

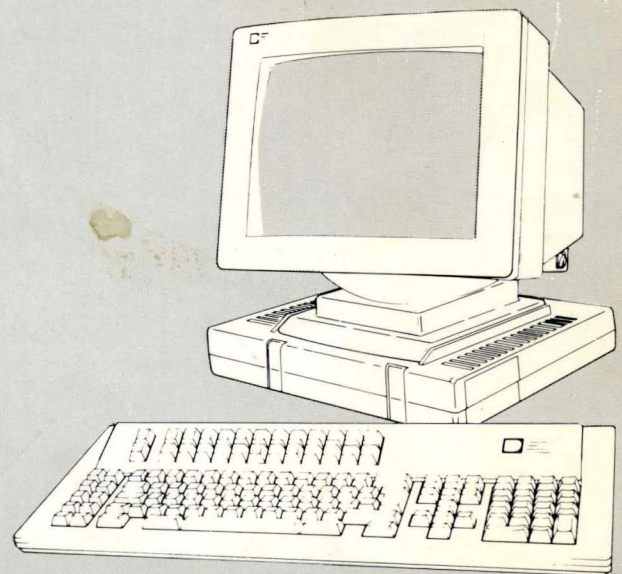


**Decision
Data**
Computer
Corporation

A **Decision Industries** Company

3496 Workstation

User Reference Manual



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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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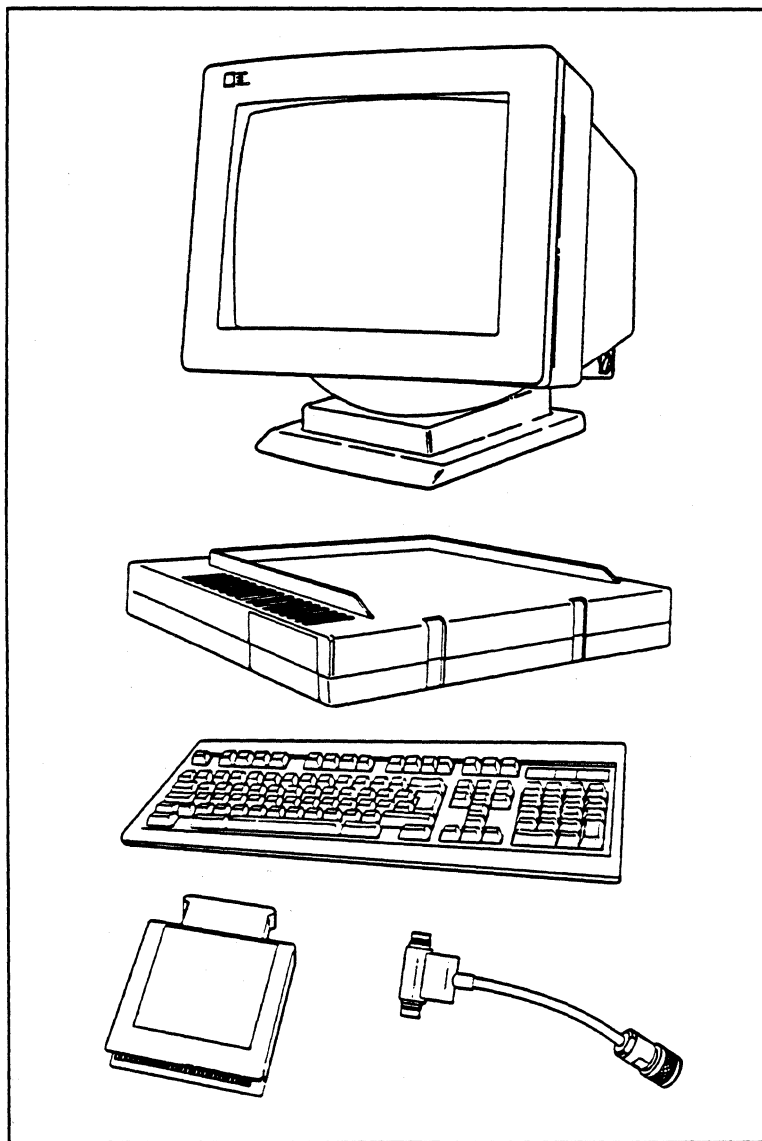
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Introduction



Introduction

The Decision Data 3496 Workstation has five basic modules: The CRT, the keyboard, the logic module, the "smart T" connector, and the cartridge. The Workstation is designed to configure as an IBM 3196 on a S/36 or S/38 host system, or as an IBM 5291-2 on a S/34, S/36 or S/38.

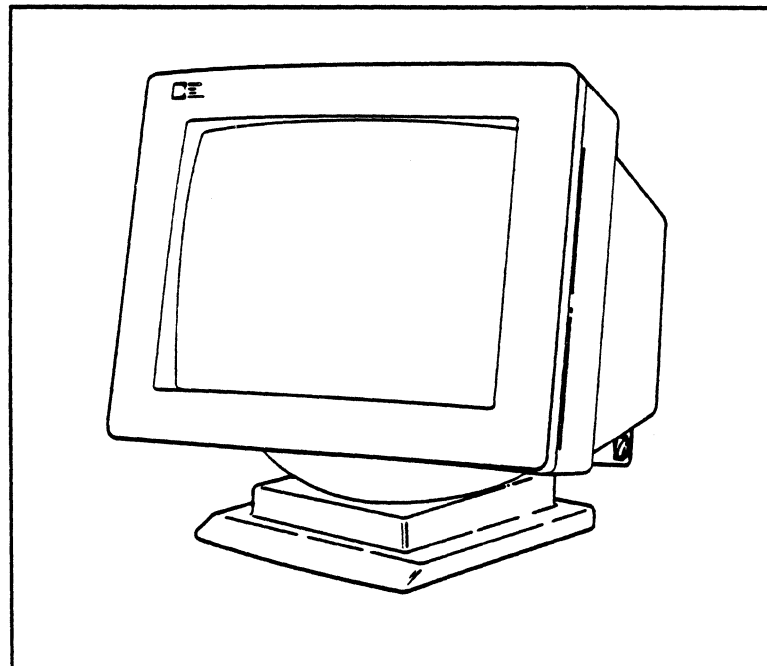


The CRT

Features

Your 3496 is equipped with a low-glare 12-inch screen in either amber or green. The angle of the display screen can also be adjusted by tilting the monitor up or down, or from left to right. An optional sunflex filter is available to reduce glare and improve the display contrast.

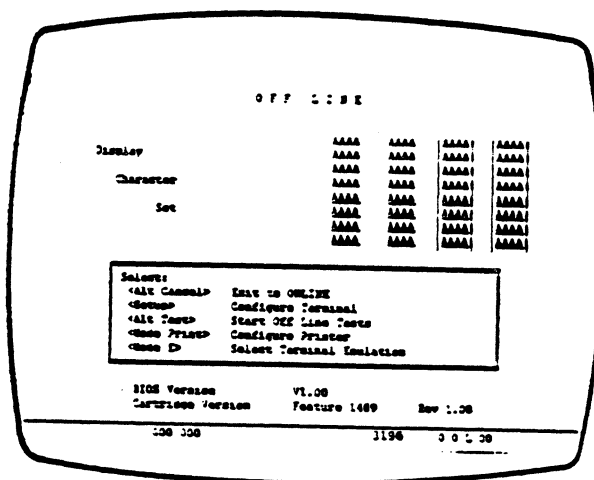
The power switch and the security keylock are located to the rear on the right side of the CRT. When the Workstation is locked, the terminal can be turned on, but cannot access the host. This allows the flexibility of changing operational characteristics in the SetUp mode and running diagnostics without requiring the key. It maintains security by preventing an unauthorized user from signing on to the system and displaying data while the system is locked.



Display

There are a variety of display characteristics that can be selected or changed by the user. All adjustments to the display are controlled during SetUp mode by the Command keys. The display intensity and contrast can be increased or decreased. Characters can be shown on a dark background, or in reversed image as dark images on a light background. The cursor can be displayed as blinking or steady, and can be an underscore or a solid block. The cursor location indicator can be displayed on the Status Line or can be turned off. The screen can auto dim automatically after 10 minutes unattended and can be recalled by pressing the Reset key.

At sign-on the display is controlled by the host system. The screen displays messages from the host system. If the spacebar is held down during power on the Offline screen appears on the display.



With the 83-key keyboard the choices on the Offline screen are accessed as follows:

Select	
<Err-C>	Exit to ONLINE
<Err-S>	Configure Terminal
<Err-T>	Start Off Line Tests
<Err-Print>	Configure Printer

Introduction

The screen will display an 80-column format. In this format, up to 24 lines of data can be displayed in the data area of the screen. At the bottom of the screen is a Status Line which displays mode and status indicators. The Record/Playback and printer prompts and messages will temporarily overlay some of the status line. A list of the Status Line indicators follows for your reference.

If you are in Extended Display (see Set Up), the terminal emulation, terminal address, printer address, keyboard ID, language code, line parity error counter, and keyboard error counter are also displayed.

Normal Status Line Indicators

SYS	System Available—indicates that the host system is operating and available, and that the Workstation can access the host system.
MSG	Message Waiting—indicates that a message is waiting for you on the host system.
INH	Input Inhibited—indicates that the host system is processing your data and further input cannot be accepted; also occurs when the host recognizes an error condition.
LCK	Key Lock—indicates that the Workstation is locked; the workstation is operational in Off-Line mode only.
NV,U,K,KT,KL,L	Hardware Error Code Indicator—indicates hardware and NVRAM error conditions.
0000	Error Code—indicates all operator errors that occur while communicating with the host or while the Workstation is offline.
SHF	Shift—indicates that the Shift key or the Caps Lock key is depressed.
INS	Insert—indicates that the Workstation is in the insert mode.
DIM	Dim—indicates that the display has turned itself off after 10 minutes with no user or system interaction; display returns to normal at first keystroke (Reset key recommended).
M	Mode—indicates the current mode of the Workstation.
PRT, STP	Printer Attention—indicates that the printer needs attention or the printer is not "ready."
RR/CC	Row/Column Indicator—indicates the row and column position of the cursor.

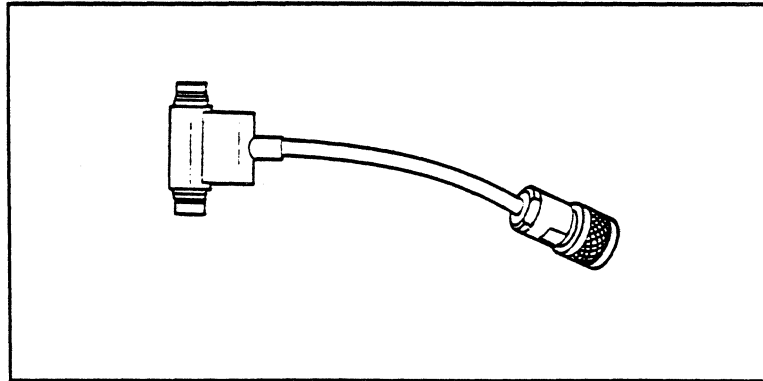
S	Setup —indicates that the Workstation is in Setup mode.
R	Record —indicates that the Workstation is in Record mode. While this indicator is displayed every keystroke is recorded.
P	Playback —indicates that the Workstation is in the Playback mode; characters and commands stored on one of the Record/Playback keys can be entered into the data area of the screen.
T	Test —indicates that the Workstation is in Test mode.

Extended Display Status Line Indicators

0000	Terminal Emulation —indicates the current terminal emulation.
0	Terminal Address —indicates the station address of the terminal.
0	Printer Address —indicates address for the printer emulation.
0	Language —indicates either the multinational set or the language selected commands stored on one of the Record/Playback keys can be entered into the data area of the screen.
00	Keyboard ID —indicates the workstation's keyboard ID.
000	Keyboard Error Count —indicates the number of keyboard errors since the workstation was powered on.
000	Line Error Count —indicates that the number of line parity errors or link level errors since power on.

The Smart T Connector

The smart T connector can be disconnected from the logic module so that the workstation itself can be moved. The operation of devices attached to the "smart T" will not be affected by the removal of the workstation.



The Keyboard

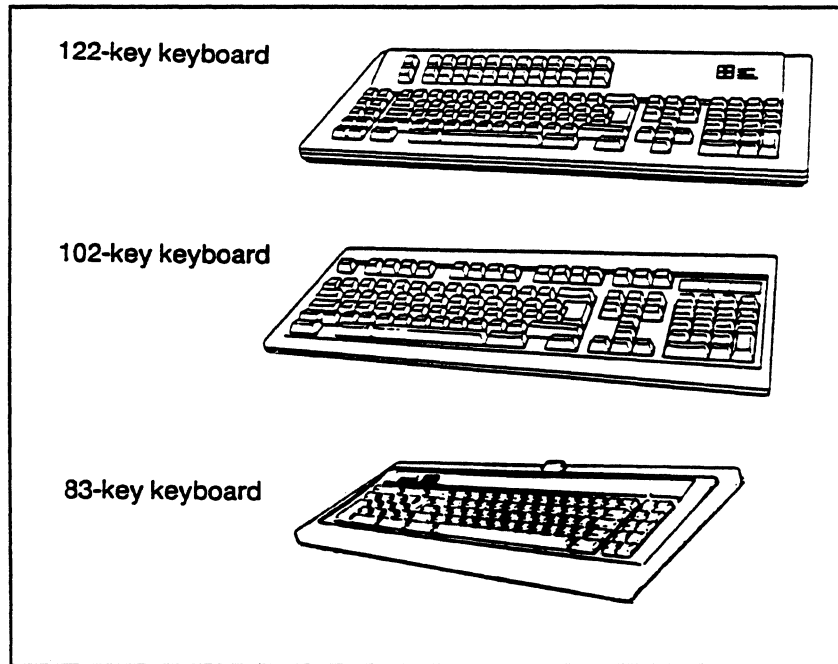
Your Workstation comes with an 83, 102, or 122-key keyboard.

The 122-key keyboard features a center cluster of keys in a standard typewriter-style arrangement. On the far right of the keyboard is a numeric keypad. Control keys are located in two groups to the left and right of the center cluster (for a description of the functions of these keys, see Control Key Functions). Above the center cluster are 24 single stroke Command keys. The keyboard tilt angle on the 122-key keyboard can be adjusted with the button underneath the upper center of the keyboard. While holding the button in, raise or lower the top edge of the keyboard. Release the button when the keyboard is at the most comfortable position for you.

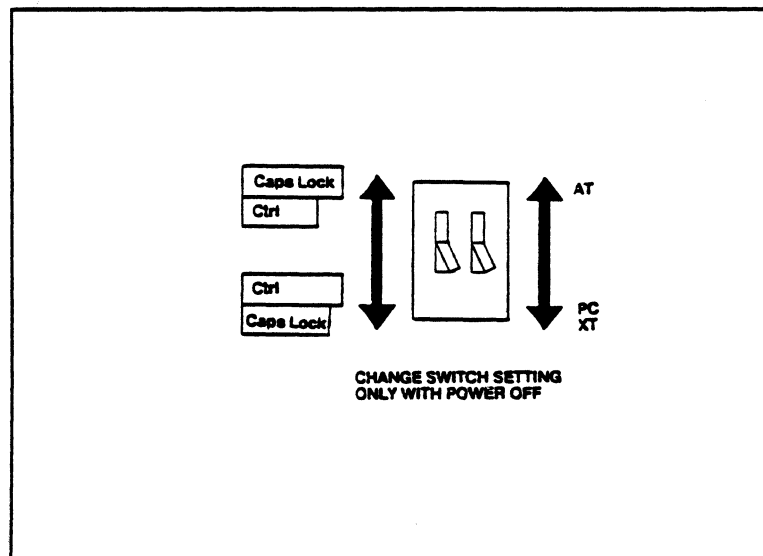
The 102-key keyboard features a center cluster of keys set up in a standard typewriter arrangement. The function keys at the top of the keyboard are used as the Command keys. The Control keys are to the left of the center cluster and a numeric keypad is at the far left.

The 83-key keyboard also features a standard typewriter-style arrangement in the center cluster. On the far right of the keyboard is a numeric keypad and the Control keys are on the far left.

Both the 83- and 102-key keyboards can either lie flat or be set at an angle. The 102-key version can be adjusted by pressing the buttons on both sides of the top of the keyboard. The 83-key keyboard can be adjusted with a button underneath the upper center of the keyboard.



If you are using the workstation with the 102-key keyboard make sure the switches on the underside of the keyboard are both set so AT is selected.

