User Manual

Tektronix

Phaser® 480X Color Printer

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PANTONE Color simulations are only obtainable on these products when driven by qualified Pantone-licensed software packages. Contact Pantone, Inc. for a current list of qualified licensees.

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Users safety summary

Terms in manual:

CAUTION	Conditions that can result in damage to the product.
WARNING	Conditions that can result in personal injury or loss of life.

Power source: Do not apply more than 250 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. Refer to a qualified service technician for changes to the cord or connector.

Operation of product: Avoid electric shock by contacting a qualified service technician to replace fuses inside the product. Do not operate without the covers and panels properly installed. Do not operate in an atmosphere of explosive gases.

Safety instructions: Read all installation instructions carefully before you plug the product into a power source.

Terms on product:

CAUTION	A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area. Also applies to a hazard to property including the product itself.
DANGER	A personal injury hazard exists in the area where you see the sign.

Care of product: Disconnect the power plug by pulling the plug, not the cord. Disconnect the power plug if the power cord or plug is frayed or otherwise damaged, if you spill anything into the case, if product is exposed to any excess moisture, if product is dropped or damaged, if you suspect that the product needs servicing or repair, and whenever you clean the product.

Ground the product: Plug the three-wire power cord (with grounding prong) into grounded AC outlets only. If necessary, contact a licensed electrician to install a properly grounded outlet.

Symbols as marked on product:

DANGER high voltage:

Protective ground (earth) terminal:

Use caution. Refer to the manual(s) for information:

WARNING: If the product loses the ground connection, usage of knobs and controls (and other conductive parts) can cause an electrical shock. Electrical product may be hazardous if misused.

Phaser® 480X Warranty

Tektronix warrants that the Phaser 480X will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If the Phaser 480X proves defective during its respective warranty period, Tektronix, at its option, will either repair the defective product without charge for parts and labor, or provide a replacement in exchange for the defective product.

This warranty applies only to products returned to the designated Tektronix depot or the Tektronix authorized representative from which the product was originally purchased. For products returned to other locations, Customer will be assessed the applicable service charge. The above limitation shall not apply within the European Economic Area, where products may be returned for warranty service to the nearest designated service depot regardless of the place of purchase.

In order to obtain service under this warranty, Customer must provide the applicable office of Tektronix or its authorized representative with notice of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix or its representative, with shipping charges prepaid. Tektronix or its representative shall pay for the return of the product to Customer. Customer shall be responsible for paying any associated taxes or duties.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty:

a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product;

b) to repair damage resulting from improper use or connection to incompatible equipment;

c) to repair any damage or malfunction caused by the use of non-Tektronix supplies or consumables;

d) to repair a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product; or

e) to repair damage or malfunction resulting from failure to perform user maintenance and cleaning at the frequency and as prescribed in the user manual.

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Chapter

1 Introduction

All about the Phaser 480X

The Phaser 480X Color Printer is the latest model of Tektronix' large-format dye-sublimation printer. Dye-sublimation technology produces photorealistic, continuous-tone images ideal for graphic arts comping and proofing, engineering/scientific data analysis, and custom photographic image processing applications.

The Phaser 480X provides fast, built-in raster image processing hardware, with Adobe PostScript Level 2 software. Flexible interfaces and networking options make it easy to install in a variety of computer environments.

Printer features

Brilliant colors and resolution

The Phaser 480X delivers 256 shades of each primary color at 300-by-300 dots-per-inch resolution to produce millions of colors. Dye-sublimation produces brilliant colors with smooth transitions, sharp details, and accurate textures. In addition, the Phaser 480X gives you the power of TekColor™ Photofine™ and TekColor Dynamic Correction, Tektronix' proprietary image processing technology.

- TekColor Photofine image processing sharpens text and fine lines while smoothing shaded fill areas and optimizing image detail.
- TekColor Dynamic Correction provides an easy way to select the right color correction for your application.

With built-in simulations of a SWOP (Specifications Web Offset Publications) press, commercial press, video display, and other devices, color correction is fast, accurate and accessible through simple driver selections. Support for PANTONE process color simulations provides even more flexibility.

Digital pre-press proofs complete with trapping

The Phaser 480X provides the capability to print single or multi-page separation files created by Macintosh and Windows applications. Files are automatically assembled and printed, showing the overprint and trapping information. Separation files can be printed as four separate pages or as a composite page.

DCS Print

This standalone utility, running on Macintosh 7.X and Windows 3.1 platforms, allows you to directly print Desktop Color Separation (DCS) files, Adobe Separator and Aldus PageMaker output files. You can print high-quality DCS files by simply dragging the file onto the DCS Print application icon.

PhaserMatch™

PhaserMatch™ is an application for Macintosh and Windows users that provides a simple visual approach to calibrating the printer and editing color profiles. PhaserMatch provides two modes: *easy* and *expert*. The *easy* step-by-step calibration mode requires no training or special measurement equipment. *Expert* mode is designed for the most demanding users who need to consistently and accurately predict and control colors. Users can calibrate the printer; also, users can create custom profiles by adjusting dot gain, defining paper background color, controlling color density and color reproduction curves to simulate the color output of a target press.

The versatility of built-in PostScript Level 2

Tektronix and Adobe co-developed the PostScript Level 2 software in the Phaser 480X to produce fast color rendering and image processing. Image data throughput rivals that of dedicated raster interface printers, without the connectivity limitations.

Software application compatibility

The Phaser 480X lets you make color prints from a wide variety of software applications since most applications support PostScript output.

Hardware platform compatibility

The printer works with virtually any personal computer or workstation because it supports simultaneous input through serial, parallel, LocalTalk, and Ethernet ports.

Expandable memory

The baseline memory for the Phaser 480X is 32 Mbytes of RAM. This is sufficient memory to produce a full two-page spread with a 3-color transfer roll. You can increase the memory in 16 Mbyte- or 32 Mbyte-increments to achieve 4-color printing, color separations, and increased throughput speed. Maximum memory capability is 112 Mbytes. See Appendix B for information on expanding memory.

CD-ROM

By default, the Phaser 480X is shipped with a CD-ROM for platforms that have a CD-ROM drive. (If your computer does not have a CD-ROM drive, you can order the optional diskettes; see Chapter 5 for details.) The CD-ROM includes printer drivers, utility files, and online help, as well as information for PC users running DOS, Macintosh users needing the QuickDraw GX driver, and information on fonts and the serial port.

Wide range of media sizes

The Phaser 480X prints on paper and transparency film ranging in size from Letter to Tabloid Extra. Tabloid Extra provides enough image area to produce a full two-page spread with full edge bleeds.

Font flexibility

Besides its 39 resident fonts, the printer accepts Adobe Type 1, Type 3, and TrueType downloadable fonts and a variety of user-defined fonts. You can download additional fonts as needed, or store them on an external hard disk.

Extensive drivers and utilities

Software for Macintosh, Windows, and workstation platforms are included on the drivers and utilities CD-ROM or diskettes that ship with the printer. The Macintosh and Windows drivers include the capability for printing color separations, showing overprint and trapping information.

The Phaser 480X utilities also include PhaserPrint™ for Photoshop™ — a Photoshop plug-in that achieves higher printing throughput in bypassing the Macintosh LaserWriter driver.

For details on the contents of the Phaser 480X CD-ROM and diskettes, as well as how to use them, refer to the *Phaser 480X Drivers and Utilities Printing Reference*, which is shipped with the printer.

Ordering supplies

To order Tektronix supplies such as paper, transparencies or color transfer rolls, refer to the supplies information sheet that came with the printer and contact your local Tektronix dealer or, in the United States, call Tektronix at:

1-800-835-6100

Chapter

2 Getting Set Up

At a glance

Installation of your Phaser 480X Color Printer involves these tasks:

1. Setting up the printer
   - Checking inventory
   - Removing packing material
   - Loading the transfer roll
   - Setting paper size
   - Loading the paper tray
2. Connecting power and interface cables
3. Installing a driver on your computer
   Using the Tektronix Phaser 480X compact disk (CD-ROM) or the drivers and utilities diskettes to install a print driver on either a Macintosh or a PC running Windows.

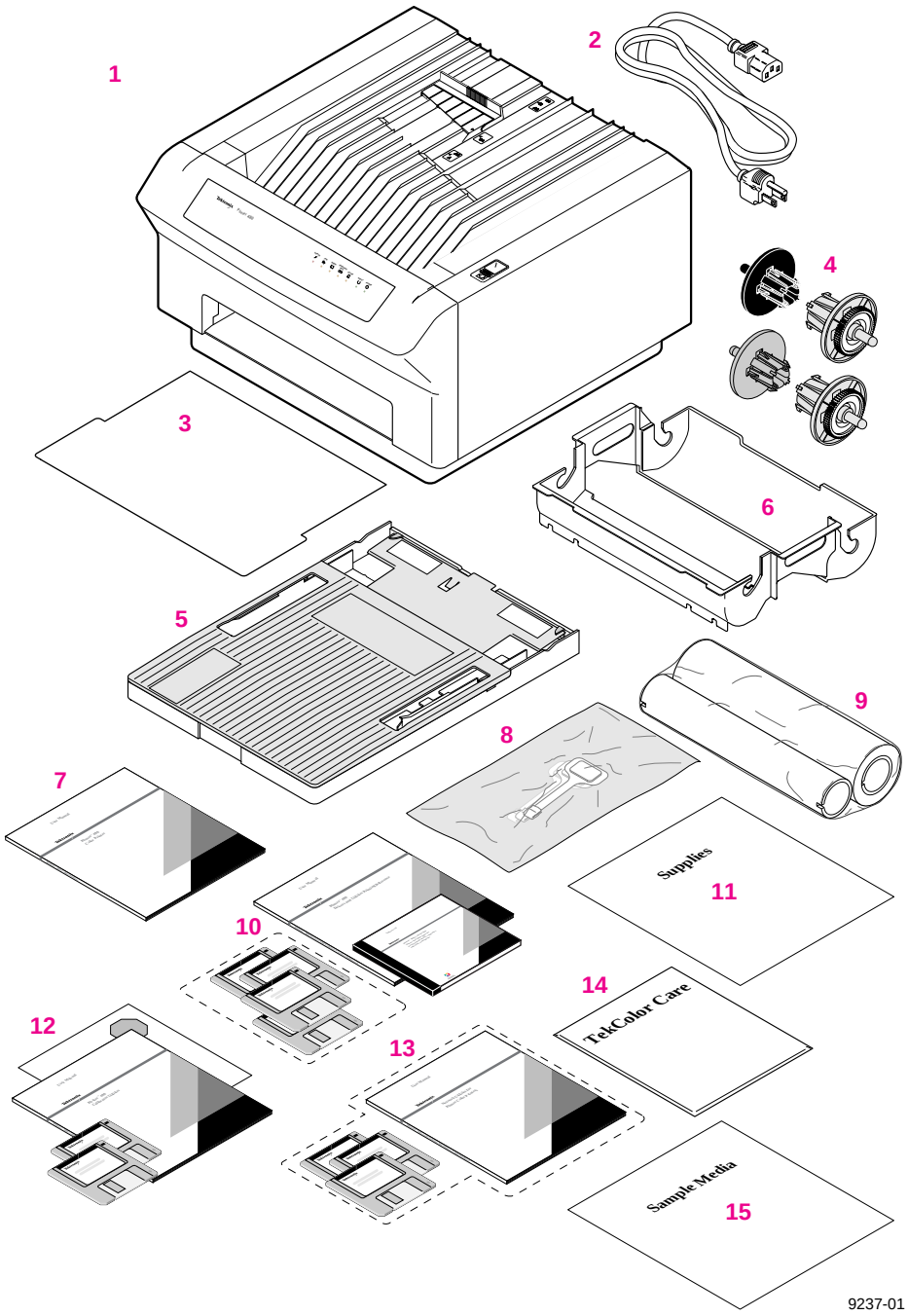
Note *To add a hard disk to your printer, see "Adding a hard disk for font storage" on page B-3.*

Setting up the printer

Checking the inventory

1. Phaser 480X color printer
2. Power cord
3. *Phaser 480 Quick Reference Card*
4. Transfer roll endcaps (2 green, 1 gray, 1 black)
5. Paper tray (B/A3/WB)
6. Transfer roll tray
7. *Phaser 480X User Manual*
8. Cleaning kit
9. Sample transfer roll
10. *Phaser 480X Drivers and Utilities Printing Reference* manual and CD-ROM or optional diskettes
11. Supplies information sheet
12. *Phaser Calibrator User Manual* with the *Gray Balance Reference Card* and optional diskettes
13. Optional *Network Utilities for Phaser Color Printers* manual and diskettes
14. *TekColor Care* information packet
15. Sample media

Note *Save **all** packing material in case moving or subsequent shipment is necessary.*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Supplies
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TekColor Care
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Sample Media
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Registering your printer

The TekColor information envelope contains your product registration card.

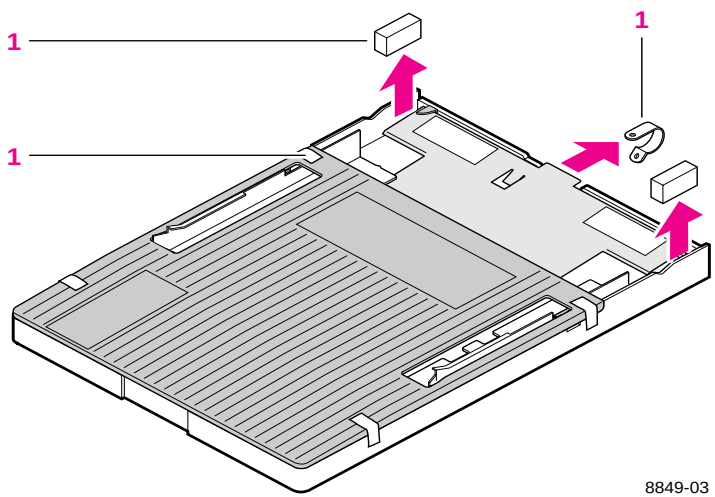
- Find the customer registration card that is appropriate for you (U.S. or international versions).
- Fill out the card and mail it.

By registering your printer with Tektronix, you are validating the product warranty and ensuring that you will be sent information about upgrades, service, and accessories as it becomes available.

Removing the packing material

Note *Save **all** packing material in case moving or subsequent shipment is necessary.*

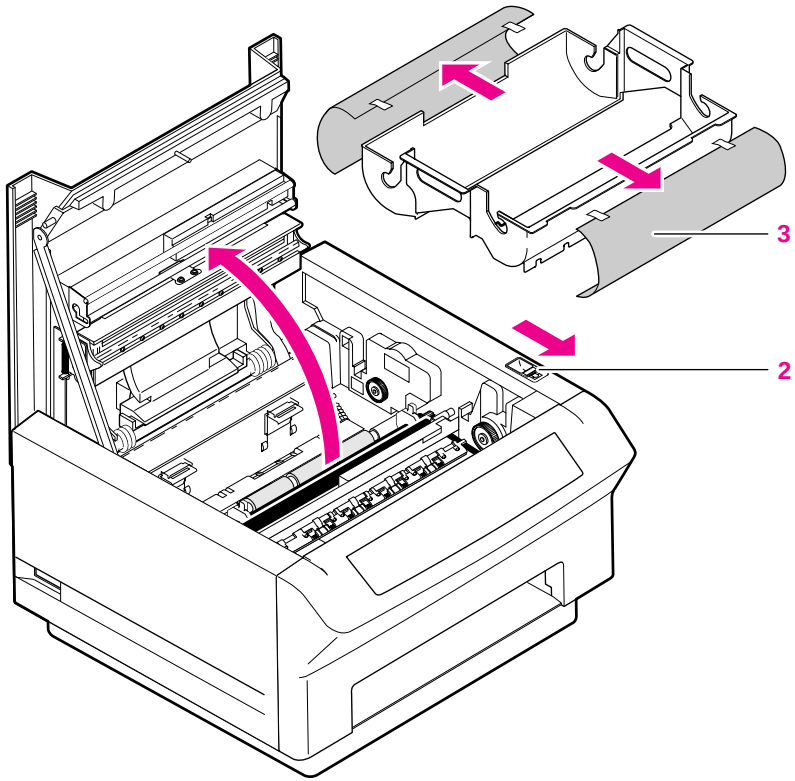
1. Lift the paper tray out of the shipping box; remove all packing material from the tray and set the tray aside.



2. Open the printer cover by sliding the cover release and raising the cover to its full upright position.

Caution *The cover release includes a safety catch. If the cover is only partially lifted, **do not force it open**; you might damage the printer. Slide the cover release again.*

3. Lift the transfer roll tray out of the printer and remove all packing material from the tray.



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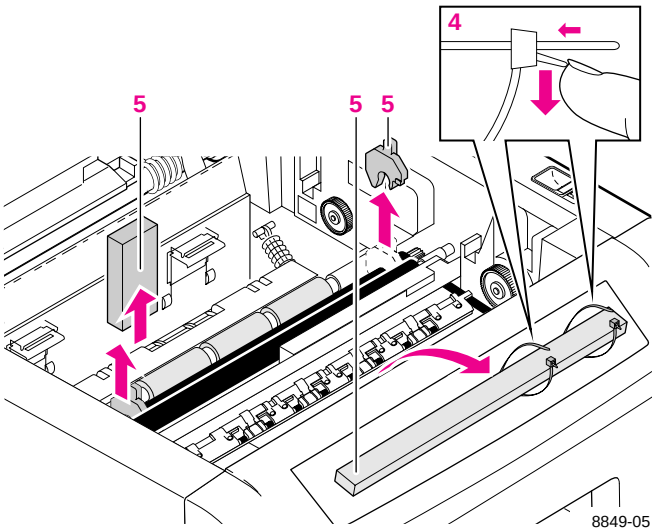
4. Unfasten the tie-wraps: press and hold down the lever under the fastener; then slide the tie-wrap out through the fastener's opening.

5. Remove all packing material from inside the printer.

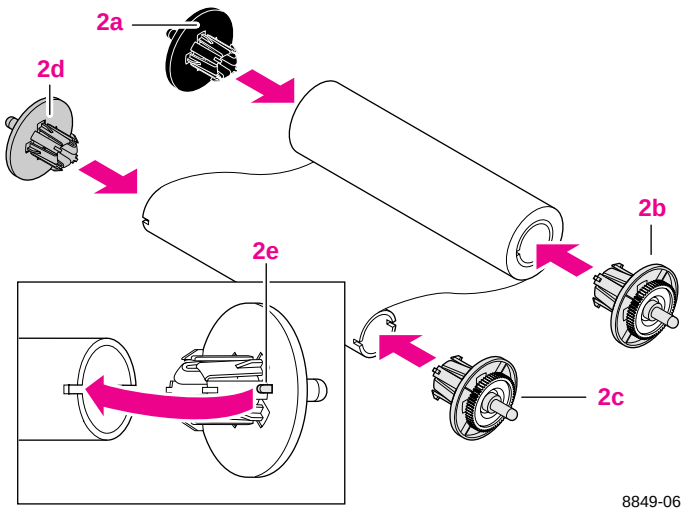
Caution *Do not cut the tie-wraps to remove them; you will need them for repacking. Save* ***all*** *packing material in case moving or subsequent shipment is necessary.*



Loading the transfer roll

Note *To ensure the best print quality, load the transfer roll in an area that is free of dust and dirt.*

1. Unwrap the new transfer roll and position it in the following manner so that the take-up core (the empty side) is closest to you and the supply core (the full side) is farthest away from you.
2. Insert the four endcaps:
   a. Insert the black endcap into the left side of the supply core.
   b. Insert a green endcap into the right side of the supply core.
   c. Insert the green endcap into the right side of the take-up core.
   d. Insert a gray endcap into the left side of the take-up core.
   e. Make sure that the tabs on the endcaps fit snugly into the notches.

