



The Microcomputer Software Company

WordStar®

Installation Manual

For Release 3.3

Copyright 1983
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33 San Pablo Avenue
San Rafael, California 94903 USA

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Introduction

Installing WordStar is easy. With this manual and the installation program, which you received on your distribution disk, you can install WordStar on almost any terminal and printer in minutes. Also, experienced WordStar users have the additional option of customizing WordStar by using the installation program's advanced features.

To install WordStar, you simply reply to a series of questions presented on your screen. Onscreen directions guide you to each next step, and this manual, organized to correspond with the progression of the program, provides additional information. The installation program helps you to create a WordStar program file tailored to your equipment (your computer, terminal, and printer) and your needs. Proper installation ensures top performance from WordStar.

MANUAL ORGANIZATION

This manual is divided into six chapters with two appendices:

- **Chapter 1, Basic Installation**, contains a brief description of the installation program's structure and basic installation instructions. The simple procedures outlined here are sufficient for most terminals and printers.
- **Chapter 2, Custom Terminal Installation**, and **Chapter 3, Custom Printer Installation**, explain the installation of terminals or printers not included on the menus. You'll find descriptions of each terminal and printer feature used by WordStar. If your equipment is not listed, you'll have to provide the WordStar program with additional information.

- **Chapter 4, Protocols and Drivers**, discusses WordStar's requirements for communicating with your printer. This information should be particularly helpful for beginners.
- **Chapter 5, WordStar Features**, explains how you can tailor the WordStar program to your particular requirements. Once you are familiar with WordStar, you may want to change normal operations. For example, using the custom installation procedures described in this chapter, you can instruct WordStar to number pages only at your request.
- **Chapter 6, Testing Installation**, explains how to make sure you've installed WordStar properly.
- **Appendix A, ASCII Conversion Chart**, shows the conversion of ASCII codes to decimal and hexadecimal values.
- **Appendix B, Installation Quick Guide**, summarizes the WordStar installation procedure.



Everyone should begin with basic installation procedures in Chapter 1. If your system requires custom installation, you'll be instructed to proceed to the more advanced steps.

RE-RUNNING INSTALLATION LATER

You may want to run the installation program again later. If you were to acquire a new printer or terminal, for example, or if you simply wanted to change a few standard features, you would use this manual to re-install the WordStar program.

ADDITIONAL INFORMATION

Use the following resources to answer some of your questions:

- Appendix A in this manual will help you convert values into three formats: ASCII, decimal, and hexadecimal.

- The glossary at the back of the WordStar Reference Manual will help you understand unfamiliar terms.
- Appendix A, “Program Specifications,” in the reference manual will answer your questions about hardware and software requirements.
- Your terminal, printer, and computer manuals and your dealer will supply the specific information about your hardware requested by the installation program.

The following symbols are used in this manual:



RETURN KEY



REMEMBER



KEEP IN MIND

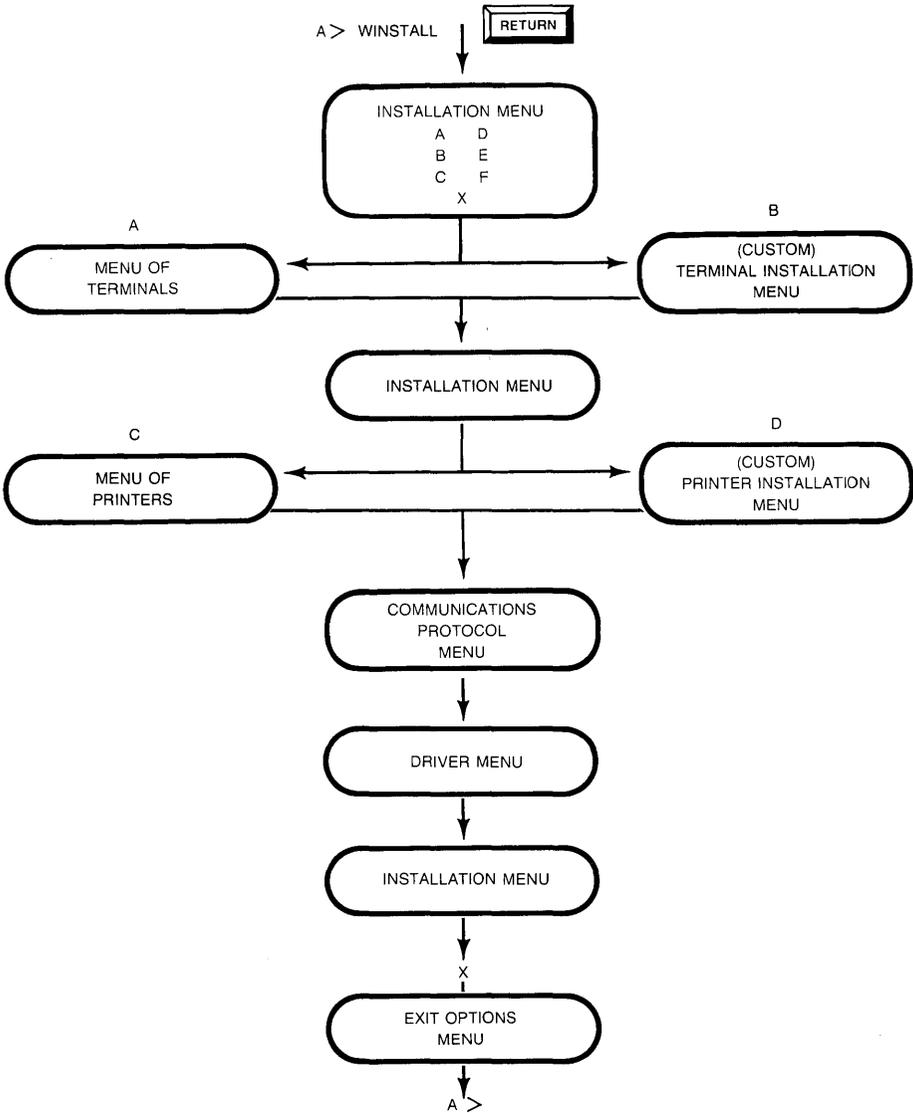


CAUTION

1. Basic Installation

STRUCTURE OF THE PROGRAM

You'll work from a series of menus making selections and responding to prompts. Your path through the program will depend on the type of hardware you are using. The following is a map of the menus you'll see as you install WordStar for the first time:



**WHAT YOU'LL
NEED TO KNOW**

Before you begin your WordStar installation, it's a good idea to gather the information you'll need. Ask your dealer or consult your terminal, printer, and computer manuals for the following information. Write it down for reference.