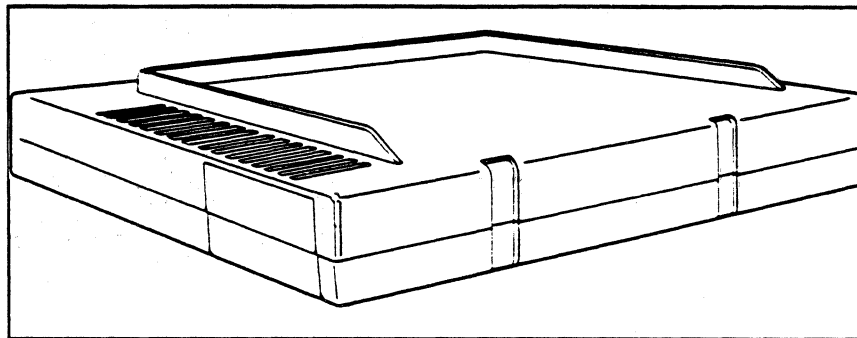


The Logic Module

The logic module is a separate element of the Workstation. It has a raised receptacle on its top to secure the positioning of the workstation monitor. There are connectors on the rear of the logic module for the keyboard, the CRT cable, the printer, and a Twinax connector to attach the "smart T" connector.

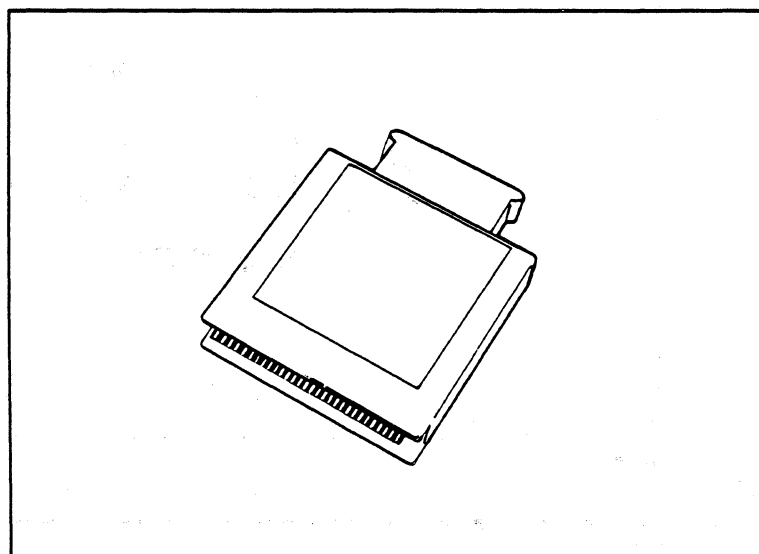
The door on the left side of the logic module opens to accept the system software cartridge.

There is a printer connector on the rear of the logic module.



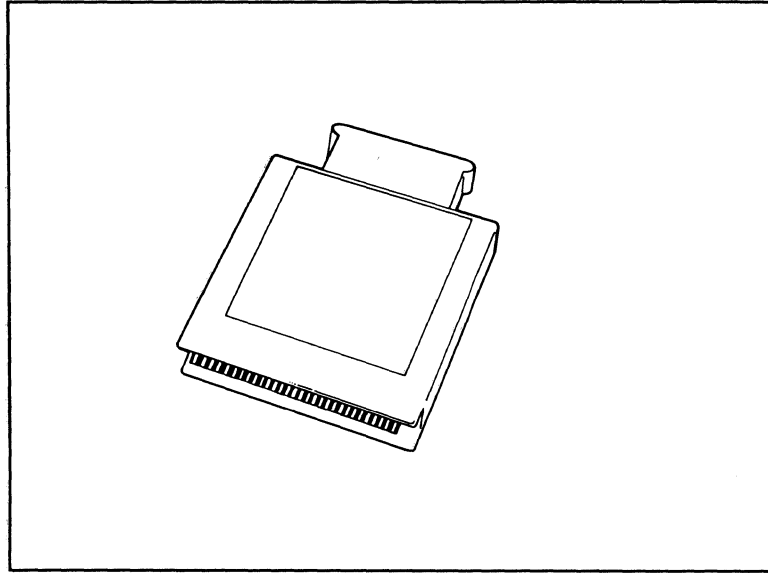
The Cartridge

The cartridge plugs into the left side of the logic module in a receptacle covered by a door. The cartridge contains all software for the Workstation.



The Cartridge

The cartridge plugs into the left side of the logic module in a receptacle covered by a door. The cartridge contains all software for the Workstation.





Unpacking and Installing



Unpacking and Installing Your Workstation

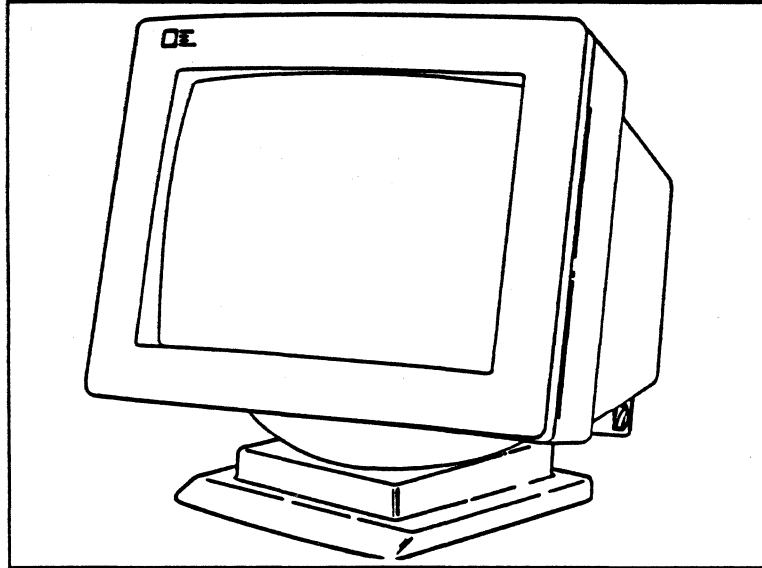
Your 3496 is shipped in five modules (CRT, logic module, the "smart T" connector, cartridge, and keyboard). We recommend that you save the packing material after unpacking the Workstation. On-site replacement is available through Decision Data Service Incorporated; other maintenance options may require you to repack and ship problem modules back to DDSI. Follow all instructions in the User Reference Manual when installing the 3496.

If you encounter any problems when installing or operating the Workstation, contact DDCC Marketing Support (1-800-231-3322 or 215-674-3300 in PA).

The Workstation is configured as a 3196 or a 5291-02 terminal on your system. See the section, "Attaching the Workstation" for device and system configuration information.

Connecting the Modules

1 Remove the CRT from its shipping package and place it on the desk or tabletop you will use as a workspace. When moving the CRT, lift it from underneath the housing.

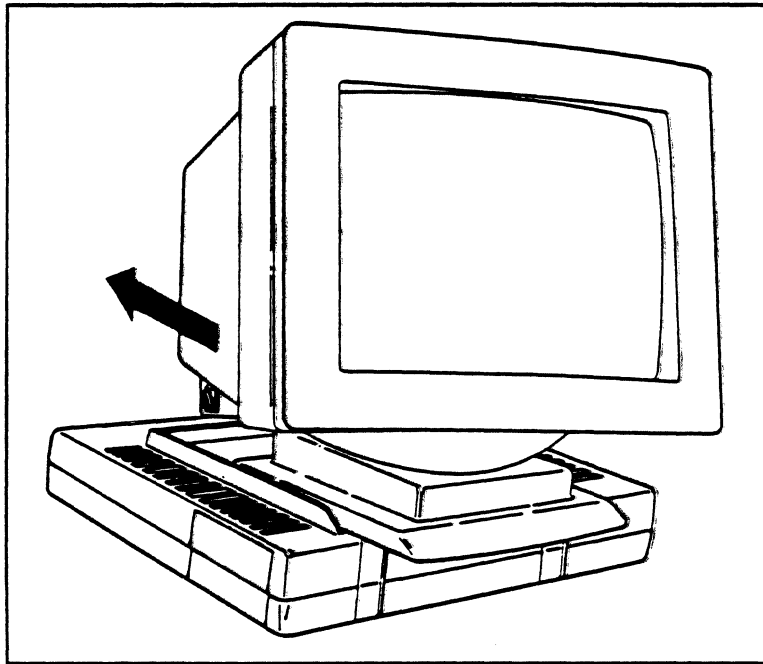


2 Check that the security keys are enclosed with the CRT. Write down the key number and save it in a safe place.

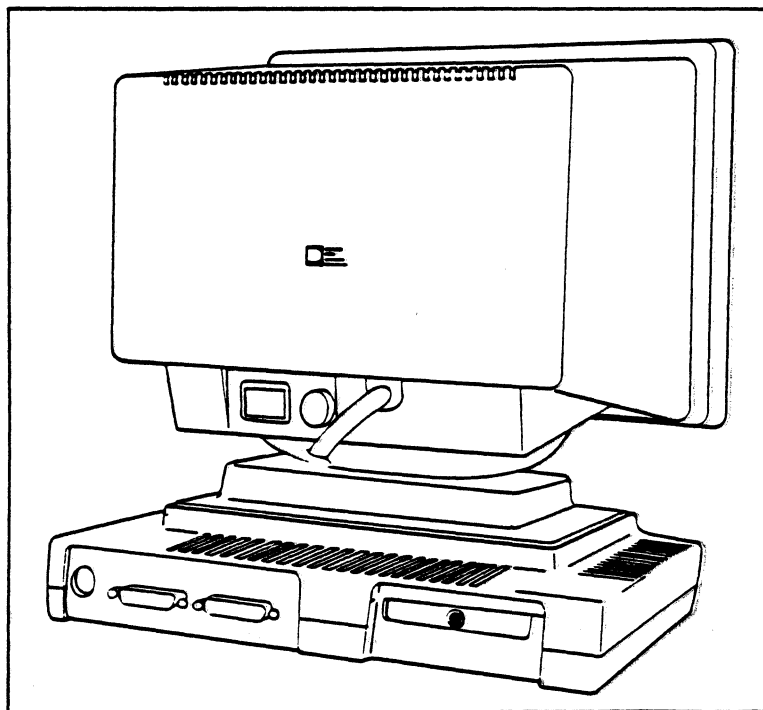
3 Remove the logic module from its carton and place it on the surface you will use as a workspace.

4 Open the keyboard package. The keyboard shipping package contains the keyboard and the plastic overlay for the command keys.

-
- 5** Slide the monitor base into the raised receptacle on the logic module.



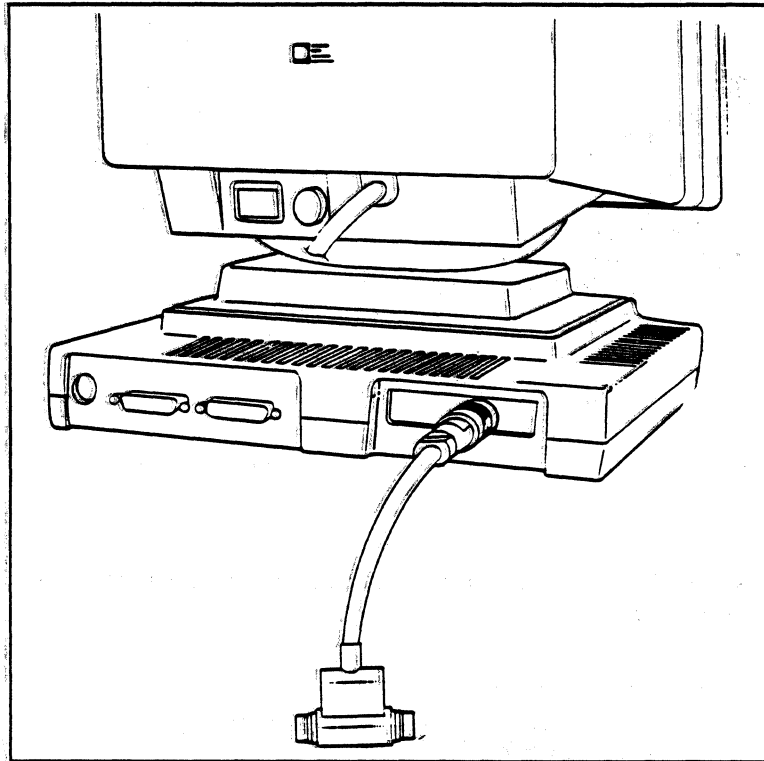
- 6** Plug the CRT cable into the logic module and then screw the connector in place. The CRT connector is at the left.



Unpacking and Installing

7 Plug the keyboard cable into the base of the CRT. The 5-pin keyboard connector is at the rear left.

8 Hold the Smart-T connector by the cord end (note that the shell of the connector slides up and down the connector about a quarter of an inch). Pull the shell back to expose the end of the connector.



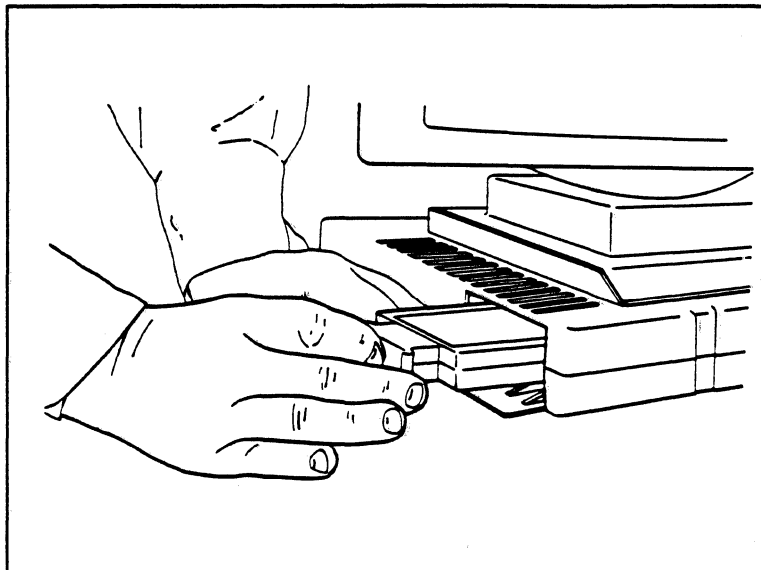
9 The Twinax socket on the Workstation has a key inside the right hand side. Align the slot in the connector plug with the key and push the connector all the way onto the socket and screw the shell onto the socket threads. If there is no cable attached to the "smart T" output, the output connector automatically terminates.

10 Attach the power cord to the rear of the CRT. Make sure the workstation is powered off. Before plugging the power cord into the wall outlet, be sure that the outlet is properly wired and grounded using a three-prong receptacle.

11 Your Workstation comes with three numbered labels. One of these labels should be applied to the back of the monitor, the bottom of the keyboard, and the bottom of the logic module for your service warranty to be valid.

Installing the Cartridge

- 1 Open the cartridge door on the left side of the logic module.

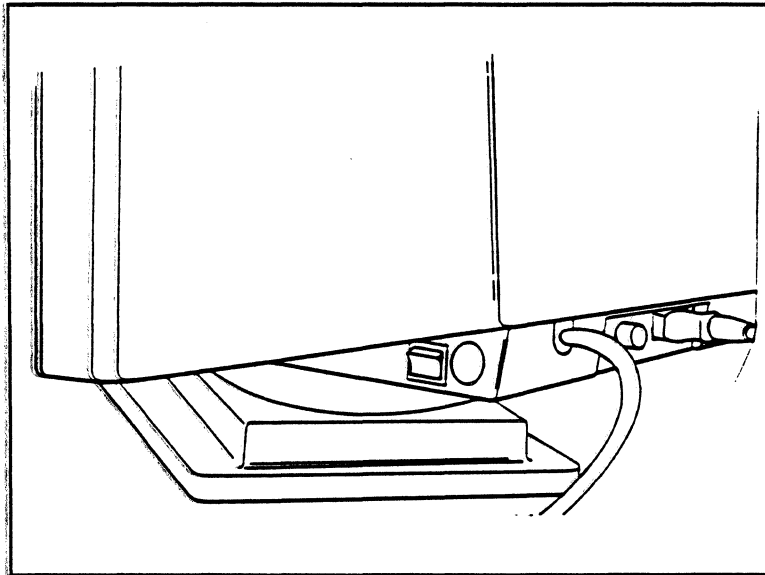


- 2 Slide the cartridge into the slot at the left side rear of the CRT base. Make sure that the cartridge label is facing up and that the cartridge is firmly seated in the slot.

CAUTION: Make sure the power is off before installing or removing the cartridge.

Initial Start-Up -- Workstation

1 Unlock the CRT with the security key in the keylock at the right rear of the monitor, hold down the space bar, and turn on the power. The Workstation takes about 8 seconds to warm up; make sure you hold the space bar down. If the message "NV" appears on the status line, press the Reset key. The Off-Line display will appear. If no display appears, turn the Workstation off and check all connections. Check that the CRT is unlocked (that the slot is in the horizontal position). Then turn the power on again to check for the Power On display.



2 The workstation device address, the language set, the terminal emulation (on the 122-key and 102-key keyboards), and the keyboard ID should be set before connecting to the host (with the 83-key keyboard you must set the device address). First, turn off the Workstation. Press down and hold the space bar on the keyboard, and turn on the power again. Hold the space bar down until the Off-Line display appears. (If the error 9013 is displayed, press the Error Reset key.) The Workstation will be in Off-Line mode.

