IBM 3192-G
Color Graphics Display Station Operator Reference and Problem Solving Guide

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IBM 3192-G Color Graphics Display Station Operator Reference and Problem Solving Guide GA18-2591-1

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Warning: 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 when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause 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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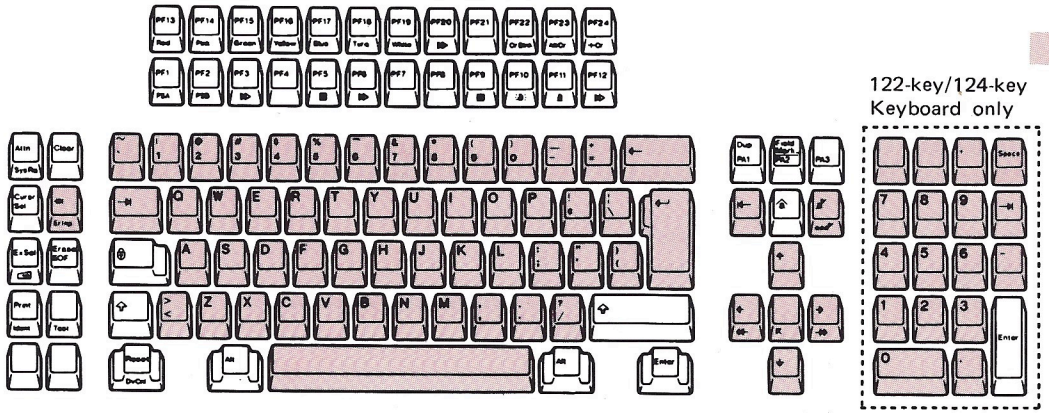
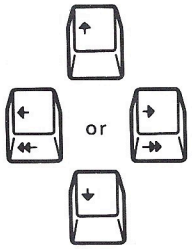
Keyboard Key Functions

The following section shows the standard keyboard layout and describes the function of each key.



Repeat-action keys (repeat characters or functions when held down)

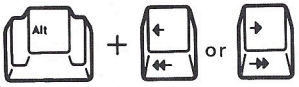
Cursor Position Control Keys



Cursor-Positioning Keys

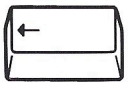
The cursor moves up, down, left or right one position at a time.

Press and hold



The cursor moves to the first position of the previous or next word.

Cursor Position Control Keys (Continued)

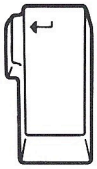


Back-Space Key
The cursor moves back (left) one position at a time.

Tab Key
The cursor moves to the first position of the next unprotected field.

Back-Tab Key
The cursor moves to the first position of the current unprotected or previous unprotected field.

Cursor Position Control Keys (Continued)



New-Line Key
The cursor moves to the first input position of the next input line.

Press and hold

Home Key
The cursor moves to the first input position on the screen.

Press and hold

Selectable-Field-Tab Key
The cursor moves to the first position of the next cursor-select-key detectable field with a designator character (protected or unprotected).

Host Attention Keys

One of these keys

Program-Access Keys

A signal is sent to the host. The function of this key depends on the application program.

One of these keys

Program-Function Keys

These keys have special functions determined by the application program.

Clear Key

All characters and images on the screen are cleared.

Host Attention Keys (Continued)

Attention Key

The operation in process is interrupted. This key works only when B appears in the operator information area.

Press and hold

System-Request Key (in non-SNA)

A test request message is sent to the host.

Enter Keys

Data is sent to the host.

Cursor-Select Key

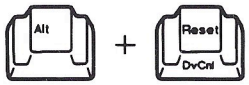
A selector-pen detectable field is selected.

Local Function Keys

Reset Key

1. A Do-Not-Enter condition is cleared.
2. A dead-key operation is canceled, leaving a stand-alone accent at the cursor position.
3. Insert mode operation is ended.
4. Print ID mode is reset.

Press and hold



Device-Cancel Key

1. A current print operation is canceled.
2. A printer-related Do-Not-Enter condition is cleared.

Press and hold

System-Request Key (in SNA)

Ownership of the screen is switched. For more details, see *IBM 3179-G/3192-G Color Graphics Display Station Description*, GA18-2589.

Local Function Keys (Continued)

Press and hold

Ident (Print ID) Key

A change to the printer ID or printer class is requested, or the existing printer ID appears. Print ID '99' is for the screen copier attached to the IBM 3192-G.

Press and hold

Duplicate Key

A request code to duplicate the rest of the field is entered.

Press and hold

Field-Mark Key

An 'end-of-field' code is entered.

Local Function Keys (Continued)

Press and hold

Cursor-Blink Key
The cursor setting is changed from blinking to non-blinking or vice versa.

Press and hold

Erase-Input Key
The contents of all unprotected fields in the screen are erased and the cursor moves to the beginning of the first unprotected field.

Local Function Keys (Continued)

Erase-EOF Key
All characters from the cursor position to the end of the field are erased.

Press and hold

Test Key
The display station enters the offline-test mode.

Insert Key
Characters can be inserted at the cursor position of the input field. All characters to the right shift to the right.

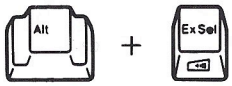
Local Function Keys (Continued)

Delete Key
The character at the cursor position of an input field is erased. All characters to the right and on the same line shift one position to the left.

Press and hold

Delete-Word Key
All characters to the right in the same word are deleted. All remaining characters to the right on the same line shift to the left.

Press and hold

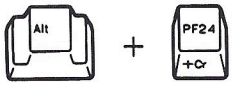


Clicker Key
The audible feedback (generated when a key is pressed) is turned on or off.

Local Function Keys (Continued)

Print Key
The screen image is sent to the local screen printer if it is attached and assigned to your display station (▭–▭99). If a subsystem local copy printer is assigned to your display station, the characters are sent to the printer.

Press and hold



Graphic-Cursor Key
The cursor control mode is switched from alphanumeric to graphic or vice versa when the graphic cursor is displayed. In graphic mode, '+Cr' is indicated.

Press and hold

Alternate-Cursor Key
The shape of the cursor is switched. In alphanumeric mode, the cursor changes between an under-bar and block cursor. In graphic mode, the cursor changes from a white cross to a green cross, to a white cross-hair, then to a green cross-hair cursor.

Local Function Keys (Continued)

Extended-Select Key
The display station enters extended select mode.

Document On/Off Key
After you press the Extended Select key, turns document mode on or off.

Word Wrap Key
After you press the Extended Select key in document mode, word wrap mode turns on or off.

Local Function Keys (Continued)

Change format (Chgfmt) Key
After you enter document mode and press the Extended Select key, change format mode turns on or off.

Response Time Monitor (RTM) Key
After you press the Extended Select key, the response time of your 3192-G is monitored.

Cursor Position (CrPos) Key
After press the Extended Select key, the cursor position is indicated at the bottom right of the screen.

Local Function Keys (Continued)

Trimming On/Off Key

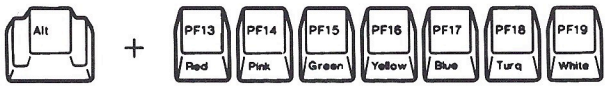
After you press the Extended Select key, the trimming mode is turned on or off.

Attribute Selection Keys

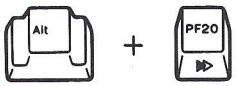
Extended-Color-Selection Keys

The subsequent keyed-in data is displayed in the color specified, if the application program allows.

Press and hold — One of these keys



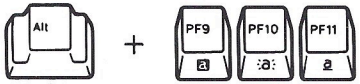
Press and hold



Extended-Color, Field-Inherit Key

The subsequent keyed-in data is displayed in the color specified in the extended color field.

Press and hold — One of these keys



Extended-Highlight-Selection Keys

The subsequent keyed-in data is displayed in the highlighting (reverse, blinking, and underscoring) specified, if the application program allows.

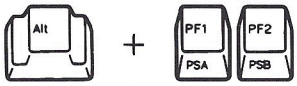
Attribute Selection Keys (Continued)

Press and hold

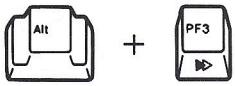
Extended-Highlight, Field-Inherit Key
The subsequent keyed-in data is displayed in the highlighting specified in the extended highlighting field.

PS-Selection Keys
The subsequent keyed-in data is displayed in the programmed symbol set specified, if the application program allows.

Press and hold One of these keys



Press and hold



PS-Field-Inherit Key
The subsequent keyed-in data is displayed in the character set specified in the PS selection field.

Attribute Selection Keys (Continued)

Press and hold

Background Non-Transparent Key
The subsequent keyed-in data is displayed in the background transparency specified, if the application program allows.

Press and hold

Background Transparency, Field-Inherit Key
The subsequent keyed-in data is displayed in the transparency specified in the background transparency field.

Entering APL mode (IBM 3192-G Models G20 and G40 only)

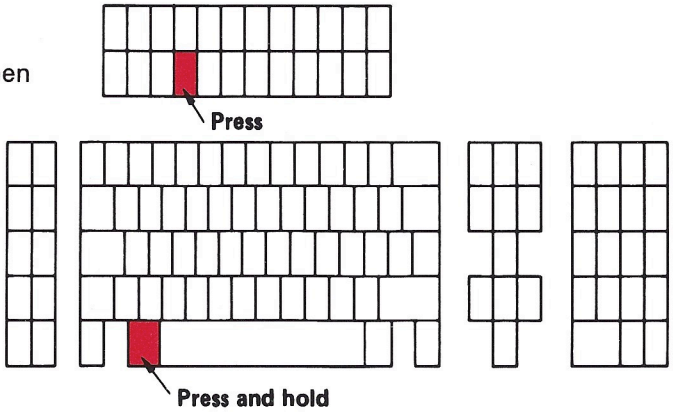
Press and hold

APL Key
The display station enters APL mode.

Keyboard Switch Settings

To sound the alarm

1. Press and hold the Alt key on the left side of the space bar, then press the Test key.
2. You should see the test pattern on the screen.
3. Press and hold the Alt key on the left side of the space bar, then press the key indicated in the figure.

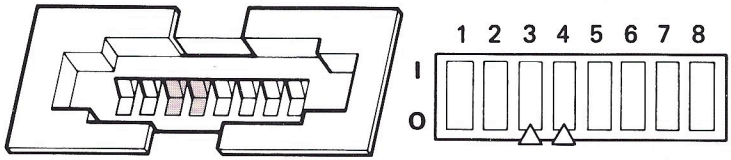


To adjust the alarm volume

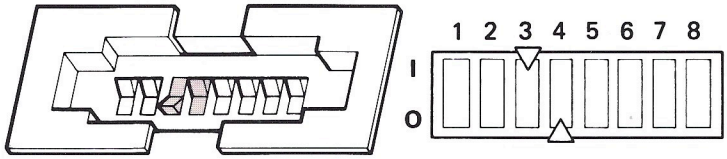
1. Turn the keyboard upside down.
2. Set switches 3 and 4 as shown on the next page.
3. Check the alarm volume as described above.