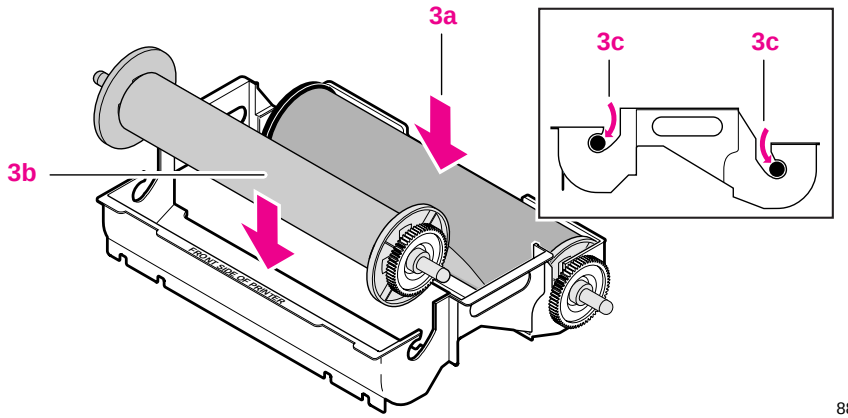


3. Load the transfer roll into the tray. The front of the tray is marked FRONT SIDE OF PRINTER.

   a. Place the supply core into the back of the tray.

   b. Place the take-up core into the front of the tray.

   c. Make sure that the endcap axles are pressed firmly into the openings on the transfer roll tray.



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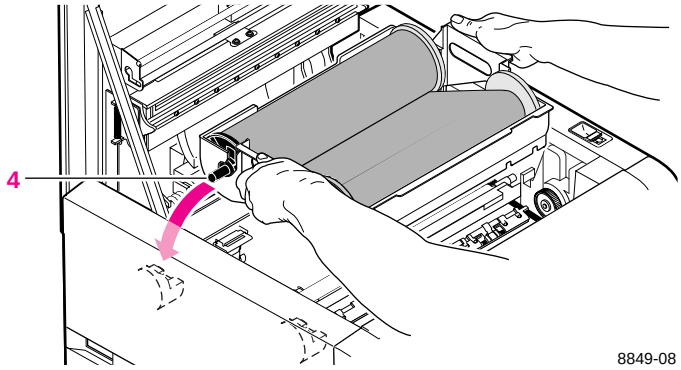
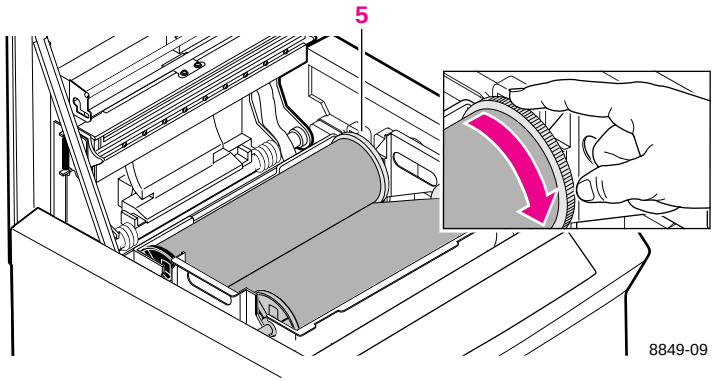
4. Insert the transfer roll tray into the printer and push firmly on the handles so that the axles on the transfer roll lock into place.



5. To remove any slack in the transfer roll, turn an endcap toward the front of the printer until you see that the transfer roll is taut.

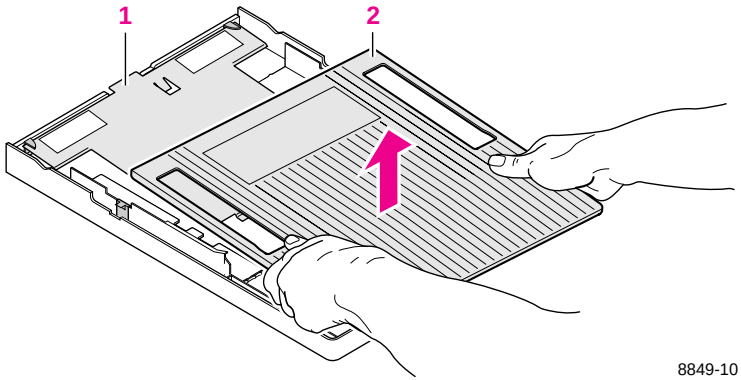


Adding paper

Follow these steps to add paper to the paper tray.

Note *This procedure assumes you are loading B-size paper into the standard paper tray. All sizes of paper and transparency are loaded in the same way. For information on other paper sizes and the optional paper tray, refer to "Setting paper and transparency size" on page 3-8. For information on loading transparencies, see "Loading paper and transparencies" on page 3-11.*

1. Place the paper tray on a flat surface so that the side with the spring-loaded metal plate is farthest away from you.
2. Remove the plastic cover.



3. Adjust the paper tray to fit the media size:

   a. Pull up on the paper guide lock (the metal tab on the right side of the paper tray).

   b. Slide the paper guides on the sides to the desired paper size. For this example, select B.

      Sizes are imprinted on the floor of the paper tray. The standard paper tray accommodates these paper sizes with the following abbreviations and dimensions:

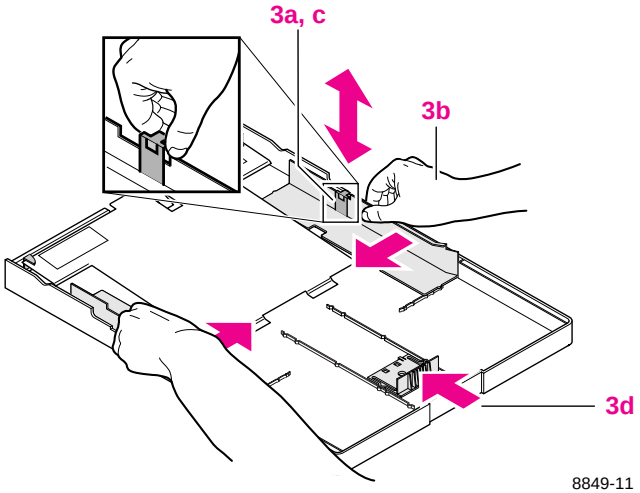
B	Tabloid	11 x 17 in.
A3	Metric B-size	297 x 420 mm
WB	Tabloid Extra	32 x 46.5 mm (12.6 x 18.3 in.)

      The optional paper tray accommodates these paper and transparency sizes:

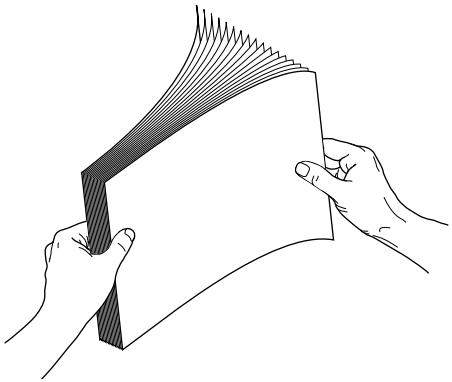
A	U.S. Letter	8.5 x 11 in.
A4	Metric Letter	210 x 297 mm

   c. Push down on the paper guide lock to lock the guides in place.

   d. Adjust the rear paper guide to the same setting as the other guides. For this example, select B.



4. Fan the stack of paper, but be careful not to touch the printing side — fingerprints can cause smudged prints.



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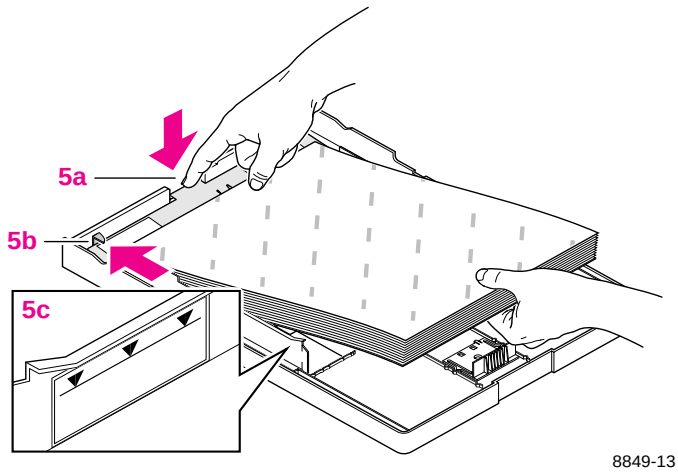
5. Load the paper into the paper tray *with the printing side down* (the non-printing side is marked with Tektronix):

   a. While pressing down on the tab of the metal plate, slide the paper into the tray.

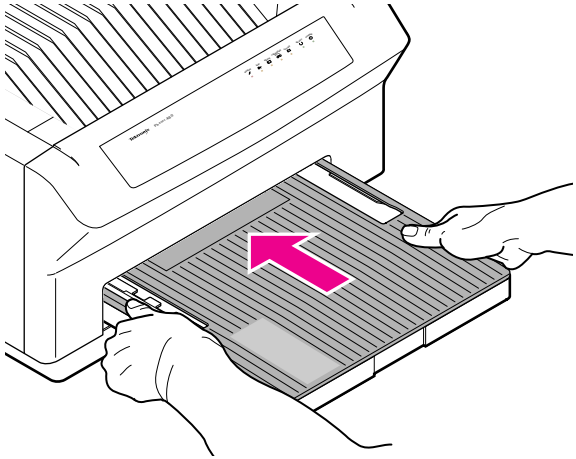
   b. Make sure that the hooks are positioned over the left and right corners of the paper and that the paper is inserted evenly with the printing side down.

   c. Do not fill past the red line on the left inside wall of the paper guide (approximately 50 sheets).



6. Replace the plastic cover on the paper tray.

7. Insert the paper tray into the slot in the front of the printer and push it all the way in.



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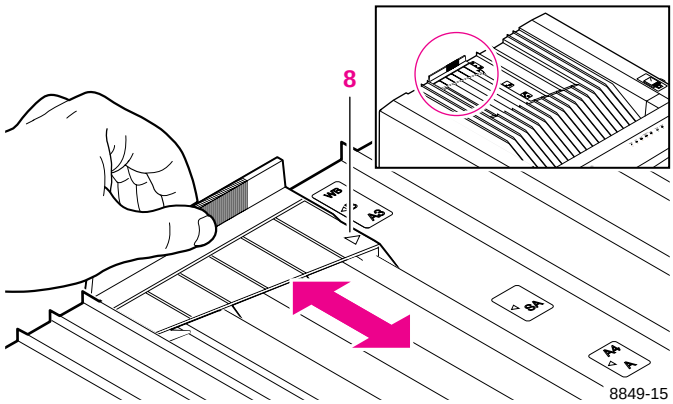
8. Adjust the paper stopper on the printer's top cover so that the arrow aligns with the arrow next to the desired paper size.



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Connecting the printer

Printer ports

The printer accepts data through four ports:

- LocalTalk
- Parallel
- Ethernet
- Serial (RS-232)
  Information on the serial port can be found in the following places:
  - The Tektronix CD-ROM
  - HAL and EuroHAL, the Tektronix automated fax systems
  - Internet World Wide Web

  For specific information, refer to "If you need help" on page 6-1.

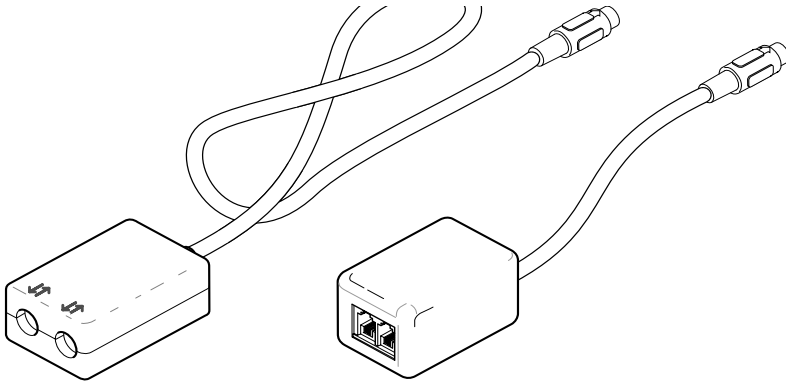
The Phaser 480X also includes a SCSI port, which is only used for connecting an external hard disk. Refer to "Adding a hard disk for font storage" on page B-3 for more information on the SCSI port.

LocalTalk connection

You can make LocalTalk connections between the printer and a single computer or on a LocalTalk network using a *daisy-chain* setup. If your LocalTalk installation is complex, or if you need assistance, contact your network system administrator.

LocalTalk connectors and cables are available through your dealer. This illustration shows two commonly used types of LocalTalk connectors:

1. Self-terminating connector.
2. Connector that requires an external terminator (depending on your network configuration).



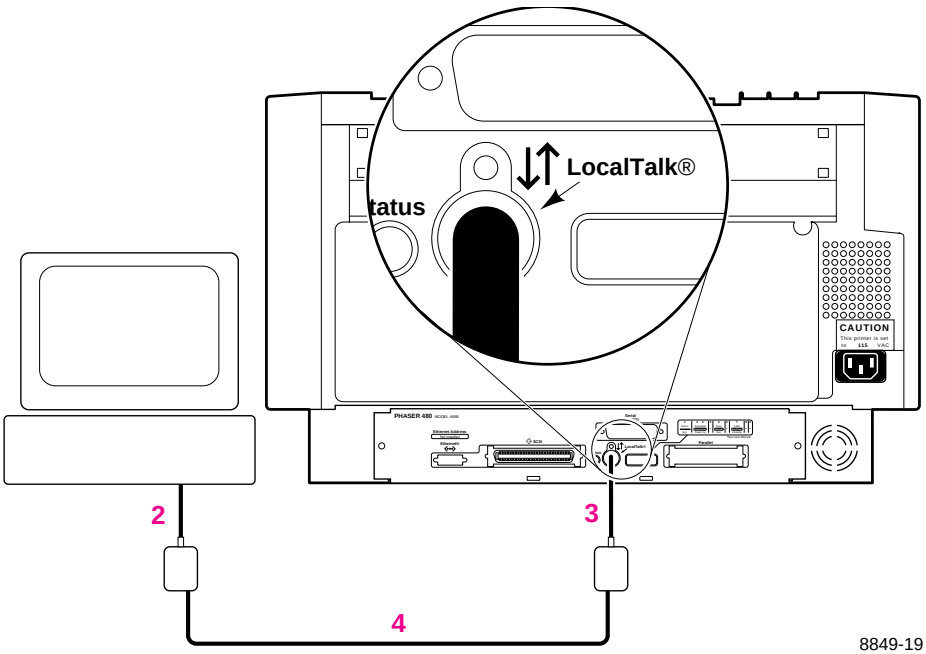
Note *Depending on the type of LocalTalk cables you use and your network configuration, you might need to use terminators at certain points in the installation. Refer to the documentation for your LocalTalk connectors and cables for details.*

Note *LocalTalk is sometimes referred to as AppleTalk. LocalTalk refers to the physical connection; AppleTalk is the protocol.*

Connecting to a single computer

Follow these steps if you are connecting the printer directly to your computer via LocalTalk:

1. Make sure that the printer is turned *off* before making any LocalTalk connections.
2. Connect the short cable of a LocalTalk connector to your computer's LocalTalk port.
3. Connect the short cable of a second LocalTalk connector to the printer's LocalTalk port.
4. Connect a LocalTalk cable between the two LocalTalk connectors you have just attached to your computer and your printer.

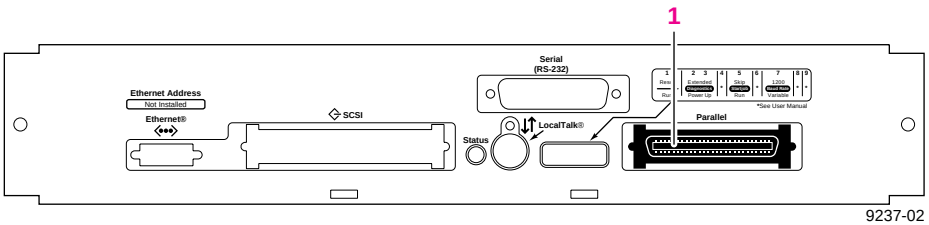


Note *If your LocalTalk connectors require an external terminator (see the illustration on the previous page), make sure that the last device on either side of the network has a terminator inserted into its LocalTalk connector.*

If you have no other connections to make, read ahead to "Turning on the printer" on page 2-19.

Parallel connection

1. Connect a parallel interface cable to your computer and to the printer's parallel port.



If you have no other connections to make, read ahead to "Turning on the printer" on page 2-19.

Ethernet connection

Ethernet is a communication standard that supports very high speed data transmission — up to 10 times faster than LocalTalk. If you ordered your printer with the network option, you received the Network Utilities diskettes and the *Network Utilities for Phaser Color Printers* manual. Refer to that manual for complete information on Ethernet (including setup).

SCSI connection

The SCSI port is used for connecting an optional external hard disk to your printer (the external disk is used to store fonts). Refer to "Adding a hard disk for font storage" on page B-3 for information on installing a hard disk.

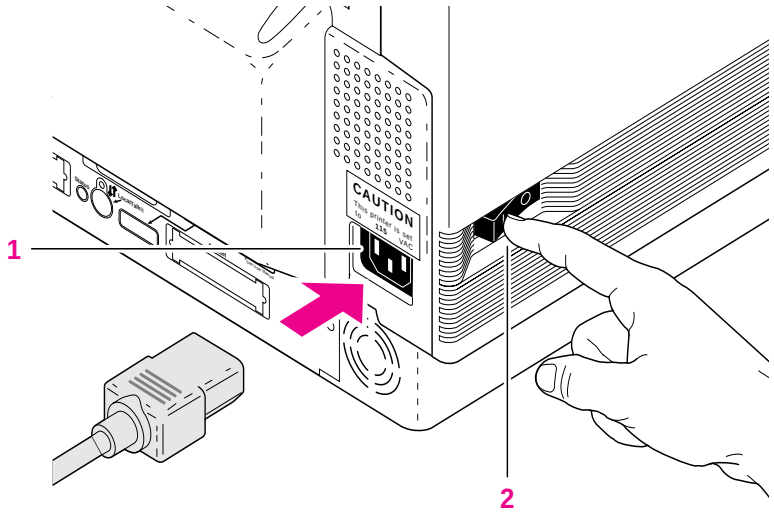
Turning on the printer

After you have connected all the interface cables, you are ready to connect the power cord and turn on the printer.