Terminal name: _____

Printer name: _____

Communications Protocol (if necessary):

Printer Driver: _____

**COPYING
WORDSTAR**

Before you run the installation program for the first time, you'll need to copy your WordStar Distribution disk. Your distribution disk contains the following WordStar program files and auxiliary files:

- WSU.COM
- WINSTALL.COM
- WS.INS
- PRINT.TST
- WSOVLY1.OVR
- WSMMSG.S.OVR

NOTE: IBM and other 16-bit computer systems use files with slightly different names. See the addendum to the reference manual for a list of files.

The instructions included here are general; refer to your system documentation for specific commands. If you have already copied the disk, go on to the next section, "Installation Procedures."

STEP 1 Turn on your computer.

STEP 2 Boot your system.

- STEP 3** Place your WordStar Distribution disk in drive A.
- STEP 4** Place a formatted disk in drive B.
- STEP 5** At your system prompt, type instructions to copy the files from the distribution disk in drive A to the disk in drive B.

You now have a copy of the WordStar Distribution Disk in drive B. If you purchased other MicroPro software for use with WordStar—SpellStar or MailMerge—follow the same steps to copy them as well. Once you have placed the original program disks in a safe place, you're ready to run the installation program.

NOTE: You can create a WordStar system disk, that is, a disk that includes the WordStar program *and* your operating system. This disk will enable you to boot the system and enter WordStar directly. Refer to your system documentation for specific instructions.

INSTALLATION PROCEDURES

Place the copy of the WordStar distribution disk in the logged disk drive and make sure the operating system prompt is on the screen.

STEP 1 TYPE **WINSTALL** 

SEE copyright information

STEP 2 PRESS any key

SEE **Would you like to continue?**

STEP 3  or TYPE **Y** or **N**

If you choose to leave the installation program at this point, no changes will be made to the file.

NOTE: If at some point an error message appears, follow the instructions on your screen to correct the problem.

SEE **Which MicroPro product would you like to install?**

STEP 4 TYPE WS 



Be sure to enter the correct code for WordStar. Typing the wrong code will produce an error message.

NOTE: You can bypass steps 2-4 by typing WINSTALL and the product code on the same line. At the operating system prompt,

TYPE WINSTALL WS 

TYPE any key

SEE an information screen



Be sure to read all onscreen information and instructions as you proceed through the installation program.

STEP 5 PRESS any key

PROGRAM EXIT

You can leave the installation program at any point by pressing ^C.

SEE disk drive name request

If some of your WordStar installation files (WSU.COM, for example) are located on another disk drive, enter the disk drive name here. If all files are located on the logged disk drive, press RETURN.

SEE **Name of file to install or RETURN or WSU.COM**

At this screen, you first provide the name of the file to be installed or modified and then the name for the newly installed file. WSU.COM is the Uninstalled version of WordStar. WS.COM is the installed version you'll use to run WordStar.

STEP 6



SEE **File to install is : WSU.COM**

NOTE: If you are re-installing WordStar you'll find slight differences between the onscreen text and descriptions in the manual. From this point on in the program, simply follow the instructions on the screen, using the manual as a reference; the steps will be the same.

SEE **Enter name of file for installed WordStar, or RETURN for WS.COM.**

STEP 7



SEE **doublecheck message**

STEP 8



or TYPE **Y** if all information is accurate; otherwise TYPE **N**. If you type **N**, you'll return to the information screen.

SEE **INSTALL is copying the filename. PLEASE WAIT.**



Throughout the program, you'll be asked to confirm your responses. This safeguard lets you check your work and correct errors. If you type **N (No)**, you will return to an earlier prompt where you can make necessary changes.

SEE INSTALLATION MENU

**INSTALLATION
MENU**

From this main menu, you will make the necessary selections to install WordStar for your computer system. You'll return to the main menu each time you complete a selection. Each menu item is briefly described here:

- **A, Menu of Terminals.** From this menu, which lists most terminals, you will select the terminal you are using.
- **B, Custom Installation of Terminals.** If your terminal isn't listed on the Menu of Terminals, you'll choose this option to provide WordStar with the information it needs.
- **C, Menu of Printers.** From this menu, you'll select the printer you are using.
- **D, Custom Installation of Printers.** If your printer isn't listed on the Menu of Printers, you'll choose this option to provide WordStar with the information it needs.
- **E, Menu of WordStar Features.** By making selections from this menu, you can modify certain WordStar features. Wait until you have completed the training guide and have become familiar with the way WordStar works before you make changes.
- **F, Operating System Considerations.** If you have a multi-user operating system, MP/M, you'll select this option along with the others needed for installation.



- **X, Exit from INSTALL.** This option lets you review your selections, make more changes if you like, and then return to the operating system. Only when you choose **X** are changes made to the installed WordStar file.

MULTI-USER SYSTEMS

If your operating system is MP/M, take step 9; if not, bypass this step:

STEP 9 TYPE F

SEE **Is this to be installed on an MP/M system?**
Currently . . .NO (it is not).

TYPE C

SEE **NOW . . .YES (it is).**



Choose this option only if your system is multi-user. The default setting is single-user.

SELECTING A TERMINAL

Your CRT must have a display area of at least 16 lines by 64 columns. The maximum display area depends on the amount of RAM available in your computer. The upper limit is about 57 lines by 120 columns.

WordStar can use the following features to enhance the performance of your terminal:

- Erase to end of line
- Line insert
- Line delete
- Either inverse video or bright/dim highlighting

STEP 10 TYPE **A**

SEE **Is your terminal on this list?**

STEP 11 TYPE **Y (Yes)** or **N (No)**

If you typed **Y (Yes)**:

SEE **Terminal is currently : no terminal yet selected**

EXTRA TERMINAL TYPES

STEP 12 TYPE the appropriate letter for your terminal

OR, if you typed **N (No)** at **STEP 11**:

SEE **Terminal is currently : no terminal yet selected**, followed by a list of terminal types

STEP 12 TYPE the appropriate letter for your terminal

If your terminal isn't listed, go on to the next menu. If you are viewing menu #1, for example, type **2** to see menu #2.

