Digital Series 500 Printers

User Guide

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Preface

About this User Guide

This user guide contains information on how to set up your Digital Series 500 inkjet printer. It explains how to unpack and prepare your printer for use, how to use the buttons on the printer's operator panel, how to print files from the Windows environment, and how to maintain the printer and correct common printing problems. In addition, this guide describes the technical characteristics of the printer and describes the list of accessories and options that are available with the Digital Series 500.

The Structure of this Manual

This manual contains all the information required to install, configure and operate the printer. It is intended for use by both first-time and experienced users. The manual is structured with a step-by-step approach. Read and follow all the instructions carefully. Always refer to the manual whenever you encounter a problem.

The contents of the chapters are as follows:

1 - Presentation

This chapter introduces the Digital Series 500 family and the features of the printers in the Series 500 range. In addition, it illustrates the physical environment most suitable for the printer, and identifies and locates the various parts and controls. In addition, this chapter explains, in detail, the functions of the indicators and buttons on the operator panel.

2 - Preparation for Use

This chapter describes how to connect the printer to the power outlet, how to insert the inkjet print head in the printer, load the paper tray and print head, install a Windows printer driver and run a print test.

3 - Operating the Printer

This chapter describes the common tasks involved in using the printer. It includes information on the different types of paper you can use, the print area associated with different paper sizes, how to insert paper manually and some of the common functions of the printer's operator panel's buttons.

4 - Printing with the Series 500

This chapter contains information on installing the Windows printer drivers included on your Driver diskettes and setting up your printer for printing within Windows applications. There is also a section in this chapter on printing in the DOS environment.

5 - Maintenance

This chapter describes day-to-day user maintenance performed during the printer's working life.

6 - Troubleshooting

This chapter contains a troubleshooting guide, for problems which may occur, together with indications for their solution. In addition, it provides information on how to contact Digital support centers for support.

Appendix A - Technical Characteristics

This section describes the printer's technical and functional characteristics.

Appendix B - Accessories and Options

This appendix describes the accessories and options available with the printer.

Note: In the sections regarding the logical connection to the computer and the installation and use of software, this manual can provide only a general outline with some basic hints. For more detailed information, you must consult the documentation of your operating system and application packages.

Related Documents

In addition to this manual, the following documents are available for use with your Series 500 printer:

- *Carton Contents Card*
  - This single page card is included in the printer's carton and lists the items you should find when unpacking your printer.
- *Series 500 Printers - Setting Up You Printer*

This short guide describes the following:

- How to unpack and connect your printer
- How to install paper and a print head
- How to run a printer self test
- How to install a Windows printer driver and run a Windows print test.

- *Series 500 Printers - DECcolor Works Printer Driver User Guide*
  - This user guide is part of the Series 500 color kit. It describes how to install and configure your printer for color printing.
- *Series 500 Printers - Technical Reference Guide*
  - This reference manual can be ordered as a separate document. It contains character set tables, programming information and information on how to operate the printer with the DOS operating system.

Notes, Cautions and Warnings

The text contains three different types of annotation which should always be read.

Note: This NOTE gives you, or indicates where you can find, additional information.

Caution: *This CAUTION should catch your attention, advising you of a particular situation/problem which may occur/be avoided as a result of a certain sequence of operations. It may also contain a reminder to execute a particular operation.*

Warning: This WARNING indicates a specific procedure which must be strictly observed. Failure to comply with the instructions given may result in injury to the operator and/or damage to the printer.

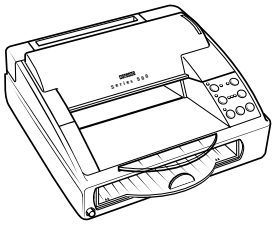
1

Presentation

This chapter introduces the Digital Series 500 Printers family, explains how to identify your printer model and details the main features of your printer and its components.

The Digital Series 500 Printers Family

Digital Series 500 Printers are a family of high-quality, color-capable inkjet printers. Depending on the model, the color capability is available as an option or delivered as a basic feature of your printer.



You can identify your specific Digital Series 500 printer model by consulting the *Carton Contents Card* included in the accessories box (see the section on identifying your printer below).

The color printing performance of the Digital Series 500 Printers is specially highlighted through the specific DECcolor Works color printer driver (see the *DECcolor Works Printer Driver - User Guide* for further information).

The Digital Series 500 Printers are designed and built to guarantee excellent reliability. They provide constant quality of both text and high resolution graphics, associated with high speed and quiet operation.

Benefits of the Series 500

A number of benefits are provided by the Digital Series 500 printers, including the following:

High Quality Color Printing

Depending if your printer model includes this capability, your printer allows you excellent color printing, using "drop on demand" thermal ink jet technology. It produces a laser-like print density of up to 300 x 300 dots per inch (dpi). For monochrome printing, note that the black ink is water-resistant.

Printing on Paper, Envelopes and Transparencies

The standard paper handling devices allow the use of a wide range of paper types and sizes: transparencies, standard or special paper single sheets (Letter, A4, Legal...), envelopes (COM-10, DL...). The Digital Series 500 Printer Drivers are specially designed to optimize printing using these different media.

Low Cost Ownership

The monochrome print head has a rechargeable system which allows you to only change the ink cartridge, instead of changing the whole print head. Furthermore, the Digital Series 500 Printers include an *Economy* mode designed to save ink.

The Digital Series 500 Printers have very low power consumption (25 W - less than a standard light bulb). This consumption conforms to EPA (Environment Protection Agency) norms.

Ease of Use

The user-friendly driver interface make this printer very easy to use. A *Setting Up Your Printer* booklet is also provided to help you quickly install your Digital Series 500 Printer.

Compatibility

Your printer can be connected to personal computers with a standard parallel or optional serial interface. Compatible with Windows 3.1/3.11 and many other software applications commonly used with this class of printer, it can be used in most working environments. The resident firmware emulates the HP DeskJet 500C printer (extended PCL-III commands).

Options

Depending on your printer model, the color capability is implemented when you acquire one or several of the color printing system components: a color print head, the print head storage box, the DECcolor Works printer driver and associated user guide.

Additional emulations (EPSON LQ 850, IBM Proprinter X24, including character sets), RAM and fonts, which increase and extend the printer's operating range, are also available as options.

Two specific paper devices can be mounted on your printer to:

- An external automatic sheet feeder, similar to the built-in basic sheet feeder to toggle between 2 types of letterhead paper, for example.
- A fan-fold paper tractor mechanism to print listings, for example.

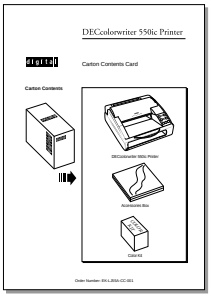
The serial interface kit represents another useful option.

Configured in the appropriate operating surroundings, your Digital Series 500 Printer is the ideal output tool for Word Processing and Desktop Publishing applications.

Identifying your Printer Model

The *Carton Contents Card* allows you to identify your own printer model among the Digital Series 500 Printers family.

1. Unpack the contents of the carton.
2. Remove all packing from the printer.
3. Check all printer parts are present and undamaged, by consulting your specific printer *Carton Contents Card*, included in the accessories box. If anything is missing or damaged call your dealer immediately.


DEColorwriter 550ic Printer

Digital

Carton Contents Card

Carton Contents

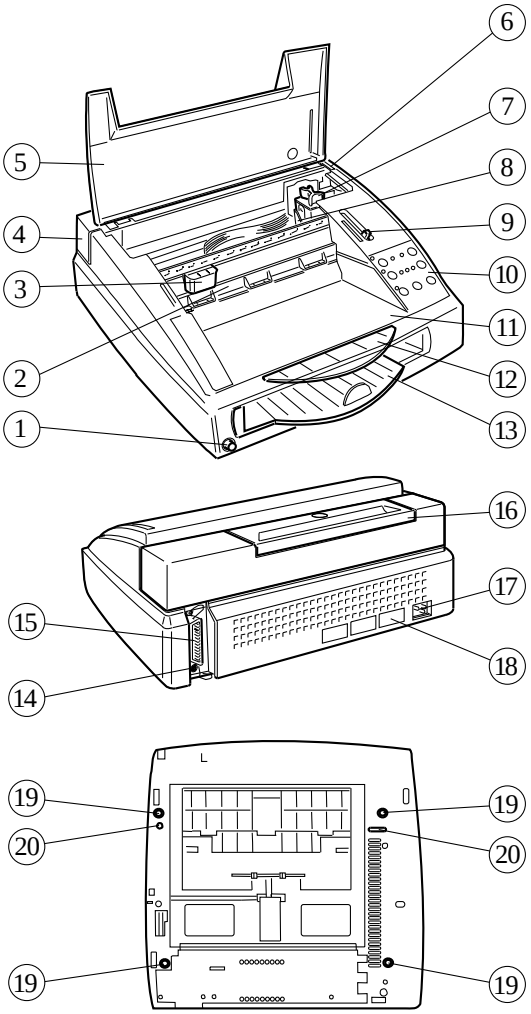
Example Carton Contents Card

Caution: *Keep the carton and all the packing materials in case you have to transport the printer any distance, relocate it, or return it to Digital Services for maintenance.*

Printer Location

- Place the printer on a flat, stable surface near your computer.
- Make sure there is a power outlet nearby to easily connect the printer.
- Make sure that there is enough space around the printer for all its parts to be accessed comfortably.
- Do NOT leave the printer exposed to direct sunlight or heat sources, or in dusty or dirty environments.

Printer Components



Front / Rear / Underside Views

The figures on the previous page show a front, rear and underside view of the printer. The following components are indicated:

Front View

1 Power switch

2 Ink tube

3 Ink slide

4 Manual paper insertion slot casing

5 Top cover

6 Slot for optional emulation / font card

7 Inkjet print head

8 Print head carriage

9 Print head selection lever

10 Operator panel

11 Paper output tray

12 Transparent extendible support

13 Built-in paper tray (Upper Tray - ASF1: Automatic Sheet Feeder 1)

Rear View

14 Socket for optional external paper tray (Lower Tray - ASF2: Automatic Sheet Feeder 2)

15 Parallel interface cable socket

16 Manual paper insertion slot cover

17 Power cable socket

18 Electrical data plate

Underside View

19 Printer feet

20 Mounting points for optional external paper tray ASF2

Inkjet Print Heads

The Digital Series 500 Printers technical concept is based on interchangeable inkjet print heads. This concept allows to define a compact machine, which is very comfortable, regarding the modern space constraints.

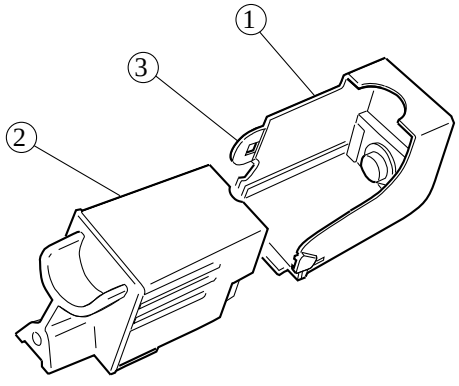
You obtain monochrome printing by using a monochrome print head and switch to color printing by replacing this print head with a color print head.

Replacement of the print head must be communicated to the computer (through the selection of the proper printer driver or of the proper printing option) AND to the printer (through changing the position of the print head s selection lever).

Note: For information on how to replace the print head, see the section on replacing the print head in Chapter 2.

The Monochrome Inkjet Print Head

The monochrome (black ink) print head consists of an outer casing ① with the nozzles and electrical contacts, and a replaceable ink cartridge ② which fits inside the outer casing and is held in place by the clip ③.

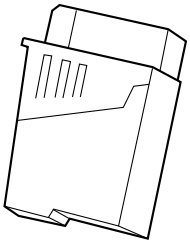


Monochrome Inkjet Print Head

Note: For information on how to replace the monochrome ink cartridge, see the section on *Replacing the Monochrome Ink Cartridge* in Chapter 5.

The Color Inkjet Print Head

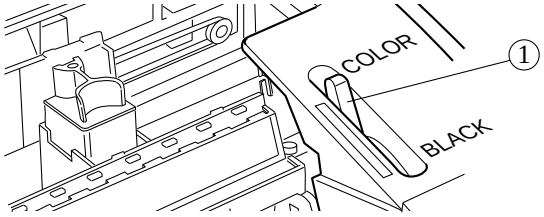
The color inkjet print head is larger than the monochrome print head and includes an ink cartridge with three ink reservoirs for the colored inks. Unlike the monochrome print head, the color print head and ink cartridge are a single unit and can not be replaced separately.



