

Copy Scanners

Operator's Guide

Contex document no.: FCS/USM/001 (3.2)

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Internet info:<http://www.contex.dk>

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Preface

The Copy Scanners provides a complete solution for the dual purposes of large format copying of color/monochrome originals, drawings, maps and pictures to a directly attached InkJet or Laser plotter and scanning to file on an optionally attached PC or workstation for Graphics art, Reprographic, CAD and GIS applications.

The Context Full Scale Copy Scanners are:

- Full Scale Color Copy Scanner (E-Size/A0): FSC8010COPY^{DSP} and FSC5010COPY^{DSP}
- Full Scale Monochrome Copy Scanner (E-Size/A0): FSC8300COPY^{DSP}

Built-in JETstream – accelerator for high speed conversion of scanned color stream to matched realistic colors on inkjet printer/plotter output. Digital Signal Processor, 2D-Adaptive and Gray-Adaptive (advanced Area Diffusion Logic, ADL), deskewing, despeckling and real-time compression of scanned data.

This guide explains how to operate and maintain the Copy Scanners.

SYSTEM REQUIREMENTS

- Large format color or monochrome Copy Scanner
- Copy Scanner interface kit (only for Scan-to-file support).
- Supported Large format plotter (InkJet or Laser Plotter)

RELATED PUBLICATIONS

The "COPY SCANNER OPERATOR's GUIDE". This guide.

The "CADImage/SCAN USER's GUIDE".

How To Use This Guide

This guide contains seven chapters, and four appendices. Make sure you read Chapter 2: "Getting Started", before attempting to install or use the Copy Scanner and software described in this guide.

- Chapter 1.** An overview of the Copy Scanners and their features.
- Chapter 2.** Getting started, initial installation and power-on.
- Chapter 3.** Introduces the copy operations features.
- Chapter 4.** Describes how to add customized settings.
- Chapter 5.** Describes the Setup and diagnostics.
- Chapter 6.** Describes scan-to-file operation and installation.
- Chapter 7.** Describes user maintenance of the Copy Scanner.
- Appendix A.** Overview of the menu hierarchy.
- Appendix B.** Contains model specifications.
- Appendix C.** Contains a glossary.
- Appendix D.** FCC and CE Regulations.
- Appendix E.** Contains program license agreement.
- Appendix F.** Important safety instructions.
- Appendix G.** Index.

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1. Overview

1.1 Introduction

The Copy Scanners are large format scanners which interfaces directly with a large format inkjet/laser printer, functioning as one integrated large format copier unit, enabling fast copying of originals up to E-size.

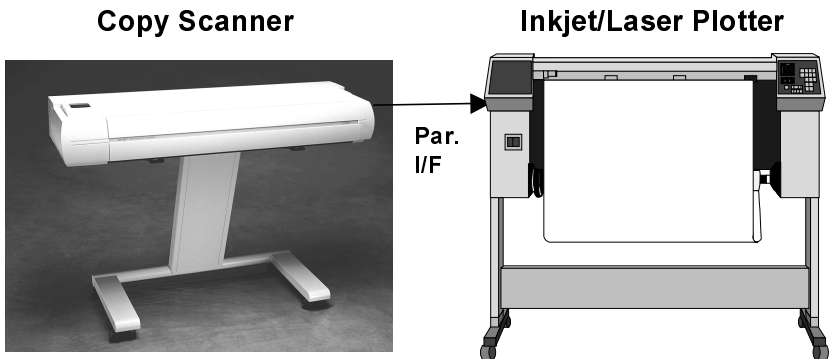


Figure 1-1 Copy Scanner and large format plotter

The copy process is completely controlled, through the easy to operate touch screen on the Copy Scanners.

The Copy Scanners are cost-effective solutions, supporting both fast high volume scanning to workstation, and stand-alone copying with a directly connected inkjet or laser plotter.

Color Copy Scanners FSC8010COPY and FSC5010COPY:

The Color Copy Scanners enables you to easily make both vivid, high quality color corrected copies and crisp, clear black and white copies. The unique closed loop color matching wizard means that a high level of color reproduction skills is not required for achieving excellent results:

- Copy, up to 99 copies of an original.
- Collate Copy, scan a set of up to 99 different originals, and make multiple copies of the set in collated order.
- Trial Copy, quick copying of an evaluation strip.

- Enlargement/Reductions selectable from a predefined, or user defined, set of scaling factors (25-400%)
- User friendly single screen selection of CopyType, Lightness, Document size, Reduction/Enlargement, and No. of copies.
- Extension of the standard selections with ten user defined selections for: CopyTypes, Document sizes and Reduction/Enlargement.
- Selecting the CopyType, automatically selects the color matching map for the inkjet printer and the printing media.
- Easy closed loop color matching by printing a color patch reference sheet, followed by scanning of the reference sheet, the resulting color matching map being automatically generated, and stored as a recallable CopyType.
- Color matching with your inkjet printer/plotter and printing medias by creation of up to six custom color matching maps.
- Takes full advantage of the JETstream accelerator hardware built into your Full Scale Color Copy Scanner.
- Resolution is setable in one dpi increments, ensuring a perfect match with output devices and applications:
 - Output Resolution to Inkjet/Laser plotter: 100 to 800 (500) dpi.
 - Scan-to-file Resolution: 25 to 800 (500) dpi.
- The Color Copy Scanners in addition also has all the features of the FSS8300 Monochrome Copy Scanner.

The operation is touch screen menu based, starting with the *Main Copy screen* providing setup for all the most common copying operations. The *Menu* button provides entry into additional copying functions:

<i>Trial Copy</i>	Quick copying of an evaluation strip.
<i>Collate Copy screen</i>	Collated copies of multiple originals.
<i>Copy Functions screen</i>	Additional copy functions.
<i>Scanning screen</i>	Scan-to-file.
<i>Settings...</i>	Customization/setup of large format copier

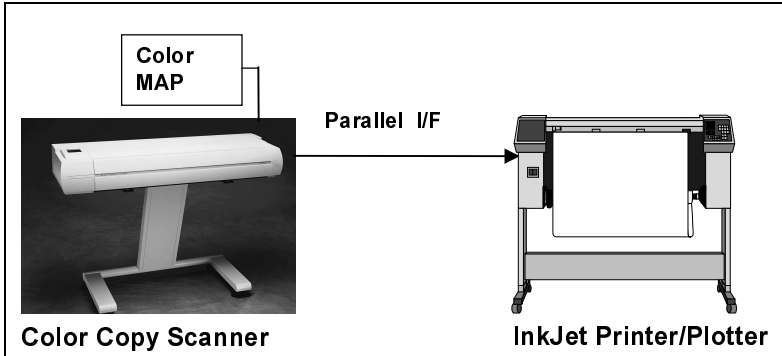


Figure 1-2 Large Format Color Copying System

The Color Copy Scanners achieves color consistency between the scanned original and the printed copy, by analyzing the correspondence between the printed and scanned values of a set of reference color patches printed by the printer.

The printed reference color patches are subsequently scanned by the Color Copy Scanner and an internal color matching map is automatically generated (closed loop color calibration).

The generated color map is then loaded prior to copying into scanner hardware tables for fast on-the-fly color translation while copying.

The range of colors that may be produced by an inkjet printer/plotter depends on model, ink, printing media, printing resolution etc. and the Color Copy Scanners therefore supports generation and storing of up to six color maps, each reflecting a different printing media (e.g. plain paper, glossy paper, film) or different inkjet printer/plotters. The relevant color map is then easily recalled and loaded when making color copies.

Monochrome Copy Scanner FSS8300COPY:

The Monochrome Copy Scanner enables you to make crisp, clear and legible results from even the most difficult areas of monochrome documents:

- Copy, up to 99 copies of an original.
- Collate Copy, scan a set of up to 99 different originals, and make multiple copies of the set in collated order.
- Enlargement/Reductions selectable from a predefined, or user defined, set of scaling factors (25-400%).
- Scanning to file on an externally connected PC or Workstation with the optional PC/Workstation I/F kit.
- The integrated operator touch panel supports single screen selection of Lightness, Document size, Document Type, Reduction/Enlargement, and No. of copies.
- Extension of the standard selections with ten user defined selections for: Document sizes, Document Types, and Reduction/Enlargement.
- Selecting the CopyType e.g. Normal, Brown (Sepia), Blueprint or Photo, automatically sets the optimal Lightness and image enhancement.
- The built-in dedicated highspeed Digital Signal Processor (DSP) provides clean crisp scans from poor quality originals, doing real-time 2D-Adaptive Image enhancement.
- Gray-Adaptive mode provides sharp high quality copies with all the shades of grey preserved, with advanced "Area Diffusion Logic (ADL)" maintaining the image integrity of a greyscale scan, and importantly keeping file sizes very compressed.
- Auto-Photo mode for continuous tone originals, the advanced "Area Diffusion Logic (ADL)" providing fine detail in both dark and highlight areas, automatically detecting and updating black and white points.
- Resolution is setable in one dpi increments, ensuring a perfect match with output devices and applications:
 - Output Resolution to Inkjet/Laser plotter: 100 to 410 dpi.
 - Scan-to-file Resolution: 25 to 800 dpi.

1.2 Scan-to-file

The Copy Scanners in addition are complete scan-to-file solutions (requiring the optional PC/Workstation interface kit), it's dual interfaces supports mixing of scanning-to-file and copy operations without changing of cables or configuration.

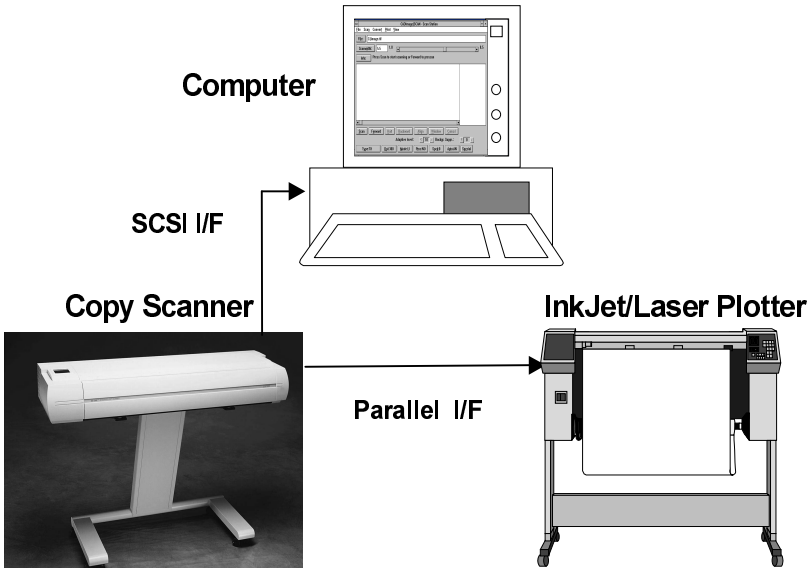


Figure 1-3 Copy Scanner and PC in Scan-to-file configuration

For further information on how to operate the scanner when scanning-to-file, please refer to the CADImage/SCAN User's Guide and the later chapter in this guide on: "Scanning-to-File".

2. Installation

Installation and initial setup of the Copy Scanner is described in the following sections.

2.1 Copy Scanner Interface kit

The I/F kit supplied with the Copy Scanner contains:

- Power cord
- Standard Centronics parallel interface (IEEE1284) cable.

2.2 Connection Panel

The Copy Scanner standard connection ports are shown in figure 2-1 and are located on the rear of the scanner. These are a 25-pin D-SUB parallel port, a standard 50-pin SCSI-2 Interface port, and a serial port which is dedicated for diagnostics and maintenance.

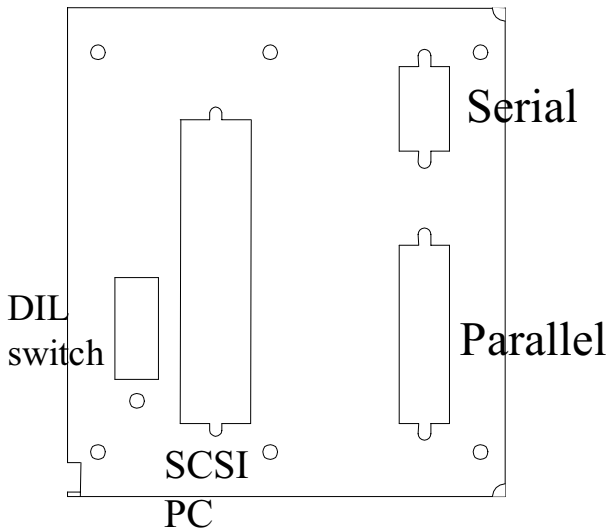


Figure 2-1 Copy Scanner standard interfaces

2.2.1 Connecting the Copy Scanner

Remove the power cords from both the Copy Scanner and Plotter.

Connect the Copy Scanner Centronics parallel port directly to the plotter parallel port.

Important: Before connecting the Copy Scanner power cord to an electrical outlet, be sure that the voltage selector switch just above the mains inlet is set to the correct voltage.

Connect both the Copy Scanner and Plotter power cords to an electrical outlet.

The SCSI Computer interface is dedicated for connecting the Copy Scanner to a PC or Workstation (requires the optional PC/Workstation interface Kit) when using the Copy Scanner to scan originals to files (see "Scan-to-file Operation and Installation" chapter for detailed information).

2.3 Powering on

The power switch and plug is located at the rear of the scanner.

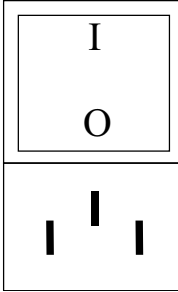


Figure 2-2 Power Switch and Plug

To power on the Copy Scanner, follow these steps

- Make sure the power cord is connected
- Press the power switch to the I (On) position

The power-up sequence can now be followed on the touch screen located on the left side of the scanner.

1. Initially the “Powering Up” message will be displayed after a few seconds.
2. Progressing to the Copy Scanner self test, several messages indicating the individual tests are displayed.
3. Following the successful completion of the self test, the Main Copy screen shown overleaf is displayed.

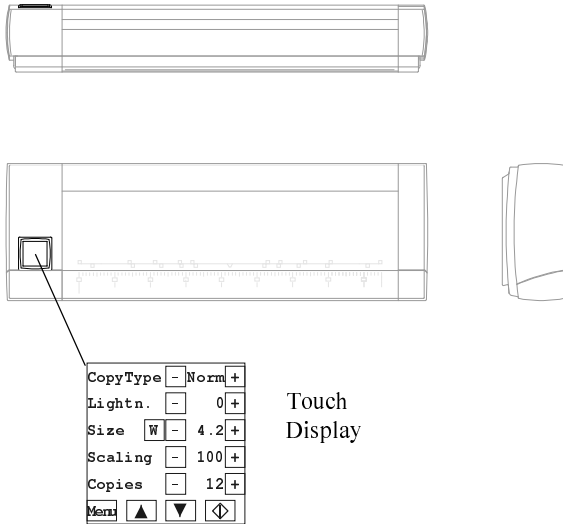


Figure 2-3 Touch Screen Location

2.4 Setting up for the first time

To setup the Copy Scanner for the first time, you must enter the following information:

- Copy Configuration settings.
- Operator Panel settings.
- Make a test plot and copy to verify the setup.

