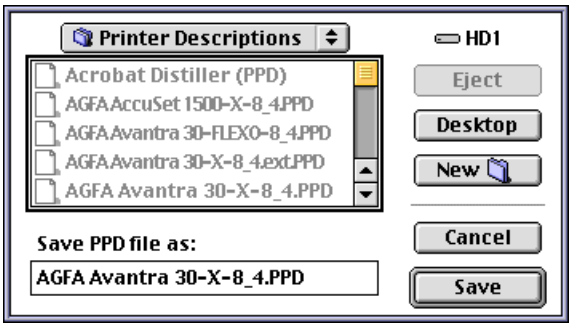
1. Return to the AgfaSet main window.
2. Select the PPD Generator.EDF from the Plug-in Modules panel.



3. Open the PPD Generator.EDF.

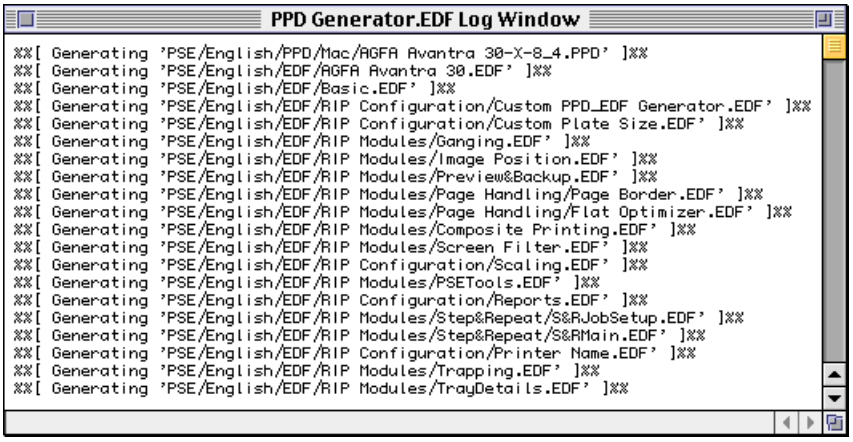


4. Check one of the PPD Generation Options (depending on the printer driver you are using).
5. Click Apply.



6. Select a name and location for your new PPD file, and click Save.

   A log window will confirm that your PPD has been created:



For a description of each of the PPD file options, refer to your specific output device documentation.

Appendix C — Proofing with AgfaProof

This chapter contains recommendations and guidelines on how to correctly produce analog color proofs from Apogee CristalRaster films using the AgfaProof system. If you are not using AgfaProof, you should use press proofing.

What is Proofing? 82

CristalRaster Dot Gain Characteristics 82

CristalRaster on AgfaProof - Proofing Guidelines 83

- General Recommendations 83
- Procedure with AgfaProof Negative 83
- Procedure with AgfaProof Positive 84

What is Proofing?

Until recently, the approval of a print job was negotiated on the basis of a press proof. Off-press proofing systems were used simply to monitor color adjustment.

It is only now, after years of experience, that printers have gained sufficient confidence in off-press proofing systems to accept them as a guideline for press adjustments. Today, when we talk about "proofing" we actually mean "off-press proofing".

However, the only way to obtain a real preview of Apogee CristalRaster on the printed sheet is to print a press proof. This is because many of the specific press advantages of CristalRaster (such as increasing ink-film thickness) cannot be mimicked with the current off-press proofing systems.

We therefore recommend using AgfaProof only for previewing the color adjustment carried out in prepress, with proofing conditions adjusted to obtain a correct grey balance. Approval from the print buyer should still be negotiated on the basis of press proofs. Furthermore, the press operator should adhere strictly to standard platemaking and printing guidelines, rather than making subjective adjustments which are more appropriate to conventional screening techniques.

❖ Note: Do not rely on off-press proofs for calibration and "fingerprinting" purposes.

CristalRaster Dot Gain Characteristics

On the printing press, Apogee CristalRaster has more dot gain than Agfa Balanced Screening in the mid tones, and less dot gain in the 0 - 30% area. Also, the different behavior of positive or negative printing plates in the highlight region is more pronounced with CristalRaster. The exposure of negative working plates tends to increase the size of the microdots, which are further “enlarged” by the physical dot gain on the press. When exposing positive plates, this same press gain is partially neutralized by the reduction in the size of the microdots.

Although dot gain simulation with AgfaProof is possible in negative as well as in positive mode, the characteristics of Apogee CristalRaster proofing are somewhat different from what is generally experienced with Agfa Balanced Screening. CristalRaster dot gain is still influenced by the selected proofing base, but the differences are smaller when compared to Agfa Balanced Screening.

Dot gain values can also be influenced by the exposure time. Overexposure of CristalRaster proofs decreases the dot gain, and vice versa. These effects are more noticeable with positive proofs and with the smaller dot sizes.