Color Inkjet Print Head

The Print Head Selection Lever

The print head selection lever ① is located above the operator panel and under the top cover. The lever must be positioned according to your print head type: BLACK position for a monochrome print head, COLOR position for a color print head.



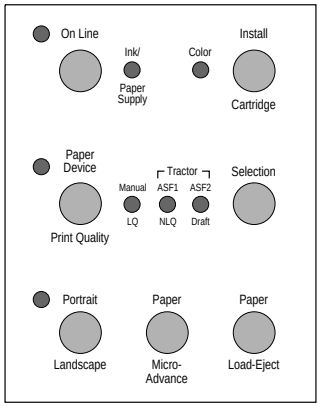
The Print Head Selection Lever

***Caution**: If the print head selection lever position does not match the print head, the printer does not function and the Color indicator flashes.*

The Operator Panel

The printer operator panel, located on the upper right side of the printer has seven buttons and eight indicators.

The buttons provide a way to control and configure the printer. The indicators provide you with information on the configuration and current state of the printer.



Operator Panel

Indicators Attributions

The following section explains which are the attributions that have been assigned to the different operator panel indicators. The following graphic conventions are used in the tables below:

- Off
- Lit
- Flashing with single sequence
- Flashing with double sequence

Indicators Status Graphic Conventions

Printer Control / Data Transmission

Indicator Status	Meaning
On Line	The printer is in On Line mode (under operator and computer control).
On Line	The printer is in Off Line mode (under operator control only).
On Line	The printer is receiving data for printing.

Ink and Paper Supply Control

Indicator Status	Meaning
Ink/ Paper Supply	A paper error condition has occurred.
Ink/ Paper Supply	An end of ink or no print head present condition has occurred.

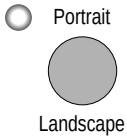
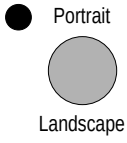
Print Head Carriage Shift Control

Indicator Status	Meaning
┌ Tractor ┐ Manual ASF1 ASF2 LQ NLQ Draft	When the 3 indicators flash consecutively, the print head carriage is unable to return to its home position.

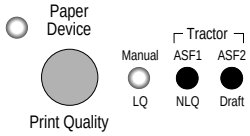
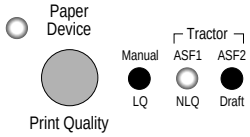
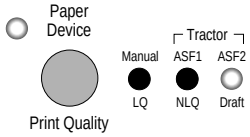
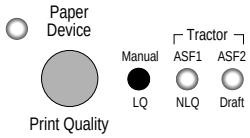
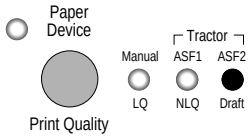
Print Head Type Control

Indicator Status	Meaning
Color	A color print head is being used.
Color	A monochrome print head is being used.
Color	The print head inserted is not the correct type (the file to be printed requires a different print head type).
Color	The print head type and the print head selection lever position do not match.

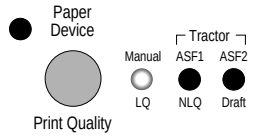
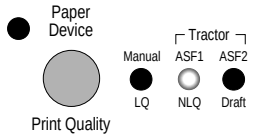
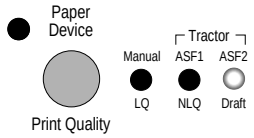
Print Orientation Control

Indicator Status	Meaning
	The printer is in Portrait mode.
	The printer is in Landscape mode.

Paper Device Control

Indicator Status	Meaning
	The printer is in Manual Insertion mode.
	The selected paper device is the built-in automatic sheet feeder (also called Upper Tray - ASF1).
	The selected paper device is the optional external automatic sheet feeder (also called Lower Tray - ASF2).
	The selected paper device is the optional fan-fold paper tractor mechanism.
	This indicator status is reserved.

Print Quality Control

Indicator Status	Meaning
	The selected print quality is Letter Quality (LQ).
	The selected print quality is Near Letter Quality (NLQ).
	The selected print quality is Draft.

The Buttons

The button functions depend on the printer functional and operating states.

Functional States

The following table explains the different functional states of to your printer.

Functional State	Meaning
Free	No data to be printed.
Busy	Reception of data until the completion of its printing.
Idle	Data to be printed, but awaiting a form feed command (from console or line).

Operating States

The following table explains the different operating states applying to your printer.

Operating State	Meaning	Indicator Status
On Line	The printer is ready to receive data or data is being processed and printed.	On Line lit or flashing.
Off Line	State imposed by the operator, who has pressed the On Line button. Any printing operation is suspended.	On Line off.
Warning	Depending on the indicator status.	See the *Indicator Warnings* section in Chapter 6.

Button Functions

Button	Functional State / Operating State	Function
On Line	N/A	Toggles the printer On Line / Off Line operating state.
Install Cartridge	N/A	Sets the printer for a print head replacement operation.
Portrait - Landscape	Free	Toggles the Portrait / Landscape print modes.
Paper Device - Print Quality	Free	Toggles the Paper Device / Print Quality selection modes.
Selection	N/A	Selects paper device or print quality to be used.

Button	Functional State / Operating State	Function
Paper Load-Eject	- Idle / On Line. - Paper present. - Manual, ASF1 or ASF2 selected.	Forces the printing to empty its buffer and eject the printed page.
	- Idle / On Line. - Paper present. - Tractor selected.	Forces the printing of unclosed page and advances the paper to the next top of form (TOF).
	- Off Line. - Paper present. - Manual, ASF1 or ASF2 selected.	Ejects the paper.
	- Off Line. - Paper present. - Tractor selected.	Advances the paper to the next TOF.
	- Paper not present. - Manual, ASF1 or ASF2 selected.	Attempts to insert a sheet of paper in the printer.
	- Paper not present. - Tractor selected.	Attempts to feed the paper to the next TOF.
Paper Micro-Advance	Off Line or not Busy.	Advances paper on selected device. If held, paper feed is continuous until released.

Functions Activated with Button Combinations

Function	Button(s)	*Precaution* / Result
Running the print self test	On Line + switch on the printer	*Check that there is paper available in the selected paper device.* Starts the print test.
Hexadecimal printing	Install Cartridge + switch on the printer	*Check that there is paper available in the selected paper device and that the monochrome print head is installed.* Causes all subsequent data transmitted to the printer to be printed in its hexadecimal format.
Loading the setup program values	Install Cartridge + Portrait - Landscape + switch on the printer	Causes the next text file sent to the printer to be interpreted as a setup configuration file.
Loading the default setup program values	Install Cartridge + Paper Device - Print Quality + switch on the printer	Causes the default values for the programmable parameters to be restored.
Printer reset	Install Cartridge + Paper Micro-Advance	Pressing these two buttons together (in any printer state) causes the printer to reset to its last switch-on condition. Any printing operation is aborted and unprinted data in the print buffer is lost.

2

Preparation for Use

This Chapter describes how to connect the printer to the power outlet and to the computer, load paper, install, replace and store an inkjet print head, run the printer self test, install a Windows printer driver, and run a Windows print test.

Connecting the Printer to the Power Outlet

Warning: BEFORE connecting the printer to the power outlet and/or switching it on, read all the following points carefully:

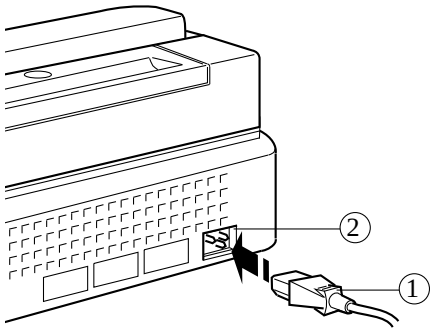
The manufacturer declines all responsibility for accidents to persons or damage to the printer arising from the non-observance of the following procedure.

Make sure the power outlet supplies the voltage indicated on the electrical data plate at the rear of the printer.

If the electrical data plate indicates a different voltage, call your dealer immediately. DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT OR SWITCH ON THE PRINTER.

- Make sure that the plug on the power cable is of the type accepted by the power; if it is not, contact your Digital sales representative or your retailer. Do NOT attempt to change the plug yourself.
- Make sure the printer is switched off BEFORE plugging into the power outlet socket.

1. Connect the power cable ① into the power socket ② at the back of the printer.
2. Plug the other end of the power cable into the power wall socket.



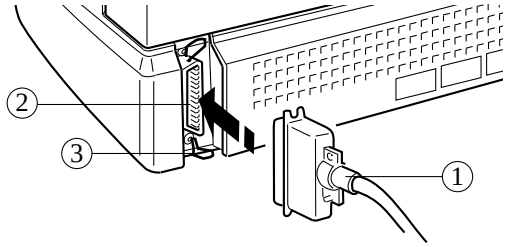
Connecting the Power Cable into the Power Socket

Connecting the Printer to the Computer

Your printer has a resident parallel interface with a 36-pin female connector and is connected to a computer using an interface cable. An optional plug-in serial interface is available on request. For most users a parallel interface cable will be suitable.

Note: The necessary parallel interface cable is not included in the printer package. Your dealer can supply you with the interface cable.

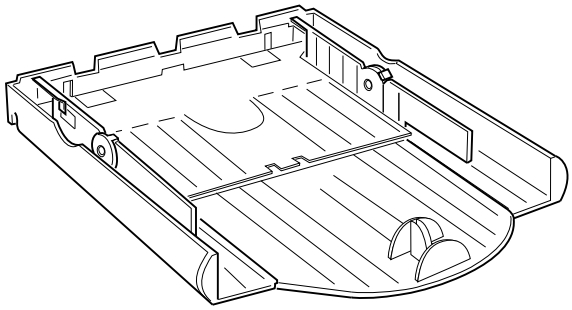
1. Connect the printer end of the parallel interface cable ① to the parallel port ② at the back of the printer.
2. Close the spring clips on the printer cable ③.
3. Connect the computer end of the parallel interface cable to the appropriate parallel port on your computer (**LPT1**, for example).



Connecting the Parallel Interface Cable

Loading Paper in the Printer

Paper is automatically fed into the printer from a tray which is situated in the base of the printer. This tray is also called ASF1 (Automatic Sheet Feeder 1). Another tray is available as an option: this tray (ASF2) is mounted under the base of the printer. Each paper tray can hold up to 150 sheets of standard photocopy paper.



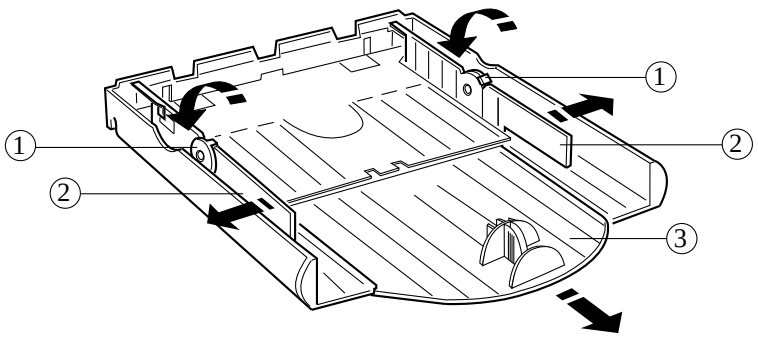
The Built-in Paper Tray

Note: For information on the types of paper you can use and the page layout, see *Printing on Different Types of Paper* in Chapter 3.

A paper stop, which is pressure-mounted on the inside base of the tray, is supplied. This stop allows the correct positioning of Letter and A5 paper sizes.

Preparing the Built-in Paper Tray

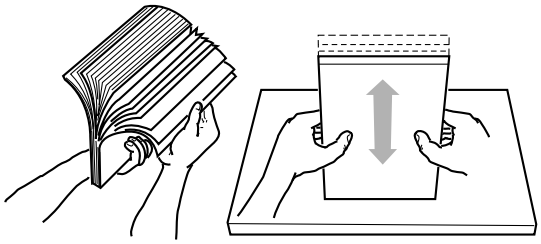
1. Push the locks ① towards the OPEN position to unlock the side paper guides.
2. Open the side paper guides ②, pushing them towards the sides of the paper tray.
3. Pull out the extendible guide ③ on the paper tray.



Preparing the Built-in Paper Tray

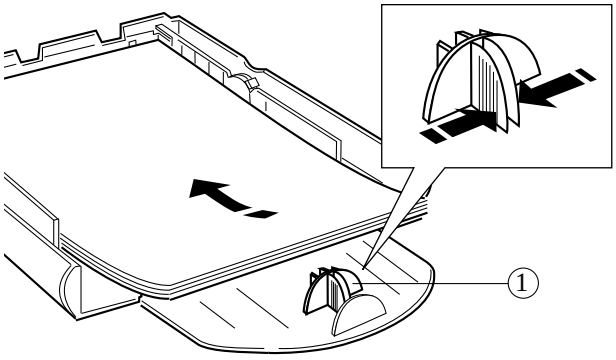
Loading Paper in the Tray

1. Take a stack of about 100 sheets of paper, fan the sheets by flicking the edge with your thumb and then tap the edge to align the sheets, to ensure a smooth feed into the printer.