2.4.1 Copy Configuration settings

To setup the Copy Configuration (starting from the Main Copy screen) press “**Menu**”, “**Settings**”, “**Options**” and “**Copy Config.**” to display Copy Configuration screen. Enter the following information by pressing the **+** and **-** buttons for each of the items listed on the sub-screens. (Exit the sub-screens by pressing “**Prv**”).

Scanner *Feed:* Auto
Setup: *Note:* All other settings in this menu should be set to zero. They are for advanced use only.

Plotter: *Custom:* User setup of a plotter (see below)
Ccomp Solus4: CalComp Solus 4 (laser)
CComp TJ720c: CalComp TechJet 720c (inkjet)
EnCad NJ PRO EnCad NovaJET PRO series
Encad NJ PROe EnCad NovaJET PROe series
HP DJ 750C+: HP DesignJet 750C+ (inkjet)
HP DJ 2x00CP: HP DesignJet 2000 series (inkjet)
JRL 1220/9000: JRL 1220E and JRL 9000 (laser)
Oce G9055-S: Oce G9055-S (thermal)
Xerox 2230ij: Xerox 2230ij (inkjet)
Xerox 8830: Xerox 8830 (laser)
 Select your plotter from the list. If not found, select a similar one, or select "Custom" for your own setup of plotter parameters (See Plotter Setup below, and Chapter on: "Setup Options and Diagnostics" for details).

Plotter Only if "Custom" plotter has been selected above, can
Setup: the settings be modified:
Plot Dpi: Set to max. Dpi of plotter
Format: Plot Format: RLC, CCRF, CALS(Grp4-type1), TIFF Grp4, RTL, RTL2(RTL Grp4), RTL3(CMYK)
Header: Format Header: Std., Spc1 (plot CALS after scan, if paper length undefined)
PlotCtrl: Plot Control Format: None, P JL (HP), P JL2(Xerox), P JL3(HP2x00), CDCL
 PortMode: Parallel Port type: Std., Fast (Centronics), ECP
Note: Plotter Margin settings in this menu should be set to zero. They are for advanced use only.

In the Copy Config. Screen press "**Sto**" to save all changes. Return to the Main Copy screen by pressing "**Main**".

2.4.2 Operator Panel settings

To setup the Operator Panel (starting from the Main Copy screen) press **"Menu"**, **"Settings"**, **"Options"** and **"Operator Panel"** to display Operator Panel settings screen. Enter the following information by pressing the and buttons in front of each item listed on the screen:

DisplAdj: adjust this setting to give the best display brightness.

Language: US

Unit: Inch

Drw.Size: Both

TimeOut: 5

Press **"Sto"** to save changes, and return to the Main Copy screen by pressing **"Main"**.

2.4.3 Verify your setup

To verify the setup by printing a test print (starting from the Main Copy screen) press **"Menu"**, **"Settings"**, **"Options"** and **"Diagnostic"** to display the diagnostics screen.

Press "Plot Test" to print out the test image on the connected plotter (the test image shows a diagram of all the menus of the Copy Scanner).

Return to the Main Copy screen by pressing **"Main"**.

2.4.4 Verify Black and White Copy Operation

To verify the correct copy operation in black and white mode,

- Insert an original into the scanner's paper path, aligning it to the zero mark on the scanner front.
- Enter the below settings in the Main Copy screen:
 - CopyType:** Norm
 - Lightness:** 0
 - Size:** If you know the size of your original:
 - Press the SizeMode button (left of the minus button) until it shows 'S'
 - Select the correct paper size using and buttonsif you do not know the size of your original:
 - Press the SizeMode button (left of the minus button) until it shows 'W'
 - Read the width of your original of the front of the scanner, and enter this value into the field
 - Scaling:** 100
 - Copies:** 1
- Press the copy button in the lower right corner of the Main Copy screen to start the copy process. The copy process can be aborted by pressing the up or down arrow key.

2.4.5 Verify Color Copy Operation

To verify the correct copy operation in color mode, you have to initiate a color CopyType by creating and store a Color Map, to get optimized color matching for the plotter and paper type you are using.

2.4.5.1 Creating a Color Map

To create a color map (starting from the Main Copy screen) press **“Menu”**, **“Settings”**, **“CopyTypes”** and **“Create Map”** to display the Create Map screen.

- Print out a color patch reference sheet by pressing **“Plot Sheet”**:
Note: If you can select Print Quality on your plotter’s Operating Panel, set this to Best.

With a pair of scissors cut the color patch reference sheet so that the color patches including the front arrow have a surrounding margin of 0.5 inch (1.25 cm).



- Scan and initiate the color CopyType with the Color Map:
Insert the color patch reference sheet into the scanner, face down and the arrow at approximately 1.4 position (Scanner Units printed on front of the scanner). Perfect alignment is important, also make sure that the color patch reference sheet is perfectly perpendicular to the scanner’s insertion slot, to omit any skew during scanning.

Set **“New Map”** to the color CopyType: **CoCo**

Press **“Scan Sheet and Store Map”** to initiate the color CopyType CoCo with the color map. Note that this operation will take several minutes.

To return to the Main Copy screen press **“Prv”** followed by **“Main”**.

2.4.5.2 Performing a Color Copy

- Insert an original into the scanner's paper path, aligning it to the zero mark on the scanner front.
- Enter the below settings in the Main Copy screen:
 - CopyType:** Set this to the Color CopyType that matches the color map you created above. (All Color CopyTypes start with "Co").
 - Lightness:** 0
 - Size:** If you know the size of your original:
 - Press the SizeMode button (left of the minus button) until it shows 'S'
 - Select the correct paper size using the  and  buttonsif you do not know the size of your original:
 - Press the SizeMode button (left of the minus button) until it shows 'W'
 - Read the width of your original of the front of the scanner, and enter this value into the field
 - Scaling:** 100
 - Copies:** 1
- Press the copy button in the lower right corner of the Main Copy screen to start the copy process. The copy process can be aborted by pressing the up or down arrow key.

3. Copy Operation

3.1 Introduction

The operation of the Copy scanner is based on the user friendly touch screen approach, starting with the *Main Copy screen* providing all operator interactions necessary for single original copying, plus a menu button giving access to the other operator interaction screen, the *Collate Copy screen* for multiple original copying. Also the menu button gives access to the *Scanning screen* and a number of *Settings.. screens* for customization of the Copy Scanner.

The following screens are selectable:

- Main Copy screen (single original copying)
- Collate Copy screen (multiple original copying)
- Scanning screen (scan to file)
- Settings... screens

The Settings... screens are for customization of your Copy Scanner and not accessed during normal copying operation:

- CopyTypes customizing screen (add up to ten customized CopyTypes).
- Sizes customizing screen (add up to ten customized sizes for originals).
- Scalings of copies customizing screen (add up to ten customized scalings).
- Options... screens:
 - Copy Configuration screen
 - Operator Panel customizing screen
 - Diagnostics screen

The touch screen operator interface has been designed with ease of use in mind in order to provide an intuitive and friendly interface, allowing easy access to the full power of the Copy Scanner.

3.2 Touch Screen Operation

If a screen has been left untouched for more than a few minutes, it will return to the *Main Copy screen*. However for the *Collate Copy screen* and the *Scanning screen* there is no time-out.

Changing the settings for a menu item

For a menu item, you toggle through it's range of settings with the two buttons, [+] and [-]. A button will automatically be disabled at the end of it's range, when no more values can be selected, the button changes to an empty box.

Alternatively the pop-up Quick-Entry screen provides a faster and more convinient method of changing the setting for a menu item, by touching it's indicator field (between the [+] and [-] buttons).

Example:

Main Copy screen, with pop-up Quick-Entry setting of the Lightness, and no. of copies count setting by the [+] and [-] buttons:

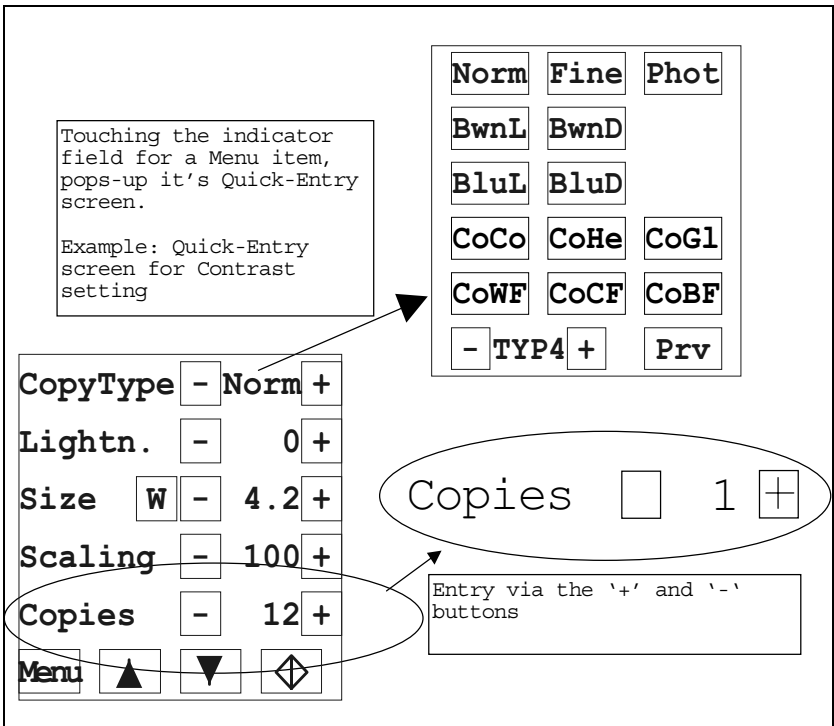


Figure 3-1 Main Copy Screen Entry Methods

3.2.1 Quick-Entry pop-up Screens

The pop-up Quick-Entry screens allows a convenient direct way of entering a setting into any of the menu items in the *Main Copy Screen* and the *Collate Copy Screen*.

You pop-up the associated Quick-Entry screen by touching the indicator field for a menu item (between the and buttons).

Selecting a button in the top part of a Quick-Entry screen will enter this setting in the menu item, and return to the *Menu Screen*.

Selecting the **Prv** key returns to the *Menu Screen* without changing the value.

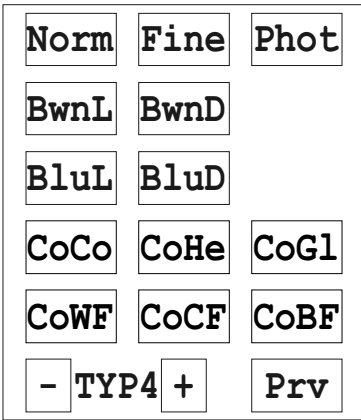


Figure 3-2 CopyType Quick-Entry Screen

The **CopyType, Size, and Scaling** Quick-Entry screens has a field at the left bottom part, for selection of a customized user setup by the and buttons, afterwards touching the field between the and buttons will enter the selection into the menu item, and return to the *Menu Screen*.

The Calculator screen pop-up is available in all the *Menu Screens*, for menu items requiring a variable number setting,

Enter the number, and press the **Ent** key to return to the menu with the new value.

Pressing the **Prv** key returns to the *Menu Screen* without changing the value.

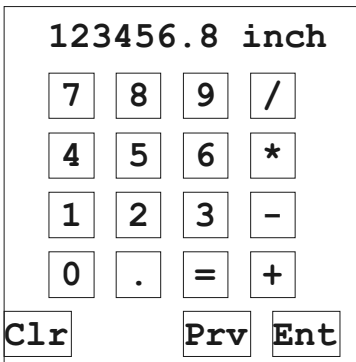


Figure 3-3 Calculator Quick-Entry Screen

3.3 Main Copy Screen

The main copy screen contains all the functions required for single original copying. These are selection of:

- CopyType
- Lightness setting
- Size of original
- Reduction/Enlargement percentage
- Number of copies

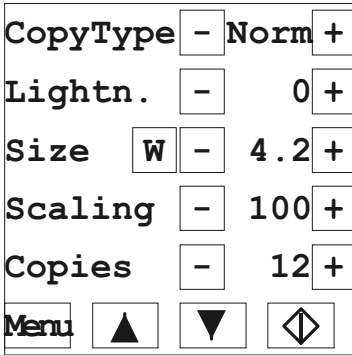


Figure 3-4 Main Copy Screen

Pressing the \oplus or \ominus button changes the setting for the corresponding menu item (or touch the indicator field to pop-up the Quick-Entry screen).

Pressing the \boxed{W} button toggles the Size indication between Width \boxed{W} or Standard Sizes \boxed{S} .

Pressing the $\boxed{\text{Menu}}$ button switches to the menu selection screen.

Pressing the $\boxed{\triangle}$ button aborts copying and reverses the original.


Pressing the $\boxed{\nabla}$ button loads the original, or aborts the copy process and forwards the original.

Pressing the $\boxed{\diamond}$ button starts the copy process.

3.3.1 Copying

Normal copying is controlled solely from the Main Copy screen. To make one or more copies of an original follow the steps below:

1. Insert the Original

Place the original face down and leading edge forward on top of the Copy Scanner (the side of the original aligned with the zero point on the insertion slot measurement scale), slide the original gently into the insertion slot. If “AutoFeed” has been selected during setup of settings (default) the original will automatically be loaded into the start position, when the paper is sensed to be fully slid into the insertion slot. If “AutoFeed” has been deselected press the forward  button when the paper is fully slid into the insertion slot, to load it into the scanner

2. Select the CopyType

The CopyType is selectable from three groups: Standard B/W CopyTypes (monochrome copying), Standard color CopyTypes (color copying) and user customizable CopyTypes (Color or monochrome copying).

Selecting the CopyType will automatically set up all the parameters optimal for copying that type of document, e.g Image enhancement method, initial value for Lightness and Color Adjustments:

B/W standard CopyTypes for monochrome copying:

- Norm:** Normal works well for most normal types of drawings on paper or transparents (this is the default selection).
- Fine:** Fine will work only with good quality drawings, and pick up thin fine lines.
- BwnL:** Brown Light, for light brown transparents/sepia
- BwnD:** Brown Dark, for dark brown transparents/sepia
- BluL:** Blueprint Light, for light blueprints/vellum
- BluD:** Blueprint Dark, for dark blueprints/vellum
- Photo:** Photo, for monochrome photos etc. with many graytones, this selection can also be useful with very poor quality drawings.

Color Standard CopyTypes for color copying (a color CopyType must previously to first use be initiated with a color map, see later chapter on: Customization, Create Map):

- CoCo:** Color copy on inkjet Coated paper
- CoHe:** Color copy on inkjet Heavy coated paper

- CoGI:** Color copy on inkjet Glossy photo paper
- CoWF:** Color copy on inkjet White glossy Film.
- CoCF:** Color copy on inkjet Clear Film.
- CoBF:** Color copy on inkjet Backlit display Film.





User customized CopyTypes (color or monochrome copying):

Typ0-9 See later chapter on customization for details.


3. Setting the Lightness


Lightness is selected in the range: -3,-2,-1,0,+1,+2,+3,+4,+5,+6. The default setting is zero, working well with most originals.

Increasing the Lightness setting makes the copy lighter, and decreasing the Lightness setting makes the copy darker.

Note: if a color CopyType was selected above, touching the indicator field (between the  and  buttons) will pop-up the Quick-Entry menu for easy entry of Color Adjustments, the Lightness must be set using the  and  buttons.

4. Setting the Size

You can select Width , and set the width of the original as seen on the scanner insertion slot measurement scale in the range: **1.0 ... 8.5**. The length of the original will automatically be detected when copying.