NOTE: If the exact name of your terminal doesn't appear on any menu, talk to your dealer. One of the terminals listed may be so similar to yours that WordStar won't know the difference. Otherwise, you will need to select **B** on the Installation Menu and do a custom installation (see Chapter 2, "Custom Terminal Installation").

STEP 13  or TYPE **Y** if correct, **N** if you need to make a change

SEE **INSTALLATION MENU**

STEP 14 TYPE C

SEE **Printer is currently : no printer yet selected**

SEE **STANDARD PRINTER TYPES**

SELECTING A PRINTER

WordStar works with most printers on the market and can be installed to use most printer features, though some require special procedures (see Chapter 4 of this manual).

If your printer is capable of backspacing or carriage returns without line feed, you can use the following WordStar printing features:

- underlining
- boldface (multi-strike method)
- doublestriking
- overstriking

If you have a specialty printer, that is, a printer capable of incremental motion, you can use these WordStar printing features:

- microspace justification
- variable line height
- variable character pitch
- subscripts
- superscripts
- boldface (offset and restrike method)

The Standard Printer Types menus list several printers. Almost any printer can be installed by selecting **Standard printer**. If your printer can also backspace, select **Backspacing standard printer**. However, if you have a daisy-wheel or other specialty printer and you want to use all the print features available with WordStar, you must select your exact printer name from this menu.



Check the glossary in the WordStar Reference Manual to better understand unfamiliar terms.

**SPECIALTY
PRINTER
CAPABILITIES**

Specialty printers (and those which are mechanically and functionally similar) are capable of backspacing, bidirectional printing, and spacing vertically and horizontally in increments smaller than one line or one character width. Specialty printers are sometimes called letter-quality printers.

If your printer name isn't listed, you can select **D** on the Installation Menu and perform a custom printer installation. Instructions are given in Chapter 3, "Custom Printer Installation."



Some printers have switches which must be properly set for WordStar operation. In Chapter 3, "Custom Printer Installation," you'll find information about setting these switches.

STEP 15 TYPE the appropriate letter

If your printer isn't listed, go on to the next menu. If you are viewing menu #1, for example, type **2** to see menu #2.

SEE **You have chosen :** your selection

SEE further information (with some selections)

STEP 16 or TYPE **Y**, if correct, **N** if you want to change your selection

SEE **Communications protocol is currently: No protocol**

SEE **COMMUNICATIONS
PROTOCOL MENU**

**SETTING THE
PROTOCOL**

At the Communications Protocol Menu, you'll tell WordStar how to communicate with your printer. If you are unfamiliar with protocols, turn to Chapter 4, "Protocols and Drivers." You'll find an easy-to-understand explanation and more detailed instructions about how to set the communication protocol if one is required for your printer. Also, consult your printer manual to establish what protocol, if any, you need.

STEP 17 TYPE **A, B, C,** or

SEE **Communications protocol is now :**
your selection

STEP 18 or TYPE **Y** or **N**

Depending on your protocol choice, you will or will not be required to give more information. If further information *is* required, see Chapter 4.

SEE **Driver is currently : No driver
yet selected**

SEE **DRIVER MENU**

**SETTING THE
DRIVER**

At the Driver Menu, you'll tell WordStar how to handle the communication between your computer and your printer. Again, refer to Chapter 4 of this manual and to your printer and computer manuals for the necessary information.

STEP 19 TYPE **A, B, C,** or **RETURN**

SEE **Driver is now :** your selection

SEE further information

STEP 20  or TYPE **Y** or **N**

SEE further information

If further information is required at this point, see Chapter 4.

SEE **INSTALLATION MENU**

LEAVING THE INSTALLATION PROGRAM

The last steps give you the opportunity to recheck your work and to reenter the installation program if you want to make a change.

STEP 21 TYPE **X**

SEE **These are your current values.
Exit options menu**

STEP 22 TYPE **A, B, or C**

Choose **A** to save your modifications and return to the operating system. Choose **B** to leave the installation program without saving the changes you've made. Choose **C** to remain in the installation program and return to the **INSTALLATION MENU**.

TESTING YOUR INSTALLATION

Your installation is complete. You may want to run a test to verify that WordStar is properly installed. In Chapter 6, "Testing Installation," you'll find instructions for checking all aspects of the installation.

SAVING DISK SPACE

You may want to remove the installation program files from your disk to save space. To re-install any features later, you'll need to restore the files from your distribution disk copy.

2. Custom Terminal Installation

Custom Installation of Terminals is selection **B** on the Installation Menu. If you have already checked selection **A**, **Menu of Terminals**, and have not found the name of your terminal listed, you'll need to do a custom installation to give WordStar information about the codes your terminal sends and receives. This information should be available in your terminal manual.

Check with your dealer before you begin a custom installation. If your terminal is similar to one listed on the Menu, you may be able to select that terminal for your installation.

WHAT YOU'LL NEED TO KNOW

Before you begin your terminal installation, it's a good idea to gather the information you'll need. Each item is listed in the "Features" section of this chapter. Using your terminal and computer manuals, locate the necessary information and write it down for reference in the space provided.

If this is the first installation of your terminal,

SEE **INSTALLATION MENU**

TYPE **B**

SEE **TERMINAL INSTALLATION
MENU**

TYPE **A**

SEE **Automatic installation of all
features**

If you have already installed WordStar and you are returning to the program to modify a particular feature, select only that feature from the menu.

THE PROMPTS

As you respond to the prompts, you'll see each feature's current (default) values displayed. To change a value, type **C**. If the value is correct, continue to the next feature by pressing RETURN. To complete the installation of some features, you'll have to enter more than two values. If you have chosen **A, Automatic installation**, not all the current values will be displayed at once. You must type **C** to view or change each value. After each response, you'll have the opportunity to confirm your answer before you go on to the next prompt.

The first time you install your terminal you should respond to every prompt because WordStar needs this information.