Fanning the Paper

2. Place the paper stack in the paper tray.
3. Depending on the paper you use, either remove the paper stop ① by pinching its striped arms or mount it in the holes corresponding to your paper size (see table on next page).



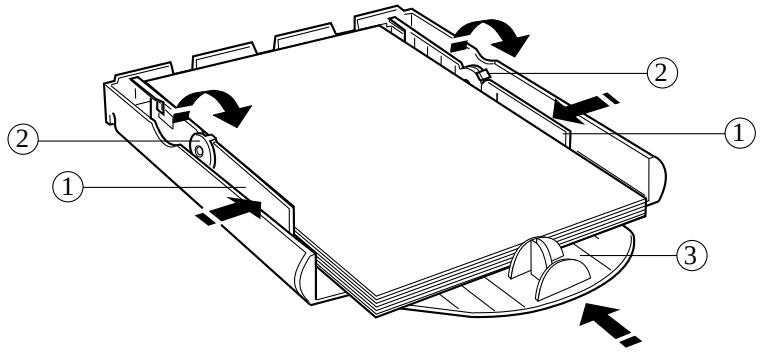
Placing the Paper Stack in the Paper Tray

The following table shows which paper sizes require the paper stop:

Paper Size	What to Do with the Paper Stop
Letter	Mount the paper stop at the LTR position
Legal	Remove the paper stop
A4	Remove the paper stop
A5	Mount the paper stop at the A5 position

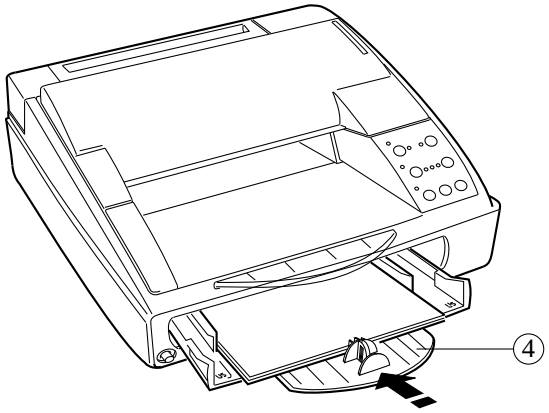
Inserting the Paper Tray in the Printer

1. Push the side paper guides ① inwards against the edges of the paper stack.
2. Lock the paper guides ②, by pushing the locks towards the CLOSE position.
3. Push the extendible guide ③ in, until it stops against the edge of the paper stack.



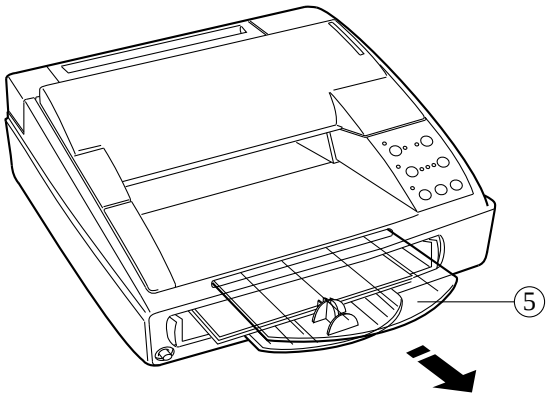
Securing the Paper Stack

4. Insert the paper tray ④ into the front slot of the printer.



Inserting the Paper Tray in the Printer

5. Pull out the transparent extendible support ⑤ to receive the ejected printed pages. Up to 150 printed pages can be held by the paper output tray if the transparent support is correctly extended.



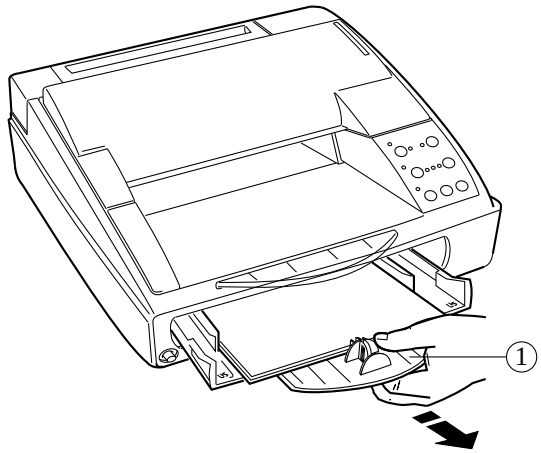
Pulling Out the Transparent Extendible Support

Caution: *Do NOT force in more paper than is permitted by the leafers or metal stops inside the paper tray (tray capacity is approximately 150 sheets of paper).*

Printing on both sides of the paper may increase the risk of misfeeds or paper jams.

Make sure the paper feeds smoothly and that it is not held too tightly nor has too much play

When you have to reload the paper tray for any reason or wish to remove the paper tray from the printer, always hold the tray ① in the center (topside extendible guide and underside tray base) to remove it.

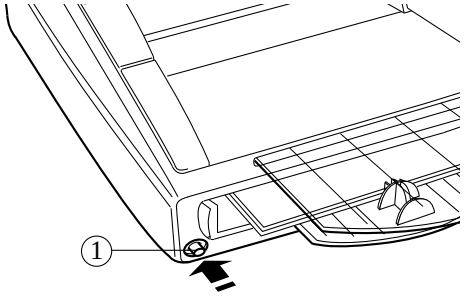


Removing the Paper Tray from the Printer

Caution: *Before you remove the paper tray, make sure there is no paper loaded in the printer. If there is, you must eject it by pressing the Paper Load-Eject button on the operator panel.*

Switching On the Printer

1. Switch on the printer, by pressing the power switch ①.



Switching On the Printer

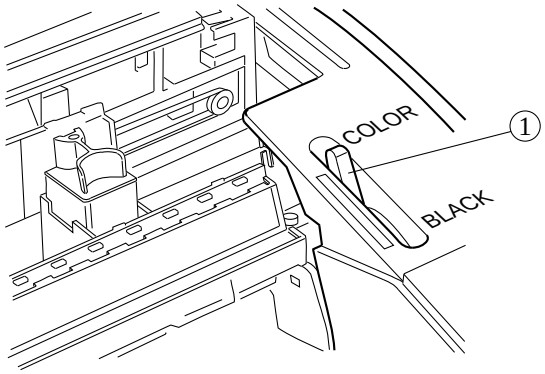
Whenever the printer is switched on:

- It undergoes a series of internal checks. If any faults are found, all the indicators on the operator panel will flash rapidly. Should this happen, switch the printer off and then on again. If the fault persists, see the Chapter 6, Troubleshooting.
- A mechanical reset is executed and the last-saved printer parameters are loaded in the printer memory. The print head carriage stops in the extreme right-hand position (home position).
- If no faults are found, it will be in On Line mode (On Line indicator lit).

Positioning the Print Head Selection Lever

Before installing a print head, it is important to position the print head selection lever to match the print head type you intend to install.

1. Press the Install Cartridge button on the operator panel to move the print head carriage to its loading position.
2. Open the top cover of the printer.
3. Move the selection lever ① (located above the operator panel) to the position that matches your print head type, as indicated near the lever: BLACK for a monochrome print head, COLOR for a color print head.



Moving the Print Head Selection Lever

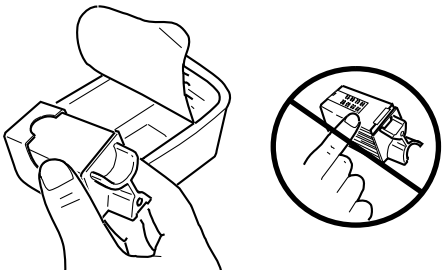
Caution: *If the print head selection lever position does not match the print head you install, the printer will not function and the Color indicator will flash.*

Installing a Print Head

The print head installation operation for both the monochrome and color print heads are identical.

Note: The monochrome print head has an "ink detection" sensor which causes the Ink / Paper Supply indicator to flash rapidly when it is time to replace the monochrome ink cartridge.

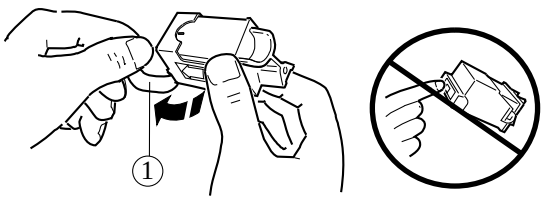
1. Open the sealed print head container.
2. Remove the print head from its container, holding it by the casing, at the side opposite the protective tape.



Removing the Print Head from its Container

Caution: *Do not touch the electrical contacts or sit the print head on them.*

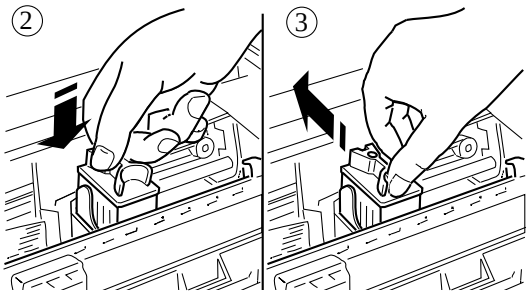
3. Still holding the print head casing, **remove the transparent protective tape** ①, pulling its tab end in the direction indicated by the arrow.



Removing the Transparent Protective Tape

Caution: *Do not touch the printing nozzles or sit the print head on them.*

4. **With the electrical contacts facing towards the back of the printer**, insert the print head in the print head carriage by:
   - Placing it in the carriage ②.
   - Pushing it gently towards the back of the printer ③ until it clicks.



Inserting the Print Head

5. Press the Install Cartridge button on the operator panel to return the print head carriage to its ready position.
6. Close the top cover.

If you have problems inserting a print head:

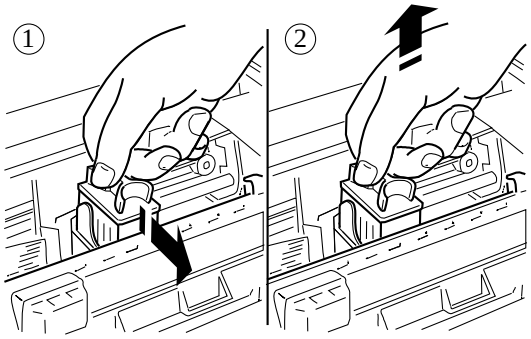
- Make sure the print head carriage is in the correct head loading position (towards the center and away from the far right hand edge of the printer).
- Check that the print head carriage is clean and free of obstructions.
- NEVER force the print head into the carriage.
- Make sure the print head selection lever is in the correct position for the type of print head being inserted.

Caution: *Never attempt to toggle the print head selection lever when the print head is in the Home position (far right end). You must press the Install Cartridge button first, before toggling the lever.*
If you have problems when inserting the print head, always remove it completely and repeat the entire insertion operation.

Replacing the Print Head

You may need to replace the print head, to repeat its installation in case of faulty printing or in order to switch from monochrome to color printing (or to switch from color to monochrome printing).

1. Press the Install Cartridge button.
2. Open the top cover of the printer.
3. Remove the print head from its carriage by:
   - Pulling it towards the front of the printer by its top casing ①.
   - Pulling it upwards out of the carriage ②.



Removing the Print Head

4. Repeat the installation procedure as described in the previous section to install the other or new print head.

Running the Printer Self Test

The printer self test allows you to check that your printer operates correctly. Before running the printer self test, check the following:

- Paper is loaded in the tray.
- Print head is properly installed.
- Print head selection lever position matches the print head type: BLACK for a monochrome print head, COLOR for a color print head.

The print test contains information on the printer firmware (release, emulation and character generators).

If you have both types of print heads, monochrome and color, it is suggested that you insert the monochrome print head first, run the print test and then insert the color print head and repeat the print test.

To run the printer self test:

1. Switch off the printer.
2. Hold down the On Line button on the operator panel, while you switch on the printer.
3. Wait for the test printout:
   - With a monochrome print head (black ink), the print test produces 4 test pages.
   - With a color print head, a single test page is produced.

Caution: *If the print head selection lever position does not match the print head you install, the printer will not function and the Color indicator will flash.*

- To suspend the print test temporarily, press the On Line button (pressing this button a second time will cause printing to resume).
- To exit the print test, switch the printer off or reset it, holding down Install Cartridge and pressing Paper Micro-Advance.