Caution *Before applying power, verify that the line voltage of your printer (indicated on the printer's rear panel) matches the line voltage in your area to avoid damage to the printer.*

To protect your printer from a power surge, make sure that the power switch on the side of the printer is in the ***off*** *position before plugging in the cord.*

1. Plug the power cord into the printer and into a properly grounded electrical outlet.
2. Turn on the printer.



8849-20

What happens at power-up

All indicators on the printer's front panel light up for approximately 30 seconds, and the printer goes through a series of self-tests. The printer takes 1 to 3 minutes (depending on the amount of memory installed) to warm up and complete the self-tests.

- Check the indicators on the front and back panels of the printer:
  - **Front**
    All indicators light for about 30 seconds, then all but the POWER indicator go out for about 60 seconds; the READY light blinks for a few seconds. When both the POWER and READY lights are on, the self-tests are complete.
  - **Back**
    The status indicator lights for about 3 seconds; then goes off and on — first rapidly; then slowly— then it blinks regularly, indicating normal operation.
- When the self-tests run successfully, the Phaser 480X prints a startup page (if the startup page is enabled), which takes from 1 to 4 minutes to print. The READY indicator blinks while the startup page is printing.

Note *When you receive your printer from Tektronix, the startup page is disabled. Because it contains useful information on printer configuration and print count, you might wish to enable the startup page. When enabled, the startup page prints whenever the printer is powered up or reset. Refer to "Enabling/disabling the startup page" on page A-1 for general information. You can also generate a configuration page with detailed information useful for troubleshooting. Refer to "Configuration page" on page A-3 for more information. Refer to the* ***Phaser 480X Drivers and Utilities Printing Reference*** *for detailed information.*

Installing a driver on your computer

Packaged with your printer are the Phaser 480X compact disk (CD-ROM) for platforms with a CD-ROM drive or, if your computer does not have a CD-ROM drive, optional PC and Macintosh diskettes. The CD-ROM and diskettes contain drivers and utility files that let you select between media type, color corrections, and other features. In addition, the CD-ROM contains other software for use with your printer, online help, information for PC users running DOS, and installation and use of the Phaser 480X GX driver for Macintosh users.

If your computer does not have a CD-ROM drive and you need to order the optional diskettes, refer to the table in Chapter 5 for the order number. For complete details on the contents of the Phaser 480X CD-ROM and diskettes and how to use them, refer to the *Phaser 480X Drivers and Utilities Printing Reference*, which is shipped with the printer.

PC: Microsoft Windows driver

The Phaser 480X CD-ROM and diskettes include a Tektronix driver for Windows 3.1 for this printer. To use Microsoft Windows applications with this printer, install the driver on your PC.

1. Start Windows on your PC.
2. Insert the Tektronix CD-ROM into the CD-ROM drive or the Tektronix Windows 3.1 Driver and Printer Utilities diskette into your computer's disk drive.
3. In the main window, double-click on the Control Panel.
4. Double-click the Printers icon; the Printers dialog box appears.
   a. Click the Add button.
   b. In the List of Printers, select Install Unlisted or Updated Printer.
   c. Click the Install button.

5. Type in the drive that the CD-ROM or PC diskette is in (for example, for the CD-ROM drive, enter /DRIVER; for the PC drive, enter A or B) and click OK.

6. Select your printer from the list of printers and click OK. The driver software you need is automatically installed.

7. Assign the printer to a port:

   a. Select the printer from the list of Installed Printers.

   b. Select the Set As Default Printer button if you want this printer to be the default.

   c. Select the Connect button to display the Connect dialog box.

   d. In the Connect dialog box, set the Transmission Retry value to 850. Refer to your Windows documentation for details.

   e. In the Connect dialog box, select a port:

Interface	Select
Parallel	LPT1 or LPT2
Serial	COM1 or COM2
Network	Network port

   - **If you selected a parallel port:** Go on to Step **f**.
   - **If you selected a serial port:**
     Click on the Settings button to open the Settings dialog box. Fill in each item according to the printer's configuration page, then click OK. Refer to your Windows documentation for details or ask your network administrator for help.
   - **If you selected a network port:**
     Click the Network button. The Printers – Network Connections dialog box appears. Fill in each item according to the printer's configuration page; then click OK. Refer to Windows documentation for details, or ask your network administrator for help.

Note *The printer's configuration page contains the information you need to set up the printer port. Refer to "Configuration page" on page A-3 to print the configuration page.*

f. Click on OK in the Connect dialog box and close the Printers dialog box.

Macintosh drivers

The Tektronix CD-ROM and the Macintosh Printer Drivers diskette include two Macintosh printer drivers that allow you to select page sizes, media type, and TekColor color corrections for a Phaser 480X printer.

- Use the Phaser 480X driver if you are using System Software 7.0 and later. The Phaser 480X driver is a Tektronix-modified version of Apple's LaserWriter 7.1.2 printer driver. If you are using System Software 7.5 and QuickDraw GX, you must disable QuickDraw GX before using this driver; the Phaser 480X driver does not work with QuickDraw GX.

- Use the Phaser 480X GX driver if you are using QuickDraw GX and System Software 7.5 or later. The Phaser 480X GX driver works with QuickDraw GX applications and with non-QuickDraw GX applications.

Note *Information on installing and using the* ***Phaser 480X GX*** *driver can be found on the CD-ROM, through the Internet, or on HAL and EuroHAL, the Tektronix automated fax systems. Refer to "If you need help" on page 6-1 for details on Internet access and on using the HAL and EuroHAL systems.*

The *Phaser 480X Drivers and Utilities Printing Reference* manual provides detailed driver installation procedures and complete information on using the Tektronix drivers with your printer.

In addition to installing a driver, you may also need to install PostScript printer description files for applications such as Aldus PageMaker and QuarkXPress. For details on printing from an application, refer to the *Phaser 480X Drivers and Utilities Printing Reference* manual.

Installing the Phaser 480X driver

1. Make sure that your Macintosh is turned on with System Software version 7.0 or later installed.

2. Insert the CD-ROM into the CD-ROM drive or the Macintosh Printer Drivers diskette into the disk drive.
   - If you are using the CD-ROM, open it and open the *Drivers* folder.
   - If you are using the diskette, it should appear on the desktop open, showing the icons inside.

3. Drag the Phaser 480X driver icon and the Phaser 480X Prefs file from the CD-ROM or diskette to the closed *System Folder* icon on your Macintosh hard disk.
   - At the alert message, click OK to automatically install the software in the *Extensions* folder.

4. Select Chooser from the Apple menu.

5. Click the Phaser 480X printer driver icon on the left side of the Chooser. A list appears with the printers you have connected to your Macintosh or printers that are available on a network. (If the printer driver icon does not appear, Restart your Macintosh, and repeat the printer driver installation procedure; also check the cable connections on your computer and printer.)

6. Click on the Phaser 480X printer in the list of printers on the right side of the Chooser.

7. Close the Chooser by clicking its close box.

8. Store the CD-ROM or diskette in a safe place.

Workstation users

The printer-control PostScript files that are on the Tektronix CD-ROM and the Windows 3.1 Driver and Printer Utilities PC-format diskette can be used with Unix and VMS workstations. These files let you set up your spooling system to select between media types, color corrections and other features.

Unix workstation users can access utility files in the following ways:

- Install the files from the CD-ROM if your system includes a CD-ROM drive.
- Mount the optional PC diskette on the workstation (refer to the table in Chapter 5 for ordering information).
- Download utility files from the Tektronix Bulletin Board Service (BBS).
- Request utility files from the Tektronix Color Printer Information Server over the Internet.

Most workstations with 3.5-inch disk drives provide a device driver that allows you to mount a PC floppy diskette. Refer to the *Phaser 480X Drivers and Utilities Printing Reference* manual for information on mounting PC diskettes.

Refer to the Chapter 6 in this manual for information on accessing Tektronix' Bulletin Board Service or Color Printer Information Server.

What next?

- When you have set up all the hardware and connectors, installed the software on your computer, and turned on the power, you are ready to print. Chapter 3, "Printing," contains useful information on printing features such as color correction, fonts, and printing hints. For detailed information on printing options, refer to the *Phaser 480X Drivers and Utilities Printing Reference* that was shipped with your printer.
- To install a hard disk for your printer's fonts, refer to "Adding a hard disk for font storage" on page B-3.
- To enable the startup page, refer to "Enabling/disabling the startup page" on page A-1.

Chapter

3 Printing

Which platform?

You can print to your printer from any of these platforms:

- Macintosh
- PC in Windows

  To print from a Macintosh or a PC running Windows, you should have first installed the Tektronix driver for your computer. For information on installing the drivers, see "Installing a driver on your computer" on page 2-21. For detailed information on using the drivers, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Note *If you are using DOS on a PC, you can get online information from the CD-ROM, from the Internet, and from HAL and EuroHAL, the Tektronix automated fax systems. Refer to "If you need help" on page 6-1 for details.*

- Workstation

Printing from a Macintosh

The Tektronix CD-ROM and the Macintosh Printer Drivers diskette include two Macintosh printer drivers that allow you to select printer features.

Using the Phaser 480X driver

1. Make sure that the Tektronix printer driver for the Macintosh has been installed. If it hasn't, refer to "Installing a driver on your computer" on page 2-21 for instructions.

2. Select the driver:

   a. Select Chooser from the Apple menu.

   b. Select the Tektronix driver by clicking on the Phaser 480X printer icon. (If it did not appear in the list of drivers, restart your Macintosh and repeat the driver installation procedure.)

      A list of printers available in the current zone appears.

   c. Select the zone where your Phaser 480X is connected.

   d. Select the printer by name (default is Phaser 480X).

      You can change the default name with the *LaserWriter Utility* which is on the CD-ROM and the Macintosh Printer Utilities diskette. See the *Phaser 480X Drivers and Utilities Printing Reference* for instructions.

3. To print a file, use the Page Setup and Print commands from the File menu within your application:

   a. In the Page Setup dialog box, select the desired paper size so that the application uses the correct margins for the printer. To see the printer's page sizes in the Page Setup dialog box, use the pop-up menu to the right of the standard LaserWriter page sizes.

Note *If you are using the standard LaserWriter driver, select **U.S Letter**, **A4 Letter**, **Tabloid**, **A3 Tabloid**, or **Tabloid Extra** paper sizes.*

b. Click the TekColor button in the Print dialog box to open the TekColor Options dialog box, in which you can select the TekColor color corrections and media type options. If you are printing color separations from one of the supported applications, you can use the Combine Separations option to print the separations as a single file. For more details on the driver, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Note *Make sure that you load the same type of media in the paper tray that you select in the printer driver. Failure to do so will result in a ruined image: selecting **Paper** and printing on transparency causes washed-out colors; selecting **Transparency** and printing on paper causes over-saturated (dark) colors.*

The CD-ROM and the Macintosh Printer Utilities diskette contain the PhaserPrint plug-in file for use with Photoshop™ and Phaser 480X printers. Use this plug-in within the Photoshop application to improve the image data transfer time from your Macintosh to your printer. For instructions on installing and using PhaserPrint, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Using the GX driver for the Phaser 480X and the LaserWriter 8.x driver

Complete information on using the Phaser 480X GX driver and the LaserWriter 8.x driver can be found on the CD-ROM, through the Internet, or on HAL and EuroHAL, the Tektronix automated fax systems. Refer to "If you need help" on page 6-1 for details.

Printing from a PC: Windows

1. Make sure that the Windows printer driver has been installed.

2. Click on the Printer Setup command from the File menu (or the similar command in your application). Select Tek Phaser 480X (TekColor) from the list. If you have previously set the printer as the default printer, it will already be selected on the list.

3. Use the Setup dialog box to select the paper size and other printing options.

4. Click on the Options button to display the Options dialog box.

   a. Click on the Printer Features button to display the Tektronix Printer Features dialog box.

   b. Use the Tektronix Printer Features dialog box to select TekColor color corrections and media type (Paper or Transparency).

   c. Use the Combine Separations check box if you are printing color separations from one of the supported applications and you want to print the separations as a single file. Once you mark the check box, you can select your application from the pulldown list.

Note *Make sure that you load the same type of media in the paper tray that you select in the printer driver. Failure to do so will result in a ruined image: selecting **Paper** and printing on transparency causes washed-out colors; selecting **Transparency** and printing on paper causes over-saturated (dark) colors.*

If the Printer Features button does not appear in the Options dialog box, the Tektronix Windows driver probably is not installed or the Phaser 480X has not been selected.

For details on the Tektronix driver, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Printing from a Unix or VMS workstation

You send files from your workstation to the Phaser 480X as you would to any PostScript printer (for example, the Apple LaserWriter II NTX). Workstation users can print from any application that generates PostScript Level 1 or 2.

For Unix and VMS environments, Tektronix offers PhaserPrint™, which provides fast raster screen copy printing to Tektronix color printers. PhaserPrint also provides a graphical user interface for push-button control of Tektronix printer features.

PhaserPrint software is available for these workstations:

Workstations	Operating systems
Sun:	SunOS 4.1.3, Solaris 2.3, 2.4
SGI:	IRIX 4.0.1, 5.2, 5.3
HP 9000 700/800:	HPUX 9.05
IBM RS/6000:	AIX 3.2
DECstation:	Ultrix 4.0, 4.4
DEC Alpha AXP:	OSF/1 1.3, 3.0

Note *Tektronix offers a similar solution for DEC OpenVMS VAX and DEC OpenVMS AXP.*

PhaserPrint works with the workstation's native spooling system to print PostScript files and raster files in these formats: Sun Raster Format (SRF), `xwd`, and SGI RGB.

For VMS environments, Tektronix also offers PhaserSym, a VMS print symbiont. Refer to Appendix B for ordering information.

For information on printing from workstations and setting up spooling systems, you can look on the CD-ROM or contact HAL or EuroHAL, the Tektronix automated fax systems. Refer to "Using the automated fax systems" on page 6-4 for details on using the HAL and EuroHAL systems.

The printer-control PostScript files that are on the CD-ROM and the PC-format diskettes can be used for Unix workstations. Most workstations with 3.5-inch disk drives provide a device driver that allows you to mount a PC floppy diskette. These PostScript files let you set up your spooling system to select media types, color corrections and other features.

If you don't have the means of transferring utility files from either the CD-ROM or PC diskette, you can download utilities and files from the Tektronix Bulletin Board Service (BBS), request files from the Tektronix Color Printer Information Server (an automatic file serving program on the Internet), or from the World Wide Web, eWorld and America OnLine. Refer to Chapter 6, "Troubleshooting," for information about accessing these network resources.

Printing from specific applications

Refer to the *Phaser 480X Drivers and Utilities Printing Reference* manual for some application-specific information.

In addition, you can get tips on printing from specific applications (such as QuarkXPress and PageMaker) by contacting HAL or EuroHAL, the Tektronix automated information systems. HAL and EuroHAL fax you information immediately on applications and other topics. To receive a HAL FAX catalog, call toll-free in the United States 1-800-835-6100, or dial direct (503) 682-7450. For a EuroHAL catalog, and for complete information on both HAL and EuroHAL, see "Using the automated fax systems" on page 6-4.

About paper and transparencies

Handling paper and transparencies

- Make sure that paper trays are free of dust. Dust and dirt in a paper tray can be transferred to the paper, resulting in poor print quality.
- Handle paper and transparencies at the edges to avoid fingerprints. Fingerprints can result in a smudged print.
- Store unused paper and transparencies in the original dust-free package.
- Handle transparencies with both hands to avoid creases, which can result in poor print quality.
- To avoid having paper or transparencies stick together, fan them before loading into the paper tray.

Setting paper and transparency size

The Phaser 480X has two paper trays accommodating five paper sizes and two transparency sizes:

Standard Tray
For B, A3, and WB

Optional Tray
For A and A4

To adjust the trays for any of these sizes, follow three basic steps:

1. **Select a paper tray.**

   Decide on a paper or transparency size and select the appropriate tray. The paper and transparency size names are imprinted on the paper trays.

Tray	Size	Media
Standard Tray		
B (Tabloid)	11 x 17 in.	paper
A3 (Metric Tabloid)	297 x 420 mm	paper
WB (Tabloid Extra)	32 x 46.5 mm 12.6 x 18.3 in.	paper
Optional Tray		
A (U.S. Letter)	8.5 x 11.0 in.	paper and transparency
A4 (Metric Letter)	210 x 297 mm	paper and transparency

Note *If you plan to use Letter-size media regularly, order the **Z480FSS** kit which includes the optional paper tray, Letter-size paper, a Letter-size transfer roll, and an extra transfer roll tray for convenient swapping of the transfer roll.*

2. Set the paper guides on the tray.

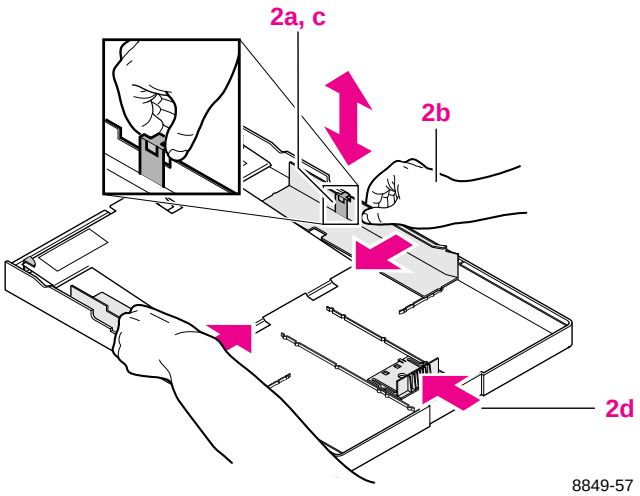
On the paper tray, adjust the side and rear paper guides to the desired size:

a. Pull up on the paper guide lock (the metal tab on the right side of the paper tray).

b. Slide the paper guides on the sides to the desired paper size. Select A3, B, or WB (Tabloid Extra) on the standard tray and A or A4 on the optional tray.

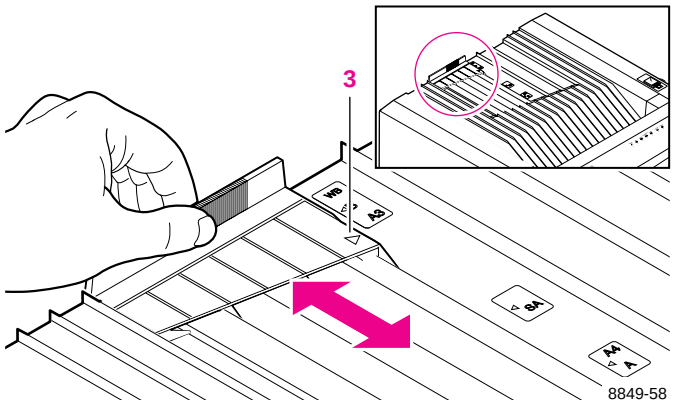
c. Push down on the paper guide lock to lock the guides in place.

d. Adjust the rear paper guide to the same setting as the other guides.