Four Choices of Audible Alarm Volume

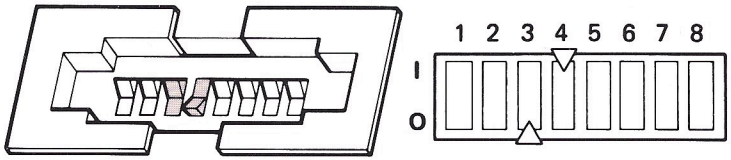
LOUD



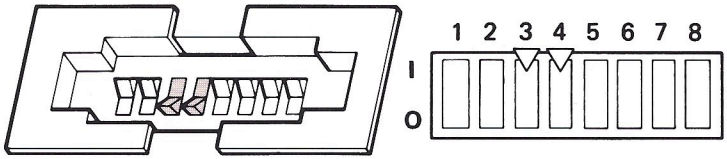
SOFT



MEDIUM

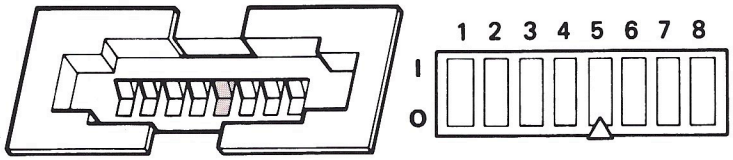


NO SOUND

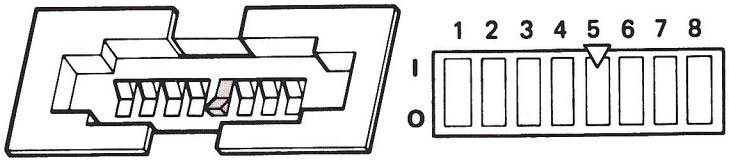


Keyboard Switch Settings for Printer

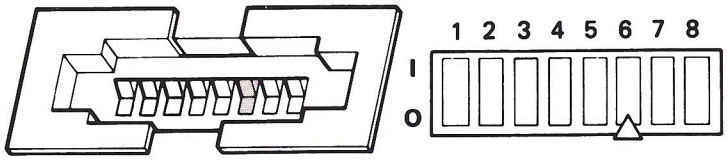
Color(IBM 3852-2)
Normal(IBM 4201/4202)



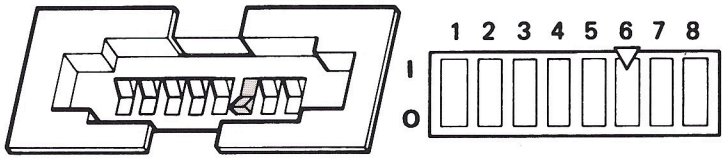
Monochrome(IBM 3852-2)
Near Letter Quality(IBM 4201/4202)



6 Line per inch



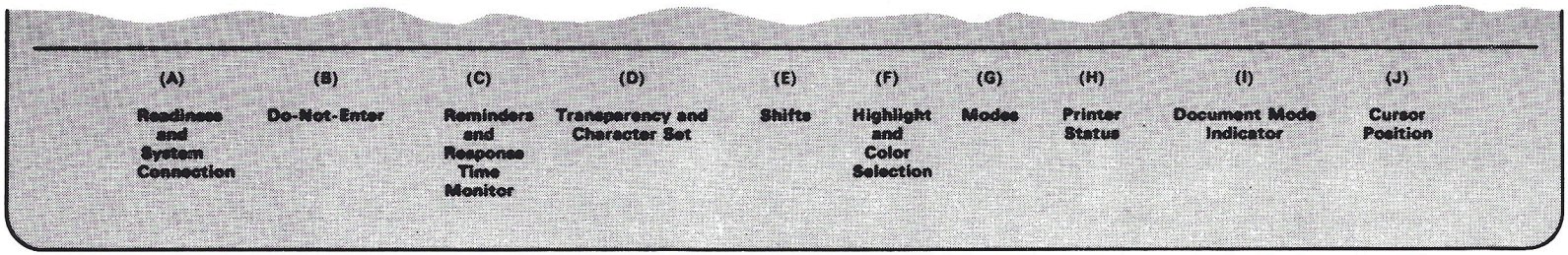
8 Line per inch



For explanations of
Operator Messages,
go to the next page.

Operator Messages

Operator and status messages appear in the operator information area — the bottom row of the display screen separated from the rest of the display area by a horizontal line. The messages are displayed in ten fields in the operator information area, as follows.



Message	Color	Meaning
4	Blue	IBM 3274 control unit and your display station are ready.
S	Blue	IBM 3174 control unit and your display station are ready.
	Blue	Only your display station is ready. IBM 3174/3274 control unit is not ready.
A	Blue	IBM 3174/3274 control unit is connected to the host system (Non-SNA).
B	Blue	IBM 3174/3274 control unit is connected to the host system (SNA).
	Blue	Your display station is connected to your application program.
	Blue	Your display station is connected to the control program.
?	Blue	Your display station is connected to the host system but neither to your application program nor the control program.
TEST	Blue	Your display station is in test mode.
X	White	Do Not Enter - Security key lock is locked.
X nnn	Yellow	Do Not Enter - Your display station is not operating properly.
X 5nn	Yellow	Do Not Enter - There is a problem in the communication link to the host system.
X PROG nnn	Yellow	Do Not Enter - Programming error is detected.

Message	Color	Meaning
X	Yellow	Do Not Enter - The printer assigned to your display station is not working.
X	Yellow	Do Not Enter (Wait) - The printer assigned to your display station is busy.
X	Yellow	Do Not Enter (Wait) - The printer assigned to your display station is very busy.
X	White	Do Not Enter (Wait) - Time is required to perform a function.
X <	Red	Do Not Enter (Press the Reset key) - Not enough.
X >	Red	Do Not Enter (Press the Reset key) - You tried to insert too much data into the field.
X ? +	Red	Do Not Enter (Press the Reset key) - Input ignored. Please retry.
X – f	Red	Do Not Enter (Press the Reset key) - The function you requested is not available.
X α + ? (α : Accent character)	Red	Do Not Enter (Press the Reset key) - Invalid Dead-key Combination.
X # ?	Red	Do Not Enter (Press the Reset key) - Only certain numerals can be entered here.
X – f X	Red	Do Not Enter (Press the Reset key) - You are not authorized to make that selection.
X – S	Red	Do Not Enter (Press the Reset key) - The symbol keyed is not available.

Message	Color	Meaning
✖←⚹→	Red	Do Not Enter (Press the Reset key) - Input not allowed in this position.
✖⚹✖	Red	Do Not Enter (Press the Reset key) - You are not authorized to do that function.
✖⚹ NUM	Red	Do Not Enter (Press the Reset key) - Numeric Data Only.
✖ SYSTEM	White	Do Not Enter (Wait) - The host system has locked your keyboard.
5nn	Blue	A communication error has been detected.
	White	Your display station is not authorized to display the last transaction time.
SS.t	White	The duration of the last inbound transaction is indicated in seconds and tenths of seconds.
mm:SS	White	The duration of the last inbound transaction is indicated in minutes and seconds.
??. ?	White	The current last transaction time measurement has been aborted.

Message	Color	Meaning
a⚹	Blue	Background Non-Transparent (Operator Selected)
a⯈	Blue	Background Non-Transparent (Field Inherit)
a⯈	Blue	Background Transparent (Field Inherit)
SO ⯈	Blue	Base Character Set (Field Inherit)
PSA ⯈	Blue	Programmed Symbol Set A (Field Inherit)
PSB ⯈	Blue	Programmed Symbol Set B (Field Inherit)
PSA ⚹	Blue	Programmed Symbol Set A (Operator Selected)
PSB ⚹	Blue	Programmed Symbol Set B (Operator Selected)
PSA	Blue	Programmed Symbol Set A
PSB	Blue	Programmed Symbol Set B
ALPHA	Blue	Alpha Shift
カナ	Blue	Katakana Shift
APL	Blue	APL
⇧	Blue	Upshift
NUM	Blue	Numeric

Message	Color	Meaning
a	Blue	Normal Non-highlighting (Field Inherit)
a	Blue	Blink Highlighting (Field Inherit)
a	Blue	Reverse Video Highlighting (Field Inherit)
a	Blue	Underscore Highlighting (Field Inherit)
a	Blue	Blink Highlighting (Operator Selected)
a	Blue	Reverse Video Highlighting (Operator Selected)
a	Blue	Underscore Highlighting (Operator Selected)
0	Green	Extended Color (Field Inherit)
	(: Blue)	
	**	Extended Color (Field Inherit)
	**	Extended Color (Operator Selected)

** : Any one of seven colors (Red, Pink, Green, Yellow, Blue, Turquoise and White). Symbols and are blue.

Message	Color	Meaning
^	Blue	Insert Mode.
+Cr	Blue	Graphic Cursor Mode.
▶	White	Extended Select Mode (Program-Function keys).
_ _	White	Assign Printer
nn	White	Printer Printing
nn	Yellow	Printer Failure - Press the DvCnl key.
??	Yellow	What Printer?
nn	Blue	Printer Assignment
99	Blue	Screen copy
DOC	Blue	Document mode
⇩	Blue	Word wrap
RR/CC	White	Cursor position

For any problems with your display station,
go to the next page.

PROBLEM
DETERMINATION

Problem Determination Procedures

This section will help you to isolate the failing element for replacement. Perform the initial checks first. If you still have a problem, continue with the isolation procedures.

Requests for service (including the replacement of the defective stand and power cord) should be directed to the IBM Service/Exchange Communication Center (S/ECC) by dialing toll-free 1-(800)-428-2569 in the United States and Puerto Rico.

Before making a call, be prepared to give

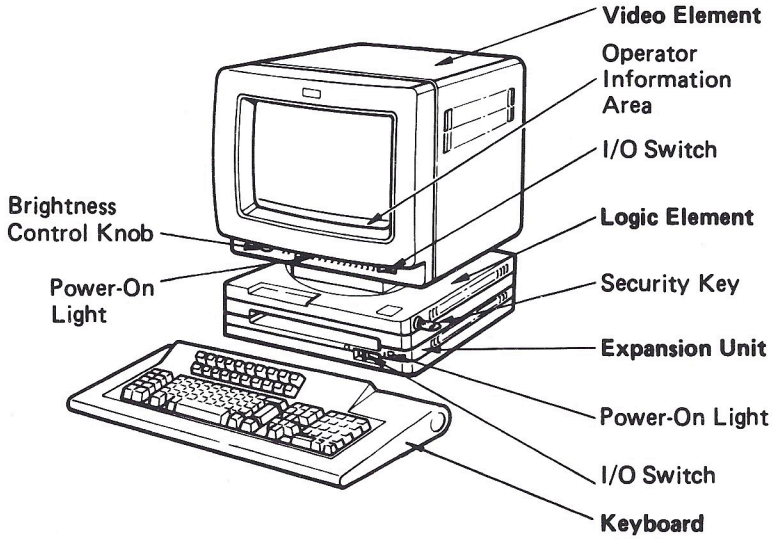
- Machine type and model number
- Defective element
- Serial number and part number of the defective element (written on the label affixed to each element)
- Your phone number, address, and zip code
- Host computer type
- Problem symptom

Note: If the power cord or video stand is defective, use the serial number of the logic element.

Initial Checks

1. Do the following.
   - Set the power switches of both the video element and the expansion unit (if present) to O(Off).
   - Make sure the cables are firmly connected.
   - Set the power switches of both the video element and the expansion unit (if present) to I(On).
   - If you still have the problem,
     then go on to step 2.
     otherwise resume work.

Continued on next page.