Alternatively, you can select Standard Sizes , and select between a list of international standard drawing sizes (up to 10 user customizable original sizes: Siz0-9 can be added, see later chapter on: Customization for details).

5. Setting the Scaling

Scaling is selected between a list of predefined Reduction/Enlargement percentages in the range: **25% ... 400%**, a selection of 100% copies with no scaling (up to 10 user defined reduction/enlargement percentages: Uxxx can be added, see later chapter on: Customization for details).

6. Setting the number of Copies

Number of copies is selected in the range: **1 ... 99**.

7. Start Copying

Press the  button to start copying.

3.4 Trial Copy

Pressing the button in the *Main Copy* screen displays the selection menu with the “**Trial Copy**” button:

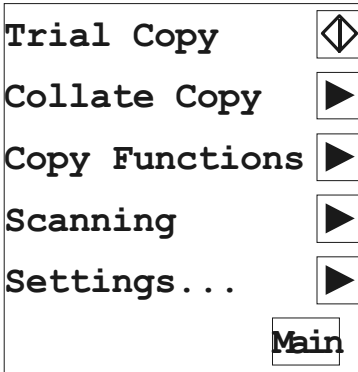


Figure 3-5 Trial Copy button

Trial Copy

Pressing the button, provides a copy of a short strip of the original, for visual control of the effect of your copy settings.

3.5 Collate Copy Screen

The Collate Copy screen is displayed when pressing “**Menu**” in the Main Copy screen, followed by “**Collate**” in the next screen

CopyType	-	Norm	+	
Lightn.	-	0	+	
Size	W	-	4.2	+
Scaling	-	100	+	
Copies	-	12	+	
Add	▲	▼	Main	

Figure 3-6 Collate Copy Screen

Please refer to the *Main Copy screen* previously described, as the *Collate Copy screen* has identical copy functions, plus the **Add** button to create a set of multiple originals and making a number of copies of the set.

The Collate Copy function copies a set of originals, by scanning each original into the set by pressing the **Add** button. As long as you choose **Add**, you add an original to the current set of input originals.

Having scanned the last original into the set, the **Main** button will pop-up a dialog (Plot Yes/No) which activates the printing of copies of the number of sets, specified in the Copies field in the above *Collate Copy Screen*. Afterwards is returned to the *Main Copy Screen*. The output printing is done in collated order (e.g. copies within each set are printed in the order you scanned them in).

Pressing the **▲** button aborts the scanning (but not previously scanned originals) and reverses the original.

Pressing the **▼** button loads the original, or aborts the scanning (but not previously scanned originals) and forwards the original.

Otherwise the *Collate Copy screen* has the same functions as the *Main Copy screen*.

Example:

Making 10 copies of a set of 3 drawings. This is done by inserting the first drawing into the scanner and pressing . After the first drawing has been scanned, insert the second drawing and press and finally insert the last drawing and press .

Now set the number of copies to 10 and press the button, and press 'Yes' in the pop-up dialog to start the printing process.

3.5.1 Copy Functions

The *Copy Functions* screen is displayed by pressing “**Menu**” in the *Main Copy* screen, followed by “**Copy Functions**” in the next screen.

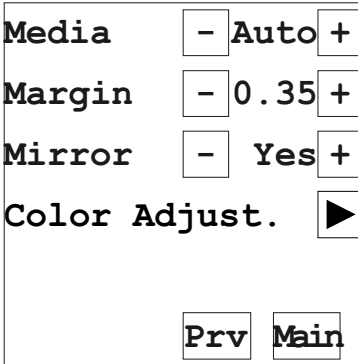


Figure 3-7 Copy Functions Screen

Media: Selects paper tray/roll on the plotter: Auto, 1, 2,...,9 (if supported by plotter)

Margin: Deducts a margin around the original, e.g. used to remove the drawing frame from a copy. The margin is setable in increments of .05 units (as displayed on front of the Copy Scanner, corresponding to 1/5" or 5mm) up to a maximum margin of 1.0 unit (corresponding to 4" or 100 mm). The margin is deducted from your selected original size, if using 'auto length' the margin will not be deducted from the trailing edge.

Mirror: Selects mirroring of the original while copying. It is sometimes better to copy an original on transparent or film from the *backside*, due to the toner being on that side. The mirror option will orientate the copy correctly in this case.

Color Adjust: Only active If one of the six color CopyTypes is selected in the **CopyType** field. The printed output colors can be user modified to obtain optimal color copying with various originals. The standard color CopyTypes all use the default setting (0), in all entries in the *Color Adjustment Screen*, and will work well with both photos, artwork, posters and graphics.

AddBlack	-	0	+	
AddWhite	-	0	+	
Sharpen	-	1	+	
Saturate	-	0	+	
ColBal	R	-	0	+
Prv				

Figure 3-8 Color Adjustments Screen

You can modify the default settings by entering new values in the *Color Adjustment Screen*, most often you will want to:

- **Add Black** (+3..0..-3, default zero): Use positive values to emphasize text and details in color graphics, or negative values to reduce the black emphasis in pictures and other color originals with primarily continuous tones. The default value (0) produces good results with both color graphics and continuous tone pictures.
- **Add White** (+3..0..-3, default zero): Use positive values to increase the white background portion by removing the very light colors, or negative values to decrease the white background portion and emphasize the weakest light colors. The default value (zero) produces a good clean white background and maintains most of the light colors.
- **Sharpen:** (+3..0..-3, default zero) use positive values to sharpen text and fine lines, or negative values to soften the original to compensate for printed originals containing halftoning and dither patterns (moire). The default value (zero) is no sharpening and no softening.

The above settings enhances the copy, but does not change the basic color relations between the scanned original and the printed copy.

The remaining settings: “Saturation” and “Color Balance” changes the color relations, and is only used to obtain more optimal results with difficult originals:

- **Saturation** (+3..0..-3, default zero): Changes the Color saturation, negative values are cooler colors and positive values warmer colors. The default value (zero) provides for unchanged colors.
- **Color Balance** (+3..0..-3, default zero): Each of the Red, Green or Blue colors can be changed individually. Negative values reduces the content of the color and positive values increases the content of the color. The default value (0) provides for unchanged color.

3.6 Scanning-to-file Screen

The Scanning-to-file screen is displayed by pressing “**Menu**” in the Main Copy screen, followed by “**Scanning**” in the next screen.

Please refer to the later chapter on scanning-to-file, for detailed operation and installation of the Copy Scanner with your computer.

When this screen is entered the Copy Scanner enters the optional scan-to-file mode (requires a connected PC or workstation with the CADImage/SCAN software), and provides the scanner control panel with two keys: The Paper Reverse and Paper Feed/Forward.

The actual scanning and setup is completely controlled by the CADImage/SCAN software on the PC/Workstation. Please refer to the CADImage/SCAN User’s Guide (part of the optional PC/Work-station interface kit).

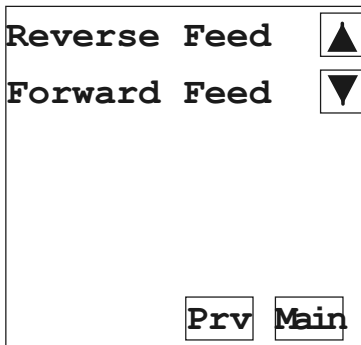


Figure 3-9 Scan-to-file Screen.

4. Adding User Customized Settings

Pressing “**Menu**” in the *Main Copy screen*, followed by “**Settings**” in the next screen, you are presented with a choice of three screens for adding customized settings to the standard settings selectable in the *Main Copy screen* and *Collate Copy screen*:

- CopyTypes customizing screen (add up to ten customized CopyTypes).
- Sizes customizing screen (add up to ten customized original sizes).
- Scalings of copies customizing screen (add up to ten customized scalings).

Common functions for all three customizing screens are:

Recall: Pressing the button recalls and displays all the settings stored for a CopyType, Size or Scaling respectively.

Store: Pressing the button stores all the settings on the display into a user defined CopyType, Size or Scaling respectively . The store function is only available when the top menu field of the customizing screen shows a user entry e.g TYP0-9, SIZ0-9 or Uxxx respectively.

By pressing the button the previous menu appears.

By pressing the button you are returned to the *Main Copy Screen*.

4.1 Initiate or Add a Customized CopyType

The CopyType screen allows initiating of standard color CopyTypes and adding customized CopyTypes:

- Initiate a standard color CopyType (CoCo ... CoBF) for color copying by creating a color map.
- Add a customized CopyType for B/W or color copying (TYP 0-9).

CopyType	-	Norm	+
Lightn.	-	0	+
Method	-	Gr-A	+
Color Adjust.			▶
Create Map			▶
Rcl	Sto	Prv	Main

Figure 4-1 CopyTypes Screen

Note: Setup changes will only take effect when stored (Sto) into one of the user CopyTypes (TYP0 to TYP9), and afterwards selected as active in the *Main Copy Screen* or the *Collate Copy Screen* previous to copying.

4.1.1 CopyTypes

Standard CopyTypes are preprogrammed with the copy scanner, and directly selectable by their predetermined names in the CopyType menu point in the *Main Copy Screen* and the *Collate Copy Screen*.

The seven standard B/W CopyTypes are specified by the originals they are designed to give optimal results with:

B/W CopyType	Description
Norm	Normal paper and transparents
Fine	Highly legible good quality drawings
BwnL	Light Brown Transparents (Sepia)
BwnD	Dark Brown Transparents (Sepia)
BluL	Light Blueprints
BluD	Dark Blueprints
Phot	Photo mode

The six standard Color CopyTypes are only available with the Color Copy Scanners, and requires initiating with a color map before functioning correctly (see later: "Creating a Color Map")

The standard Color CopyTypes are specified by the printing paper used in the inkjet printer :

Color CopyType	Description
CoCo	Coated Paper
CoHe	Heavy Coated Paper
CoGl	Glossy Photo Paper
CoWF	White Glossy Film
CoCF	Clear Film
CoBF	Backlit Display Film

The *CopyType screen* allows customizing of the Lightness, Image enhancement method and color settings, and to store the settings as a user defined **CopyType** for easy recall in the *Main Copy Screen* and the *Collate Copy Screen*.

Ten user customized CopyTypes are available:

Custom CopyType	Description
TYP0-9	10 User customized CopyTypes

4.1.2 Creating a Color Map

The range and visual impression of printable colors are very dependent on your inkjet printer/plotter model, ink, printing media, printing resolution etc.

The central concept of the Color Copy Scanner is that you create a calibrated matched color map for each of your printing media (e.g. plain paper, coated paper, glossy paper, film) and store each color map in one of the six predefined standard color CopyTypes.

Important: Always ensure that “Best” print quality, and the loaded “paper type (media)” is selected on the plotter operator panel before making a map.

To create a color map (starting from the Main Copy screen) press “**Menu**”, “**Settings**”, “**CopyTypes**” and “**Create Map**” to display the Create Map screen.

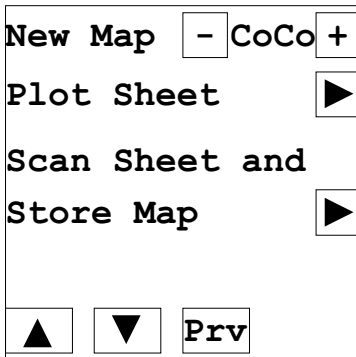


Figure 4-2 Create Map Screen

Print out a color patch reference sheet by pressing “**Plot Sheet**”. With a pair of scissors cut the color patch reference sheet such that the color patches including the front arrow have a surrounding margin of 0.5 inch (1.25 cm).

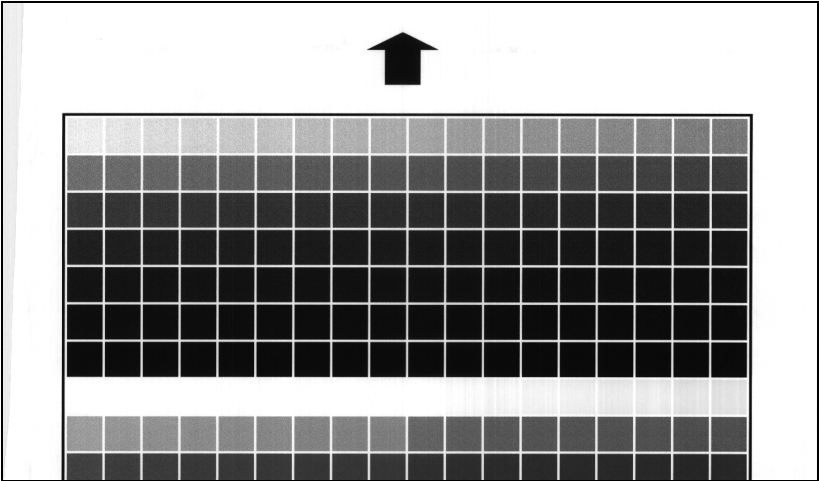


Figure 4-3 Color Patch Reference Sheet (cut out)

Insert the color patch reference sheet into the scanner, face down and the arrow at approximately 1.4 position (Scanner Unit printed on front of the scanner).

Perfect alignment is important, also make sure that the color patch reference sheet is perfectly perpendicular to the scanner's insertion slot, to omit any skew during scanning.

Set "**New Map**" to the standard color CopyType you want to initiate with the color map.

The six possible choices of color CopyTypes symbolizes different printing paper types:

Color CopyType	Description
CoCo	Coated Paper
CoHe	Heavy Coated Paper
CoGl	Glossy Photo Paper
CoWF	White Glossy Film
CoCF	Clear Film
CoBF	Backlit Display Film

If you do not know the type of paper you are using, or you always use only one type, just select the first color CopyType: "CoCo".

If you know the type of paper you are using, select the CopyType name that matches your paper.

Note: The color CopyType names are symbolic only, as long as you remember which printing paper you used to create the initiating color map for the color CopyType, you can use any of the names.

Press **“Scan Sheet and Store Map”** to create the color map. Note that this operation will take approximately 10 minutes.

To return to the Main Copy screen press **“Prv”** followed by **“Main”**.

To verify your initiated CopyType, select it in the *Main Copy Menu* and make a copy of the the color patch reference sheet to the inkjet plotter, the copy should be very similar to the original.

Note: If a "Map Error" message pops up in the display, an error occurred during map creation (possibly that the color patch reference sheet was not perfectly aligned) and you must repeat above initiation of the color CopyType.

To alter the color map you have previously initiated a standard color CopyType with, simply create a new map as described above for that CopyType (the new map will overwrite the old map).

4.1.3 Add a Customized CopyType

The CopyType screen allows customizing of the Lightness, Image enhancement method and color settings, and to store the settings as a user defined CopyType:

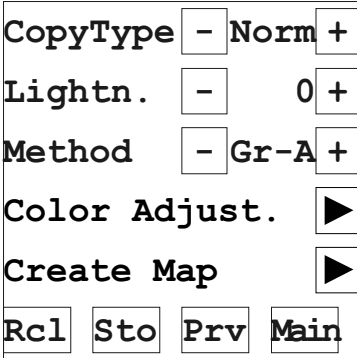


Figure 4-4 Customize CopyTypes Screen

Note: Setup changes will only take effect when stored (Sto) into one of the user Sizes (TYP0 to TYP9), and afterwards selected as active in the *Main Copy Screen* or the *Collate Copy Screen* previous to copying.