3. Set the paper stopper.

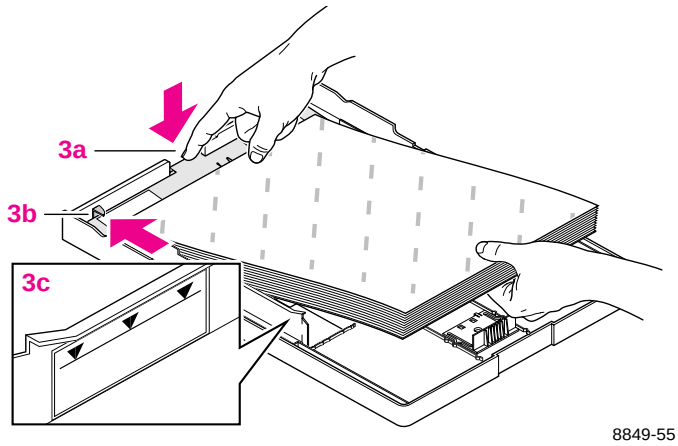
Adjust the paper stopper on the printer's top cover for the paper or transparency size you are using. Align the arrow with the arrow next to the desired paper or transparency size. Select from A (U.S. Letter), A4 (Metric Letter), A3 (Metric Tabloid), B (Tabloid), and WB (Tabloid Extra).



Loading paper and transparencies

You load the paper tray with paper and transparencies in the same way:

1. Pull the paper tray out of the printer and remove the plastic cover.
2. On the paper tray, set the correct size by adjusting the paper guides on the sides and rear of the tray. (Refer to "Setting paper and transparency size" on page 3-8 for details.)
3. Load paper or transparencies into the paper tray, *with the printing side down* (the paper's non-printing side is marked with Tektronix; the transparency's non-printing side is marked with This Side up):
   a. While pressing down on the tab of the metal plate, place the paper or transparencies (*printing side down*) into the tray.
   b. Make sure that the paper or transparencies are inserted evenly and the hooks are positioned over the left and right corners of the media.
   c. Do not fill past the red line on the left inside wall of the paper guide.



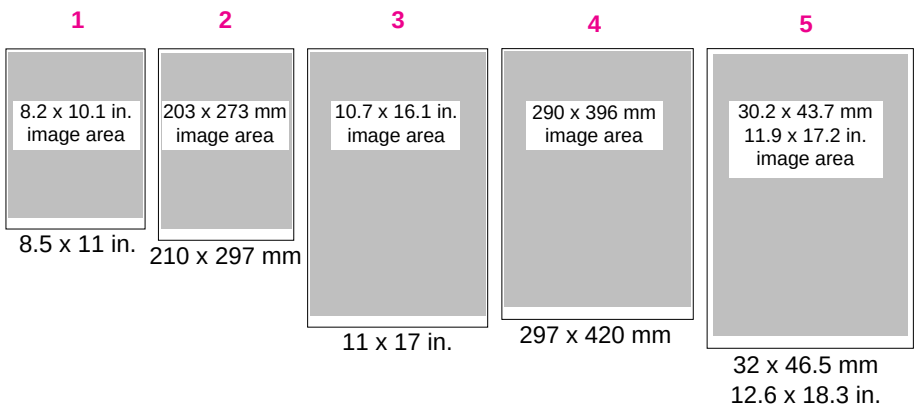
4. Replace the plastic cover on the paper tray.
5. Insert the paper tray into the slot in the front of the printer and push it in until it stops.

Margins and print area

When the printer places an image on paper, the image (print area) is a bit smaller than the paper size. You may need to adjust the page margins in your application software to match the print area.

This illustration shows the page dimensions, margins, and the largest print areas for all sizes of paper and transparency supported on this printer. The names in parentheses are the choices that appear in the driver.

1. A (Letter)
2. Metric letter (A4)
3. B (Tabloid)
4. Metric tabloid (A3)
5. WB (Tabloid Extra)



Note *The standard tray supplied with the printer accommodates B, A3, and WB sizes. The tray for A and A4 must be ordered separately. To order, refer to Chapter 5 or the supplies information sheet.*

Manual feed

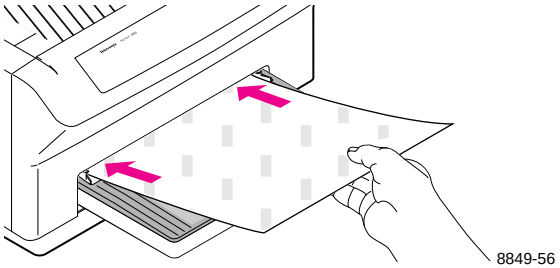
Follow these steps to feed a single sheet of media into the printer. The manual feed option is selected through the Windows and Macintosh drivers. Typically, you would use manual feed when one of these conditions exist:

- Paper is loaded in the paper tray and you want to print a transparency *of the same size*.
- Transparencies are loaded in the tray and you want to print on paper *of the same size*.

1. Make sure that the media you want to manually feed is the same size as the media in the paper tray. If it is not, reset the size on the paper tray to accommodate the single sheet of paper or transparency.

Note *If you do not set the paper tray to the correct size for manual feed, the print might jam or you might get an improperly placed image on your print.*

2. Issue the print command on your computer. In the drivers, select Manual Feed under Paper Source. The MEDIA indicator blinks for 60 seconds.
3. Place the single sheet, *printing side down*, on the paper tray cover and slide it in until it stops. If the paper tray is empty, the printer immediately picks the single sheet. If the paper tray is not empty, the printer waits for the MEDIA indicator to stop blinking, then picks the single sheet.



Color correction

There are several ways to correct colors on your prints:

- **Using a printer driver or a utility file.**

  The printer driver provides nine color corrections and the utility files provide ten color corrections:

Color correction mode	Driver	Utility files
No color correction	✓	✓
Vivid Color	✓	✓
Simulate Display	✓	✓
SWOP Press (closely matches printing press colors)	✓	✓
SNAP Press (closely matches printing press colors)	✓	✓
Euroscale Press (closely matches printing press colors)	✓	✓
Commercial Press (closely matches printing press colors)	✓	✓
Monochrome	✓	✓
Raw CMYK		✓
Raw RGB		✓
Use Printer Setting	✓	

  For details on making color corrections through a printer driver or a utility file, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

■ Using the color correction switches on the printer's rear panel.

The Phaser 480X allows you to make color corrections with rear panel Switches 8 and 9. If using the Tektronix driver, select Use Printer Setting. The combinations of these two switches have the following effect:

Switch 8	Switch 9	Color correction mode
down	down	No color correction
down	up	SWOP Press (closely matches printing press colors)
up	down	Vivid Color
up	up	Use NVRAM setting (default setting is Euroscale Press)

Note *If your printer is on a network and you have changed rear panel Switches 8 or 9, make sure you tell other users on the network since the switches affect* ***all*** *prints made with non-Tektronix drivers or the* ***Use Printer Setting*** *option in the Tektronix drivers. The NVRAM setting can be changed when both switches are* ***up****, by sending one of the utility files from the CD-ROM or the diskettes.*

Using the rear panel switches for color correction is only necessary if you are not set up to use the Phaser 480X drivers. If you are using TekColor Dynamic Correction in the Phaser 480X drivers, the settings you choose in the drivers override the rear panel switches.

For complete information on color correction, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

- **Using color sampler charts provided on the CD-ROM and diskettes.**

  The printer's CD-ROM and diskettes contain color sampler charts for CMYK (cyan, magenta, yellow, and black), RGB (red, green, and blue), HSB (hue, saturation, and brightness), and PANTONE Colors. The charts consist of colored rectangles and coordinate values. Print out the appropriate chart for your application, and use the coordinate values to select colors within an application. For example, your printer can produce PANTONE-approved process color simulations. Use the PANTONE Color sampler chart to select the process color values within software applications that support PANTONE Colors.

  For details on printing the charts, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Fonts: resident typefaces

Courier
Courier Bold
Courier Oblique
Courier Bold Oblique

ITC Avant Garde Gothic Book
ITC Avant Garde Gothic Book Oblique
ITC Avant Garde Gothic Demi
ITC Avant Garde Gothic Demi Oblique

ITC Bookman Light
ITC Bookman Light Italic
ITC Bookman Demi
ITC Bookman Demi Italic

Helvetica
Helvetica Bold
Helvetica Oblique
Helvetica Bold Oblique

Helvetica Condensed
Helvetica Condensed Bold
Helvetica Condensed Oblique
Helvetica Condensed Bold Oblique

Helvetica Narrow
Helvetica Narrow Bold
Helvetica Narrow Oblique
Helvetica Narrow Bold Oblique

New Century Schoolbook
New Century Schoolbook Bold
New Century Schoolbook Italic
New Century Schoolbook Bold Italic

Palatino
Palatino Italic
Palatino Bold
Palatino Bold Italic

Times Roman
Times Bold
Times Italic
Times Bold Italic

ITC Zapf Chancery Medium Italic
☆✶⌘ ✺❁❒❄ ⌘❊■✵✲❁▼▲ (ITC Zapf Dingbats)
Σψμβολ (Symbol)

8849-22

Downloading fonts

The printer accepts PostScript Type 1 and Type 3 downloadable fonts including those from Adobe, AGFA, Bitstream, Microsoft, Apple, and many others.

The Phaser 480X also accepts TrueType fonts (Type 42), which are scalable to any point size and look the same on the screen as they do printed.

If you have an external hard disk connected to the Phaser 480X, you can store the downloadable fonts on it. For details on using fonts, look on the CD-ROM or contact Tektronix' HAL system at 1-800-835-6100.

Screen fonts

For information on downloading screen fonts, use one of the following:

- Phaser 480X CD-ROM
- Network resources (World Wide Web, eWorld, America Online, CompuServe)
- HAL and EuroHAL, the Tektronix automated fax system.

Refer to Chapter 6 for more information.

Printing hints

Application hints

For information about using specific software applications with your printer, refer to the *Phaser 480X Drivers and Utilities Printing Reference* or contact Tektronix' HAL or EuroHAL information systems at 1-800-835-6100.
For instructions on using these systems, refer to "Using the automated fax systems" on page 6-4.

Tektronix supplies and drivers

Always use Tektronix supplies to ensure the highest quality prints and printer performance. Tektronix print drivers provide extensive control of print features.

Getting the largest printed picture

To get the largest printed picture, keep in mind the following:

- The area of paper that the Phaser 480X prints on is smaller than the paper size (refer to "Margins and print area" on page 3-12 for more details). You may have to adjust the margins in your application software.
- Use a Tektronix Phaser 480X driver to get the largest print (image) areas. Refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Relative port speed

Ethernet is the fastest port, followed by the parallel port, the LocalTalk port, then the serial port.

How long does it take to make a print?

The total print time depends on the following:

- Image complexity
- Image size
- Type of port used
- Printer's memory configuration (112 Mbyte configuration is fastest)
- Printer's paper-marking speed (the time it takes the printer to put the dye into the paper, once it has received the processed image)

Of these elements, only memory configuration and paper-marking speed are predictable; the others vary greatly depending on memory configuration and the type of image you are printing. However, the Phaser 480X PostScript interpreter combines very fast image processing and communication with sophisticated memory management to keep the total print time to a minimum.

For details on the printer's paper-marking speed, refer to "Specifications" in Appendix A.

Chapter

4 Caring for Your Printer

Overview

Cleaning is important

This chapter describes how to care for your printer to keep it in peak operating condition. By performing regular cleaning, you can ensure that your printer produces the highest quality prints. Regular cleaning also helps prevent paper jams, smudged prints, skewed images and misregistration. If you clean the printer at intervals suggested in this chapter, you will experience improved print quality, less downtime, and fewer paper handling problems.

Cleaning the Phaser 480X is divided into two types of procedures:

- **Quick cleaning**
  Basic cleaning to be done every time you change the transfer roll.

- **Complete cleaning**
  Thorough cleaning to be done every 6 months or 2,000 prints or as needed for the highest print quality.

Refer to the table on the next page for a list of the printer components included in Quick Cleaning and Complete Cleaning. You can also look at the procedures for cleaning each component; they are marked to indicate Quick Cleaning and/or Complete Cleaning in the following manner:

Quick Cleaning	Complete Cleaning
✔	✔

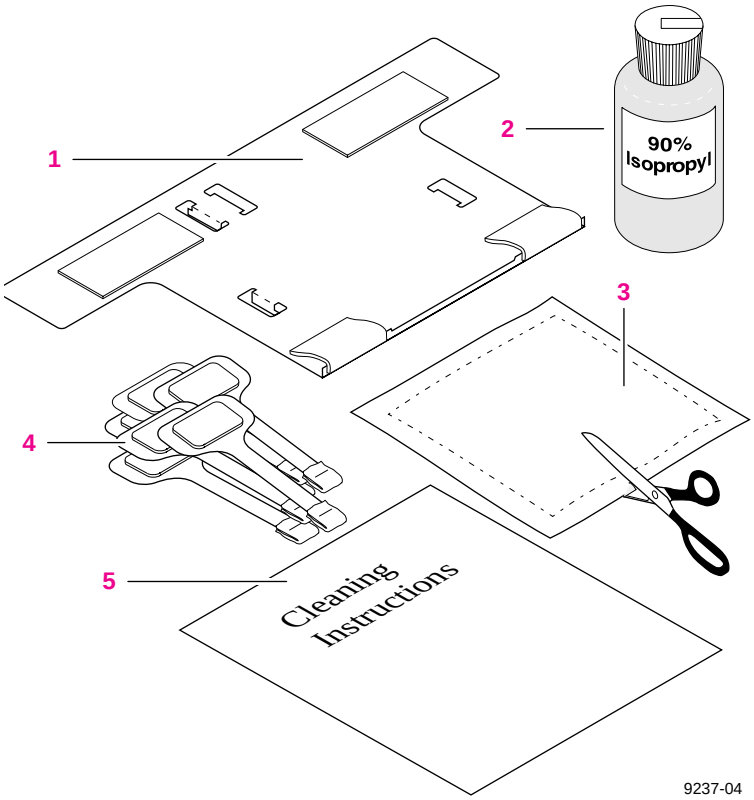
The following table lists each part of the printer that needs to be cleaned, how often, and if it is included in the quick cleaning or complete cleaning procedures.

Printer component	Quick Cleaning	Complete Cleaning	Frequency
Paper-pick roller	✔	✔	Every transfer roll change
Thermal head	✔	✔	
Separator bar	✔	✔	
Paper-feed roller	✔	✔	
Platen	✔	✔	
Inside cover		✔	Every 6 months or 2,000 prints
Transfer roll tray		✔	
Idler		✔	
Pinch roller		✔	
Exit rollers		✔	
Paper clamp bar		✔	As needed
Transfer roll sensors (located on the inside top cover above the thermal head and in front of the idler).			As needed

Cleaning kit contents

To order a new cleaning kit, call your dealer or Tektronix and ask for order number 016-1287-01. The cleaning kit contains these items:

1. Cleaning sheet
2. Plastic bottle for 90-99% isopropyl alcohol
3. Lint-free cleaning cloth (to be cut into squares)
4. Six paper clamp cleaning pads
5. Cleaning instructions booklet



Important

When you clean the Phaser 480X, *always* remember the following:

Cooling time

After the last print has been made, wait 5 minutes for the thermal head to cool.

A clean, dust-free area

When removing the paper from the paper tray and the transfer roll tray from the printer, always set them aside on a clean, dust-free surface.

High-grade isopropyl alcohol

- It is best to use the purest isopropyl alcohol available to you (90-99% pure). It can be purchased at your local pharmacy (shipping regulations prohibit supplying alcohol with the printer).
- Pour isopropyl alcohol from its container into the plastic bottle supplied in the cleaning kit.

Caution *Never use rubbing alcohol because it can contain oils that leave undesirable residue on the printer parts.*

Drying time

Make sure to leave enough time for the printer to dry (generally 5 minutes) before making a print.

Careful handling

Avoid touching the rollers with your fingers; oil from your hands can contaminate the rollers and cause printing problems.

Cleaning the printer

Quick Cleaning	Complete Cleaning
	✔

1. Outside surfaces

Clean the outside surfaces of the Phaser 480X using a soft cloth and a non-abrasive cleanser.

Quick Cleaning	Complete Cleaning
✔	✔

2. Cleaning the paper-pick roller

Clean the paper-pick roller (hidden under and in front of the paper guide) by using the cleaning sheet included in the cleaning kit.

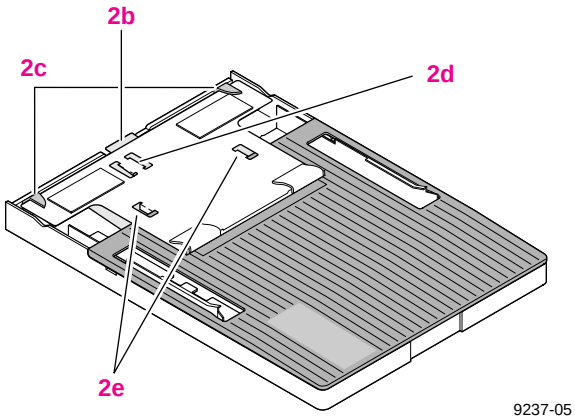
a. Remove all paper from the paper tray, set it aside on a clean, dust-free surface; replace the plastic cover on the paper tray.

b. While pressing down on the metal load lever, place the cleaning sheet on top of the paper tray cover.

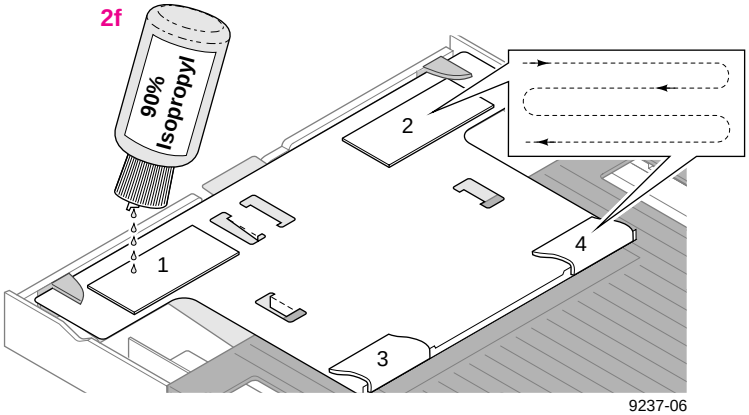
c. Press the cleaning sheet under the hooks on either side of the tray.

d. Press the flaps on the cleaning sheet into openings on the metal load lever.

e. Press the flaps on the cleaning sheet under the paper tray cover.