Once the test is completed and the last sheet of paper ejected, the printer will go automatically into the On Line condition.

Check the print quality of the test:

- For the monochrome print head, make sure that all the characters are clearly defined and complete.
- For the color print head, check that the colored bands are bright and consistent in hue.

Caution: *If you have any problems running the print test, check that you have followed the operating procedures correctly; if so, see Chapter 6, Troubleshooting.*

Print Test Contents

The following information describes what has been printed.

Monochrome Print Test

First Page

- The first line of the print test contains information on the printer status:
  - At the left hand margin: the resident (or selected) emulation.
  - At the right hand margin: the name, date of issue and level of the printer firmware.
- The second line of print test indicates the print head type and is followed by the print head test which allows you to check whether any dots are missing. The oblique line should be continuous: a missing segment corresponds to a defective nozzle.
- A list of defective nozzles (if any) is indicated after the test. The defective nozzles are identified by their number and the text "Nozzles test Fail on". Otherwise, the text "Nozzles test Pass" is printed.

Note: If there are defective nozzles, see the section on *Priming the Monochrome Print Head* in Chapter 5 for the possible solutions to this problem. Then repeat the print test.

- A list of the current setup parameter settings.
- The currently selected character set table.

Second and Subsequent Pages

- Samples of the resident (and, if present, optional) fonts in Portrait and/or Landscape with all their attributes.

Color Print Test

If a color print head is installed, the print test will consist of three samples, one in each of the three colors of the print head, which allow you to check the correct operation of each group of nozzles.

As for the monochrome self print test, the oblique lines should be continuous.

Installing a Windows Printer Driver

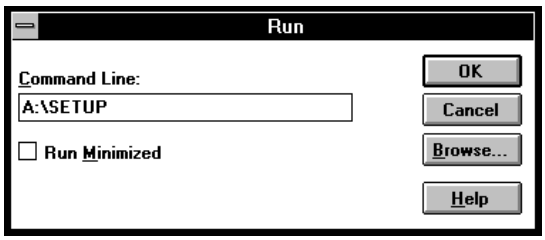
Before you can start printing from a Windows application, you must first install a Windows printer driver control program. A printer driver controls the printer behaviour, loading information from your software and transmitting it to the printer to create a document.

Two types of driver are available with the Digital Series 500 printers: **Digital Series 500-Monochrome** for monochrome printing, and **DECcolor Works** for color printing on a **Digital Series 500-Color** printer. Each driver is provided on a separate diskette, according to the *Carton Contents Card* printer configuration.

If you have both the monochrome and the color drivers, install both to get maximum benefit from your Digital Series 500 printer. You need to perform the same installation procedure for each driver as follows:

1. Switch on your printer and computer.
2. Insert a driver diskette into your diskette drive A:.
3. Start up Windows on your computer.
4. From Program Manager, select the **File** menu option **Run...**.

5. In the **Run** window, type "**A:\SETUP**".



6. Click once on the **OK** button. The installation program automatically performs the setup procedure.

Once the setup is complete, your printer driver is installed as the default printer and the following window appears:

Depending on your configuration and your use for the printer, you can choose between three possibilities:

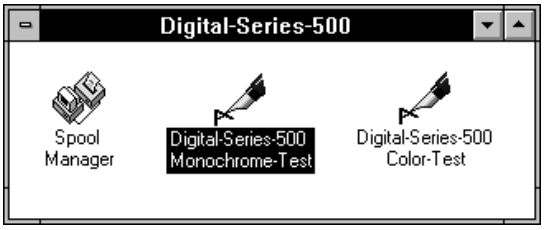
- You can modify the port to which your printer driver is attached by selecting an option in the drop-down menu ①.
- You can return to Windows by clicking on the **Continue** button. A specific window appears, allowing you to run the Windows print test
- You can modify your printer driver setup by clicking on the **Printer Setup** button.
  - For more information about your monochrome printer driver setup, see Chapter 4.
  - For more information on your color printer driver setup, see Chapter 3 in the *DECcolor Works Printer Driver - User Guide*.

Running a Windows Print Test

Once the printer driver installation is complete and depending on your printer configuration, you can easily launch the monochrome or the color Windows print test.

1. If you have closed the **Digital-Series-500** program group window after the printer driver installation, double click on the **Digital-Series-500** icon in the **Program Manager** window.

2. In the **Digital-Series-500** group window, double click on the icon indicating the print test you want to run. The **Write** application is launched.



Example Digital Series 500 Group Window

Caution: *Check that the print head type and the print head selection lever position match the print test you intend to run.*

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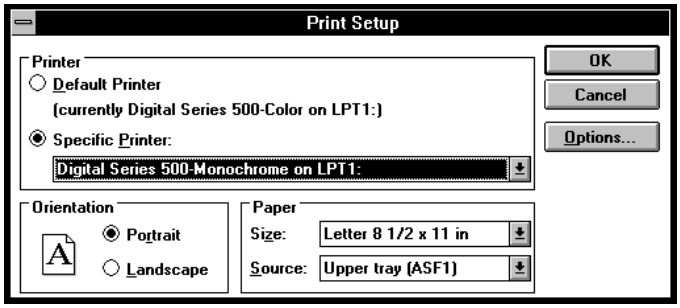
3. From the **File** menu, choose **Print Setup...** and ensure the printer you want to test is selected in the **Printer** box: **Digital Series 500-Monochrome** for the monochrome test, **Digital Series 500-Color** for the color test.

Note: If you select the **Digital Series 500-Color** printer, complete the following steps:

- Click on the **Options...** button.
- In the **Printhead / Resolution** dialog box, ensure that the **Color (CMY)** printing option is enabled.
- Click on the **OK** button.

4. In the **Size:** scroll box, select the paper size according to the paper loaded in your printer.



Note: In the **Source:** scroll box, **Upper tray (ASF1)** corresponds to the built-in paper tray.

5. Click once on the **OK** button.
6. Select **Print...** from the **File** menu.
7. Click once on the **OK** button.
8. Wait for the test printout.
9. Check the quality of the printout.
10. Close the **Write** application.

Your printer is now set up for printing from Windows applications.

Printing with Color

To print using color, you must set up the DECcolor Works printer driver. For more information on setting up this driver see the *DECcolor Works Printer Driver - User Guide*.

3

Operating the Printer

Introduction

This section contains information on the different paper types and sizes you can print on.

It also describes how to insert documents and envelopes manually, indicating the types and characteristics of the paper you can use. In addition, it explains some of the more common printer tasks, like ejecting paper, taking the printer off line and resetting the printer.

Printing with the Series 500 Printer

Your Series 500 printer can print from both Windows and DOS. To print from Windows, the Series 500 printer drivers control printing. When printing from DOS, the settings defined by the DOS500 program control printing.

In addition to these DOS settings, you can use the buttons on the printer's operator panel to control printing from DOS. For more information on setting up the printer for printing from Windows and DOS, see Chapter 4.

Printing from Applications

With your Series 500 printer, you can print files created in Windows applications. Most Windows applications allow you to set up the printer for printing. A typical Windows application (word-processor, spreadsheet, etc.) contains a Print Setup command in the File menu. You can use this command to modify the printer's setup.

Application or Control Panel

Note that you can modify the print setup using either an application's **Print Setup** command from the **File** menu, *or* use **Printers** in the Windows **Control Panel**.

Printing on Different Types of Paper

Types of Paper

Your Series 500 printer can print on different types and sizes of paper, including envelopes and transparencies. Typically, the printer's paper tray is loaded with a stack of paper on which you print.

In addition to printing from the paper tray *single sheets* of paper can be fed in to the printer manually through the top rear of the printer. Paper with weights up to 36 lb/ream, (135 g/m^2) can be inserted manually.

The following table contains the dimensions of the types of paper which you can use in your printer:

Paper Size	Dimensions (inches)	Dimensions (millimeters)
Letter	8.5 in x 11 in	215.9 mm x 279.4 mm
Legal	8.5 in x 14 in	215.9 mm x 355.6 mm
US Exec	7.25 in x 10. 5 in	184 mm x 267 mm
A4	8.26 in x 11.7 in	210 mm x 297 mm
A5	8.26 in x 5.85 in	210 mm x 148.5 mm

Envelopes

Envelopes are inserted at the right of the manual insertion slot, aligned with the corresponding indication on the paper insertion guide, with their short side as the leading edge and the surface to be printed face up. See the section on *Inserting Paper Manually* later in this chapter.

Envelope	Dimensions (inches)	Dimensions (millimeters)
COM-10	4.125 in x 9.5 in	104.7 mm x 241.3 mm
C5	6.37 x 9 in	162 x 228.6 mm
C6	4.5 in x 6.37 in	114.3 x 162 mm
DL	4.33 in x 8.6 in	110 mm x 218.4 mm

Transparencies

You can print transparencies for use with an overhead projector. You can store or project transparencies 5 minutes after printing, but avoid touching the images.

Note: Only Digital Equipment Corporation's LJ50X series transparency film gives satisfactory results. The film is specially formulated to absorb the printer's ink.

Inserting Transparencies

When inserting transparencies (manually or with the Automatic Sheet Feeder), **insert the glued edge first**.

Fan-fold

Fan-fold	Dimensions (inches)	Dimensions (millimeters)
Pin to Pin	9 in	228.6 mm
Height	12 in.	304.8 mm

Paper Characteristics

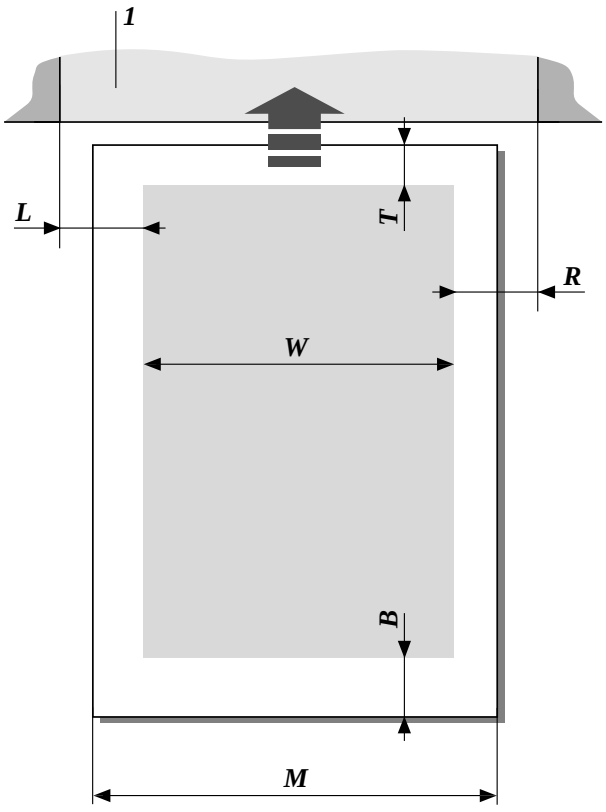
Precautions

Here are some precautions you should consider before printing:

- Most types of paper give good printing quality. Best results are obtained using standard photocopy paper, which has a paper weight of between 18 to 24 lb/ream (70 and 90 g/m^2).
- Always test the type of paper you intend to use thoroughly. Sub-standard paper can affect the quality of printing.
- Before inserting envelopes, make sure that there is no air in them and that their folds lie flat.
- Make sure the paper is inserted in the paper tray so as to print on the correct face of the page (see indication arrow on paper wrapping).
- Printing on both sides of the paper may increase the risk of misfeeds or paper jams.

Print Area

The following figure and table give the measurements for the print area on the standard page sizes handled by the printer (all measurements are indicated in millimetres and inches).



Print Area

Paper Sizes

The following tables show the dimensions described in the above diagram. In this diagram, the labels used are as follows:

M Maximum width of the paper

W Maximum pint lined length

L Minimum left margin

R Minimum right margin

T Minimum top margin

B Minimum bottom margin

Paper Dimensions

	A4	A5	L/L	US EXEC
M	210 mm/8.26 in	210 mm/8.26 in	215.9 mm/8.5 in	184 mm/7.25in
W	203.2 mm/8 in	203.2 mm/8 in	203.2 mm/8 in	184 mm/7.25in
L	3.4 mm/0.134 in	3.4 mm/0.134 in	6.4 mm/0.25 in	--
R	3.4 mm/0.134 in	3.4 mm/0.134 in	6.4 mm/0.25 in	--
T	1 mm/0.04 in	1 mm/0.04 in	1 mm/0.04 in	1 mm/0.04 in
B	12.7 mm/0.5 in	12.7 mm/0.5 in	12.7 mm/0.5 in	12.7 mm/0.5 in

Fan-fold Paper Dimensions

M 241.3 mm/9.5 in

W 203.2 mm/8 in

L 19 mm/0.75 in

R --

T 1 mm/0.04 in

B 1 mm/0.04 in

The maximum paper feed path **(1)** is 240 mm/9.45 in. (This value does not apply to the tractor device).

Envelope Dimensions

	COM-10	C5	C6	DL
M	104.7 mm/4.12 in	162 mm/6.37 in	114.3 mm/4.5 in	110 mm/4.33in
W	104.7 mm/4.12 in	162 mm/6.37 in	114.3 mm/4.5in	110 mm/4.33in
L	--	--	--	--
R	--	--	--	--
B	12.7 mm/0.5 in	12.7 mm/0.5 in	12.7 mm/0.5 in	12.7 mm/0.5in
T	1 mm/0.04 in	1 mm/0.04 in	1 mm/0.04 in	1 mm/0.04 in

Choosing the Paper Tray

The Series 500 printer comes with a standard built-in paper tray. In addition, you can choose alternative ways of feeding paper through the printer. The use of each of the paper sources is described below.

Using the Built-in Paper Tray

The built-in paper tray, referred to as "Upper Tray (ASF1)" is the default paper handling device for your printer. If data is sent to the printer for printing and no command is received for selecting the paper input source, the printer will automatically try to feed a sheet of paper from the built-in paper tray, even if you have loaded paper in one of the optional paper handling devices.

Caution: *If you intend to use a paper feed device other than the built-in paper tray, you must first select the paper source through your application software, from the printer driver setup, or from the operator panel.*

Using the Lower Tray or the Tractor

The lower paper tray, referred to as "Lower Tray (ASF2)", is an optional paper tray that can be installed on the underside of the Series 500 printer. This tray holds a second pack of up to 150 sheets of standard paper.

Caution: *Before installing the optional lower paper tray (ASF2), you must first SWITCH OFF the printer.*

To use the optional lower paper tray or tractor, you must select it from one of the following:

From Windows applications use one of the following:

- The **Print Setup** options from the **File** menu.

  or

- Select the printer driver and choose the **Setup** option from **Printers** in the Windows **Control Panel** icon.

From DOS, use the Series 500 printer's operator panel or the DOS500 setup program.

Note: For more information on how to install and use the optional lower paper tray (ASF2), read the booklet supplied with the tray and for more information on how to install and use the tractor, read the booklet supplied with the tractor.

Inserting Paper Manually

Paper, transparencies and envelopes can be inserted manually into the printer for printing one-by-one. This section contains information on how to insert paper manually.

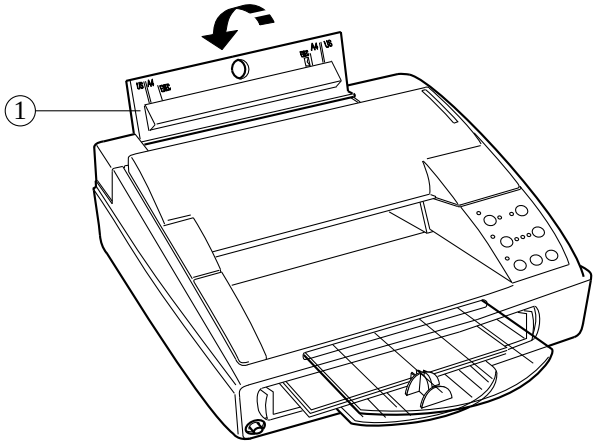
Orienting the Paper

Paper and transparencies can be inserted manually in the printer's manual paper feed insertion slot at the top back side of the printer. Paper and transparencies should be inserted with their short side as the leading edge and the surface to be printed facing up.

Envelopes can ***only*** be inserted manually, with their short side as the leading edge and printing side face upward. Envelopes are printed in Landscape mode. Envelopes are inserted at the right of the manual insertion slot, aligned with the envelope insertion guide, with their short side as the leading edge and the surface to be printed face up.

Inserting Documents Manually in the Printer

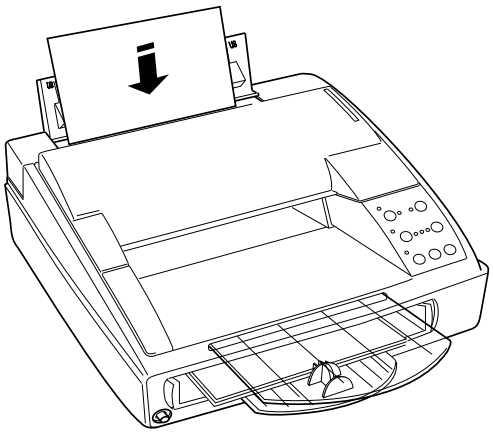
1. Open the document insertion slot on the top rear of the printer, raising and tipping back its cover ①.



Opening the Manual Insertion Slot

2. Switch on the printer.
3. Select the manual insertion mode either through your application or at the printer front panel by selecting the Paper Device-Print Quality button.

4. Insert the document to be printed (see next section for formats) in the manual insertion slot until it stops against the feed rollers, and aligning it with the guide which is engraved at the left edge of the insertion slot. Envelopes (with short side as leading edge) should be aligned with the corresponding indication on the paper insertion guide.
5. Press Paper Load-Eject and the document will be fed in and aligned at the first print position.



Inserting Documents Manually

6. Send the file to be printed.

Normally after printing, the paper is ejected through the front of the printer into the paper output tray. However if the paper is not ejected, press the Paper Load-Eject button.

Caution: *The document/envelope must not be crumpled or torn, otherwise it may jam or even fail to be inserted. To print envelopes you must select Landscape mode. Envelopes must be inserted against the right edge of the insertion slot with the short side as the leading edge and the surface to be printed face up. In the Windows environment, place the envelope so that the open flap is to the left. In other environments, make sure the open flap is to the right.*

Ejecting Paper from the Printer

You can eject paper from the printer using the Paper Load-Eject button on the printer's operator panel. Press the button once to load paper in the printer and again to eject it from the printer into the paper output tray.

Some applications print all the information on the paper but do not eject the paper from the printer. In this case, press the Paper Load Eject button to terminate the print and eject the paper to the output tray.

Taking the Printer Off Line

The On Line indicator on the operator panel provides information on the status of the printer. When the On Line indicator is lit, the printer is ready to print. When the On Line indicator is flashing, the printer is receiving information from the computer.

The On Line button can be used to temporarily pause the printer from printing. You can pause the printer by pressing the On Line button on the printer's operator panel. To restart printing, press the On Line button again.

Resetting the Printer

You can reset the printer by pressing a combination of 2 buttons on the printer's operator panel. Press the Install Cartridge button and the Paper Micro-Advance buttons on the printer's operator panel to reset the printer. This clears communication between the printer and the computer. Resetting the printer is similar to turning the printer off and on again.

4

Printing with the Series 500

Printing in the Windows Environment

The Series 500 printers are designed for printing from the Windows environment and from Windows applications. All the basic features of your Series 500 printer can be accessed within Windows applications after having installed the monochrome or color printer drivers. These features give great control over your printer with both monochrome and color printing.

Windows Printer Drivers

A Windows printer driver is a software program that controls how information is transferred to the printer to create a document. When you select the print attributes in a word-processing application, (for example **bold** or *italic*), the application sends corresponding codes to the printer driver. The printer driver interprets the codes and sends corresponding commands to the printer on how to print the document.

The printer driver transmits both characters, numbers and/or symbols for printing and also instructions on how the data received should be printed.

Series 500 Printer Drivers: Monochrome and Color

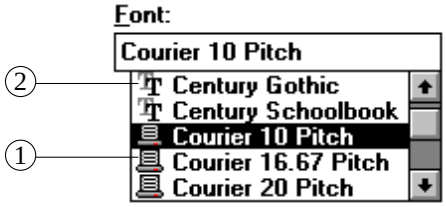
There are 2 printer drivers available for printing with the Series 500 - one printer driver for monochrome printing and an *optional* color printer driver, DECcolor Works, for color printing.

The Series 500 *monochrome* printer driver is designed to print text and grayscale graphics and allows you access to all installed fonts, including the resident fonts and optional card fonts. This driver is to be used **only** with a monochrome print head.

The DECcolor Works *color* printer driver is designed to print color graphics. It allows you access only to soft fonts (such as TrueType and other installed scaleable fonts), but documents that use resident fonts can nevertheless be printed using graphic mode. You can use this driver with a monochrome or a color print head.

You should use the monochrome printer driver for all text intensive printouts such as word processing files, so that you can benefit from the faster printing of the resident printer fonts. You should use the color printer driver primarily for printing color graphics files.

Using the Printer's Resident Fonts



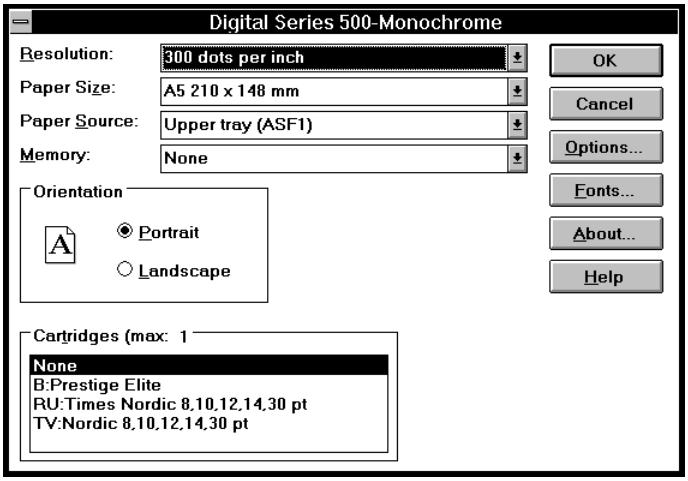
You can select the printer's resident fonts in your application. In most applications, a small icon in front of the font name allows you to identify the font type.

Printer-resident fonts can be identified by a small printer icon ①. Scaleable fonts, such as True Type fonts for example are identified by a specific icon ②.

Setting up Your Printer

This section describes how to set up your Series 500 monochrome printer driver. For more information on selecting option for color printing, see the *DECcolor Works Printer Driver User Guide.*

Use the **Digital Series 500-Monochrome** dialog box to set or modify your printer settings.



Monochrome Printer Driver Dialog Box

Using this dialog box, you can do the following:

- Use the **Resolution** setting to select the graphic density for images.
- Use the **Paper Size** setting to set a pre-defined paper setting, or define a custom paper size.
- Select the source from which paper is fed to the printer with the **Paper Source** setting.
- Specify the memory available for printing with the **Memory** setting.

To access this dialog box, you can open **Printers** in the **Windows Control Panel**, or use the **Print Setup** command from the **File** menu of your Windows application.

Resolution

- **300 dots per inch**
- **150 dots per inch**
- **75 dots per inch**

The **Resolution** parameter allows you to select the graphic density for images printing. Select the higher resolution to obtain fine printing. By selecting the lower resolution, you increase the printing speed.

Paper Size

Several sizes are available to define sheets or envelopes formats (Letter, Legal, Executive, A4, Envelope C5 etc).

The **User Defined Size...** option in the monochrome printer driver allows you to define your own specific page format.

Select the measurement unit and specify the width and the length of the sheet on which you intend to print.

Paper Source

Paper Source	Choosing a Paper Source
Upper tray (ASF1)	Select this option to print from the built-in paper tray. This is the default setting.
Lower tray (ASF2)	Select this option to print from the optional paper tray, installed on the underside of the printer.
Envelope Manual Feed	Select this option to print on manually inserted envelopes.
Manual Feed	Select this option to print on manually inserted sheets.
Tractor	Select this option when using fan-fold paper.

Orientation

Portrait and Landscape orientations define the way that the text and images are printed on paper. For most paper types, portrait is tall and landscape is wide. Select the **Portrait** option to print in Portrait mode and **Landscape** to print in Landscape mode.

Memory

The Series 500 printers support the following memory configurations:

- **None**
- **1 MB**
- **2 MB**
- **4 MB**
- **256 KB**
- **512 KB**

Using the above options you can specifiy how much memory is to be made available for printing.

Specifying Printer Memory

In the printer setup dialog box, open the **Memory** drop down menu and select a value.

For help with the printer setup dialog box, choose the **Help** button or press F1 while using the dialog box.

Installing Cartridge Fonts

- **None**
- **B: Prestige Elite**
- **RU: Times Nordic 8,10,12,14,30 pt**
- **TV: Nordic 8,10,12,14,30 pt**

The above list shows the available optional fonts you can install with your printer. Select one of these fonts if you have inserted the corresponding optional font cards in your printer. The corresponding font will appear as a resident font in the font list within your application.