3 With the 122-key and 102-key keyboards, select the terminal emulation to be used, press the Mode and E keys. With the 83-key keyboard the terminal emulation is automatically set to 5291-2. The following screen will be displayed:

SELECT TERMINAL TYPE

Select terminal emulations	
<0>	Exit
<1>	3196
<2>	5291-2

4 Press option 0 to exit the Terminal Emulation Selection. The Off-Line Display will appear again.

5 To set the channel address, language set or multinational character set, or keyboard ID, press the SetUp key with the 122-key keyboard, the Shift and SetUp keys with the 102-key keyboard, or the Error Reset and S keys on the 83-key keyboard. A blinking "S" will appear on the Status Line at the bottom of the screen. The device address number will be displayed as a number from 0 to 7, the language set will be displayed as 0-9 or A-C and the Multinational Character Set as a M. The keyboard ID will normally be displayed as two dashes, or 00 through 63 with the 122-key keyboard or 00 through 31 with the 102-key keyboard. There is no display for the 83-key keyboard.

6 The channel address (0 to 7) on the Status Line increases each time you press the Set Address key. Your System Operator will determine your channel address number (7 is not a valid address and cannot be selected by using this key). If the address displayed is not the address you want, you can change it according to the keyboard you are using:

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 24 Shift and F12 keys Shift and = keys

7 The keyboard ID number (- - and 00 to 63 on the 122-key keyboard and 00 to 31 on the 102-key keyboard) on the Status Line increases each time you press the Keyboard ID key. The 83-key keyboard does not require a keyboard ID. The normal and default setting is two dashes, unless your System Operator assigns another number. If the keyboard ID displayed is not the ID you want, you can change it according to the keyboard you are using:

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 23 Shift and F11 keys N/A

8 Language set values change as you press the Language Set key or key sequence.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 10 F10 key 0 key

Unpacking and Installing

Choose the language set from the chart below.

Language Set	Character Set	Message Language
0	US/Canadian	English
1	Belgian	English
2	French	French
3	French Canadian	French
4	German/Austrian	German
5	Italian	Italian
6	Norwegian/Danish	English
7	Spanish	Spanish
8	Spanish Speaking	Spanish
9	UK	English
A	Swedish/Finnish	Swedish
B	Brazilian	English
C	Portugese	English

9 The Multinational Character Set key enables the multinational character set. The selection of this set is indicated in the language field on the status line. When you choose the Multinational Character set it overrides any other language set choice but will not override the selected message language.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 22 Shift and F10 keys Shift and 0 keys

10 When completed, press the SetUp key (or Error Reset and S keys on the 83-key keyboard) again to exit the SetUp mode and power off the workstation or continue to the next section.

Off-Line SetUp for Printer Default Parameter

1 In order to set the default Print Format Parameters for the System Addressed Printer Capability, your Workstation must be off line and you can choose from the following selections:

Select	
<Alt Cancel>	Exit to ONLINE
<Setup>	Configure Terminal
<Alt Test>	Start Off Line Tests
<Mode Print>	Configure Printer
<Mode E>	Select Terminal Emulation

With the 83-key keyboard the choices on the Offline screen are accessed as follows:

Select	
<Err - C>	Exit to ONLINE
<Err - S>	Configure Terminal
<Err - T>	Start Off Line Tests
<Err - Print>	Configure Printer

2 Press the Mode and the Print keys (or the Error Reset and Print keys with the 83-key keyboard). The Printer Configuration Display appears as shown below:

PRINTER CONFIGURATION

Select printer configuration:	
<0> Exit	
<1> Line Spacing	6 LPI 8 LPI
<2> Font	Draft NLQ
<3> Character Spacing	10 CPI 12 CPI Compressed
<4> Override Host	On Off
<5> Character Set	0 1 2 3 4 5 6 7 8 9 A B C
<6> Emulation	5256-3 5224-2 5225-4
<7> Address	0 1 2 3 4 5 6 7
<8> Buffer	Large Small
<9> Select Attached Printer	

The Printer Configuration Display allows you to change the values for the line spacing, font, character spacing, and other options. The default settings currently in effect appear in reverse video on the Printer Configuration Display.

Unpacking and Installing

Initial Power-On Printer Defaults

Printer default settings can either be changed permanently through the Printer Configuration Display in the Off-Line SetUp mode or temporarily through the printer's operator control panel. Parameters set through the Printer Control screen are stored in the Workstation's memory. When the Workstation is turned off and on again, the Printer Control screen parameters will be the last ones used. The following parameters are preset for your printer:

Parameter	Setting
Line Spacing	6 Lines per Inch
Font	Draft
Character Spacing	10 CPI
Override Host	Off
Language Set	0 (US/Canadian English)
Emulation	IBM 5225-4
Address	7*
Buffer	Large

*If the Printer Device Address is 7 an error message is displayed if Mode Print is pressed while on line.

3 Repeatedly pressing an option number causes the select bar to move through the available choices for that option. Once the desired feature is highlighted, choose another option by pressing its corresponding number or press 0 to exit the Printer Configuration. The options are described below:

<u>Option</u>	<u>Function</u>
<0> Exit	Returns you to the Off-Line screen.
<1> Line Spacing	Select 6 LPI, 8 LPI or host selected LPI for the desired line spacing.
<2> Font	Select Draft or NLQ to change the character quality.
<3> Character Spacing	Select 10 CPI, 12 CPI or Compressed for the desired character spacing.
<4> Override Host	The printer's CPI can be designated as follows: <ul style="list-style-type: none">o Host Format Control: The CPI of the output will be set according to the information provided by the host.o User Format Control: The CPI will be based on the values specified in the options for Character Spacing discussed above.

-
- <5> Character Set** The printer's character set can be made to correspond to that of the terminal. See the Language chart on page 2-8 for valid values. Select a number from 0-9; A, B, C or M to choose another language set.
- <6> Emulation** Several IBM printers can be emulated. Select 5256, 5224 or 5225 for the desired printer emulation. Note: The host must be configured to recognize the same printer type.
- <7> Printer Device Address** Select a number (0-7) for the desired address. (7 disables the printer feature.)
- <8> Buffer** Printing can be performed using a print buffer of the same size as that of the IBM 5256 printer. A larger burst mode buffer can be used to achieve slightly faster printing.
- Select Large or Small for the desired buffer type.

If you press any keys other than those displayed on the Printer Configuration Display, the Invalid Setup Key error message (9013) will be displayed. To correct this error, simply press a valid key.

4 The last selection from the Printer Configuration screen allows you to select the attached printer. When you select 9 from the Printer Configuration screen you will see the following menu:

ATTACHED PRINTER SELECTION

<p>Select Attached Printer:</p> <p><0> Exit</p> <p><1> DDCC 651X</p> <p><2> Proprinter XL</p> <p><3> Epson FX - 286</p> <p><4> Basic ASCII</p>
--

Press the number corresponding to your printer type. Press 0 to return to the Printer Configuration screen.

5 To exit the Printer Configuration Display, press the 0 key. This will save the specified defaults and return you to the Off-Line Display.

Configuring the Workstation on the Host System

System/36

On System/36 systems, set the workstation emulation and address and perform an IPL with the workstation powered on. The system will automatically recognize the workstation. Consult the IBM manual, "Operating Your Computer" SC21-9026 for directions on performing an IPL.

The chart below shows the device code and the keyboard type for 3196 and 5291 emulations for reference, if the CNFIGSSP procedure is used.

Device Type	3196		5291
	No. of Keys on Keyboard	102	122
Device Code	15	15	10
Keyboard Type	Enhanced	5250 Style	5250 Style

The 83-key keyboard emulates a 5291 only.

System/38

When the workstation is configured on a System/38, consult the IBM System/38 Guide to Program Product Installation and Device Configuration, GC21-7775.

The 3496 Workstation can be configured as a 3196 or 5291 depending on the terminal emulation selected. Reference the chart below to determine the device type, model, and wsckbd parameters.

Device Type	3196				5291
	No. of Keys on Keyboard	102*		122	
Screen Color	Amber	Green	Amber	Green	n/a
Model	B2	A2	B1	A1	n/a
WSCKBD	GUSB	GUSB	PUSB	PUSB	TUSB

* When installing a 3496 Workstation configuration as a 3196 with a 102-key keyboard locally on a System/38, the workstation must be configured to a workstation controller-extended (WSCE).
The 83-key keyboard emulates a 5291 only.

Configuring the Workstation on the Host System

System/36

On System/36 systems, set the workstation emulation and run the CONFIG procedure.

System/38

When the workstation is configured as a 5292-01, consult the IBM System/38 Guide to Program Product Installation and Device Configuration, GC21-7775.

Set the DEVTYPE for 3196 or 5291.

Set the MODEL and the WSCKBD according to the chart below:

	102	122
Green	A-1	A-2
Amber	B-1	B-2
WSCKBD	GUSB	PUSB

For 5291 emulation, set WSCKBD to TUSB.

SetUp



SetUp

There are a number of operational characteristics, such as the brightness of the display or the cursor type, that you can adjust according to your preference. These adjustments are made by entering the Setup mode. Setup can be entered either on-line (after the power-on diagnostics are completed and the Workstation has communicated with the host) or off-line. There are a few operational characteristics that can only be changed off-line.

- To enter Setup mode off-line, press the space bar and hold it down while turning on the Workstation. Hold the key down until the Off-Line display appears. Then press the Setup key with the 122-key keyboard, the Shift and Setup keys with the 102-key keyboard, or the Error Reset and S keys with the 83-key keyboard.
- To enter Setup mode on-line, press the Setup key with the 122-key keyboard, the Shift and Setup keys with the 102-key keyboard, or the Error Reset and S keys with the 83-key keyboard.
- Follow the instructions below for setting operational characteristics.
- To store your new settings and exit the Setup mode, press the Setup key or key sequence a second time.

An explanation of each of the options on the Setup menu is provided below.

An "S" in the Status Line indicates that you are in Setup mode. Once in Setup mode, all operational characteristics are changed by selecting the appropriate Command keys. Some options, such as display intensity or contrast, are adjustable over a wide range; their setup keys are auto-repeat keys. The keyboard clicker will click as you hold these keys down. More than one operational characteristic may be changed while in the Setup mode.

Keys that have no function in Setup mode will cause the error alarm to beep and an error number to be displayed on the status line. These keys have no titles, only a number designation. To clear the error indication and continue in Setup, press a valid Command key. The template provided with the Workstation shows you the functions of the Command keys.

SetUp

Display Intensity

The intensity of the screen display is adjustable over a range of 16 steps. Once you reach the top limit of this feature the next choice will be the bottom again. You can reverse the order of the option by pressing the Alt key and Command key 1 simultaneously. This key is an auto-repeat key.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 1 F1 key 1 key

Display Contrast

The contrast of the screen display is adjustable over a range of 8 steps. Once you reach the top choice of this feature the next choice will be the bottom again. You can reverse the order of the option by pressing the Alt key and Command key 2 simultaneously. This key is an auto-repeat key.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 2 F2 key 2 key

Auto-Dim

The auto-dim feature protects your CRT screen from phosphor burn. When auto-dim is active, the screen automatically goes blank if there is no keyboard input or host system command input for 10 minutes. "DIM" appears in the Status Line to indicate that the screen has auto-dimmed. The display returns to normal at the first keystroke (use Reset to restore the display). The dim indicator is enabled during SetUp. This key is an auto-repeat key.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 3 F3 key 3 key

Reverse Image

The image on the display screen can be either green (or amber) characters on a dark background or reverse image, that is, dark letters on a light background.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 4 F4 key 4 key

Alarm Duration

The duration of the alarm can be adjusted between .5 second, 1 second, or 1.5 second. The alarm sounds for the selected duration each time the key is pressed. The power on default is 1 second.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 5 F5 key 5 key

Keyboard Clicker On/Off

The keyboard clicker can be turned off entirely.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 6 F6 key 6 key

Blink/Normal Cursor

The display cursor can be either blinking or normal.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 7 F7 key 7 key

SetUp

Alternate Cursor

The cursor type can be either an underline or a solid block.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 8 F8 key 8 key

Extended Display

When extended display is activated, formatting is shown in hexadecimal code.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 9 F9 key 9 key

Language Character Set

The terminal character option selects the character set to be displayed. This option can only be activated in the Off-Line mode. A value of 0 stands for US/Canadian English. 3 stands for French Canadian. (See the section 2 for a listing of all language choices). This key is an auto-repeat key.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 10 F10 key 0 key

Cursor Location Indicator

The location of the cursor on the screen (row, column) can be displayed in the lower left hand corner, or it can be turned off.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 11 F11 key - key

Multinational Character Set The multinational character set option reassigns certain keys to display different characters. The character set can only be activated in the Off-Line mode. An "M" on the Status Line indicates that the multinational character set is chosen and active.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 22 Shift and F10 keys Shift and 0 keys

Keyboard ID

Keyboard ID can only be set off line. The keyboard ID is displayed as either two dashes (- -) or a two-digit number (00 to 63) on the Status Line. The normal setting for the 122-key is --, with the 102-key the normal setting is 00, and with the 83-key keyboard there is no keyboard ID. This key is an auto-repeat key; the number will increment as you hold the key down.

Keyboard type	Key sequence
122-key 102-key 83-key	Command key 23 Shift and F11 N/A

Set Address

Set address should be set before connecting to the host computer. The set address is determined by the System Operator, and can only be set off line. The set address (0 to 6) is displayed on the Status Line. This key is an auto-repeat key; the number will increment as you hold down the key.

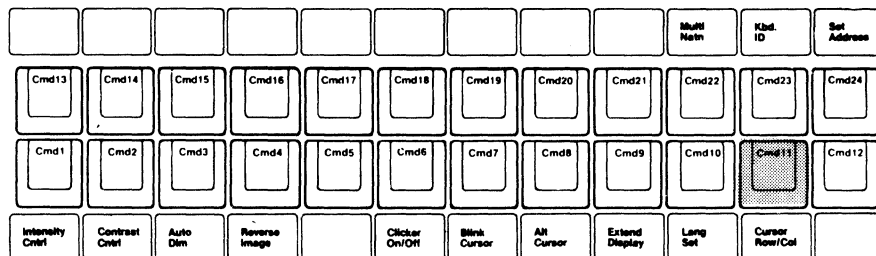
Keyboard type	Key sequence
122-key 102-key 83-key	Command key 24 Shift and F12 Shift and =

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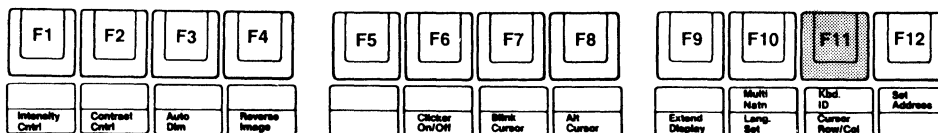
Cursor Location Indicator

The location of the cursor on the screen (row, column) can be displayed in the lower left hand corner, or it can be turned off. Use Command key 11 to change the cursor location indicator option from its previous setting.

For 122 key keyboard



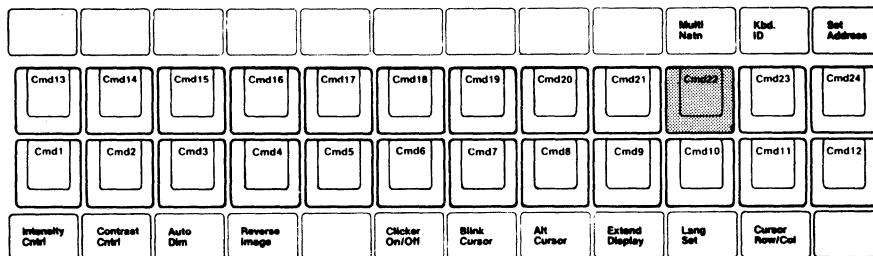
For 102 key keyboard



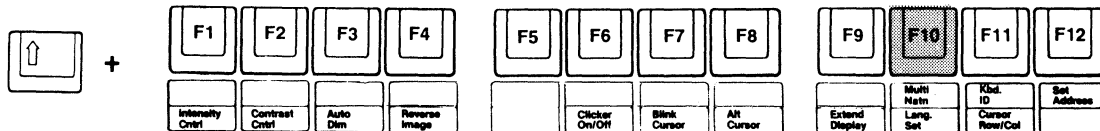
Multinational Character Set

The multinational character set option reassigns certain keys to display different characters. The character set can only be activated in the Off-Line mode. Press Command key 22 to change the character set from its previous value; an "M" on the Status Line indicates that the multinational character set is chosen and active.