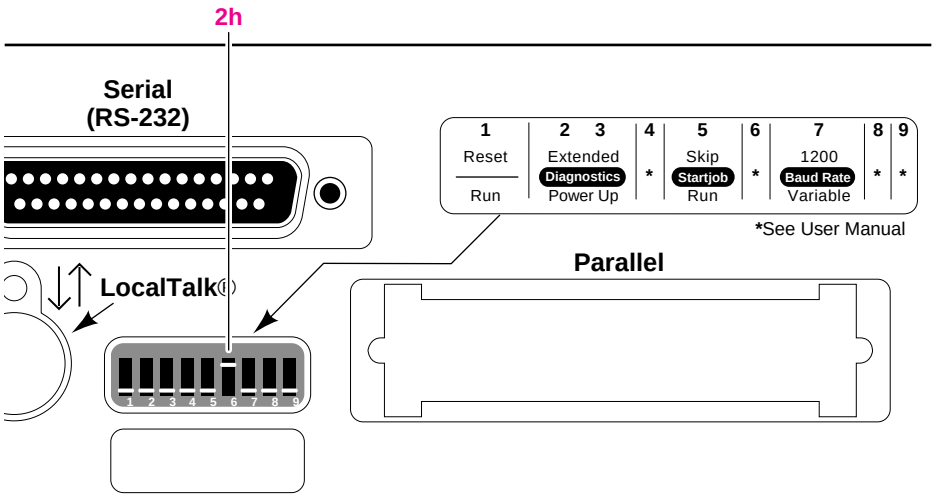
f. Apply isopropyl alcohol (at least 20 drops) to the four sponges on the cleaning sheet. Use a back and forth motion for the best coverage.



g. Insert the paper tray into the printer.

Caution *The transfer roll must be installed and the printer's top cover must be closed for this procedure to work.*

h. On the rear panel of the printer, set Switch 6 to the *up* position. (A diagram of the switch settings appears on the back panel with the switches.)



9237-18

i. Set Switch 1 to the *up* position, then to the *down* position. Wait for the motor noises to stop.

j. Toggle Switch 1 *up*, then *down* three more times.

Note *Always wait for the motor noises to stop before toggling Switch 1.*

k. Reset the switches: set Switch 6 to the *down* position; set Switch 1 to the *up* position, then to the *down* position.

l. Remove the cleaning sheet from the paper tray and put it away (it can be used up to 12 times). Wipe out any excess alcohol from inside the tray before refilling it with paper. Put the paper tray back into the printer.

Quick Cleaning	Complete Cleaning
✔	✔

3. Thermal Head

Open the cover to its full upright position.

Caution *Do not force the cover open; you could damage the printer. If the cover is only partially opened, a safety catch keeps the cover from releasing. Slide the cover release again and then raise the cover.*

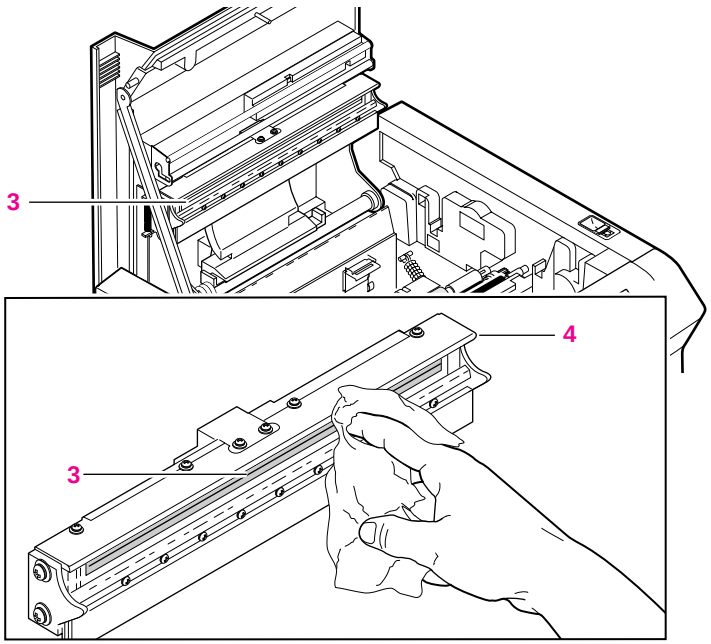
Note *After making the last print, allow the thermal head to cool at least 5 minutes before cleaning because it is very hot.*

Using a lint-free cloth moistened with isopropyl alcohol, lightly wipe the full length of the thermal head, using a back and forth motion, until dust and ink are removed. Do not exert much pressure on the thermal head.

Quick Cleaning	Complete Cleaning
✔	✔

4. Separator Bar

Wipe the edge of the separator bar.

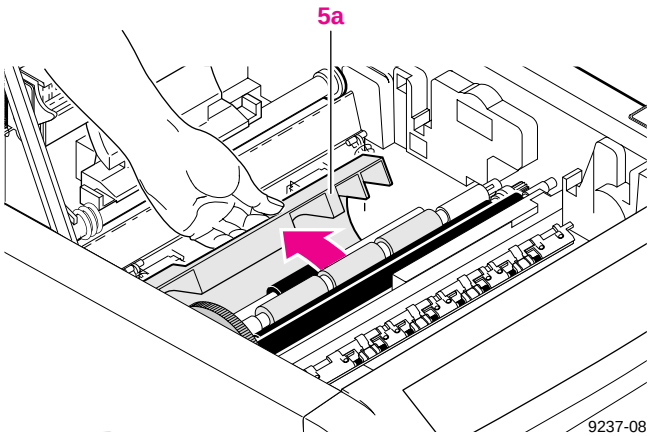


9237-07

Quick Cleaning	Complete Cleaning
✔	✔

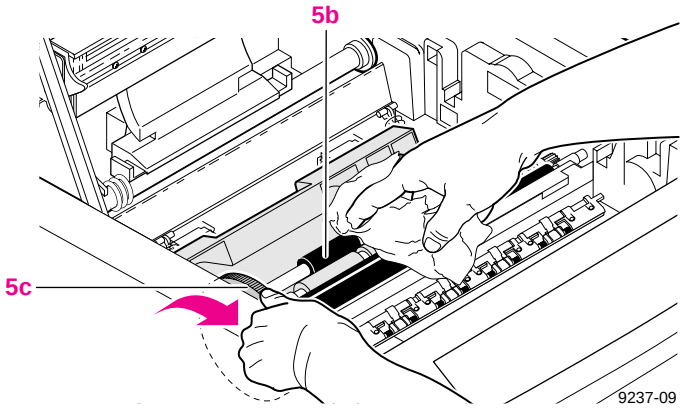
5. Paper-Feed Roller

a. With the transfer roll tray removed, open the gray plastic paper guide by grasping it in the center and lifting it open. The paper-feed roller is exposed.



b. Vigorously wipe the paper-feed roller with the lint-free cloth that has been moistened with 90% isopropyl alcohol.

c. Turn the green knob toward the front of the printer to rotate the paper-feed roller. Clean the roller's entire surface.



d. Close the paper guide.

Caution *Make sure that you close the paper guide to avoid a printer jam.*

6. Pinch Roller, Platen, and Idler

Caution *Avoid touching the rollers with your fingers; oil from your hands can contaminate the rollers and can cause printing problems.*

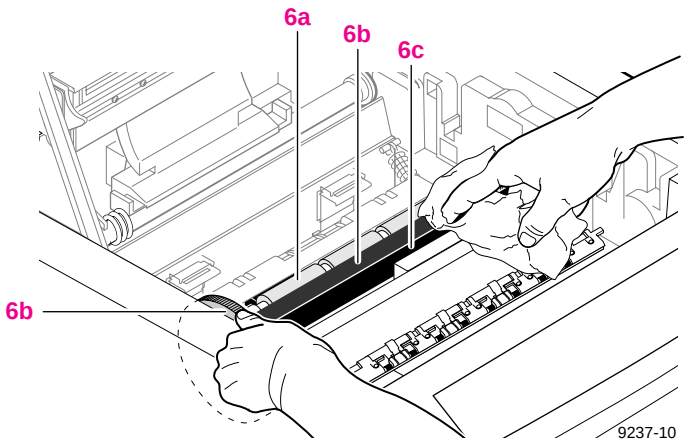
Quick Cleaning	Complete Cleaning
	✔
✔	✔
	✔

Use the lint-free cloth moistened with 90% isopropyl alcohol to wipe the full length of these three rollers. Rotate each roller to clean its entire surface.

a. **Pinch roller** — rotate with your hand (use a clean lint-free cloth).

b. **Platen** — rotate by turning the green knob.

c. **Idler** — rotate with your hand (use a clean lint-free cloth).

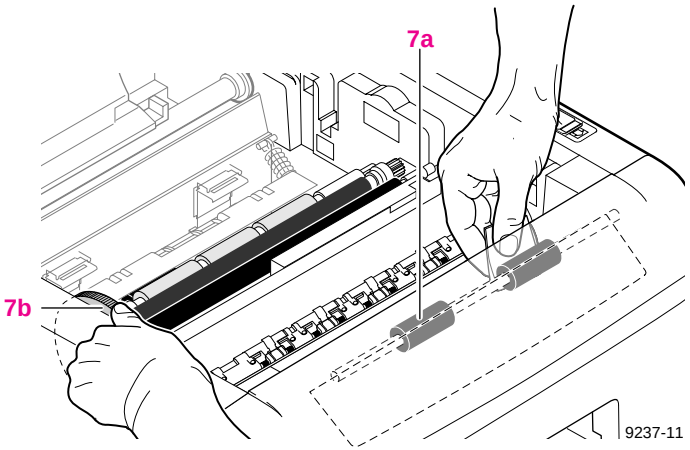


Quick Cleaning	Complete Cleaning
	✔

7. Exit rollers

a. Locate the exit rollers at the front of the Phaser 480X, behind the front panel.

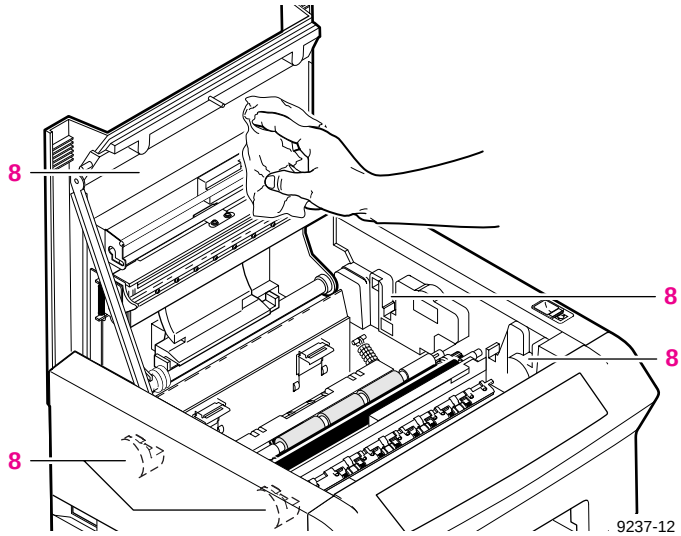
b. Hold the lint-free cloth moistened with isopropyl alcohol against the rubber segments of the roller as you turn the green knob toward the back of the printer. Make sure to clean both segments of the roller.



Quick Cleaning	Complete Cleaning
	✔

8. Inside top cover and rack

Using a lint-free wipe moistened with isopropyl alcohol, wipe out the inside of the printer's top cover and around the rack that holds the transfer roll tray.



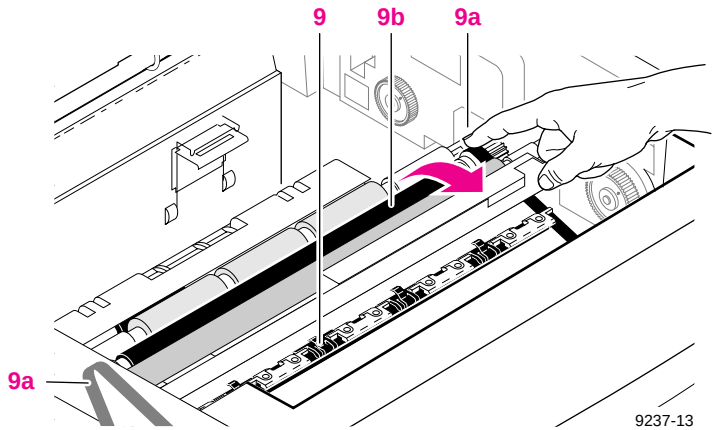
Quick Cleaning	Complete Cleaning
	✔

9. Paper clamp bar

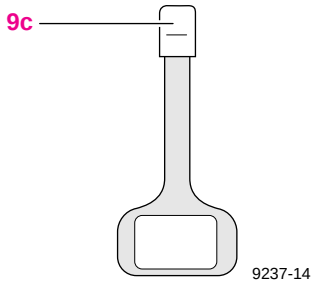
Clean the paper clamp bar using the cleaning pads that were shipped with the cleaning kit:

a. Use the black rubber belt to move the paper clamp bar.

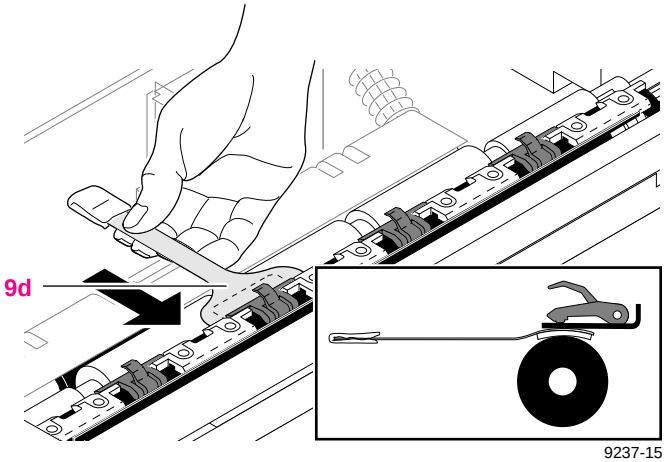
b. Position the paper clamp bar directly over the platen (of the three rollers, the platen is the middle, black roller).



c. Dampen the small end of the cleaning pad with isopropyl alcohol.



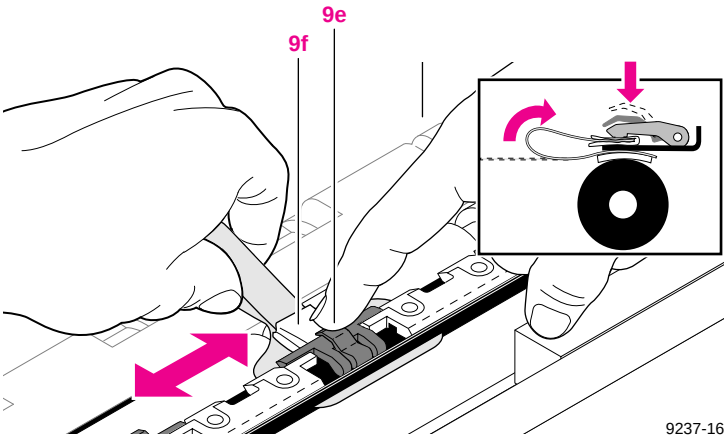
d. Place the wide end of the cleaning pad (*foam side down*) on the platen beneath a paper clamp.



e. Gently press the clamp lever down with your finger to open the clamp.

f. Slide the small end of the pad through the open clamp, wiping side-to-side.

g. Repeat for all four clamps, then discard the cleaning pad.



Quick Cleaning	Complete Cleaning
	✔

10. Transfer Roll Tray

Remove the transfer roll from the tray and wipe the inside of the tray, using the lint-free cloth moistened with isopropyl alcohol. When the tray is dry, put the transfer roll back into the tray.

11. Install the transfer roll tray

Place the transfer roll tray back into the printer; press down gently on the handles so that the endcaps click into place.

12. Close the printer cover

Allow approximately 5 minutes for drying time before making prints.

13. Resume printing

Replacing the transfer roll

Note *To ensure the best print quality, load the transfer roll in an area that is free of dust and dirt.*

1. Open the printer cover to its full upright position; lift the transfer roll tray out of the printer and remove the four endcaps from the used transfer roll. Discard the used transfer roll.

Note *Negative images of all prints remain on the used transfer roll. If this is a security risk, keep this in mind when disposing of the used transfer roll.*

2. Clean the printer components marked for Quick Cleaning. Refer to the table on page 4-2 and the cleaning procedures beginning on page 4-5.

3. Unwrap the new transfer roll and insert the four endcaps:

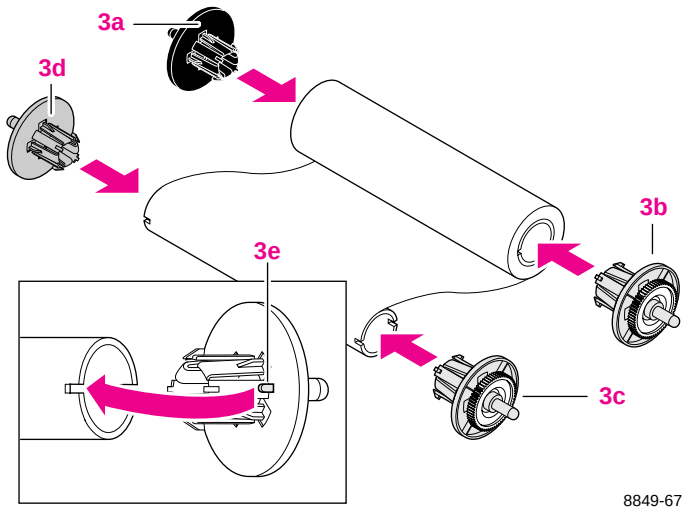
   a. Insert the black endcap into the left side of the supply core.

   b. Insert a green endcap into the right side of the supply core.

   c. Insert the gray endcap into the left side of the take-up core.

   d. Insert a green endcap into the right side of the take-up core.

   e. Make sure that the tabs on the endcaps fit snugly into the notches.

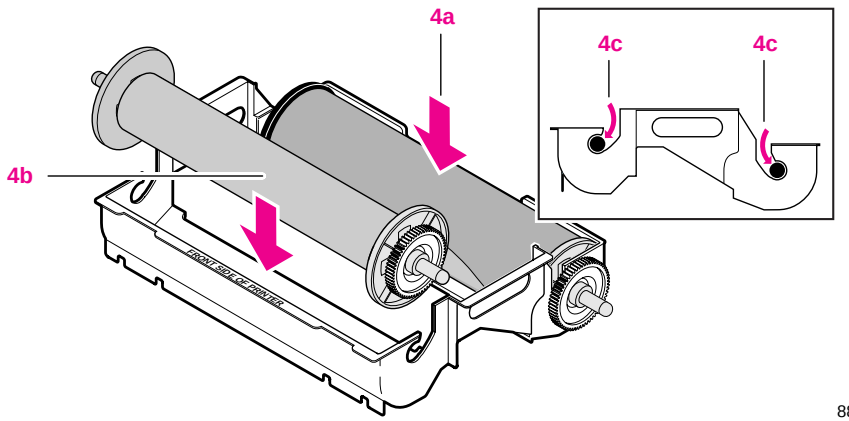


4. Load the transfer roll into the tray: The front of the tray is marked FRONT SIDE OF PRINTER.

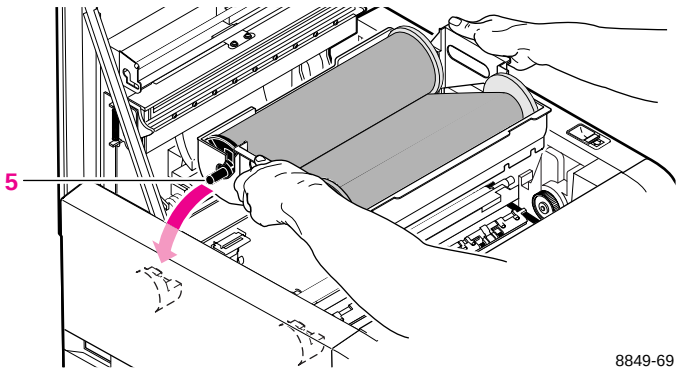
   a. Place the supply core into the back of the tray.

   b. Place the take-up core into the front of the tray.

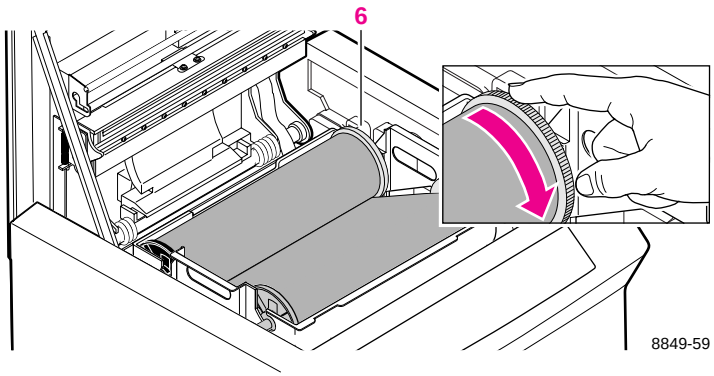
   c. Make sure that the endcap axles are pressed firmly into the openings on the transfer roll tray.



5. Insert the transfer roll tray into the printer and push firmly on the handles so that the axles on the transfer roll lock into place.



6. To remove any slack in the transfer roll, turn an endcap toward the front of the printer until you see that the transfer roll is taut.



Chapter

5 Supplies and Accessories

Tektronix supplies: the mark of quality

Tektronix supplies are developed and tested as a total *system* — printer, dyes, and media. These system components work together to produce consistent, high-quality color images.

Always order Tektronix supplies for your Phaser 480X printer to guarantee the best print quality, media feed reliability, and trouble-free printer performance.

Ordering information

For specific product information, use the information in this chapter or refer to the supplies information sheet that was shipped with your printer. To order, contact your local Tektronix dealer or, in the United States, call Tektronix at:

1-800-835-6100

Phaser 480X Supplies and Accessories

	Order number	Description	
Supplies			
Transfer rolls	016-1241-00	*Universal Black	650 images
	016-1243-00	†4-Color A/A4	210 images
	016-1244-00	*Universal 3-Color	215 images
	016-1245-00	*Universal 4-Color	160 images
Paper	016-1246-00	A-size (U.S. Letter)	100 sheets
	016-1247-00	A4-size (Metric Letter)	100 sheets
	016-1248-00	B-size (Tabloid)	100 sheets
	016-1249-00	A3-size (Metric Tabloid)	100 sheets
	016-1250-00	Tabloid Extra	100 sheets
Transparency	016-1179-00	A-size (U.S. Letter)	50 sheets
	016-1180-00	A4-size (Metric Letter)	50 sheets
Media Kits			
	Z480FSS	Letter-size media startup kit	
	Z480FSS Opt. 1	Metric media configuration for the startup kit	

* Universal transfer rolls are used with large- and small-format media.
† 4-Color A/A4 transfer rolls are used only with small-format media.

Phaser 480X Supplies and Accessories (cont'd.)

	Order number	Description
Accessories		
	436-0272-00	Optional paper tray for A and A4 media
	436-0271-00	Standard paper tray for A3, B, and Tabloid Extra media
	016-1287-01	Cleaning kit
	016-1277-00	Transfer roll tray and 4 endcaps
	063-2266-00	Phaser 480X Printer Drivers and Utilities diskettes
	063-2448-00	Phaser 480X CD-ROM
Interface equipment	012-1214-00	Cable, parallel interface for PC
	011-0160-00	AAUI-to-Ethernet Adapter, 10Base5 THICK
	011-0161-00	AAUI-to-Ethernet Adapter, 10Base2 COAX or THIN
	011-0162-00	AAUI-to-Ethernet Adapter, 10Base-T TWISTED PAIR
Shipping materials	065-0546-00	Shipping Carton kit
	650-3358-00	Shipping Block kit

If you plan to use Letter-size media regularly, order the Z480FSS kit which includes the optional paper tray, Letter-size paper, a Letter-size transfer roll, and an extra transfer roll tray for convenient swapping of the transfer roll.

Chapter

6 Troubleshooting

If you need help

If you need assistance, contact your local Tektronix dealer or sales representative, Tektronix Customer Support Hotline, the Tektronix Bulletin Board Service (BBS), Tektronix' interactive fax system (HAL and EuroHAL). This table lists all the ways to get help from Tektronix; detailed information follows.

At a glance: electronic addresses and telephone numbers

■ Customer service ■ Technical support ■ Ordering ■ Service	*U.S. and Canada:* **1-800-835-6100** (toll-free) *Outside U.S. and Canada:* Contact your local dealer or Tektronix representative.
HAL fax library	*U.S. and Canada:* **1-800-835-6100** (toll-free) *All locations:* **(503) 682-7450**
EuroHAL fax library	Refer to page 6-5 for numbers for specific countries.
Bulletin Board Service (BBS)	(503) 685-4504 (using a modem and computer)
Internet	
■ World Wide Web	http://www.tek.com/Color_Printers
■ Automatic File Server	color_printer_info@tek.com
■ Technical Support	support@ColorPrinters.tek.com
■ America On-Line	Keyword: Tektronix
■ eWorld	Shortcut: Tektronix
■ CompuServe	Go Tektronix

Customer Support Hotline

If your problem is not resolved after first trying the suggestions in this chapter, call the Tektronix Customer Support Hotline in the United States and Canada at 1-800-835-6100 (from 6:00 am to 5:00 pm PST).

For technical support outside the United States and Canada, contact your local Tektronix dealer or Tektronix sales representative.

Printer service

If your printer needs service, call 1-800-635-6100 (in the United States, from 6:00 am to 5:00 pm PST). Outside the United States, contact your Tektronix dealer or local Tektronix office.

The Tektronix Bulletin Board Service

The Tektronix Bulletin Board Service (BBS) is available for direct downloading of the latest versions of printer drivers, utilities, and files. If you have a Macintosh or PC, communication software, and modem, you can call the system and use the menus to locate and download the files you want.

To access the BBS 24 hours a day, 7 days a week, call (503) 685-4504.

For a detailed instruction guide on system requirements, terminal settings, protocol, modem, how to connect to our BBS, and how to download files, request a document catalog from HAL, the Tektronix automated fax system. Refer to “Using the automated fax systems” on page 6-4 for instructions on using HAL.

Downloading files from the Tektronix Color Printer Information Server

Unix and VMS workstation utility files included with the printer on a CD-ROM or PC diskette let you set up the printer to select media type, color corrections, and other features. If you don't have the means of transferring these files from either the CD-ROM or PC diskette, you can request files from the Tektronix Color Printer Information Server, an automatic file serving program on the Internet that responds to requests for files.

If you can exchange electronic mail with other Internet sites, you can access the Tektronix Color Printer Information Server. From this server you can retrieve driver and utility files and color printer information.

Send your electronic mail requests for files to the following address:

color_printer_info@TEKTRONIX.TEK.COM

To receive the list of information available on the server, type the following at the Subject prompt:

send index

To examine the full index for any library, type:

send index from ***library-name***

To request a single file from a directory, type:

send ***filename*** from ***library-name***

To determine file size, type:

send list of ***filename*** from ***library-name***

Using the automated fax systems

As an alternative to the Customer Support Hotline, and to provide up-to-date information quickly, Tektronix has set up HAL (Highly Automated Library) and EuroHAL, two interactive, automated fax systems. These automated fax systems provide Macintosh, PC, and workstation users with the latest technical hints and tips (like color corrections), solutions to common technical problems, and application notes for software problems (such as CorelDRAW! and QuarkXPress).

You may call HAL or EuroHAL from anywhere in the world. The fax systems are available 24 hours a day, seven days a week.

Use HAL to order a catalog or individual documents in the U.S.A. and Canada

If you have a fax machine and a touch-tone voice telephone, you can order a HAL catalog, listing all of the information offered by HAL, by calling (503) 682-7450 (direct) or, in the U.S. and Canada, call 1-800-835-6100.

1. Before you call, write down the area code and telephone number for your fax machine. HAL will ask you to key this number through the keypad on your voice telephone. If you are calling from outside the United States or Canada, you'll need to know the international access code to reach your country from the United States. Without a complete fax number, HAL cannot call your fax machine.

2. Call only from a touch-tone voice telephone.

3. Follow through the voice-prompted menu.

4. Order individual documents by entering the desired document's number as listed in the HAL catalog. Enter the number by using the telephone's keypad.

5. You can order up to three documents per call.

6. The HAL catalog or documents you request are faxed to you in a matter of minutes.

Use EuroHAL to order a catalog or individual documents in Europe

EuroHAL includes many documents, some in English and some in other European languages. If a local version of the document you want is available, EuroHAL will send it in your language. Otherwise, it will send English documents.

If you have a tone-dial telephone and a fax machine, then you can use EuroHAL. If your telephone has star (*) and hash mark (#) keys, then it can probably use tones; ask your local telephone supplier if you are not sure.

If your telephone does not have these keys or has a dial, you will need to buy a tone dialer from your local telephone or electronics shop. This small box is held to the phone and will send the standard tones that you need to talk to EuroHAL.

1. To use EuroHAL, dial one of the numbers listed in the following table.

Country	Numbers
Austria	00 44 1628 478 347
Belgium	00 44 1628 478 347
Denmark	00 44 1628 478 347
Finland	990 44 1628 478 347
France	05 90 81 86
Germany	0130 819 220
Holland	09 44 1628 478 347
Italy	00 44 1628 478 347
Norway	0 95 44 1628 478 347
Spain	07 44 1628 478 347
Sweden	0 09 44 1628 478 347
Switzerland	00 44 1628 478 347
UK	01628 478 347
Other countries	+44 1628 478 347 (where + is your country's International Access Code)

2. EuroHAL answers and asks which language you want to use.

   For English Press 1
   For French Press 2
   For German Press 3

3. The first time you use EuroHAL, you should order a catalog. This lists all the documents that are available and is constantly updated.

4. EuroHAL asks you for your fax machine number. If you are calling from outside the UK, add your country code first, as shown in the following table.

Country	Country code	Your area code and fax number	Press # when finished
Austria	00 43	area code fax number	#
Belgium	00 32	area code fax number	#
Denmark	00 45	area code fax number	#
Finland	00 358	area code fax number	#
France	00 33	area code fax number	#
Germany	00 49	area code fax number	#
Holland	00 31	area code fax number	#
Italy	00 39	area code fax number	#
Norway	00 47	area code fax number	#
Spain	00 34	area code fax number	#
Sweden	00 46	area code fax number	#
Switzerland	00 41	area code fax number	#
UK		just enter your fax number	#
Other countries	00 xx	area code number	#

Problems and solutions

Several problems are listed in the "Troubleshooting Quick Reference" table. More detailed information follows the table.

Troubleshooting Quick Reference

Symptom	Cause	Solution
POWER indicator is not on	Power connector is loose or not connected.	Insert power connector.
	Power outlet is not active.	Turn on the power outlet.
	Power switch is set to *off*.	Set power switch to *on*.
COVER indicator is on	The cover is open.	Close the cover.
TRANSFER ROLL indicator is on	Transfer roll has run out.	Replace the transfer roll. See page 4-17.
	Dust or foreign matter is sticking to the transfer roll sensors.	Wipe off sensors with a lint-free cloth moistened with isopropyl alcohol. (Sensors are located on the inside top cover above the thermal head and in front of the idler.)
TRANSFER ROLL indicator is blinking	You have installed a short (A/A4) transfer roll and loaded long (B/A3/WB) media.	Install the correct size transfer roll for the media.
MEDIA indicator is on	Paper tray is empty.	Load paper into the paper tray.
	Paper tray is not installed or is not correctly installed.	Install the paper tray correctly.
MEDIA indicator is blinking	Printer is waiting for a manual feed (indicator blinks for 60 seconds).	Load a single sheet or cancel the manual feed command by pulling out the paper tray and pushing it in again.
ERROR indicator is on	Printer is cooling down after printing a dense image (large areas of dye coverage).	Wait 5 minutes for the indicator to go out. If it does not go out, turn the printer off and back on again. If the indicator is still on after the power-up sequence, the printer requires service.
JAM indicator is on	Transfer roll jam.	Turn the green knob to rotate the rollers and free the jammed transfer roll; or, wind the endcaps to release the jammed transfer roll.
	The transfer roll or transfer roll tray is not installed.	Load the transfer roll and the transfer roll tray.
	Transfer roll can't wind because it is torn.	Replace the transfer roll.

Troubleshooting Quick Reference (cont'd.)

Symptom	Cause	Solution
JAM indicator is on (cont'd.)	Transfer roll does not wind.	Reload the transfer roll correctly.
	There is a wrinkle or irregularity on the transfer roll.	Turn the endcaps until the transfer roll is taut or replace the transfer roll with a new one if necessary.
	Paper jam.	Remove the jammed paper. See page 6-9.
	Correct sized paper is not loaded in the paper tray.	Load the correct size paper.
	The paper tray is set to a different size than the loaded media.	Set the paper tray to the correct size: set the paper guides on the paper tray to the same size as the loaded media.
	Too much paper is loaded in the paper tray.	Reduce the amount of paper to below the red line on the paper tray label.
Transfer roll is wrinkled	Transfer roll is not installed correctly.	Reinstall the transfer roll correctly.
	Dirty separator bar.	Clean the separator bar. See page 4-8.
Transfer roll is jammed	Transfer roll is not installed correctly.	Make sure that the transfer roll is installed correctly.
	Dirty platen or pinch rollers.	Clean the platen and pinch rollers.
	Dirty separator bar.	Clean the separator bar. See page 4-8 or page 4-8.
Paper is jammed	Paper or transparency is not installed correctly.	Make sure that paper or transparencies are installed correctly.
	Dirty paper-feed rollers.	Clean the paper-feed rollers. See page 4-9.
	Paper is wrinkled or curled	Change the paper.
	The paper guide was left open.	Close the paper guide.
Print is blurry or dots are missing.	Transfer roll is wrinkled.	Remove the transfer roll tray and wind the endcaps to remove wrinkles. Reinstall the transfer roll tray.
	Dirty thermal head.	Clean the thermal head.
	Dirty platen or pinch roller.	Clean the platen and pinch rollers.
Bad registration	Transfer roll problem.	Make sure that the transfer roll and transfer roll tray are installed correctly. See page 3-11.
	Paper is jammed.	Clear the paper jam.
	Dirty thermal head.	Clean the thermal head.
	Dirty platen or pinch rollers.	Clean the platen and pinch rollers.

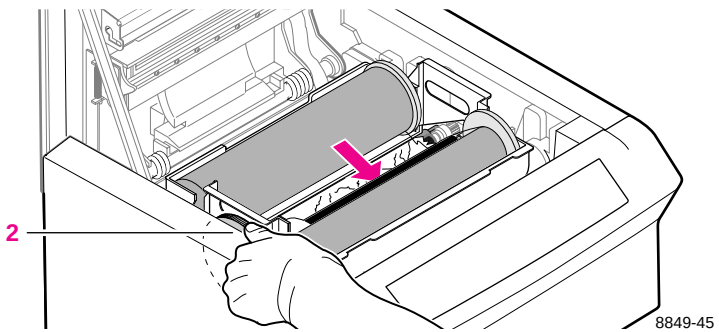
Clearing a jam

If a paper jam or transfer roll jam occurs, the JAM indicator is on. Follow these steps to locate and remove the jam:

1. Turn off the printer; open the top cover to its full upright position.

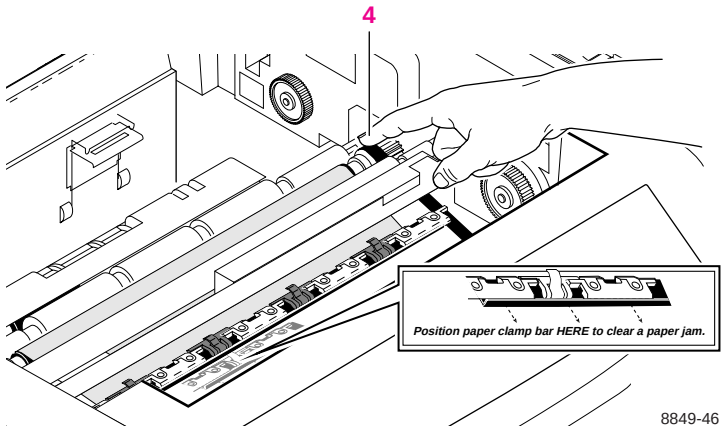
Caution *The thermal head is hot; do not touch it until it has cooled down, approximately 5 minutes. Also, do not touch the rubber rollers directly because the oil from your fingers can contaminate the rubber and cause printing problems. Use a cloth or gloves if you need to rotate the rollers.*

2. If the transfer roll or paper is wound on a roller, turn the green knob to rotate the rollers and free the jammed paper or transfer roll.



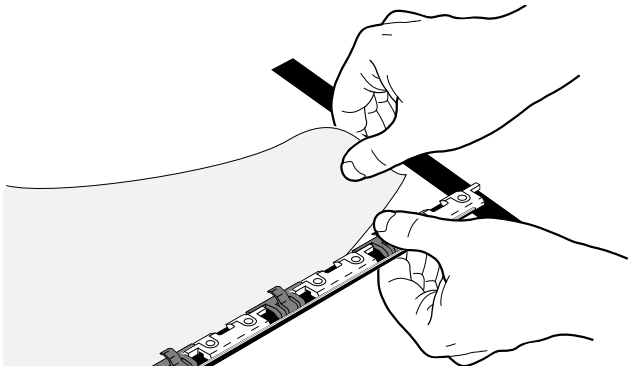
3. Lift out the transfer roll tray. Check the roll for tears and wrinkles. (If the roll is damaged, replace it with a new one.) Straighten the roll and make sure that the axles on the endcaps are set snugly into the tray (refer to "Replacing the transfer roll" on page 4-17).

4. To check the paper clamp bar, pull on the black rubber belt until the paper clamp bar is positioned over the label **Position paper clamp bar HERE to clear a paper jam**. If the paper clamps are holding any paper, this is the cause of the jam.