To setup a customized user CopyType (TYP0-9), recall a standard or user CopyType (which already provides a reasonable copy result) by selecting it in the CopyType field and press the "Rcl" button to recall it's settings to the display.

Modify the settings and afterwards select a user CopyType (TYP0-9) in the CopyType field and press the "Sto" button to store the modified settings under the new user CopyType.

Test the copy result by selecting your new CopyType in the Main Copy screen and make a copy, repeat the procedure until an optimal result is obtained.

CopyType: CopyType selects in the list of predefined standard and user CopyTypes. e.g, Normal, Brown Transparent (sepia), Blueprint, CoCo, CoHe, TYP0 etc. You can walk through the list by pressing the \oplus or \ominus button respectively, recall settings by pressing the Rcl button.

Recalling and modifying settings for a CopyType, has no immediately effect. To make the new settings available in the Copy screens, select one of the user CopyTypes (TYP 0-9) in the CopyType field, and store the settings by pressing the "Sto" button.

A stored customized user CopyType is displayed as TYPd, where d is a number between 0 and 9.

Custom CopyType	Description
TYP0-9	10 User customized CopyTypes

Lightness: Lightness is selectable in the range: **-3,...,0,...+6**. for both B/W and color CopyTypes. The lower the Lightness value is, the darker the copy becomes. Normal default setting is zero.

The Lightness setting stored with a CopyType, becomes the initially displayed setting in the Copy Screens when that CopyType is selected. The initial Lightness setting can allways be altered in the Copy screens to achieve the optimal copy result.

Method: The copying Image enhancement method is selectable between four B/W metods (used with standard and customized B/W CopyTypes) and six color methods (used with standard and customized color CopyTypes):

- **Thr:** Thresholded mode, no image enhancement. Use with very good quality drawings.
- **BW-A:** 2D-adaptive Image enhancement in black & white line mode. Use with medium or dark paper drawings, blueprints, vellums, dark transparents, and dark brown Transparentsepias.
- **GR-A:** 2D-Adaptive Image enhancement with ADL (Area Diffusion Logic) shades of gray. Use with light, normal or medium paper drawings, gray transparents, and light brown Transparentsepias
- **Phot:** Monochrome halftone mode with automatic setting of brightness range (white and black points). Use with B/W pictures and drawings with very smeared background.
- **CoCo, CoHe, CoGI, CoWF, CoCF, CoBF:** Color map modes, requires that the corresponding standard color CopyType has been initiated by creating a color map for the printing paper. Use for color copying to the inkjet printer with the corresponding printing paper loaded.

Color Adjust: Only active if one of the six color map modes is selected in the **Method** field. The printed output colors can be user modified to obtain optimal color copying with various originals.

AddBlack	-	0	+	
AddWhite	-	0	+	
Sharpen	-	1	+	
Saturate	-	0	+	
ColBal	R	-	0	+
				Prv

Figure 4-5 Color Adjustments Screen

- **Sharpen:** (+3..0..-3, default zero) use positive values to sharpen text and fine lines, or negative values to soften the original to compensate for printed originals containing halftoning and dither patterns (moire). The default value (zero) is no sharpening and no softening.
- **Add Black** (+3..0..-3, default zero): Use positive values to emphasize text and details in color graphics, or negative values to reduce the black emphasis in pictures and other color originals with primarily continuous tones. The default value (0) produces good results with both color graphics and continuous tone pictures.
- **Add White** (+3..0..-3, default zero): Use positive values to increase the white background portion by removing the very light colors, or negative values to decrease the white background portion and emphasize the weakest light colors. The default value (zero) produces a good clean white background and maintains most of the light colors.

The above settings enhances the copy, but does not change the basic color relations between the scanned original and the printed copy.

The remaining settings: "Saturation" and "Color Balance" changes the color relations, and is only used to obtain more optimal results with difficult originals:

- **Saturation** (+3..0..-3, default zero): Changes the Color saturation, negative values are cooler colors and positive values warmer colors. The default value (zero) provides for unchanged colors.
- **Color Balance** (+3..0..-3, default zero): Each of the Red, Green or Blue colors can be changed individually. Negative values reduces the content of the color and positive values increases the content of the color. The default value (0) provides for unchanged color.

4.2 Add a customized User Size

The sizes setup screen allows setting of the four original size parameters, and to store the settings as a user defined **Size**:

- Width
- Length
- Top Adjustment
- Side Adjustment

Note: Setup changes will only take effect when stored (Sto) into one of the user Sizes (SIZ0 to SIZ9), and afterwards selected as active in the *Main Copy Screen* or the *Collate Copy Screen* previous to copying.

Size	-	E2	+
Width	-	2.0	+
Length	-	1.1	+
Top Adj	-	2.2	+
Side Adj	-	4.0	+
Rcl	Sto	Prv	Main

Figure 4-6 Customize Sizes Screen

The allowable range for the parameters are as specified in the following table:

Table 4-1 Size ParameterRange

	Scan Units	Inch	mm
Width	0.2-8.5	1-36	25-914
Length	Auto or 0.2-92.7	Auto or 1-393	Auto or 25-9982
Top Adj.	0-92.7	0-393	0-9982
Side Adj.	0-8.5	0-36	0-914

Size: Size selects in the list of predefined and user defined original sizes. You can walk through the list by pressing the $\boxed{+}$ or $\boxed{-}$ button respectively, recall settings by pressing the Rcl button.

Recalling and modifying the Width, Length, Top and Side settings for a Size, has no immediately effect. To make the new settings available in the Copy screens, select one of the user Sizes and store the settings by pressing the Sto button.

A stored customized user Size is displayed as SIZd, where d is a number between 0 and 9.

Table 4-2 Paper Size Table

Size	Paper Format
A-1	8.5x11 inch
A-2	9x12 inch
B-1	11x17 inch
B-2	12x18 inch
C-1	17x22 inch
C-2	18x24 inch
D-1	22x34 inch
D-2	24x36 inch
E-1	34x44 inch
E-2	36x48 inch
A0	841x1189 mm
A1	594x841 mm
A2	420x594 mm
A3	297x420 mm
A4	210x297 mm
SIZ0-9	10 User customized sizes

Width: The width specifies the width of the original to copy and is specified in either scan unit, inch or mm, depending on the actual unit preference setting in the Copy Configuration screen.

Length: The length specifies the length of the original to copy and is specified in either scan unit, inch or mm, dependently on the actual unit preference setting in the Copy Configuration screen.

If a length other than "Auto" is specified, and the actual length of an original to be copied is shorter - the copy will automatically adapt, if it is longer - the copy will cut at the specified length.

Selecting "**Auto**" means that the length will automatically be set to fit the actual length of the original to be copied.

Top Adjustment: The Top Adj. specifies the offset from top edge of the original, from where the copying should start, and is specified in either scan unit, inch or mm, dependently on the actual unit preference setting in the Copy Configuration screen.

Side Adjustment: The Side Adj. specifies the offset from the side of the original where the copying should start, and is specified in either scan unit, inch or mm, dependently on the actual units preference setting in the Copy Configuration screen.

4.3 Add a Customized User Scaling

The Setup User Scaling screen (Reduction/Enlargement) allows setting of a scale percentage between 25% and 400% in 0.1% increments, and to store the setting as a user defined **Scaling**:

- Scale% (Reduction/Enlargement percentage)
- Set 1/10 of a %
- Set 1/1 of a %
- Set 10/1 of a %

Note: Setup changes will only take effect when stored (Sto) into one of the user Sizes (Uxxx), and afterwards selected as active in the *Main Copy Screen* or the *Collate Copy Screen* previous to copying.

Scaling	-	U172	+
Scale%		172.7	
000.X	-	1.1	+
00X.0	-	2.2	+
XX0.0	-	4.0	+
Rcl	Sto	Prv	Main

Figure 4-7 Customize Scalings Screen

Scaling: Scaling selects in the list of predefined and user defined scalings (reductions/enlargements). You can walk through the list by pressing the $\boxed{+}$ or $\boxed{-}$ button respectively, recall settings by pressing the Rcl button.

Recalling and modifying the scale% for a Scaling, has no immediately effect. To make the new settings available in the Copy screens, select one of the user scalings and store the settings by pressing the Sto button.

A stored customized user scaling is displayed as Uxxx, where xxx is the integer part of the stored Scale% (e.g. the setup user Scale% =172.3 will be displayed as Scaling U172).

Scaling	Description
25%	
45%	
50%	
64%	
70%	Actually 70.7 % scaling
78%	
100%	
129%	
133%	
141%	Actually 141.4 % scaling
154%	
200%	
400%	
Uxxx	10 User customized scalings

Scale%

Setting the Scale% (reduction/enlargement) is controlled by pressing the three button pairs representing the 1/10% changes, 1% changes and 10% changes. The actual scaling percentage is displayed in the Scale% line of the display.

5. Setup Options and diagnostics

Pressing “**Menu**” in the Main Copy screen, followed by “**Settings**” in the second screen, and finally selecting “**Options**” in the third screen , you are presented with a choice of three screens to set up options and diagnostic:

- Copier Configuration screen
- Operator Panel customizing screen
- Diagnostics screen

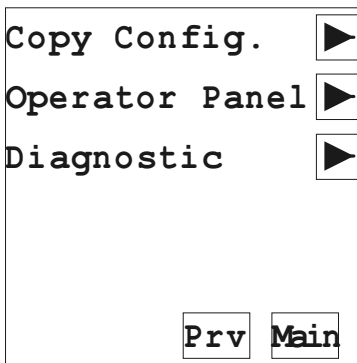


Figure 5-1 Options Screen

By pressing the button the previous menu appears.

By pressing the button you are returned to the main copy screen.

5.1 Setting up the Copier Configuration

The *Copier Configuration Screen* allows for selecting three setup sub-screens:

- Scanner Setup (Feed, Vert.Precision and Offsets)
- Plotter (select plotter model)
- Plotter Setup (Dpi, Format and Margins)

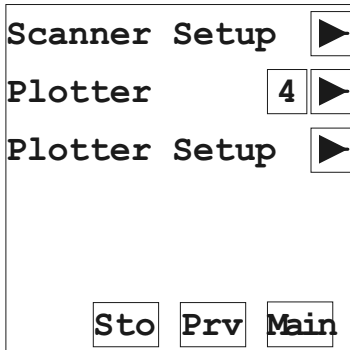


Figure 5-2 Copier Configuration Screen

Pressing the button stores all the settings in the sub-screens accessible from the *Copier Configuration Screen*.

5.1.1 Scanner Setup

In the Scanner Setup screen Feed, Vert.Precision, Top-, Bottom- and Left-Offset settings can be modified.

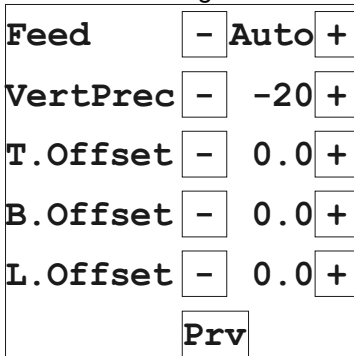




Figure 5-3 Setup Preferred Units Screen

Note: The settings on the *Scanner Setup Screen* are only stored when the  button in the previous *Copier Configuration Screen* is pressed.

Feed: The *Auto Feed* setting can be changed between manual feed and auto feed of the original. When manual feed is chosen the operator need to load the original into the Copy Scanner by manually pressing the  button in the *Main Copy screen* or *Collate Copy screen*. When Auto load is chosen the scanner automatically loads the original, when it is inserted into the scanner.

VertPrec: Vertical Precision is setable from -100 to 100, changing the vertical precision of the scanner in increments of 1/100%. The Vertical Precision is preset from the factory and should not be altered except when high precision adjustment originals and measurement equipment is available.

T.Offset: Top-Offset from paper detect switch to start of scan, 0.0-10.0mm (0.00-0.39")

B.Offset: Bottom-Offset from paper detect switch to end of scan, 0.0-10.0mm (0.00-0.39")

L.Offset: Left-Offset from default start of scanline to actual start of scanline, 0.0-10.0mm (0.00-0.39")

5.1.2 Plotter

Press the Plotter button in the *Copier Configuration Screen*, to display selection of plotters:

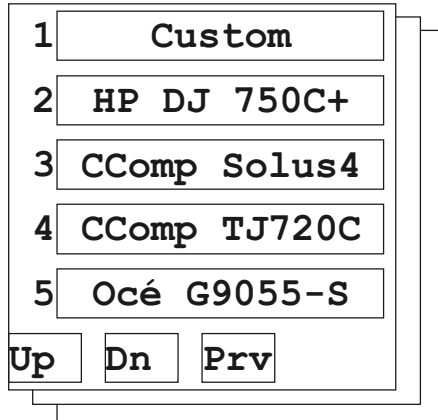


Figure 5-4 Plotter Selection Screen

Note: The selected plotter on the *Plotter Select Screen* are only stored when the button in the previous *Copier Configuration Screen* is pressed.

Up and **Dn** moves between selection screens, **Prv** returns to the Copy Config. Screen without changed selection. Pressing a Plotter button selects the plotter and returns to the Copy Config Screen. Examples of available selections are:

- | | |
|-----------------|--------------------------------------|
| - Custom | User setup of a plotter (see below) |
| - CComp Solus4 | CalComp Laser Plotter Solus 4 |
| - CComp TJ720 | CalComp InkJet Plotter TechJet 720c |
| - EnCad NJ PRO | EnCad NovaJet PRO series |
| - EnCad NJ PROe | EnCad NovaJet PROe series |
| - HP DJ 750C+ | HP Inkjet Plotter DesignJet 750C+ |
| - HP DJ 2x00CP | HP Inkjet Plotter HP2500,2000 models |
| - Océ G9055S | Océ Thermal Plotter G9055-S |
| - Xerox 2230ij | Xerox Inkjet Plotter 2230ij |
| - Xerox 8830 | Xerox Laser Plotter 8830 |

If your exact plotter is not found in the list select a similar one, or select "Custom" for your own setup of plotter parameters (See Plotter Setup below).

5.1.3 Plotter Setup

Press arrow to pop up display of settings for the above selected plotter, if "Custom" has been selected, the settings can be customized, all other plotters are view only.

Note: For aid in setting up a "Custom" plotter, browse the setup for a similar plotter defined in the selection list.

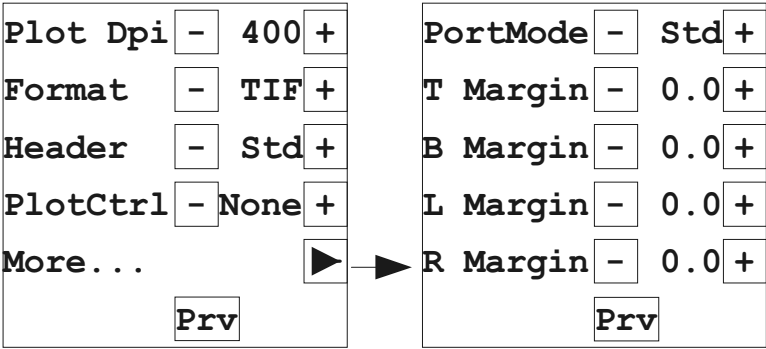


Figure 5-5 Plotter Setup Screens

Note: The settings for the "Custom" plotter in the *Plotter Setup Screen* are only stored when the **Sto** button in the previous *Copier Configuration Screen* is pressed.

Plot Dpi: The max. Dpi of the connected output plotter - can be set from 100 Dpi and up to: 427, 576 or 800 Dpi (FSS8300, FSC5010 and FSC8010 respectively), in one Dpi increments.

Format: The Format setting can be changed between different output formats supporting different plotter interface requirements: Contex RLC, Calcomp CCRF, CALS-Group4-Type1, TIFF-Group4, RTL (uncompressed), RTL2 (RTL Group4) and RTL3 (CMYK) formats.

Header: Plot Header/Trailer added to information sent to the plotter (e.g. Spc1 define scan completely before starting plot of CALS format, to cope with plotters requiring the length of the original in the header):

Std.: Standard, send data while scanning

Spc1: Send data after scanning is completed, if paper length is undefined in format (only CALS)

PlotCtrl: Plotter Control Language, some plotters require the use of pre-header setup in a separate control language:

None: default

PJL: HP-PJL

PJL2: Xerox-PJL

PJL3: HP-PJL HP-DesignJET 2000 series

CDCL: Calcomp Device Control Language

PortMode: Parallel Port communication supported by plotter (Std. is available with all plotters, the faster modes depends on model):

Std. Centronics

Fast Fast Centronics

ECP Extended Capability Port

T.Margin: Top-Margin of plotter , 0.0-99.9mm (0.00-3.93")

B.Margin: Bottom-Margin of plotter , 0.0-99.9mm (0.00-3.93")

L.Margin: Left-Margin of plotter , 0.0-99.9mm (0.00-3.93")

R.Margin: Right-Margin of plotter , 0.0-99.9mm (0.00-3.93")

If setting up "Custom" plotter, Press **Prv** once or twice to return to the *Copier Configuration Screen*, and press "**Sto**" to save changes .

5.2 Operator Panel Display Options

The display options allows for setting:

- Display brightness.
- Language (US-English,...)
- Units displayed (ScanUnits, Inch or mm.)
- Original sizes selectable (US, EU or Both)

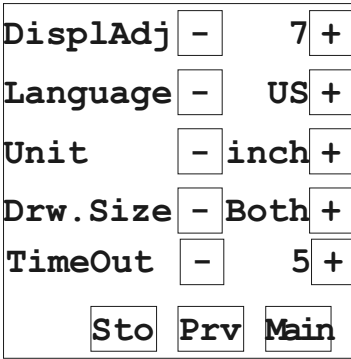


Figure 5-6 Setup Preferred Units Screen

Pressing the button stores all the settings on the display

DisplAdj: The display adjust brightens/darkens the Touch display (0 to 15).

Language: Preference setting for the operator panel language (can be toggled between US-English and others).

Unit: Preference setting for units displayed in the *Customize Sizes screen* , can be toggled between scanner units, inch, or mm.

Drw.Size: The Drw.Size entry enables you to filter which international standard drawing sizes should be selectable in the Size field in the *Main Copy* and the *Collate Copy screens*, can be toggled between US, EU or both.

TimeOut: The Copy Scanner automatically returns to the *Main Menu Screen* from sub menus after the TimeOut: Off, 0..10 minutes.

5.3 Diagnostic Screen

In the Diagnostic screen a Plot test button and an About button is available. When 'Plot Test' is pressed the scanner output a test plot, showing the complete CopyScanner menu diagram, to the connected plotter.

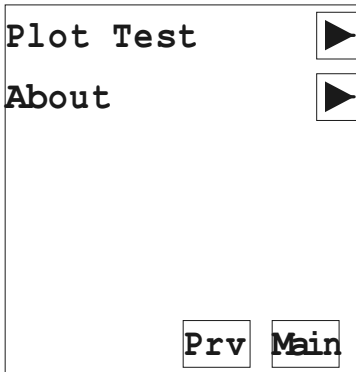


Figure 5-7 Diagnostic Screen

5.3.1 About Screen

The About screen displays information about the output plotter, the input Copy Scanner, and the current version of the firmware:

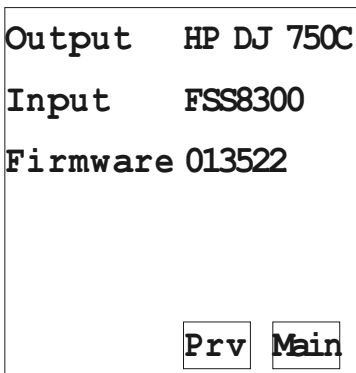


Figure 5-8 About Screen

6. Scan-to-file Operation and Installation

This chapter describes operation of the Copy Scanner when scanning-to-file on a PC/Workstation and the installation of the Copy Scanner on the PC/Workstation.

6.1 Scanning-to-file

The Scanning-to-file screen is displayed by pressing “Menu” in the Main Copy screen, followed by “Scanning” in the next screen.

When this screen is entered the Copy Scanner changes to the optional scan-to-file mode (requires a connected PC or workstation with the CADImage/SCAN software), and provides scanner control by two buttons: The ‘Reverse Feed’ and ‘Forward Feed’ buttons.

The actual scanning and setup is completely controlled by the CADImage/SCAN software on the PC/Workstation. Please refer to the CADImage/SCAN User’s Guide (part of the optional PC/Workstation interface kit).

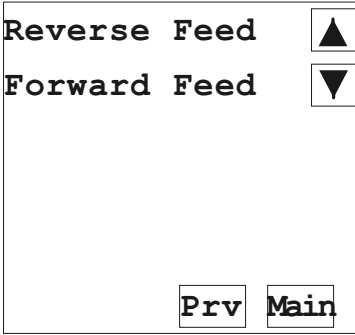


Figure 6-1 Scanning Screen

Forward Feed: Insert the original face down into the scanner original insertion slot and press the Forward Feed button to move the drawing into the start-of-scan position. If “Autoload” has been selected in setup of settings (default) the original will automatically be loaded into the start position, when inserted fully into the scanner.

Reverse Feed: By pressing the Reverse Feed button the original will move backwards out of the scanner as long as the key is depressed.

6.2 Scan-to-file installation

For both the Copy Scanner and your computer, make sure that power is turned off and the power cord is disconnected from the electrical outlet.

Connect the SCSI cable that came with your interface kit to the corresponding SCSI connector found at the back of the Copy Scanner.

For the PC you must now install the SCSI interface board that is part of your interface kit for WIN-95 and WIN-NT, and connect the scanner SCSI cable.

For workstations with a built-in SCSI interface, simply turn power off and connect the scanner SCSI cable.

As the scanner is always the last device on the SCSI bus connected to the PC/Workstation, make sure the built-in active SCSI terminator is turned on (see later section: Scanner SCSI address switch setup).

Important: Before connecting the Copy Scanner power cord to an electrical outlet, be sure that the voltage selector switch just above the mains inlet is set to the correct voltage.

Reconnect the Copy Scanner and computer power cords, and turn power on.

You are now ready to install the CADImage/SCAN scanner control software and set up the SCSI address of the scanner, as described later in this chapter and in the CADImage/SCAN User Guide and SCSI installation instructions that came with your interface kit.

6.2.1 Installation verification

Run the Height Adjustment of CCD Cameras described in the Chapter: "Maintenance" to verify above installation.

6.2.2 Scanner DIL-switch setup

The DIL-switch is used for setup of the Copy scanner’s computer SCSI connection port, and for selection of the “Copy Scanner test” modes and the “Copy Scanner forced boot startup” mode.

Turn off power to computer and scanner when setting the SCSI device number, it is only read from the scanner DIL-switch on power up of the scanner.

Set up the SCSI device no. on the DIL-switch found besides the SCSI connectors on the Copy Scanner to an unused SCSI device address no. according to the table below:

Table 6-1 DIL-switch table

Switch no:	1	2	3	4	5	6	7	8
SCSI device no. 0	ON	ON	ON	X	X	X	X	X
SCSI device no. 1	OFF	ON	ON	X	X	X	X	X
*SCSI device no. 2	ON	OFF	ON	X	X	X	X	X
SCSI device no. 3	OFF	OFF	ON	X	X	X	X	X
SCSI device no. 4	ON	ON	OFF	X	X	X	X	X
SCSI device no. 5	OFF	ON	OFF	X	X	X	X	X
SCSI device no. 6	ON	OFF	OFF	X	X	X	X	X
SCSI device no. 7	OFF	OFF	OFF	X	X	X	X	X
Built-in SCSI termination	X	X	X	ON	X	X	X	X
No Synchronous transfer	X	X	X	X	OFF	X	X	X
No disconnect	X	X	X	X	X	OFF	X	X
Force boot start up	X	X	X	X	X	X	OFF	X
Continuous test mode	X	X	X	X	X	X	X	OFF

* Factory Default

X: Don't Care

As the Copy Scanner is always the last device on the SCSI bus, make sure the built-in active SCSI termination is turned on, switch 4, above.

Make sure that none of the troubleshoot and test switches are on (switches 5, 6, 7 and 8)

Turn on power to the computer and scanner, and verify installation.

Below is a detailed description of the troubleshoot and test switches:

Switch 5. No synchronous transfer.: Disables SCSI synchronous transfer mode (reverts to asynchronous transfer). Only use this mode for test as it slows down the scanner.

Switch 6. No disconnect: Disables the SCSI disconnect command. Only use this mode for test as it slows down the scanner.

Switch 7. Force boot start up: If a malfunction occurred during an update of the scanner firmware, this switch forces the scanner into firmware boot mode, enabling you to download the firmware again.

Switch 8. Continuous test mode: The continuous test mode is only used for maintenance, the Copy Scanner is inaccessible.

6.2.3 SCSI Termination on Scanners

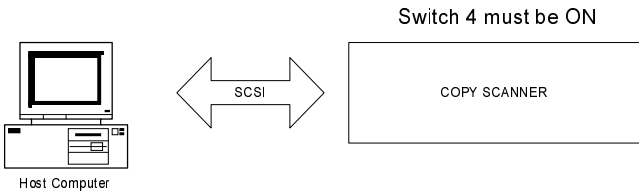
The copy scanners have a build in active SCSI termination that works better at the high transfer rates used by these scanners than a passive terminator.

The build in active termination is enabled by setting switch 4 on the SCSI switch to ON and disabled by setting it to OFF.

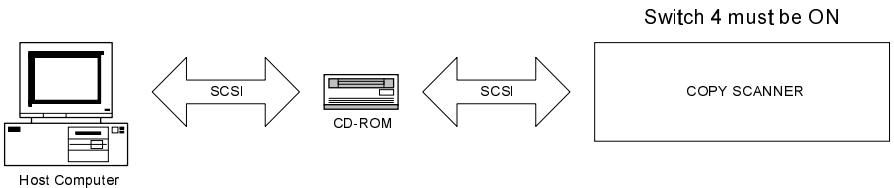
Note: Always set switch 4 to ON on the copy scanners
(they have only one SCSI connector, and therefore will be at the end of the SCSI chain).

The following 2 scenarios shows the possible SCSI bus chains:

A. The Scanner is the only external device on the SCSI bus



B. The Scanner is the last device on the SCSI bus



Note: If the scanner is connected to an existing SCSI controller board that is used together with an internal SCSI device (f.ex. a hard disk), make sure that the on-board SCSI termination is removed before attaching the scanner.

7. Maintenance

Clean the original scanning area, and adjust the height of the CCD-Cameras at regular intervals.

7.1 Cleaning of Original Scanning Area

When cleaning the original scanning area, turn the power switch OFF and disconnect the power plug.

1. Open the scanner front cover by gently pulling at the top of the cover.
2. Remove the original guide fixture and gently wipe clean the glass plate and the white platen on the original guide fixture.

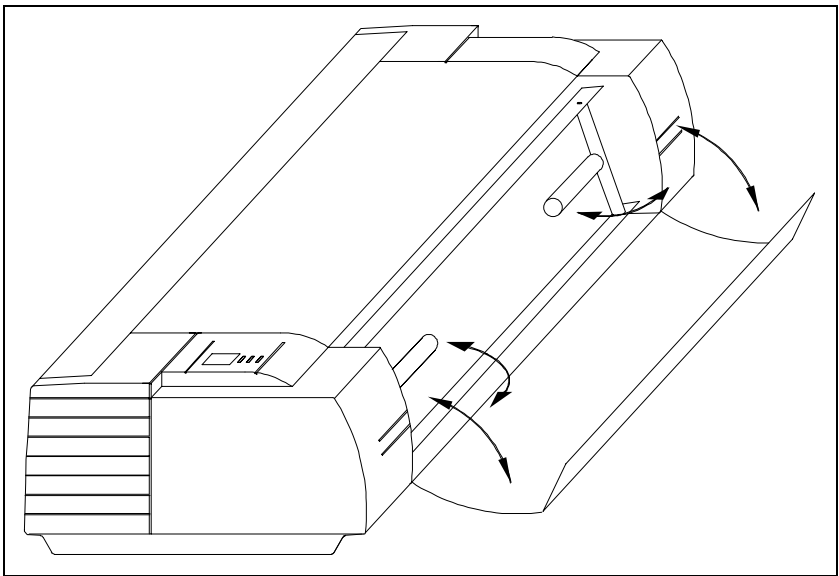


Figure 7-1 Opening the front cover

7.2 Height adjustment of the CCD Cameras

The height adjustment of the CCD cameras can be done either in the scan-to-file mode or in the copy mode.

7.2.1 Height Adjustment in Scan-to-file mode

The following adjustment applies to the Copy Scanner

FSC5010COPY and FSS8300COPY models:

1. Insert the Height Alignment Chart delivered with the scanner into scanner and press the "Paper Feed/Forward key". In CADImage select Scan-Width size of 8.5, and start prescan with "Forward". Press "Halt" to stop the prescan over the horizontal lines in the chart, and horizontally set the "detail window" so as to be in the middle of the "overview window". The "detail window" should show a picture similar to one of the three below.
2. Use a slim screw-driver to turn the heighth adjustment screw through the hole (1) on the top of the scanner (see figure overleaf) clockwise or counter-clockwise so that the lines from the left and right CCD-Cameras make a continuous line on the "down-scans" on the screen:
 - Clockwise: Line at right side of screen moves down.
 - CounterClockwise: Line at right side of screen moves up.

Note: Only judge the camera height adjustment on the repeated "down-scans" on the screen to omit angle errors.