For 122 key keyboard



For 102 key keyboard

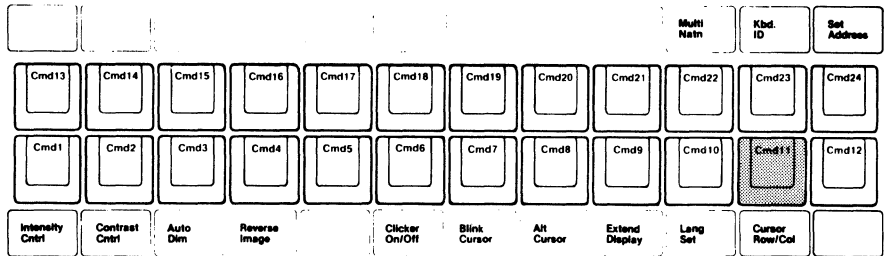


SetUp

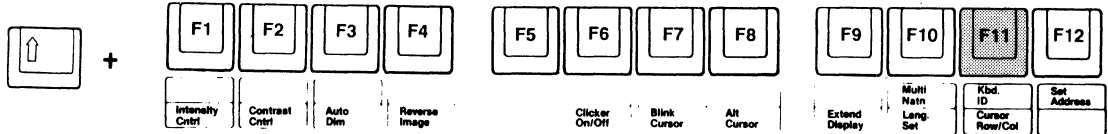
Keyboard ID

Keyboard ID can only be set off line. The keyboard ID is displayed as either two dashes (- -) or a two-digit number (00 to 63) on the Status Line. The normal setting is two dashes, unless your System Operator assigns a number. Press Command key 23 to change the keyboard ID. This key is an auto-repeat key.

For 122 key keyboard



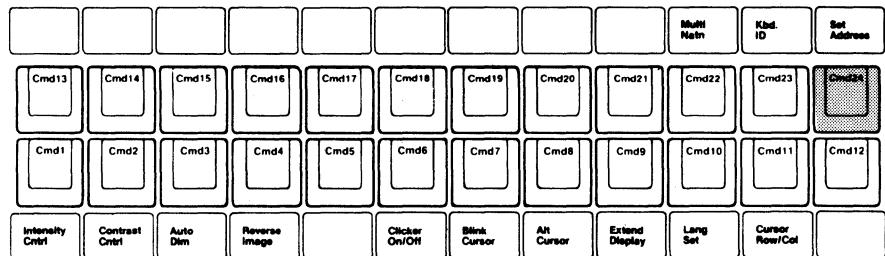
For 102 key keyboard



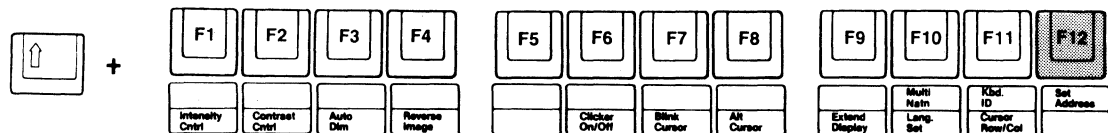
Set Address

Set address should be set before connecting to the host computer. The set address is determined by the System Operator, and can only be set off line. The set address (0 to 6) is displayed on the Status Line. Press Command key 24 to change the channel address. This key is an auto-repeat key; the number will increment as you hold down the key.

For 122 key keyboard



For 102 key keyboard

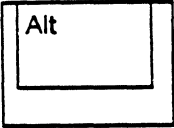
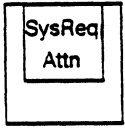
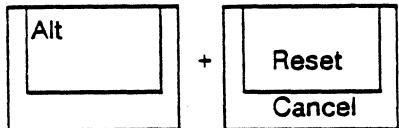
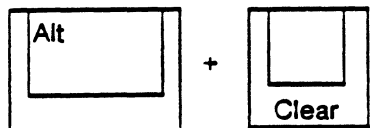
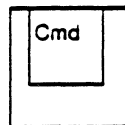


Control Keys

Control Key Functions for the 122-key Keyboard

When you press a control key, the Workstation performs a specific operation. Pressing a control key does not enter a character on the screen. The control keys and their functions are described in the table below. Auto-repeat keys are marked with an asterisk; these keys automatically repeat when you hold them down.

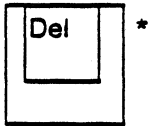
The Alt key functions similarly to the Shift key. To select operations labeled on the front of the keys, hold down the Alt key and press the appropriate key.

Key	Function/Effect
	<p>Alternate</p> <p>The Alternate key initiates functions printed on the front of the keys. Alt must be pressed and held while the key for the desired function is pressed.</p>
	<p>Attention</p> <p>Used to temporarily stop the Workstation's current activity and select a new job activity.</p>
	<p>Cancel</p> <p>Used to exit the Off-Line mode.</p>
	<p>Clear</p> <p>Blanks all information in the data screen, if the program permits.</p>
	<p>Command</p> <p>Used to access the Command key functions.</p>

Control Key Functions

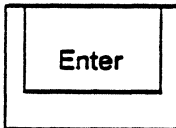
Key

Function/Effect



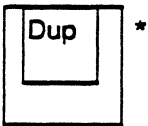
Delete

Deletes the character at the cursor. All characters in the same field move to the left.



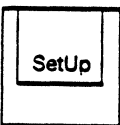
Display Next Record/Enter Data

Displays the next record on the screen (when application is so programmed). Data already entered is sent to the host.



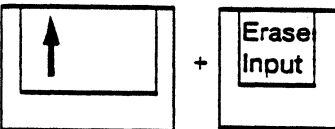
Duplicate Record

Duplicates the information in the previous record into the field where the cursor is positioned. A duplicate character fills the field to indicate successful duplication. (Some fields cannot be duplicated; an error message will be displayed.)



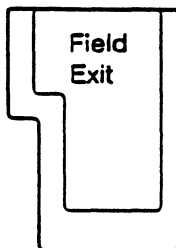
Enter the SetUp Mode

Allows operating characteristics to be changed, in On-Line or Off-Line modes. After changing parameters, press the SetUp key again to enter the changes. See the section on SetUp.



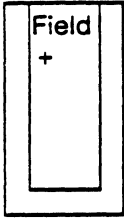
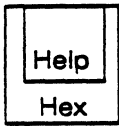
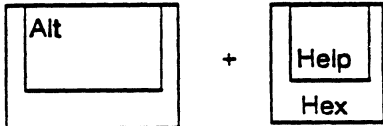
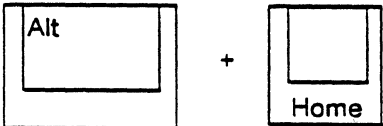
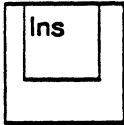
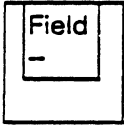
Erase Input

Erases information from all input fields and returns cursor to Home position.



Exit Any Data Field

Moves the cursor to the first position of the next field.

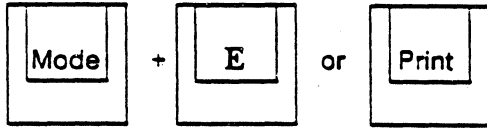
Key	Function/Effect
	<p>Exit Data Field</p> <p>Fills the rest of a data field with blanks and moves the cursor to the next data field. In right-adjust fields, data is aligned to the right. In assigned numeric fields, a blank fills the last position.</p>
	<p>Help</p> <p>Information about an error condition or an operation of the current application (when application is so programmed) is displayed. To continue entering data, press Reset.</p>
	<p>Hex Key</p> <p>Used to enter a character's hexadecimal code. After Alt and Hex are pressed, the next two numeric characters entered are treated as the hexadecimal value of a displayable character (which may not appear on the keyboard). The character will be displayed at the cursor position.</p>
	<p>Home</p> <p>Moves the cursor to the Home position or to the first input position on the screen.</p>
	<p>Insert</p> <p>Begins insert mode. The next character keyed is inserted at the cursor. All characters in the same field move to the right. "INS" appears in the Status Line.</p>
	<p>Insert Minus Sign in Numeric Field</p> <p>In assigned numeric fields, places a minus sign in the last position. If the cursor is not positioned in an assigned numeric field, a letter fills the last position.</p>

Control Key Functions

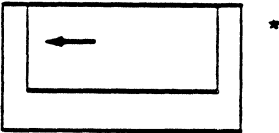
Key

Function/Effect

Mode Key

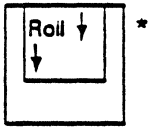


When used with the E key, the Mode key causes the Select Emulations screen to be displayed. When on-line, the Mode key along with the Print key accesses the Printer Control screen.



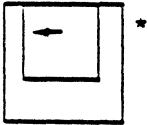
Move Cursor Back One Character

Moves the cursor back one character.



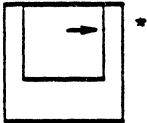
Move Cursor Down

Moves the cursor down one line or wraps around to the top of the page when pressed with the cursor at the bottom of the page.



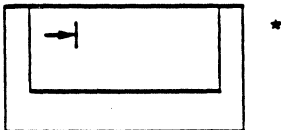
Move Cursor Left

Moves the cursor to the left, or wraps around to the previous line when the cursor is at the start of a line. With the Shift key, moves the cursor at 3 times the regular speed.



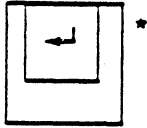
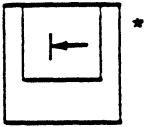
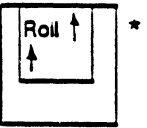
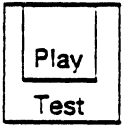
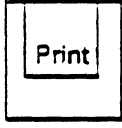
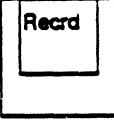
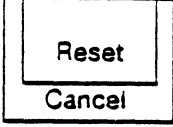
Move Cursor Right

Moves the cursor to the right, or wraps around to the next line when the cursor is at the end of a line. With the Shift key, moves the cursor at 3 times the regular speed.



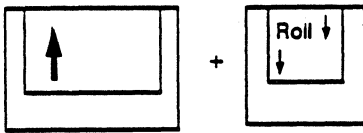
Move Cursor to Next Field

Moves the cursor to the first position of the next input field to the right.

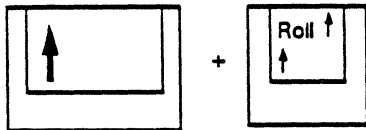
Key	Function/Effect
	Move Cursor to Next Line Moves the cursor to the first position of the next line with an input field.
	Move Cursor to Previous Field Moves the cursor to the previous first position of an input field.
	Move Cursor Up Moves the cursor up one line or to the top of the page when the cursor is at the bottom of the page.
	Playback Recorded Keystrokes Starts Playback mode. See the section on Record/Playback keys.
	Print The information in the data area of the screen is sent to the assigned printer.
	Record Keystrokes Starts and ends record mode. See the section on Record/Playback keys.
	Reset When an error message is displayed, the Reset key unlocks the keyboard.

Control Key Functions

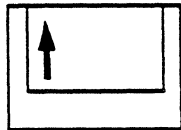
Key**Function/Effect**

**Roll Screen Down**

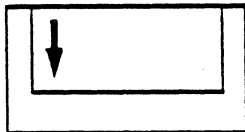
Displays the next screen.

**Roll Screen Up**

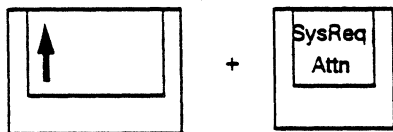
Displays the previous screen.

**Shift**

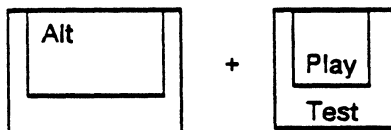
Accesses the upper case characters.

**Shift Lock**

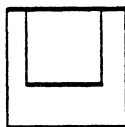
Locks the shift key on. Shift Lock is released when the Shift key is pressed.

**System Request**

Used to notify the host system that the Workstation is selecting a new activity or a new program.

**Test**

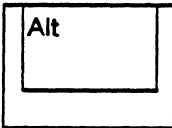
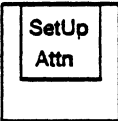
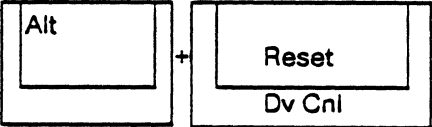
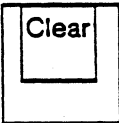
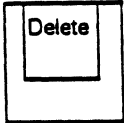
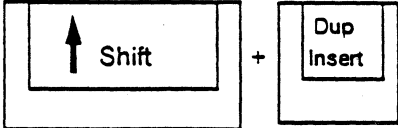
Used to enter diagnostic testing. See the section on Diagnostics.

**Text Assist**

This blank key, located to the right of the the Dup key, is used to toggle the text assist character display.

Control Key Functions for the 102 key Keyboard

The control keys and their functions are described in the table below. Pressing a control key does not enter a character on the screen. Auto-repeat keys are marked with an asterisk; these keys automatically repeat when you hold them down. The Alt key functions similarly to the Shift key. To select operations labeled on the front of the keys, hold down Alt and press the appropriate key.

Key	Function/Effect
	<p>Alternate</p> <p>The Alternate key initiates functions printed on the front of the keys. Alt must be pressed and held while the key for the desired function is pressed.</p>
	<p>Attention</p> <p>Used to temporarily stop the Workstation's current activity and select a new job activity.</p>
	<p>Cancel</p> <p>Used to exit the Off-Line mode.</p>
	<p>Clear</p> <p>Blanks all information in the data screen, if the program permits.</p>
	<p>Delete</p> <p>Deletes the character at the cursor. All characters in the same field move to the left.</p>
	<p>Duplicate Record</p> <p>* Duplicates the information in the previous record into the field where the cursor is positioned. The field is filled with duplicate characters to indicate that duplication has been executed. (Some fields cannot be duplicated; an error message will be displayed.)</p>

Control Key Functions

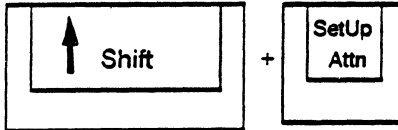
Key

Function/Effect



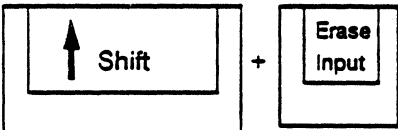
Enter Data

Sends the data entered on the screen to the host system.



Enter the SetUp Mode

Allows operating characteristics to be changed, in On-Line or Off-Line modes. After changing parameters, press the SetUp key again to enter the changes. See the section on SetUp.



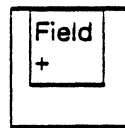
Erase Input

Erases information from all input fields and returns cursor to Home position.



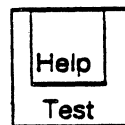
Exit Any Data Field

Moves the cursor to the first position of the next field.



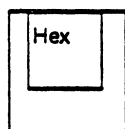
Exit Data Field

Fills the rest of a data field with blanks and moves the cursor to the next data field. In right-adjust fields, data is aligned to the right. In assigned numeric fields, a blank fills the last position.



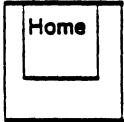
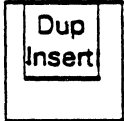
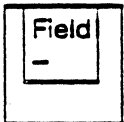
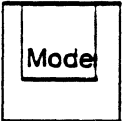
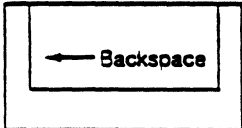
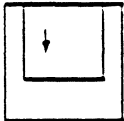
Help

Information about an error condition or an operation of the current application (when application is so programmed) is displayed. To continue entering data, press Reset.



Hex Key

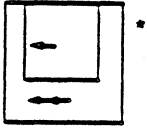
Used to enter a character's hexadecimal code. After Alt and Hex are pressed, the next two numeric characters entered are treated as the hexadecimal value of a displayable character (which may not appear on the keyboard). The character will be displayed at the cursor position.

Key	Function/Effect
	<p>Home</p> <p>Moves the cursor to the Home position or to the first input position on the screen.</p>
	<p>Insert</p> <p>Begins insert mode. The next character keyed is inserted at the cursor. All characters in the same field move to the right. "INS" appears in the Status Line.</p>
	<p>Insert Minus Sign in Numeric Field</p> <p>In assigned numeric fields, places a minus sign in the last position. If the cursor is not positioned in an assigned numeric field, a letter fills the last position.</p>
	<p>Mode</p> <p>When used with the E key, the Mode key causes the Select Emulations screen to be displayed. When on-line, the Mode key along with the Print key accesses the Printer Control screen.</p>
	<p>Move Cursor Back One Character</p> <p>Moves the cursor back one character.</p>
	<p>Move Cursor Down</p> <p>Moves the cursor down one line.</p>

Control Key Functions

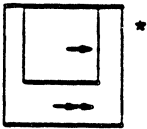
Key

Function/Effect



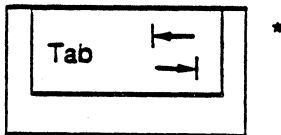
Move Cursor Left

Moves the cursor to the left, or wraps around to the previous line when the cursor is at the start of a line. With the Shift key, moves the cursor at 3 times the regular speed.



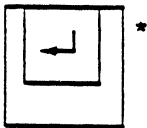
Move Cursor Right

Moves the cursor to the right, or wraps around to the next line when the cursor is at the end of a line. With the Shift key, moves the cursor at 3 times the regular speed.



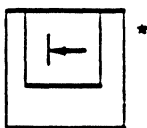
Move Cursor to Next Field

Moves the cursor to the first position of the next input field to the right.



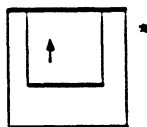
Move Cursor to Next Line

Moves the cursor to the first position of the next line with an input field.