Because of these differences in the behavior of CristalRaster screening, as opposed to Agfa Balanced Screening, you should follow specific proofing guidelines for Apogee CristalRaster on AgfaProof.

CristalRaster on AgfaProof - Proofing Guidelines

General Recommendations

- A clean copying environment is needed.
- Vacuum conditions are of utmost importance for good proofing results.
- Use of an AgfaProof finishing layer will cause additional dot gain.

Procedure with AgfaProof Negative

Recommendation	Because...
Use SLC or SD base.	Microdot size increases when making negative copies.
Make exposure series with ACR for each separation. Lowest exposure = 4 steps Dmax on UGRA contone wedge.	Too low exposure results in wash-off of fine detail.
Select the correct exposure for each individual color. Correct exposure when C, M, Y dot gains match the printed dot gains.	Neutral grey balance when equal dot gains on C, M , Y.

❖ The influence of exposure on dot gain is limited when using AgfaProof negative.

Procedure with AgfaProof Positive

Recommendation	Because...
Use SHC base.	Lower dot gain on positive Apogee CristalRaster.
Make exposure series with ACR for each separation Lowest exposure = 1 step white on UGRA contone wedge.	Lower exposure results in wash off problems and fog.
Select correct exposure for each individual color. Correct exposure when C, M, Y dot gains match the printed dot gains.	Neutral grey balance when equal dot gains on C, M, Y.

❖ Note: The influence of exposure on dot gain is strong with AgfaProof positive. Dot gain can be fine-tuned by means of exposure adjustments.

Appendix D — Glossary of Terms Used

This glossary defines many of the terms used in this document with which the user may not be familiar.

Application

A computer software program that performs a specific task, such as page composition, word processing, illustration, or telecommunications.

CMYK

Cyan, Magenta, Yellow, and Black - the standard ink colors used in four-color printing. CMYK is a color model based on the subtractive color theory, and is used by professional printers to reproduce color using offset lithography.

CMYK Image

A four-color image containing a cyan, magenta, yellow, and black channel.

Color Rendering Dictionary

A color rendering dictionary defines a composite color rendering function, as applied in the PostScript RIP, that transforms CIE-based color values to output device color values by applying gamut and color-mapping functions. Color rendering dictionaries actually define the transformation from a standard color space (CIE XYZ) to a specific output device color space. This color transformation is performed in the RIP.

Color Separation

In traditional pre-press, the separation of a color image into four layers corresponding to the four process colors (CMYK) used in process printing.

Composite

A term used to refer to multi-color files (e.g. composite printing).

CPSI

Configurable PostScript Interpreter. This is the core software used in all Agfa software RIPs.

Crop Marks

Short vertical and horizontal lines, printed on an output medium which is larger than the page size of a document, to indicate the finished page area.

DCS

Desktop Color Separation. This is essentially an enhancement to the EPS definition for pictures that can hold the four-color separations of an image in one file or in 5 separate PostScript files.

DPI

Dots per inch: A commonly used measure for the addressability, or resolution, of scanners, monitors, printers, proofers, imagesetters, and color film recorders.

Driver

A program which is part of the operating system of a computer, and controls part of the hardware.

EDF

Engine Description File: This is a readable, machine-parsable text file, which allows you to view or modify the static parameters of output engines, such as RIPs, proofers, printers, and imagesetters.

Engine

The term Engine is used in this manual in two ways: Either to refer to a physical output device which writes raster data on a medium such as film or paper, or as an "EDF" (Engine Description File) which is a tool to set output-related settings.

EPS

Encapsulated PostScript: A standard format for a drawing, image, or complete page layout, allowing it to be placed into other documents. EPS files normally include a low resolution screen preview

Font

A set of letters, numbers, punctuation marks, and symbols that share a unified design. The design is called a typeface.

FTP

File Transfer Protocol. This is one of the standard protocols defined for use on a TCP/IP network.

Grayscale

Shades of gray that range from black to white.

Grayscale Image

A single-channel image consisting of levels of gray (up to 256 levels of gray with 8 bits of data per pixel.

Halftone

The reproduction of a continuous-tone image, which is made by using a screen that breaks the image into various size dots.

Halftone Screen

Traditionally, continuous-tone art (such as a photograph) is reproduced by photographing the original artwork through a crossline or contact screen. The resulting halftone image is composed of a matrix of dots, ellipses, squares, or lines of various sizes that can be reproduced via offset lithography.

HiFi Color

HiFi color is a high fidelity color that is composed of more than the four standard process colors (CMYK). For example, HiFi color may comprise 6 color plates such as CMYK plus Orange and Green.

Imagesetter

A high resolution printer used to prepare high-quality page art on paper or film (usually at resolutions between 1,200 and 5,000 dots per inch).

Lineart

Refers to pictures that contain only black-and-white, with no shades of gray. Also known as bi-level images.