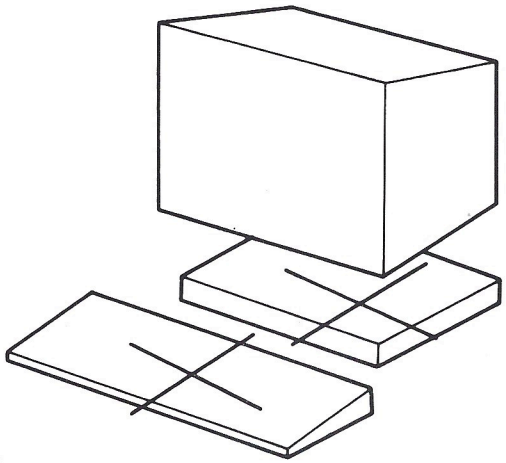


2. Is the power-on light of the video element ON?
   YES, go on to step 3.
   NO, go to "Power-on Light Problems" on page 67.

3. Does the alarm sound continuously?
   YES,
   - Set the power switch of the video element to O(Off).
   - Wait about 5 seconds.
   - Set the power switch of the video element to I(On).
   - If you still have the problem,
     then go to "Logic Element Removal" on page 90.
     otherwise resume work.

   NO, go on to step 4.

4. Does an image (as shown to the right) appear at power-on time with one or two X's?
   YES, go to "Display Problems" on page 58.
   NO, go on to step 5.



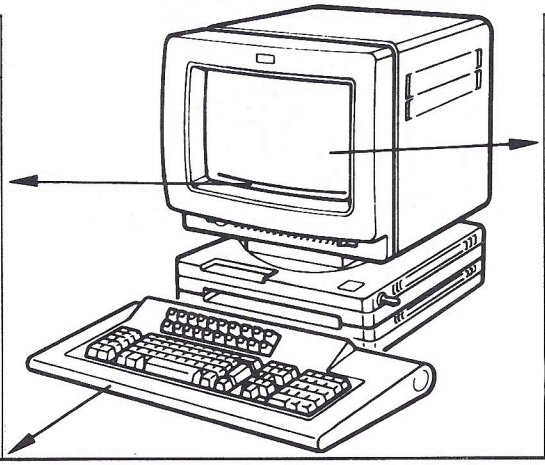
5. If you see one of following messages appears, take the action indicated.

Messages	Action
✖ ✆ ✖ SYSTEM	Wait until it disappears and resume work. The IBM 3174/3274 control unit or the host has not responded.
✖ ? ✖ -f ✖ ←⚥→ ✖ ⚥> ✖ ⚥ NUM	Press the Reset key and retry the operation. These messages are probably caused by an incorrect operation. If the problem continues, call your supervisor.
✖ ▭–▭ ✆ ✖ ▭–▭ ✆ ✆	Wait until it disappears, or cancel the print request by pressing and holding the Alt key, then pressing the DvCnl(Reset) key.

If you still have a problem after these checks,
go to the next page
and follow the isolation procedures.

Isolation Procedures

Identify your problem by using the following chart. Then go to the page specified. If you do not find the problem, contact your supervisor or your IBM marketing representative.

Message		Display
• One of the following messages is displayed, go to page 38. (n=0 to 9) ✕ nnn ✕ PROG nnn ✕ 5nn ✕ ✕ • The ready symbol 4 or S is not displayed, go to page 50.		• An image of your display station with one or two big X's appears on the screen at power-on time, go to page 58. • Display is blank, go to page 60. • Only a horizontal line is displayed, go to page 64. • Displayed image is distorted or incorrect, go to page 62. • Color is not correct, go to page 65. • Other display problems, go to page 62.

Keyboard	Optional Equipment	Alarm	Security Key
• Characters are typed but not displayed, go to "Keyboard Test" on page 54. • Characters are displayed without typing, go to "Keyboard Removal" on page 86. • Characters are displayed but not as entered or a command key is failing, go to "Keyboard Test" on page 54. • Keyboard clicker does not sound, go to page 53.	• Problems in printer, go to "Printer Problem" on page 71. • Problems in plotter, go to "Plotter Problem" on page 75 • Problems in mouse, go to "Mouse Problem" on page 78	• Alarm does not sound, go to "Alarm Problems" on page 56. • Alarm sounds continuously, go to step 3 on page 33	• Security key does not work, go to "Logic Element Removal" on page 90.

Operator Messages

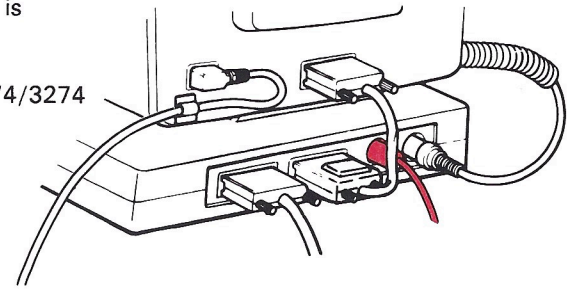
Find your message on the following pages, then take the action indicated.
For messages not described in this section, see "Operator Messages" on page 24.

Messages	Action
✕ 204 ✕ 207 ✕ 208 ✕ 209 ✕ 211 ✕ 240 ✕ 241 ✕ 242 ✕ 243 (continued)	1. Make sure the communication cable is firmly connected to the logic element. 2. Press the Reset key and retry the operation. 3. Does the message still appear? **YES,** go on to the next step. **NO,** resume work. 4. Set the power switch of the video element to O(Off). 5. Set the power switch of the video element to I(On). 6. Retry the operation. 7. Does the message still appear? **YES,** go to "Logic Element Check Procedure" on page 51. **NO,** resume work.

Messages	Action
✕ 386 ✕ 388 ✕ 389	Call your supervisor. The load diskette in the control unit may have a problem.
✕ 200 through ✕ 399 (Other than the messages on the previous page.)	1. Press the Reset key. 2. Retry the operation. 3. Does the message still appear? **YES,** go to "Logic Element Check Procedure" on page 51. **NO,** resume work.

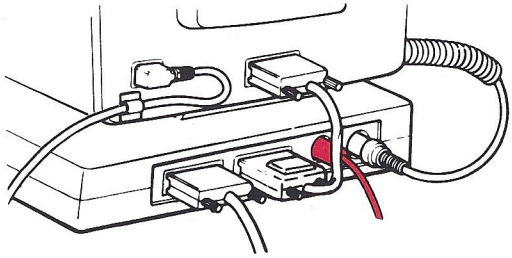
Messages	Action
✕ PROG 400 through ✕ PROG 499 ✕ PROG 700 through ✕ PROG 799 (Continued)	1. Press the Reset key. 2. Retry the operation. 3. Does the message still appear? **YES,** call your supervisor (or the person in charge of the application programs) for help. There is an error in the host application program. **NO,** resume work.

Messages	Action
✕ 610 through ✕ 614 ✕ 630 through ✕ 640	1. Make sure that the communication cable is firmly connected to the logic element. 2. Set the power switch of the video element to O(Off). 3. Set the power switch of the video element to I(On). 4. Does the message still appear? **YES,** call your supervisor (or the person in charge of the system configuration) for help. If your message number is between 610 and 614, there is an error in the system configuration. If your message number is between 630 and 640, there is an error in the diskette of the IBM 3174/3274 control unit. **NO,** resume work.

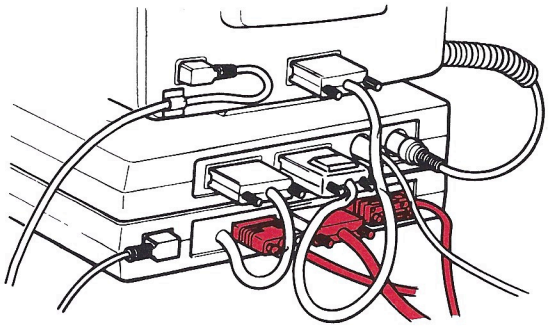


Messages	Action
✕ 615 through ✕ 619 ✕ 625 through ✕ 629 ✕ 660 through ✕ 669 ✕ 690 through ✕ 699 (Continued)	1. Press the Reset key. 2. Retry the operation. 3. Does the message still appear? **YES,** go on to step 4. **NO,** resume work. 4. Set the power switch of the video element to O(Off). 5. Set the power switch of the video element to I(On). 6. Retry the operation. 7. Does the message still appear? **YES,** contact your IBM service representative for help. **NO,** resume work.

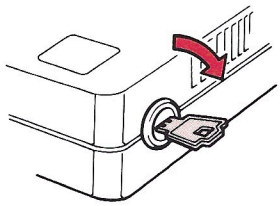
Messages	Action
✕ 650 through ✕ 659	1. Press the Reset key. 2. Retry the operation. 3. Does the message still appear? **YES,** go on to step 4. **NO,** resume work. 4. Set the power switch of the video element to O(Off). 5. Set the power switch of the video element to I(On). 6. Retry the operation. 7. Does the message still appear? **YES,** go to "Logic Element Removal" on page 90. **NO,** resume work.

Messages	Action
✕ 620 through ✕ 624 ✕ 670 (Continued)	1. Make sure the keyboard cable is firmly connected to the logic element. 2. Press the Reset key. 3. Retry the operation. 4. Does the message still appear? **YES,** go on to step 5. **NO,** resume work. 5. Set the power switch of the video element to O(Off). 6. Set the power switch of the video element to I(On). 7. Retry the operation. 8. Does the message still appear? **YES,** go to "Keyboard Removal" on page 86. **NO,** resume work. 

Messages	Action
✕ 641 through ✕ 649	1. Make sure the optional equipment (printer, plotter, and mouse) cables are firmly connected to the expansion unit, the optional equipment is powered-on, and paper is properly set in the printer and plotter. 2. Press the Reset key. 3. Retry the operation. 4. Does the message still appear? **YES,** go to "Optional Equipment" on page 37. **NO,** resume work.



Messages	Action
✕ 590	1. Make sure the communication cable is firmly connected to the logic element. 2. Set the power switch of the video element to O(Off). 3. Set the power switch of the video element to I(On). 4. Retry the operation. 5. Does the message still appear? **YES,** go to "Logic Element Check Procedure" on page 51. **NO,** resume work.
✕ 500 through ✕ 599 (Other than ✕ 590) (Continued)	1. Press the Reset key. 2. Retry the operation. 3. Does the message still appear? **YES,** call your supervisor (or the person in charge of the system configuration) for help. There may be something wrong between the host computer and the IBM 3174/3274 control unit. **NO,** resume work.

Messages	Action
✖ ⏲ ✖ SYSTEM	Wait until the message disappears, and resume work. The host has not responded.
✖ 🔑	1. Turn the security key unlock as the right figure. 2. Do you still see the message? **YES**, go to "Logic Element Removal" on page 90. **NO**, resume work. 

Messages	Action
✖ ? + ✖ – f ✖ ←⚙→ ✖ ⚙ > ✖ ⚙ NUM	Press the Reset key. Retry the operation. This message is probably caused by an incorrect operation. If the problem continues, call your supervisor.

Messages	Action
✕ ▭–⊘	1. Is the ▭–▭99 or the ▭–⊘99 displayed on the bottom right of the screen? **YES,** go to step 2. **NO,** tell the number next to the ▭–▭ or ▭–⊘ to the supervisor. The remote printer attached to the control unit may have a problem. 2. Press and hold the Alt key and press the DvCnl key. 3. Press the print key. 4. Does the message still appear? **YES,** go to "Printer Problem" on page 71. **NO,** resume work.
✕ ▭–▭ ⏲ ✕ ▭–▭ ⏲ ⏲	**Either** wait until the message disappears, **or** cancel the print request by pressing and holding the Alt key, then pressing the DvCnl(Reset) key. The printer is busy.

