FLAGSTAFF ENGINEERING

8 Inch Diskette System Installation Guide

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FLAGSTAFF ENGINEERING

DISKETTE CONNECTION SYSTEM

INSTALLATION AND HARDWARE GUIDE

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1.Ø INTRODUCTION

The Diskette Connection is a hardware and software system that provides an easy method of interfacing many different diskette drives to an IBM PC, PC/XT, or PC/AT computer.

The basic system includes a Flagstaff Engineering Model D diskette controller card that supports up to four external diskette drives. The external drives may be 8", 5 1/4" 96 TPI quad density, 5 1/4" 96 TPI high density (PC/AT compatible), or 3 1/2" drives.

The controller card is installed inside the computer in any empty slot, and is accessed through a software device driver that must be installed into the DOS operating system. The device driver provides low level I/O support to the card through DOS interrupt 13H.

A secondary device driver is included with the system to support the external drives as DOS devices with DOS assigned ID letters.

The system may include the following optional modules ordered at time of purchase.

Model S Controller Card

> Replaces original IBM floppy controller card. Used for applications where all expansion slots are in use. External drives are limited to two devices since the two standard 5 1/4" internal IBM drives are supported off the front of the card.

Hard Sector Option

Model S card or Model D card with optional support circuitry for reading Hard Sector diskettes.

8" Diskette Drives

Single or dual drive units in external enclosure. Power supply included. Available as 110 or 220 volt. Interfaces to controller card through 50 pin ribbon cable.

5 1/4" Diskette Drives

Single or dual drive units in external enclosure. Power supply included. Available as 110 or 220 volt. Drives may consist of any of the following:

- 48 TPI 360K drive.
- 96 TPI 720K drive.
- 96 TPI 1.2 Meg. High Density drive.

3 1/2" Diskette Drives

Single or dual drive units in external enclosure. Power supply included. Available as 110 or 220 volt. Compatible with Data General 1 diskettes.

Cable Adapter

Allows connection of 50 conductor 8" drive cable to 34 conductor card connector, or connection of 34 conductor 5 1/4" cable to 50 conductor card connector.

2.0 SYSTEM DESCRIPTION.

When you unpack the DISKETTE CONNECTION system from the shipping carton, you should find the following pieces:

1. A diskette controller card. This card has a 50 conductor edge connector at one end, and a 34 conductor edge connector at the other. The 50 conductor is normally used to interface 8" drives to the card, and the 34 conductor connector is normally used to interface 5 1/4" and 3 1/2" drives to the card (Figure IN.1).

2. 8", 5 1/4", or 3 1/2" diskette drive enclosure containing either one or two diskette drives. This unit will either contain only the diskette drive(s) or be furnished in an enclosure with its own power supply and power cord. At the back of each diskette drive is an edge connector. This connector will be used to interface the drive(s) to your computer. 8" (Figure IN.2) drives have a 50 conductor connector while 5 1/4" (Figure IN.3) and 3 1/2" (Figure IN.4) drives have a 34 conductor connector.

3. A 50 conductor or 34 conductor ribbon cable. The cable has identical connectors on each end. Dual drive systems are supplied with a ribbon cable that has two connectors at the drive end of the cable. This cable is used to connect the diskette drive(s) to the diskette controller card inside your computer.

The ribbon cable will have a colored stripe at one edge of the cable. This stripe indicates Pin 1 of the connector.

4. Power connector cable for 5 1/4" and 3 1/2" drives supplied without an external power supply. One end of the cable has a 'Y' connector that fits between the existing internal 5 1/4" drive(s) and the IBM power connector.