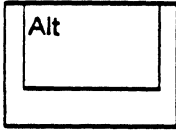
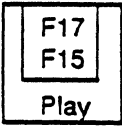
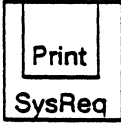
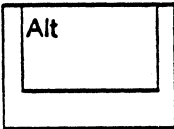
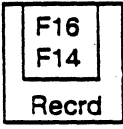
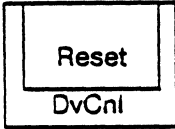
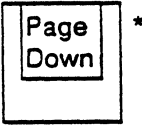
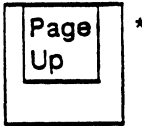
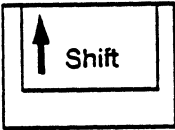
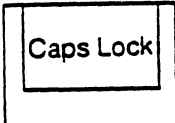
Move Cursor to Previous Field

Moves the cursor to the previous first position of an input field.



Move Cursor Up

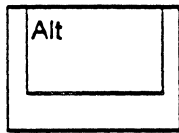
Moves the cursor up one line.

Key	Function/Effect
 + 	<p>Playback Recorded Keys</p> <p>Starts the Playback mode. See the section on Record/Playback keys.</p>
	<p>Print</p> <p>The information in the data area of the screen is sent to the assigned printer.</p>
 + 	<p>Record Keystrokes</p> <p>Starts and ends record mode. See the section on Record/Playback keys.</p>
	<p>Reset</p> <p>When an error message is displayed, the Reset key unlocks the keyboard. Also ends an insert.</p>
	<p>Roll Screen Down</p> <p>Displays the next screen.</p>
	<p>Roll Screen Up</p> <p>Displays the previous screen.</p>
	<p>Shift</p> <p>Accesses the upper case characters.</p>
	<p>Caps Lock</p> <p>Locks the shift key on. Caps Lock is released when the Shift key is pressed again.</p>

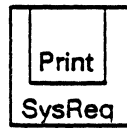
Control Key Functions

Key

Function/Effect

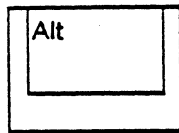


+

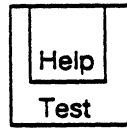


System Request

Used to notify the host system that the Workstation is selecting a new activity or a new program.

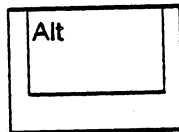


+

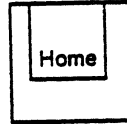


Test

Used to enter diagnostic testing. See the section on Diagnostics.



+

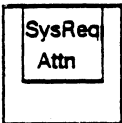
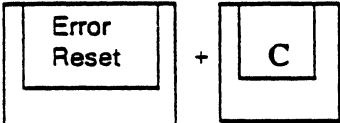
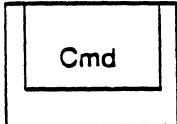
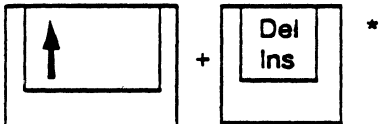
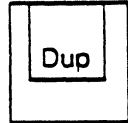


Text Assist

This key is used to toggle the text assist character display when the application program permits.

Control Key Functions for the 83-key Keyboard

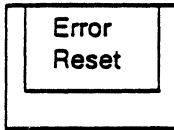
When you press a control key or key sequence, the Workstation performs a specific operation. Pressing a control key does not enter a character on the screen. The control keys and their functions are described in the table below. Auto-repeat keys are marked with an asterisk; these keys automatically repeat when you hold them down. The Error Reset key functions similarly to the Shift key. To select operations labeled on the front of the keys, hold down the Error Reset key and press the appropriate key.

Key	Function/Effect
	Attention Used to temporarily stop the Workstation's current activity and select a new job activity.
	Cancel Used to exit the Off-Line mode.
	Command Used to access the Command key functions.
	Delete Deletes the character at the cursor. All characters in the same field move to the left.
	Duplicate Record Duplicates the information in the previous record into the field where the cursor is positioned. The field is filled with duplicate characters to indicate that duplication has been executed. (Some fields cannot be duplicated; an error message will be displayed.)

Control Key Functions

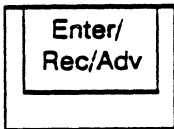
Key

Function/Effect



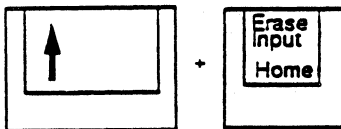
End Insert

Ends the insert mode. The next character keyed will replace the character at the cursor.



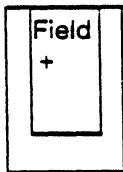
Enter Data

Sends the data entered on the screen to the host system.



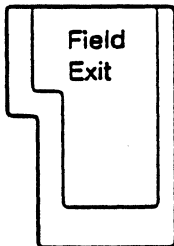
Erase Input

Erases information from all input fields and returns cursor to Home position.



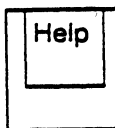
Exit Any Data Field

Moves the cursor to the first position of the next field.



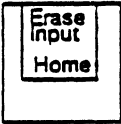
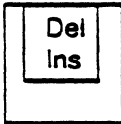
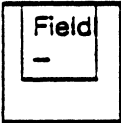
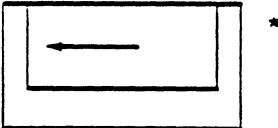
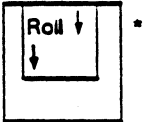
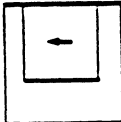
Exit Data Field

Fills the rest of a data field with blanks and moves the cursor to the next data field. In right-adjust fields, data is aligned to the right. In assigned numeric fields, a blank fills the last position.



Help

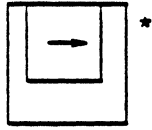
Information about an error condition or an operation of the current application (when application is so programmed) is displayed. To continue entering data, press Reset.

Key	Function/Effect
	Home Returns the cursor to the Home position.
	Insert Begins insert mode. The next character keyed is inserted at the cursor. All characters in the same field move to the right. "INS" appears in the Status Line.
	Insert Minus Sign in Numeric Field In assigned numeric fields, places a minus sign in the last position. If the cursor is not positioned in an assigned numeric field, a letter fills the last position.
	Move Cursor Back One Character Moves the cursor back one character.
	Move Cursor Down Moves the cursor down one line or wraps around to the top of the page when pressed with the cursor at the bottom of the page.
	Move Cursor Left Moves the cursor to the left, or wraps around to the previous line when the cursor is at the start of a line. When used with the Shift key, moves the cursor at 3 times the normal speed.

Control Key Functions

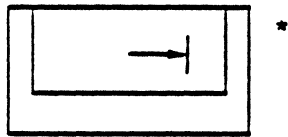
Key

Function/Effect



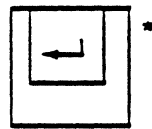
Move Cursor Right

Moves the cursor to the right, or wraps around to the next line when the cursor is at the end of a line. When used with the Shift key, moves the cursor at 3 times the normal speed.



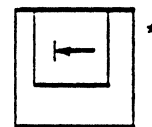
Move Cursor to Next Field

Moves the cursor to the first position of the next input field to the right.



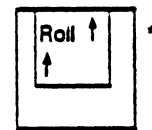
Move Cursor to Next Line

Moves the cursor to the first position of the next line with an input field.



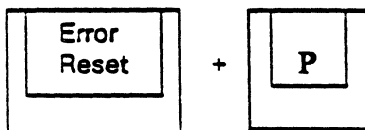
Move Cursor to Previous Field

Moves the cursor to the previous first position of an input field.



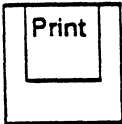
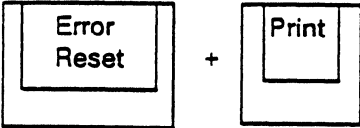
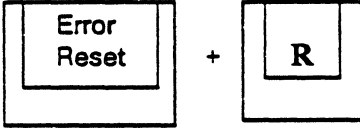
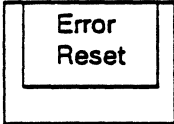
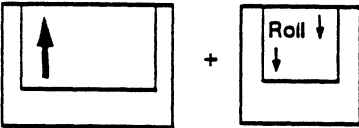
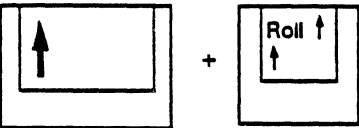
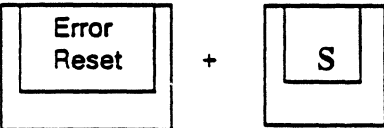
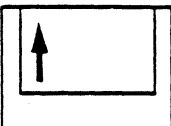
Move Cursor Up

Moves the cursor up one line or to the top of the page when the cursor is at the bottom of the page.



Playback

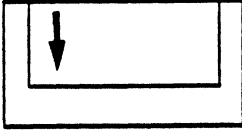
Starts Playback mode. See the section on Record/Playback keys.

Key	Function/Effect
	Print The information in the data area of the screen is sent to the assigned printer.
	Printer Control Accesses the printer control screen of the printer.
	Record Keystrokes Starts and ends record mode. See the section on Record/Playback keys.
	Error Reset When an error message is displayed, the Error Reset key unlocks the keyboard.
	Roll Screen Down Displays the next screen.
	Roll Screen Up Displays the previous screen.
	SetUp In the On-Line mode, displays the menu for setting operating characteristics.
	Shift Accesses the upper case characters.

Control Key Functions

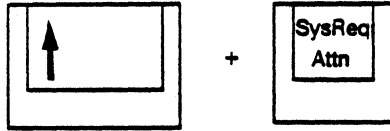
Key

Function/Effect



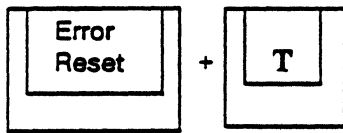
Shift Lock

Locks the shift key on. Shift Lock is released when the Shift key is pressed.



System Request

Used to notify the host system that the Workstation is selecting a new activity or a new program.



Test

Used to access On-Line tests.

Record/Playback Keys

Record/Playback Keys

The Record/Playback keys give you the capability of storing a series of keystrokes and later inputting them to the display with one keystroke. When you play back keystrokes, the Workstation treats them as though you were entering them through the keyboard.

The 24 Command keys are used as the "addresses" of the recorded keystrokes. Any Playback key can store up to 1024 keys; the total for all 24 keys cannot exceed 1024. The Workstation will keep track of available space for you.

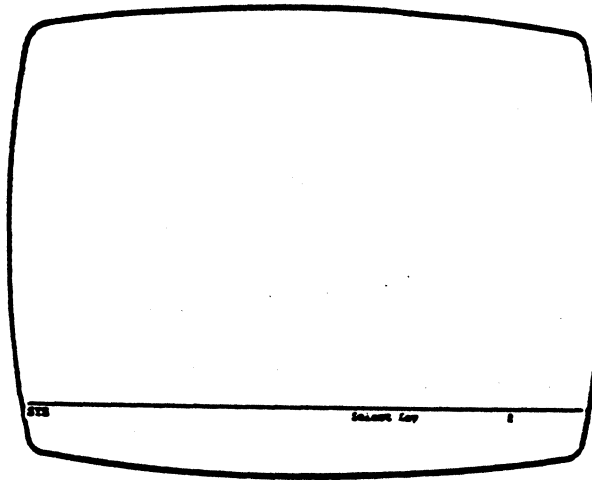
Recording a playback key may only be done on-line.

Record

- 1** To begin recording keystrokes, use the proper key sequence for your keyboard:

Keyboard type	Key sequence
122-key 102-key →83-key	Record key Alt and Rec keys Error Reset and R keys

A blinking "R" appears in the Status Line to indicate that the Workstation is in the Record mode. At the bottom of the screen, the message "SELECT KEY" appears.

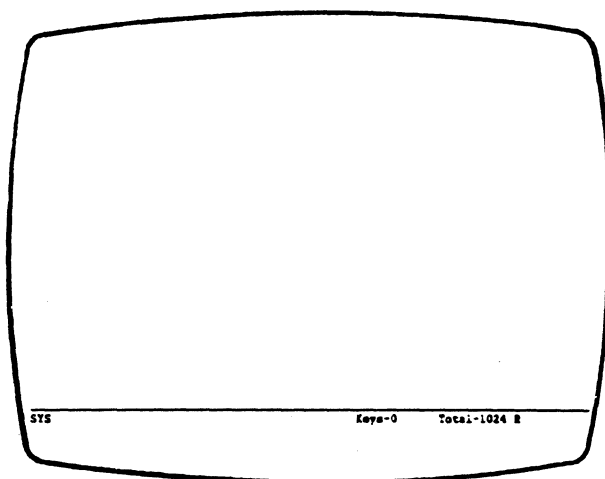


- 2** Select one of the 24 Command keys to "address" the recorded keystrokes.

Keyboard type	Key sequence
122-key 102-key 83-key	24 Command keys in the cluster at the top of the keyboard. Function keys for Command keys 1 - 12 and the Shift key and the function keys for Command keys 13 - 24. Numbered keys along top row for Command keys 1 - 13 and Shift and numbered keys for Command keys 13 - 24.

2 Select one of the 24 Command keys to "address" the recorded keystrokes. On the 122 key keyboard, use one of the 24 Command keys in the cluster at the top of the keyboard. With the 102 key keyboard, use the function keys for Command keys 1 through 12 and the Shift key and the function keys for Command keys 13 through 24.

The "R" on the Status Line will stop blinking. The number of keystrokes recorded for that Playback key and the available recording space in memory (0000 to 1024) are displayed on the message line.



3 Enter the keystrokes you want to save. Note: Any keystrokes except Play, SetUp, Record, or Mode can be used. Record/Playback keys must be used independently and cannot be nested together. Note: Only one Enter keystroke can be used in a recorded sequence.

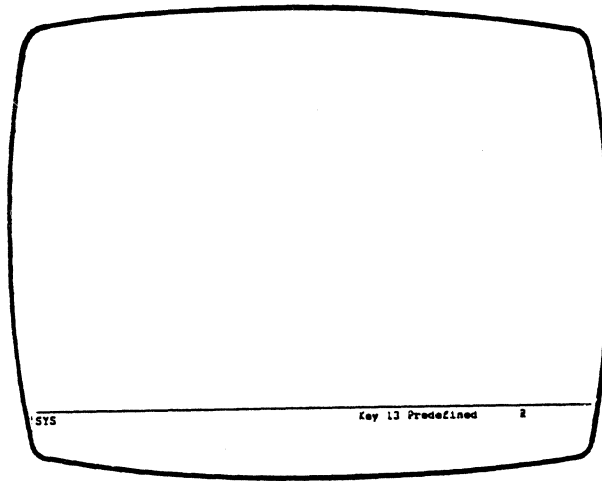
The characters are displayed in the data area of the screen. The available buffer space displayed for the key and for the Record/Playback functions decreases as you type until the total remaining counter reaches zero. If the available space in memory is filled, an error tone sounds.

4 To save the keystrokes, press the Record key. With the 102 key keyboard press the Alt and Rec keys. The Workstation saves the keystrokes in non-volatile memory and exits the Record mode.

Record/Playback Keys

Previously Assigned Keys

If the Command key you choose as the playback address has been previously assigned a keystroke sequence, the Workstation beeps and displays the error message:



- To leave the contents intact and end the Record process, press the Record key again. With the 102 key keyboard press the Alt and Rec keys.
- To write over the contents, type the keystrokes you wish to store. The new keystrokes will overwrite all of the previously recorded keystrokes.
- To erase the contents of the key entirely, press the Alt and Cancel keys.

Typing Errors

Use the backspace or cursor keys to correct the mistakes. These keystrokes will be recorded.

Erasing a Single Command Key

If you wish to erase a single command key sequence, enter the Record mode, select the key to be erased, and press the Alt and Cancel keys. The Workstation will automatically exit the Record mode.

Erasing All Playback Keys

If you wish to clear all information stored in all 24 playback keys while in the Record mode, press the Alt and Erase Input keys. The available space in memory will return to 1024, and all information previously recorded will be erased.

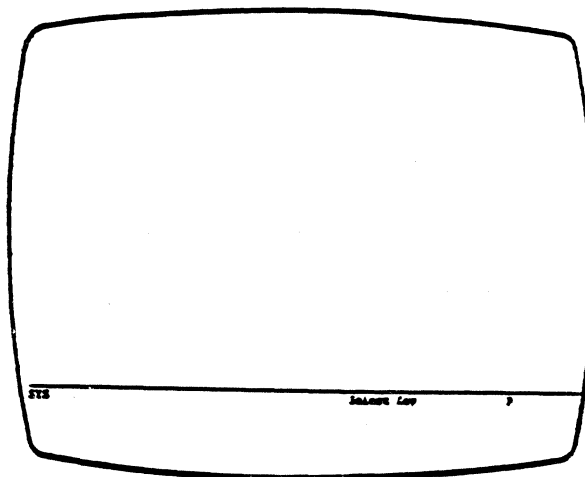
Playback

1 To play back a previously recorded keystroke sequence, move the cursor to the location on the screen where you want the stored information entered.

2 Press the Play key(s).

Keyboard type	Key sequence
122-key 102-key 83-key	Play key Alt and Play keys Error Reset and P keys

A blinking "P" appears in the Status Line to indicate that the Workstation is in the Playback mode. At the bottom of the screen, the message "SELECT KEY" appears. (If you decide not to play back a recorded sequence, press the Play key again.)



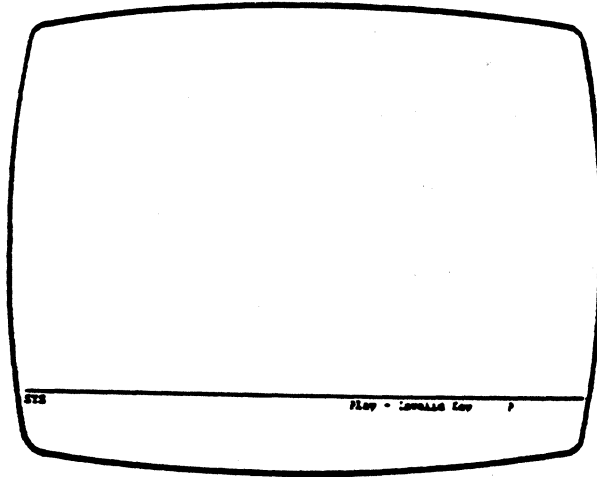
3 Press one of the 24 Command keys that you have previously assigned as an address for a keystroke sequence.

The "P" on the status line stops blinking while the previously recorded keystrokes are sent to the host. Once the host receives these keystrokes, the "P" is removed from the status line and Playback mode is exited.

Record/Playback Keys

Invalid Playback Keys

If you press any key other than a Command key or the Reset key, or if you press a Command key that has no recorded keystrokes, an error tone will sound and either the "INVALID KEY" message or the "UNRECORDED KEY" message will be displayed.



- o To play back a recorded sequence, press a valid Command key.
- o To cancel the Playback mode, press the Play or Reset key.

Note: If the "INPUT INHIBITED" message occurs during a playback sequence, the data will not be input. The playback will automatically continue after the "INPUT INHIBITED" message clears.

Fault Isolation Procedures

Fault Isolation Procedures

Your Workstation has six replaceable modules: the keyboard, the CRT display, the logic module, the "smart T" connector, the cartridge, and the power cord. This problem solving guide will help you to isolate the problem.

To begin problem-solving, first make sure that the Workstation is unlocked by turning the security key clockwise. Then determine when the problem appeared, and start at either number 1, 2, or 3 below. If you're not sure when the problem appeared, start at number 1.

If you have any problems following these procedures, call DDCC Marketing Support for assistance.

When Did the Problem Occur?

1. PROBLEM OCCURRED BEFORE SIGN-ON

Is there an error code or an error message displayed on the screen?

Yes Go to Pathway B.

No Go to Pathway A.

2. PROBLEM OCCURRED AT SIGN-ON OR AFTER SIGN-ON

Go to Pathway B.

3. INTERMITTENT PROBLEMS

Is there a problem with the display?

Yes Go to Pathway B.

No Go to Pathway C.

4. PROBLEM OCCURRED WHEN ATTEMPTING TO PRINT

Go to Pathway D.

Pathway A

In this section, you will start diagnosing the problem by looking at the red and green lights on the logic module. The base is vented on the right side at the rear, and the logic module lights are visible through these vents. Position the Workstation so that you are looking at the back of the base. Then look through the vent on your right.

IS ONLY THE LOGIC MODULE GREEN LIGHT ON?

No Turn off the power. Wait 15 seconds. Turn the power on. Wait 15 seconds. Is only the green light on?

Yes Go to Pathway B.

No Compare the lights to the table below.

Logic Module Lights	Resolution
Red light on steady.	Replace the <u>logic module</u> .
Red blinking and a four second beep sounds.	<u>Cartridge</u> not installed or not seated properly. Install the <u>cartridge</u> properly.
Red blinking and no beep sounds.	Replace the <u>cartridge</u> .
Red and green lights on.	Replace the <u>logic module</u> .
All lights off.	Run the Power test.

Yes Go to Pathway B.

Power Test

To run the power test, check the CRT lights, which can be seen through the vents at the top rear of the CRT display. There should be one green light and three red lights visible through the vents.

ARE ALL FOUR CRT LIGHTS OFF?

- Yes** Check the circuit breaker. The circuit breaker is a round button next to the power cord on the back of the CRT. Check the CRT lights again. Are all four lights on now?
- Yes** Your Workstation should be OK. If the circuit breaker trips repeatedly, replace the CRT display.
- No**
- Check your AC power supply. If your outlet is faulty, repair it. If your outlet is OK, check the Workstation power cord; try exchanging cords with a station that is working. If the cord is faulty, replace it.
 - If your AC power and your power cord appear OK, replace the CRT display.
- No** Are all three red lights on?
- Yes** Check the cable from the CRT to the logic module.
- If the cable is loose, turn off the power, and reconnect the cable. Your Workstation should be OK.
 - If the cable appears OK, replace the logic module. If this does not correct the problem, replace the CRT display.
- No** Replace the CRT display.

Pathway B

Turn off the Workstation and check the keyboard cable. If it is loose, resecure it. Then turn on the power. If the problem continues, find the appropriate description below and follow that procedure.

An "L" or error code appears on the Status Line.

- Replace the logic module.

An "KL" error code appears on the Status Line.

- Turn the power off. Unplug the keyboard from the logic module. Turn the power on. If the error code does not appear, replace the keyboard. If the error code appears, replace the logic module.

A "K" error code appears on the Status Line when the power is turned on.

- Turn the power off and on again. If the error code appears again, exchange keyboards with a station that is working. If the error code still appears, replace the logic module; if the error does not reappear, replace the keyboard.
- If the problem continues, replace the logic module.

A "NV" error code appears on the Status Line during normal operations.

- Press the Reset key. Re-enter the setup parameters. Power the Workstation off and on again. If the error code still appears, replace the logic module.

An error code or error message is displayed on the Status Line.

- Consult the list of error codes in Appendix A for errors displayed on the message line and Appendix C for errors displayed on either the Status Line.

One or several keys display the wrong characters or no characters.

- First, check that the keyboard ID is set correctly. Unless your System Operator has told you otherwise, keyboard ID should be two dashes (see the section on Initial Start-up).
- Perform the keyboard test. (See the Diagnostics section.)
- If the keyboard ID is set correctly and the problem continues, replace the keyboard.
- If the problem still continues, replace the logic module.

Is the sign-on display on or blinking, and the system available indicator off or the system available indicator blinking?

Yes

- Check that all cables are attached to the CRT display correctly and securely.
- Check that the "smart T" twinax connector is securely fastened to the CRT display. (See the Installation section.)
- Check the channel address setting, the address of the printer, and that the proper emulation is selected.
- Do you share a cable with other terminals?

Yes

If other terminals are having the same problem, notify your System Operator. If your terminal is the only device on the cable that has the problem, replace the logic module. If the problem continues, replace the smart T connector.

No

Replace the logic module. If the problem continues, replace the smart T connector.

No

- Your Workstation should be OK. If you still have problems, contact your Decision Data Service Representative.

Fault Isolation Procedures

There is a display problem. For example, the screen is out of focus, all or part of the screen is shrunk, or the screen is warped, tilted, or too dark with the brightness set at maximum.

- Check the channel address setting.
- Check that no other station on your cable is using the same channel address setting.
- Turn the power off, remove the cartridge, and check that you are using the right cartridge, that the label is facing up when inserted, and that the cartridge is seated properly.
- If the channel address is OK, replace the CRT display. If the problem continues, replace the logic module.

The display is blank.

- Run the Power test.

The display contrast or brightness is too low.

- Check the contrast and brightness settings. If they are set too low, readjust them (see SetUp).
- If the contrast and brightness settings do not work, run the Keyboard test (see the Diagnostics section). Did the keyboard pass?

Yes Replace the logic module.

No Replace the keyboard.

- If they need frequent readjustment, replace the CRT display.

Displayed characters have pieces missing or have extra dots.

- Replace the logic module.

The cursor or attributes do not work correctly.

- Make sure the cursor and attributes are set up in the desired way.
- Replace the logic module.

The security keylock does not work correctly.

- Turn the security key counterclockwise. Does the "LCK" keylock indicator appear?

Yes Turn the security key clockwise. Does the "LCK" keylock indicator appear?

Yes Make sure the CRT cable connector is firmly seated. If the problem continues, replace the CRT display. If the problem still continues, replace the logic module.

No Your Workstation should be OK. If your problem appears again, start your problem-solving over again from the beginning.

No Make sure the CRT cable connector is firmly seated. If the problem continues, replace the CRT display. If the problem still continues, replace the logic module.

Fault Isolation Procedures

Pathway C

- 1** Turn off the Workstation.
- 2** Hold down space bar, and turn the power on again. This puts you in Off-Line mode.
- 3** Press the Alt and Test keys to enter the Offline Test screen.
- 4** Select #8 from the test screen.
- 5** Turn the Workstation off. Wait 15 seconds. Then turn the power on again. The Workstation will attempt to run the power-on test; however, because an invalid channel address (7) was entered, it will continue cycling through the tests. Let it run until an error is detected.
- 6** While the power-on tests are running, answer the following question.

IS THERE AN ERROR MESSAGE OR ERROR CODE DISPLAYED?

Yes Go to Pathway B.

No The power on screen should flash every 10-15 seconds. If the power on screen does not flash after 15 seconds, check the lights on the logic module and compare them to the table below.

Logic Module Lights	Resolution
Red light on steady.	Replace the <u>logic module</u> .
Red blinking and a four second beep sounds.	<u>Cartridge</u> not installed or not properly seated. Install the <u>cartridge</u> properly.
Red blinking and no beep sounds.	Replace the <u>cartridge</u>
Red and green lights on.	Replace the <u>logic module</u> .
All lights off.	Run the Power test.

Pathway D

In this section, you can isolate problems that occur when attempting to print from your Workstation. When you encounter any printing problems the first thing you should check is that your printer is properly set up to receive print commands from the Workstation. Make sure the printer is plugged in to an AC outlet, that your printer is powered on and connected to the Workstation, and that the printer is online and selected. If you cannot print your job after you've checked these basics, go to the appropriate section below and follow that procedure.

System Addressable Printer Fault Isolation Procedures

Identify one of the following conditions and follow that path to solve your printing problem:

1. **PRINTER DOESN'T PRINT** -- Go to D-1
2. **PRINTER GOES OFFLINE WHILE PRINTING** -- Go to D-2
3. **PRINT OUTPUT NOT SATISFACTORY** -- Go to D-3
4. **INCORRECT OR MISSING CHARACTERS IN PRINT OUTPUT** -- Go to D-4
5. **PRINT FORMAT INCORRECT** -- Go to D-5
6. **PRINTER PRINTS TOO SLOWLY** -- Go to D-6

D-1 PRINTER DOESN'T PRINT

- Make sure you are using a cartridge with the optional printer capability.

- Does PRT appear on the status line?
 - No** Go on to the next step.
 - Yes** Perform a printer check:
 - Make sure the printer is plugged in to an AC outlet and the power is on.
 - Check the interface cable between the printer and the workstation to ensure the connections fit snugly into the ports.
 - Make sure the printer is selected.
 - Make sure there is paper in the printer.
 - Check on jam conditions in the printer. Check the forms thickness and the tractor settings.
 - Check the alarm light on the printer. If the light is lit, refer to your printer operator manual.

- Check the printer status indicators on the printer control screen:
 - "SYS AVAIL" - check that the workstation address matches the system address. Check the Printer Configuration Menu and check that the printer is the same as the host and the printer is the same as specified. Check the smart T connector is properly attached and port termination.
 - "READY" - this indicator should be lit when the printer is ready to print.
 - "ATTN" - the printer requires attention. Check for an error message at the bottom of the screen. (See Appendix A for more information on error messages.)
 - "GRAPHIC CHK" - check the host program and take appropriate action.

- Is there a message indicator from the host on the status line?
 - No** Go to the next step.
 - Yes** Print the printer configuration menu and check the emulation and the attached printer are correct.

- Check the setup of both the terminal (e.g. the printer control screen, the cartridge) and the printer (e.g. dip switches, the printer menu). Refer to your printer operator manual for details on how to setup your printer. Check at the end of this section for recommended dip switch setting for the IBM Proprinter and the Epson FX-286 printers and for menu selections for Okidata printers.

- If your printer still won't print, run the mechanism test.

D-2 PRINTER GOES OFFLINE WHILE PRINTING

- Check the printer status indicators on the printer control screen:
 - "SYS AVAIL" - check that the workstation address matches the system address. Check the Printer Configuration Menu and check that the printer is the same as the host and the printer type is the same as specified. Check the smart T connector is properly attached and port termination.
 - "READY" - this indicator should be lit when the printer is ready to print.
 - "ATTN" - the printer requires attention. Check for an error message at the bottom of the screen. See Appendix D for a list of error codes.
 - "GRAPHIC CHK" - check the host program and take appropriate action.

- Is there a message indicator from the host on the status line?
 - No** Go to the next step.
 - Yes** Contact your system operator.

- Perform a printer check:
 - Make sure the printer is plugged in to an AC outlet and the power is on.
 - Check the interface cable between the printer and the workstation to ensure the connections fit snugly into the ports.
 - Make sure there is paper in the printer
 - Make sure the printer is selected.
 - Check on jam conditions in the printer. Check the forms thickness and the tractor settings.
 - Check the alarm light on the printer. If the light is lit, refer to your printer operator manual.

- Check that the smart T connector is securely attached.

- Try printing your job. Does it print?
 - No** Power the Workstation off and on again. Try printing again. Did your job print?
 - Yes** Your system should be o.k.
 - No** Call DDCC Marketing Support.
 - Yes** Your system should be o.k.

D-3 PRINT OUTPUT NOT SATISFACTORY

- Perform a printer check:
 - Make sure the printer is plugged in to an AC outlet and the power is on.
 - Check the interface cable between the printer and the workstation to ensure the connections fit snugly into the ports.
 - Make sure the printer is selected.
 - Make sure the printer has paper in it.
 - Make sure the proper forms are installed.
 - Check on jam conditions in the printer. Check the forms thickness and the tractor settings.
 - Check the alarm light on the printer. If the light is lit, refer to your printer operator manual.

- Check the printer ribbon. Is the ribbon o.k.?
 - No** Go to the next step.
 - Yes** Replace the ribbon. If the problem continues, go on to the next step.

- Perform diagnostics on the printer as described in the printer operator manual.

D-4 INCORRECT OR MISSING CHARACTERS IN PRINT OUTPUT

- Check the sample printouts at the end of this section to see if those characters are supported by the Workstation. Are the characters printable?
 - No** Continue printing your job.
 - Yes** Go on to the next step.

- Is GRAPHIC CHK displayed in reverse video on the Printer Control screen Status Indicators line?
 - No** Go to the next step.
 - Yes** Check the host program and take appropriate action.

-
- Has the host system been configured to suppress unprintable characters? Check with the System Operator.

No Go to the next step.

Yes Your printer should be ok.

- Check your configuration menu. Make sure your terminal emulation is correct, that your system configuration is correct and that the printer emulation is correct for your printer. Are these parameters correct?

No Enter the proper numbers.

Yes Go on to the next step.

- Run the mechanism test.

D-5 PRINT FORMAT INCORRECT

- If you are printing on a printer that is NOT a basic ASCII printer, power the Workstation off and on again, enter Off Line mode and check printer configuration for printer type, emulation, CPI, LPI, font and override. Are these parameters correct?

No Correct the parameters, your printer should be o.k.

Yes Go to the next step.

- If you ARE using a basic ASCII printer, check the printer requirements against the table at the end of this section. Are the parameters correct?

No Your printer is not compatible.

Yes Go to the next step.

- Check form size.

- Run the mechanism test.

D-6 PRINTER PRINTS TOO SLOWLY

- Select "large" from BUFFER on the printer configuration menu.

Mechanism Test

The mechanism test is entered from the off line test menu. In Off Line mode, press the Alt and Test keys. Select 7 from the off line test menu, then press 1 to start the test. See the samples on the following pages to check the performance of your printer.

Did your printer pass?

No Run the printer self test. Did the printer pass?

Yes Replace the cable and run the test again. Did it pass?

No Replace the logic module.

Yes Your printer should be o.k.

No Replace the printer.

Yes Your printer should be o.k.

NOTE: If you are running the mechanism test on an ASCII printer, the variable formats of the mechanism test will print the same output each time it prints.

Printable Characters

The following table lists the different printer emulations available with the 3496 workstation. Combine the exceptions with the appropriate printer table to determine if your printer is printing the proper characters.

Emulation	Combine Tables
5256-3	Multinational, 5256/5291, Language Differences
5224-2	Multinational, Language Differences
5225-4	Multinational, Language Differences

Exceptions

Note: If a character difference is listed as blank, that character is not printed.