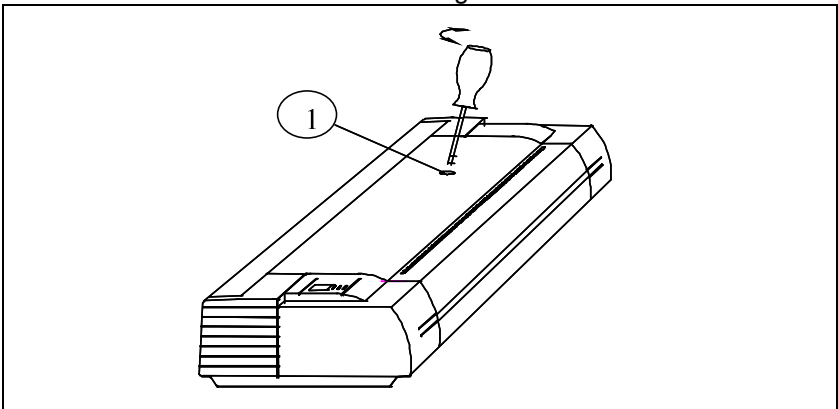


Figure 7-2 Camera Height Adjustment

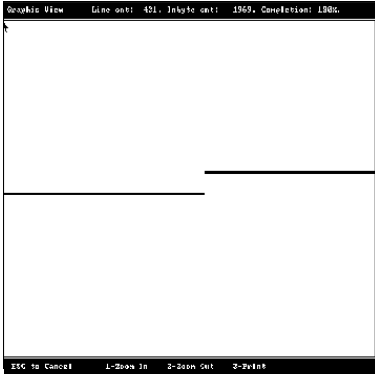


Figure 7-3 Height adjustment (turn clockwise)

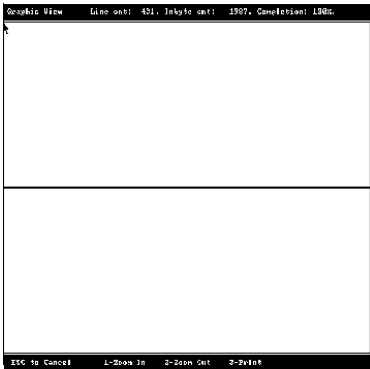


Figure 7-4 Height Adjustment (correctly aligned)

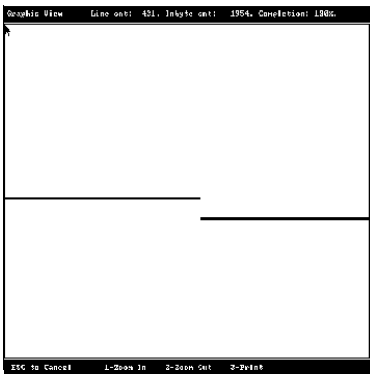


Figure 7-5 Height Adjustment (turn counter clockwise)

FSC8010COPY model:

1. For the left CCD Camera (seen from the front of the scanner) adjustment, follow the procedure given above for the FSC5010COPY model, but select a "detail window" centered about one-third in from the left in the "overview window".
 Clockwise: Line at Left side of Screen moves Down.
 Counterclockwise: Line at Left side of Screen moves Up.
2. For the right CCD Camera adjustment follow the procedure given above for the FSC5010COPY model, but select a "detail window" centered about two-third in from the left in the "overview window".
 Clockwise: Line at Right side of Screen moves Down.
 Counterclockwise: Line at Right side of Screen moves Up.

Note: Only judge the camera height adjustment on the repeated "down-scans" on the screen to omit angle errors.

7.2.2 Height Adjustment in Copy mode

The following adjustment applies to the Copy Scanner when it operates in the copy mode:

1. Insert the Height Alignment Chart delivered with the Copy Scanner into the scanner, and in the *Main Copy screen* on the touch display, select:

CopyType	Lightness	Size	Scaling	Copies
Norm	0	E-1	100	1

and make a copy by pressing the  button.

2. The printout should look similar to one of the three screens shown above.
3. Use a slim screw-driver to turn the height adjustment screw through the hole(s) on the top of the Copy Scanner clockwise or counter-clockwise as indicated above, repeat making copies and adjustment, until the lines from all the CCD-Cameras make a continuous line on the printout:

7.3 Color Calibration Platen

When you are doing a basic color calibration of the scanner, from the CADImage/SCAN software on the PC, you will be asked by the calibration wizard to insert the Color Calibration Platen at the startup and shortly after to remove it (before inserting the ANSI IT8 color patch calibration target)

Note: The insertion of the Calibration Platen is optional, but recommended as it is not being worn by scanning documents.

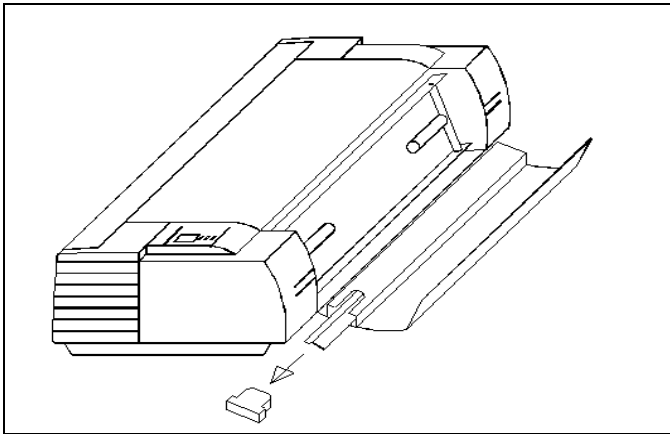


Figure 7-6 Color Calibration platen

When requested by the color calibration wizard to insert the Color Calibration Platen:

1. Open the scanner front cover by gently pulling at the top of the cover.
2. Remove the original guide fixture and position with the white pressure plate upwards on a table.
3. Gently wipe clean the white pressure platen on the original guide fixture and the glass plate on front of the scanner.
4. Remove the Color Calibration Platen as shown above, from its protective storage sleeve. **Caution:** Handle with care, the Color Calibration Platen is very fragile.
5. Position the Color Calibration Platen on top of the white pressure plate, inserting the the top edge as shown below.
6. Reinsert the original guide fixture with the Color Calibration Platen into the scanner and close the cover, and proceed with the calibration wizard.

When requested by the color calibration wizard to remove the Color Calibration Platen:

1. Open the scanner front cover by gently pulling at the top of the cover.
2. Remove the original guide fixture and position with the Color Calibration Platen upwards on a table.
3. Gently remove the Color Calibration Platen and return it to its protective storage sleeve behind the cover (close the sleeve, so the platen can't slide out). **Caution:** Handle with care, the Color Calibration Platen is very fragile.
4. Re-insert the original guide fixture into the scanner and close the front cover, and proceed with the calibration wizard.

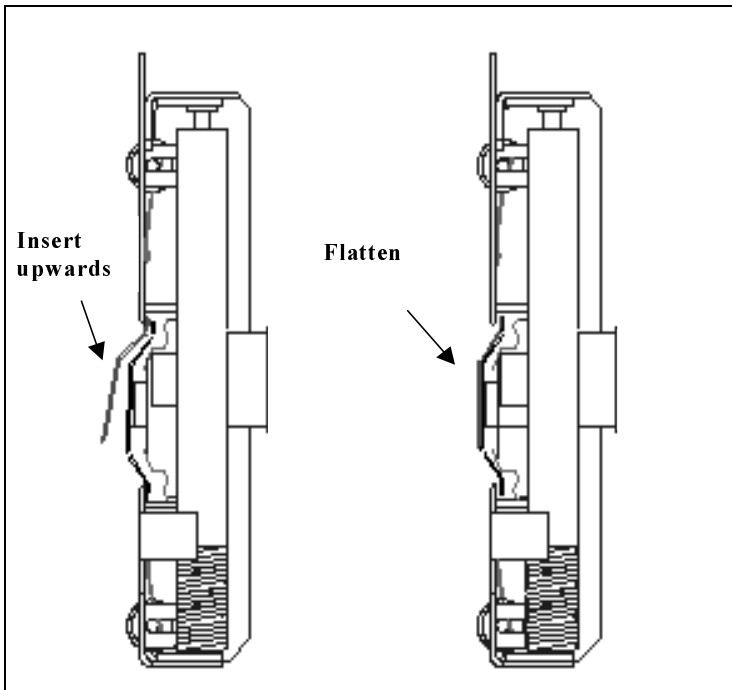
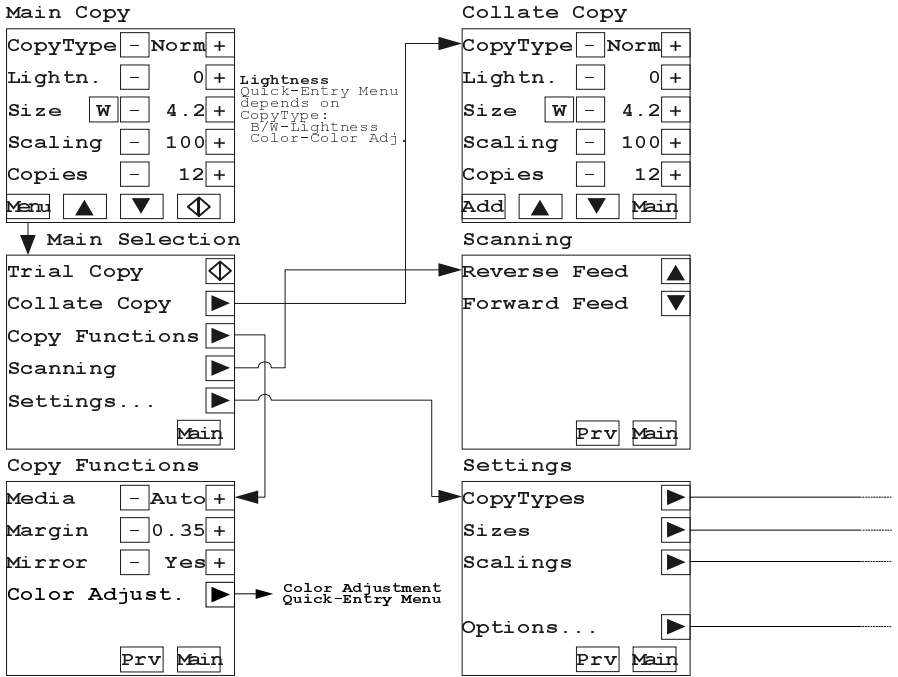


Figure 7-7 Insertion of Color Calibration Platen

8. Appendix A: Menu Tree

Overleaf is shown the menu tree (2 pages) for the FSC8010COPY and FSC5010COPY Color Copy Scanners, and the menu tree (2 pages) for the FSS8300 Monochrome Copy Scanner.

FSC8010COPY & FSC5010COPY Color Copy Scanners, sheet 1:

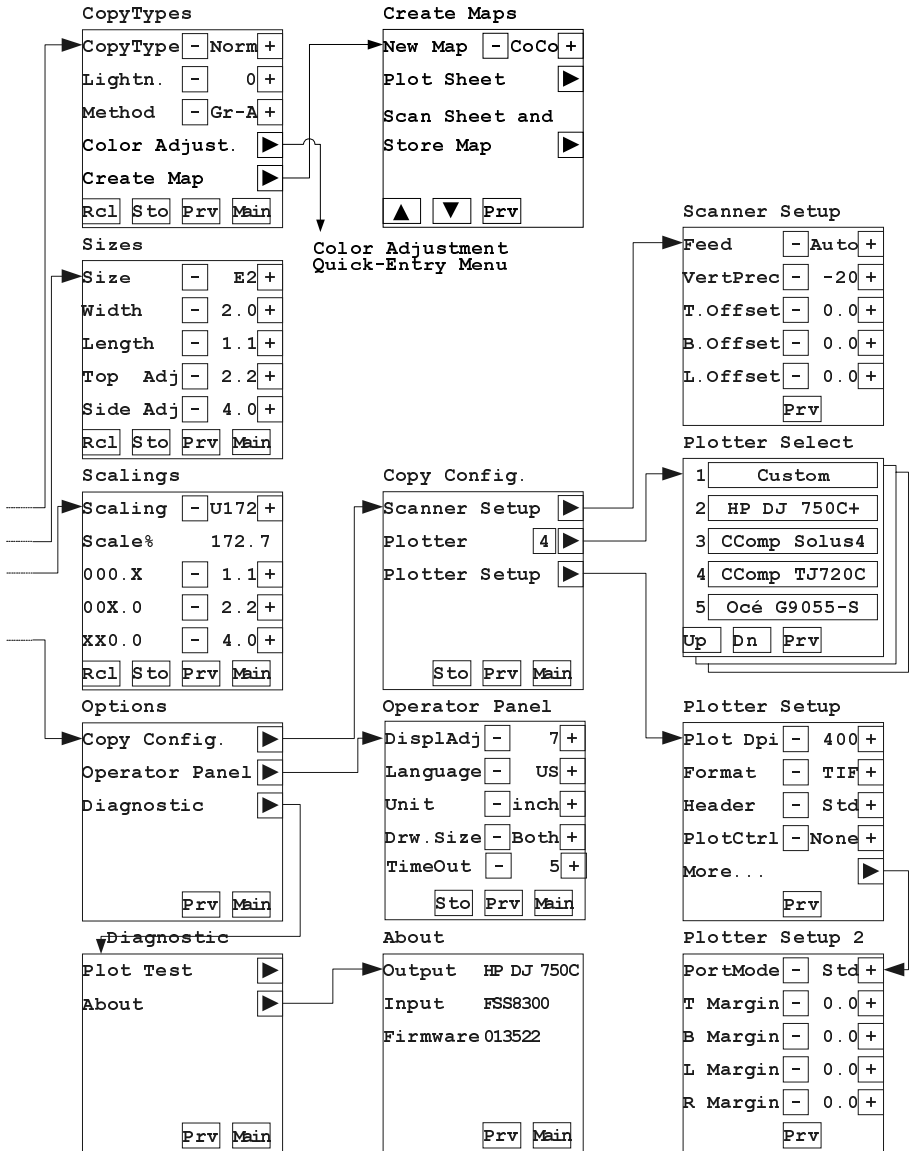


Quick-Entry Screens.
 Accessed from MainCopy & CollateCopy menus.

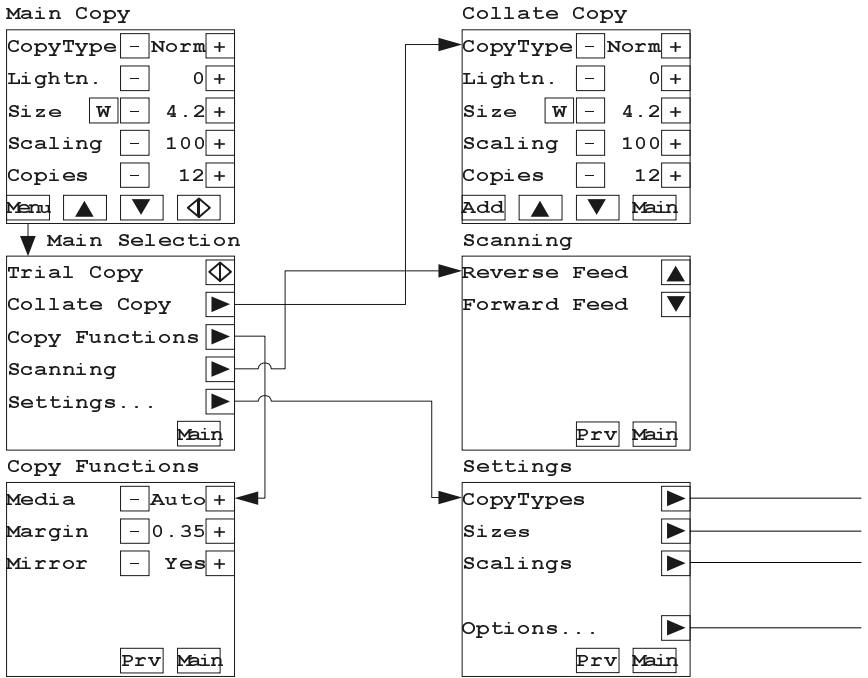
CopyTypes	Lightness	Color Adjustment
Norm Fine Phot	+3 +4 +5	AddBlack [- 0 +]
BwnL BwnD	+2 +6	AddWhite [- 0 +]
BluL BluD	+1	Sharpen [- 1 +]
CoCo CoHe CoGl	0	Saturate [- 0 +]
CoWF CoCF CoBF	-1 -2 -3	ColBal [R] [- 0 +]
[- TYP4 +] Prv	Prv	Prv