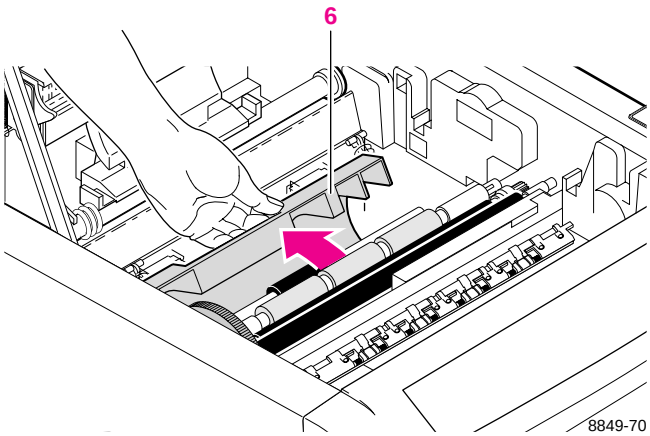


Caution *Do not force or pull the jammed paper out of the paper clamps. This will damage the printer. You must first release each paper clamp and gently remove the paper.*

5. If the paper clamps are holding any paper, squeeze each clamp open and gently remove the paper. Always start at one end and work toward the other to avoid tearing the media (do not start in the middle). ***Always support the paper clamp bar with your hand when opening the clamps; otherwise you could damage it***.



6. Open the paper guide and remove any remaining paper. Close the paper guide.



7. Remove the paper tray and any paper remaining in the opening. Replace the paper tray.

8. Re-install the transfer roll tray, making sure the axles on the endcaps fit snugly into place inside the printer. Remove any slack in the transfer roll by turned the supply core endcaps forward (toward the front of the printer).

9. Close the cover and turn the printer on.

If you can't make a print

Printer not operating

- Make sure that you plugged in the printer and turned it on.
- Make sure that you connected the interface cable properly and set the rear panel switches correctly. For details on the switch settings, refer to Chapter 7.
- Make sure that the line voltage setting for the printer matches the voltage setting in your office. See "Changing the line voltage" on page C-1.
- Set all of the rear panel switches to *off* (*down*) and turn off the printer and then turn it on again.
- Make sure that paper is loaded correctly and that a transfer roll is properly installed.

Note *When you have checked all known possible causes and your printer is still not operating, call for service at 1-800-547-8949 in the United States or call your Tektronix dealer.*

- Make sure that your computer can communicate with the printer, using one of these methods:
  - If you have a Macintosh, make sure that you have the correct driver installed and that you have selected the printer in the Chooser. If the printer's name does not appear in the Chooser, your LocalTalk or EtherTalk connection may be faulty. (See "The printer doesn't appear in the Chooser" on page 6-15.)

    From the File menu in Finder, choose Print Window or Print Desktop to send a file to the printer without using an application. If the communication link between your computer and the printer is working, the printer produces a directory listing of the active window on the desktop.

- If you have a PC, use this DOS ECHO command:

  ```
  echo showpage > port
  ```

  Substitute the name of the printer port (for example COM1:, COM2:, LPT1:, LPT2:) for the variable *port* in this command. For example, if you are testing a parallel connection on LPT1, type:

  ```
  echo showpage > lpt1:
  ```

  If the communication link between your computer and the printer is working, the printer should eject a blank page. If this works, but you cannot print from your application or through Windows, make sure that the appropriate driver is installed and that you have selected the printer correctly.

The printer doesn't appear in the Chooser

- Make sure that the printer is turned on and the cables are correctly attached.
- Check the termination (refer to the documentation for your Ethernet adapter or LocalTalk connector for information on termination).
- Make sure that you have the correct zone selected in the Chooser before looking for the printer's name in the list of printers.
- If you have changed the printer's name, make sure that you have given it a unique name (not the same as any other printer in the zone).

READY light blinks, but file doesn't print

This is probably the result of a PostScript error. Download the PostScript Error Handler file from the Phaser 480X CD-ROM or optional utility diskettes. For more information on using the PostScript Error Handler, see the *Phaser 480X Drivers and Utilities Printing Reference*.

MEDIA indicator blinks, and no print is produced

You have requested manual feed. Refer to "Manual feed" on page 3-13.

Print job doesn't finish (printer times out)

If you are using the serial or parallel port from a PC, make sure that you used the MODE command to set the PC's communication parameters. For example:

```
MODE LPT1:,,P > NUL

MODE COM1:9600,N,8,1,P
```

If you are using Windows 3.1, make sure that the Transmission Retry value for the printer's assigned port is set to 995. For more information on setting up ports, refer to the CD-ROM or HAL and EuroHAL, the automated fax systems.

ERROR indicator is on

The printer might be cooling down after printing a dense image. Wait 5 minutes for the printer to cool down; if the indicator does not go out, turn the power off and on again. If the ERROR indicator is still on after the power-up sequence, your printer requires service. See "If you need help" on page 6-1 for telephone information.

Media handling problems

Frequent paper-picking errors

- Be sure to fan the paper or transparencies before installing them in the paper tray. This is especially important for transparencies because they tend to stick together.
- Make sure that the printer is cleaned regularly: perform Quick Cleaning every time you change the transfer roll and Complete Cleaning every 6 months or 2,000 prints, or as needed. Refer to Chapter 4, "Caring for Your Printer."

Media is picked but does not advance

- If the media only partially advances in the paper tray, clean the paper-feed roller. See page 4-9.
- If the media advances through the printer but stops as it is exiting, clean the transport roller. The transport roller is cleaned at the same time as the pick roller when you use the cleaning sheet on the paper tray. For detailed instructions, refer to page 4-5.

Frequent paper jams

- Make sure that you use the Tektronix paper and transparency film that are listed in the supplies information. Tektronix does not support or guarantee the results of non-Tektronix supplies in Tektronix printers.
- Do not overfill the paper tray.
- Make sure that you close the paper guide (after clearing a paper jam or cleaning the paper-feed roller).
- If you still experience paper jams, clean the paper-feed roller and paper-pick roller. For details, refer to "Cleaning the printer" on page 4-5.

Problems with image size and position

Printed images are off-set

Check your application for correct image sizing.

Part of the image is cut off

- Check your application for image sizing.
- Make sure that you are using a Phaser 480X driver and have selected the correct page size. If you select the incorrect page size, the image may be cut off.
- If the TRANSFER ROLL indicator is blinking, you have installed a short (A/A4) transfer roll and long (B/A3/WB) paper, which causes part of the image to be cut off.

On a Macintosh, printed image has shifted or margins are incorrect

- Make sure that you have installed the Phaser 480X printer driver onto your Macintosh so that you can select the correct page sizes from the driver. For details on the Phaser 480X drivers, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.
- For details on printing from a Macintosh, refer to Chapter 3.

Print quality problems

Prints have dull, faded colors and significant dropout (areas where dye is missing)

- Make sure that you have selected the same media in the driver that is loaded in the paper tray and that it is loaded correctly (*printing side down*).
- Make sure that you are using Tektronix paper for the Phaser 480X. You can achieve excellent results with Tektronix supplies; they are tested and guaranteed to work with Tektronix printers.

Streaks or spots appear on prints

- Make sure that the paper or transparency film is clean (see "Handling paper and transparencies" on page 3-7).
- Make another print. If the problem persists, clean the thermal head. For cleaning information, see Chapter 4, "Caring for Your Printer."

The image prints in black-and-white instead of color

- Make sure that a color transfer roll is installed in the printer.
- If you have a Macintosh, make sure that you are using the Phaser 480X driver or the latest Apple LaserWriter printer driver (version 6.0.7 or higher), that supports color PostScript.
- Make sure that Color/Grayscale is selected in the Print dialog box. Some applications require printer description files to print in color. Make sure that these files are properly installed. For information, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.
- If you have a PC, be sure to use a driver that supports color PostScript. If you are using Windows 3.1, use the Phaser 480X driver and make sure that the Color box in the Options dialog box is checked. For information on the drivers, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

The startup page prints although you disabled it

The printer's power-up self-test can detect problems that do not necessarily make the printer completely inoperable. Examples of these *non-fatal* errors include faulty printer ports and some memory failures.

If the printer detects a non-fatal error at power-up, the startup page prints, even if you have disabled it. In this case, the page contains one or more of the error messages listed in the table "Error messages on the startup page." Depending on your needs, you may not need to call for service immediately.

Error messages on the startup page

The startup and configuration pages contain useful information for troubleshooting. For more information on the startup and configuration pages, refer to Appendix A, "Technical Notes."

Error messages on the startup page

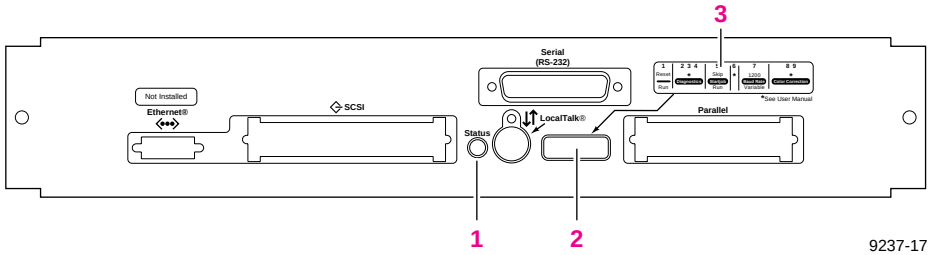
Message	Description
Serial Port failed	The named port is not working. Other ports can still be used.
Parallel Port failed	
LocalTalk Port failed	
Ethernet Port failed	
SCSI Port failed	
DRAM SIMM *x* failed	One of the optional additional memory SIMMs is not working. In this message, *x* indicates the number of the SIMM that failed (2, 3 or 4). Since the printer's base memory is still working, the printer can still be used, but large image files may not print, and throughput may suffer.

Chapter

7 Front and Rear Panels

Rear panel

1. Status indicator
2. Rear panel switches
3. Legend for rear panel switches



Phaser 480X rear panel switches

Rear panel switches

Switch	Function	Settings
1	Reset/run	*Up*: The printer resets and does not accept data while the switch is in this position. *Down*. The printer runs a self-test, then proceeds to run normally. Leave the switch *down* for normal operation.
2, 3, and 4	Diagnostics	*Up*. When **only** Switch 4 is moved from *down* to *up*, the printer prints a configuration page. *Down*. Normal operation.
5	Start Job	*Up*: The Sys/Start job on the hard disk does not run. *Down:* The Sys/Start job runs if the file exists on the disk.
6	Cleaning mode	*Up:* At power-up, the printer rotates the rollers for a few seconds, then stops the rotation. See “Cleaning the printer” on page 4-5. *Down:* Normal operation.
7	Baud Rate	*Up*: Fixed. Sets the serial communication parameters to 1200 baud, software flagging, and ignore parity. *Down*: Variable. Lets you change the serial communication parameters. The factory setting is 9600 baud, software flagging, and ignore parity.
8 and 9	Color correction	See table “Switches 8 and 9: Color Correction Mode” on page 7-3.

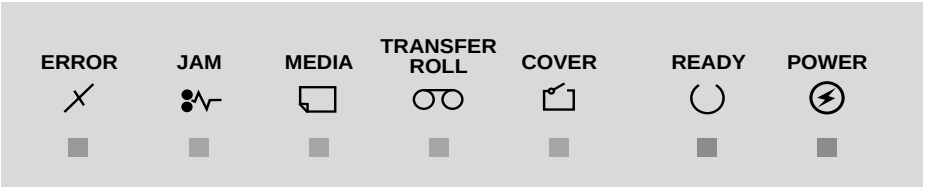
Switches 2, 3, and 4: Diagnostic

Switch 2	Switch 3	Switch 4	Function
Down	*Down*	*Down*	Default, normal operation
Down	*Down*	*Up*	Prints configuration page
Up	*Down*	*Down* or *Up*	For qualified service personnel
Down	*Up*	*Down* or *Up*	For qualified service personnel
Up	*Up*	*Down* or *Up*	For qualified service personnel

Switches 8 and 9: Color Correction Mode

Switch 8	Switch 9	Function
Down	*Down*	No color correction
Down	*Up*	SWOP Press (matches output of a web offset press)
Up	*Down*	Vivid Blue
Up	*Up*	Use NVRAM setting (default setting is Euroscale Press)

Front panel



8849-48

Front panel indicator

Indicator	On	Blinking	Off
POWER	The power switch is on.		The power switch is off, or the printer is unplugged, or the power supply has failed.
READY	The printer is idle and ready for operation.	The printer is processing or printing an image.	The printer is not ready, or there is an error.
ERROR	The print engine is cooling after printing a dense image. Wait 5 minutes for the indicator to go out. If it does not, turn the printer off, wait 30 seconds, and turn it back on again. If it is still lighted after the power-up sequence, the print engine has an error that is not user-correctable and requires service.		Normal operation: there are no print engine or controller board errors.
JAM	Media is jammed inside the printer.		Normal operation: there are no media jams and the transfer roll is installed.
	Transfer roll is jammed inside the printer.		
	Transfer roll is not installed.		
MEDIA	There is no media in the tray, or the tray is not installed.	Waiting for manual feed.	Media is ready to feed.
COVER	The top cover is open. The printer does not print while the cover is open.	Not applicable.	Normal operation: the top cover is closed.
TRANSFER ROLL	Transfer roll is used up or there is not enough of the transfer roll left for the print job.	A/A4 transfer roll is installed with B/A3/WB media. Part of the image will be lost.	Normal operation: the transfer roll is ready for use.

Appendix

A Technical Notes

Startup and configuration pages

You can print out a startup page and a configuration page that contain useful information about your Phaser 480X. If you disable the startup page, keep a copy near the printer for easy access to the information.

Enabling/disabling the startup page

When you receive your printer from Tektronix, the startup page is disabled. However, when you want information such as the printer name, the number of pages printed, or available ports, you can enable the startup page. The Phaser 480X CD-ROM and diskettes include utilities for PCs (*STARTPG.PS* and *NOSTRTPG.PS*) and for Macintoshes (*LaserWriter Utility*). For detailed instructions on enabling and disabling the startup page, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Even if the startup page is enabled, you can power-up or reset your printer without printing a startup page. To do this, pull out the paper tray before power-up or reset; when the READY light stops blinking, push the paper tray back into the printer. The printer will be ready for printing, but will have bypassed the startup page.

Configuration page

The configuration page contains extensive information that is useful in Ethernet installation and troubleshooting network problems.

There are two ways to generate the configuration page:

- Use the printer's rear panel switches.

  1. Make sure Switch 2, Switch 3, and Switch 4 are in the *down* position (the default position).
  2. Set Switch 4 *up*.

     The printer generates the configuration page as soon as you set Switch 4 *up*.
  3. When the configuration page has printed out, reset Switch 4 to *down*.

- Send a PostScript language file to the printer.

  The Phaser 480X CD-ROM and diskettes include a PostScript file for PCs (*PRNTCNFG.PS*) and a Macintosh utility (*Configuration Page*) for printing the configuration page. For detailed instructions, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

Printer ports

This section includes information on the parallel and Ethernet ports. Information on the serial port is available on the CD-ROM, on the HAL and EuroHAL automated fax systems, and through the Internet. Refer to "At a glance: electronic addresses and telephone numbers" on page 6-1.

Parallel port

The printer has a standard unidirectional, byte-wide parallel, synchronous port. When you use the parallel port, be sure to type this command at the PC (if LPT1 is not available, use LPT2):

MODE LPT1:,,P

The table shows the parallel port's connected pins. Other pins are not connected. Signal names ending with a dash (-) are asserted low.

Parallel port signal descriptions

Signal name	Pin #	Return pin	Signal source	Description
DSTRB-	1	19	Host	Pulsed low for .5 microseconds; clocks data into printer
DATA1	2	20	Host	Positive true data input
DATA2	3	21	Host	Positive true data input
DATA3	4	22	Host	Positive true data input
DATA4	5	23	Host	Positive true data input
DATA5	6	24	Host	Positive true data input
DATA6	7	25	Host	Positive true data input
DATA7	8	26	Host	Positive true data input
DATA8	9	27	Host	Positive true data input
ACK-	10	28	Printer	Data acknowledge pulsed low for 3-4 microseconds; ends bus transaction

Parallel port signal descriptions (cont'd.)

Signal name	Pin #	Return pin	Signal source	Description
BUSY	11	29	Printer	Positive true = cannot accept data
PE	12	-	Printer	Positive true = any media fault
SLCT	13	-	Printer	Positive true = printer selected
INPRIME-	31	30	Host	Negative true = printer port reset
FAULT-	32	-	Printer	Negative true = printer fault indicator
Frame Gnd	-	17	Printer	Frame ground
SGnd	-	14,16,33	Printer	Signal ground

Ethernet port

If you ordered your printer with the network option, you received the Network Utilities diskettes and the *Network Utilities for Phaser Color Printers* manual. Refer to that manual for complete information on Ethernet.

Specifications

Temperature
Operating: 15° C to 30° C (59° F to 86° F)
Non-operating: 0° C to 35° C (32° F to 95° F)
Storage: (without paper, transparencies, or transfer roll): –20° C to +55° C (–4° F to +131° F)

Humidity
Operating: 10% to 80% Relative Humidity, non-condensing
Non-operating: 10% to 80% Relative Humidity, non-condensing

Altitude
Operating: 0 to 3,048 m (0 to 10,0000 ft.)
Non-operating: 0 to 9,144 m (0 to 30,000)

Primary voltage ranges
90 - 132 VAC, 110 VAC nominal
180 - 264 VAC, 220 VAC nominal

Frequency range
47 to 63 Hz

Primary fusing
110 VAC, 15 Amps
220 VAC, 6.3 Amps
(Not user-accessible)

Heat dissipation
Idle: 150 Watts
Maximum: 600 Watts

Dimensions
Height: 340 mm (13.4 in.)
Depth: 570 mm (22.4 in.)
Width: 520 mm (20.5 in.)

Weight
42 kg (93 lbs.)

Printing
300 x 300 dots-per-inch

Print speed (paper-marking speed)
The speeds listed in the following table represent the printer's paper-marking speed, the time it takes the printer to put the dye on the paper, after it has received the processed image.