Network

A cabling system which allows a number of devices such as workstations and printers to communicate with each other. Each device in the network can offer specific services, or be a user of services provided by other devices.

PDF

Portable Document Format. A file format used to describe cross-platform documents which are created using Adobe Acrobat Exchange or Acrobat Distiller, and which can be viewed on-screen and printed, using Adobe Acrobat Reader.

Point

A basic unit of typographic measurement. A point is approximately equal to 1/72 of an inch.

PostScript

PostScript is the name of a computer programming language developed originally by Adobe Systems Incorporated to communicate high-level graphic information to digital laser printers. It is a flexible, compact, and powerful language for expressing graphic objects, and for performing general programming tasks. As is true with many programming languages, the PostScript language has been designed for a specific purpose - to express complex digital graphics in a device-independent manner. Powerful typesetting features are built into the language for sophisticated handling of letterforms and graphics.

PPD

PostScript Printer Description: This is a readable, machine-parsable text file that provides a uniform approach to using the diverse special features of devices that contain PostScript interpreters. These features include different page sizes, different methods of paper and film handling, memory size, font availability, and finishing features such as duplex printing and stapling. All devices do not have the same set of features, and even devices with the same features do not necessarily invoke those features in the same way. The information contained in PPD files serves as a list of available features, as basis for building a user interface, and as a mechanism for invoking the features on a particular device. The PPD file also contains the PostScript language code to invoke each feature.

Printer Font

A bitmapped or outline font that is resident in the printer, or is downloaded to the printer during printing. Computer fonts have two components: a screen font for on-screen display and a printer font for printing.

Process Color

Any color (except cyan, magenta, yellow, black, white, and certain PANTONE colors) can be specified as spot colors or process colors. When separations are printed, all process colors on a page are broken down into their cyan, magenta, yellow, and black components, each of which is printed on its own separation plate. When combined during offset printing, the process colors can reproduce full-color page art.

Process Color Separation

In order for a professional printer to reproduce full-color documents using offset lithography, color pages must be broken down into the four process separation colors - cyan, magenta, yellow, and black.

PSE

Agfa's PostScript Environment (PSE) is RIP software which allows you to customize your output settings according to your particular requirements, and to modify these settings on a job-by-job basis. PSE can be regarded as an extremely flexible and powerful front-end to your existing PostScript configuration. Once installed, PSE will upgrade your generic PostScript RIP into an Agfa PostScript RIP. This will allow you to make use of Agfa-specific resources, tools, and technologies which have been designed to produce the highest quality output from Agfa proofers and related output engines. PSE uses AgfaSet as its front-end management interface for both Macintosh and PC systems.

Registration Marks

Reference marks that appear on camera-ready art, generally for CMYK color separations, that help align the overlaying printing plates.

Resolution

A measure of the fineness of spatial detail that a device can record or produce. The higher the resolution, the finer the detail. Resolution is expressed in elements per unit length; for example, pixels per inch (ppi) for scanners and monitors. (refer also to dpi).

Resources

The PostScript language is designed with various features which are controlled by collections of objects. These object-collections are referred to as resources (with names such as Font or Halftone), and are stored centrally. Specific resources, which can be downloaded to the output RIP, include Font, Halftone, ColorRendering, ProcSet, Form, Pattern, ColorSpace, and Encoding.

RGB

Red, Green, Blue: Refers to the primary colors, namely Red, Green, Blue, in the additive color model. The RGB model is used in color televisions, monitors, scanners, and color film recorders.

RIP

Raster Image Processor: A module that converts a page description that it receives from the server into a matrix of dots, ready for output to a specific output device, such as an imagesetter, platemaker, proofer, or color printer. RIP software can run on a standard computer (commonly called a 'software RIP')or on dedicated hardware(commonly called a 'hardware RIP').

Screen Angles

The angles at which halftone screens are placed in relation to one another.

Screen Font

A bitmap representation of a font that is used to display the characters on-screen.

Screen Frequency

The density of dots on the halftone screen, commonly measured in lines per inch (also known as screen ruling).

Shared Volume

A shared volume is an area of the server's hard disk which can be viewed and accessed as a series of normal desktop folders on the front-end workstation.

Spot Color

Any color (except cyan, magenta, yellow, black, white, and certain PANTONE colors) can be specified as spot colors or process colors. When separations are printed, each spot color on a page is printed onto its own separation plate. In contrast, process colors are broken down into their cyan, magenta, yellow, and black components, each of which is printed on its own separation plate.

TCP/IP

Transmission Control Protocol / Internet Protocol: This is a communications “language” which is used to enable two different computers to exchange data over a network, particularly over the Internet.

TIFF

Tagged Image File Format: This is a standard file format used for exchanging bitmapped images between applications or platforms.