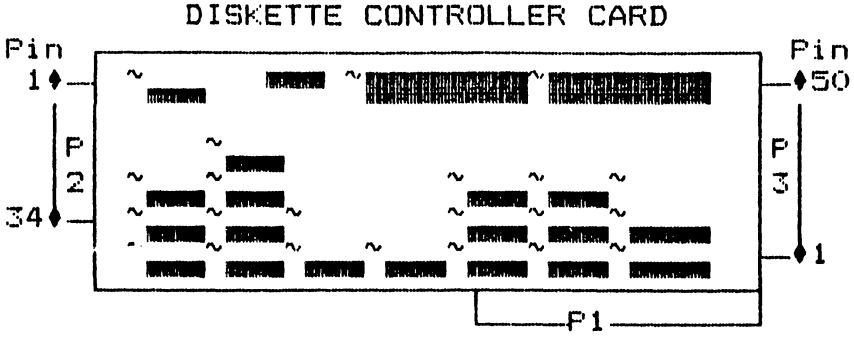
5. A 5 1/4 inch distribution diskette labeled DISKETTE CONNECTION UTILITY/8. This distribution diskette contains device drivers required for system operation, and also includes diagnostic and utility programs. These programs will be used to confirm proper installation of the system, and furnish utility routines for use with diskettes used in external drives.

The software on this diskette must be used with IBM PC-DOS versions 2.0 or higher.

Complete information on the software included on this diskette is contained in the Utility/8 Software Documentation Manual provided with your system.

This distribution diskette is an important addition to your software library. Before you do anything else with your computer, load the DOS DISKCOPY utility program from IBM and MAKE A BACKUP COPY OF THE 5 1/4 INCH DISTRIBUTION DISKETTE SUPPLIED WITH YOUR FLAGSTAFF ENGINEERING SYSTEM. After you have finished making the backup copy, store the original diskette in a safe place.

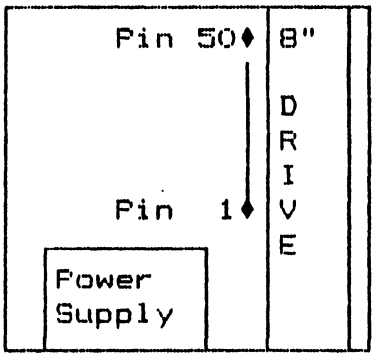
(Figure IN.1)



RED or BLUE stripe on cable edge indicates connector Pin 1.

(Figure IN.2)

FLAGSTAFF 8" DISKETTE DRIVE (BACK)

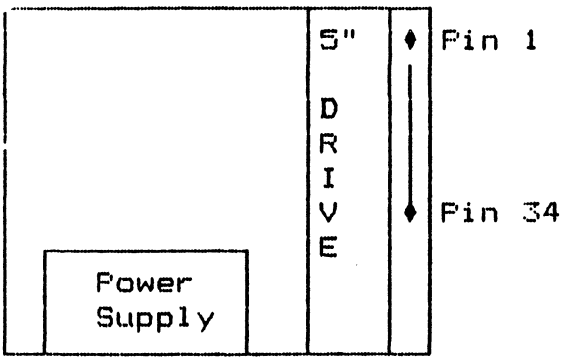


Connect Card P3 to Drive P1

```
*****************************************
*  ALWAYS connect the ribbon cable so   *
*  that the RED stripe on the side of   *
*  cable goes to Pin 1 of a connector.  *
*  34 pin connectors have a notch in    *
*  the edge connector between pins      *
*  3&5/4&6 to help indicate the         *
*  Pin 1 location.                      *
*****************************************
```

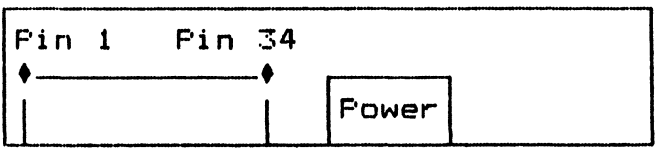
(Figure IN.3)