Paper Size	With Black transfer roll (minutes:seconds)	With 3-Color transfer roll (minutes:seconds)	With 4-Color transfer roll (minutes:seconds)
A/A4 (Letter)	1:2	2:3	2:8
B/A3 (Tabloid)	1:20	3:00	3:40
WB (Tabloid Extra)	1:5	3:2	4:00

Standard transfer roll capacities
Universal Black transfer roll: 650 prints
Universal 3-Color transfer roll: 215 prints
Universal 4-Color transfer roll: 160 prints
4-Color A/A4 transfer roll: 210 prints

Safety and emissions standards
FCC Part 15, Subpart J "Class B" verified.
UL 1950, listed.
CSA 22.2 no. 950 certified.
Vfg 241. in Germany.
CE marked for the European Union.
Low Voltage Directive
EN60950, TÜV Licensed
EMC Directive
EN 50082-1
EN 55022 (CISPR 22 Class B)

Appendix

B Expanding Your Printing System

Upgrade kits

4685F16	16-Mbyte SIMM for adding memory
Z480F32	32-Mbyte SIMM for adding memory
4680FP1	Ethernet port upgrade kit; a SIMM that adds Ethernet hardware with EtherTalk and Novell protocols
4680FP2	Information sheet with TCP/IP authorization code enables TCP/IP protocol (requires pre-existing Option P1 or FP1 kit)

Advantages of adding memory

In general, more memory improves throughput, provides more storage for downloadable fonts, and allows printing of the most complex images. Additional memory can also reduce offload time by increasing the size of input buffers for all ports.

Memory configurations for Phaser 480X printers

Memory	Total Memory	Performance
Standard	32 Mbytes	Supports 3-Color printing on B (Tabloid), A3 (Metric Tabloid), and WB (Tabloid Extra). Supports 4-Color printing on A (U.S. Letter) and A4 (Metric Letter).
Add one 16-Mbyte SIMM	48 Mbytes	Minimum requirement for 4-Color printing on large format media.
Add one 32-Mbyte SIMM	64 Mbytes	Additional I/O buffer capacity and extra processor cache memory for throughput that is up to two times faster.
Add two 32-Mbyte SIMMs	96 Mbytes	Minimum requirement for recomposing color separations.
Add two 32-Mbyte SIMMs and one 16-Mbyte SIMMs	112 Mbytes (max.)	Optimum performance.

Adding a hard disk for font storage

You can connect one or more Small Computer System Interface (SCSI) external hard disks to the Phaser 480X for additional font storage. When you download a font to the external disk, the font remains there until you remove it.

Compatible hard disks

The Phaser 480X can use most SCSI hard disks that support the full SCSI command set. Also, most SCSI hard disks that work with an Apple LaserWriter will work with a Phaser 480X. Contact your computer or printer dealer for information.

For additional information on SCSI hard disks, request a document catalog from HAL, the Tektronix automated fax system. Refer to "Using the automated fax systems" on page 6-4 for instructions on using HAL.

Requirements for adding a hard disk

To connect an external disk to your Phaser 480X, you need these items:

- A SCSI peripheral cable for each disk. The printer uses a 50-pin connector.
- One SCSI cable terminator, unless your disk has an internal terminator.

Initialization Unless the disk is already formatted for operation with a PostScript printer, you have to format and then initialize the disk after connecting it to the printer. The Tektronix CD-ROM and the Phaser 480X diskettes contain utilities to help you format and initialize the disk and download fonts to it. For instructions on how to use the utilities, refer to the *Phaser 480X Drivers and Utilities Printing Reference*.

SCSI ID number The printer's SCSI number is 7. Valid ID numbers for the external disk are 0 through 6.

Termination The Phaser 480X has an internal terminator.

Startup file You may load a startup file called *Sys/Start* onto your external disk. You can use the *Sys/Start* file to customize printer operation. For example, you can set the printer's color correction mode or load fonts into the printer's memory. The CD-ROM or diskettes include utility files that enable and disable the *Sys/Start* file (refer to the *Phaser 480X Drivers and Utilities Printing Reference* for more information).

When you turn on the printer, it executes the *Sys/Start* file if the printer's rear panel Switch 5 is in the *down* position. When Switch 5 is in the *up* position, the file does not execute.

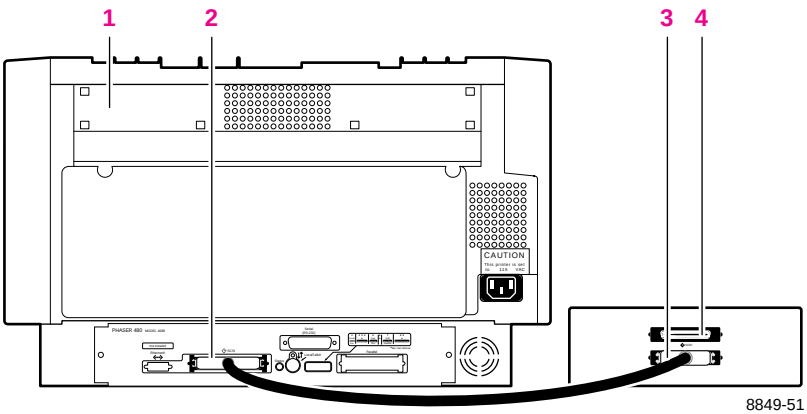
Guidelines for connecting SCSI disks The printer can support up to seven external disks connected at one time. When connecting a hard disk to the printer, follow these guidelines:

- You must turn on the disk(s) *before* you turn on the printer.
- The printer must always be at one end of the chain with a terminator at the other end.
- With multiple disks, each disk must have a unique SCSI ID number. Do not turn on the printer or disk *until each disk has a unique number.*
- With multiple disks, only one disk can contain a *Sys/Start* file.

Connecting one disk

Make sure that the computer, printer, and external disk are turned *off* before you connect or disconnect the SCSI cables.

1. Printer with a built-in SCSI terminator
2. Printer's SCSI port
3. External disk SCSI port
4. Terminator (not required if the disk has a built-in terminator)



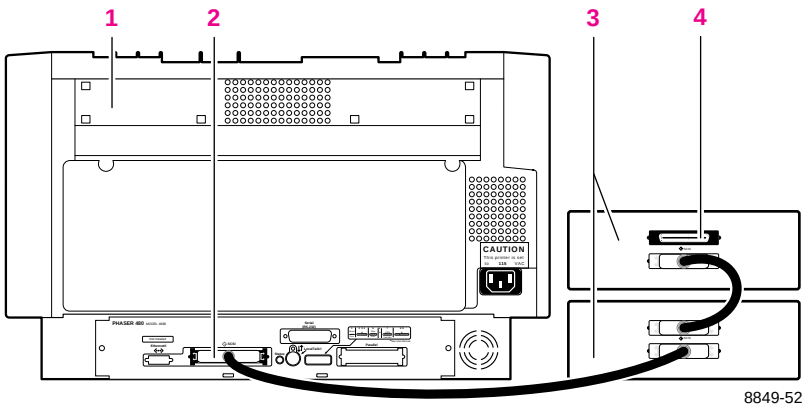
Each disk must have a unique SCSI ID number. Do not turn on the printer or disk until each disk has a unique number.

Turn on the external disk before turning on the printer.

Connecting multiple disks

Make sure that the computer, printer, and external disk are turned *off* before you connect or disconnect the SCSI cables.

1. Printer with a built-in SCSI terminator
2. Printer's SCSI port
3. External disks
4. Terminator (not required if the disk has a built-in terminator; the middle disk must not have an internal terminator)



Each disk must have a unique SCSI ID number. Do not turn on the printer or disks until each disk has a unique number.

Turn on the external disks before turning on the printer.

Appendix

C Moving Your Printer

Changing the line voltage

If you move the printer to a country that uses a line voltage different from the printer's factory setting, you must have the printer's line voltage and fuse changed to match the setting. This can only be done by a trained service technician. Contact your Tektronix service representative. Fuse values are 15 amps for 110 V and 6.3 amps for 220 V.

Repacking your printer

1. Turn off the printer; remove all cords and cables.

2. Slide the cover release to open the top cover.

Caution *To keep your warranty valid, you must ship the printer in its Tektronix shipping box, taking reasonable care to repack it properly. Failure to do so will result in damage to the printer. Call Tektronix if you need a replacement box. Also, if you are returning the printer for service, call Tektronix for a return authorization number.*

3. Remove the paper tray and repack it for shipping:

   a. Insert the two small foam shipping blocks into the paper tray on either side of the metal plate (refer to "Removing the packing material" on page 2-4).

   b. Secure the cover to the paper tray. Use masking tape.

Note *If you are shipping the printer for service, you do not need to return the paper tray.*

4. Remove the transfer roll tray; remove the transfer roll from the tray and wrap the tray in packing material.

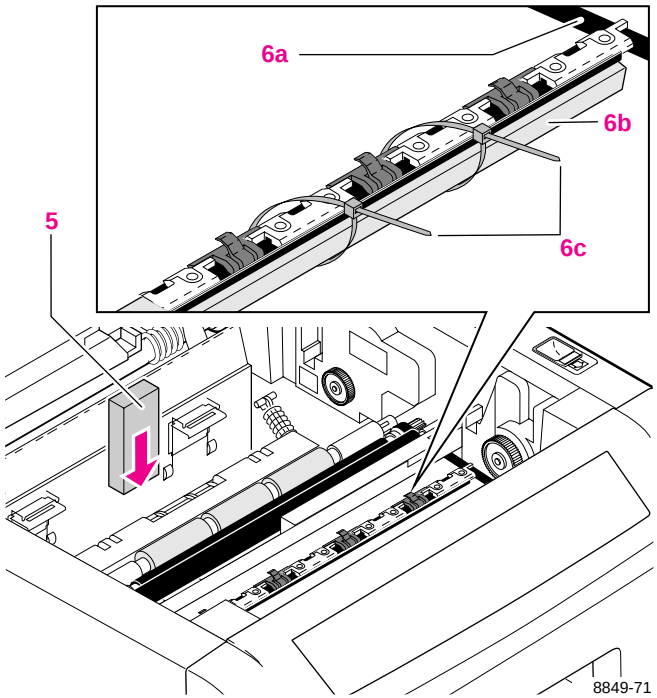
5. Insert the medium-sized foam shipping block inside the printer behind the paper guide.

6. Attach the long foam shipping block to the paper clamp bar:

   a. Use the black rubber belt to move the paper clamp bar so that it is positioned directly over the label **Position paper clamp bar HERE to clear a paper jam**.

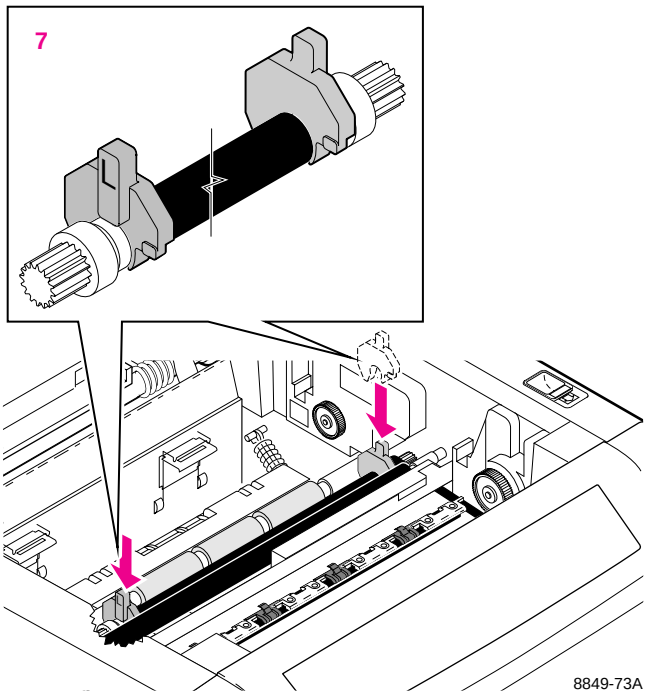
   b. Insert the shipping block under the paper clamp bar.

   c. Use the two tie-wraps to secure the block to the paper clamp bar. Attach them on the righthand side where there is open space beneath the paper clamp bar. Make sure that they are tightly secured.



7. Place the two rubber cushions, marked L (left) and R (right), onto the metal bar on either side of the platen. Make sure that the rubber cushions are positioned with the posts *upright* (or *leaning slightly forward)* and *facing outward* as shown.

Caution *The rubber cushions protect the thermal head. If they are positioned incorrectly, the thermal head will be damaged in shipping.*

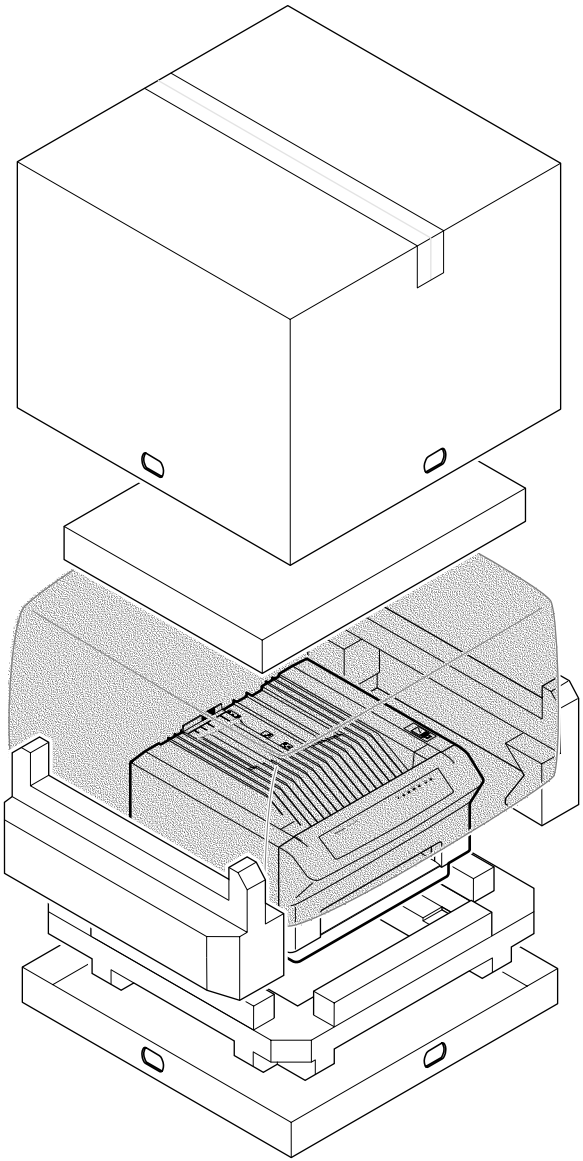


8. Replace the transfer roll tray inside the printer.

9. Close the top cover; the thermal head must be resting on the rubber cushions.

10. Secure the top cover closed. Use masking tape.

11. Repack the printer in the Tektronix shipping box. Keep the printer level when moving.



8849-50

Appendix

D Regulatory Information

Canadian EMC (Electromagnetic Compatibility) regulatory standards

- This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

- Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limits applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministere des Communications du Canada.

Declaration of conformity (for 220 VAC equipment)

Tektronix, Inc.
Color Printing and Imaging Division
P.O. Box 1000
Wilsonville, Oregon 97070-1000 U.S.A.

declares, under our sole responsibility, that the product

Phaser 480X

to which this declaration relates, are in conformity with the following standard(s) or other normative document(s):

For the EC EN60950	Safety of Information Technology Equipment including Electrical Business Equipment
For the EC EN55022 (CISPR 22)	Limits and methods of measurement of radio Interference characteristics of Information Technology Equipment
For the EC EN50 082-1	The Generic Immunity Standard for electrical and electronic apparatus intended for use in the residential, commercial, and light industrial environment.

following the provision of the

Low Voltage Directive 73/23/EEC, the Electromagnetic Compatibility Directive 89/336/EEC, and the law governing the operation of radio-frequency equipment (HFfG) 9 August 1949.

FCC Class B device (for 110 VAC equipment)

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly in strict accordance with Tektronix' instructions, it may cause interference with radio and television reception.

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interferences in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning *Changes or modifications not expressly approved by Tektronix can affect emission compliance and could void the user's authority to operate this product. To ensure emission compliance, use shielded interface cables.*

Material Safety Data Sheet

Proper management of environmental resources protects the well-being of our employees, customers, shareholders, and the communities we are a part of worldwide.

Tektronix establishes and maintains sound environmental management practices to accomplish this goal and to assure compliance with the laws, regulations, and orders of the responsible governmental authorities wherever Tektronix and its subsidiaries operate.

Tektronix, Incorporated is complying with government regulations by providing Material Safety Data Sheets for our products.

Color Printing and Imaging Division
Tektronix, Incorporated

Section I – Product identification

Trade name	Tektronix part number
Universal Black Transfer Roll	016-1241-00
Universal 3-Color Transfer Roll	016-1244-00
Universal 4-Color Transfer Roll	016-1245-00
4-Color A/A4 Transfer Roll	016-1243-00

Product use: Used in Phaser 480X color printers.

Section II – Information on ingredients

Hazardous Ingredients: None.

Section III – Hazards identification

Potential Health Effects:

Eyes: Non-irritating.
Skin: Non-irritating.
Inhalation: Not considered a route of exposure.
Ingestion: Not considered a route of exposure.

Section IV – First aid measures

This material is a coated film. No medical emergency is foreseen when product is used as intended.

Section V – Fire fighting measures

Flammable Properties:

Flash point: Not applicable.
Fire & explosion hazards: The film will burn when in contact with fire. Products of combustion include carbon dioxide, carbon monoxide, and water which are similar to combustion of other products found in an office setting.

Section VI – Accidental release measures

Spill Or Leak: This section is not applicable to this product, which is a dry film.

Section VII – Handling and storage

Handling: No special precautions necessary.
Storage: Store away from excessive heat.

Section VIII – Exposure control – personal protection

Exposure Guidelines: No PEL or TLV established.
Engineering Controls: No special controls necessary.
Eye Protection: None needed.
Skin Protection: None needed.
Respiratory Protection: None needed.

Section IX – Physical and chemical properties

Appearance: Coated, flexible film.
Odor: None.
Solubility: Not water soluble.

Section X – Stability and reactivity

Stability: Stable.
Incompatibility With Other Materials: None expected.
Hazardous Polymerization: Not applicable.

Section XI – Toxicological information

Mutagenicity:	All materials in product subjected to Ames Test and found to be negative.
Pigments:	Acute oral toxicity: LD50 rat >5000 mg/Kg Acute dermal toxicity: LD50 rat >5000 mg/Kg

Section XII – Ecological information

No data available.

Section XIII – Disposal considerations

Dispose in accordance with all Federal, State or Local regulations. This film is not considered a hazardous waste under RCRA 40 CFR 261.

Section XIV – Transport information

D.O.T.: Not applicable.

Section XV – Regulatory information

SARA Title III:
313 Reportable Ingredients: None.

California Prop. 65: None of the components of this film appear on the California Proposition 65 list of chemicals known to cause cancer or reproductive toxicity.

Canadian WHMIS: The film meets the requirements of a "manufactured article" under Canadian Workplace Hazardous Materials Information System, and therefore no MSDS or label is required.

TSCA: All components of this film are included in the Toxic Substances Control Act inventory as verified by our suppliers.

OSHA: This film meets the definition of an article under 29 CFR 1910.1200 Hazard Communication and therefore it is exempt from its requirements. We are supplying this data sheet as a courtesy to our customers.

Section XVI – Other information

Original preparation date: 9/30/93 R.C.

Tektronix, Incorporated
P.O. Box 500
Chemical Documentation
Mail stop 55-769
Beaverton, Oregon 97077
Phone: Printer information: 1-800-835-6100
MSDS information: (503) 627-7255

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