Typeface

A set of fonts that share a unified design. For example, the Futura typeface includes Futura Book, Futura Bold, Futura Italic, and Futura Bold Italic.

Index

1200 dpi screens, 72
1800 dpi screens, 72
2400 dpi screens, 73

A

about this guide, 6
Adobe Illustrator
  printing, 60
Adobe PageMaker, 56
Adobe Photoshop, 51
Agfa Alliance, 36
Agfa Alliance film material, 21
AgfaProof, 81
application
  definition, 85
ArtPrinter, 62

C

calibration
  files, 34
Calibrator, 40
changing
  ruling map numbers, 30
checking scaling resources, 77
CMYK
  definition, 85
CMYK image
  definition, 85
color rendering dictionary
  definition, 85
color separation
  definition, 85
CompareScreening.EDF
  installing, 32
compensation
  tone value, 34
composite
  definition, 85
conventional screening, 12
CPSI
  definition, 85
creating
  a fine-tuned compensation curve, 40
  a new scaling resource, 75
  a proofer PPD, 23
CristalRaster
  features, 18
  technology, 15
  uncompensated screens, 35
  using with prepress applications, 48
CristalRaster ruling map
  downloading, 28
CristalRaster screens
  downloading, 24
  installing, 22
CristalRaster screens, 71
crop marks
  definition, 86

D

DCS
  definition, 86
Desktop Color Separation, 86
dot gain, 35
dot gain characteristics, 82
Dots per inch, 86
downloading
  a fine-tuned compensation, 44
  CristalRaster ruling map, 28
  CristalRaster screens, 24
dpi definition, 86

E

EDF
  definition, 86
engine
  definition, 86
Engine Description File, 86
EPS
  definition, 86
evaluating
  print results, 39
exposure, 69

F

features
  CristalRaster, 18
fine-tuned compensation
  downloading, 44
fine-tuned compensation curve
  creating, 40
font

definition, 86
FreeHand, 58
frequency-modulation, 13
FTP
definition, 87

G

generating
new PPD file, 31
grayscale
definition, 87
grayscale image
definition, 87

H

halftone
definition, 87
screen, 87
Halftone-Linked Transfer Resources, 34
halftoning, 12
hardware requirements, 21

I

imagesetter
definition, 87
imaging negative films, 35, 49
installing
CristalRaster screens, 22
the CompareScreening.EDF, 32

L

lineart
definition, 87

M

Macromedia FreeHand, 58
microdot sizes, 16
moiré, 13

N

negative films
imaging, 35, 49
negative platemaking, 69
noise, 14

O

output recording media
selecting, 36

P

PDF
definition, 88
Photoshop, 51
printing files using default halftone screens, 51
saving EPS files, 52
platemaking
exposure sources and lamp position, 67
vacuum frame efficiency, 66
platemaking, 65
imagesetter density level, 66
negative, 69
positive, 68
processor settings and chemical conditions, 67
point
definition, 88
positive platemaking, 68
PostScript
definition, 88
PostScript 3
new features, 17
PostScript Printer Description, 88
PPD
definition, 88
PPD file
generating, 31
PPD Generator.EDF, 31
prepress applications
using with cristalraster, 48
print options
adding a scaling resource, 78
print results
evaluating, 39
printer
font, 88
printer driver
setting up, 49
printing
test page, 37
printing
from Adobe Illustrator, 60
from QuarkXPress, 54
recommendations, 70
process color separation
definition, 89
process colors, 89
definition, 89

proofer PPD
  creating, 23
proofing
  definition, 82
  guidelines, 83
  with AgfaProof, 81
PSE
  definition, 89

Q

QuarkXPress
  printing, 54

R

Raster Image Processor, 90
Red, Green, Blue, 90
registration marks
  definition, 89
requirements
  hardware, 21
  software, 21
resolution, 87
  definition, 89
resources
  definition, 89
RGB
  definition, 90
RIP
  definition, 90
rosettes, 13
ruling map numbers
  changing, 30
RulingMap information window, 28

S

scaling resource
  adding to print options, 78
  creating, 75
scaling resources
  checking, 77
  using, 74
screen
  angles, 90
  font, 90
  frequency, 90
screening
  conventional, 12
  defined, 12
  stochastic, 13
screens
  1200 dpi, 72
  1800 dpi, 72
  2400 dpi, 73
  CristalRaster, 71
selecting
  output recording media, 36
separations, 89
setting up a printer driver, 49
shared volume
  definition, 90
software requirements, 21
spot color
  definition, 90
stochastic screening, 13
subtractive color theory, 85
system requirements, 21

T

test page
  printing, 37
TIFF
  definition, 91
tone value compensation, 34
typeface
  definition, 91

U

uncompensated screens
  CristalRaster, 35
using
  Calibrator, 40
  CristalRaster with prepress applications, 48
  scaling resources, 74