CHANGING A VALUE

To change some values, you must enter information in one of three formats — decimal, hexadecimal, or ASCII. (See the ASCII Conversion Chart in Appendix A.) When you type **C**, to change a value, you'll see a screen describing these formats and explaining how to change from one to another. You'll also see instructions about how to leave a value as is and how to end the sequence. Just above the values at the bottom of the screen is a statement telling you the maximum number of entries stored by that feature. Here is the screen:

You can enter a value in ASCII, decimal, or hexadecimal codes.
Precede each entry with these prefixes:

ASCII	:	(: ^A enters ASCII ^A, a single value)
Hexadecimal	,	(,41 enters hexadecimal 41)
Decimal	#	(#61 enters decimal 61)

To enter a sequence of characters, enter each one separately, followed by <RETURN>.

Press <RETURN> to leave a value unchanged.

Enter a period (.) and press <RETURN> to terminate a sequence and to eliminate all subsequent values.

These special characters require hexadecimal input:

Maximum entries for this function is 6.

Current Value	New Value
---------------	-----------

A value typed in ASCII may include the control key. For example, if you press the control key and **A** together, **^A** will be entered as a single value. To enter a series of characters, such as **^Q^Q^C**, type **^Q RETURN ^Q RETURN ^C RETURN**.

FEATURES



Name: _____

TERMINAL NAME

Select **B** to give WordStar a name for your terminal. Although your response doesn't affect the program, it does affect all messages that give the name of the terminal for which WordStar is installed.



Lines: _____
Columns: _____

SCREEN SIZE

Select **C** to provide the number of horizontal lines and vertical columns available on your terminal screen. (Defaults: *24 lines, 80 columns*)



Code: _____

- The character, or characters, that indicate the cursor is about to be moved

Code: _____

- The characters sent between the coordinates of the move

Code: _____

- The characters sent following a move

Code: _____

- The characters representing line 1 and column 1

Code: _____

- The code type representing line and column numbers: ASCII or BINARY

Code: _____

- The order in which the column number and line number are sent



Code: _____

TERMINAL START-UP

Select **E** if your terminal requires that a sequence of codes be sent in preparation for WordStar. Examples are given on the screen.



Code: _____

TERMINAL EXIT

Select **F** if your terminal also requires that a sequence of codes be sent to leave the terminal set as it was before you started WordStar.



Code: _____

HIGHLIGHTING

Select **G** if your terminal has highlighting capabilities and requires a code sequence to turn highlighting on and off. (You will need to supply the codes for both on and off.)



Code: _____

ERASE TO END OF LINE

Select **H** to provide the code for the feature that erases all characters from the cursor position to the end of the line. If this feature is not available on your terminal, WordStar will use another method to perform the same function.



Code: _____

DELETE LINE

Select **I** to provide the code sequence for the delete line feature, which erases the line containing the cursor and moves the lines below up one line. If this feature is not available on your terminal, WordStar will use another method to perform the same function.



Code: _____

INSERT LINE

Select **J** to provide the code sequence for the insert line feature. This feature places a blank line at the cursor line and pushes the text down one line on the screen. Check your terminal manual; if your terminal inserts the blank line *below* the cursor, you'll have to precede the insertion code with a code sequence to move the cursor up a line. If the insert line feature is not available on your terminal, WordStar will use another method to perform the function.



Code: _____

HANDLING OF LAST CHARACTER ON SCREEN

Select **K** and type **Y** at the prompt if your terminal scrolls up a line when it encounters a character at the bottom right of the screen. If your terminal doesn't use this convention, type **N**, and WordStar will use another method to cause the scrolling.

3. Custom Printer Installation

Custom Installation of Printers is selection **D** on the Installation Menu. If you have already checked selection **C**, **Menu of Printers**, and have not found your printer on the list, you'll need to perform a custom installation to take advantage of all the capabilities of your printer. WordStar needs specific information, which you'll find in your printer manual. If you need more help, ask your dealer.

You'll be installing either a standard or specialty printer. Be sure your printer has all the capabilities outlined in Chapter 1 before you install it as a specialty printer.

WHAT YOU'LL NEED TO KNOW

Before you begin your printer installation, it's a good idea to gather the information you'll need. Each item is listed in the "Features" section of this chapter. Using your printer and computer manuals, locate the necessary information and write it down for reference in the space provided.

PRINTER SWITCHES

Some printers have switches that must be properly set for WordStar to control printing operations. The switches may be located on an external control panel, on a control panel under the printer cover, or on internal circuit boards. If your printer has any of the following options switches, they should be set as recommended:

- **AUTO CR** (CR = carriage return)
Turn this switch off.
- **AUTO LF** (LF = line feed)
Turn this switch off.
- **FORM LENGTH**

If you are using WordStar's **Use form feeds** print option, set this switch to match the length of the paper you are using.

- **LOCAL LF**
Same as AUTO LF above. Turn off.
- **PARITY**
Check your printer manual or check with your dealer for the correct setting for this switch.
- **SET TOF**
If you're using WordStar's **Use form feeds** print option, press this switch after positioning your paper at the top of the form or at the perforation.
- **SPEED OR BAUD**
Set this switch to match the speed at which your computer transmits characters.

In addition, some printers have a switch that must be set to activate a communication protocol when required. (See Chapter 4 for more information.) Check your printer manual to see if your printer has such a switch.

THE PROMPTS

As you respond to the prompts, you'll see each feature's current (default) values displayed. To change a value, type **C**. If the value is correct, continue to the next feature by pressing RETURN. To complete the installation of some features, you'll have to enter more than two values. If you have chosen **A** or **B, Automatic installation**, these features will not display all the current values at once. You must type **C** to view or change each value. After each response, you'll have the opportunity to confirm your answer before you go on to the next prompt.

The first time you install your printer you should respond to every prompt. WordStar needs all the information requested.

CHANGING A VALUE

To change some values, you must enter information in one of three formats — decimal, hexadecimal, or ASCII. (See the ASCII Conversion Chart in Appendix A.) When you type **C** to change a value, you'll see a screen describing how to enter a value. You'll also see instructions about how to leave a value as is and how to end the sequence. At the bottom of the screen is a statement telling you the maximum number of entries that can be stored at that feature. Here is the screen:

You can enter a value in ASCII, decimal, or hexadecimal codes.
Precede each entry with these prefixes:

ASCII	:	(^A enters ASCII ^A, a single value)
Hexadecimal	,	(,41 enters hexadecimal 41)
Decimal	#	(#61 enters decimal 61)

To enter a sequence of characters, enter each one separately, followed by <RETURN>.

