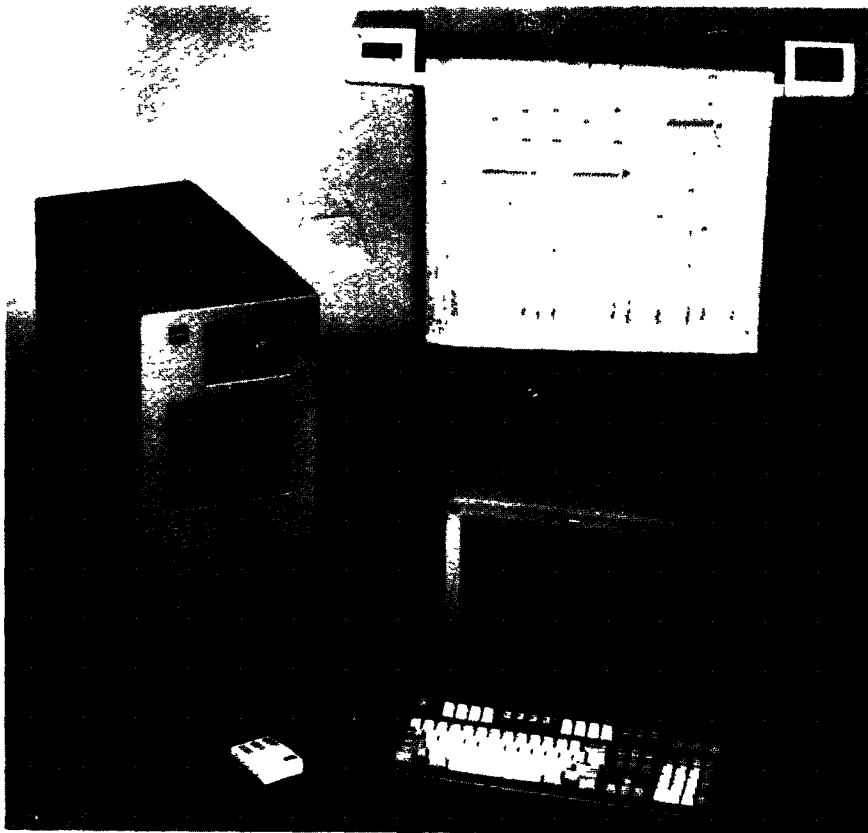


# Bailey<sup>®</sup> network 90<sup>®</sup>

## Bailey Workstation Enhancement Kits HIKT01 and HIKT03



Installation Instruction

E93-919-4

**Bailey**<sup>®</sup>

Seamless, Real-Time  
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## INTRODUCTION

The HIKT01 is a hardware kit that converts a Bailey XT, IBM XT or Industrial XT, or COMPAQ PLUS portable computer into a Workstation capable of operating Bailey Personal Computer software. The HIKT03 Kit enables the Bailey AT, IBM AT or Industrial AT to utilize the same software. The purpose of this instruction manual is to aid the proper installation of the hardware kits into an existing system.

In order to be upgraded the minimum requirements of the existing system are:

- 640K memory
- an IBM Color Graphics Adapter (CGA) or Enhanced Graphics Adapter (EGA) or equivalent
- an IBM Color Monitor or equivalent
- a vacant slot (or slot that can be made vacant) in your computer.

### NOTE:

1. In addition to the required hardware, serial and parallel ports are also required on your computer to operate peripheral devices such as a cursor positioner ('mouse'), printer or plotter. Refer to instruction manuals for specific devices to determine which ports are needed.
2. By ordering an additional HCDQ01 cable, the HIKT01 Kit will operate the monochrome monitor of the COMPAQ PLUS, and although a color monitor can also be used, it is not necessary.

### REQUIRED TOOLS

Medium size, flat blade screwdriver

### OPTIONAL TOOLS

Medium screwstarter  
 3/16 inch nutdriver  
 1/4 inch nutdriver



## HIKT01 Kit

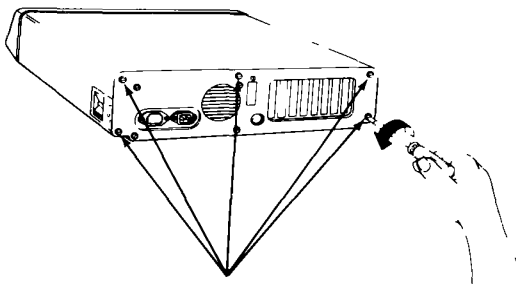
### DESCRIPTION

The HIKT01 Kit consists of. a Bailey Graphics Board, an 8087 Math Coprocessor, a cable (P/N 1948100A20006), and a card edge guide

### INSTALLATION INTO BAILEY XT OR IBM XT

#### Preparing the Unit For Conversion

- 1 Set the POWER switch on the system unit to OFF
- 2 Set any power switches on the peripheral devices to OFF (printer, monitor, etc )
- 3 Unplug the system unit power cord from the wall outlet
- 4 Position the unit to allow access to the rear of the computer.
- 5 Disconnect all cables from the rear of the system unit
- 6 Move your keyboard and peripherals away from the work area
- 7 Remove the five cover mounting screws at the rear of the system cabinet by turning them counterclockwise, as shown in Figure I. Save the screws for the installation of the cover
- 8 Position the unit to allow access to the front of the computer
- 9 Carefully slide the system unit cover away from the rear and toward the front When the cover will go no further, tilt it up, remove it from the base, and set it aside
- 10 Look at the inside left rear of your system unit (Figure 2) There are eight expansion slots If you have a Bailey XT or IBM Industrial XT, it contains a metal bracket which protects the PC boards, and which must be lifted (continue with Step 11). If you have an IBM XT, it does not contain the bracket (continue with Step 12).
- 11 The bracket is hinged on the right; remove the screw at the left of the bracket and swing it up to the right.
- 12 If your system does not have a math coprocessor integrated circuit installed, then install the coprocessor according to the instructions supplied with the math coprocessor



Cover Mounting Screws

FIGURE 1 Removing Cover

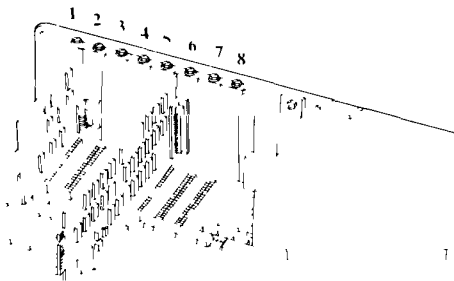


FIGURE 2 Option Slots

#### Placement of Color Graphics Adapter (CGA) and Installation of Bailey Graphics Board

- NOTE: 1 The necessary requirement for the placement of the CGA and the Bailey Graphics Board is that they are placed close enough that they can be easily connected, through the plugs at the rear of the boards, by the cable supplied with the kit. The recommended placement is the CGA in slot 1 and the Bailey Graphics Board in slot 2.
- 2 As with all delicate electronics, one should avoid touching the PC board components, connections, and input pins as much as possible. When installing and handling the boards hold them by the insulating material along the edges.

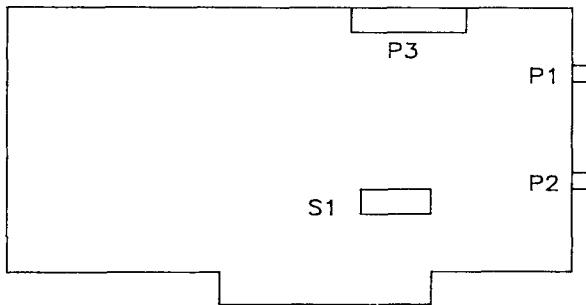
- 13 If boards are already present in the slots you intend to place the graphics boards into remove and relocate the boards to vacant slots by following Steps a through e
  - a Remove the screw at the top of the board bracket at the rear of the system cabinet
  - b Grasp the board by the top and lift straight up.
  - c Remove the blank plate from the vacant slot (if present)
  - d. Install the board by placing the card edge connector at the bottom of the board into the receptacle in the system board and pressing the board firmly into place
  - e. Align the slot in the board retaining bracket with the hole in the bracket at the rear of the system cabinet and fasten the screw.
  
- 14 It is recommended that the CGA be in slot 1. If it is not already there, continue with Steps a through f. If the CGA is there, continue with Step 15.
  - a Remove the screw securing the CGA by turning the screw counter clockwise.
  - b. Grasp the CGA by the top and lift straight up.
  - c Remove the blank plate from slot 1 (if present).
  - d Install the card edge guide, if necessary, by pressing the pins of the guide into the holes on the system cabinet at the front of the option slot
  - e. Install the CGA you removed by holding the board by the top and firmly pressing it into slot 1.
  - f Align the slot in the CGA retaining bracket with the hole in the rear panel of the system unit, and install the screw
  
- 15 It is recommended that you place the Bailey Graphics Board in slot 2 by following the procedure described in Steps a through e
  - a Before installing the Bailey Graphics Board, make sure that dipswitch S1 is set according (Figure 3)
  - b. Remove the blank plate from slot 2 (if present).
  - c Install the card edge guide, if necessary, by pressing the pins on the guide into the holes at the front of the system cabinet in front of the option slot
  - d. Install the Bailey Graphics Board by holding the board on top and pressing it firmly into slot 2
  - e Align the slot in the retaining bracket at the rear of the Bailey Graphics Board with the hole in the bracket at the rear of the system unit, and fasten the screw.

### Cable Attachments

- 16 Attach the cable supplied with the HIKT01 Kit between plugs P2 of the Bailey Graphics Board and J2 of the CGA (Figures 3 and 4) (Cable attaches to plugs behind system cabinet)

**NOTE:** If your system uses an Enhanced Graphics Adapter (EGA), the cable attaches from J3 of the EGA to P2 of the Bailey Graphics Board (Figures 3 and 5)

- 17 Attach the cable from the color monitor to plug P1 of the Bailey Graphics Board

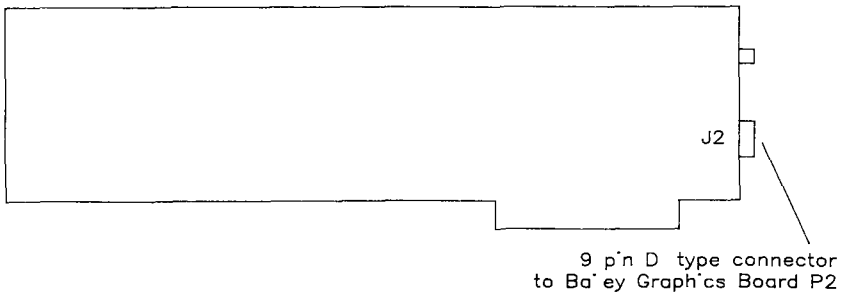


- P1 -- To Color Monitor  
9 pin D type connector
- P2 Input from host graphics board  
9 pin D type connector
- P3 -- Output to COMPAQ monitor board  
12 p'n Berg connector
- S1 -- I/O address select 8 pin DIP switch:
- 1 CLOSED
  - 2 - OPEN
  - 3 OPEN
  - 4 OPEN
  - 5 CLOSED
  - 6 - OPEN
  - 7 - CLOSED
  - 8 - CLOSED

OPEN = OFF - 1, CLOSED = ON - 0

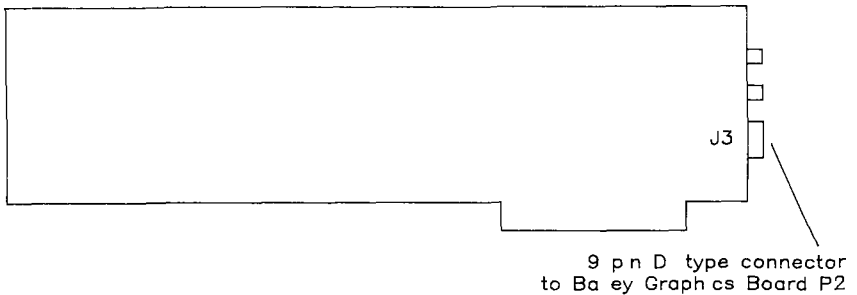
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**FIGURE 3** Bailey Graphics Board and Dipswitch Setting



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**FIGURE 4** *Color Graphics Adapter (CGA)*



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**FIGURE 5** *Enhanced Graphics Adapter (EGA)*

- 18 Attach the bracket that protects the circuit boards (if applicable) by swinging the bracket back into place and fastening the screw at the left of the bracket.
- 19 Tilt the system unit cover when replacing it and carefully slide it to the rear of the system unit. Position the unit to allow access to the rear of the computer. Align the screws with the threaded tabs. Tighten the screws with a flat blade screwdriver, or a (1/4) inch nutdriver.
- 20 Return all peripheral equipment to the work area, and connect all cabling. Remember that you must plug the color monitor into the Bailey Graphics Board.
- 21 Plug the system unit power cord into the wall outlet.

- 22 Set POWER switch on the system unit to ON
- 23 Set the power switches on the peripheral equipment to ON (printer, monitor, etc ).
24. Run the computer diagnostic disk to verify proper computer operation, and hardware configuration. When the checklist is displayed, make sure the list includes

640K memory (minimum)  
 Color Graphics Adapter  
 Color Monitor  
 Math Coprocessor

#### Installing the HIKT01 Kit into a COMPAQ PLUS Portable Computer

- 1 To install the HIKT01 Kit into the COMPAQ PLUS, first gain access to the option boards by following the COMPAQ instructions.

**NOTE:** In order to assure that the power supply of the COMPAQ PLUS is sufficient to operate the HIKT01 Kit, check the revision level that is silk screened on the power supply circuit board. Revisions G, H, and J are the proper supplies. Supplies with other revision designations may not provide sufficient power to operate the kit.

- 2 If a math coprocessor integrated circuit chip is not installed on the COMPAQ, install one according to the instructions supplied with the math coprocessor.
- 3 Before installing the Bailey Graphics Board, make sure dipswitch S1 is set according to Figure 6.
- 4 Mount the Bailey Graphics Board into slot J105 of the COMPAQ (Figure 7).
- 5 Install the cable supplied with the HIKT01 Kit between plugs P2 of the Bailey Graphics Board and J404 of the COMPAQ Display Board (Figures 7 and 8) (Installs from behind system cabinet).

#### CAUTION

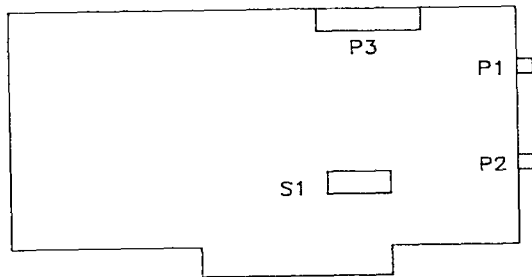
High residual voltage may be present on the anode of the CRT. Before removing the video cable from the COMPAQ Monitor Board in the next step, discharge the CRT anode by grounding it.

**RECOMMENDED PROCEDURE** Attach one end of a wire with alligator clips on both ends to a ground on the COMPAQ chassis (a metallic part). Attach the other end to the base of the blade of a long, thin metallic screwdriver with an insulated handle. Slide the screwdriver under the insulating cup at the rear of the CRT and touch the blade to the metal CRT anode. Any voltage present will discharge to ground, and may create a 'snapping' or 'crackling' sound.

- 6 Follow the COMPAQ instructions to gain access to the circuit boards inside the video monitor. Remove the COMPAQ video cable between plugs J401 of the COMPAQ display Board and S107 of the COMPAQ Monitor Board (Figures 7 and 8).
- 7 Install the Bailey Video cable HCDQ01 between plugs P3 of the Bailey Graphics Board and S107 on the COMPAQ Monitor Board (Figures 6 and 7)

**NOTE:** A color monitor can also be connected to P1 of the Bailey Graphics Board

- 8 Replace the COMPAQ cover according to the instructions. Return peripheral equipment to the work area, connect cables and power cords, and power up the system
- 9 Run the diagnostic disk to verify proper computer operation and hardware configuration

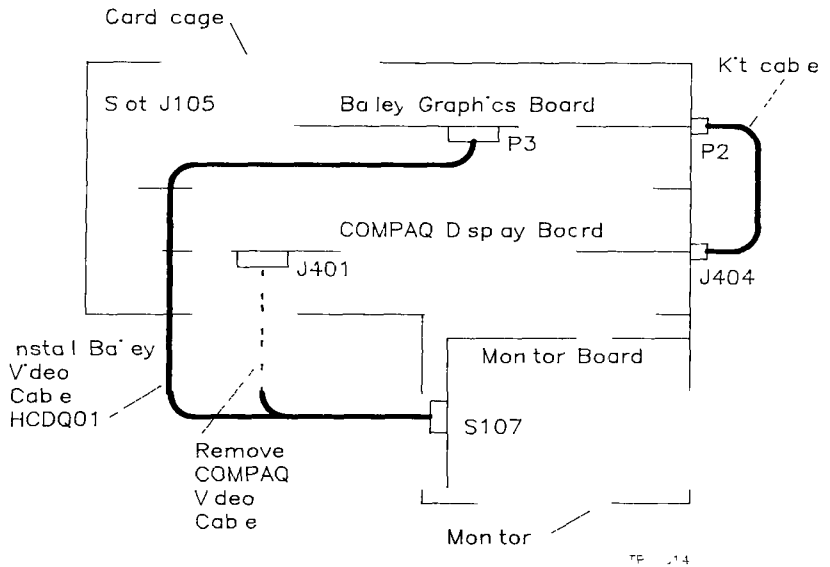


- P1 To Color Monitor  
9 pin D type connector
- P2 Input from host graphics board  
9 pin D-type connector
- P3 Output to COMPAQ monitor board  
12 pin Berg connector
- S1 /O address select 8 pin DIP switch:  
1 CLOSED  
2 OPEN  
3 - OPEN  
4 OPEN  
5 CLOSED  
6 - OPEN  
7 CLOSED  
8 - CLOSED

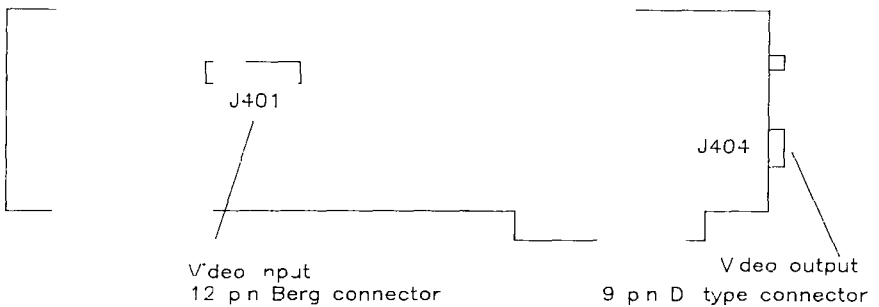
OPEN - OFF - 1, CLOSED - ON - 0

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**FIGURE 6** Bailey Graphics Board and Dipswitch Setting



**FIGURE 7** COMPAQ PLUS Cabling and Option Board Arrangement



**FIGURE 8** COMPAQ PLUS Display Board

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## HIKT03 Kit

Bailey Workstation Conversion Kit for Bailey AT, IBM AT, or IBM Industrial AT

### DESCRIPTION

The HIKT03 Kit consists of a Bailey Graphics Board, an 80287 Math Coprocessor, a cable (P/N 1948100A20006), and a card edge guide

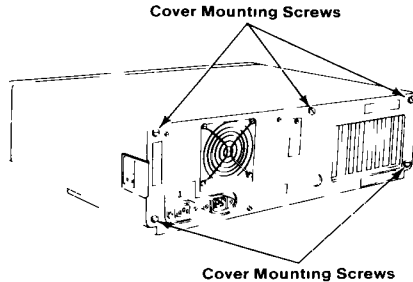
### INSTALLATION

#### Preparing the Unit

1. Set the power switch on the system unit to OFF
2. Set power switches on peripheral equipment to OFF (printer, monitor etc)
3. Make sure the keylock is unlocked (IBM AT only) (Turn the key counterclockwise and remove the key)
4. Unplug the system unit power cord from the wall outlet
5. Position the unit to allow access to the rear of the computer
6. Disconnect all cables from the rear of the system unit
7. Move the keyboard and all peripheral equipment away from the work area

#### Removing the Cover of the IBM AT

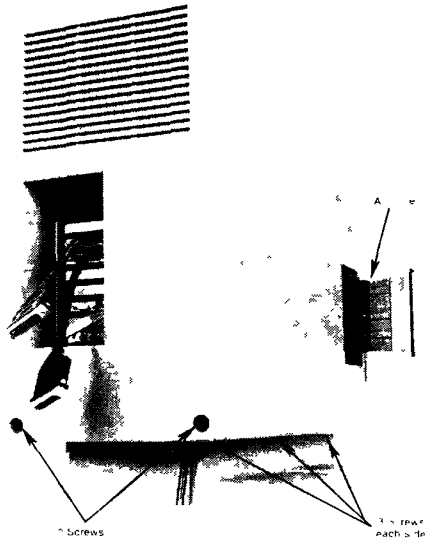
8. Remove the five cover mounting screws from the rear of the system cabinet by turning them counterclockwise (Figure 9)
9. Position the unit to allow access to the front of the computer.
10. Carefully slide the system unit cover away from the rear. When the cover will go no further, tilt it up, remove it from the base, and set it aside
11. If your system does not have a math coprocessor integrated circuit chip installed, then install it according to the instructions supplied with the coprocessor. Proceed to 'Placement of the CGA/ Bailey Graphics Board'



**FIGURE 9** *Removing Cover of IBM AT*

#### **Removing Cover of Bailey AT or IBM Industrial AT**

12. Remove the air filter from the left side of the system cabinet by grasping it by the handle and pulling it out (Figure 10).
13. Position the unit so access can be gained to the rear of the system cabinet
14. Remove the two screws at the bottom rear of the system cabinet (Figure 10)
15. Position the unit so access can be gained to the front of the cabinet.
16. Remove the six screws located under the cabinet cover, three on either long side (Figure 10)
17. Grasp the cover firmly, pull forward breaking the cover free from its connection with the back cover casing, and continue to slide it forward until it is removed
18. Remove the protective metal cover on the left side of the system cabinet frame by removing the four screws (Figure 11).
9. Remove the bracket protecting the circuit boards by removing the four screws. Note the orientation of the bracket and position of the pads (if any) that support the option cards so the bracket can be reinstalled correctly (Figure 11)
20. If your system does not have a math coprocessor installed, then install it according to the instructions supplied with the math coprocessor

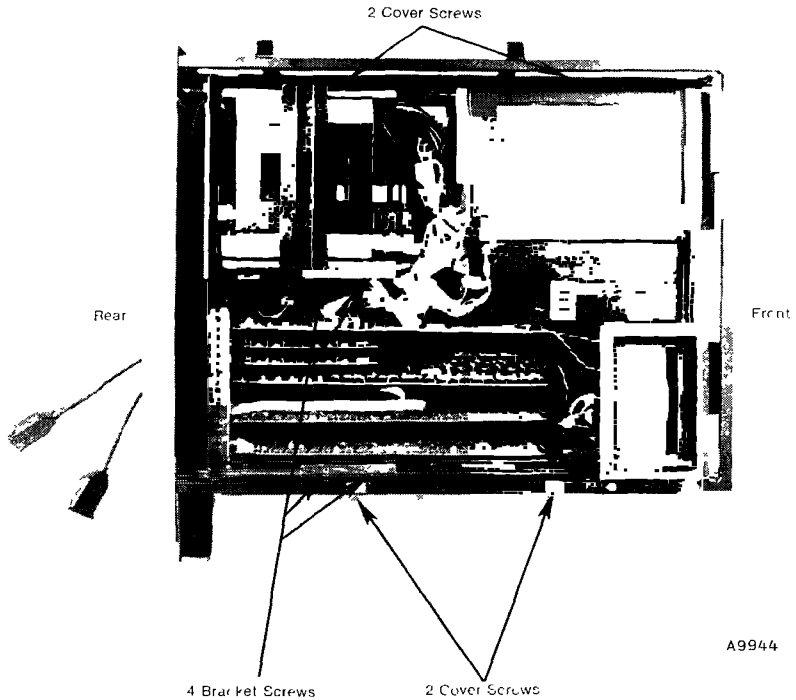


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FIGURE 10 Bailey AT, IBM Industrial AT (Rear view)

**Placement of the Color Graphics Adapter (CGA) and Installation of the Bailey Graphics Board**

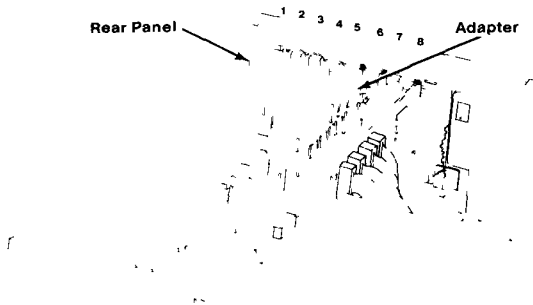
- NOTE: 1 The necessary requirement for the placement of the CGA and the Bailey Graphics Board is that that they are close enough to be connected, through the plugs at the rear of the boards, by the cable supplied with the kit. The recommended placement is the CGA in slot 1 and the Bailey Graphics Board in slot 2.
2. As with all delicate electronics, one should avoid touching the PC board components, connections, and input pins as much as possible. When installing and handling the boards hold them by the insulating material along the edges.



**FIGURE 11** *Installing Options on Bailey AT or IBM Industrial AT*

- 21 If boards are already present in the slots you intend to place the graphics boards into (Figure 12), relocate them to vacant slots. Follow steps a through e.
- a. Remove the screw from the bracket at the rear of the option board.
  - b. Grasp the board by the top and lift straight up.
  - c. Remove the blank plate from the slot (if present).
  - d. Firmly press the board into the slot.
  - e. Align the slot in the board retaining bracket with the hole in the bracket at the rear of the system cabinet and fasten the screw.

Rear Panel      1 2 3 4 5 6 7 8      Adapter

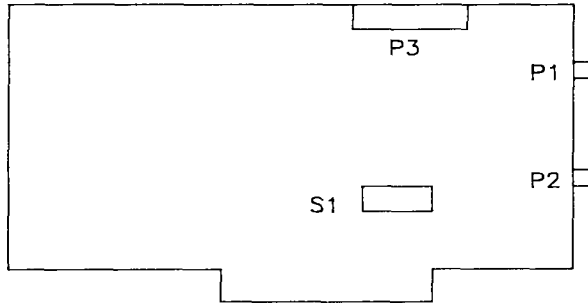


**FIGURE 12** IBM AT Card Cage

**NOTE:** Bailey AT and IBM Industrial AT card cage shown in Figure 11

- 22 It is recommended that you place the CGA in slot 1. If it is not already there, continue with Steps a through e. If the CGA is there, continue with Step 23.
- a Use a flat blade screwdriver or a 3/16 inch nutdriver and remove the screw that holds the CGA in place. Save the screw for the installation.
  - b Grasp the CGA by the top and lift straight up.
  - c Remove the blank plate from slot 1, if present.
  - d Install the CGA by holding the board on top and pressing it firmly into the receptacle in slot 1. Be sure that the front of the board is seated in the card edge guide at the front of the cabinet.
  - e Align the slot in the CGA retaining bracket with the hole in the rear panel of the system unit, and fasten the screw.
- 23 It is recommended that you place the Bailey Graphics Board in slot 2 by following the procedure described in Steps a through e.
- a Before installing the Bailey Graphics Board, make sure that dipswitch S1 is set according to Figure 13.
  - b Remove the blank plate from slot 2, if present.
  - c Install the card edge guide, if necessary, by pressing the pins on the guide into the holes at the front of the system cabinet.

- d Install the Bailey Graphics Board by holding the board on top and pressing it firmly into slot 2, making sure the board is seated in the card edge guide
- e Align the slot in the Bailey Graphics Board retaining bracket with the hole in the bracket at the rear of the system cabinet, and secure it with the screw



- P1 To Co or Monitor  
9 pin D-type connector
- P2 - Input from host graphics board  
9 pin D-type connector
- P3 - Output to COMPAQ monitor board  
12 pin Berg connector
- S1 /O address select 8 pin DIP switch:  
1 - CLOSED  
2 - OPEN  
3 - OPEN  
4 - OPEN  
5 - CLOSED  
6 - OPEN  
7 - CLOSED  
8 - CLOSED

OPEN = OFF = 1, CLOSED = ON = 0

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**FIGURE 13** *Bailey Graphics Board and Dipswitch Setting*

## Cable Attachments

- 24 Position the computer to allow access to the rear of the cabinet. Attach the cable supplied with the HIKT03 Kit between plugs P2 of the Bailey Graphics Board (Figure 13), and J2 of the CGA (Figure 14). (Cable attaches to plugs from behind system cabinet)

NOTE: If your system uses an EGA, the cable attaches from P2 of the Bailey Graphics Board to J3 of the EGA (Figure 15)

- 25 Attach the cable from the color monitor to plug P1 of the Bailey Graphics Board

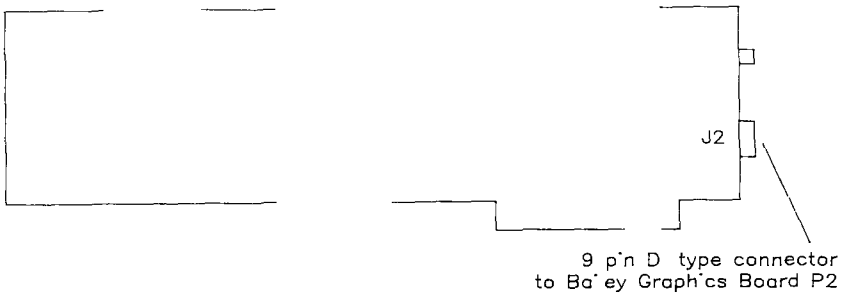


FIGURE 14 Color Graphics Adapter (CGA)

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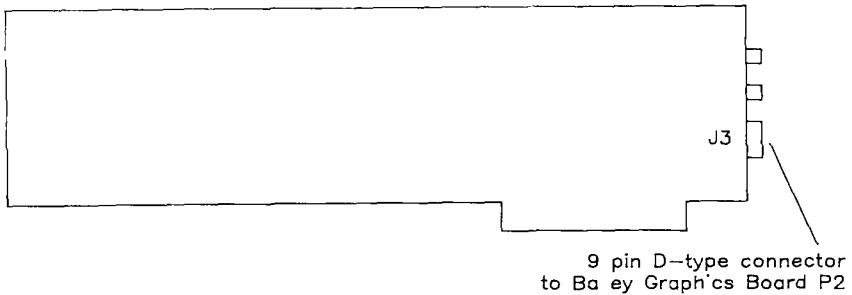


FIGURE 15 Enhanced Graphics Adapter (EGA)

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### Installing the Cover on the IBM AT

- 26 Tilt the system unit cover when placing it on the system unit and carefully slide it to the rear of the system unit. Align the screws with the threaded tabs and install the screws

### Installing the Cover on the IBM Industrial AT or Bailey AT

- 27 Install the bracket protecting the option boards by replacing the 4 screws (Figure 11)
- 28 Replace the metal cover on the side of the cabinet frame with the 4 screws (Figure 11)
- 29 Slide the cabinet cover on from the front making sure that the metal brackets at the rear of the cabinet cover secure around the lip of the back cover. Replace the two screws at the bottom rear of the unit, and the six screws at the bottom of the cabinet cover
- 30 Return all peripheral equipment to the work area and connect cables. Remember that you must plug the color monitor into the Bailey Graphics Board.
- 31 Plug the system unit power cord into the wall outlet.
32. Set power switch on the system unit to ON
- 33 Set the power switches on the peripheral equipment to ON (printer, monitor, etc.)
34. Run the computer diagnostic disk to verify proper computer operation, and hardware configuration. When the checklist is displayed, make sure the list includes:

640K memory (minimum)  
 IBM Color Graphics Adapter or equivalent  
 IBM Color Monitor or equivalent  
 Math Coprocessor

### TROUBLESHOOTING

If you have any problem after installation, one of the following is the most likely cause

Coprocessor not seated properly or damaged.

Cabling is incorrect.

Cards may be loose.

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