Sizes (S-mode)	Scalings	Numeric Pad
A-1 A-2 B-1	25 45 50	123456.8 inch
B-2 C-1 C-2	64 70 78	7 8 9 /
D-1 D-2 E-1	100 129 133	4 5 6 *
E-2 A0 A1	141 154 200	1 2 3 -
A2 A3 A4	400	0 . = +
[- SIZ7 +] Prv	[- U112 +] Prv	Clr Prv Ent

FSC8010COPY & FSC5010COPY Color Copy Scanners, sheet 2:



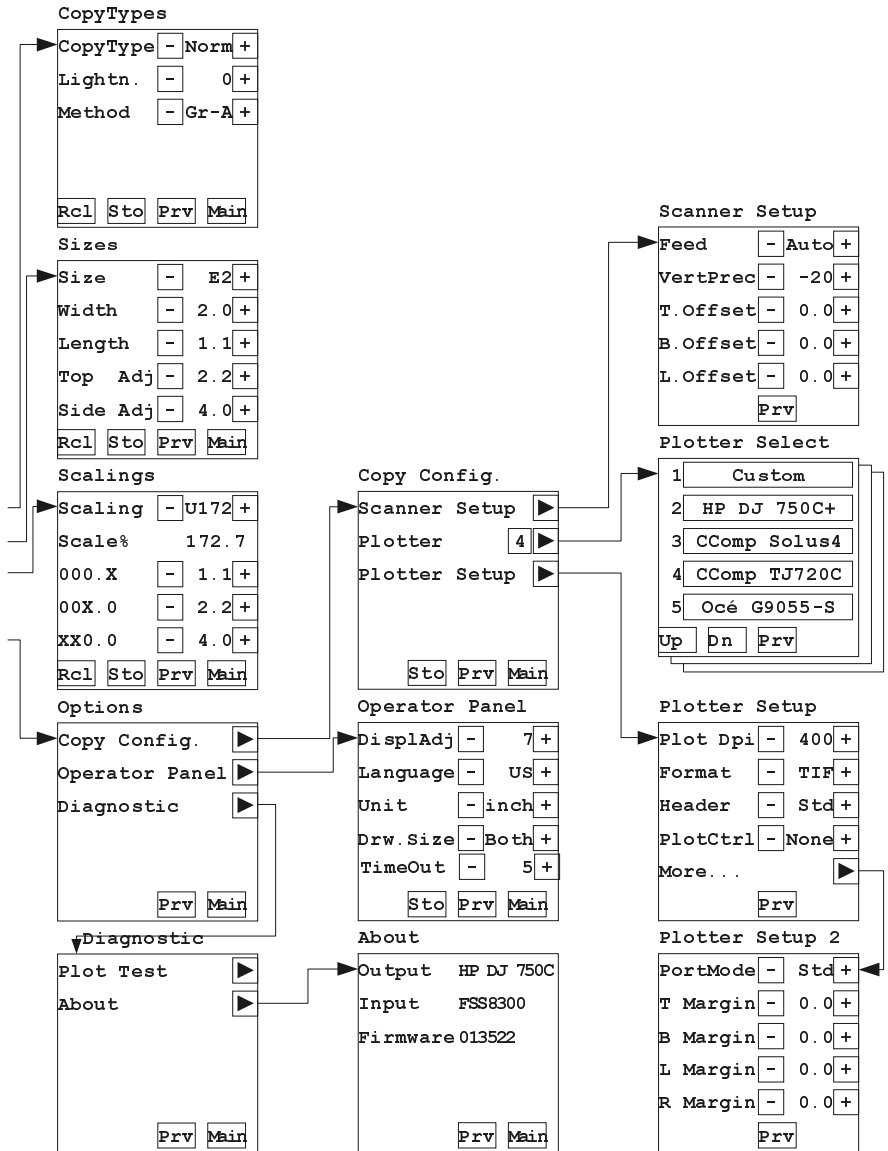
FSS8300COPY Monochrome Copy Scanner, sheet 1:



Quick-Entry Screens.
 Accessed from MainCopy &
 CollateCopy menus.

<p>CopyTypes</p> <p>Norm Fine Phot</p> <p>BwnL BwnD</p> <p>BluL BluD</p> <p>- TYP4 + Prv</p>	<p>Lightness</p> <p>+3 +4 +5</p> <p>+2 +6</p> <p>+1</p> <p>0</p> <p>-1 -2 -3</p> <p>Prv</p>	
<p>Sizes (S-mode)</p> <p>A-1 A-2 B-1</p> <p>B-2 C-1 C-2</p> <p>D-1 D-2 E-1</p> <p>E-2 A0 A1</p> <p>A2 A3 A4</p> <p>- SIZ7 + Prv</p>	<p>Scalings</p> <p>25 45 50</p> <p>64 70 78</p> <p>100 129 133</p> <p>141 154 200</p> <p>400</p> <p>- U112 + Prv</p>	<p>Numeric Pad</p> <p>123456.8 inch</p> <p>7 8 9 /</p> <p>4 5 6 *</p> <p>1 2 3 -</p> <p>0 . = +</p> <p>Clr Prv Ent</p>

FSS8300COPY Monochrome Copy Scanner, sheet 2:



9. Appendix B: Specifications

Model	FSC8010COPY^{DSP}	FSC5010COPY^{DSP}
Sensors(trilinear color):	Triple CCDs 15.000 pixels 30 bits color capture	Dual CCDs 10.000 pixels 30 bits color capt.
Image Resolution (dpi):	Set-able in 1 dpi increments from 50 dpi to 800 dpi.	Set-able in 1 dpi increments from 50 dpi to 500 dpi .
Scan to File Modes:	24 bit RGB color mode (16.8 million colors). 4-bit and 8 bit indexed color mode. 4-bit and 8-bit feature extraction color mode. 8-bit graytone mode. B/W: Line, 2D-Adaptive & advanced ADL. Photo, B/W dithered mode.	
Color Adjustment:	3x3 Matrix Multiplier. R,G and B tone curves (Gamma). Independent white and black point settings.	
Features:	Stand-alone large format color and mono- chrome copying with inkjet/laser plotter. Built-in JETstream color accelerator and 2-D advanced ADL image enhancement.	
Image Size:		
Media Width:	6.0 to 40.0" (1016mm.)	6.0 to 40.0" (1016mm.)
Scan Width: (max.)	36 Inches (914 mm)	36 Inches (914 mm.)
Scanner Measurements (inches/mm):		
Width:	49.25"/1200	49.25"/1200
Depth:	15.0"/380	15.0"/380
Height:	7.9"/200	7.9"/200
Power:		
Consumpt.:	180W	180W
Voltage:	100/115/220/240V-50/60Hz	
Weight:	47 kg.	46 kg.
Light Source:	Color balanced, stabilized fluorescent lamps	
Optics:	Compact optical path, torsion stabilized for portability. Apochromatic color lenses.	
Interface:	Industry standard SCSI-2 I/F , ECP Par.Port	

Image Processing:

Single pass scanning for high speed and fine pitch color registration.

Color calibration by standard ANSI - IT8 color reference card.

Color Management Systems support by standard ICC profile.

Individual color tone adjustments of R,G&B, and White/Black points.

On-board, real time color feature extraction.

JETstream – accelerator for high speed conversion of scanned color stream to matched realistic colors on inkjet printer/plotter output.

Digital Signal Processor, 2D-Adaptive and Gray-Adaptive (advanced Area Diffusion Logic, ADL), deskewing, despeckling and real-time compression of scanned data.

Individual pixel adaptive ampl. Correction. On-screen view, zoom, rotation, alignment, mirroring and reverse.

More than fifty Industry standard image file formats supported.

Model	FSS8300COPY^{DSP}
Sensors:	Dual CCDs 16.000 pixels
Image Resolution (dpi):	25 to 800 Setable in 1 dpi incre- ments.
Image Size:	
Media Width:	6.0 to 40.0" (1016mm.)
Scan Width: (max.)	36 Inches (914 mm)
Features:	Stand-alone large format mono-chrome copying with inkjet/laser plotter. Built-in 2-D advanced ADL image enhancement.
Scanner Measurements(inches/mm.):	
Width:	47.25"/1200
Depth:	15.0"/380
Height:	7.9"/200
Power:	
Consumpt.:	130W
Voltage:	100/115/220/240V-50/60Hz
Weight:	43 kg.
Light Source:	Stabilized Fluorescent Lamp
Interface:	SCSI-2 I/F and ECP Parr. Port
Graylevels:	Up to 256 levels recognized (1Byte, 8Bits per pixel).
Window Scan:	Adjustable Horizontal and Vertical Offset and scan-window size.
Image Processing:	Digital Signal Processor, 2D-Adaptive Threshold. Advanced "Area Diffusion Logic (ADL)" preserves tones of grey in copies, maintains compact print-ready files. On-line threshold, deskewing, despeckling and holefilling. Individual pixel adaptive ampl. Correction. Image rotation, alignment, mirroring and reverse. On-screen view, zoom, and print functions. More than fifty industry standard image file formats supported.

To ensure state of the art products and design, Contex reserves the right to change specifications at any time.

10. Appendix C: Glossary

Adaptive thresholding

Advanced 2-D Adaptive Thresholding estimates the background gray level in a window area around each pixel. The difference between the actual pixel value and the background is then compared to the adaptive settings to determine if a pixel is thresholded as a black or a white pixel.

Additive Colors

The additive primary colors are red, green and blue. These additive primaries represent the three main components of white light. Used individually or together, these three colors of light can be mixed to create nearly all colors. When these three primary colors are mixed in equal parts they produce white. Additive color is used in scanners and computer displays.

Bitmapped Image

A bitmapped image is a computer file representing a line-art image that was scanned with a scanner. Refers to the pattern (map) of bits that are either black or white.

Black Point Adjustment

An adjustment made that will determine the amount of shadow detail in an image. It is considered proper to set the black point so that the darkest part of an image will only just have zero detail.

Blueprint

A process of photographic printing used mainly for copying architectural and mechanical drawings, produces blue lines on a white/bluish background.

Blur

The averaging of pixel elements.

Brightness Adjustment

An adjustment on a scanner that allows the user to compensate for a light or dark original.

Calibration

Adjusting equipment so that it performs in accordance with an established standard e.g scanner calibration, minimizing color deviation between scanned ANSI IT8 reference color patches and the known color reference values.

Cals

Computer-aided Acquisition and Logistics Support (CALS) standard, a U.S. Defense Department and industry initiative that addresses the design, manufacture, and support issues of generation, access, management, and use of technical data in digital form.

CCD

Charge Coupled Device, the CCD is the image sensor in the scanner that converts light to voltages. These voltages are converted by the scanner into the image.

CCITT Group 3

Standard runlength compression format used with FAX transmission. It utilizes modified Huffman coding to further compress the runlength numbers. Most scanner file formats are dialects of this format.

CCITT Group 4

Two-dimensional compression format, giving very compact image files. Standardized by CALS (MIL 28002) and ISO-ODA for Drawing Archival and Interchange.

CIE

Centre Internationale d'Eclairage (CIE) is an international organization that establishes methods for measuring color. These color standards for colorimetric measurements are internationally accepted specifications that define color values mathematically. The first color space model, the CIE xyz, was developed in 1931. CIE defines color as a combination of three axes: x, y, and z. The two color spaces released in 1978 are CIE Lab and CIE Luv. The goal was to provide an accurate and uniform reference of visual perception.

CIE LAB

A device independent color space specified by CIE, used in modern color management software to facilitate conversion of data from a scanner to a display, or from a display to an output device.

CMYK

The subtractive printing colors. Cyan, Magenta, Yellow, Black.

Color

Electromagnetic energy that exists in the form of wavelengths creates the perception of color. There is a huge difference between the visible spectrum we can see with our eyes and the colors which can be reproduced on a computer screen and then printed on a color printer. The total number of colors that a device can produce is called its color gamut. The visible spectrum is larger than the color gamut of a color monitor, which in turn is larger than that which can be reproduced by a color printer. No system can produce all the colors visible to the human eye.

Color bit depth

The simplest pixel has two options: black or white. (A pixel with two choices is known as a one-bit image, or two raised to the power of one). Adding more bit information increases the number of color options. The number of potential color options for a pixel is called color bit depth. For example a four-bit pixel would have 16 color options, and an eight-bit pixel would have 256 color options, while a 24-bit pixel would have 16,777,216 color options.

Color Cast

An image is said to have a color cast if its colors are not true. A color cast will usually be described by stating the particular color predominant in the image e.g. the grass appears to have a red color cast.

Color Correction

Correcting for, and eliminating an unwanted color cast.

Color Management System

Color Management System (CMS) software increases the accuracy of color interchange between scanners, displays and printers based on profiles for each device. The CMS is a layer of software resident on the computer that negotiates color reproduction between the application and color devices. The CMS performs the color transformations necessary to exchange accurate color between diverse devices. The Color manager needs access to characterization data for the device, the format and content of such device profiles is standardized by the International Color Consortium (ICC.)

Color Separation

Converting an RGB color image into CMYK color image. Color separation is a technical function during which critical settings such as GCR, black ink limit and total ink limit are applied to the image.

Color Space

A color space is a particular language used to describe color. Examples of color spaces are: RGB, CMYK, HSV, CIE LAB.

Compressing

Reducing file sizes of images by encoding the data (see also Run Length Encoding and CCITT Group 3 and 4).

Lightness

The range between light and dark in an image. Proper Lightness is important for an image to appear realistic.

Density

The light stopping ability of a film. Density is inversely proportional to the amount of light reflected or transmitted by an image.

Density units

Photographers and printers measure transmission in base-10 logarithmic density units, where transmission of unity corresponds to a density of 0, transmission of 0.1 corresponds to a density of 1, transmission of 0.01 corresponds to a density of 2 and so on

Device Dependent Color Space

For example RGB. A device dependent color space e.g. the same scan file will appear different when viewed on different computer displays.

Device Independent Color Space

For example CIE LAB. A device independent color space is one in which color values are absolute e.g defined by CIE standard. CIE LAB is the central color space in color management systems (CMS) and is used to translate between different device dependent color spaces such as scanner RGB and display RGB.

Device Profile

A file used as part of a Color Management System (CMS). A device profile contains information about the characteristics of a scanner, computer display or printer. The format for device profiles (Win95, Colorsync. Etc.) is standardized by ICC (International Color Consortium).

Display

Also called Graphic display or Monitor. The computer screen attached to your computer, or to the portion of a drawing image, menu, etc. shown on the screen

Dithering

A printing or display device may have only a small number of greyscale or color values for each device pixel. However if the viewer is sufficiently distant from the printed page or display, the value of neighboring pixels can be set so that the viewer's eye integrates several pixels to achieve an apparent improvement in the number of levels or colors that can be reproduced.

DPI

Dots Per Inch, equivalent to Pixels Per Inch. An expression of resolution of a scanned image.

DSP

Digital Signal Processor, does image enhancement in real-time while scanning

Dynamic Range

A measurement of scanner quality, the density difference between highlights and shadows.

Equalizing

Distributing all color or tone equally along a density range.

File

Image, text or program information stored on a computer disk, with a file name for retrieval (an extension to the name is often added to distinguish between different types of files).

Folder

An organizational aid on a hard disk. Like office folders it allows a user to group related files together.

Foreground

Foreground when scanning raster data (black and white, or monochrome data) refers to the pixels that represent data of interest (background refers to everything

else). Typically, lines and shapes are represented by black pixels (foreground) and empty space is represented by white pixels (background).