Press <RETURN> to leave a value unchanged.

Enter a period (.) and press <RETURN> to terminate a sequence and to eliminate all subsequent values.

These special characters require hexadecimal input:

<RETURN> (^M)	,OD
Period (.)	,2E
^H (backspace: ^H)	,08

Maximum entries for this function is 6.

Current Value	New Value
---------------	-----------

A value typed in ASCII may include the control key. For example, if you press the control key and **A** together, **^A** will be entered as a single value. To enter a series of characters, such as **^Q^Q^C**, type **^Q RETURN ^Q RETURN ^C RETURN**.

INSTALLATION

Begin at the Installation Menu:

TYPE **D**
SEE **PRINTER INSTALLATION**
MENU

If you are installing your printer for the first time, choose **A**, Automatic installation for specialty printer (features C through M), or **B**, Automatic installation for standard printer (features C through H and N). Later, if you want to modify a particular feature, select the appropriate letter from the Printer Installation menu and respond to the prompts.

FEATURES

All Printers

WordStar must have information about all of the following features for all printers:



Name: _____

PRINTER NAME

Select **C** to give WordStar a name for your printer. This name, which doesn't affect the program, is used in all messages that specify the printer for which WordStar is installed.



Code: _____

Code: _____

INITIALIZATION

Select **D** to provide the code sequences that tell your printer to begin and end printing.



Code: _____

OVERPRINTING

Select **E** to tell WordStar how your printer backspaces. If you are installing a backspacing printer, you'll also have to know the code that tells the printer to backspace.



Code: _____

BOLDFACING

Select **F** to specify how dark your boldfaced print will be. The default value is 2, the recommended value for specialty printers.



Protocol: _____

PROTOCOL MENU

Select **G** to set any required protocol. Refer to Chapter 4 in this manual for detailed information about communications protocols.



Driver: _____

DRIVER MENU

Select **H** to specify a printer driver. Refer to Chapter 4 in this manual for detailed information about printer drivers.

Specialty Printers Only

Install all of the following features on specialty printers to take advantage of WordStar's print features:



Code: _____

RIBBON SELECTION

Select **I** to supply alternate and standard ribbon-selection code sequences if your printer is capable of two-color printing.



VERTICAL MOTION

Select **J** if your printer is capable of the vertical movement necessary to produce sub- and superscript. You must supply the following values regarding the vertical motion index (VMI):

Code: _____

- Code sequences that tell the printer to prepare to move the platen up and down.

Code: _____

- Code sequences (called VMI trailer strings) that tell the printer the movement in vertical increments is complete. Very few printers require this information.

Value: _____

- The minimum value for VMI.

Range: _____

- The range of valid VMI values. If you don't know the range, subtract the minimum value from the maximum value.

Code: _____

- The code sequence for line feed.

Code: _____

- The code sequence for reverse line feed.



HORIZONTAL MOVEMENT

Select **K** if your printer is capable of incremental horizontal movement. You must supply the following values regarding horizontal motion index (HMI):

Code: _____

- Code sequences that tell the printer to prepare to move the print head left or right.

Increment: _____

- The fraction (increment) in inches your printer moves the print head for HMI, either 1/60 or 1/120 inch.

Value: _____

- The minimum value for HMI.

Range: _____

- The range of valid HMI values. If you don't know the range, subtract the minimum value from the maximum value.

Code: _____

Code: _____

- The code sequence for a space forward.
- The code sequence for a backspace.



Forward

Code: _____

Backward

Code: _____

PRINT MODES

Select **L** to enter the codes for both forward and backward printing.



Code: _____

Code: _____

PHANTOM CHARACTERS

Select **M** if your print head contains two characters, nicknamed phantom space and phantom rubout, that are not represented on your keyboard. You can set two WordStar commands to represent these characters in your printed text. Check your print head for the characters and your printer manual for the code sequence representing each.

Standard Printers Only



LF Code: _____

1/2 LF Code: _____

No LF Code: _____

RETURN/LINE FEED

Select **N** to tell WordStar whether your printer is capable of carriage returns with line feeds, with half-line feeds, or without line feeds. If your printer is capable of one or more of these returns, most WordStar features such as overstriking, overprinting, and underscoring will function. You'll need to supply the function code sequences for each of your printer's carriage returns.

Optional

These features are optional on all printers and depend on the special capabilities of your printer:



^PQ Code: _____
^PW Code: _____
^PE Code: _____
^PR Code: _____

USER-DEFINED FUNCTIONS

Select **O** to set four WordStar commands to perform actions of your choice. If your printer supplies another font, for example, you can set one of the commands to toggle the font on and off. The four commands you set are **^PQ**, **^PW**, **^PE**, and **^PR**. You'll need to provide the code sequence for each command you define.



Selections **I**, **Q**, and **P** are not strictly limited to ribbon selections and character pitch. Like the user-defined functions (selection **O**), these selections let you set the WordStar **^P** commands to the code sequences of your choice. You could, for example, select **I** to enter a code for double-width characters and select **Q** to enter a code for reduced-sized characters. You could also use these selections to assign the special print features of a dot matrix printer to WordStar commands.



Roll up
Code: _____
Roll down
Code: _____

CARRIAGE ROLL

Select **P** if your printer is capable of rolling the platen up and down a partial line. You'll need to enter the function code sequences for both up and down partial rolls.



Standard

Code: _____

Alternate

Code: _____

CHARACTER PITCH

Select **Q** if your printer is capable of altering the pitch (width between characters) of your printed text. You'll need to enter the function code sequences for standard character width and alternate character width.



EXIT

Type **X** to return to the Installation Menu.

4. Protocols And Drivers

This chapter presents general information about protocols and drivers and then explains the options on both menus.

COMMUNICATIONS PROTOCOLS

A communications protocol is a system of codes that enables your printer and computer to talk to one another. If WordStar were to send 200 words per second from computer to printer, your printer, like a person taking dictation, would need a way of saying "Hold it! I can't transfer characters to paper that fast."

PRINTER BUFFER

Most printers have a good memory called the printer buffer. When receiving new information, your printer can use this buffer as storage space while printing information received earlier.



The size of this buffer is important. A buffer that holds only 500 words can become filled in seconds if WordStar is dictating 200 words per second. Any characters sent after the buffer is full will be lost.

Communications protocols require that the computer and printer *exchange* information or signals. The computer must be able to send information to the printer for printing, and the printer must be able to send signals back when it's ready to receive more information.

**DO YOU NEED A
PROTOCOL?**

You probably won't need a communications protocol if you have a specialty printer (or one with similar capabilities) that can receive information from the computer at 300 bits per second or less (that is, with a serial interface set at 300 baud or less) or a standard printer with a serial interface at 600 baud or less. However, your printer may operate so slowly that you will want to increase the baud rate. At a higher baud rate, you will need a communications protocol unless your printer is equipped with special hardware or cabling options. (See the next section on hardware protocol.) Without a communications protocol, you run the risk of losing characters before they can be printed.

**HARDWARE
PROTOCOL**

Use a hardware protocol if one is available. A hardware protocol is a special cabling device that regulates the exchange of information between your computer and your printer. Many computer and printer manufacturers routinely supply hardware protocols with their products. Your dealer will help you select the proper protocol for your system.

To achieve a hardware protocol with certain machines (computers or printers), some rewiring may be necessary. Such hardware protocol is *still* preferred over any software protocol (see the following section). Your hardware manuals should supply the information you need. If you cannot find this information, contact your hardware dealer or manufacturer.

SOFTWARE PROTOCOL

If a hardware protocol is unavailable, a software protocol—sometimes called “handshaking”—can be installed. Most printers are capable of using either the ETX/ACK protocol or the X-ON/X-OFF protocol. Many printers allow you to choose between the two.



Although the X-ON/X/OFF variety is generally preferred, consult your dealer or hardware manual to determine which software protocol is best to use with your printer. The WordStar program itself will handle either kind of software protocol.

Communications Protocol Menu

The Communications Protocol Menu appears after you choose **C** at the Installation Menu and then select the letter corresponding to the name of your printer (**A - L**) from the list of Standard Printer Types. If you are performing a custom printer installation, however, the Protocol Menu appears after you choose **D** at the Installation Menu and then **G** at the Printer Installation Menu.



NONE REQUIRED

Select **A** if your printer does not need a protocol or if the protocol is handled by the hardware. (See the previous section on hardware protocol.)



ETX/ACK PROTOCOL

Select **B** if your printer uses ETX/ACK protocol. WordStar will place a special character at the end of each information “message” it sends to the printer. This special character is known as an ETX (an acronym for **End of TeXt**) code and is represented by a value of 03. Once the printer has printed everything in the message up to the ETX code (a line, for example), it sends an ACK code (**ACK**nnowledge) back to the computer. The ACK code (represented by a value of 06) tells the computer that the printer is ready to receive the next information message.



Do not attempt to install or use code in the operating system to implement ETX/ACK protocol. If WordStar is to operate under this protocol, the protocol must be executed by WordStar.



Some specialty printers (or printers with similar capabilities) permit the use of this protocol as an alternative to X-ON/X-OFF. You should use ETX/ACK protocol when other considerations require its use—for example, when other software on your computer requires it.

When you use this protocol, WordStar must know how many characters can be “dictated” before the printer buffer becomes full. In addition, some printers may require specific procedures (such as setting a switch inside the printer) to activate ETX/ACK protocol. Check your printer manual.

After you type **B** and confirm your choice, the ETX/ACK message length prompt will appear on your screen. The number you enter must be equal to or less than half the size of the printer buffer. WordStar will keep two messages in the buffer at any given time. The default is 127 characters; this number indicates that the printer buffer can hold at least 254 characters. The maximum ETX/ACK message length is 254 characters.



Be sure to decrease this value if your printer has a smaller buffer. Otherwise, the messages will overlap in the buffer, and you will lose characters or print unwanted data.



Some printers have switches that make it possible to select two or more different buffer sizes. If your printer has such switches, check to make sure the switches are set to the correct buffer sizes.



X-ON/X-OFF PROTOCOL

Select **C** for the X-ON/X-OFF protocol. When the printer is ready to receive an information message, it sends an X-ON code (transmit ON) to the computer. The X-ON code is represented by the ASCII code DC1 (which translates to a hexadecimal value 11). When it receives an information message, the printer sends an X-OFF (transmit OFF, ASCII code DC3, hexadecimal value 13) to the computer, telling it not to send any more messages before receiving the next X-ON code. This protocol is sometimes known as DC1/DC3.



X-ON/X-OFF protocol is the usual selection if you have a serial specialty printer interfaced at any rate over 300 baud. Most, but not all printers support this kink of protocol.



The ETX/ACK and X-ON/X-OFF protocols require that the computer and printer be able to *exchange* (i.e., transmit and receive) information. You must, therefore, select a printer driver which allows information to be *received from* as well as *transmitted to* the printer.

PRINTER DRIVERS

The printer driver is a program that works with the protocol to make sure that the printer and computer communicate properly. The driver tells them where to do the talking and where to do the listening. Without this information, your computer and printer couldn't "converse." They would be like people trying to carry on a phone conversation with one party speaking into the earpiece and the other listening at the mouthpiece—information could not pass between them.

Protocols require that the computer and the printer be able to exchange (that is, transmit and receive) information. Some printer drivers make this exchange possible, whereas others permit information to be sent only from the computer to the printer. Be sure to select a driver that is compatible with the type of protocol you have installed.

Your WordStar program contains several different printer drivers. The following section, which presents descriptions of each option on the driver menu, will help you make the appropriate selection for your situation.

Driver Menu

The Driver Menu appears after you have selected your communications protocol during a standard installation. If you are performing a custom printer installation, however, the Driver Menu appears after you choose **H** at the Printer Installation Menu.



OPERATING SYSTEM PRIMARY LIST DEVICE

Select **A** to send characters to your printer through the printer driver in your operating system. If your selection of a protocol was **A** (No protocol required), the Operating System List Device is the usual selection.