5256/5291 Differences

All printers except Basic ASCII

Basic ASCII

8D	AD	BC	DA
≤	↑	≠	≥

Multinational Table

All printers except Basic ASCII

First Hex Character ->	4	5	6	7	8	9	A	B	C	D	E	F
0	.	&	-	_	0	o	u	e	<	>	\	o
1		e	/	e	a	j	7	2	A	J		1
2	a	e	x	e	b	k	s	#	B	K	S	2
3	a	e	A	E	O	I	t	R	C	L	T	3
4	a	e	A	E	O	M	U	S	D	M	U	4
5	A	i	A	i	e	n	v	S	E	N	V	5
6	x	i	x	i	f	O	x	4	F	O	x	6
7	a	i	A	i	g	p	x	4	G	P	X	7
8	g	i	C	i	n	q	y	2	H	Q	Y	8
9	R	B	N	'	i	r	z	4	I	R	Z	9
A	[	]	:	:	<	>	|	-	-	:	:	3
B	.	\$	,	#	>	o	o	|	o	o	o	o
C	<	*	x	e	e	e	o	-	o	o	o	o
D	<	)	_	'	y	j	x	"	o	o	o	o
E	+	:	>	=	r	R	D	'	o	o	o	o
F	!	>	?	"	H	x	o	-	o	y	o	

Second Hex Character ->

Fault Isolation Procedures

Language Differences

All printers except Basic ASCII

	4A	4C	4F	5A	5B	5F	6A	79	7B	7C	A1	CO	DO	EO
U.S./Canada	@	<	!	!	\$	-	|	'	#	@	~	(	)	\
Belgium	[	<	!	]	\$	^	u	'	#	^	-	e	e	ç
France	o	<	!	§	\$	^	u	'	£	^	-	e	e	ç
French Canadian	^	<	!	'	\$	^	u	'	#	@	-	e	e	ç
German/Austrian	A	<	!	0	\$	^	o	'	#	§	B	z	ü	ö
Italian	o	<	!	e	\$	^	o	u	£	§	z	z	e	ç
Norwegian/Danish	#	<	!	x	A	^	o	'	£	o	ü	z	z	\
Spanish	[	<	!	]	R	-	n	'	n	@	-	()	\
Spanish Speaking	[	<	!	]	\$	-	n	'	n	@	-	()	\
United Kingdom	s	<	!	!	£	-	|	'	#	@	-	(	)	\
Sweden/Finland	§	<	!	x	A	^	o	e	x	o	ü	z	z	z
Brazil	z	<	!	\$	ç	^	ç	z	o	x	-	o	e	\
Portugal	[	ç	!	]	\$	^	o	'	x	o	ç	z	'	ç

Multinational Table
Basic ASCII

First Hex Character-->	4	5	6	7	8	9	A	B	C	D	E	F	
0		&	-						(	)	\	0
1		e	/	E	a	j	~		A	J		1	
2	a	e	A	E	b	k	s		B	K	S	2	
3	a	e	A	E	c	l	ç		C	L	Ç	3	
4	a	e	A	E	d	n	u		D	N	U	4	
5	a	i	A	I	e	n	v		E	N	V	5	
6	a	i	A	I	f	o	w		F	O	W	6	
7	a	i	A	I	g	p	x		G	P	X	7	
8	c	i	C	I	h	q	y		H	Q	Y	8	
9	n		N	'	i	r	z		I	R	Z	9	
A	[	]	|	:		a			-			
B	.	s	,	#		o			l	o	u	O	U
C	<	*	%	@	---				-	o	u	O	U
D	()	_	'	y		Y			o	u	O	U
E	+	;	>	=					'	o	u	O	U
F	!	^	?	^	,					o	y	O	

Fault Isolation Procedures

Language Differences

Basic ASCII

	4A	4C	4F	5A	5B	5F	6A	79	7B	7C	A1	C0	D0	E0
U.S./Canada		<	!	!	s		l	'	#	@	~	{	}	\
Belgium	[	<	!	]	s	^	u	'	#	a		e	e	c
France		<	!		s	^	u	'		a		e	e	c
French Canadian	a	<	!	'	s	^	u	'	#	@		e	e	
German/Austrian	A	<	!	U	s	^	o	'	#			a	u	O
Italian		<	!	e	s	^	o	u				i	a	e c
Norwegian/Danish	#	<	!		A	^		'				u		a \
Spanish	[	<	!	]			n	'	N	@		{	}	\
Spanish Speaking	[	<	!	]	s		n	'	N	@		{	}	\
United Kingdom	s	<	!	!			i	'	#	@		{	}	\
Sweden/Finland		<	!		A	^	o	e	A	O	u	a	a	E
Brazil	E	<	!	s	C	^	c	a	O	A	~	o	e	\
Portugal	[	C	!	]	s	^	o	'	A	O	c	a	'	C

Switch Settings

Okidata 193 (set from print menu)

EMP - N
ENH - N
D.W. - N
LANG - 0
SOP - N
AUTO LF - N
POD - N
PROP SP - N

Okidata 293 (set from print menu)

EMPHSZD - N
ENHNCD - N
DBL WPTH - N
DBL HGHT - N
ITALICS - N
PROP SPC - N
LANG SET - 0
SKI OVER PERF - N
AUTO LF - N
PPR OUT OVRD - N

IBM ProPrinter XL (dip switch settings)

Switch 1 - ON
Switch 2 - OFF
Switch 3 - OFF
Switch 4 - OFF
Switch 5 - OFF
Switch 6 - OFF
Switch 7 - OFF

Epson FX-286 (dip switch settings)

Switch 1-1 - OFF
Switch 1-2 - OFF
Switch 1-3 - OFF
Switch 1-4 - ON
Switch 1-5 - OFF
Switch 1-6 - ON
Switch 1-7 - ON
Switch 1-8 - ON
Switch 2-1 - ON
Switch 2-2 - OFF
Switch 2-3 - OFF
Switch 2-4 - OFF

**This page intentionally
left blank.**

Printer Control

System Addressable Printer

The Decision Data Workstation has a Printer Control screen that allows you to control certain aspects of printer operation. You can:

- set printer parameters, including line spacing, and character spacing and print type;
- perform several printer functions, including start, stop, cancel print requests, insert a line feed, set top of form, and insert a form feed.
- display printer control error messages.

Printer functions on the Workstation are accessed through the Printer Control screen. This screen can be selected from the Online screen by pressing the Mode and Print keys (or the Error Reset and Print keys on the 83-key keyboard).

PRINTER CONTROL		
Emulation: 5225-4	Printer: Epson FX-286	
Address: 0	Character Set: 0	
Status: READY STOP ATTN GRAPHIC_CHK DATA_CLR SYS_AVAIL		
<0> Exit	<3> Line Feed	<Alt Cancel> Cancel*
<1> Start	<4> Form Feed	<6> Set Printer Parameters
<2> Stop	<5> Set Top of Form	

* Cancel with the 83-key keyboard is enacted by pressing the Error Reset and C keys.

Printer Status Indicators

The printer status indicators tell the current operating condition of the system printer. When the indicator is on it appears in reverse video.

READY

The printer is ready to print data or perform commands from the host.

STOP

The printer is NOT ready to print data or perform commands from the host. When this indicator is highlighted you can enter commands on the Printer Control screen.

ATTN

The printer requires attention. This indicator is highlighted either when the host requires attention or when there is a printer error. If caused by the host, pressing STOP clears this indicator. See the description of the printer errors below for descriptions of the errors and corrective action. The ATTN indicator goes off once you correct the error.

GRAPHIC_CHK

Indicates that an unprintable character has been detected. If the READY light is on, GRAPHIC_CHK is cleared the next time you select STOP. If the ATTN is lit and printing has ceased, select START to resume printing.

DATA_CLR

Indicates that a clear command has been received from the host and the print buffers are clear of data. Select STOP to clear the indication and START to resume printing.

SYS_AVAL

Indicates that the printer is communicating with the host.

Printer Control Menu

The Printer Control Menu is used for aligning paper, clearing errors, and communicating with the host. When you press the number corresponding to a control menu option, the Workstation immediately executes that option.

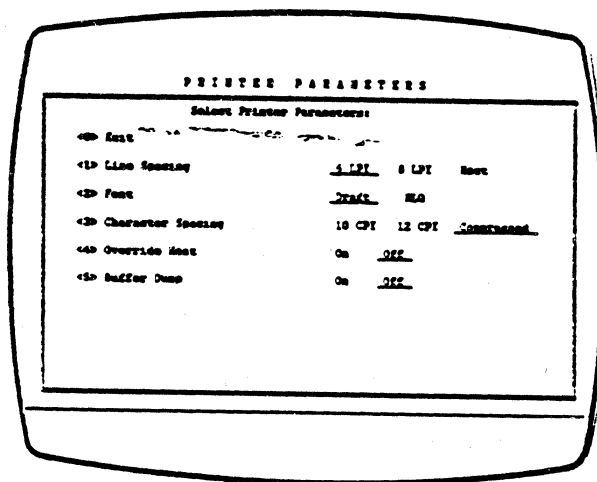
- (0) **Exit** Returns the display to the Online screen. This removes the Printer Control screen from the display and returns the most recent Online screen commands from the host.
- (1) **Start** Makes the printer ready to receive host commands. If the READY status indicator is on, nothing additional occurs when Start is selected. If the READY indicator is off, selecting Start turns the READY indicator on. If the ATTN indicator is on, press Stop (2), replace paper or read the error message on the status line and take appropriate action.
- (2) **Stop** Stops the printer from printing. Turns off the GRAPHIC_CHK and DATA_CLR indicators. Turns off the READY indicator and no further host commands are accepted. Turns off the ATTN indicator if the error that caused it is not a printer operation error.
- (3) **Line Feed** Advances the paper one line. If the ATTN or READY indicators is on, the error message "action cannot be taken" is displayed.
- (4) **Form Feed** Advances the paper to the top of the next page. If the ATTN or READY indicators is on, the error message "action cannot be taken" is displayed.
- (5) **Set Top of Form** Defines the current page position of the printer as line one. If the ATTN or READY indicators is on, the error message "action cannot be taken" is displayed.
- (6) **Set Printer Parameters** Displays the printer parameters screen when the READY and ATTN indicators are off. Parameters such as line spacing, font and character spacing may be changed from the menu.
- (Alt + Cancel) **Cancel** Cancels the current print job. The printer continues to print until the print buffers are empty.
(Error Reset + C)
- To exit, select option 0 by pressing the 0 key.

Printer Parameters Screen

The Printer Parameters Screen allows you to define current printer parameters from the keyboard. If these parameters are changed online, these parameters are only effective until they are changed again or until your Workstation is turned off. Once it is turned off, the default settings are restored. In order to change the default values permanently, you must enter the Off-Line SetUp mode (see the Off-Line SetUp Mode section of this manual). The only Printer Parameter that is valid if the BASIC ASCII printer class has been selected in the Off-Line Mode is Buffer Dump.

Accessing the Printer Parameters Screen

1 To enter the Printer Parameters Screen, press 6 (the Set Parameters option) from the Printer Control screen. The following screen will appear:



The Printer Parameters Screen can only be accessed if the printer is in Stop mode, i.e., Stop (option 2) on the Printer Control screen is selected.

2 When the Workstation is powered on, the settings that were used last are the default values. As you enter new parameters on the screen, these parameters are stored in the Workstation's memory. The Printer Parameters menu always indicates the values that are currently being used by the printer.

3 To exit the Printer Parameters Screen and use the selected values, press 0. The previous screen will be displayed.

Printer Parameter Settings

1. Line Spacing:

Option	Function
6 LPI	6 lines of text will be printed per inch.
8 LPI	8 lines of text will be printed per inch.
Host	Last Host selected value is used.

2. Font:

Option	Function
Draft	Lower quality font allows the printer to print at high speeds.
NLQ	Near letter quality font; however, printer performance is reduced.

3. Character Spacing:

Option	Function
10 CPI	10 characters of text will be printed per inch.
12 CPI	12 characters of text will be printed per inch.
Compressed	* characters of text will be printed per inch.

* The actual CPI produced depends on how your printer responds to the Compressed Spacing command.

Note: Your printer may allow for varying form widths. If a narrow form width paper is being used, you must select the character density to preserve the correct format.

4. Override Host:

The format (CPI) of printed data can be designated either by information provided by the Host computer along with the data or by the user via the Printer Parameter settings. For everyday use, the print format designated by the Host computer should meet your needs. However, occasionally you may wish to override the print format designated by the Host Computer. You can easily bypass the Host's print format by setting the Printer Parameters either in the Off-Line Mode (see Section 1) or in the On-Line Mode.

<u>Option</u>	<u>Function</u>
Off (Host)	The print format is designated by the Host computer with information supplied along with the data.
On (User)	The Character Density can be specified on the Printer Parameters Screen (see option 3).

The Print Format control selections, which can be used to specify the desired print format (Line Spacing, Character Density and Print Type) for a particular printer emulation, are summarized below:

<u>Print Format</u>	<u>Printer Emulation</u>	
	5256	5224 5225
6 LPI	User	Host
8 LPI	User	Host
10 CPI	Host or User	Host or User
12 CPI	User	User
Compressed	Host or User	Host or User
Draft	User	User
Correspondence	User	User

5. Buffer Dump:

The Buffer Dump is a specialized print option used by programmers to decode print buffers. When the Buffer Print Option is ON, data is printed in the following special format:

- The data is printed in repeated sets of two blocks. Each set of two blocks represents the two buffers normally found in an IBM printer. Each block consists of four lines of output.
- The two blocks of each set are labeled with block numbers (00 or 01) in the first two print positions of the first line of each block.
- The characters to the right of the block number on the first line of the block are separated by eight characters. These "alignment" characters act as a positional aid in locating a desired vertical column of data in a block. Each column of data represents a character of normal printed data. There are a total of 128 columns in each block. Thus, a pair of blocks correspond to buffer positions 0 through 127 (block 00) and buffer print positions 128 through 255 (block 01).
- The two vertically adjacent characters in the second and third rows of the block are the hexadecimal or EBCDIC representation of normal print data. The corresponding character in the fourth row is the normal representation of the printed data.

Differences From IBM 5256 Operations

The following differences exist between the Workstation Printer Capability and the IBM 5256.

Printer Operation

The Workstation Printer Control screen (rather than the printer's actual control panel) must be used for operations such as: Set Top of Form, Insert a Form Feed, Insert a Line Feed.

The printer's control panel can be used for operations involving setting the printer Off-Line or On-Line when loading paper, etc.

Operator Messages

Messages will be generated at the workstation which has been assigned the message queue for a 5256 printer:

- unit not available,
- a graphic check condition is detected,
- the data clear command is detected, or
- a paper-out is detected.

5256 Print Modes

Output can be created for a 5256 in:

- Draft
- NLQ
- 10 CPI, 12 CPI, Compressed
- Override Host

If the Emphasized or Enhanced print modes have been used to create a report, that report should be printed in the Data Processing mode on the Workstation. Using any other Workstation print mode (i.e., Compressed or NLQ), will cause the printed output to be slightly distorted by extra dots.

5256 Buffer

The 5256 printer has a small print buffer in it; therefore, the data being printed remains in the host spool file for a longer period of time before it is deleted. This extra time allows you to halt a print job if a printer problem should arise and to complete the print job without having to recreate the data. However, most parallel printers (including the DDCC personal Workstation Printer) have large printer buffers. Therefore, the data is sent to the printer quickly and the print job can be deleted from the host spool file long before the actual printing is completed. Once the print job has been deleted from the host, it is not possible to restart the print job unless the job is rerun.

The Workstation Printer Capability can be set to run using either a small print buffer like the 5256 or the larger print buffer in the parallel printer. See the section on Off-Line SetUp for Printer Default Parameters.

If you wish to use the large or small buffer but you don't want the the print file automatically deleted from the system, the spool file can be "Held." Once the printing has been completed, the spool file can be deleted from the Host.

Printer Control

Differences From IBM 5224/5225 Operations

The following differences exist between the Workstation Printer Capability and the IBM 5224/5225.

Printer Operation

The Workstation Printer Control Screen (rather than the printer's actual control panel) must be used for operations such as: Set Top of Form, Insert a Form Feed, Insert a Line Feed.

The printer's control panel can be used for operations involving setting the printer Off-Line or On-Line when loading paper, etc.

Operator Messages

Messages will be generated at the workstation which has been assigned the message queue for a 5224/5225 printer:

- unit not available,
- a graphic check condition is detected,
- the data clear command is detected.
- a paper out is detected.

5224/5225 Print Modes

Output can be created for a 5224/5225 in:

- Draft or NLQ,
- 12 CPI,
- Override Host.

If the Emphasized or Enhanced print modes have been used to create a report, that report should be printed in the Data Processing mode on the Workstation. Using any other Workstation print mode (i.e., Compressed or NLQ), will cause the printed output to be slightly distorted by extra dots.

Output that is formatted by the host for 15.0 Characters per Inch will be printed in the Compressed mode since the parallel printer does not support 15.0 CPI as a feature of the Workstation.

Any graphics data sent to the printer will be printed as blanks instead of data because the parallel printer does not support graphics as a feature of the Workstation.

If output from the host contains more than one Character per Inch setting on the same print line, unpredictable results may occur.