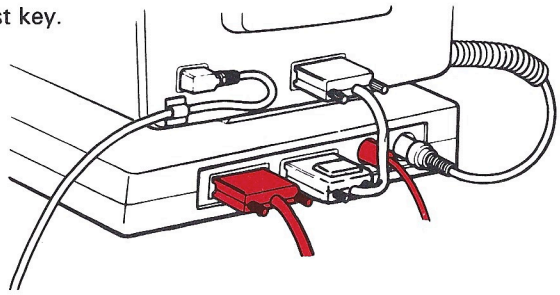
Note: For messages not described in this section, see "Operator Messages" on page 24.

Symptom	Action
Ready symbol ⊡ or S is not displayed	1. Does □ appear at the bottom left of the screen? **YES,** go on to step 2. **NO,** go to "Display Problems" on page 58. 2. Does a two-digit number appear to the right of □? **YES,** wait until ⊡ or S appears and resume work. **NO,** go on to step 3. 3. Set the power switch of the video element to O(Off). 4. Make sure that coaxial cable is firmly connected to the logic element. 5. Set the power switch of the video element to I(On). Wait about 12 seconds. 6. Does a two-digit number appear to the right of □? **YES,** wait until ⊡ or S appears and resume work. **NO,** go to "Logic Element Check Procedure" on page 51.

Logic Element Check Procedure

1. Set the power switch of the video element (and the expansion unit if present) to O(Off).
2. If you have a cable connected to connector 1 of the logic element, disconnect the cable from the logic element.
3. Disconnect the communication cable.
4. Set the power switch of the video element to I(On).
5. Check □ appears at the bottom left of the screen (about 12 seconds later).
6. Press and hold the Alt key on the left side of the space bar, then press the Test key. You should see the test pattern on the screen.

Continued on next page.



7. Press and hold the Alt key on the left side of the space bar, then press the key indicated in the figure.
8. You should see the symbol '01 -' or '01 +' at the top left of your screen.

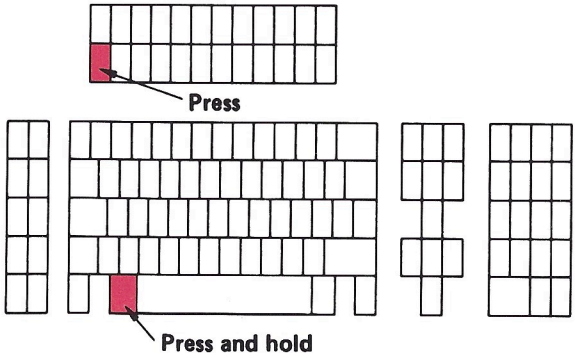
Do the following:

01 -,go to "Logic Element Removal" on page 90.

01 +,the problem may be caused by:

- Wrong operation
- Communication cable
- Control unit, Adapter
- Host computer

Call your supervisor.



Keyboard Problems

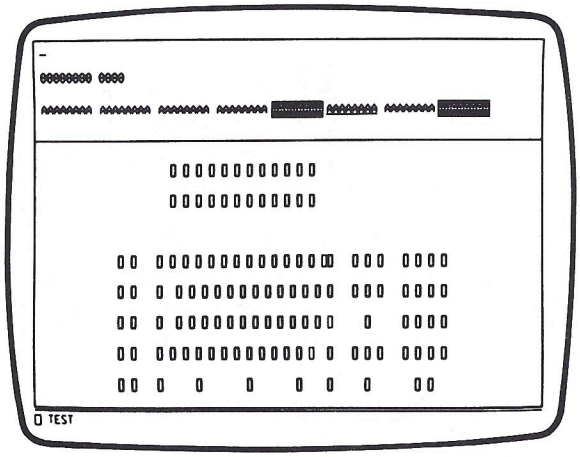
Check that all the cables are correctly and firmly connected.

Symptom	Action
Keyboard clicker does not sound.	1. Do you hear the short alarm when you press a key? **YES,** resume work. On your display station, the short alarm is the keyboard clicker. **NO,** go on to step 2. 2. Press and hold the Alt key, then press the clicker key. 3. Press any key. 4. Do you hear the short alarm? **YES,** resume work. **NO,** go to "Logic Element Removal" on page 90.

Keyboard Test

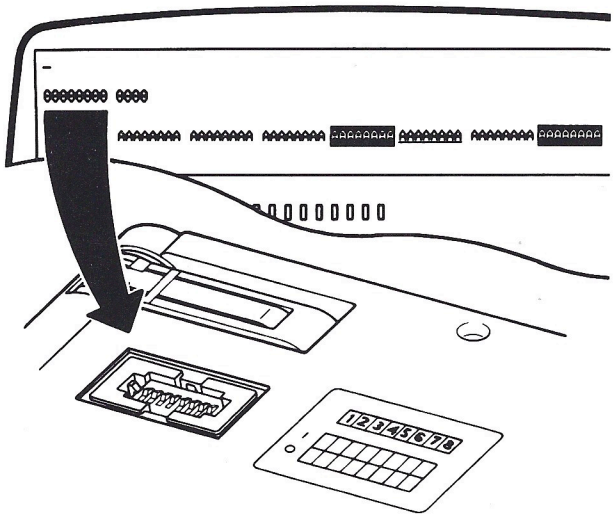
1. Press and hold the Alt key on the left side of the space bar, then press the Test key.
2. Do you see the test patter as shown in the right?
   YES, go on to step 3.
   NO, go to "Keyboard Removal" on page 86.

Continued on next page.



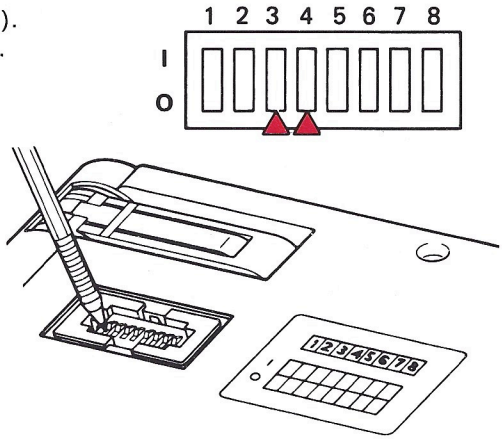
3. Are the switch settings on the bottom of the keyboard the same as indicated at the top left of the test pattern?
   Note: 'I' means On, 'O' means Off.
   YES, go on to step 5.
   NO, go to "Keyboard Removal" on page 86.
4. Press the key causing the problem.
5. Does the equivalent key shown on the display change from □ to ■?
   Note: Some keys stay reversed and some return to normal video.
   YES, go on to step 6.
   NO, go to "Keyboard Removal" on page 86.
6. Ask your supervisor if the customization has been properly done.
7. Has the customization been done properly?
   YES, go to "Logic Element Removal" on page 90.
   NO, call your supervisor for proper customization.

Note: The switches and the label may not be exactly as shown.

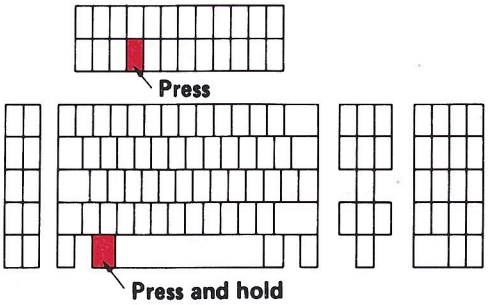


Alarm Problems

Symptom	Action
Alarm does not sound	1. Set the power switch of the video element to O(Off). 2. Set the power switch of the video element to I(On). 3. Does the alarm sound after 12 seconds? **NO,** go to "Logic Element Removal" on page 90. **YES,** adjust the audible volume by: • Turning the keyboard upside down. • Setting the switch using a pointed instrument such as ball point pen shown in the figure to the right. *Note:* The switches and the label may not be exactly as shown. Continued on next page.



Symptom	Action
Alarm does not sound (Continued)	4. Press and hold the Alt key on the left side of the space bar, then press the Test key. 5. You should see the test pattern on the screen. 6. Press and hold the Alt key on the left side of the space bar, then press the key indicated in the figure. 7. Does the alarm sound? **YES,** set the power switch of the video element to O(Off), to I(On) again, and resume work. **NO,** go to "Keyboard Removal" on page 86. *Note:* You may re-adjust your audible alarm volume by the steps on page 20.



Display Problems

Symptom	Action
An image of your display station appears on the screen	• If you see an image as Figure 1, go to "Logic Element Removal" on page 90 • If you see an image as Figure 2, then 1. Set the power switch of the video element to O(Off). 2. Make sure the keyboard cable is firmly connected to the logic element. 3. Set the power switch of the video element to I(On). 4. Do you still see the image as Figure 2? **YES,** go to "Keyboard Removal" on page 86. **NO,** resume work.

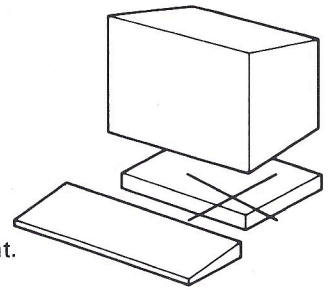


Figure 1

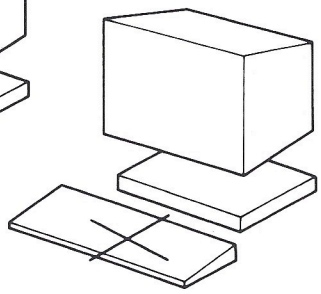
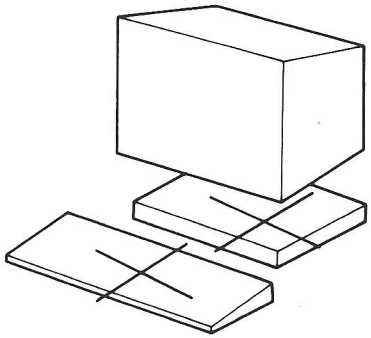
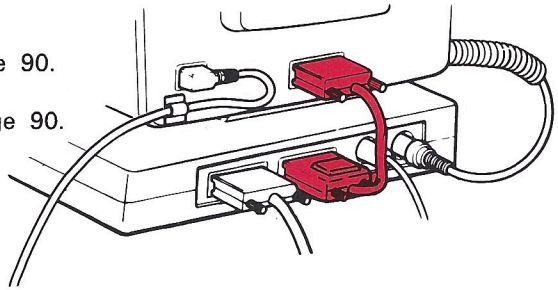
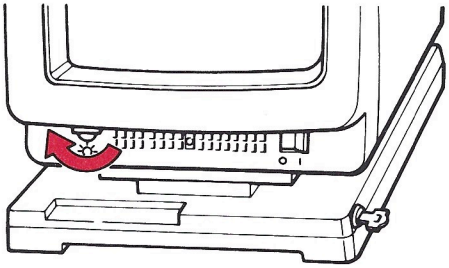