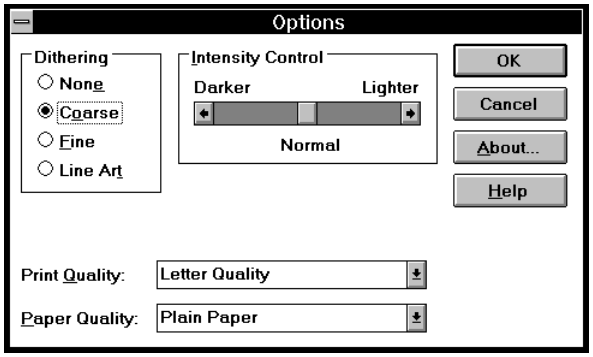
Setup Options

In addition to the setup parameters available when installing the Series 500 monochrome printer driver, there are a number of options available which let you customize the quality of you print. You can select these options using the **Options** dialog box. The setup options available are as follows:

- **Dithering**
- **Intensity Control**
- **Print Quality**
- **Paper Quality**

Choosing Setup Options

To access the **Options** dialog box, click on the **Options...** button.



The Options Dialog Box

Dithering

The **Dithering** option you select determines how detailed the graphic images will appear in your documents. The following settings are available with the **Dithering** option.

Dithering	Resolution
None	Only prints in seven colors with a color print head and black and white with a monochrome print head.
Coarse	Default value for 300 dpi resolution. Produces dark and thick printing.
Fine	Recommended for producing smoother images.

Intensity Control

This **Intensity Control** option increases or decreases the darkness of graphics. The following recommendations show which setting combinations are best:

1st choice	**Dithering** = **Fine** **Intensity** = between **Normal** and **Lighter**
2nd choice	**Dithering** = **Coarse** **Intensity** = **Normal**

Print Quality

The **Print Quality** option lets you choose the combination of resolution and speed of printing that define the quality of the print.

Print Quality	Resolution and Speed
Letter Quality	Provides standard quality resolution and standard print speed.
Draft	Draft gives lowest resolution associated with fastest print speed.
Near Letter Quality	Provides better resolution than the Draft setting, but has slower print speed.
Presentation	Presentation is used for printing grayscale or color graphics. It gives the highest resolution associated with the slowest print speed.

Paper Quality

Note that the print quality is determined by the type of paper or transparency you use. The **Paper Quality** option lets you choose between the following:

- **Plain Paper**
- **Transparency**

Note: Digital Equipment Corporation's LJ50X series transparency film gives satisfactory results.

Monochrome Printing with the Color Print Head

In addition to monochrome printing with the monochrome printer driver, you can also print in monochrome with DECcolor Works (the optional color printer driver for the Series 500).

Using DECcolor Works, you can print enhanced grayscale graphics and access a larger choice of **Print Quality** and **Paper Quality** options. You can print in monochrome with the color print head which creates a *composite black* by combining the colored inks.

Note: Monochrome printing using the color print head is not recommended as the black color quality is low and it is a much slower and costlier method of printing.

For more information on how to set up the optional DECcolor Works color printer driver with your Series 500 see the *DECcolor Works Printer Driver User Guide*, which comes with the color driver.

Printing from DOS

In addition to being able to print from Windows, you can use your Series 500 printer to print from DOS and DOS applications.

Printer Setup for DOS

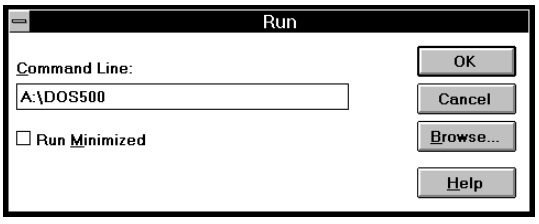
The printer settings for DOS are defined by the DOS500 program which is on the same diskette as the monochrome printer driver. Use the DOS500 program to set up your printer with DOS.

Note that when you set the DOS printer settings, these settings are loaded to the memory of the printer and are the default settings until you next run the DOS500 program.

Note: When you set the printer settings under DOS, these settings are only valid under DOS. The printer's settings under Windows and Windows applications are defined in the printer driver's setup. The Windows printer driver settings override the corresponding DOS settings.

Setting up Your Printer with DOS500

1. Insert the Digital Series 500-Monochrome diskette in your computer's A:\ drive.
2. Select **Run**... from the **File** menu of the **Program Manager**
3. Enter "**A:\DOS500**" in the dialog box and click on **OK**.



4. In the Print Setup at Power On window, you can select to change the print parameters for printing under DOS or to return previously made settings to the factory default.

DOS500 Setup Options

The following list shows which of the printer settings can be modified using the DOS500 program.

- Paper Paper size and paper source selection
- Quality Print quality and resolution
- Font Type style selection
- Set Character set selection
- Serial Serial interface setup
- Others Various parameters

Ink Save Mode

One of the options available when you select the **Others** option in the DOS500 setup window is Ink Save Mode. You should click on **Ink Save Mode** box when setting up your printer. This option optimizes your printers use of ink when printing from both DOS and Windows applications.

MS-DOS Documents

For more information on printing from DOS applications see your MS-DOS documentation.

5

Maintenance

This chapter describes basic maintenance operations you are required to perform during the printer's working life.

Basic Maintenance Operations

This printer is designed to require only minimum maintenance. However, everyday use requires a number of simple maintenance operations.

Warning: If you detect serious mechanical damage to or a failure in the printer, do not attempt to repair it yourself! CALL THE DIGITAL SERVICE CENTER or your retailer. See the Digital Customers Services Center listing in Chapter 6 for the contact in your area.

Changing the Print Head

If dots or lines are not printed completely, remove the inkjet print head completely and replace/reinsert it, and/or execute the print head cleaning and/or prime operations (see the sections which follow).

When to Replace the Print Head

We recommend you to ALWAYS use your original supplier for print heads and ink cartridges.

The print head is removed either to replace it or to ensure correct insertion, in the case of faulty printing. The following information applies to both the monochrome print head and the color print head available with the color kit option.

If dots or lines are not printed completely, remove the print head completely and replace / reinsert it, and clean and / or prime it (see the specific sections in this chapter).

When the "end of ink" condition is indicated by the Ink/Paper Supply indicator flashing, you must either replace the ink cartridge (monochrome print heads only) or, if necessary, change the entire print head.

WARNING: When the printer is already switched on and a print operation is running, press the On-Line button to interrupt printing BEFORE opening the top cover.

To return the printer to operating state, close the top cover and press the On-Line button.

Cleaning the Print Head

If you encounter printing quality problems, run the self print tests which are described in earlier. This test will demonstrate whether the print head nozzles are operating properly or not. If you find that there are problems, perform the following steps. The following section applies to monochrome print heads and to the color print head available with the color kit option.

To Clean the Monochrome Print Head

1. Remove the print head from the printer.
2. Dampen a paper tissue and then squeeze it to remove excess water.
3. Holding the print head with the printing nozzles facing downwards, blot it against the paper tissue, pressing lightly. Repeat this on different areas of the paper tissue until the ink nozzles are clean.
4. To clean ink traces on the electric contacts, use paper tissue.
5. Insert the print head in the printer and run the print test again.

To Clean a Color Print Head

If you have the color kit option you can clean the electrical contacts on the print head and on the print head carriage with the brush supplied with the storage box.

Caution: *If there are traces of ink on the electrical contacts, you MUST NOT use the brush, otherwise you may permanently damage them. Instead use an absorbent material, such as paper tissue, to remove the ink traces from the contacts.*

If the print head still does not operate correctly, you must change, or if it is monochrome, prime the print head (see the section on priming the monochrome print head later in this chapter).

Replacing the Monochrome Ink Cartridge

When the ink cartridge is empty (the Ink / Paper Supply indicator flashes with a double sequence), you must either replace the ink cartridge or, if necessary, change the entire print head. The use of Digital replacement ink cartridges provides you with the most cost effective printing solution available.

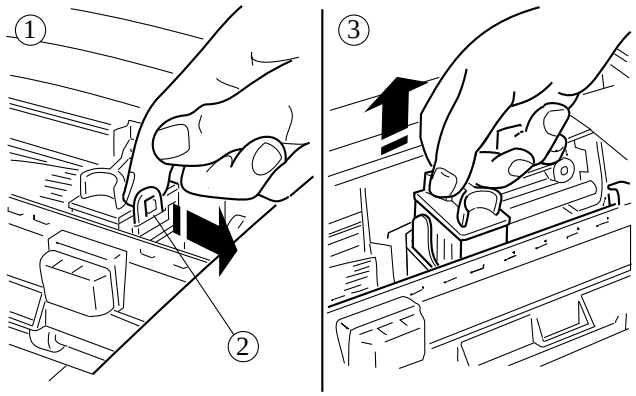
After using a number of replacement ink cartridges (up to 10, depending on work load and storage) your printer may begin to experience some degradation in print performance, such as excessive smudging or missing dots. If this is the case, you should replace the print head.

Note: This section applies only to the monochrome print head which contains a replaceable ink cartridge. The color print head does not have a detachable ink cartridge and so the entire color print head must be replaced when empty.

To replace the ink cartridge, proceed as follows:

1. Press the Install Cartridge button to move the print head carriage to the head loading position.
2. Open the top cover of the printer.

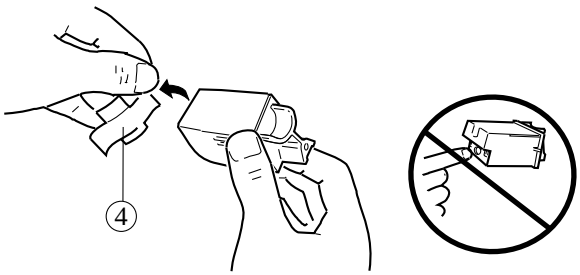
3. Release ONLY the ink cartridge from the print head casing ①, by pulling the plastic clip ② WITHOUT releasing or removing the print head casing from its carriage in the printer, and pull out the ink cartridge from its casing ③.



Releasing the Ink Cartridge

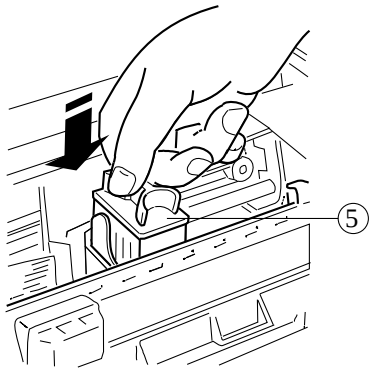
4. Remove the protective tape from the new ink cartridge (see ④ below).

Caution: *Always keep the ink cartridges sealed until they are to be used.*



Removing the Protective Tape

5. Insert the new cartridge in the print head casing IMMEDIATELY, pressing in until it clicks into place ⑤.



Inserting the Ink Cartridge

6. Close the top cover of the printer.
7. Press the Install Cartridge button.

The printer checks that the correct type of cartridge has been inserted and is ready to print.

If you have set the printer to operate with a color print head (print head selection lever set to Color) and the new print head is not color, the Color indicator will flash with a single sequence.

If the cartridge is not inserted correctly, the Ink / Paper Supply indicator will flash with a double sequence. You must repeat the entire replacement operation.

Priming the Monochrome Print Head

The prime operation is performed to clear the monochrome print head nozzles.

Poor print quality is usually caused by air bubbles which block one or more of the print head nozzles; the prime operation will clear any blockage.

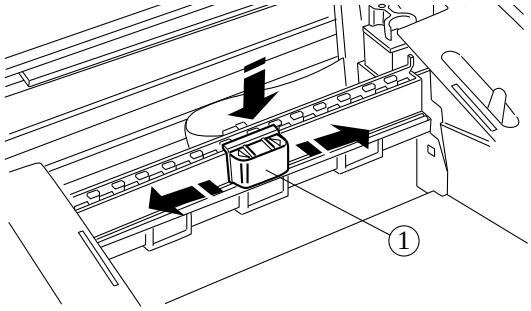
If, after inserting a new monochrome print head or during a printing operation, the print quality is not optimal or deteriorates, execute the prime operation to improve it.

Caution: *The prime operation is only to be performed with the monochrome print head. Do not attempt to prime the color print head.*

To Prime the Print Head

To clear the print head nozzles, proceed as follows:

1. Set the printer off line (pressing the On Line button), to move the print head carriage to its home position.
2. Open the top cover of the printer.
3. Pressing down the ink slide ① (<PUSH>), move it slowly from right to left along the full length of its shaft; hold the slide pressed for a few seconds at the left edge. Return the slide to the right edge and repeat the operation several times, until ink appears in the tube below the slide.