5224/5225 Buffer

The Workstation Printer Capability can be set to run using either a small print buffer like the 5224/5225 or the larger print buffer in the parallel printer. See the section on Off-Line SetUp for Printer Default Parameters.

If you wish to use the large or small buffer mode but not have the print file automatically deleted from the system, the spool file can be "Held." Once the printing has been completed, the spool file can be deleted from the Host.

Printer Control

Printer Interface Information

Terminal End Pin Number	Printer End Pin Number	Direction	Signal Description
1	1	OUT	NOT STROBE
2	2	OUT	DATA 0
3	3	OUT	DATA 1
4	4	OUT	DATA 2
5	5	OUT	DATA 3
6	6	OUT	DATA 4
7	7	OUT	DATA 5
8	8	OUT	DATA 6
9	9	OUT	DATA 7
10	10	IN	NOT ACKNOWLEDGED
11	11	IN	BUSY
12	12	IN	PAPER END
13	13	IN	SELECT
14	14	--	NOT USED
15	32	IN	NOT FAULT
16	31	OUT	NOT INPUT-PRIME
17	xx	--	NOT USED
18	34	--	GROUND
19	19	--	GROUND
20	21	--	GROUND
21	23	--	GROUND
22	25	--	GROUND
23	27	--	GROUND
24	29	--	GROUND
25	30	--	GROUND
xx	16-18	--	NOT USED
xx	20	--	NOT USED
xx	22	--	NOT USED
xx	24	--	NOT USED
xx	26	--	NOT USED
xx	28	--	NOT USED
xx	33	--	NOT USED
xx	35	--	NOT USED
xx	36	--	NOT USED

Appendix A
Error Codes

Error Codes

System Error Codes

- 0000** **Cause:** Help key was pressed when no error message was displayed or in a program with no help functions.
Solution: Press the Reset key.
- 0001** **Cause:** Data is being entered too fast for the Workstation controller. Last character key was not accepted.
Solution: Press the Reset key and continue entering data.
- 0000** **Cause:** Invalid key code entered.
Solution: Press the Reset key and continue entering data. If problems continue, notify your System Operator.
- 0003** **Cause:** Invalid key pressed while holding the Alt key.
Solution: Press the Reset key.
- 0004** **Cause:** Data entered in invalid field.
Solution: Press the Reset key.
- 0005** **Cause:** Cursor is not in an input field during data entry.
Solution: Press the Reset key and move cursor to a valid input field.
- 0006** **Cause:** The Attention key was pressed, but was not followed by the Enter or Reset key.
Solution: Press the Reset key.

Error Codes

- 0007** **Cause:** Data entry is incomplete. Data must be entered into appropriate fields before continuing.
Solution: Press the Reset key and enter the required data.

Note: Cursor will automatically move to the first character of field requiring additional data.
- 0008** **Cause:** Nonalphabetic character keyed in field requiring alphabetic data (A through Z, comma, period, or hyphen).
Solution: Press the Reset key and enter valid data.
- 0009** **Cause:** Non-numeric data keyed in field requiring numeric data (0 through 9, space, comma, period, plus, or minus).
Solution: Press the Reset key and enter valid data.
- 0010** **Cause:** Non-numeric data keyed in field that allows signed numeric characters only (0 through 9).
Solution: Press the Reset key and enter valid data.
- 0011** **Cause:** Data entered in last position of signed numeric field.
Solution: Press the Reset key and check that the data is correct. Exit the field by pressing the Field-, Field+ or Field Exit key.
- 0012** **Cause:** No room remaining in field or cursor in last position of field.
Solution: Press the Reset key. Correct the field if necessary.
- 0013** **Cause:** Attempting to exit field after pressing Insert key.
Solution: Press the Reset key.

-
- 0014** **Cause:** Attempting to exit field before entering required data.
Solution: Press the Reset key. Then complete the field or erase all data from field by moving the cursor to the beginning of the field and pressing the Field-, Field+, or Field Exit key.
- 0015** **Cause:** Data entered in self-check field does not match check-digit.
Solution: Press the Reset key. Make sure that the number you are entering is correct. If you are entering correct data into the self-check field and problem continues, notify your System Operator.
- 0016** **Cause:** Field- key pressed but field is not a numeric or signed numeric field.
Solution: Press the Reset key and continue entering data or press the Field Exit key for a blank field.
- 0017** **Cause:** Field-, Field+, or Field Exit key has been pressed before filling field with required data.
Solution: Press the Reset key. Complete the field or move the cursor to the beginning of the field and press the Field -, Field +, or Field Exit key.
- 0018** **Cause:** Attempting to exit field without using nondata keys (e.g., Field Exit and cursor movement keys) to exit field.
Solution: Press the Reset key and then use a nondata key.
- 0019** **Cause:** Dup key pressed but not allowed in field.
Solution: Press the Reset key and continue entering data.
- 0020** **Cause:** Invalid key pressed in right adjust or signed numeric field.
Solution: Press the Reset key and continue using valid keys (invalid keys include Command keys, Backspace, Enter, Help, Roll Up or Down, and Home when cursor is in home position).
-

Error Codes

- 0021** **Cause:** Attempting to exit field without entering required data.
Solution: Press the Reset key and enter required data.
- 0022** **Cause:** System error during insert or delete.
Solution: Press the Reset key. Check the screen to make sure the insertion or deletion was done correctly. Correct the data if necessary.
- 0023** **Cause:** First Hex key pressed was not A-F or 4-9; or, second Hex key was not A-F or 0-9; or, Hex code was used in a numeric, signed numeric, or alphabetic only field.
Solution: Press the Reset key. Continue using correct Hex keys.
- 0026** **Cause:** Field- key used to exit field with non-numeric data.
Solution: Press the Reset key. Enter numeric data (0-9) into the last position of the field or exit field with the Field+ or Field Exit key.
- 0027** **Cause:** Key pressed for character that cannot be displayed at the terminal.
Solution: Press the Reset key and continue entering valid data.
- 0028** **Cause:** Key pressed for character that cannot be displayed at the terminal.
Solution: Press the Reset key and continued entering valid data.
- 0029** **Cause:** Invalid two-key combination pressed during a diacritic key function.
Solution: Press the Reset key and enter a valid combination.
- 0040** **Cause:** Data Set Ready line is inactive and should be active.
Solution: Error must be corrected by the System Operator.

-
- 0042** **Cause:** Receive clock signal failed during a receive operation.
Solution: Error must be corrected by the System Operator.
- 0043** **Cause:** Data Set Ready line is active and should be inactive.
Solution: Error must be corrected by the System Operator.
- 0044** **Cause:** 30 second communications time-out has elapsed before valid data was received.
Solution: Error must be corrected by the System Operator.
- 0050** **Cause:** Clear-to-send line was inactive while request-to-send line was active, or clear-to-send line was active while request-to-send line was inactive.
Solution: Error must be corrected by the System Operator.
- 0051** **Cause:** Transmit clock signal failed.
Solution: Error must be corrected by the System Operator.
- 0052** **Cause:** Internal error detected by host system.
Solution: Error must be corrected by the System Operator.
- 0054** **Cause:** Invalid command received from host system during communications.
Solution: Error must be corrected by the System Operator.
- 0097** **Cause:** System does not have programming to support on-line verification tests.
Solution: Press the Reset key.
-

Error Codes

There are three possibilities, depending on when the error message is displayed:

If the 0099 error message appeared before sign-on

0099

Cause: Invalid function key pressed.

Solution: Press the Reset key and use correct sign-on procedure.

If the 0099 error message appeared during sign-on

Cause: System not operating or workstation controller is not communicating with the Host System.

Solution: Press the Reset key and use correct sign-on procedure. Notify System Operator if problem continues.

If the 0099 error message appeared after sign-on

Cause: Key pressed is not recognized by program or utility.

Solution: Press the Reset key and try to run a different procedure. If the error message appears again, there is a system programming problem or a keying error. If the error message is not displaced again, the problem may be at the Host System level. Notify your System Operator.

Workstation Error Codes

Error Code	Location	Meaning
User Input		
9012	Status Line	Invalid key pressed in SetUp mode
9013	Status Line	Invalid key pressed in Off-Line mode
9014	Status Line	Steady cursor cannot be selected
K	Status Line	Workstation not communicating with keyboard
L	Status Line	Logic module failure
KL	Status Line	Keyboard or logic module failure
KT	Status Line	Keyboard type failure
NV	Status Line	Non-Volatile Memory Failure
U	Status Line	Unexpected interrupt occurred

Printer Operator Control Panel Error Messages

Parameter Selection Cannot Be Done While Printer in the Ready State

This message appears when you try to access the parameter selection screen while the printer is in the READY state.

To correct this error, the printer must be stopped before On-Line parameters can be changed, using the Printer Control screen on the workstation.

Action Cannot Be Taken At This Time

This message indicates that an attempt has been made to perform a function at the printer but that the printer is not in the proper state. For example, you may have tried to put the printer in the ready state while the ATTN indicator is still lit.

To correct this error, select the Help option on the Printer Control screen to display the Extended Printer Control screen with more detailed information on printer operations and help identifying the proper operation.

Printer Feature Disabled--Default Address Set to 7--Press Reset to Exit

This message appears when an attempt has been made to invoke the Printer Control screen if the printer device address is set at 7. The printer address of 7 is set: (a) as the default address at the factory; (b) by users to disable the printer feature.

To correct this error, if another address is desired, see section 1.

Invalid Key Pressed--Please Choose Valid Options

This message appears when an invalid keystroke is entered while using the Printer Control screen.

To correct this error, choose a valid option as discussed in the applicable section of this manual.

Printer Is Now Doing A Controlled Reset--Please Wait Until Message Is Removed

This message appears either when the Printer Control screen is active or when you try to access the Printer Control screen while the Workstation is executing a reset that has been caused by a command from the host or a line time-out condition. When the reset recovery is complete, the message will be removed and you may resume entering keystrokes.

No corrective action is needed. Normal operations will resume once reset completes.

Out of Paper

This message appears when the printer is out of paper.

To correct this error, select "Stop" on the Printer Control screen and add more paper. Align the paper to top of form and press the Select key on the attached printer. Select "Top Of Form" on the Printer Control screen and then "Start" to resume printing.

Printer Check

This message appears when a fault has been detected in the printer, e.g. printer is turned off, a cable is disconnected, etc.

To correct this error, locate the problem and take the appropriate steps to change the condition. Press the Select key on the attached printer then press Reset or a valid key to continue printing.

Appendix B
Diagnostics

Diagnostics

Power-On Diagnostics

Your Workstation will run a series of diagnostic tests at power-on to make sure that the system is working correctly.

In the Test mode, you can perform seven groups of diagnostic tests. Some of these tests are more extensive than power-on tests and can be used to isolate a problem.

To enter the Test mode:

- 1** Put the Workstation into the Off-Line mode. Off-Line mode can be entered by pressing and holding down the space bar after power-on. (If error 9013 is displayed, press Reset before continuing.)
- 2** Press the Alt key and the Test key to enter the Test mode. A "T" will appear on the Status Line.
- 3** To select a test, press the appropriate numeric key.

Off-Line Tests

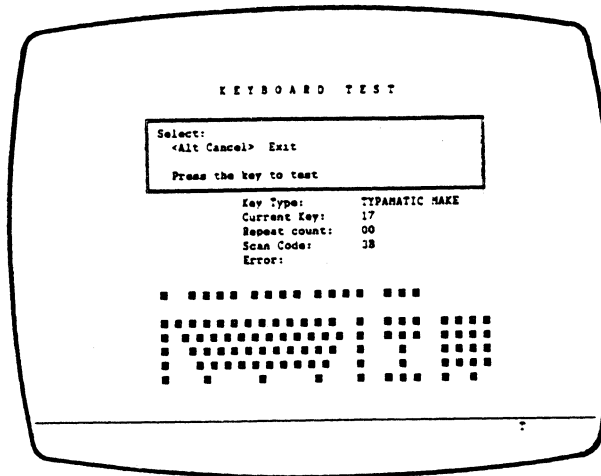
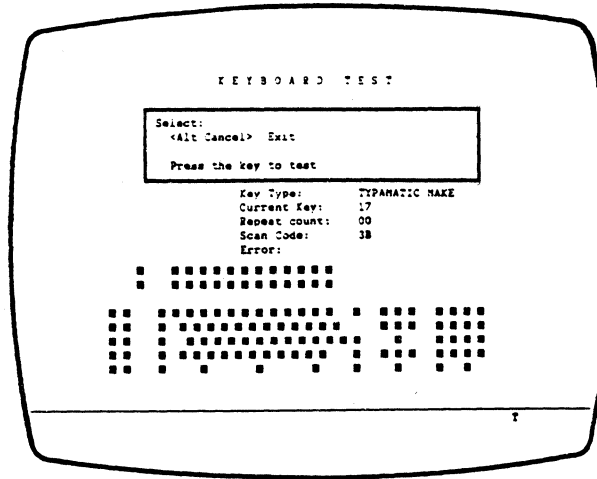
Key	Function
0	Exit
1	Keyboard Test
2	Character Test
3	Maintenance Data
4	Dim Test
5	Loop Tests
6	Monitor Alignment Test
7	Printer Mechanism Test
8	Set Terminal Address to 7

Any Off-Line Test mode can be terminated by pressing the Cancel key.

Diagnostics

Keyboard Test

The Keyboard test detects faulty keys and incorrect scan codes generated by the keyboard. When this test is selected, the screen displays an image of the keyboard, as shown below in the figure.



When you press a key, the key's location on the screen reverses image and the hexadecimal scan code for that key is shown in the Scan Code field. When a typamatic key is held down, the Current Key Repeat Count field displays the number of keystrokes. If the key does not reverse image it indicates a problem with that specific key.

Press the Cancel key to exit the keyboard diagnostic test.

Character Test

The character test completely fills the screen with characters in the primary character set. When the test begins, the screen is filled with the character "A". Refer to the table below for specific tests in this mode.

Press	Effect
Space bar	Fills screen with next character (B, C, D, etc.).
Field Exit key	Display changes to reverse image video. Normal attribute display appears in upper left of screen. Each time you press the Field Exit key, the screen is filled by a new character.
Alt and Cancel keys	Ends character test.

Press the Cancel key to exit the character test.

Maintenance Data

When the 3 key is pressed, maintenance data logged by the Workstation is displayed on the screen for the Field Engineering Representative's use. Press the 0 key to exit the Maintenance Data test.

Dim Test

The screen display will dim when the 4 key is pressed. Press any key to return the screen to normal.

Loop Tests

These tests are more extensive than the automatic power-on tests and can be used to isolate a problem. When this group of tests is selected, the display will show the number of test loops started and the number of tests failed. These tests are used by Field Service Representatives for testing the Workstation

Press	Effect
0	Exits the Loop Tests and returns you to the Off-Line Test screen.
1	Starts the loop tests and updates the screen as each test is performed.
2	Stops the tests and allows you to make another menu selection.

Diagnostics

Monitor Alignment Test

This test allows alignment, focusing and sharpening of the monitor by displaying various characters on the screen.

Press	Effect
Space Bar	Change display to "E", "H", "W" or the three-quarters characters.
Field Exit	Cycle through display attributes (20-3F) which appear in the top left corner of the screen.
Cancel	Exits test and returns to Off-Line screen.

Printer Mechanism Test

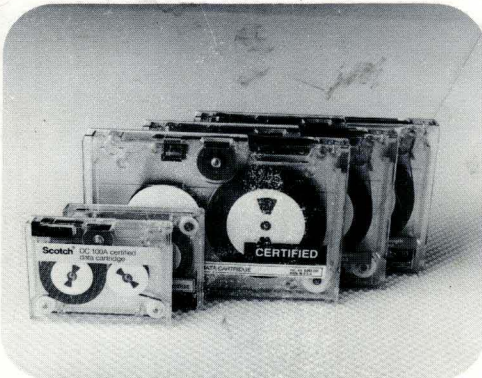
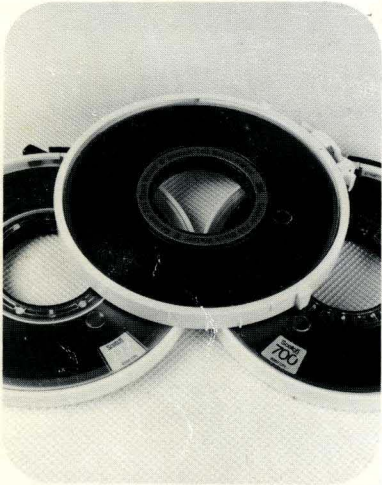
This test exercises the print head and printer motors, and confirms that the Workstation is properly communicating with the printer. It also exercises the two line spacing modes (6 and 8 LPI), three character spacing modes, and the data processing and correspondence quality print modes. To run this test, the printer must be turned on and selected and 14 inch paper should be installed in the printer. For samples of the Mechanism test see the printer section of the Fault Isolation Procedures, Section 6.

Note: Basic ASCII printers will only print the same CPI and LPI for every exercise.

Press	Effect
0	Exit to Off-Line Screen
1	Start Test
2	Stop Test

This test pattern will repeat indefinitely until an error occurs or until Option 2 is selected.

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