If you select **A**, make sure that you have set up your operating system correctly, that is, that you have assigned the correct physical device (a printer) to this logical device (the list device). See your operating system manual for the appropriate commands.

OPERATING SYSTEM SECONDARY LIST DEVICE



Select **B** if the primary list device in your operating system is assigned to a task other than printing your WordStar files. In some operating systems, a secondary list device is available.



The list device is usually not capable of exchanging information with the printer. That is, the list device will send information to the printer but will not listen for signals coming back. If you are using a software protocol (either ETX/ACK or X-ON/X-OFF), some adjustment will have to be made to your operating system. Ask your dealer for help with your particular system.



WORDSTAR'S PORT DRIVER

Select **C** to use WordStar's built-in Port Driver. This driver bypasses the operating system and exchanges information with the printer directly. If you use this driver, you will not have to adjust your operating system for two-way communication between computer and printer.

WordStar's port driver is recommended for use with a software protocol because the driver contains a test to check when the printer is busy. But to use this driver, you will need information about your computer's printer ports and the status bits at those ports.

Ports are logical places where your operating system can "plug in" to other devices. A port is not the actual plug or connector itself but has a very definite location and assigned number. Information (bits or bytes) is sent through a port on its way to another device (in this case, your printer). At the **status port** WordStar monitors the condition of the printer, that is, checks to see whether it's ready for more information.



Status bits are special bits at the status port of your computer that change when the condition of the printer has changed.

If your printer interface involves more than one output data port, one output status port, one input data port, and one input status port, WordStar's Port Driver will not work.

After you have selected and confirmed option **C**, you will be asked a series of questions—first about the numbers of the output port and output status port, and then (unless you have chosen **no protocol**) about the numbers of the input ports and input status ports. You should be able to find in your computer manual the information necessary to answer these questions.

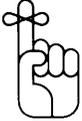


When you enter port numbers, use hexadecimal values. See Appendix A of this manual for a decimal/hexadecimal conversion table.

After you have entered port numbers, you will be asked which bits change at the status port. You should find this information in the section of your computer manual that provides port number information. The combination of all the bits that change must be represented as a single hexadecimal value. (If you are unfamiliar with converting binary values to hexadecimal values, ask your dealer for assistance.)

First, type the hexadecimal value that corresponds to the bits that change when the port can accept a character. For example, if the one and five bits change, enter the hexadecimal value 22 (which corresponds to the decimal value 34 or the binary value 00100010).

After you have entered this hexadecimal value, you'll be asked for the hexadecimal value of the bits that change from off to on (from 0 to 1) when the printer is ready to accept more characters for printing. For example, if only the one bit changes, enter 2. If only the number 5 bit changes, enter 20. If both bits change, enter 22, just as you did before.



If you have chosen **no protocol**, the questions stop here. But if you are using a communications protocol, you'll be asked another series of questions similar to those just described—this time, about *input* ports and *input* status ports.

The input status port and status bits are used by WordStar to determine whether or not a character has been received by the printer. The number of the input data port is frequently, though not always, the same as that of the output data port. You will specify the input data port, input status port, and status bits in the same manner as you specified the output ports and bits.

5. Wordstar Features

Once you're familiar with WordStar, you may want to change the way some features operate. With the installation program, you can customize the initial setting of 19 WordStar features. Your new settings become WordStar defaults. These defaults, in turn, can be altered during an editing session with a WordStar command. For example, the preset help level is 3. If you use Option A to change the level to 0, menus will not appear when you begin writing or editing, and you'll have a larger work area. Later, if you need to see a menu, you can temporarily reset the help level.

You may want to keep more than one version of WordStar (each with a different filename) on your disks. For example, a file called WS1.COM could begin WordStar in document mode and another called WS2.COM could begin the program in non-document mode. Different versions would be tailored to different tasks.



Be sure to complete the WordStar Training Guide before you change any feature settings. The guide was designed for use with standard settings, and you could easily become confused if you tried to complete exercises using a customized version of WordStar.

From the Installation Menu,

TYPE **E**

SEE **MENU OF WORDSTAR
FEATURES**

To modify a feature, type the appropriate letter and respond to the prompts on the screen. After each response, you'll have the opportunity to confirm your answer. You'll find information about each feature both on the screen and in the following discussion of menu choices. For additional information about all the features, see the WordStar Reference Manual.

FEATURES



INITIAL HELP LEVEL

Select **A** to set the level of onscreen help. To decide on the appropriate level of help, start WordStar and examine the screen under each level. As you become more familiar with the program, you'll find you need less and less help. You can later reset the level as needed. (Default: 3)



DECIMAL POINT CHARACTER

Select **B** to set the decimal point character. This character is used for aligning columns of numbers according to the position of the decimal tab settings. (Default: *period* [.])



NON-DOCUMENT MODE

Select **C** to set the mode for editing a file you name on the command line as you start WordStar (e.g., *WS filename*). You may find it useful to set this feature to non-document mode when you are editing primarily data files. (Default: *document mode*)



INITIAL DIRECTORY DISPLAY

Select **D** to display or suppress the file directory at the Opening Menu. (Default: *on*)



INITIAL INSERTION TOGGLE

Select **E** to specify the initial setting for the insertion toggle switch. With insertion off, characters will type over previously typed text, rather than move text right. (Default: *on*)



JUSTIFICATION TOGGLE

Select **F** to specify the initial setting for the justification toggle switch. With justification off, your text will have an uneven right margin. (Default: *on*)



HYPHEN HELP TOGGLE

Select **G** to specify the initial setting for the hyphen help toggle switch. With hyphen help off, WordStar will not hyphenate words during paragraph re-forming but will simply move words extending beyond the margin to the next line. (Default: *on*)



OMIT-PAGE-NUMBERING

Select **H** to specify the initial setting of the omit-page-numbering toggle switch. If the toggle switch is off, the pages will be numbered during printing. (Default: *off*)



TOP MARGIN

Select **I** to specify the number of lines to be left blank at the top of the printed page. (Default: 3)



BOTTOM MARGIN

Select **J** to specify the number of lines to be left blank at the bottom of the page. (Default: 8)



LEFT MARGIN

Select **K** to adjust the left margin on the screen and on the printed page. The left margin must not exceed the right margin and should be set at a number less than 240. (Default: 1)

With the left margin set at 1, your text appears at the extreme left on your screen. When printed, however, your text will appear to the right of the space allocated for page offset (see selection **N**).