FLAGSTAFF 5 1/4" DISKETTE DRIVE (BACK)
WITH BUILT IN POWER SUPPLY



Connect Card P2 to Drive P1

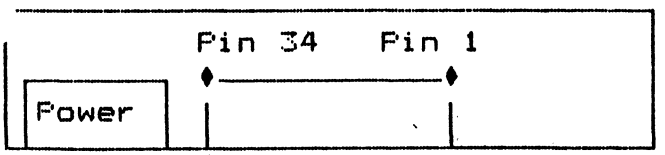
FLAGSTAFF 5 1/4" DISKETTE DRIVE (BACK)
''ITHOUT BUILT IN POWER SUPPLY



Connect Card P2 to Drive P1

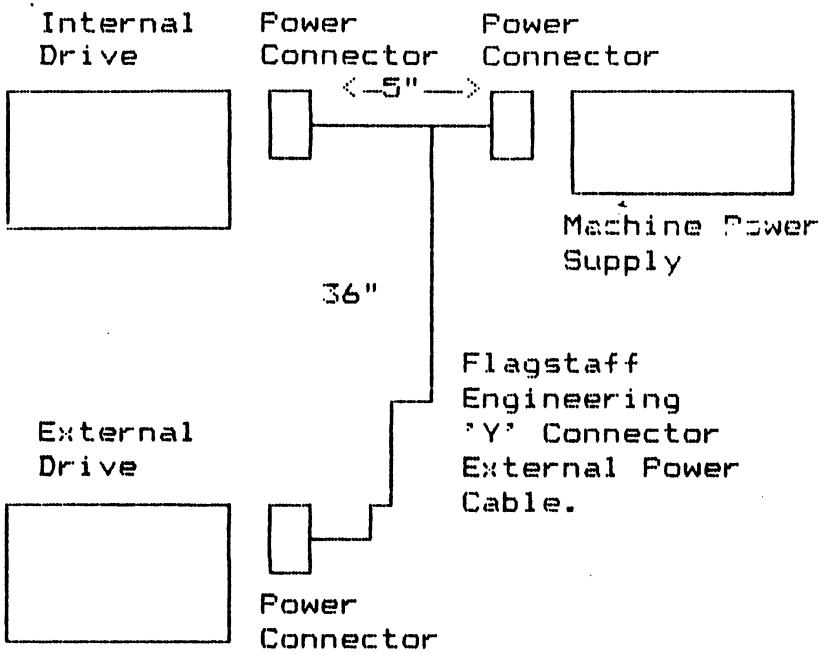
(Figure IN.4)

FLAGSTAFF 3 1/2" DISKETTE DRIVE (BACK)
WITHOUT BUILT IN POWER SUPPLY



Connect Card P2 to Drive P1

(Figure IN.5)


Internal
Drive
Power
Connector
Power
Connector
<-5"->
Machine Power
Supply
36"
Flagstaff
Engineering
'Y' Connector
External Power
Cable.
External
Drive
Power
Connector

3.0 DISKETTE CONTROLLER CARD DESCRIPTION.

The diskette controller card included with your system is one of two types. The card is a Model S or a Model D, depending on the system specifications given to Flagstaff Engineering when you placed your order. To properly install your diskette card, you must identify the type of card you have.

Card Type Identification:

The controller card shipped with your system has a quality control tag located on the component side of the card. This tag will have either a letter "D", or "S" printed on it. A Model D controller card is indicated by a "D" on the tag. A Model S controller card is indicated by an "S" on the tag.

The diskette controller card has three edge connectors. There is an edge connector on either end of the card, and an edge connector on the bottom of the card. A metal bracket is attached to the back edge of the card. The top of the bracket has a slot for a retaining screw used to anchor the card against the rear panel of the computer. In this manual, "front", designates the end of the card without the retaining bracket.

The Model S diskette controller card provides interface and control functions for 5 1/4" internal diskette drives and two external diskette drives. The Model S diskette controller card is designed to replace the standard IBM controller card in your computer.

The Model S controller card can be used with an IBM PC or IBM PC/XT computer. The Model S card CANNOT be used with an IBM PC/AT computer.

The Model D diskette controller card provides interface and control functions for up to four external diskette drives. The Model D controller card is designed to be installed as an additional controller card inside your computer.

The Model D controller card can be used with an IBM PC, PC/XT or PC/AT computer. You must have at least one unused expansion slot available in your computer to use the Model D card.

**** WARNING **** IBM PC/AT NOTE *****

Older models of PC/ATs were supplied with long slot bus expansion connectors on the motherboard that do not have adequate separators built into the connectors. Your bus expansion connectors should have two molded-in black plastic separators that divide the connector into two sections. If you have an AT and the bus expansion connectors have only a thin piece of white plastic separating the sections of the expansion connector, you should take one of the following actions since it is possible to misalign the controller card as much as one and a half full finger widths.

1. Have the motherboard replaced by a an IBM service center since the bus expansion connectors are defective.

2. Seat the diskette controller board in one of the short slot connectors to insure proper alignment.

3. