

JUKO

AUTO  **-B**

User's Operation Manual

JUKO ELECTRONICS INDUSTRIAL CO., LTD.

Though every effort has been made to ensure accuracy, this manual may include technical or typographical errors. Contents of this manual may be changed from time to time due to product improvement. These changes will be incorporated in new editions of this manual. We disclaim liability for any changes, errors or omission.

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 Hercules Graphics is a registered trademark of Hercules Computer Technology.

Part Number: 208-090013-00

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Introduction

Welcome to your JUKO Auto G7-B system, the Leading Edge Multi-Display I/O Adapter Series.

The Auto G7-B and its accessories are designed to be powerful to replace

- * Color graphics adapter
- * Monochrome display adapter
- * Hercules display adapter
- * Floppy disk drive control adapter
- * Mouse interface adapter
- * Game port adapter
- * Realtime clock adapter
- * Parallel Printer interface adapter
- * Serial RS232C interface adapter

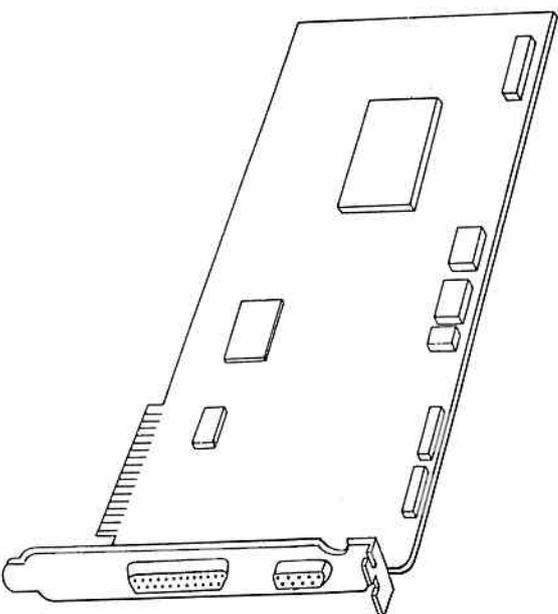
In addition, it can emulate color on a monochrome monitor in the way that different colors are represented by different tones of grey shade.

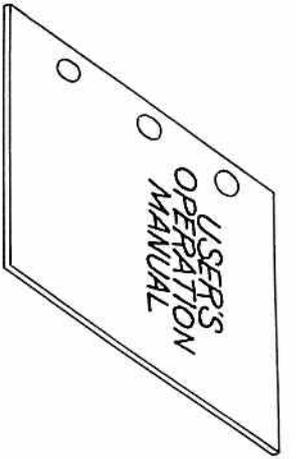
Auto G7-B also includes an utility diskette containing the software for switching between display modes.

You may now change to any of your desired display modes while the machine is on.

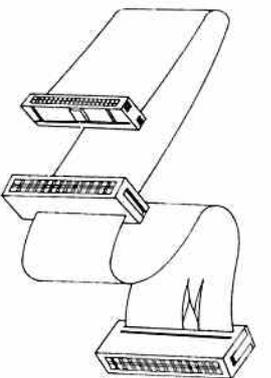
1.1. For the Auto G7-B you should have

- * An Auto G7-B Multi-display and I/O Adapter

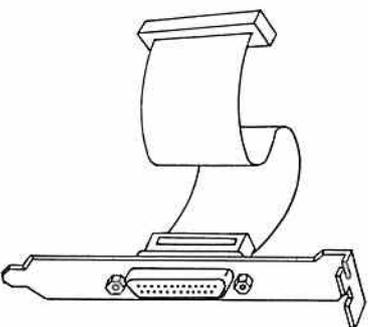




G7-P4 Floppy Disk Drive Cable

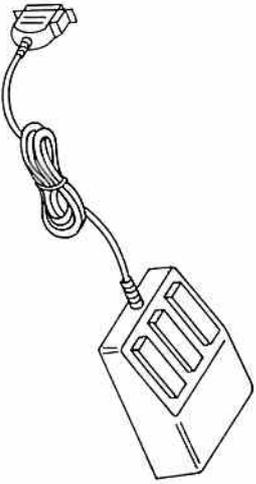


G7-P5 Serial Port Cable with Connector and Bracket

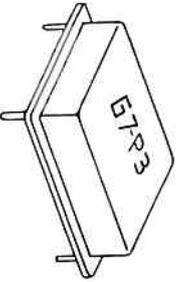


1.2 Optional Accessories for Auto G7-B

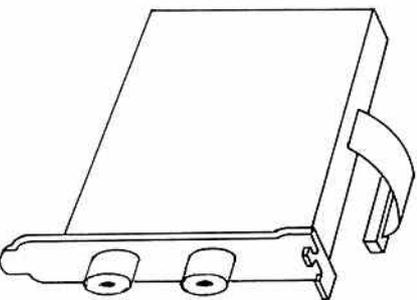
G7-P2 G7-Mouse



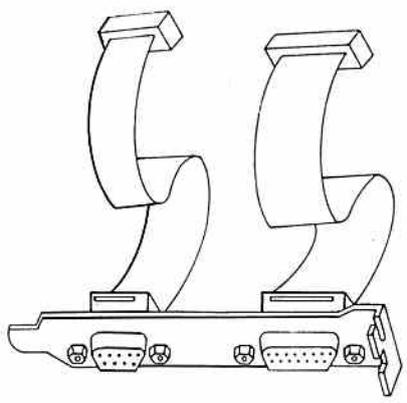
G7-P3 Module for 640 x 400 Color Monitor



G7-P6 PAL Module



G7-P8 Mouse and Game Port cables with connectors and bracket.



1.3 Features of the Auto G7-B

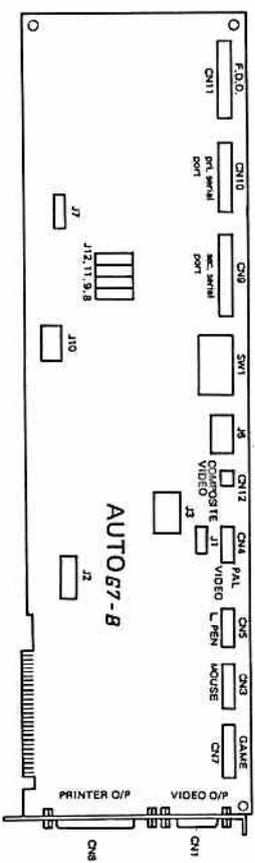
- (1) IBM Color Graphics Adapter compatible.
- (2) IBM Monochrome Display Adapter compatible.
- (3) Hercules Monochrome Graphics Adapter compatible.
- (4) Run Color Graphics softwares on monochrome monitor.
- (5) Display Mode Selection through software.
- (6) Microsoft Mouse Adapter compatible.
- (7) IBM Game Controller Adapter compatible.
- (8) IBM Printer Adapter compatible.
- (9) Support 640 x 400 high resolution color monitor without software installation (with optional accessory G7-P3).
- (10) Support 640 x 200 four colors graphics mode.
- (11) Support NTSC system television-frequency monitors or home television sets.
- (12) Support PAL system television-frequency monitors or home television sets.
- (13) Support composite video interface monitors.
- (14) Support direct drive monitors.
- (15) Light Pen Interface.
- (16) IBM 5-1/4" Diskette Drive Adapter.
- (17) IBM Primary Asynchronous Communication Adapter.
- (18) IBM Secondary Asynchronous Communication Adapter (optional).

1.4 The Auto G7-B requires:

- * An IBM PC/XT/AT or compatible computer system.
- * A monitor.

Note: You are not recommended to use the Auto G7-B adapter in the IBM AT computer system as some of the Auto G7-B features are duplicated in the IBM AT.

1.5 Connectors and Switches Description



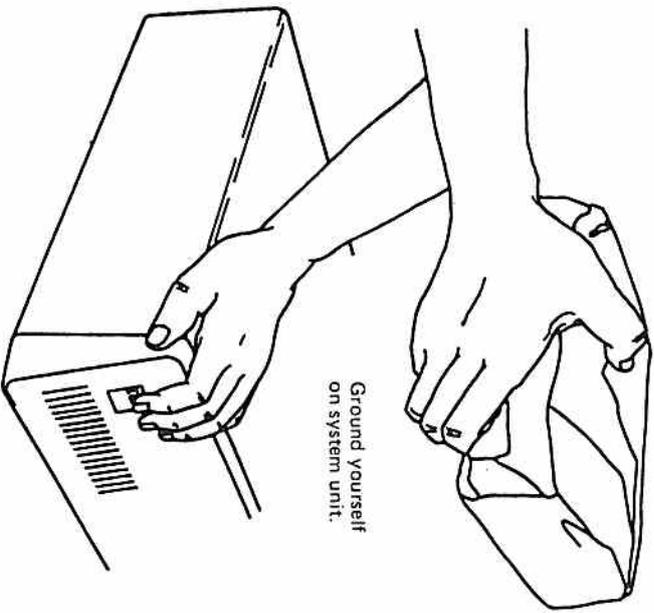
- CN1 DB9 connector for direct drive monitor.
- CN3 Mouse connector
- CN4 Connector to optional PAL modulator
- CN5 Light Pen connector
- CN7 Joystick connector
- CN8 DB25 connector for printer
- CN9 Connector for 2nd serial port
- CN10 Connector for 1st serial port
- CN11 Floppy Disk Drive Connector
- CN12 Composite video signals output
- J1 Composite Color/Mono select switch
- J2 Mouse interrupt level select switch
- J3 Oscillator frequency select switch
- J6 Mouse interrupt level select switch
- J7 Realtime clock I/O port select switch
- J8 Primary RS232C I/O port select switch
- J9 Primary RS232C interrupt level select switch
- J11 Secondary RS232C I/O port select switch
- J12 Secondary RS232C interrupt level select switch
- SW1 1-5 Video mode select switch
- SW1 6 Mouse enable
- SW1 7 Printer port enable
- SW1 8 Game port enable
- SW1 9 Grey shade display mode select switch

Installation

The Auto G7-B adapter and some of its accessories can be DAMAGED BY STATIC DISCHARGE. To prevent this damage, the products are wrapped in anti-static bags. Certain precautions must be taken before removing an option from its bag.

2.1 Handling of the Auto G7-B

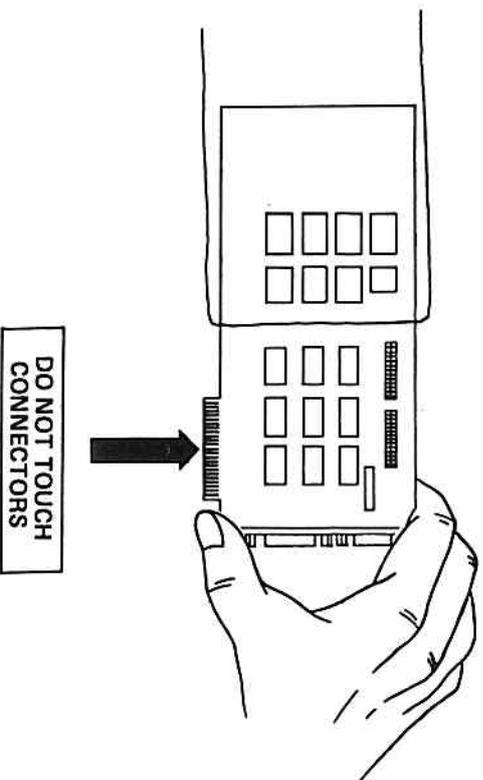
- (a) Hold the adapter and options (still wrapped in its anti-static bag) in one hand and touch a metal part of your system with the other hand.



- (b) Carefully remove the option from its anti-static bag.

* Hold Auto G7-B adapters by the edge only. Avoid touching the components or connectors.

* Hold module by the end. Avoid touching the pins.



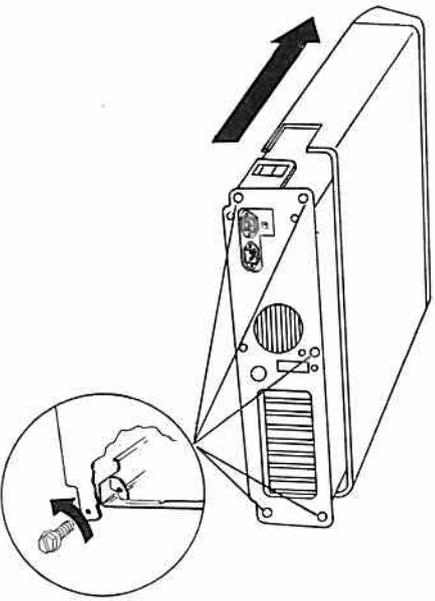
2.2 Installation of the Auto G7-B

- (a) Turn off the personal computer system power.

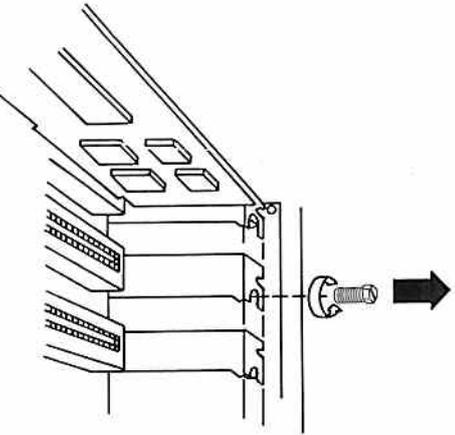
WARNING:

Turn off the power of the system before you insert any adapter, module and peripheral.

- (b) Unscrew and remove the system cover of the computer unit.



- (c) Unscrew an empty expansion slot bracket from the rear panel. Save the screws for the installation of the Auto G7-B adapter.



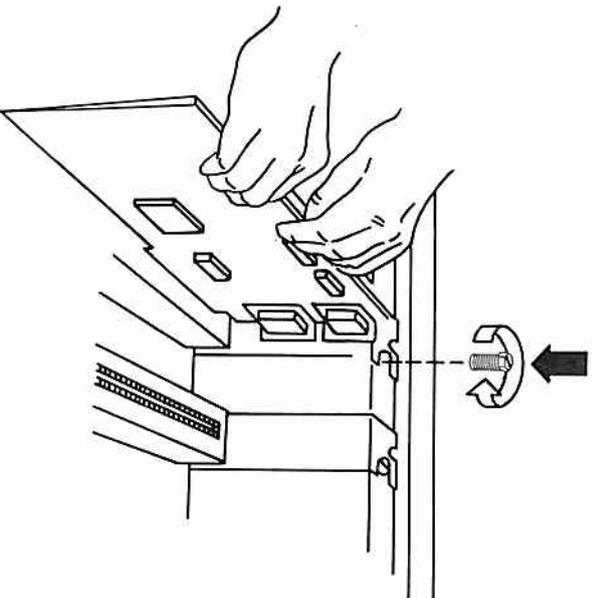
- (d) Before you install the Auto G7-B to the expansion slot, you should read the following first and get the correct jumper and DIP switch settings.

For display selection, read section 2.3.
For mouse connection, read section 2.4.
For printer connection, read section 2.5.
For joystick connection, read section 2.6.
For light pen connection, read section 2.7.
For floppy disk drive connection, read section 2.8.
For realtime clock, read section 2.9.
For primary serial RS232C connection, read section 2.10.
For secondary serial RS232C connection, read section 2.11.

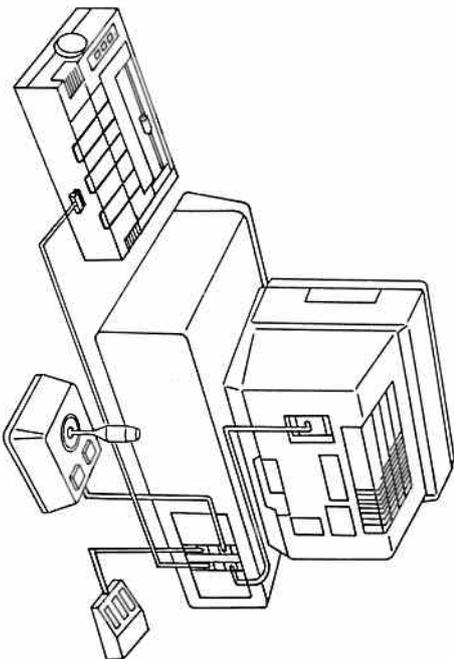
WARNING:

Make sure you have thoroughly understood the function of the switch and jumper settings of the Auto G7-B before you alter any setting; otherwise, it MAY CAUSE PERMANENT DAMAGE TO YOUR SYSTEM. Consult your dealer if you have any query.

- (e) Align the Auto G7-B adapter with the expansion connector and insert the adapter firmly into any available slot connector. Remember to hold the adapter by its top edge or upper corners.



- (f) Insert the screws to mount the adapter to the back panel.
- (g) If you have no other accessories to add, cover the system unit and tighten it with screws.
- (h) Connect the peripherals to the system unit properly.



WARNING:
To start up, turn on the power of the peripherals before you turn on the power of the system.

2.3 Video Display Mode Selection

As Auto G7-A CAN SUPPORT MANY DISPLAY MODES, you are recommended to read through all the video display modes selection in this section. However, you can refer to the particular sections in which you are interested.

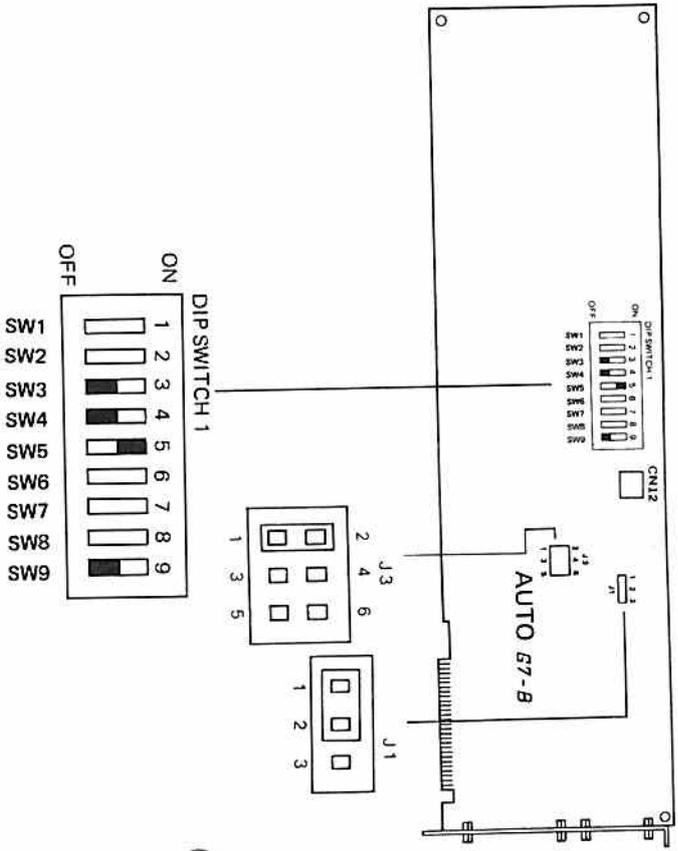
- (a) For the composite color display, please refer to section 2.3.1.
- (b) For the composite monochrome display, please refer to section 2.3.2.
- (c) For the IBM color graphics display, please refer to section 2.3.3.
- (d) For the Monochrome display, please refer to section 2.3.4.
- (e) For the 640 x 400 color display, please refer to section 2.3.5.
- (f) For the PAL TV display, please refer to G7-P6 PAL Module User's Operation Manual.
- (g) For the Grey Shade Monochrome display, please refer to section 2.3.6.

NOTE:

The file G7-READ.ME contains the latest information about G7. Please type it to get the messages. Your release may not contain this file on the diskette. However, if you have this file, be sure to read the file.

2.3.1. Composite Color Display

(i) The followings are the jumpers and switch settings for the composite color display.



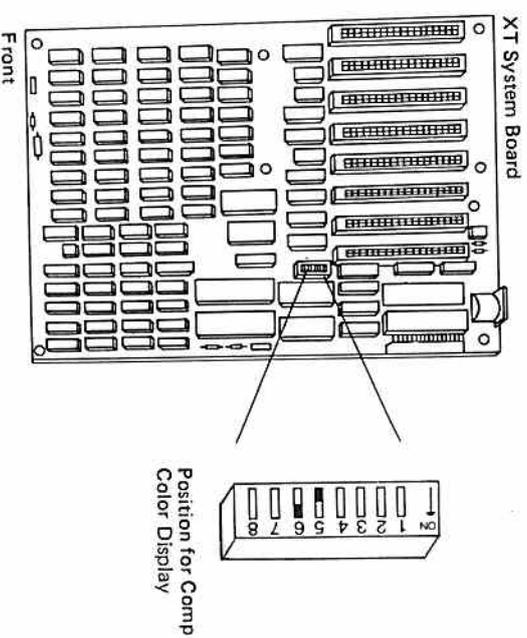
Jumper	Position
J1	1 - 2*
J3	1 - 2*
DIP SWITCH 1 +	SW3 OFF SW4 OFF* SW5 ON SW9 OFF*

* Default setting
+ SW1 and SW2 of DIP Switch 1 have no effect on composite color display.

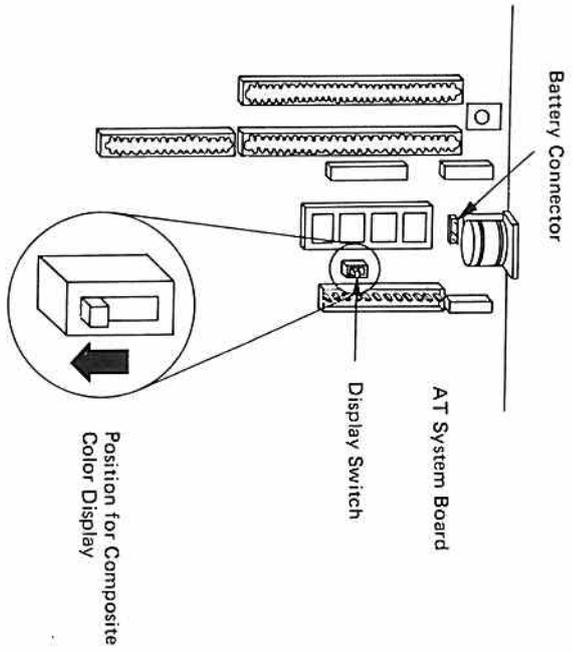
(ii) Set the switches on the system for the video display option accordingly.

WARNING:
Turn off the power of the system before you alter any switch setting.

* For the IBM PC/XT, set the switch SW1 position 5 OFF and position 6 ON for composite color display.

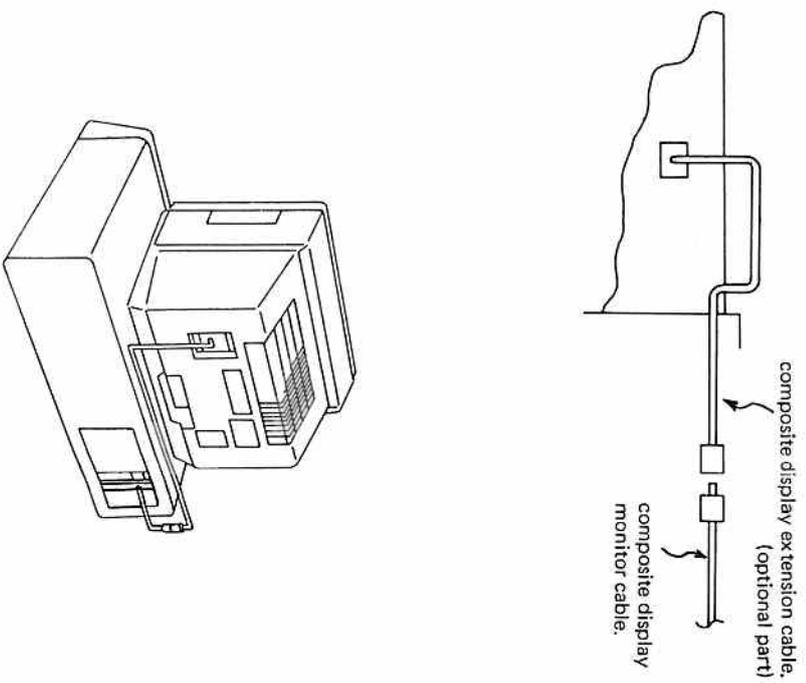


* For the IBM AT, sets the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.



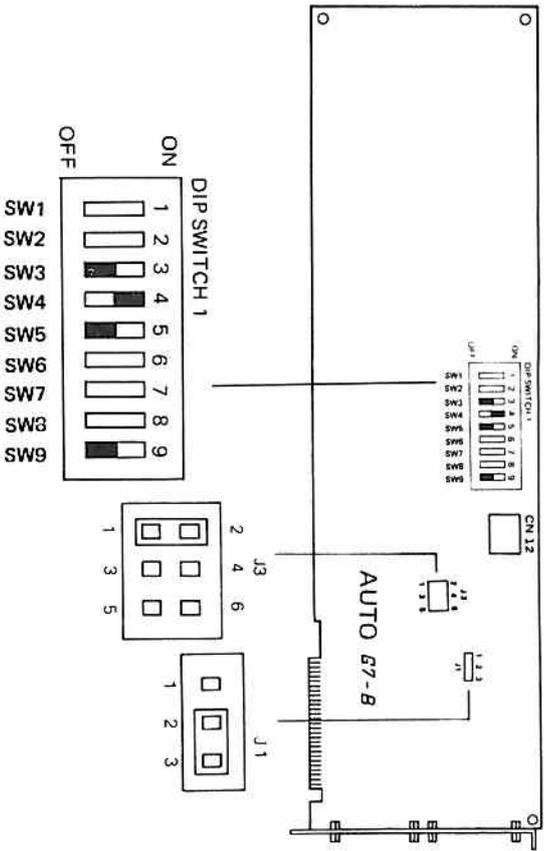
Note: 40 x 25 display mode is recommended for composite color display.

(iii) Connect a composite display extension cable to the connector CN12 of the Auto G7-B and connect the other end to the composite color monitor.



Composite Monochrome Display

(i) The followings are the jumper and switch settings for the composite monochrome display.



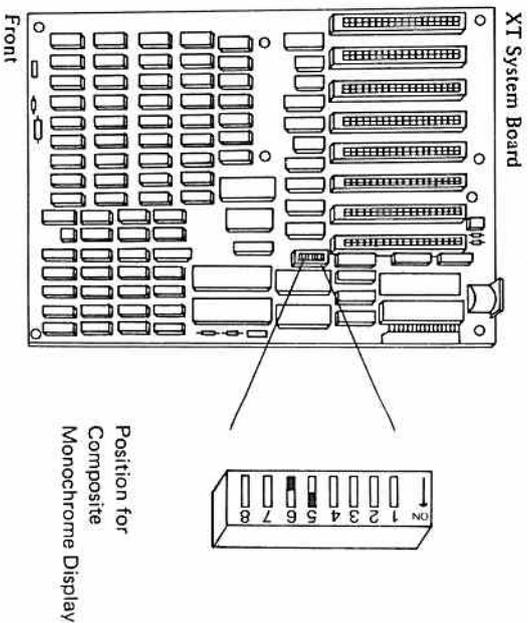
Jumper	Position	
J1	2 - 3	
J3	1 - 2*	
DIP SWITCH 1 +	SW3	OFF
	SW4	ON
	SW5	OFF
	SW9	OFF*

* Default setting
 + SW1 and SW2 of DIP Switch 1 have no effect on composite monochrome display.

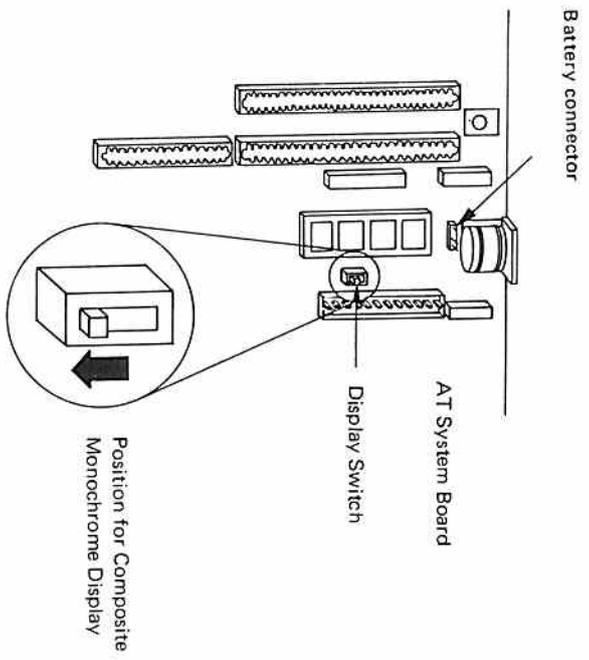
(ii) Set the switch on the system for the video display option accordingly.

WARNING:
 Turn off the power of the system before you alter any switch setting.

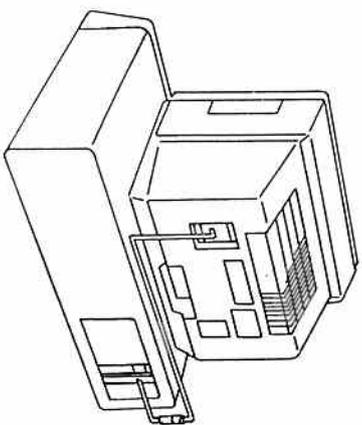
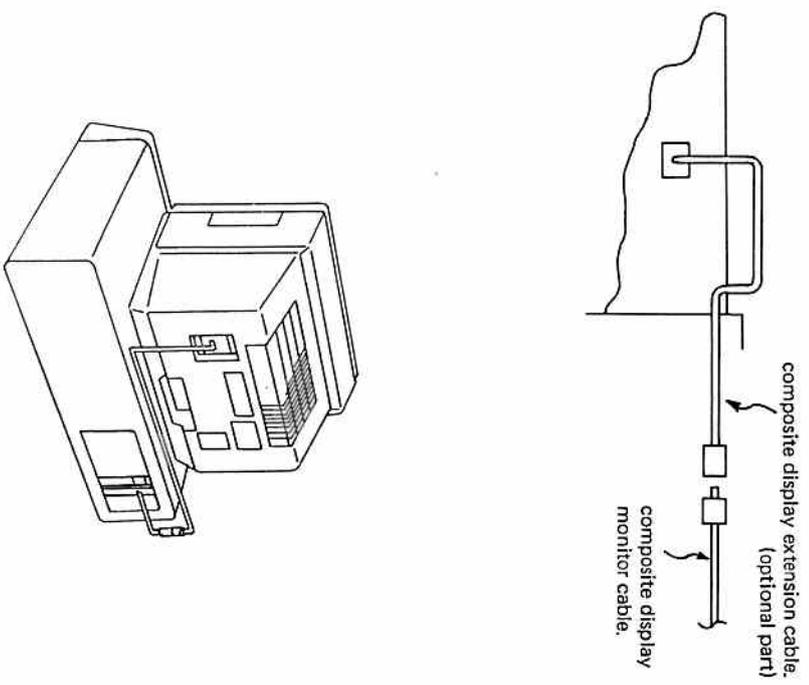
* For the IBM PC/XT, set the switch SW1 position 5 ON and position 6 OFF for composite monochrome display.



* For the IBM AT, set the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.

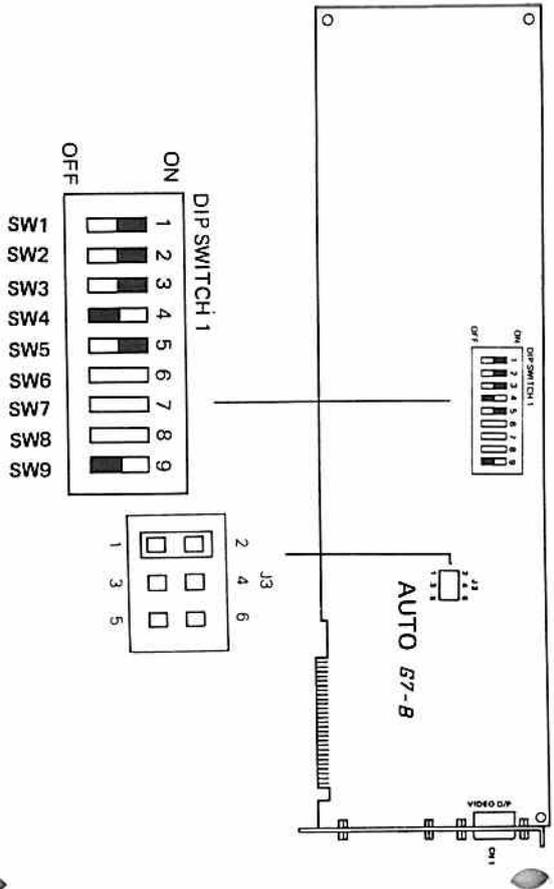


(iii) Connect a composite display extension cable to the connector CN12 of the Auto G7-B and connect the other end to the composite monochrome monitor.



2.3.3 IBM Color Display

(i) The followings are the jumper settings for the IBM color display



Jumper	Position
J3	1 - 2*
DIP SWITCH 1	SW1 ON+ * ON+ *
	SW2 ON * OFF * ON *
	SW3 * SW4 * SW5 *
	SW9 OFF *

* Default setting
+ SW1 and SW2 of DIP Switch 1 are for the synchronization polarity of the monitors, the above settings are for the IBM color display. If your monitor has a different synchronization polarity, set the SW1 and SW2 accordingly.

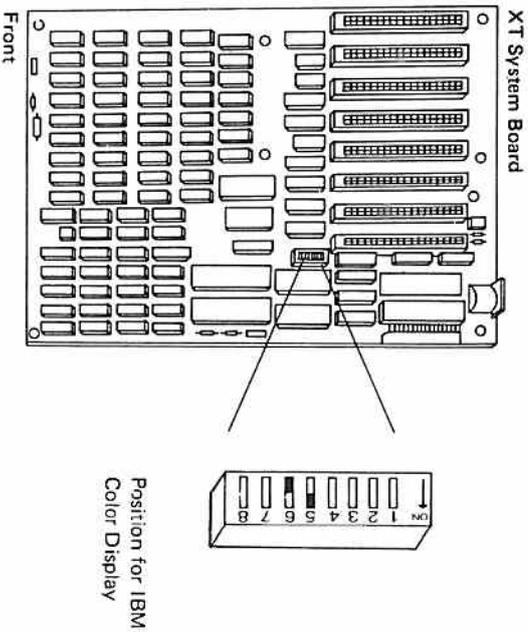
DIP SWITCH 1 SW1 and SW2 Settings: -

Jumper	Position	
DIP SWITCH 1	SW1 ON OFF	+ve vert. sync. polarity -ve vert. sync. polarity
	SW2 ON OFF	+ve hor. sync. polarity -ve hor. sync. polarity

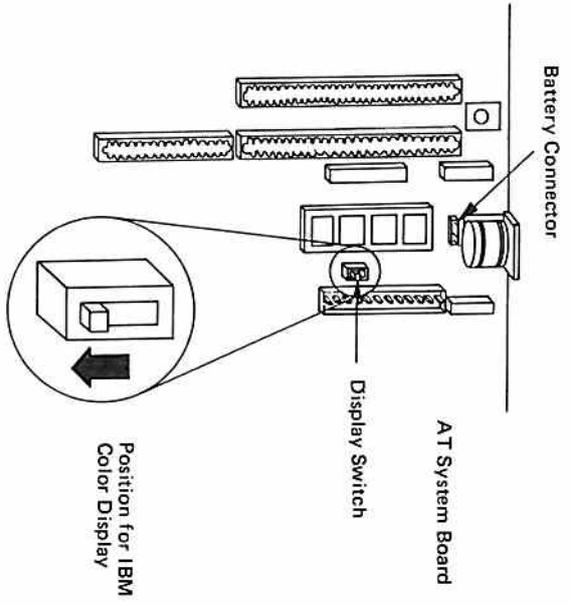
(ii) Set the switch on the system for the video display option accordingly.

WARNING:
Turn off the power of the system before you alter any switch setting.

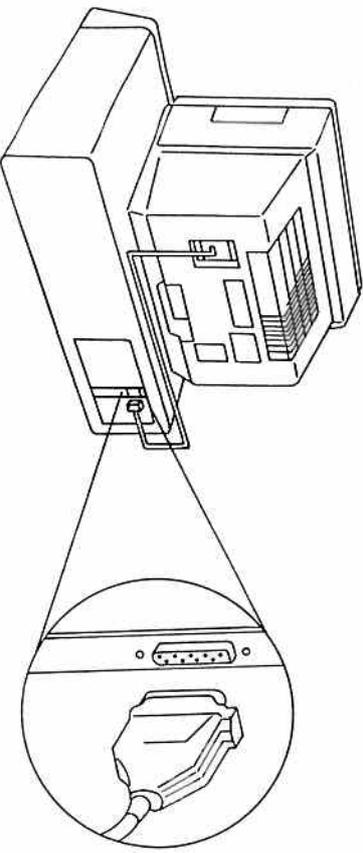
* For the IBM PC/XT, set the switch SW1 position 5. ON and position 6 OFF for IBM color display.



* For the IBM PC/AT, set the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.

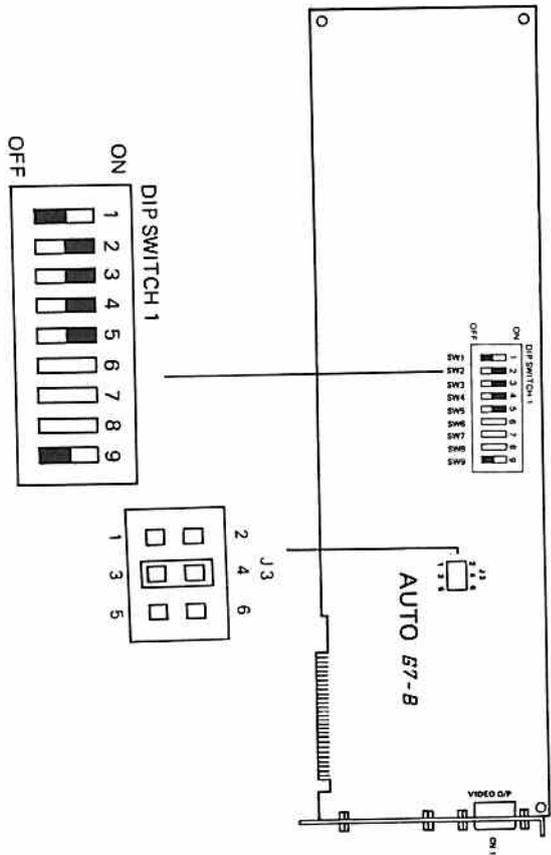


(iiii) Connect the IBM color monitor to the DB9 connector for direct drive monitor, CN1, of the Auto G7-B adapter after Auto G7-B is properly installed.



2.3.4 Monochrome Display

(i) The followings are the jumper and DIP switch settings for the monochrome display.



Jumper	Position	
J3	3-4	
DIP SWITCH 1	SW1	OFF+
	SW2	ON++
	SW3	ON *
	SW4	ON
	SW5	ON *
SW9	OFF *	

* Default setting.

+ SW1 and SW2 of DIP Switch 1 are for the synchronization polarity of the monitors, the above settings are for the IBM monochrome display. If your monitor has a different synchronization polarity, set the SW1 and SW2 accordingly.

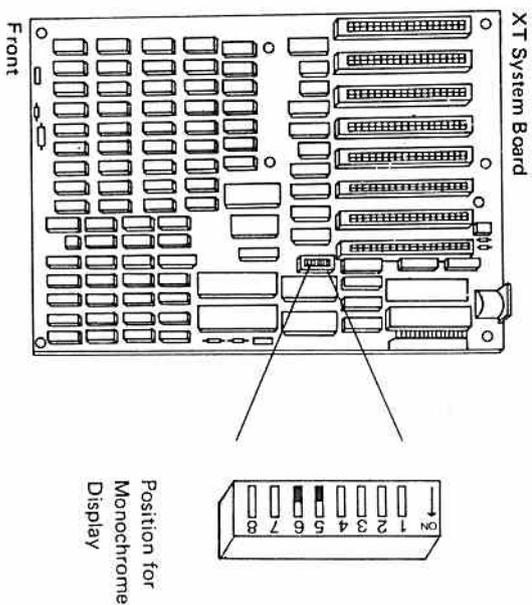
Dip Switch 1 SW1 and SW2 Settings:—

Jumper		Position	
DIP Switch 1	SW1	ON	+ve vert. sync. polarity
		OFF	-ve vert. sync. polarity
	SW2	ON	+ve hor. sync. polarity
		OFF	-ve hor. sync. polarity

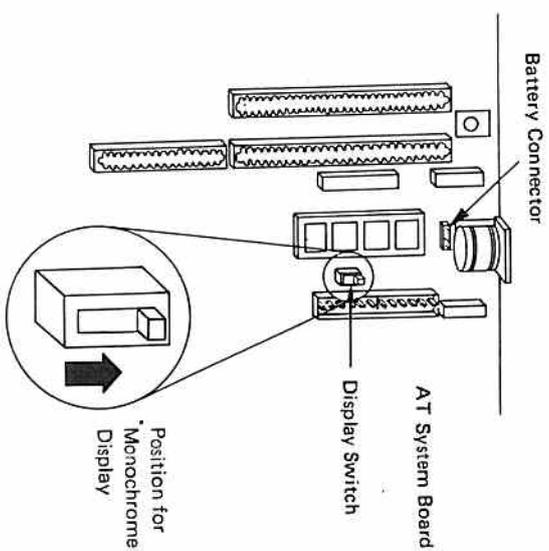
- (ii) Set the switch on the system for the video display option accordingly.

WARNING:
Turn off the power of the system before you alter any switch setting.

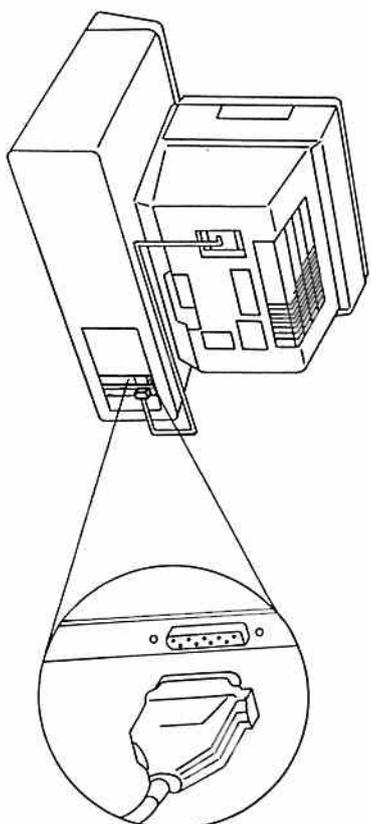
- * For the IBM PC/XT, set the switch SW1 position 5 and position 6 both OFF for monochrome display.



- * For the IBM PC/AT, set the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.



- (iii) Connect the monochrome display to the DB9 connector for direct drive monitor, CN1, of the Auto G7-B adapter after Auto G7-B is properly installed.

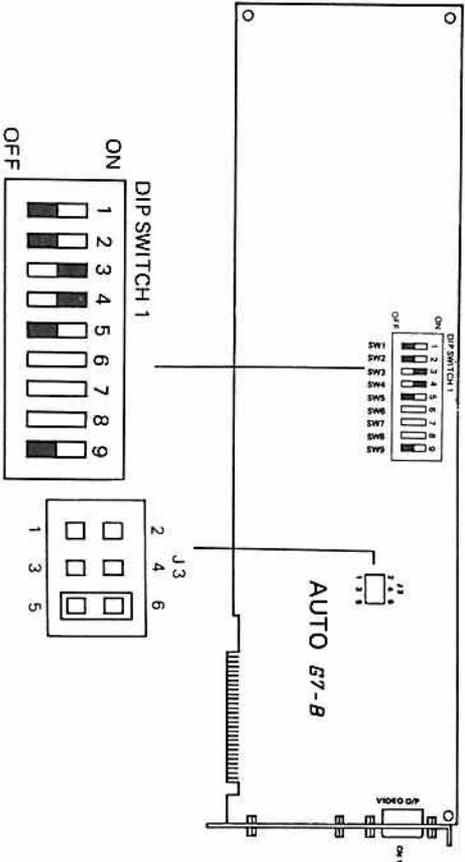


Note: Light pen is not supported in Monochrome mode.

2.3.5 640 X 400 Color Display

Note: You need to have the optional accessory G7-P3 installed for this feature. G7-P3 is available from your local dealer. However, this optional accessory is not user installable, consult your local dealer for installation details. This feature is not suitable for IBM AT machines.

(i) The followings are the jumper settings for the 640 x .400 color display.



Jumper	Position	
J3	5 - 6	
DIP SWITCH 1	SW1 SW2	OFF+ OFF+
	SW3 SW4 SW5 SW9	ON* ON OFF OFF*

* Default setting

+ SW1 and SW2 of DIP Switch 1 are for the synchronization polarity of the monitors. If your monitor has a different synchronization polarity, set the SW1 and SW2 accordingly.

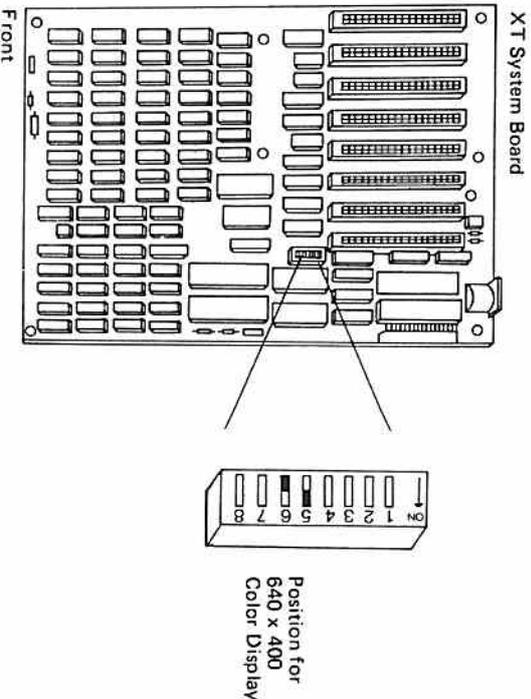
Dip Switch 1 SW1 and SW2 Settings:-

Jumper	Position	
DIP SWITCH 1	SW1	ON +ve vert. sync. polarity OFF -ve vert. sync. polarity
	SW2	ON +ve hor. sync. polarity OFF -ve hor. sync. polarity

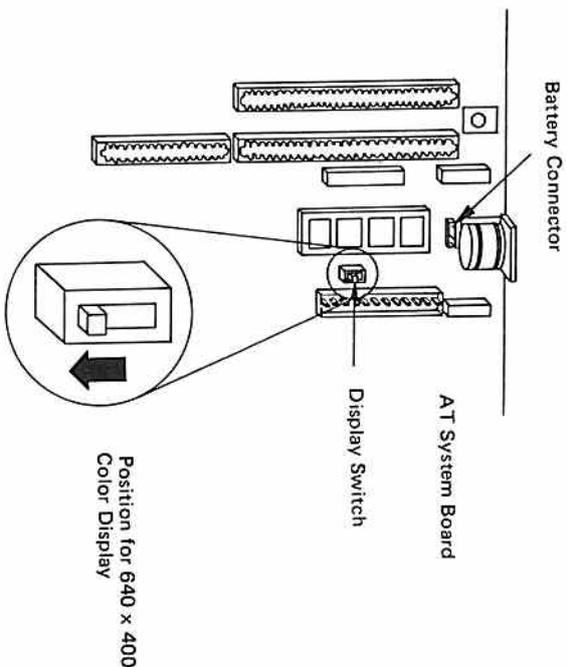
(ii) Set the switch on the system for the video display option accordingly.

WARNING: Turn off the power of the system before you alter any switch setting.

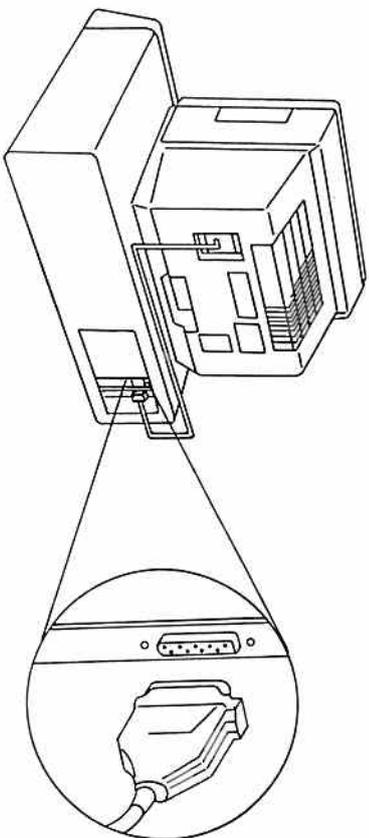
* For the IBM PC/XT, set the switch SW1 position 5 ON and position 6 OFF for 640 x 400 color display.



* For the IBM AT, set the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.



(iii) Connect the 640 x 400 color display to the DB9 connector for direct drive monitor, CN1, of the Auto G7-B adapter after Auto G7-B is properly installed.

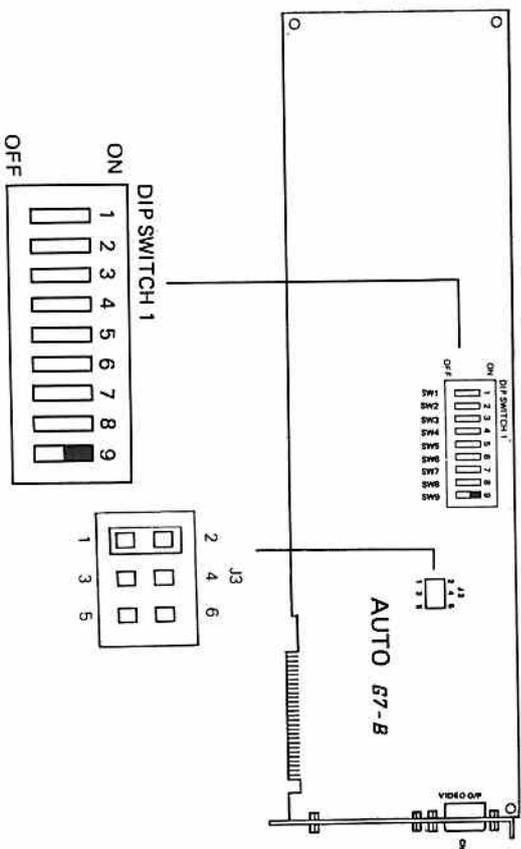


2.3.6 Grey Shade Monochrome Display

This is the color graphics display mode for monochrome monitors. In this mode, you may run full CGA softwares with the color attributes replaced by sixteen levels of grey shades.

Note: You are not recommended to use the grey shade mode with a dual frequency monitor and you may have synchronization problems if you do so. We suggest you to use the CGA mode instead.

(i) The followings are the DIP switch and jumper settings for the Grey Shade Monochrome display mode.



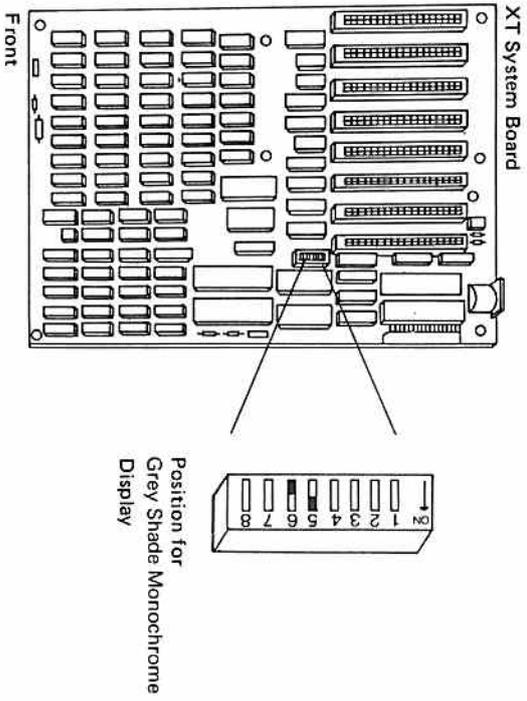
Jumper	Position
J3	1 - 2*
Dip Switch 1	ON

* Default setting

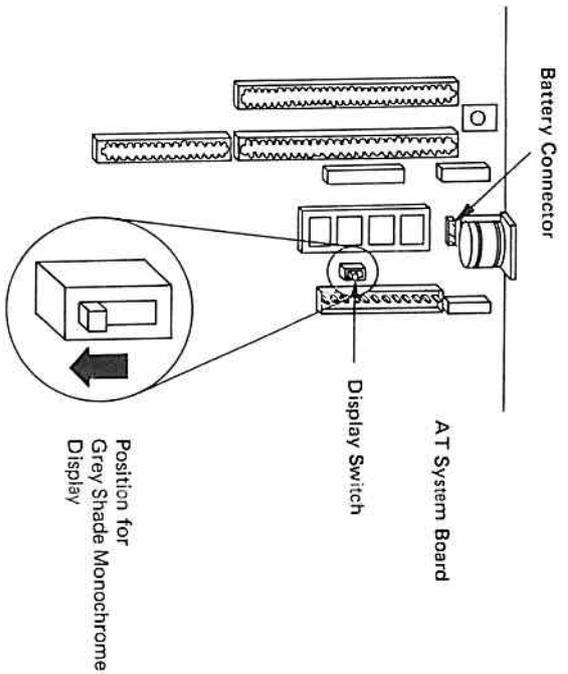
- (ii) Set the switches on the system for the video display option accordingly.

WARNING:
Turn off the power of the system before you alter any switch setting.

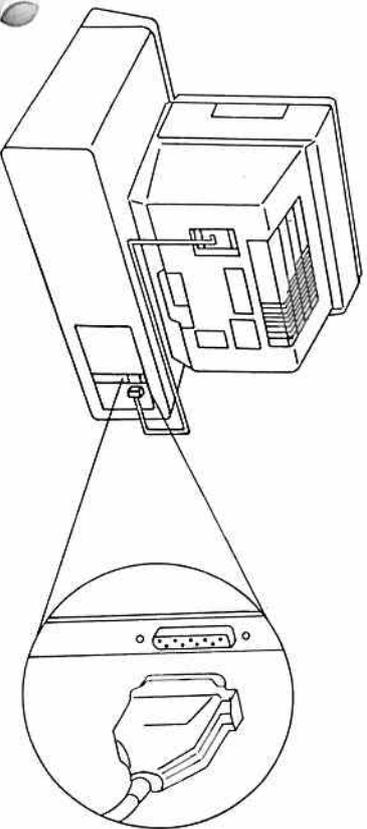
* For the IBM PC/XT, set the switch SW1 position 5 ON and position 6 OFF for grey shade monochrome display.



* For the IBM PC/AT, set the display switch as indicated below and run the SET UP PROGRAM in the IBM AT diagnostics diskette.



- (iii) Connect the IBM monochrome monitor to the DB9 connector for direct drive monitor, CN1, of the Auto G7-B adapter after Auto G7-B is properly installed.



2.3.7 Software Switching Utility

The Auto G7 display adapter can be hardware configured in any of the seven display modes via DIP switches (SW 1-5, 9) and jumpers (J1, J3) on the adapter.

In addition, Auto G7 display adapter also provides you with a new way of switching between display modes via software. You may now change the display mode while the machine is on.

- To do so, 1) Insert the Auto G7 utility diskette in drive A while you are at system prompt (i.e. 'A>').
- 2) Now, type 'g7sw' and then press the return key. A menu should come up with eight display options.
 - 3) To select any of the option, either press the number corresponds to that option (e.g. press '1' for default display mode) or use the UP-ARROW and DOWN-ARROW keys to choose the desired option.
 - 4) Press the return key to switch.
 - 5) To exit the program, press the 'Esc' key and then the letter 'y'.

The program also caters for immediate mode switching without going into the menu.

This can be done by typing

'g7sw SWITCH' and then press the return key

where SWITCH = def for default display mode;

= gre for grey shade monochrome mode;

= hgc for monochrome display mode;

= cga for color graphics display mode;

= hic for 640 x 400 color graphics display mode;

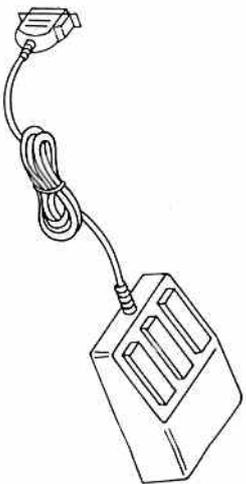
= cmc for composite monochrome display mode,

= cco for composite color display mode and

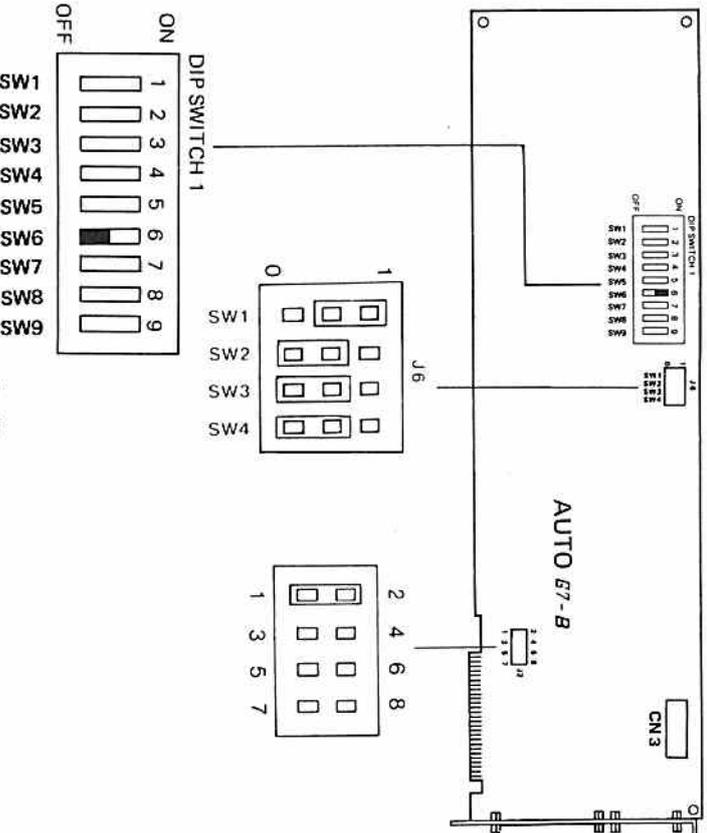
= pal for PAL TV display mode.

2.4 Mouse Interface

Your Auto G7-B has a built-in Microsoft Mouse compatible interface. You need to have an optional accessory G7-P2 (G7-Mouse) and G7-P8 (mouse and game port connector cables with bracket) to work with. G7-P2 is available from your local dealer.



- (i) For using the mouse, make sure that jumper J2 and J6 are set at the same interrupt level. Normally, there is no need to change the interrupt level of the mouse unless the selected interrupt level is already used by other devices.



The setting of jumper J2 and J6 are as follows:

J6 setting:

Jumper	Position
J6	0
	1*
SW1	Select mouse to use interrupt 2. (usually used by mouse)
SW2	0
	1
SW3	Select mouse to use interrupt 3. (usually used by RS23211)
SW4	0
	1
	Select mouse to use interrupt 4 (usually used by RS232 11)
	0
	1
	Select mouse to use interrupt 5 (usually used by HD)

J2 setting:

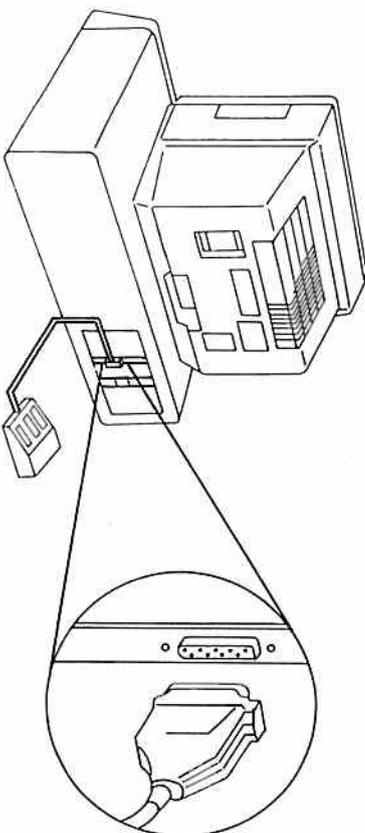
Jumper	Position
J2	1 - 2*
	3 - 4
	5 - 6
	7 - 8
	Select mouse to use interrupt 2.
	Select mouse to use interrupt 3.
	Select mouse to use interrupt 4.
	Select mouse to use interrupt 5.

DIP SWITCH 1:

DIP SWITCH 1	STATUS
SN6	ON Enable mouse OFF* Disable mouse

* Default setting

(v) Now, you may plug the mouse connector onto the DB9 connector (the lower one) on the G7-P8 mouse and game port connector bracket.

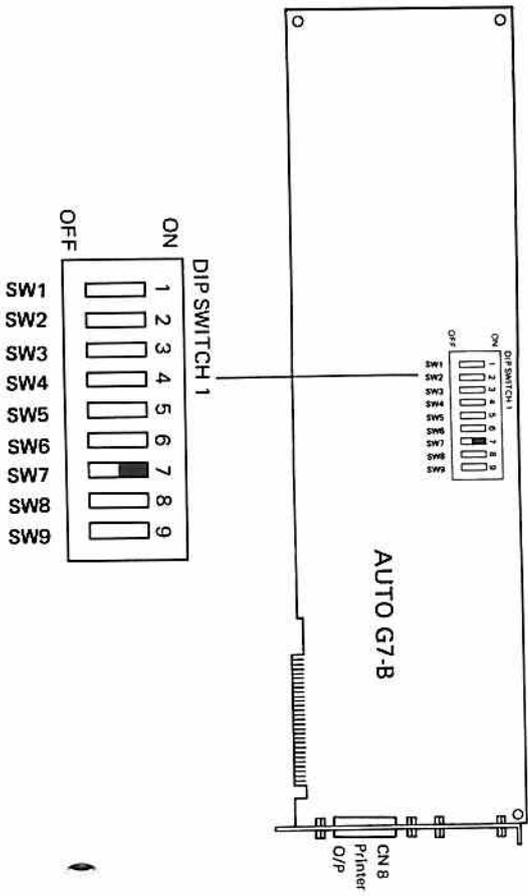


Note: Your cannot use both the mouse and the light pen at the same time. Make sure that you have the light pen disconnected when using the mouse.

2.5 Parallel Printer Interface

The parallel printer output can be obtained from CN8, the DB25 female connector on Auto G7-B adapter.

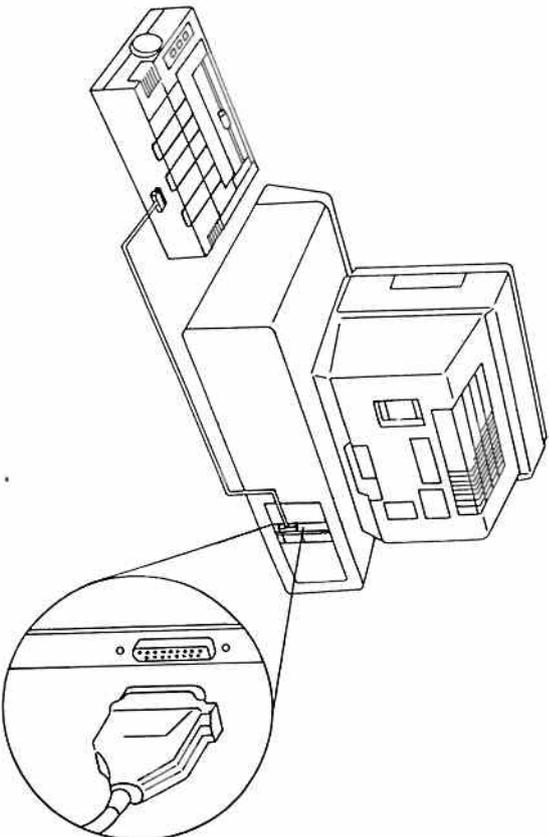
(i) Please set the DIP switch as follows:



DIP SWITCH 1	STATUS
SW7	ON* Enable on board printer port OFF Disable on board printer port

* Default setting

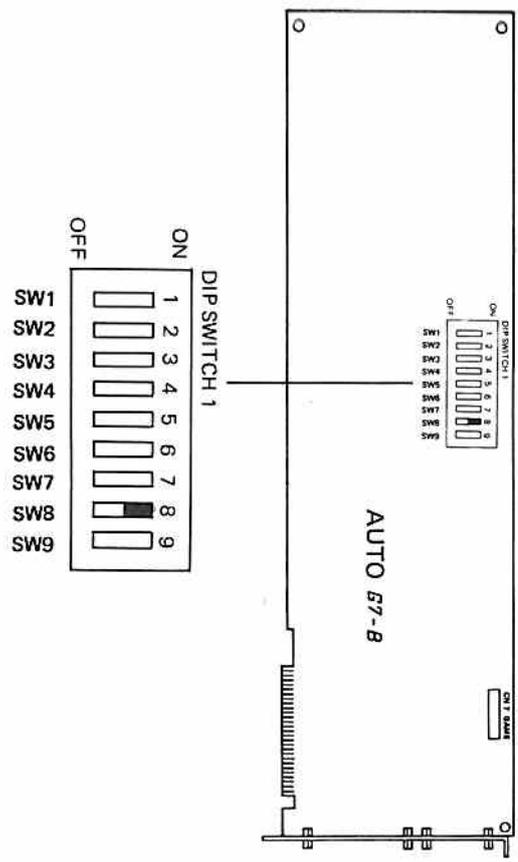
(ii) Connect the printer cable to the DB25 connector (the lower one) on the bracket.



2.6 Game Controller interface

In order to play games, you should have optional accessory G7-P8 to connect a joystick to the Auto G7-B.

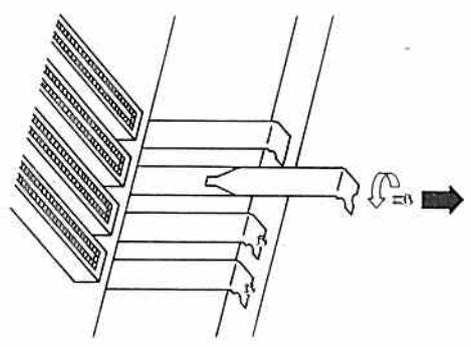
- (a) Set the DIP switch as below for the game interface.



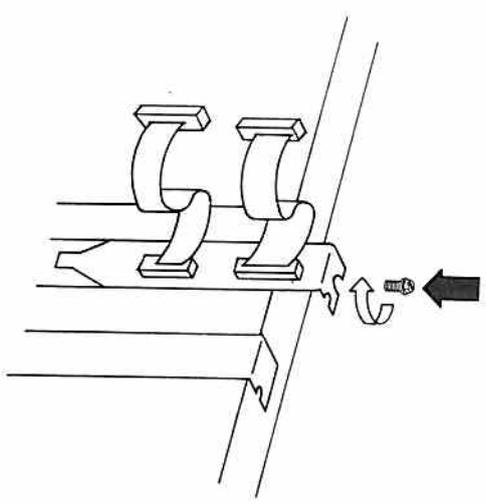
DIP SWITCH	STATUS
SW8	ON* Enable on board game controller port OFF Disable on board game controller port

* Default setting

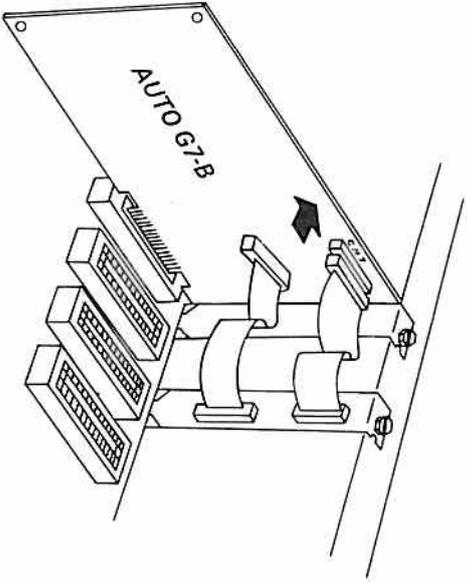
- (b) Remove the screw that holds the expansion slot cover in place.



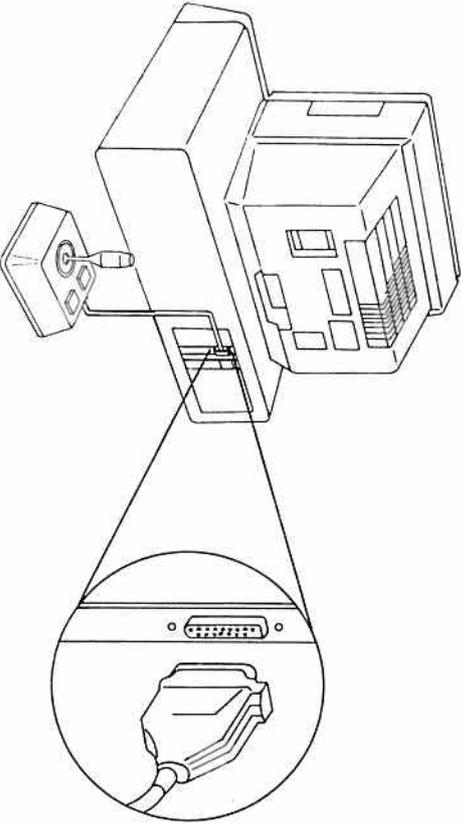
- (c) Insert the screw to mount the bracket with mouse and game port cables to the rear panel.



- (d) Connect the connector of the 15 ways cable (the upper one) on the bracket of the game connector, CN7, on the Auto G7-B adapter. Make sure that they are connected in the correct orientation. Notice that pin 16 is blank and aligns with the plugged hole # 16 in the game connector.



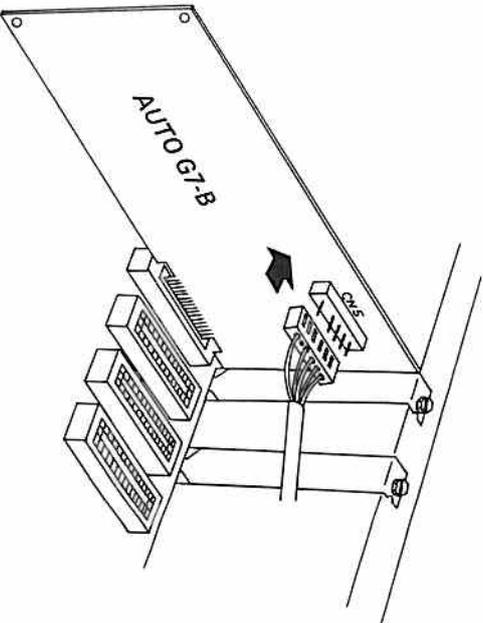
- (e) Connect the joystick to the DB15 connector (the upper one) on the bracket.



Note: See G7-P8 user's manual for cable installation details.

2.7 Light Pen Interface

- (a) Connect the light pen to the light pen connector, CN5, of the Auto G7-B. Make sure the light pen is connected in the correct orientation. Notice that pin 2 is blank and aligns with the plugged hole # 2 in the light pen connector.

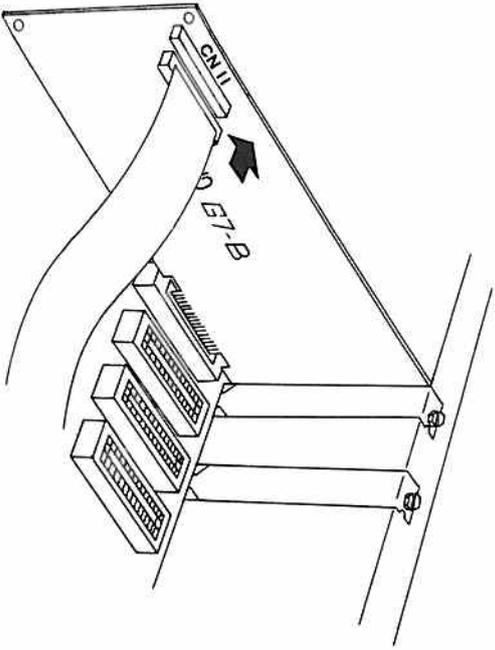


Note: You cannot use both the mouse and the light pen at the same time. Make sure you have the mouse disconnected when using the light pen. Light pen is not supported in the monochrome mode.

2.8 Floppy Disk Drive Interface

To use the floppy disk controller on board, you should have the optional accessory G7-P4 (Floppy Disk Drive Cable) installed and connected to the floppy disk drives.

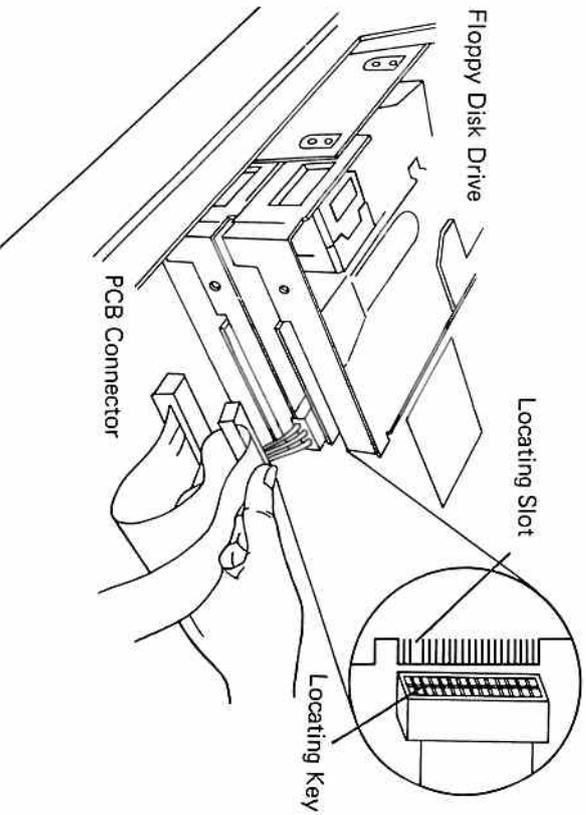
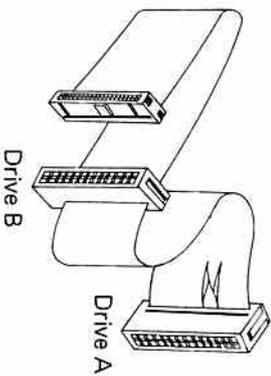
- (i) Connect the wafer connector at one end of the 34 way cable, shown below, to the floppy disk drive connector, CN11 on the Auto G7-B. Make sure that they are connected in the correct orientation. Notice that pin 34 is blank and aligns with the plugged hole # 34 in the floppy disk drive connector.



- (ii)

Connect the PCB edge connector, shown below, at the other end of the cable to your floppy disk drives. Again, make sure that they are connected in the correct orientation. Align the locating key on the connector with the locating slot on drive, and press the connector firmly into place.

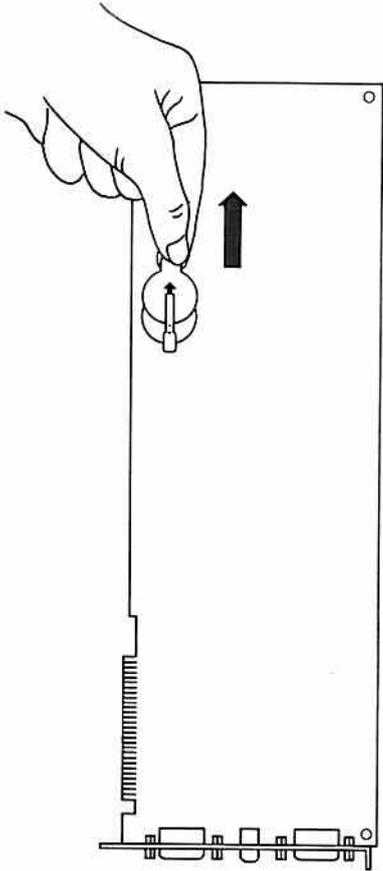
Note : Both the floppy disk drives should set at drive B option. The floppy disk drive connected to the rear PCB edge connector is assigned as drive A; the floppy disk drive connected to the middle PCB edge connector is assigned as drive B.



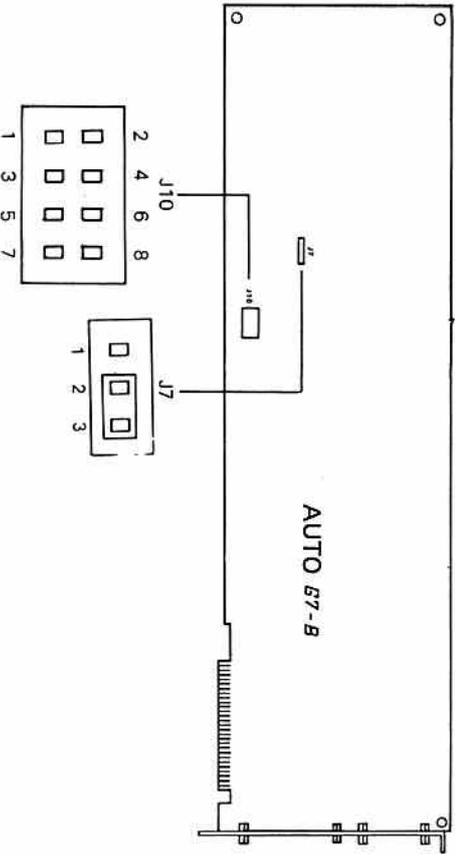
Note : See G7-P4 user's manual for cable installation details.

2.9 Realtime Clock

- (i) Remove the battery insulating plate from the Auto G7-B as shown.



- (ii) The followings are jumper settings for the realtime clock. You can assign this realtime clock as timer 1 or timer 2. Normally timer 1 is selected.



Jumper	Position
J7	1 - 2 Select timer 2 (port 240-25F)
	2 - 3* Select timer 1 (port 340-35F)
	1 - 2 Select timer to use interrupt 4
J10	3 - 4 Select timer to use interrupt 5
	5 - 6 Select timer to use interrupt 2
	7 - 8 Select timer to use interrupt 7

* Default setting

Note : Usually realtime clock timer interrupt is not used and jumper setting for J10 can be ignored. However, some advanced softwares may use this timer interrupt; users should refer to the software manual and set this timer interrupt level as instructed.

(iii) To use the realtime clock, you should have both the GETCLK.COM and SETCLK.COM programs. If you do not have these programs, try to key-in and run the following BASIC program to create your own GETCLK.COM and SETCLK.COM programs on the diskette in the default drive.

Note: Make sure that your default disk has at least 300 bytes free space and is not write protected before creating your own programs.

```
100 FILE$(1) = "GETCLK.COM" : FILE$(2) = "SETCLK.COM"
110 FOR I = 1 TO 2
120 OPEN FILE$(1) AS #1 LEN = 1
130 FIELD #1, 1 AS A$
140 CHECKSUM% = 0
    FOR J = 1 TO 116
150     READ B$
160     BYTE% = VAL("&H" + B$)
170     CHECKSUM% = CHECKSUM% + BYTE%
180     LSET A$ = CHR$(BYTE%)
190     PUT #1
200 NEXT J
210 CLOSE
220 READ B%
230 IF CHECKSUM% <>
240     B% THEN PRINT "CHECKSUM ERROR!!!": KILL FILE$(1) : END
250 NEXT I
260 PRINT "GETCLK.COM AND SETCLK.COM CREATED SUCCESSFULLY"
270 DATA BA, 41, 02, E8, 61, 00, EC, 3C, 63, 76, 05, 80, F6, 01, EB, F3
280 DATA E8, 14, 00, 52, 87, DA, B4, 2D, CD, 21, 5A, 42, E8, 1F, 00, B4
290 DATA 2B, CD, 21, B4, 4C, CD, 21, E8, 2D, 00, 8A, D8, E8, 28, 00, 8A
300 DATA F8, E8, 23, 00, 8A, C8, 51, E8, 1D, 00, 59, 8A, E8, C3, E8, 16
310 DATA 00, 8A, D8, E8, 11, 00, 8A, F8, 42, E8, 0B, 00, 8A, C8, 32, ED
320 DATA 81, C1, BC, 07, 87, D3, C3, E8, 0D, 00, EC, 42, 32, E4, B1, 04
330 DATA D3, E0, D2, E8, D5, 0A, C3, 52, B2, 54, B9, 0A, 00, EC, A8, 01
340 DATA E0, FB, 5A, C3, 14607
350 DATA BA, 41, 02, E8, 33, 00, EC, 3C, 63, 76, 05, 80, F6, 01, EB, F3
360 DATA 52, B4, 2C, CD, 21, 8B, C2, 5A, E8, 2B, 00, 8B, C1, E8, 26, 00
370 DATA 42, 52, B4, 2A, CD, 21, 8B, C2, 5A, E8, 1A, 00, 42, 8B, C1, 2D
380 DATA BC, 07, E8, 11, 00, B4, 4C, CD, 21, 52, B2, 54, B9, 0A, 00, EC
390 DATA A8, 01, E0, FB, 5A, C3, 50, E8, 0B, 00, EE, 42, 58, 8A, C4, E8
400 DATA 03, 00, EE, 42, C3, 32, E4, F6, 36, 6E, 01, 86, E0, D0, E0, D0
410 DATA E0, D0, E0, D0, E0, D1, E8, D1, E8, D1, E8, D1, E8, C3, 0A, 00
420 DATA 00, 00, 00, 00, 14652
```

(iv) To set the date and time in the system from the realtime clock, type

```
> GETCLK
then press ENTER.
```

If you want to set the system clock when booting up, include the GETCLK command in the AUTOEXEC.BAT file.

(v) To set the date and time in the realtime clock, first set the correct date and time in the system with the DOS DATE and TIME command, then type

```
> SETCLK
and press ENTER.
```

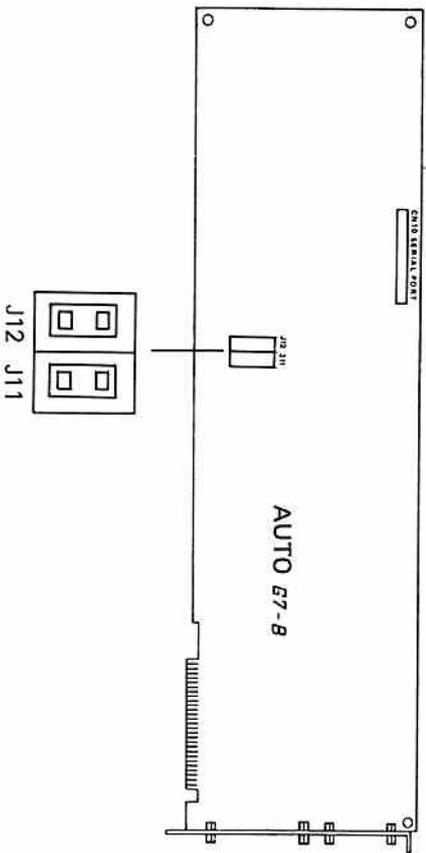
The realtime clock is now set with the system date and time.

Note: For more information on DOS commands and AUTOEXEC.BAT file, refer to the DOS Reference Manual.

2.10 Primary Serial RS232C Interface

To make use of the primary serial RS232C interface, you should have the optional accessory G7-P5 (Serial Port Cable with Connector and Bracket) properly installed.

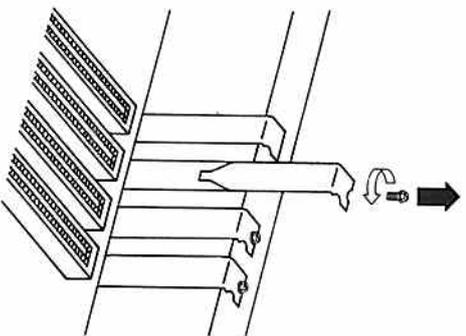
- (i) The followings are jumper settings for the serial RS232C interface:



Jumper	Function
J11	Select port 3F8-3FF
J12	Select interrupt IRQ4

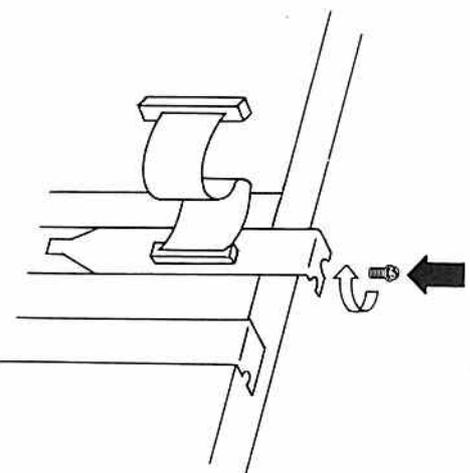
- (ii)

Remove the screw that holds the expansion slot cover in place.

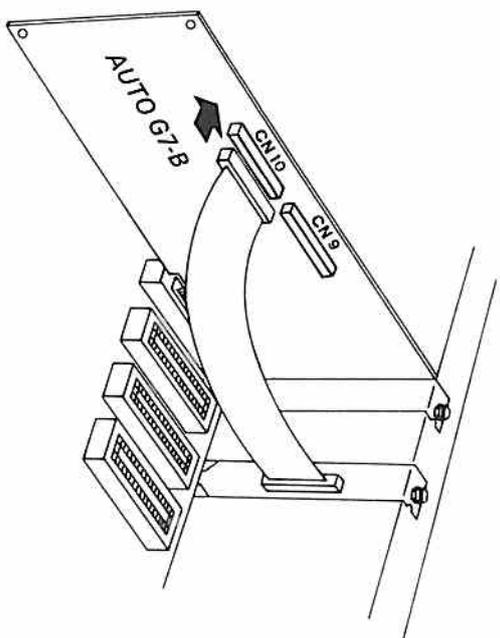


- (iii)

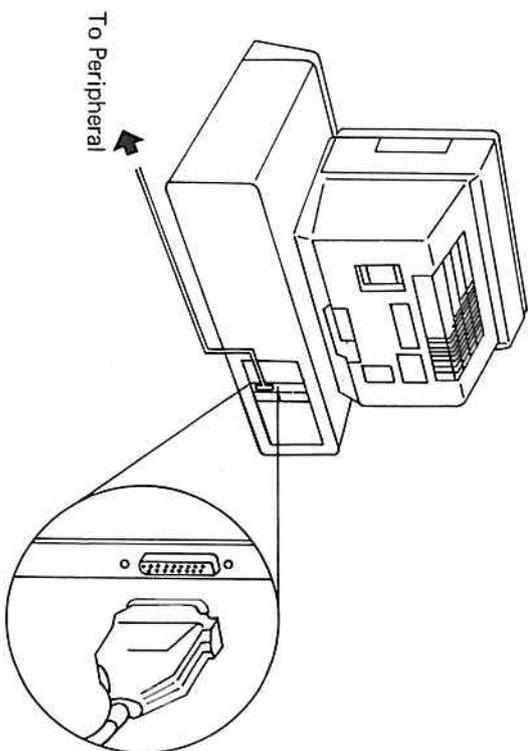
Insert the screw to mount the bracket with serial port cable to the rear panel.



- (iv) Connect the connector of the 26 ways cable on the bracket to the serial RS232C connector, CN10, on the Auto G7-B. Make sure that it is connected in the correct orientation. Notice that pin 26 is blank and aligns with the plugged hole # 26 in the serial RS232C connector.



- (v) Connect the cable of your peripheral to the DB25 connector on the bracket.



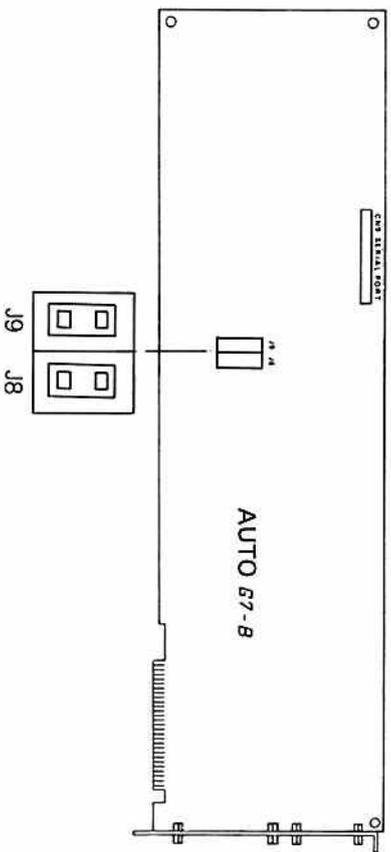
Note : See G7-P5 user's manual for cable installation details.

2.11 Secondary Serial RS232C Interface

Note: You need to have the optional parts installed in your Auto G7-B board for this feature. The optional parts are available from your local dealer. However, this optional parts are not user installable, consult your local dealer for installation details.

To make use of the secondary serial RS232C interface, you should have the optional G7-P5 (Serial Port Cable with Connector and Bracket) properly installed.

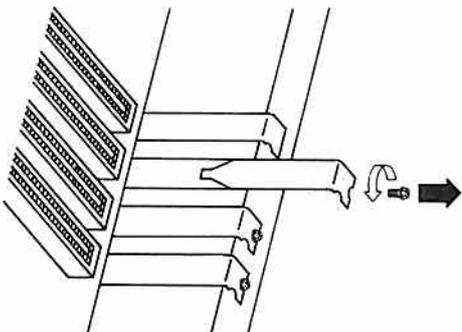
(i) The followings are jumper settings for the serial RS232C interface:



Jumper	Position
J8	Select port 2F8-2FF
J9	Select interrupt IRQ3

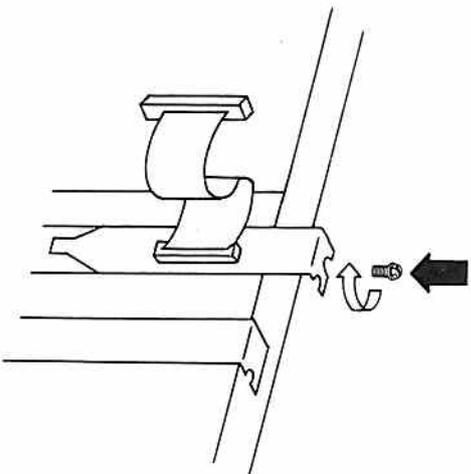
(ii)

Remove the screw that holds the expansion slot cover in place.

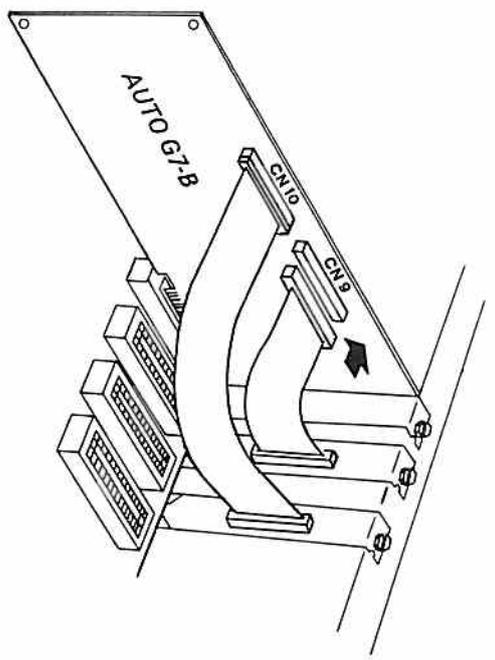


(iii)

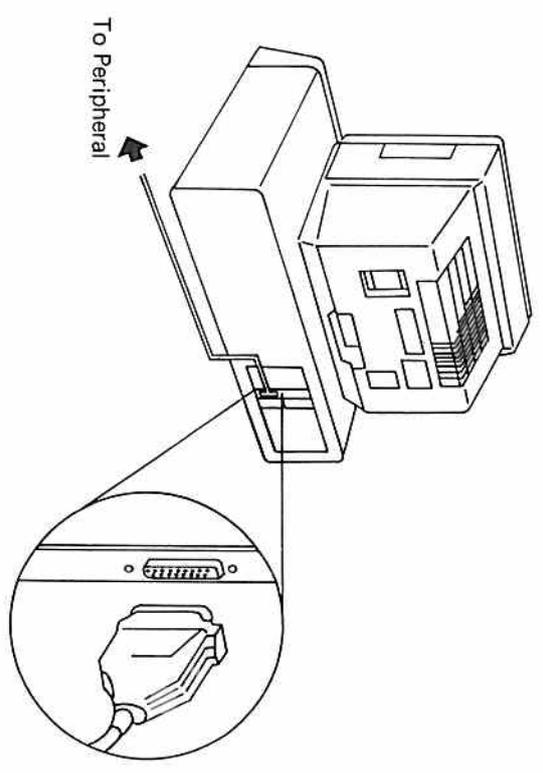
Insert the screw to mount the bracket with serial port cable to the rear panel.



- (iv) Connect the connector of the 26 ways cable on the bracket to the serial RS232C connector, CN9, on the Auto G7-B. Make sure that it is connected in the correct orientation. Notice that pin 26 is blank and aligned with the plugged hole # 26 in the serial RS232C connector.



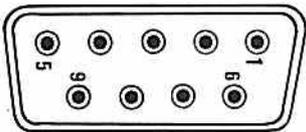
- (v) Connect the cable of your peripheral to the DB25 connector on the bracket.



Note : See G7-P5 user's manual for cable installation details.

Appendix A Video Display Adapter Interface (CN1)

A.1 Signals of Color Display Interface

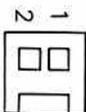


Pin No.	Signal	Direction
1	Ground	
2	Ground	
3	Red	Output
4	Green	Output
5	Blue	Output
6	Intensity	Output
7	Reserved	
8	Hor. Sync.	Output
9	Vert. Sync.	Output

A.2 Signals of Monochrome Display Interface

Pin No.	Signal	Direction
1	Ground	
2	Ground	
3	Reserved	
4	Reserved	
5	Reserved	
6	Intensity	Output
7	Video	Output
8	Hor. Sync.	Output
9	Vert. Sync.	Output

Appendix B Composite Video Interface (CN12)



Pin No.	Signal	Direction
1	Video Signal	
2	Ground	Output

Appendix C Mouse Interface Connector (CN3)

6	7	8	9	10
1	2	3	4	5

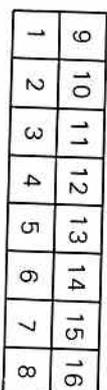
Pin No.	Signal	Direction
1	Y Pulse B	Input
2	Y Pulse A	Input
3	X Pulse B	Input
4	X Pulse A	Input
5	+5V	
6	Ground	
7	Right Button	Input
8	Middle Button	Input
9	Left Button	Input

Appendix D Light Pen Connector (CN5)

1	2	3	4	5	6
---	---	---	---	---	---

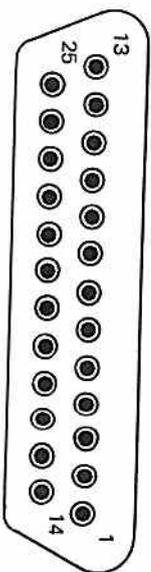
Pin No.	Signal	Direction
1	-ve Light Pen Input	Input
2	Not used	
3	-ve Light Pen Switch	Input
4	Ground	
5	+5 Volts	
6	+12 Volts	

Appendix E Game Controller Interface Connector (CN7)



Pin No.	Signal	Direction
1	+5 Volts	
2	Button 4	Input
3	Position 0	Input
4	Ground	
5	Ground	
6	Position 1	Input
7	Button 5	Input
8	+5 Volts	
9	+5 Volts	
10	Button 6	Input
11	Position 2	Input
12	Ground	
13	Position 3	Input
14	Button 7	Input
15	+5 Volts	
16	Not used	

Appendix F Parallel Printer Interface (CN8)



Pin No.	Signal	Direction
1	-ve Strobe	Output
2	+ve Data Bit 0	Output
3	+ve Data Bit 1	Output
4	+ve Data Bit 2	Output
5	+ve Data Bit 3	Output
6	+ve Data Bit 4	Output
7	+ve Data Bit 5	Output
8	+ve Data Bit 6	Output
9	+ve Data Bit 7	Output
10	-ve Acknowledge	Output
11	+ve Busy	Input
12	+ve Paper End	Input
13	+ve Select	Input
14	-ve Auto Feed	Output
15	-ve Error	Input
16	-ve Init	Input
17	-ve Select Input	Output
18-25	Ground	Output

Appendix G Serial RS232C Interface Connector (CN9, 10)

14	15	16	17	18	19	20	21	22	23	24	25	26
1	2	3	4	5	6	7	8	9	10	11	12	13

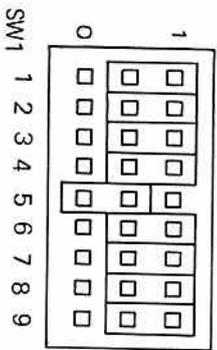
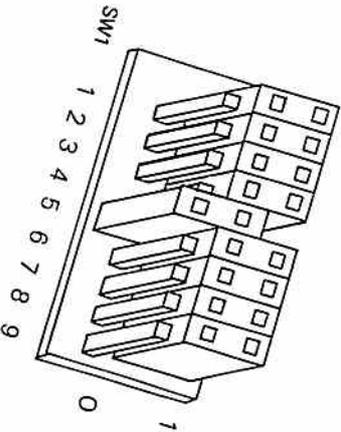
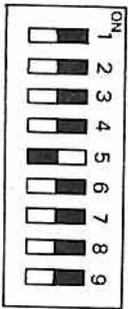
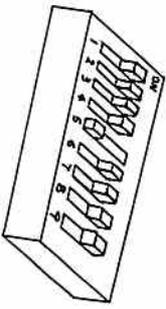
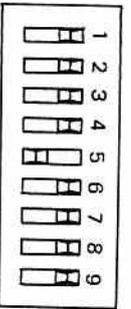
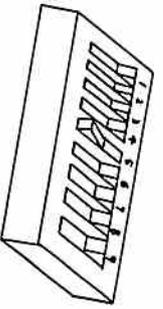
Pin No.	Signal	Direction
1	No Connection	Output
2	Transmitted Data	Input
3	Received Data	Output
4	Request to Send	Input
5	Clear to Send	Input
6	Data Set Ready	Input
7	Signal Ground	
8	Received	Input
9	Line Signal Detector + Transmit	Output
10	Current Loop Data No Connection	Output
11	Current Loop Data - Transmit	Output
12-17	Current Loop Data No Connection + Receive	Input
18	Current Loop Data No Connection	Output
19	Data Terminal Ready	Input
20	No Connection	Input
21	Ring Indicator	Input
22	No Connection	Input
24	Current Loop Return	Input
25	Receive	Input
26	No Connection	Input

Appendix H Floppy Disk Drive Interface Connector (CN11)

2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33

Pin No.	Signal	Direction
1-33	Ground (odd no.)	
2, 4, 6	Not used	
8	Index	Input
10	Motor Enable A	Output
12	Drive Select B	Output
14	Drive Select A	Output
16	Motor Enable B	Output
18	Direction (Stepper Motor)	Output
20	Step Pulse	Output
22	Write Data	Output
24	Write Enable	Output
26	Track 0	Input
28	Write Protect	Input
30	Read Data	Input
32	Select Head 1	Input
34	Not used	Output

Appendix I Notation for Jumpers and DIP Switches Settings



The above diagrams illustrate the equivalent settings for three different types of switches. Please note that the above three types of switches are used extensively in G7 series manuals.

Appendix J Jumpers and Switches Settings

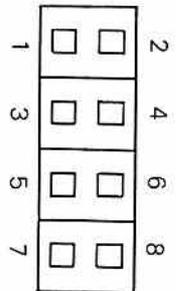
J.1 J1 Connector



Jumper	Display Mode Selected	Output
1 - 2*	Composite Color Display	CN12
2 - 3	Composite Mono Display	CN12

* Default Setting

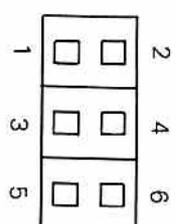
J.2 J2 Connector



Jumper	Mouse IRQ connection
1 - 2*	IRQ2
3 - 4	IRQ3
5 - 6	IRQ4
7 - 8	IRQ5

* Default Setting

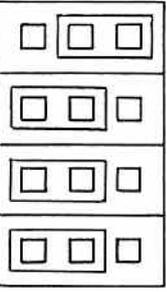
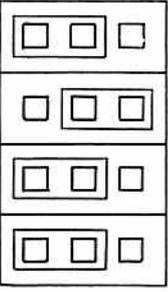
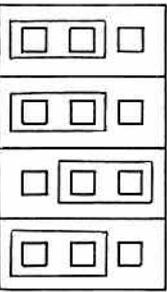
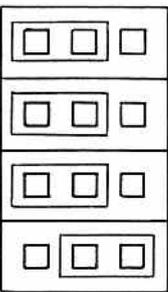
J.3 J3 Connector



Jumper	Clock Frequency
1 - 2*	Color Display 14.31818 MHz Clock
3 - 4	Monochrome 16MHz Clock
5 - 6	640x400 Display 23.4 MHz Clock

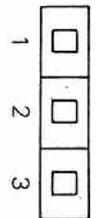
* Default Setting

J.4 J6 Switch Settings

Switch Setting	Interrupt Request Selected
<p>1 </p> <p>0 </p> <p>SW1 SW2 SW3 SW4</p>	<p>* Mouse IRQ 2 is selected</p>
<p>1 </p> <p>0 </p> <p>SW1 SW2 SW3 SW4</p>	<p>Mouse IRQ 3 is selected</p>
<p>1 </p> <p>0 </p> <p>SW1 SW2 SW3 SW4</p>	<p>Mouse IRQ 4 is selected</p>
<p>1 </p> <p>0 </p> <p>SW1 SW2 SW3 SW4</p>	<p>Mouse IRQ 5 is selected</p>

* Default setting

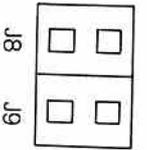
J.5 J7 Connector

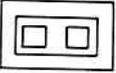
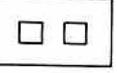


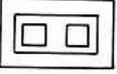
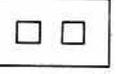
Jumper	Position
1 - 2	Timer 2 (port 240 - 25F)
2 - 3*	Timer 1 (port 340 - 35F)

* Default setting

J.6 J8, J9 Connector



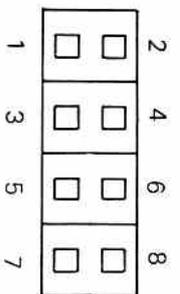
 J8	Select COM2 (port 2F8-2FF) for secondary serial RS232C interface.
 J8 *	Disable secondary serial RS232C interface.

 J9	Select IRQ3 for secondary serial interface.
 J9 *	Disable interrupt for secondary serial interface.

* Default setting

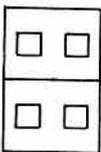
Note: Secondary RS232C Serial Interface is optional on Auto G7-B.
An option I.C. chip set is required for proper operation.

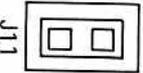
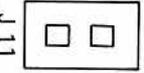
J.7 J10 Switch Settings

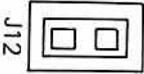


Jumper	Timer IRQ connection
1 - 2	IRQ 4
3 - 4	IRQ 5
5 - 6	IRQ 2
7 - 8	IRQ 7

J.8 J11, J12 Connector

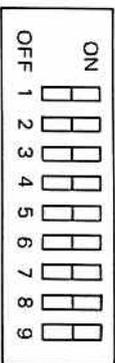


	Select COM 1 (port 3F8-3FF) for primary serial RS232C interface.
	Disable primary serial RS232C interface.

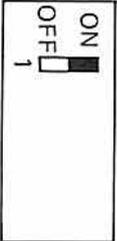
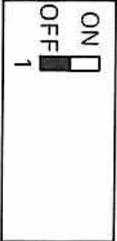
	Select IRQ4 for primary serial interface.
	Disable interrupt for primary serial interface.

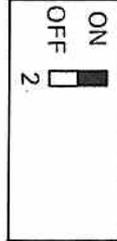
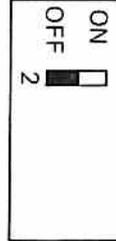
* Default setting

J.9 DIP Switch 1



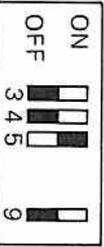
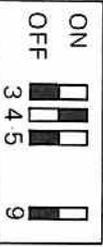
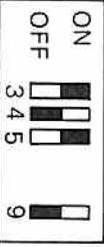
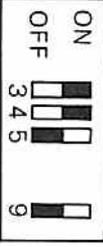
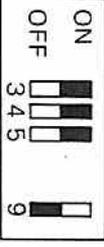
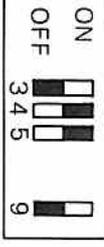
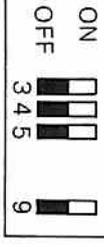
J.9.1 DIP Switch 1 – SW1, 2

	Positive Vertical Synchronization Pulse
	Negative Vertical Synchronization Pulse

	Positive Horizontal Synchronization Pulse
	Negative Horizontal Synchronization Pulse

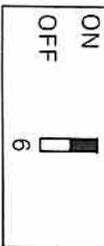
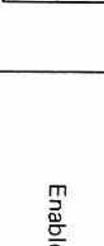
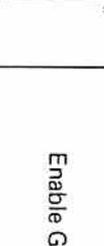
* Default setting

J.9.2 Dip Switch 1 – SW3, 4, 5, 9

Switch Setting	Display Mode Selected	Output
ON  OFF 	Composite Color Graphics Display	CN12
ON  OFF 	Composite Monochrome Graphics Display	CN12
ON  OFF 	Color/Graphics Display	CN1
ON  OFF 	640 x 400 Color Graphics Display	CN1
ON  OFF 	Monochrome Graphics Display	CN1
ON  OFF 	PAL TV Display	CN4
ON  OFF 	Grey Shade Monochrome Display	CN1
ON  OFF 	Disable All Display Modes	NONE

* Default Setting

J.9.3 Dip Switch 1 – SW6, 7, 8

ON  OFF 	Enable Mouse Interface
ON  OFF 	Disable Mouse Interface
ON  OFF 	Enable Parallel Printer Port Interface
ON  OFF 	Disable Parallel Printer Port Interface
ON  OFF 	Enable Game Port Interface
ON  OFF 	Disable Game Port Interface

* Default setting

Appendix K Specifications

Operating Voltage :	5V +/- 5%
Current :	5V / 1A (Typical)
Size :	339.5mm x 108mm x 1.6mm
Temperature :	Operating 5 degree Celsius to 40 degree Celsius Storage 0 degree Celsius to 55 degree Celsius
Relative Humidity :	Operating 20% - 80% (Non condensed) Storage 5% - 80% (Non condensed)

Note: Due to engineering improvements, specifications are subject to change without further notice.

APPENDIX L

TROUBLE SHOOTING

Here are some findings from other G7 users. Share their information may help you to use your G7 more effectively.

1. Symptoms:
Mouse doesn't work

Problem:

- a) Mouse driver has not been installed.

Solution:

Install the mouse driver.

Problem:

- b) Cannot find G7 mouse driver on the application software installation menu.

Solution:

Choose Microsoft Mouse (Bus) driver for your G7 mouse.

Problem:

- c) Mouse from other manufacturers does not work with G7 adapter.

Solution:

Mouse is not compatible with G7 mouse adapter. Check with your dealer.

Problem:

- d) Mouse interrupt is occupied by other devices. For example, this case will happen if you use the Western Digital hard disk controller.

Solution:

Set the jumpers J2, J6 and DIP SWITCH 1 SW6 to other interrupt positions.

Refer to manual section 2, 4 (mouse interface) for these jumpers settings.

You may try by setting J2 and J6 as follows:

DIP SWITCH 1: SW6 ON J2: 3-4 connected
J6: SW1 0
SW2 1
SW3 0
SW4 0

Problem:
e) Address used by mouse is already occupied by other devices.

Solution:
Check the other adapter(s) in your system and disable it.
If you still have queries, please refer to your dealer for further information.

Symptoms:
Realtime clock does not work.

Problem:

a) The battery protective paper is not removed.

Solution:
Remove the battery protective paper.

Problem:

b) The battery case is bad contact with the battery.

Solution:
Take out the battery and clean the contacts of the battery case and the surface of the battery. Then reinstall the battery.

Problem:

c) The battery has worn out.

Solution:
Replace the battery with a new one.

Symptoms:
Hercules graphics mode does not work.

Problem:

a) The Hercules graphics driver has not been installed.

Solution:
Install the Hercules graphics driver (HGC.COM) before you use graphics mode.

Symptoms:
The monitor cannot synchronize with the G7 adapter.

Problem:

a) The settings of DIP SWITCH 1 or J3 or both are incorrect.

Solution:

For IBM CGA monitor, settings should be as follows:

DIP SWITCH 1 SW1 ON J3 1-2 connected

SW2 ON

For IBM monochrome monitor, settings should be as follows:

DIP SWITCH 1 SW1 OFF J3 3-4 connected

SW2 ON

For 640x400 monitor, settings should be as follows:

DIP SWITCH 1 SW1 OFF J3 5-6 connected

SW2 OFF

Please refer to the installation manual for further detail.

Symptoms:

The 640x400 color mode does not work.

Problem:

a) The option G7-P3 has not been installed.

Solution:

Install the G7-P3 onto your G7 adapter.

Problem:

b) The monitor is not 640x400 high resolution type.

Solution:

Use color monitor with resolution 640x400 (horizontal frequency 24.5 KHz).

Note: This mode is not the same as EGA, EGA monitor cannot work with 640 x 400 mode.

6. Symptoms:
Cannot find printer port in IBM diagnostic programs.

Problem:

- a) The printer port is disabled.

Solution:

Enable the printer port by setting DIP SWITCH 1 SW7 to ON

Problem:

- b) The G7 is run in color, composite, PAL TV or Grey shade Monochrome mode.

Solution:

Printer port can be used without any problem.

In these modes, although you cannot test the printer port with IBM diagnostic programs in this mode, you still can use it with no problem.

If you want to test the printer port, set the G7 to monochrome mode and you can test it.

Since IBM diagnostic programs do not check the primary printer port if the display card is not in monochrome mode, G7 printer port will not appear in the diagnostics menu.

7.

Symptoms:
IBM diagnostic programs report errors when testing G7 display card.

Problem:

- a) The CPU is running at a clock rate not the same as IBM original one. (e.g. run in turbo mode)

Solution:

Ignore the error (code 401 or 5011)

In this case, the card will function properly even though the diagnostic programs report error.

Since IBM diagnostic programs test the display card by reading the synchronization pulse timing using software loop, numbers of looping will be different if the CPU is run at different clock rate.

Problem:

- b) The G7 is run in extended modes that IBM display card cannot support. (e.g. run in 640x400 mode)

Solution:

Ignore the error (code 5011).

In the case, the card will function properly even though the diagnostic programs report error.

In 640x400 mode, the synchronization pulse timing is different from that of CGA because the monitor needs 24.5 KHz for horizontal to synchronize. Since IBM diagnostic programs check the synchronization frequency and it is different, therefore it reports error.

Problem:

- c) The G7 is set at different synchronization polarity from that of IBM adapters.

Solution:

Ignore the error (code 401 or 5011).

In this case, the card will function properly even though the diagnostic programs report error.

In G7 there are switches for setting the synchronization polarity so that you can use a large variety of monitors. In IBM diagnostic programs, it use a software loop for timing the synchronization frequency. If the polarity of synchronization is different from that of IBM adapters, error will be reported.

8. Symptoms:
The system will halt easily after installed the G7 adapter. (e.g. cannot reboot when press CTRL ALT DEL keys)

Problem:

- a) Mouse interrupt is occupied by other devices.
For example, this case will happen if you use the Western Digital hard disk controller.

Solution:

Set the jumpers J2, J6 and DIP SWITCH 1 SW6 to other interrupt position.

Refer to manual section 2, 4 (mouse interface) for these jumpers settings.

You may try by setting J2, J6 and DIP SWITCH 1 SW6 as followings:

DIP SWITCH 1: SW6 ON J2: 3-4 connected
J6: SW1 0 SW2 1
 SW3 0
 SW4 0

Problem:

- b) The gold finger of the card is dirty.

Solution:

Clean the gold finger of the card with contact cleaner.

9. Symptoms:
Display dark out or becomes out of synchronization sometimes when power up.

Problem:

In some IBM PC compatible machines, the POWER GOOD signal from their power supply is poor on power up.

Solution:

Push RESET button in case such intermittent error occurs on power up.

Optional Accessories of Auto G7

G7-P2: G7 Mouse with Driver Software

The Auto G7 has the Microsoft mouse compatible interface built in. Plug this option to the Auto G7 with the driver software, you can enjoy the software packages which use mouse for more convenient input methods.

G7-P3: Module for 640 x 400 Color Monitor

The Auto G7 has the capability of driving 640 x 400 high resolution color monitors. With this option you can enjoy the excellent screen images reproduced by the Auto G7 in 640 x 400 format but with CGA software compatibility.

G7-P4: Floppy Disk Drive Cable

Auto G7-B has floppy disk controller built on it. With this option, your floppy disk drives can be controlled by the Auto G7 and no traditional floppy disk drive controller is needed.

G7-P5: Serial Port Cable with Connector and Bracket

Auto G7-B has RS232C serial interfaces built on it. With this option, you can communicate with other computers, modem and plotters etc.

G7-P6: PAL Module

Auto G7 supports PAL TV display. With this option, you can have PAL TV display in CGA mode.

G7-P8: Mouse and Game Port Cables with Connectors and Bracket

The Auto G7 has game port and mouse interface built in. With this option you can connect a G7 mouse and a game joystick to the Auto G7.

More optional accessories of Auto G7 may be available. Please contact your local dealer for more information.

JUKO ELECTRONICS INDUSTRIAL CO LTD.