Figure 2

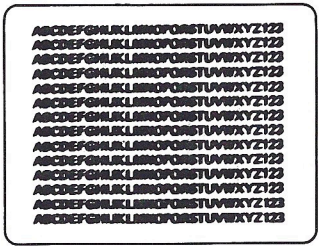
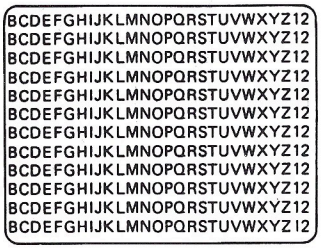
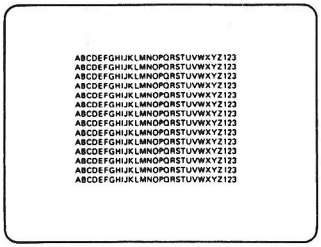
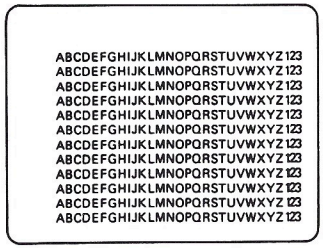
An image of your display station appears on the screen (Continued)	• If you see an image as Figure 3, then 1. Set the power switch of the video element to O(Off). 2. Disconnect the keyboard cable. 3. Set the power switch of the video element to I(On). 4. Do you still see the image as Figure 3? **YES,** go to "Logic Element Removal" on page 90. **NO,** go to "Keyboard Removal" on page 86. Continued on next page.  **Figure 3**

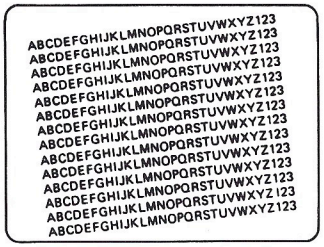
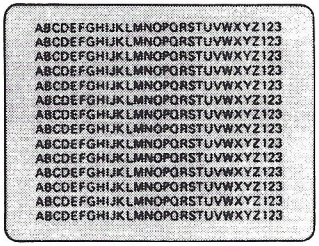
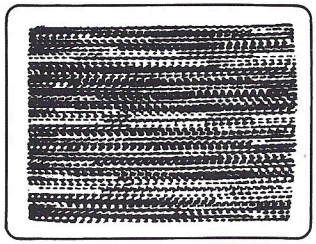
Symptom	Action
Display is blank	1. Make sure the video cable is firmly connected to both the video element and the logic element. 2. Is the power-on light ON? **YES,** go on to step 3. **NO,** go to "Power-on Light Problems" on page 67. 3. Set the power switch of the video element to O(Off). 4. Set the power switch of the video element to I(On). 5. Did you hear the short alarm 12 seconds after you set the switch? **YES,** go on to step 6. **NO,** go to "Logic Element Removal" on page 90. 6. Is the alarm sounding continuously? **YES,** go to "Logic Element Removal" on page 90. **NO,** go on to step 7. 

Symptom	Action
Display is blank (Continued)	7. Turn brightness control to maximum as shown in the figure to the right. 8. Does everything look OK? **YES,** resume work. **NO,** go on to step 9. 9. Do you see [4] or S with a message at the bottom left of the screen? **YES,** go to "Operator Messages" on page 38. **NO,** go on to step 10. 10. Do you see [ ] at the bottom left of the screen? **YES,** go to page 50. **NO,** go to "Video Element Removal" on page 82. 

Displayed image is distorted or incorrect

Do you have one or more of the following 7 problems?

1. Image out of focus	2. Image expanded	3. Image shrunk	4. Image shifted right/left or up/down
			

5. Image tilted	6. Image too dark when brightness set at maximum	7. Vertical or/and horizontal roll
		

YES, go to "Video Element Removal" on page 82.
NO, go on to the next page.

Symptom	Action
Only a horizontal line is displayed	Is the alarm sounding continuously? **YES,** go to "Logic Element Removal" on page 90. **NO,** go to "Video Element Removal" on page 82.
Characters are typed but not displayed, or unexpected character (a character different from what should appear) appears.	Go to "Keyboard Test" on page 54.
Incorrectly formed or incomplete images are displayed	Is the alarm sounding continuously? **YES,** go to "Logic Element Removal" on page 90. **NO,** go to "Video Element Removal" on page 82.

Symptom	Action
Color is not correct	1. Press and hold the Alt key then press Test key. 2. Do eight colors 'AAAAAAAA' appear right? ***Note:***From the left, the colors are:red, green, blue, pink(blinking), turquoise(reversed), yellow(underscored), white(blinking), and green(reversed). **YES,** call your supervisor. The application program may have a problem. **No,** go to the next step. 3. Set the power switch of the video element to O(Off). 4. Wait about 15 minutes. 5. Set the power switch of the video element to I(On). 6. Does everything look OK? **YES,** resume work. **NO,** go on to step 7. Continued on the next page.

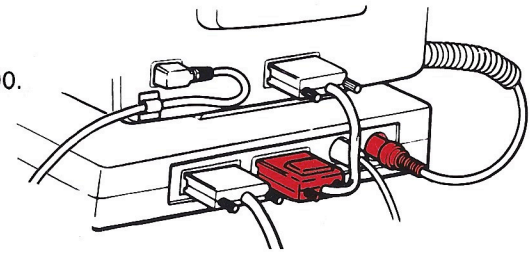
Symptom	Action
Color is not correct (Continued)	7. Set the power switch of the video element to O(Off). 8. Wait about 15 minutes. 9. Set the power switch of the video element to I(On). 10. Does everything look OK? **YES,** resume work. **NO,** go to "Video Element Removal" on page 82.

If none of the above describes your problem, call your supervisor for help.

Power-on Light Problems

Symptom	Action
Power-on light of the video element is not ON	1. Set the power switch of the video element to O (Off). 2. Make sure power is available at the power outlet. (You can check this by using a portable light or other appliances.) 3. Make sure the power cord is firmly connected to both the power outlet and your display station. 4. Set the power switch of the video element to I (On). 5. Does the power-on light of the video element come on? **YES,** resume work. **NO,** go on to step 6.

Symptom	Action
Power-on light of the video element is not ON (Continued)	6. Do you have an expansion unit? **YES,** do the following: a. Set the power switch of the video element to O (Off). b. Disconnect the expansion unit cable from the logic element. c. Set the power switch of the video element to I (On). d. Does the power-on light of the video element come on? **YES,** go to "Expansion Unit Removal" on page 94. **NO,** go on to step 7. **NO,** go on to step 7. 7. Set the power switch of the video element to O (Off). 8. Disconnect the keyboard cable from the logic element. 9. Set the power switch of the video element to I (On).

Symptom	Action
Power-on light of the video element is not ON (Continued)	10. Does the power-on light of the video element come on? **YES,** go to "Keyboard Removal" on page 86. **NO,** go on to step 11. 11. Set the power switch of the video element to O (Off). 12. Disconnect the video cable from the logic element. 13. Set the power switch of the video element to I (On). 14. Does the power-on light of the video element come on? **YES,** go on to step 15. **NO,** go on to step 16. 15. Do you have another IBM 3192-G? **YES,** go on to step 16. **NO,** go to "Logic Element Removal" on page 90. 

Symptom	Action
Power-on light of the video element is not ON (Continued)	16. Do the following: a. Set the power switch to O (Off). b. Connect the video cable of the new video element to the logic element. c. Set the power switch to I (On). d. Does the power-on light come on? **YES,** go on step 17. **NO,** go to "Logic Element Removal" on page 90. 17. Do you have a spare power cord, another IBM 3192-G or an expansion unit? **YES,** do the following: a. Set the power switch of the video element to O (Off). b. Replace the power cord with the spare power cord. c. Set the power switch of the video element to I (On). d. Does the power-on light of the video element come on? **YES,** exchange the old power cord. **NO,** replace the video element. Go to "Video Element Removal" on page 82. **NO,** replace the video element. Go to "Video Element Removal" on page 82.

Printer Problem

1. If you use the IBM 5201 Quietwriter, make sure that the font cartridge type A is installed into the left slot.
2. Do you see X PROG nnn (n=0 through 9) on the papaer which is set in the printer?
   Yes, call your supervisor. The application program has an error.
   No, go to the next step.
3. Do you see ▭—▭ 99 or ▭—⊘ 99 at the bottom corner of the screen?
   Yes, go to the next step.
   No, call your supervisor.
4. Do you have an expansion unit?
   Yes, do the following steps.
   a. Make sure the cable of the expansion unit is connected to the connector No. 1 on the logic element.
   b. Make sure the cable of the printer is firmly connected to the connector No. 7 on the expansion unit.
   c. Make sure the part number of the printer cable is 6342058. If the cable is not correct, please use the correct cable.

Continued on next page.

   e. Make sure the power cords of the expansion unit and the printer are firmly connected to the power outlet.
   f. Set the power switch of the expansion unit and the printer to On (I). Go to step 5.
   No, do the following steps.
   a. Make sure the part number of the printer cable is 6342058. If the cable is not correct, please use the correct cable.
   b. Make sure the printer cable is firmly connected to the connector No. 1 on the logic element.
   c. Set the power switch of the printer to On (I). Go to step 6.
5. Is the power-on light of the expansion unit on?
   Yes, go to the next step.
   No, go to "Expansion Unit Removal" on page 94.
6. Is the ready indicator of the printer On (I)?
   Yes, go to the next step.
   No, see the problem solving portion of the appropriate printer manual.
7. Do you see [4] or S in the operator information area?
   Yes, go to the next step.
   No, go to step 1 on page 50.

Continued on next page.

8. Press and hold the Alt key and then press the DvCnl key.
9. Type "abc".
10. Press the Print key.
11. Do you see the same image as on the screen printed on the printer?
    Yes, resume work. If the problem continues, call your supervisor.
    No, go to the next step.
12. Do you have an expansion unit?
    Yes, go to the next step.
    No, go to step 23 on page 74.
13. Set the power switches of the expansion unit and the printer to Off (O).
14. Unplug the printer cable from the connector No. 7 on the expansion unit. If the mouse and/or the plotter is connected to the expansion unit, unplug the cable from the connector No. 6 and/or No. 8 on the expansion unit.
15. Set the power switch of the expansion unit to On (I).
16. Press and hold the Alt key then press the Test key.
17. Press and hold the Alt key then press the PF3 key.

Continued on next page.

18. Do you see '03+' on the top left of your screen?
    Yes, see the problem solving portion of the appropriate printer manual.
    No, set the power switch of the video element and the expansion unit to Off (O). Unplug the expansion unit cable from the connector No. 1 on the logic element.
19. Set the power switch of the video element to On (I).
20. Press and hold the Alt key then press the Test key.
21. Press and hold the Alt key then press PF2 key.
22. Do you see '02+' on the top left of your screen?
    Yes, go to "Expansion Unit Removal" on page 94.
    No, go to "Logic Element Removal" on page 90.
23. Set the power switches of the video element and the printer to Off (O).
24. Unplug the printer cable from the connector No. 1 on the logic element.
25. Set the power switch of the video element to On (I).
26. Press and hold the Alt key then press the Test eky.
27. Press and hold the Alt key then press the PF2 key.
28. Do you see '02+' on the top left of your screen?
    Yes, see the problem solving portion of the appropriate printer manual.
    No, go to "Logic Element Removal" on page 90.

Plotter Problem

1. Make sure that the first (marked '1') and the third (marked '4') address switches next to the connector of your plotter are I (On).
2. Do you see 4 or S in the operator information area?
   Yes, go to the next step.
   No, go to step 1 on page 50.
3. Make sure that the cable of the expansion unit is firmly connected to the connector No. 1 on the logic element.
4. Make sure that the cable of the plotter is firmly connected to the connector No. 8 on the expansion unit.
5. Make sure that the power cords of the expansion unit and the logic element is firmly connected to the power outlet.

Continued on next page.