When scanning grayscale data, background means the gray level of a region of pixels that surrounds some desired foreground data.

Gamma Adjustment

An adjustment that makes the tone distribution lighter or darker in an image.

Gamut

The color range scanable, printable or displayable by a device e.g. if some of the displayable colors are outside of the gamut of the printer they cannot be printed.

Gamut Transformation

Color Management System function, where out of gamut colors are converted to colors within the gamut of the targeted device e.g a printer.

GCR

Grey component replacement. A color separation setting used on color photographs where cyan, magenta and yellow inks are replaced by black ink (in a balance that would yield a grey value). The advantages are a reduction in overall ink usage and some increase in image detail.

Gigabyte

Computer storage equal to 1024 megabytes

Grayscale

A term for a black and white photographic image or a scanner setting. Refers to the range of 256 grey tones that make up the image.

Grey Balance Adjustment

A color correction adjustment to insure that grey elements within a scanned image appear as a neutral grey. It is generally considered proper technique to adjust the image so that neutral grey elements appear neutral gray. If this is done, it will usually be true that other elements within the image will also have true color reproduction.

Halftoning

The processes of offset printing and laser printing are intrinsically bilevel. However, these devices can reproduce a range of tonelevels by halftoning e.g. an array of widely spaced dots produces the perception of light gray, and an array of tightly spaced dots produces dark gray. Halftone dots are usually placed in a regular grid. In color printing it is conventional to use cyan, magenta, yellow and black grids that have exactly the same dot pitch but different carefully-chosen screen angles.

Histogram

A bar graph representing the statistical distribution of Graytones or colors in an image. Each column represents the number of pixels at that gray level or color.

HLS

A color space with the three variable of Hue, Lightness, Saturation. See HSV.

HSV

A color space with the three variables of Hue, Saturation Value. Hue means color (as in the color wheel.) Saturation is an indication relating to the richness or vibrancy of the color. Value is a term best related to the intensity of light illuminating the object.

Hue

A measurement of color as can be related by pointing towards a certain color on the color wheel. Hue indicates the relative redness, blueness, greenness, yellowness, etc. of a color.

ICC

The International Color Consortium (ICC) was formed to address the need for a common color framework. The ICC has developed a standard device profile that contains information about how various devices render color. This concept is supported by Apple (Colorsync), Microsoft for Windows 95, Sun for Solaris, and by Silicon Graphics for Irix.

ICS

Integrated Component Scanner, integrates copying function into an existing plotting environment.

Indexed color

Indexed color (or pseudo-color), is the provision of a relatively small number, say 256, of discrete colors in a colormap or palette. For each pixel in the image the index number of a color is then stored. When retrieving the image, a lookup table uses the index to retrieve red, green and blue components that are then sent to the display. In graphic file formats such as PCX or TIFF, an indexed color image is accompanied by its colormap.

Ink-Jet Plotter/Printer

Inkjet Plotters/printers transfer color to a page by squirting cyan, magenta, yellow and black liquid ink onto the page. The ink dries on the paper through evaporation.

Interpolation

Using the interpolation method of resampling, generates values for points in between the actual pixels by looking at the surrounding colors or intensities. In a scanner resolution is increased beyond the actual number of CCD cells. As each line of pixel data arrives from the cameras, new interpolated pixels are added between original pixels. The added pixels enhances line edge definition.

JPEG Compression

Joint Photographic Experts Group Compression. A method to save storage space by compressing files. JPEG achieves a high degree of compression by discarding non-important picture detail.

Kilobyte

Computer storage equal to 1024 bytes of computer information.

Laser/LED Plotter/Printer

Laser/LED plotters/printers transfer toner to a page by discharging an electrostatically charged drum by the information modulated light from a laser or LED (Light Emitting Diodes) array. Toner then attaches to the remaining charged areas of the drum, and is subsequently transferred to the paper

Lossless Compression

File compression and subsequent de-compression without any loss of data.

Lossy Compression

File compression that will compress data to a high degree. When subsequently un-compressed data will have been lost.

LZW

Method of lossless compression used with many file formats, developed by Lempel, Zev and Welch.

Megabyte

Computer storage equal to 1024 kilobytes.

Monochrome

An image composed of a single color.

Neutral

An area of no color; white, gray or black.

Noise

A term used to describe the occurrence of pixels within an image that contain random colors

Palette

The set of colors available for an image.

Pixels

The word pixel is a combination of the two words picture and element, it is the smallest building block within a scanned line-art or photographic image. A pixel is the small square picture element that is filled with a color, black or white.

The value of a pixel depends of the luminance of the area and is either a single bit for a black and white image, or multi-bit for a color or gray-tone image.

Pixels come in various sizes and their size is expressed in terms of resolution. Resolution is measured in pixels per inch (PPI) or the equivalent dots per inch (DPI.)

Plotter

A physical device that receive information of a digital image and reproduced it on paper (see also Inkjet and Laser/LED plotter).

Printable Color

A color that falls within the gamut of a particular output device.

A printable color will output as expected. Compared to a color that falls outside the gamut which will print as an unexpectedly different shade. See also Gamut.

Printer

A physical device that receive information of a digital image and reproduce it on paper (see also Inkjet and Laser/LED printer).

PROM

Programmable Read Only Memory

RAM

Random Access Memory. RAM is a computer resource, having more RAM in a computer makes it faster and more capable.

Raster File

Also called Raster Image or Bitmapped Image. A picture composed of individual dots (picture elements, pixels) the way a scanner perceives it. The rows in a high-resolution raster file typically contain 200 or 300 dots per horizontal inch of the original drawing, and there are typically 200 or 300 rows per vertical inch. As each of these dots is defined by location, and by whether it is on or off, raster images generally have large data files.

Resolution

Defines the level of detail that can be captured or shown by a scanner, display, or output device. For scanners, the resolution is defined by the number of dots (pixels) per inch (dpi) that can be captured horizontally and vertically, e.g. 300 dpi equals 90,000 pixels per square inch.

Resolution of a Scanner

Expressed as dpi(dots per inch.) or the equivalent ppi (pixels per inch.) The higher the resolution of a scanner, the smoother the scanned images.

RGB

Red, Green, Blue. These additive primary colors are the basic elements of white light. By mixing them on a computer monitor or in a scanned image file, other colors can be created. For instance, Red and Green produces Yellow, and equal amounts of all three produces grey.

RIP

Raster Image Processor. A RIP is a special software that converts scanned images into a color dithered (halftone) image that can be output directly. An image must be 'ripped' before it can be output on a CMYK device e.g. a inkjet plotter.

Runlength Encoding

A method of compressing raster or bitmap data by representing "runs" of white or black dots along a scanned line as the number of dots in each run. Many variations exist of this scheme, with varying compression efficiency. Typically runlength compression formats yield a file 20-25% the size of an uncompressed file.

Saturation

Saturation is one attribute of color in the color space called HSV (Hue Saturation, Value). Saturation is a characteristic indicating the vibrancy or intensity of a hue. A color with high saturation will appear more intense than the same color with less.

Scanning

The process of running a hardcopy original through an optical scanner. The scanner produces a digital image (raster image) of the hardcopy drawing, which is then stored in RAM or on a disk.

SCSI

Small Computer System Interface specification of interface to computer equipment like disks, printers, scanners etc.

Shadow Detail

The amount of detail contained in the dark parts of an image. It is desirable to maintain shadow detail but there is a risk of decreasing overall Lightness if one lightens the shadow too much in an attempt to expose additional detail. If an image is scanned without shadow detail, it will be impossible to regain detail using an image editing program.

Sharpness

An attribute of a scanned image and also an attribute of scanner quality.

Stitching

In large format multiple CCD camera scanners, electronic stitching adjusts for overlap in the field of view of adjacent cameras. Automatic stitching at start of scan, ensures that each camera captures the correct number of pixels independently of mechanical and thermal changes.

Subtractive Colors

The subtractive primary colors: cyan, magenta, yellow. As ink applied to a piece of paper by a printer, these colors absorb light and alter the colors seen by looking at the printed paper. Cyan ink absorbs the red third of the spectrum, magenta ink absorbs the green third, and yellow ink absorbs the blue third. This should theoretically cause the viewer to see a black color, but due to unavoidable impurities in the inks, there is still light reflected and the viewer sees a muddy brown. The absence of CMY pigments results in white.

TIFF File Format

Tagged Image File Format. One of the most common graphic file formats for line-art and photographic images.

Tonal Distribution

Tonal Distribution describes the distribution of various bright or dark tones within an image. During the scanning or image editing stage, tones can be redistributed lightening a dark image or darkening a light one.

Tone

Any color or neutral that is denser than white.

Tone Compression

A term used in scanning and image editing that refers to compressing the broad range of tones and colors in an image down to the narrower range available on a printer.

Tone Curves

The shape of the tone transfer curves can be adjusted by the user to alter color or tone correction. The lower left end of the curve typically represents the dark portions of a picture and an upward bend will typically lighten the shadows. Similar capabilities exist by working with the middle or highlight parts of the curve. In this way it is possible to alter only certain tonal ranges of an image without making unwanted changes to other parts of the image.

True color

True color systems provide eight bits for each of the three components (red, green and blue). Therefore true color is often referred to as 24-bit color.

UCR

Under Color Removal. A color separation setting used on color photographs where cyan, magenta and yellow inks are removed from dark, neutral areas and substituted by black ink. The advantages are a reduction in overall ink usage. See also GCR.

Vector file

Also called Vector drawing. Consists of mathematically defined elements, such as "Line from A to B", "Circle with center and radius", etc. CAD systems use vector drawings because of their accuracy, relatively low memory requirement and data-file sizes compared to raster images.

Vectorization

Also called raster-to-vector conversion (RTV). The process of automatically converting a raster (bit-mapped) image into a vector (CAD) drawing.

Video Card

Expansion card installed inside the computer. Different types of video cards support varying monitor sizes and number of displayable colors.

Viewing Conditions

Different light sources affect the colors that you see. For instance, a color viewed under fluorescent light will look radically different when viewed under incandescent light. Fluorescent light adds green to colors while incandescent light adds red. For this reason the printing industry developed a standard viewing condition known as the D50 (5000 Kelvin) light source in addition to a neutral gray background surround. This light source replicates daylight with equal parts of red, green, and blue.

Vector File

Also called VECTOR DRAWING. Consists of mathematically defined elements such as: Line from A to B, Circle with center and radius etc. CAD systems use vector drawings because of their accuracy and relatively low memory and data file sizes compared to raster images.

White Point Adjustment

An adjustment made that will determine the amount of highlight detail in an image. The white point should be set so that the lightest part of an image will only just have zero detail

XYZ

The CIE system is based on the description of color as a brightness (luminance) component Y (as described above), and two additional components X and Z. The spectral weighting curves of X and Z have been standardized by the CIE, based on statistics from experiments involving human observers. XYZ tri-stimulus values can describe any color.

Zoom

Changing the size of the viewing area, to examine a larger or smaller area in greater detail.

11. Appendix D: Regulations

11.1 FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

11.2 EC Regulations

DECLARATION OF CONFORMITY

Manufacturer's Name: CONTEX A/S

Manufacturer's Address: Svanevang 2
DK-3450 Allerod
Denmark

Declares that the products:

Category: Large Format Scanners

Model/Type: FSC5010COPY, FSC8010COPY,
FSC8300 COPY/ICS1340

Conforms to the following standards:

EMC: EN55022(1987)-Class A
EN50082(1994)

Safety: EN60950

Following the provisions of Council Directive 89/336/EEC (EMC)
and Council Directive 73/23/EEC (Low Voltage).

Allerod 980415 Asbjorn Smitt, Mng. Director

Supplementary Information:

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

12. Appendix E: Program License Agreement

You should carefully read the following terms and conditions before opening the diskette package. Opening the diskette package indicates your acceptance of the terms and conditions. If you do not agree with them you should promptly return the package unopened, and your money will be refunded.

Contex provides this program and licenses its use. You assume responsibility for the selection of the program to achieve your intended results, and for the installation, use and results obtained from the program.

12.1 License

1. You may use the program on a single machine.
2. You may modify the program and/or merge it into another program for your use on the single machine.
3. You may copy the program into any machine readable or printed form for backup or modification purposes in support of your use of the program on the single machine.
4. You may not use, copy, modify or transfer the program, or any copy, modification or merged portion, in whole or in part, to another party, except as expressly provided for in this license. If you do so you terminate your license.

12.2 Term

The license is effective until terminated. You may terminate it at any time by de-stroying the program together with all copies. The license will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of the Agreement. You agree upon such termination to destroy the program together with all copies, modifications and merged portions in any form.

12.3 Limited Warranty

This program is provided as is, without warranty of any kind, either stated or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the quality and performance of the program is with you. Should the program or hardware provided with the program prove defec-tive, you (and not Contex or an authorized dealer) assume the entire cost of all necessary servicing, repair or correction.

Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights; you may also have other rights which vary from state to state. Contex does not warrant that the functions or the operation of the program will be uninterrupted or error free.

However, Contex warrants the diskette on which the program is furnished to be free from defects in materials and work-manship under normal use for a period of one (1) year from the date of delivery to you, as evidenced by a copy of your receipt.

12.4 Limitations of Remedies

Contex's entire liability and your exclusive remedy shall be:

The replacement of any diskette not meeting the Contex "Limited Warranty" and which is returned to Contex or an authorized Contex dealer with a copy of your receipt, or If Contex or the dealer is unable to deliver a replacement diskette which is free of defects in materials or workmanship, you may terminate this Agreement by returning the program and your money will be refunded.

In no event will Contex be liable to you for any damages including any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use such program, even if Contex or an authorized Contex dealer has been advised of the possibility of such damages, or for any claim by any other party. Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

12.5 General

You may not sublicense, assign or transfer the license of the program except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign or transfer any of the rights, duties or obligations hereunder is void.

This Agreement will be governed by the laws of Denmark. Should you have any questions concerning this Agreement, you may contact Contex.

You acknowledge that you have read this Agreement, understand it, and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement, oral or written and any other communications between us relating to the subject matter of this Agreement.

CONTEX

13. Appendix F: Important safety instructions

Read all of these instructions and save instructions for later use. Follow all warnings and instructions marked on the scanner.

A. Do not place the scanner on an unstable cart, stand, or table. The unit may fall, causing serious damage.

B. Power off this unit before cleaning. Do not use liquid cleaners or aerosol cleaners.
Use a damp cloth for cleaning.

C. The scanner should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

D. The scanner is equipped with a three-wire grounding type plug. This plug will fit only into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

E. Do not allow anything to rest on the power cord. Do not locate the scanner where persons will walk on the cord.

F. If an extension cord is used with the scanner, make sure that the total of the ampere ratings on the products plugged into the extension card does not exceed the extension card ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

G. Slots or openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and the protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

H. Never push objects of any kind into the scanner through cabinet slots since they may touch dangerous voltage points or short out parts

that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the scanner.

I. Do not attempt to service the scanner yourself. Opening or removing those covers requiring tools may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to authorized service personnel.

J. Unplug the scanner from the wall outlet and refer servicing to authorized service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the scanner.
- If the scanner has been exposed to rain or water.
- If the scanner does not operate normally when operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore this product to normal operation.
- If the scanner has been dropped or the cabinet has been damaged.
- If the scanner exhibits a distinct change in performance, indicating a need for service.

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