RIGHT MARGIN

Select **L** to adjust the right margin on the screen and on the printed page. The right margin has no theoretical limit but does have practical limits — page width and printer capacity. (Default: 65)



NUMBER OF LINES PER PAGE

Select **M** to adjust the number of lines available on a page for printing WordStar documents. (Default: 66 lines, the setting for 11 inch paper)



PAGE OFFSET

Select **N** to adjust the number of columns left blank at the left side of the printed page. The left margin will begin to the right of this setting. For example, a page offset of 8 and a left margin of 10 will cause printing to begin in column 18 on your paper. (Default: 8)



FORM FEEDS TOGGLE

Select **O** to set the form feed toggle switch. The value you set becomes the default answer to the question, "Use form feeds?" This question appears prior to printing files with WordStar or MailMerge. When this toggle switch is on, form feeds are used; when off, line feeds are used. (Default: *form feeds off*)



DATA FIELD SEPARATOR

Select **P** to specify the character to be used to separate fields in a datafile. You can choose any character. This feature applies only to the MailMerge option of WordStar. (Default: *comma [,]*)



VARIABLE NAME SYMBOL

Select **Q** to specify the characters to be used before and after variable names inserted into a file being merged. You can choose any character. This feature applies only to the MailMerge option of WordStar. (Default: *ampersand [&]*)



SYSTEM DISK DRIVE

Select **R** to specify the disk drive where your .OVR files are stored. WordStar looks first for the files on your currently logged drive, which is the drive indicated by your operating system when you start a program. If your files are not found there, WordStar looks for them on the system drive.



EXIT

Type **X** to return to the Installation Menu.

6. Testing Installation

This chapter contains a few, simple tests that will help you determine if your terminal and printer are correctly installed to work with WordStar.

CHECK WORDSTAR'S OPENING SCREEN

To test your installation, start WordStar running on your computer. At the system prompt,

TYPE **WS** 

SEE Program version and serial number, copyright information, and the terminal, printer, communications protocol, and printer driver selections you made during installation

The display will remain on your screen for a few seconds (or until you press any key). Then you will see the WordStar Opening Menu.

CHECK CURSOR POSITIONING

The cursor should be positioned at the lower right of the Opening Menu. If lines run together on your screen and punctuation appears at random, the cursor positioning function codes are incorrect for your terminal. Check your terminal manual and the settings of all option switches on the terminal. Re-install WordStar or correct your terminal settings.

TEST THE ERASE FUNCTION

With the Opening Menu on the screen, open a document file:

TYPE **D**

SEE **Name of file to edit?**

If information from the Opening Menu remains on your screen, the erase to end-of-line function is not working correctly. Re-install your WordStar program with the correct function codes.

PRESS ESCape

**CHECK
HIGHLIGHTING**

To check the highlighting feature, look at the Opening Menu. If highlighting is installed, the list of commands and the title <<<**OPENING MENU**>>> will appear brighter (or dimmer) than other characters on the screen or in inverse video. The type of highlighting depends on your installation.

First, check the contrast or brightness control on your terminal to be sure the screen is properly illuminated. If highlighting is not installed correctly, you'll see no contrast in brightness on the Opening Menu. Re-install the function codes correctly.

PRINT TEST

From the Opening Menu, you should be able to print a file. Make sure your printer is on and ready to print.

TYPE P

SEE Name of file to print?

TYPE PRINT.TST

PRESS ESCape

The PRINT.TST file should print, exhibiting many of the print features available in WordStar. If printing doesn't begin or if the features you've installed don't operate correctly, you'll need to re-install your printer.

**END THE
TESTS**

After the file finishes printing, the Opening Menu will return to the screen. Return to your operating system:

TYPE X

SEE your operating system prompt

You can now be assured that WordStar is ready to go to work. If you are new to word processing, you should go on to the WordStar Training Guide now. Otherwise, use the WordStar Reference Manual to learn the fine points of the WordStar program. Enjoy!

Appendix A

ASCII Conversion Chart

ASCII	DECIMAL	HEXA DECIMAL	ASCII	DECIMAL	HEXA DECIMAL
!	33	21H	G	71	47H
”	34	22H	H	72	48H
#	35	23H	I	73	49H
\$	36	24H	J	74	4AH
%	37	25H	K	75	4BH
&	38	26H	L	76	4CH
'	39	27H	M	77	4DH
(40	28H	N	78	4EH
)	41	29H	O	79	4FH
*	42	2AH	P	80	50H
+	43	2BH	Q	81	51H
,	44	2CH	R	82	52H
-	45	2DH	S	83	53H
.	46	2EH	T	84	54H
/	47	2FH	U	85	55H
			V	86	56H
0	48	30H	W	87	57H
1	49	31H	X	88	58H
2	50	32H	Y	89	59H
3	51	33H	Z	90	5AH
4	52	34H	[91	5BH
5	53	35H	/	92	5CH
6	54	36H]	92	5CH
7	55	37H	^	94	5EH
8	56	38H	—	95	5FH
9	57	39H	‘	96	60H
:	58	3AH	a	97	61H
;	59	3BH	b	98	62H
	60	3CH	c	99	63H
=	61	3DH	d	100	64H
	62	3EH	e	101	65H
?	63	3FH	f	102	66H
	64	40H	g	103	67H
A	65	41H	h	104	68H
B	66	42H	i	105	69H
C	67	43H	j	106	6AH
D	68	44H	k	107	6BH
E	69	45H	l	108	6CH
F	70	46H	m	109	6DH
			n	110	6EH

- continued -

ASCII	DECIMAL	HEXA DECIMAL	ASCII	DECIMAL	HEXA DECIMAL
o	111	6FH	w	119	77H
p	112	70H	x	120	78H
q	113	71H	y	121	79H
r	114	72H	z	122	7AH
s	115	73H		123	7BH
t	116	74H		124	7CH
u	117	75H		125	7DH
v	118	76H		126	7EH
			DEL	127	7FH

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