6. Set the power switches of the expansion unit and the plotter to I (On).
7. Does the power-on light of the expansion unit come on?
   Yes, go to the next step.
   No, go to "Expansion Unit Removal" on page 94.
8. Press and hold the Alt key then press the Test key.
9. Press and hold the Alt key then press the PF8 key.
10. Is □△□ printed on the plotter?
    Yes, press and hold the Alt key then press the Test key. Resume work. If the problem continues, call your supervisor. The application program has an problem.
    No, go to the next step.
11. Set the power switches of the expansion unit and the plotter to Off (O).
12. Unplug the plotter cable from the No. 8 on the expansion unit. If the mouse and/or the printer is connected to the expansion unit, unplug the cable from the connector No. 6 and/or No. 7 on the expansion unit.
13. Set the power switch of the expansion unit to I (On).
14. Press and hold the Alt key then press the Test key.
15. Press and hold the Alt key then press the PF3 key.

Continued on next page.

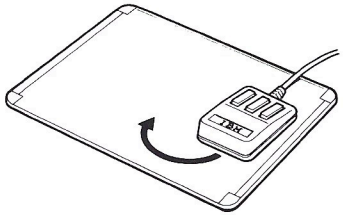
16. Do you see '03+' on the top left of your screen?
    Yes, see the problem solving portion of the appropriate plotter manual.
    No, go to the next step.
17. Set the power switch of the video element and the expansion unit to O (Off).
18. Unplug the cable of the expansion unit from the connector No. 1 on the logic element.
19. Set the power switch of the video element to I (On).
20. Press and hold the Alt key then press the Test key.
21. Press and hold the Alt key then press the PF2 key.
22. Do you see '02+' on the top left of your screen?
    Yes, go to "Expansion Unit Removal" on page 94.
    No, go to "Logic Element Removal" on page 90.

Mouse Problem

1. Make sure the cable of the expansion unit is firmly connected to the connector No. 1 on the logic element.
2. Make sure the cable of the mouse is firmly connected to the connector No. 6 on the expansion unit.
3. Make sure the power cord of the expansion unit is firmly connected to the power outlet.
4. Do you see 4 or S in the operator information area?
   Yes, go to the next step.
   No, go to step 1 on page 50.
5. Set the power switch of the expansion unit to I (On).
6. Does the power-on light of the expansion unit come on?
   Yes, go to the next step.
   No, go to "Expansion Unit Removal" on page 94.
7. Do you see a red light at the bottom of the mouse?
   Yes, go to the next step.
   No, replace the mouse.

Continued on next page.

8. Place the pad and the mouse as on the right figure.
9. Set the power switch of the expansion unit to O (Off).
10. Set the power switch of the expansion unit to I (On).
11. Move the mouse on the pad clockwise three times.
12. Does the cursor move according to the mouse movement?
    Yes, resume work.
    No, go to the next step.
13. Set the power switch of the expansion unit to O (Off).
14. Unplug the cable of the mouse from the expansion unit. If the printer and/or the plotter is connected to the expansion unit, unplug the cable from the connector No. 7 and/or No. 8 on the expansion unit.
15. Set the power switch of the expansion unit to I (On).
16. Press and hold the Alt key then press the Test key.
17. Press and hold the Alt key then press the PF3 key.



Continued on next page.

18. Do you see '03+' on the top left of your screen?
    Yes, contact your IBM marketing representative. The mouse has a problem.
    No, go to the next step.
19. Set the power switches of the video element and the expansion unit to O (Off).
20. Unplug the cable of the expansion unit from the connector No. 1 on the logic element.
21. Set the power switch of the video element to I (On).
22. Press and hold the Alt key then press the Test key.
23. Press and hold the Alt key then press the PF2 key.
24. Do you see '02+' on the top left of your screen?
    Yes, go to "Expansion Unit Removal" on page 94.
    No, go to "Logic Element Removal" on page 90.

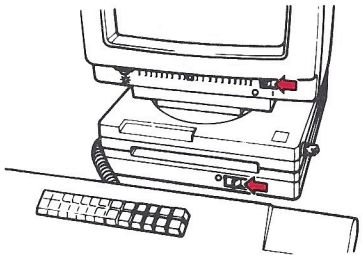
Removal and Replacement Procedures

This section describes how to remove and replace the video element, the logic element, the keyboard, and the IBM 3979 expansion unit.

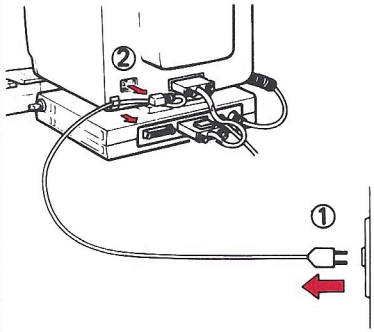
Removal	Replacement
"Video Element Removal" on page 82	"Video Element Replacement" on page 84
"Keyboard Removal" on page 86	"Keyboard Replacement" on page 88
"Logic Element Removal" on page 90	"Logic Element Replacement" on page 92
"Expansion Unit Removal" on page 94	"Expansion Unit Replacement" on page 95

Video Element Removal

1 Set the power switch of the video element (and the expansion unit if present) to O(Off).

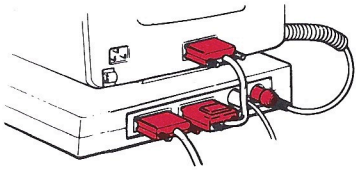


2 Unlock the cable clamp and unplug the power cord from both ends.

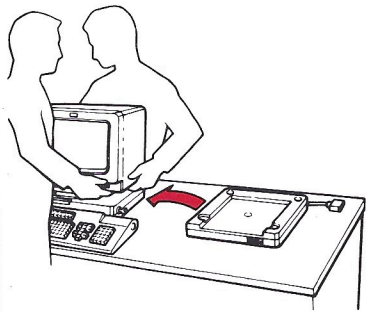


3 Unscrew and pull out all cables from the logic element and the video element.

CAUTION
Do not disconnect the communication cable during an electrical storm.

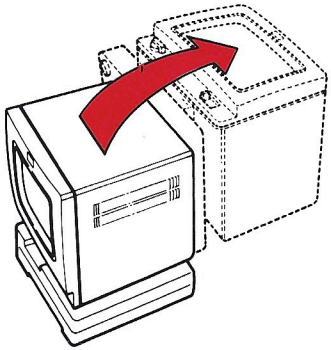


4 If you have an expansion unit, remove the display unit from the expansion unit.

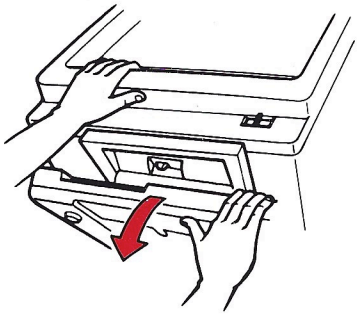


Video Element Removal (Continued)

5 Turn the video element so that the screen faces up.



6 Pull the logic element slightly towards you and locate the gray latch.

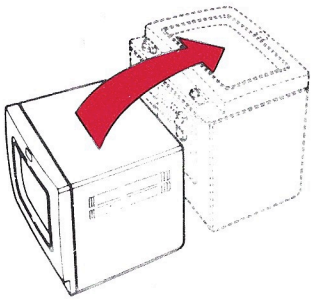


7 While holding the logic unit, push the latch to the right to unlock the stand from the video element.

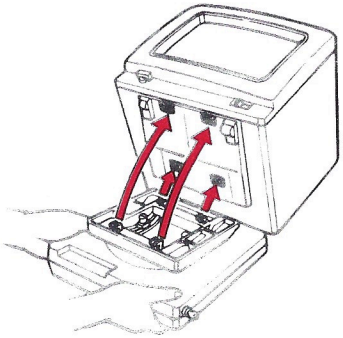
8 Go to "Packing Instructions" on page 97 for directions on returning the video element to IBM. Refer to the next page for replacement.

Video Element Replacement

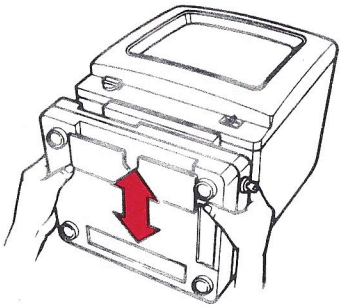
1 Turn the new video element so that the screen faces up.



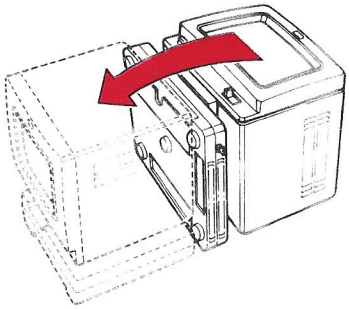
2 Attach the video stand to the new video element by inserting the hooks into the slots; lift the logic element slightly.



3 Make sure the logic element is locked onto the video element by moving the logic element up and down.

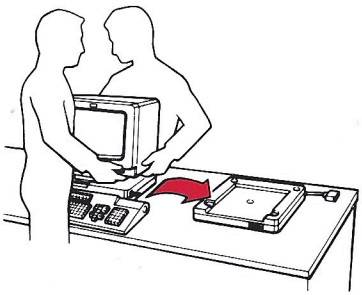


4 Turn the unit right side up.



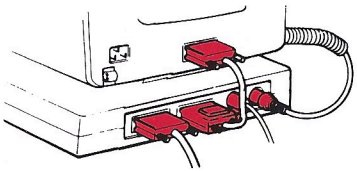
Video Element Replacement (Continued)

5 If you have an expansion unit, put the display unit onto the expansion unit.



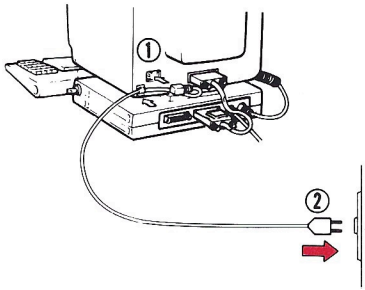
6 Connect all cables to the logic element and the video element.

CAUTION
Do not connect the communication cable during an electrical storm.

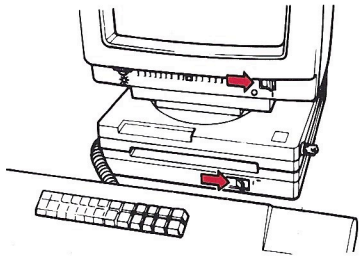


7 Plug in the power cord to the video element and to the power outlet, and lock the cable clamp.

Note: Make sure the distance between the power cord and the video-cable connector is at least 2cm (0.8 inches).

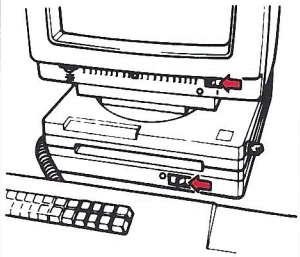


8 Set the power switch of the video element (and the expansion unit if present) to I(On).

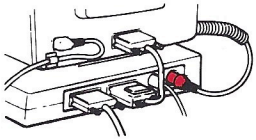


Keyboard Removal

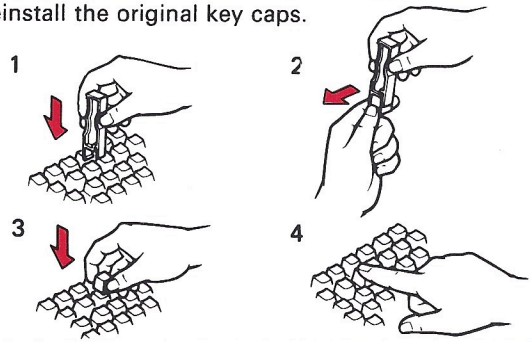
1 Set the power switch of the video element (and the expansion unit if present) to O (Off).



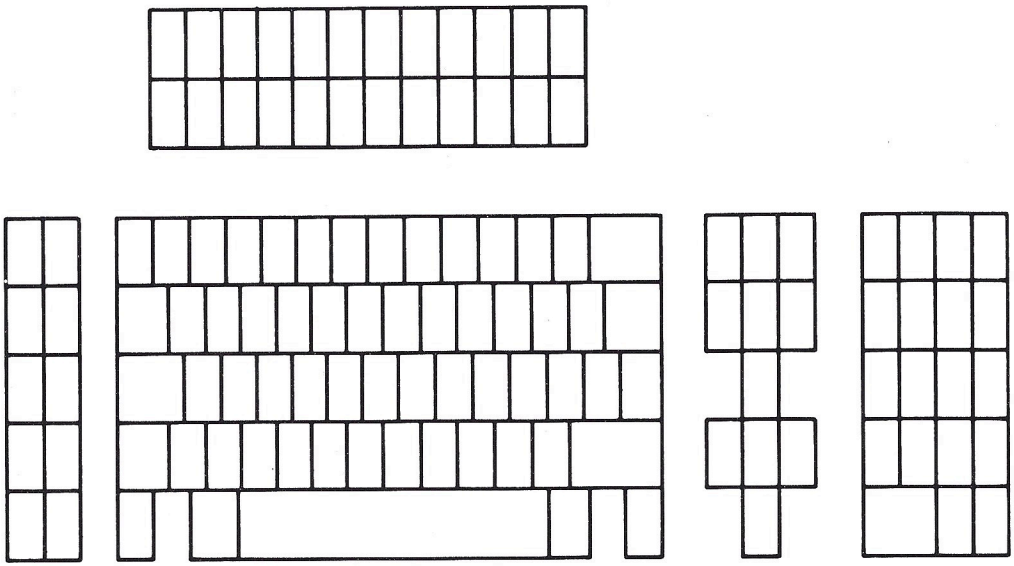
2 Unscrew and pull out the keyboard cable from the logic element.

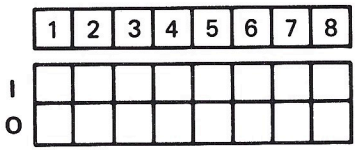


3 Record the settings of the switch (which is underneath the keyboard) onto the keyboard layout sheet on the next page. If any keys have been changed, also record the keyboard layout and reinstall the original key caps.



4 Go to "Packing Instructions" on page 97 for directions on returning the keyboard to IBM. Refer to page 88 for replacement.

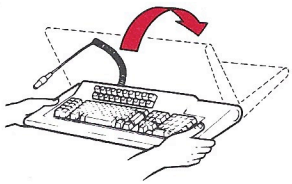




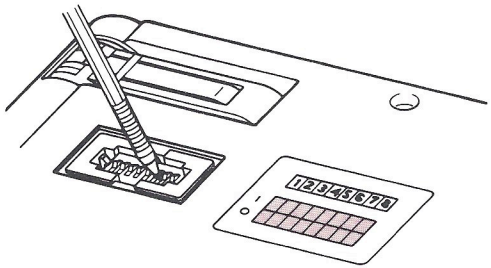
KEYBOARD LAYOUT SHEET

Keyboard Replacement

1 Turn the new keyboard element over.

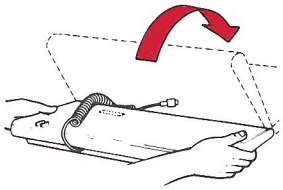


2 Mark the switch settings on to the label and set the switches as indicated on the keyboard layout sheet, if specified.
IMPORTANT: If the switch settings are not set the same as the switch settings recorded on the keyboard layout sheet, the keyboard may not work properly. Use a ball point pen. Do not use a pencil.



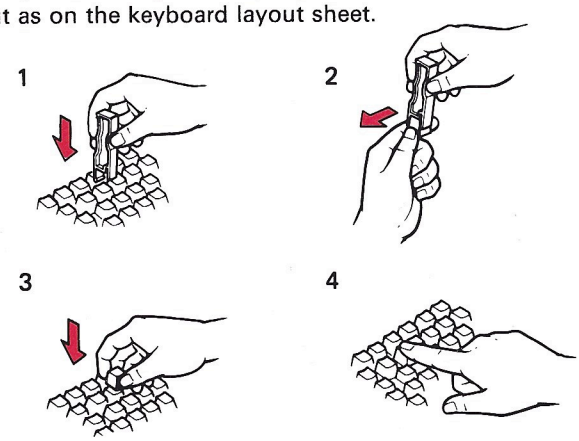
Note: The switches and the label may not be exactly as shown.

3 Turn the keyboard right side up.

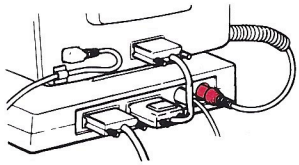


Keyboard Replacement (Continued)

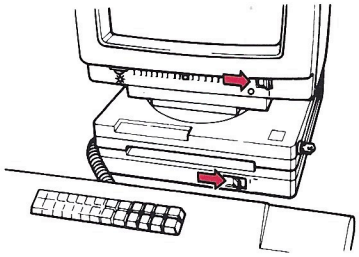
4 If required, change the key caps to match the old keyboard layout as on the keyboard layout sheet.



5 Connect the keyboard cable to the logic element.

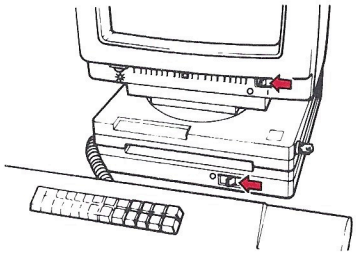


6 Set the power switch of the video element (and the expansion unit if present) to I (On).

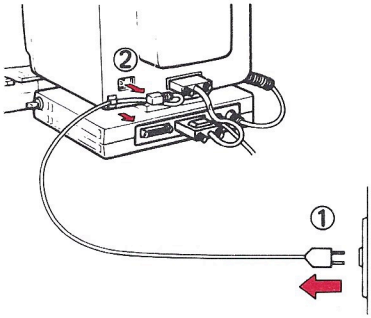


Logic Element Removal

1 Set the power switch of the video element (and the expansion unit if present) to O (Off).



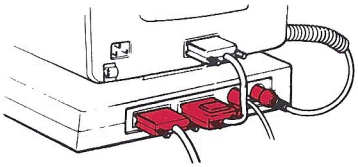
2 Unlock the cable clamp and unplug the power cord from both ends.



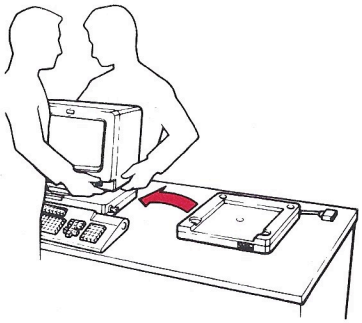
3 Unscrew and pull out all cables from the logic element and the video element.

CAUTION

Do not disconnect the communication cable during an electrical storm.

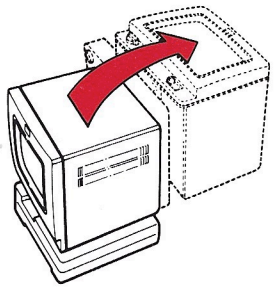


4 If you have an expansion unit, remove the display unit from the expansion unit.

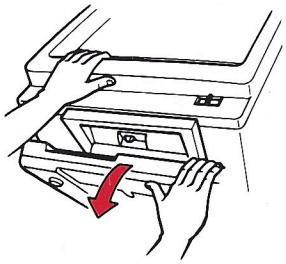


Logic Element Removal (Continued)

5 Turn the video element so that the screen faces up.

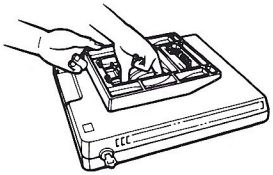


6 Pull the logic element slightly towards you and locate the gray latch.



7 While holding the logic element, push the latch to the right to unlock the stand from the video element.

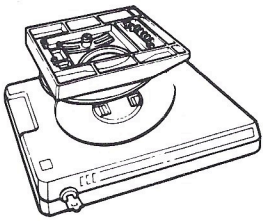
8 Pinch the two gray latches on the logic element to unlock the stand.



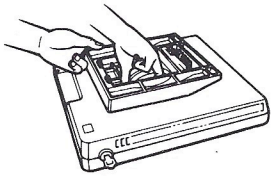
9 Go to "Packing Instructions" on page 97 for directions on returning the logic element to IBM. Refer to the next page for replacement.

Logic Element Replacement

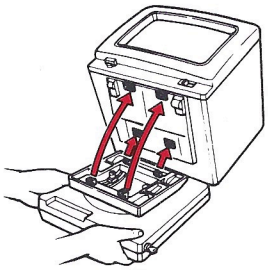
1 Set the stand on the new logic element and align the notch.



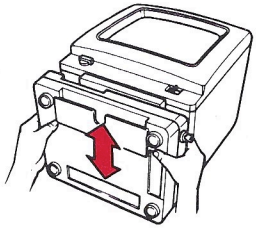
2 Lock the stand to the logic element by pinching the two gray latches on the logic element.



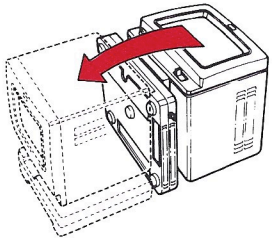
3 Lock the stand to the video element by inserting the hooks into the slots and lifting the logic element slightly.



4 Make sure the logic element is locked onto the video element by moving the logic element up and down.

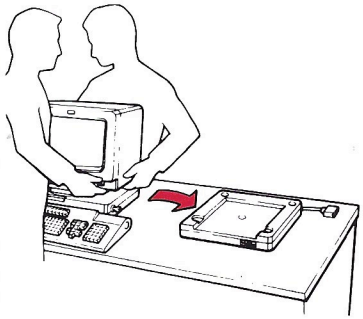


5 Turn the unit right side up.



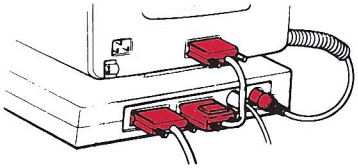
Logic Element Replacement (Continued)

6 If you have an expansion unit, put the display unit onto the expansion unit.



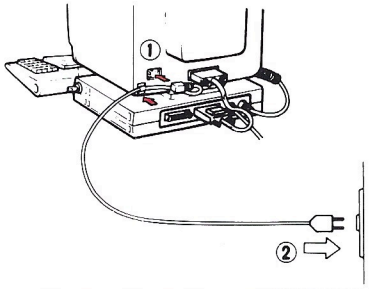
7 Connect all cables to the logic element and the video element.

CAUTION
Do not connect the communication cable during an electrical storm.

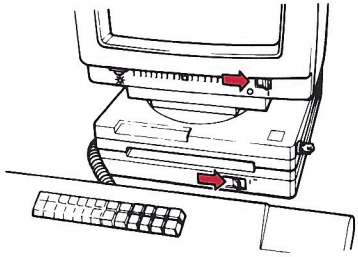


8 Plug in the power cord to the video element, and to the power outlet and install the cable clamp.

Note: Make sure the distance between the power cord and the video-cable connector is at least 2cm (0.8 inches).