Prime Operation

4. Press Install Cartridge to move the print head carriage to the head loading position and repeat the above operation to empty the tube.

Warning: Priming MUST NOT be repeated systematically, as it will damage the print head. For used print heads, it should ONLY be attempted as a last resort, before changing the ENTIRE print head.

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5. Press Install Cartridge to return the print head carriage to its home position.
6. Close the top cover
7. Press On Line to return the printer to the On Line state.

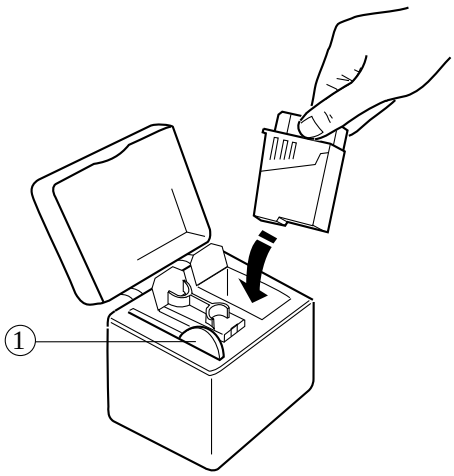
If the prime operation does not result in improved print quality, switch the printer off and then on again, and repeat the prime operation.

If there is still no improvement in the print quality, try cleaning the print head nozzles.

Storing the Print Heads

If you have the color kit option and use both monochrome and color print heads, a storage box is available to safely store the print head not in use. The storage box has two slots, one for the monochrome print head and the other for the color print head.

When you remove a print heads from its sealed container or from the printer, you should put the unused print head immediately in the storage box, to ensure it is kept clean, protected and will not dry out.



Print Head Storage Box

Inside the storage box there is a small brush ① which you can use to gently clean the electrical contacts on the print heads or the print head carriage, if necessary.

Warning: You must not use the brush to clean the ink nozzles, as this could permanently damage them.

6

Troubleshooting

This chapter contains a troubleshooting guide which indicates some of the problems which may occur when using the printer, together with suggestions for their solution. It also describes how to contact your Digital service center.

Warning Indicators on the Operator Panel

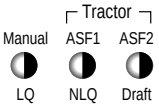
Print Head Warning

Indicator Status	Meaning
Color	The print head inserted is not the correct type (the file to be printed requires a different print head type).
Color	The print head type and the print head selection lever position do not match.

Ink and Paper Supply Warning

Indicator Status	Meaning
Ink/ Paper Supply	A paper error condition has occurred.
Ink/ Paper Supply	An end of ink or no print head present condition has occurred.

Print Head Carriage Shift Warning

Indicator Status	Meaning
	When the 3 indicators flash consecutively, the print head carriage is unable to return to its home position.

Solving Print Problems

This section provides solutions to problems you may have during printing operations.

Caution: *If a printer malfunction other than those indicated below occurs, or if, after executing the suggested corrective action, the problem persists, call your Digital Service Center or your retailer. See the telephone listing for the Digital Service Centers at the end of this chapter, for the Digital contact in your area.*

Problems with Connection to Computer

If you have problems with the connection between your PC and your printer:

- Check that your interface cable is of the correct type.
- Make sure you have fixed the interface connectors properly both to the printer and to the computer.

Installation Problems and Solutions

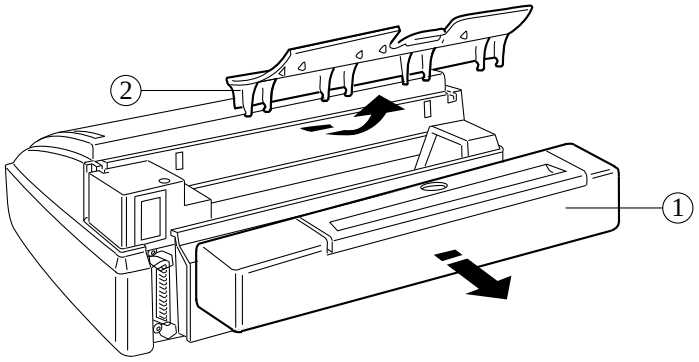
Problem	Solution
Missing or damaged parts.	- Contact your dealer immediately.
Printer does not switch on. Indicators on the operator panel do not light up.	- Check that the printer is switched on. - Check that the power cable is inserted correctly in the printer and in the mains socket. - Check that power is supplied through your power outlet.
No initial reset. At switch-on, the print head carriage does not move; all the indicators are flashing.	- Check that the carriage path is free of impediment, and that the paper is not jammed. - Switch the printer off and then on again. - If all the indicators are flashing rapidly, there is a failure on the mother board; call Digital sales representative or your retailer.
Print test did not run.	- Switch off the printer, then switch it on again, remembering to hold down On Line until the mechanical reset is completed. - If the carriage does not move and the Paper Device indicators are flashing in sequence, check that its path is not obstructed. - Check that the paper is not jammed.
If the Ink / Paper Supply indicator flashes with a single sequence.	- There is no paper in the printer; load paper in the paper input tray and press Paper Load-Eject .
If the Ink/Paper Supply indicator flashes with a double sequence.	- There is no print head in the printer, or the print head/ink cartridge needs replacing. - Follow the instructions given in Chapter 2 “Preparation”. Remember to press Install Cartridge once you have reinserted the print head.

Problems with Paper

Caution: *Always use paper in perfect condition and within the specifications defined (see the specific section in this manual).*

Problem	Solution
No paper.	- If there is no paper in the printer Ink/Paper Supply indicator flashes with a single sequence. To clear this condition, load more paper in the paper feed device selected and press Paper Load-Eject..
Paper does not load.	- Make sure that you are trying to load from the selected paper device. - Check that the size and weight of the paper used are within the limits allowed. - Make sure the paper is not feeding in crookedly. - Check that no scraps of paper (result of incorrect tear-off of continuous stationery) are blocking the Push tractor path.
Paper jamming.	- The paper or envelope has been inserted incorrectly. - If your application program does not send a paper feed command, position a sheet of paper manually and press Paper Load-Eject.
Paper jams or tears.	- Remove all the paper from the ASF tray, leaf it thoroughly, and then reload it, aligning it correctly in the tray. - Open the top cover and remove the jammed paper carefully, taking care not to damage the feed mechanism. - To resume printing, close the front cover and then press Paper Load-Eject.
Paper tray insertion problem.	- If you can not insert the paper tray completely check that the printer is switched on. If not, switch it on. - Clear the paper path.

Problem	Solution
Paper jams inside the paper tray.	- Switch OFF the printer - Remove rear cover ① (see the diagram below this table). - Remove the paper insertion guide ②. - Remove the jammed paper, pulling it out carefully from the rear. Take care not to damage the feed mechanism. - Remove the remaining paper from the paper tray, check it for and remove any damaged sheets, re-fan it and reload it in the tray. - Replace the paper insertion guide. - Replace rear cover. - Switch on the printer.



Removing the Rear Cover and Paper Insertion Guide

Caution: *The most common causes of paper jamming inside the paper tray is the addition of paper to the tray when this is not empty and/or the incorrect loading of paper.*
When adding paper to the paper tray or after removing jammed paper, ALWAYS remove any paper already in the tray and reload it all as a single stack.

Printing Problems

Problem	Solution
Printer does not print/receive data.	- Check that the printer is switched on. - Check that the printer is on line (On Line indicator lit), and that the computer is switched on. - Press Paper Load-Eject. If data is in the printer input buffer, this will complete the printing of the contents of the print buffer. In some cases, under DOS, data is sent to the printer with no Form Feed command, consequently data may be ready for printing but the printer is waiting for the Form Feed command. - If the carriage does not move and the Paper Device indicators are flashing in sequence, switch the printer off, remove the cause of the blockage and then switch the printer on again. - Check that you have removed the protective tape from the print head. - If the Ink/Paper Supply indicator flashes with a single sequence, check that there is paper in the selected paper feed device and that it loads correctly. - If necessary, load more paper and press Paper Load-Eject, to return the printer on line. - If the Ink/Paper Supply indicator flashes with a double sequence, check that the print head has been inserted correctly - If necessary, press Install Cartridge, remove the used print head/ink cartridge, replace it with a new print head/ink cartridge and press Install Cartridge again. - If the Color indicator flashes with a single sequence, check that you have inserted the correct print head. - If necessary, press Install Cartridge, remove the print head, replace it with the *correct* type and press Install Cartridge again, to return the printer on line. - If the Color indicator flashes with a double sequence, check that the print head selection lever is in the correct position for the type of print head inserted. - If necessary, FIRST remove the print head, THEN position the lever in the correct position, reinsert the print head and press Install Cartridge again, to return the printer on line.

Problem	Solution
Printing stops.	- If the Ink/Paper Supply indicator is flashing with a single sequence, check a paper out condition has occurred in the selected paper device and that it loads correctly. - Load more paper and press Paper Load-Eject, to return the printer on line. - If the Ink/Paper Supply indicator flashes with a double sequence, the print head/ink cartridge requires replacing. - Press Install Cartridge, remove the used print head/ink cartridge, replace it with a new print head/ink cartridge and press Install Cartridge again, to return the printer on line. - If printing stops before the expected completion of the print job, press the Paper Load-Eject button. The rest of the print job might be still in the printer input buffer and the printer is waiting for a Form Feed command before completion.
Printed characters are faint.	- Execute the prime operation to clear the monochrome print head nozzles.
Printing characters have missing dots or white lines.	- Execute the prime operation to clear the monochrome print head nozzles, or replace the print head. The print head must be replaced after a number of ink cartridge replacements are used (up to 10). - Clean the electrical contacts on the print head and those in its carriage (see the specific section in this chapter).
Poor print quality	- Turn over the paper pack in the paper tray, so as to print on the other side of the paper. - Make sure you are using good quality paper.

The information above provides solutions to most of the common problems. However, if the printer does not operate correctly after following the recommendations, contact your local Digital Services Center or retailer where you bought your printer (see the list below).

Contacting Your Digital Services Center

Before calling for support, you should prepare the following information:

1. The serial and model number of the printer, which is found on the electrical data plate (at the rear of the printer).
2. A summary of the problem.
3. The details of your configuration: hardware and applications software.
4. The operator panel indicator Error Status or specific failure symptoms.

Returning the Printer for Maintenance

If you are asked to return the printer for repair, please follow the instructions below to ensure you receive the best and most efficient service possible.

To Prepare Returning the Printer

1. Prepare the printer for transport.
2. Include your name, address and your telephone number.
3. Enclose the following details:
   - The complete configuration details when problems occurred, including cable type, interface type, application software used.
   - The problem description.
   - A sample of the printing problem, if appropriate.
   - A copy of purchase receipt to establish the warranty period.

Digital Customers Services Centers

(*) indicates free numbers.