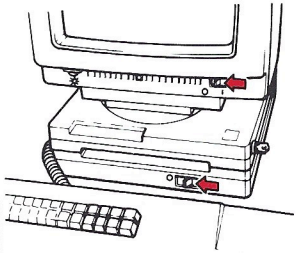


9 Set the power switch of the video element (and the expansion unit if present) to I(On).

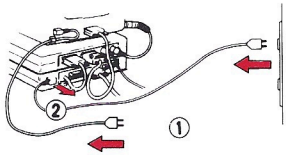


Expansion Unit Removal

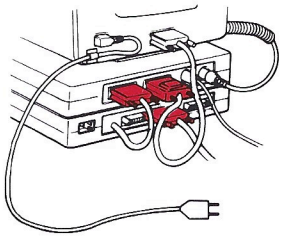
1 Set the power switches of the video element and the expansion unit to O(Off).



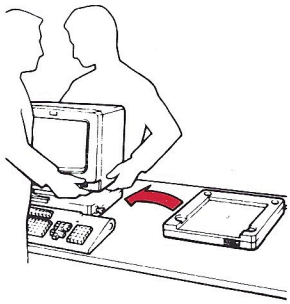
2 Unplug the power cords of the video element and the expansion unit from the power outlet (1) and disconnect the power cord from the expansion unit (2).



3 Unscrew all cables from the expansion unit and disconnect the expansion unit cable from the logic element.



4 Remove the display station from the expansion unit.

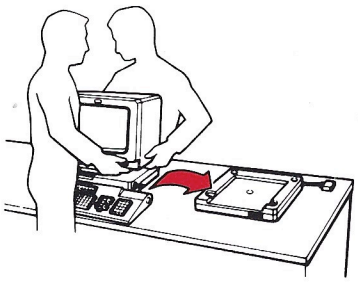


5 Go to "Packing Instructions" on page 97 for directions on returning the expansion unit to IBM. Refer to the next page for replacement.

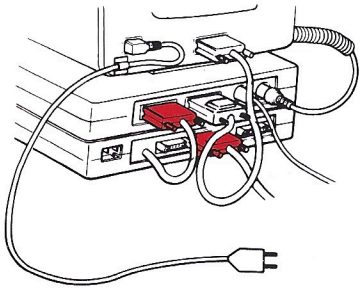
CAUTION
The expansion unit is not repairable. Personnel should not attempt to gain access as hazardous voltages are present.

Expansion Unit Replacement

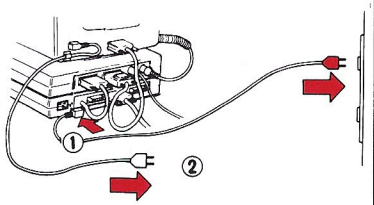
1 Place the display station onto the new expansion unit. (Hold the video element so that your finger will not be pinched.)



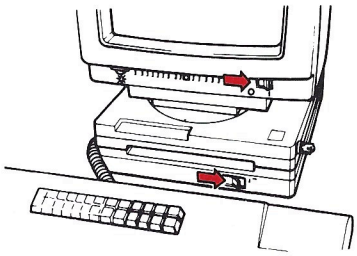
2 Connect the expansion unit cable to the logic element and optional equipment (printer, plotter or mouse) cables to the expansion unit.



3 Connect the power cord to the expansion unit (1) and plug in the power cords of the video element and the expansion unit (2).



4 Set the power switches of the video element and the expansion unit to I (On).



Information Plate Location

You can find the information plates on the work-station elements as follows.

Information Plates	Video element	Logic element	Keyboard	Expansion unit
Serial Number Plate	rear	front/bottom	bottom	front/right
Manufacturing Plate	rear	bottom	bottom	right
Power Rating Plate	rear	not available	not available	bottom
Listing or Certification Plate*	rear	bottom	bottom	bottom
Trademark Plate*	rear	not available	not available	bottom

* : Applied for required countries only.

For packing elements,
go to the next page

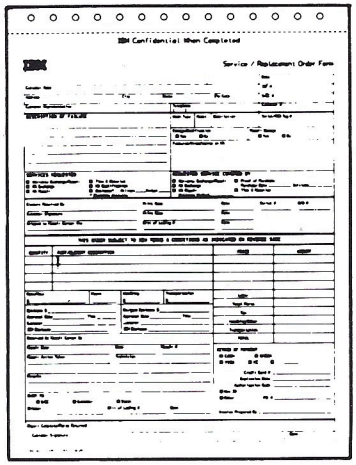
PACKING INSTRUCTIONS

Packing Instructions

For the user who needs the IBM Repair Center Maintenance Service:

1. Follow the appropriate instructions and pack your failing element in the designated IBM shipping container.
2. If required, complete the IBM Service/Replacement Order Form (see the example shown on the right). Include the form in the package.
3. Send the package to the IBM Repair Center.

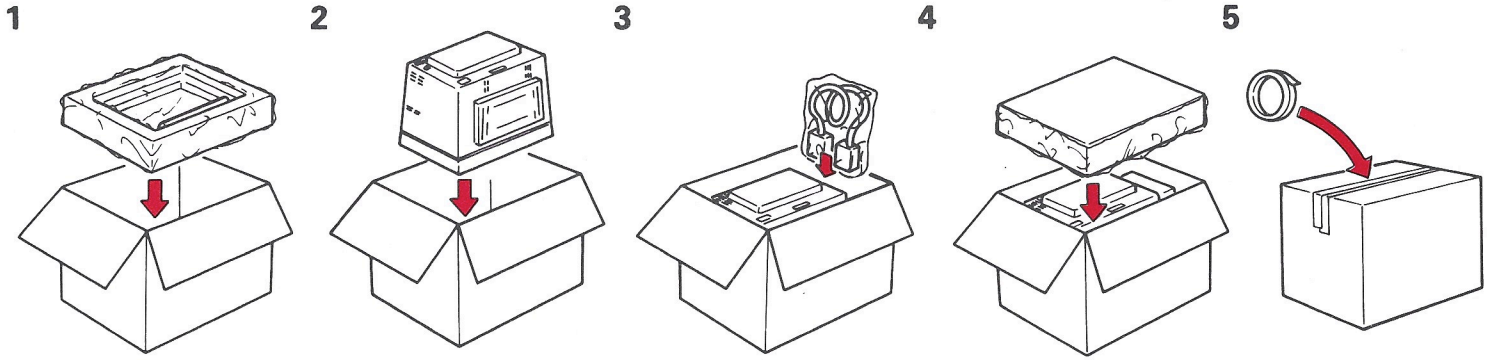
Note: It is the user's responsibility to maintain the shipping containers. You may purchase them from the FE Branch Office or Parts Distribution Center (for U.S. only). IBM part numbers of these containers are: for the video element, 6317356; for the logic element, 6316868; and for the keyboard, 6316883. Any unserviceable shipping container received by the IBM Repair Center will be replaced before return shipment, and the user will be billed accordingly.



Video Element

The failing element should be packed using the original or equivalent packaging material and returned to IBM for repair or replacement.

Note: Keep the power cord. Be sure to pack the video cable with the video element.

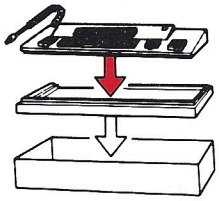


Keyboard

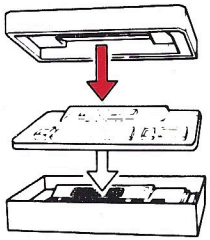
The failing element should be packed using the original or equivalent packaging material and returned to IBM for repair or replacement.

Note: Be sure to remove all accessories before returning the keyboard. Keep the keyboard overlay.

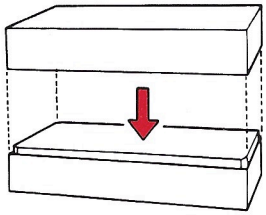
1



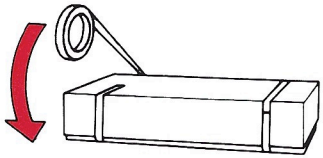
2



3



4

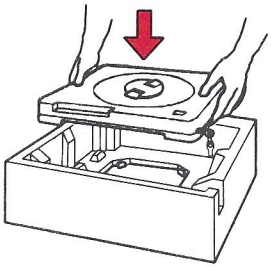


Logic Element

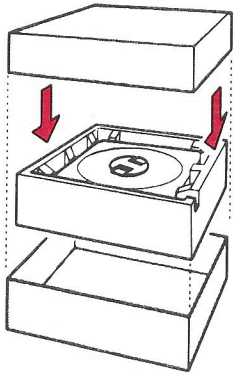
The failing element and both security keys should be packed using the original or equivalent packaging material and returned to IBM for repair or replacement.

Note: Keep the video stand and *Operator Reference and Problem Solving Guide.*

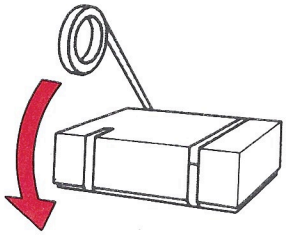
1



2



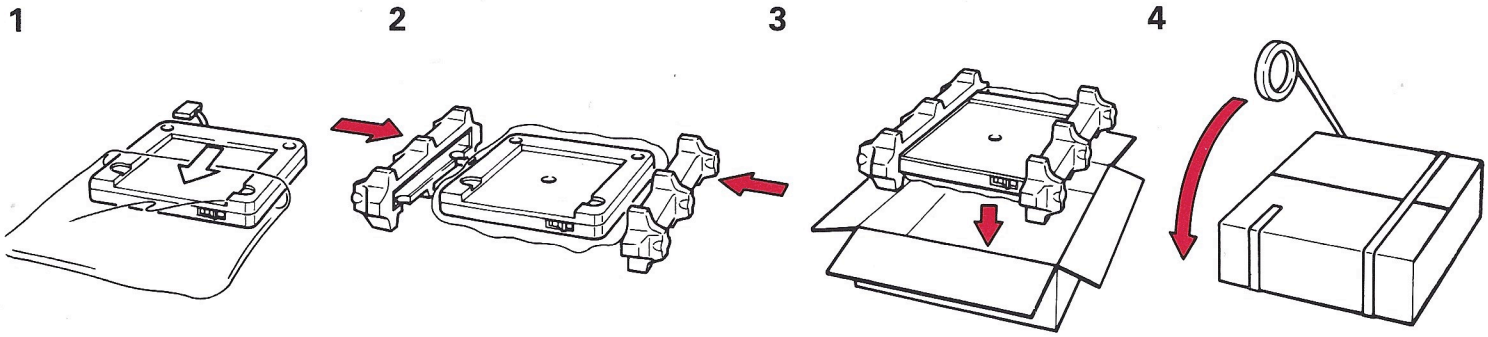
3



Expansion Unit

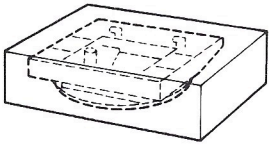
The failing element should be packed using the original or equivalent packaging material and returned to IBM for repair or replacement.

Note: Keep the power cord.



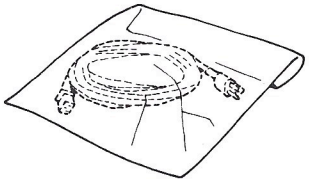
Stand

The broken stand should be packed using the original or equivalent packing material and returned to IBM for replacement.



Power Cord

The defective power cord should be packed using a convenient packing material and returned to IBM for replacement.



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GA18-2591-1

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