Country		Phone Number
U.S.A.		1-800-354-9000 *
Australia		008 252277 *
Austria		1-86630-2000
Belgium		02-7297744
Canada	English	1-800-267-5251 *
	French	1-800-267-2603 *
Denmark		80301005
Finland		800-2878
France		1-46873109
Germany		0130-7702
Greece		1-6821980
Crete		237576
Thessaloniki		423760
Hungary		01-1810966
Eire		01-381216
Israel		09-593300
Italy		1-678-20062
Japan		0120-113035 *
Korea		2-7991333
Netherlands		030-832888
New Zealand		080 080 1272 *
Norway		2-2768600
Portugal		01-3889100
Singapore		3366129
Spain	Barcelona	03-4012222
	Madrid	01-583-4257
Sweden		08-988835
Switzerland		155-5544 *
Taiwan		080 211 393 *
Thailand		66-254-8191
UK.		0256-57122

Appendix A

Technical Characteristics

Printing Technique	Non-impact, bubble inkjet
Monochrome Print Head	- With replaceable ink cartridge and water-resistant ink - Resolution: 300 x 300 dots per inch - Repetition frequency: 5000 Hz - Nozzles: 50 (in 4 groups of 12 or 13) - Vertical construction (2 columns of 25 nozzles) - Ink cartridge life: 90,000,000 dots (400,000 characters, average) - No. cartridges per print head: up to 10 (depending on usage)
Color Print Head	- Monoblock disposable - Resolution: 300 x 300 dots per inch - Repetition frequency: 3000 Hz - Nozzles: 51 (in 3 vertical groups: yellow, magenta, cyan) - Vertical construction (2 columns, one of 25 and one of 26 nozzles) - Print head life: 200 pages at 8% capacity
Print Matrix	300 x 300 dpi (dots per inch)
Print Definition (Vertical x Horizontal)	- 1/150 in x 1/300 in for Draft - 1/300 in x 1/300 in for LQ
Print Density	- 75, 100, 150, 300 dpi
Print Pitch	10, 12, 16.67 characters per inch; PS - Each basic fixed pitch value can be condensed to half and expanded to double its value (e.g.: 10 cpi: 5 cpi / 20 cpi)

Print Orientation	Portrait and Landscape
Print Line Length	- Portrait orientation: 80 characters with 10 cpi pitch 96 characters with 12 cpi 132 characters with 16.67 cpi pitch - Landscape orientation: 112 characters with 10 cpi pitch 134 characters with 12 cpi 186 characters with 16.67 cpi
Printing Speed	- DOS and similar environments: 180 cps in Draft, 120 cps in LQ - Windows and similar environments: Draft : up to 3 pages per minute (ppm) Letter Quality : up to 3 ppm **Note**: These values may vary depending on the software application and / or the type of computer used.
Work Load	1000 pages per month, printer life is 80,000 pages.
Print Path	Bi-directional
Graphic Printing	Bit Image Mode - Density: 300 x 300 dots per inch
Ink Save Mode	10 % ink saving in graphics mode
Linespacing	- Elementary value: 1/300 in - Resident value: 1/6 in (4.23 mm)
Vertical Paper Motion	4 in/s (101.6 mm/s)
Printer Emulation	- Resident : HP PCL III + - Optional : IBM X24 / EPSON LQ 850 (on emulation card)
Resident Fonts	- Courier: Upright / Italic; Portrait / Landscape - Letter Gothic: Upright / Italic - Portrait; Upright - Landscape - Book Face Times: Upright / Italic - Portrait - Times Nordic: Upright / Italic - Portrait - Linea: Upright / Italic - Portrait - Line Draw
Fonts Cards	One optional memory card at a time (see Appendix B)
Paper Handling	- Automatic: ASF (tray capacity: 150 x 21 lb sheets (80 g/m2)) - Manual: including thick documents, film, envelopes (weight up to 135 g/m2) See Chapter 3 for paper characteristics

Interface	- Resident: Parallel (Centronics) - Optional: Serial RS 232C / V 24
RAM	128K bytes
Operating Environment	- Temperature: 15 to 35 ^{o}C - Relative Humidity: 15% - 85%
Noise Emission	ISO 7779 print test (ECMA 74 text) with 10 cpi pitch: 50 dBA Letter Quality print mode Front bystander position
Electrical Characteristics	- Voltage: 115 V (+/- 10%) 220 / 230 V (+6% / -10%) 240 V (+ 6% / - 10%) - Frequency: 50 or 60 Hz - Power absorbed (operate): 25 W
Certification	*For power supply voltage 115 V (USA and Canada)* - Electromagnetic Compatibility: FCC Class B "Certified" - Safety Regulations: USA: UL 1950/478, Canada: CSA C22.2 For power supply voltage 220 - 240 V - Electromagnetic Compatibility: EN 55022 Class B, CEE 87/308, VDE 0871 level B (DBP Verf. 243/1991) - Safety Regulations: EN 60950 + Nordic Deviations, Germany: GS (EN 60950/9.88 e ZH/618)

Series 500 Character Sets

Character Sets
CP 437 - International
Roman-8
PC 8 Denmark/Norway
CP 850 (Multilingual)
ECMA 94 Latin 1
ISO 4 - United Kingdom
ISO 21 - Germany
ISO 69 - France
ISO 15 - Italy
ISO 60 - Norway 1
ISO 61 - Norway 2
ISO 11 - Sweden Names
ISO 10 - Sweden
ISO 17 - Spain
ISO 6 - ASCII
ISO 2 - IRV
ISO 16 - Portugal
ISO 14 - JIS ASCII
Legal
CP 860 - Portugal
Danish OPE I
UNIX International
Line Draw

Character Sets
Danish OPE II
CP 220 Spain II
CP 863 - French Canadian
PC-WIN - ANSI Windows 3.1
CP 852 - Latin 2
ISO 8859 / 2 - Latin 2
PC-WIN - Eastern Windows 3.1
CP 857 - Turkey
ISO 8859 / 9 (Turkey)
PC-WIN - Turkish Windows 3.1
CP 866 - Cyrillic
CP 855 - Cyrillic
ISO 8859 / 5 (Cyrillic)
PC-WIN - Cyrillic Windows 3.1
CP 210 - Greece
CP 851 - Greece
ISO 8859 / 7 (Greece)
PC-WIN - Greek Windows 3.1
CP 862 - Hebrew
ISO 8859 / 8 (Hebrew)
PC Slovenia
PC Kamenicky

Appendix B

Accessories and Options

This appendix lists the accessories and the optional items which are available on request. It also describes how to insert a memory card in the printer.

Accessories

Monochrome Print Head and Ink Cartridge

Monochrome ink print head, consisting of cartridge casing and ink cartridge available in the following packaging:

- Monochrome print head (casing and cartridge) plus one cartridge (800 page life) **LJ50X-AB**
- 2 replacement cartridges (400 page life each) **LJ50X-AC**

Color Print Head

Color print head and ink cartridge are a single unit:

- Color print head/ink cartridge unit (200 page life) **LJ50X-AK**

Options

Color Kit

Color print head and a print head storage box including DECcolor Works printer driver and user guide **LJ50X-DK**

Paper Handling Devices

- ASF2 - Lower paper tray (A4/A5/Letter/Legal) **LJ50X-SF**
- Tractor (sprocket) **LJ50X-TR**

PCMCIA Emulation Card

- IBM Proprinter X24/EPSON LQ 860 multi-emulation **LJ50X-IE**

PCMCIA Font Cards

Each font card is supplied with a booklet which illustrates the font card contents and explains the font selection procedure.

- Font Card B,Prestige Elite 7 pt, 10 pt 16.67 cpi, 12 cpi
  Letter Gothic 12 pt 12 cpi **LJ50X-CH**
- Font Card R,U Times Nordic 8 pt, 10 pt, 12 pt, 14 pt, 30 pt PS **JLJ50X-CJ**
- Font Card T,V Nordic 8 pt, 10 pt, 12 pt, 14 pt, 30 pt PS **LJ50X-CK**

PCMCIA RAM Card

- 256K byte card (other standard Type 1 cards up to 4 Mbytes, available on the market, can be used) **LJ50X-DB**

Parallel Data Cables

- 10 ft parallel shielded cable **BC19M-10**
- 6 ft parallel shielded cable **BC19M-06**

Serial Interface

- User-installable kit for EIA RS 232C / V24 interface **LJ50X-SI**

Reference Manual

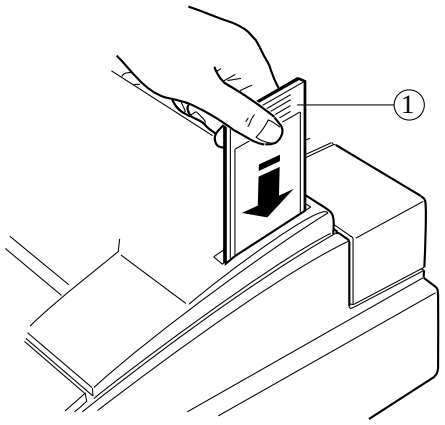
- Digital Series 500 Technical Reference Manual (English) **EK-LJ50T-RM**

Memory Card Insertion

Warning: Always insert and remove the memory card with the printer switched off. Insertion/removal with the printer switched on or operating will cause a hardware reset and the risk of damaging the printer and the memory card.

Memory cards can be inserted in the slot on the rear right hand side of the printer.

- Insert the memory card so that the symbol on the label, indicating the insertion direction, is facing outwards.
- Push the memory card down into the slot ① until it snaps into the connector on the mother board.



Memory Card Slot / Insertion

Do not force the card into the printer. If the card does not insert smoothly, check that it is compatible with your printer, and that you are inserting it correctly.

International Standards Conformity

NOTE: This equipment has been tested and found 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 interference 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 or 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 of a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Connection of peripherals requires the use of grounded shielded signal cables.

This digital equipment 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.

Ce dispositif numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de CLASSE B prescrites par le ministère des Communications canadien.

Normenkonformität und Zulassungen

Dieses Gerät entspricht den BMPT-Verfügungen 243/1991 und 46/1992 sowie DIN VDE 0878 Teil 3/11.89, zur Vermeidung von Funkstörungen. Zusatz für periphere Geräte (z.B. Monitore, Drucker)

Dieses Gerät trägt als Hinweis, daß es den Funk-Entstöranforderungen der BMPT- Verfügung Nr. 243/1991 entspricht, das VDE-Funkschutzzeichen. Der Zusatz "Vfg. 243/P" soll in Kurzform ausdrücken, daß es sich um ein peripheres (nicht selbständig betreibbares) Gerät handelt, das nur einzeln den Funk- Entstöranforderungen der Grenzwertklasse B nach DIN VDE 0878 Teil 3/11.89 und der BMPT-Verfügung 243/1991 entspricht.

Wird das Gerät innerhalb einer Anlage zusammen mit anderen Geräten betrieben, muß bei Inanspruchnahme der "Allgemeinen (Betriebs-) Genehmigung" nach der BMPT-Verfügung 243/1991 die gesamte Anlage der Grenzwertklasse B nach DIN VDE 0878 Teil 3/11.89 sowie den Voraussetzungen nach 2 und den Auflagen nach 3 der BMPT-Verfügung 243/1991 entsprechen.

Dies ist in der Regel nur dann erfüllt, wenn das Gerät in einer Anlage betrieben wird, die typgeprüft und mit dem VDE-Funkschutzzeichen mit dem Zusatz "Vfg. 243" gekennzeichnet ist.

Für Geräte welche der DPR-Verfügung 1046/1984 entsprechen und dem VDE-Funkschutzzeichen mit dem Zusatz "0871-B/P" gekennzeichnet sind, gilt obiges sinngemäß.

GS Dieses Gerät ist nach dem Gerätesichereitsgesetz GSG i.d.F. vom GS 13.8.1979 3 Abs. 4 geprüft**.**

Netzleitung

Netzleitung muß geprüftem Typ H05VV entsprechen.

Schallemissionswerte

Werteangaben nach ISO 9296 und ISO 7779 / DIN EN27779 :

	Schalleistungspegel LwAd,B		**Scalldruckpegel LpAm, dBA (Zuchauerpositionen)**	
	Leerlauf	**Betrieb**	**Leerlauf**	**Betrieb**
Draft	- -	6,6	- -	53
Briefqualität	- -	6,3	- -	50

[Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen erhältlich. 1 B = 10 dBA.]

Limited Warranty

Digital Equipment Corporation warrants to the purchaser that this product is free from defects in workmanship and materials and will perform substantially in accordance with the documentation accompanying the product for a period of two years from the date of purchase of this product. Digital's warranty does not apply to conditions resulting from improper use, external causes, or modifications to this product. Digital does not warrant that the operation or execution of the product shall be uninterrupted or error-free. This limited Warranty does not apply to any third party software products which come with their own software product warranty, if any.

Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Digital will either repair, refurbish, or replace the product through a standard, Return-to Digital Warranty. The purchaser pays for one-way transportation and insurance to the return center authorized by Digital's Technical Support and Service Hotline. For customers outside the United States of America, a different local warranty may apply. To obtain details, contact your local Digital sales office or place of purchase.

For warranty services under your Return-to-Digital Warranty within the continental United States of America, please call our toll-free Technical Support and Service Hotline at: 1-800-354-9000, push 42 for warranty operator. In Canada call 1-800-267-5251 (English), or 1-800-267-2603 (French). For customers in other parts of the world, please call your local sales office for support and service. Retain your dated sales receipt as your proof of purchase and warranty. You will also be asked to furnish Model and Serial Numbers.

Disclaimer of Warranties and Allocation of Liability

THE ABOVE WARRANTIES ARE PURCHASER'S EXCLUSIVE WARRANTIES AND NO OTHER WARRANTY EXPRESS OR IMPLIED, SHALL APPLY. DIGITAL SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. DIGITAL'S LIABILITY TO PURCHASER FOR ANY CAUSE WHATSOEVER SHALL BE LIMITED TO THE ACTUAL PURCHASE PRICE PAID TO DIGITAL OR ITS AUTHORIZED RESELLER FOR THE PRODUCT THAT ARE THE SUBJECT OF PURCHASER'S CLAIM. IN NO EVENT WILL DIGITAL BE LIABLE FOR ANY DAMAGES RESULTING FROM LOSS OF DATA OR USE, LOST PROFITS, OR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which depend on local law.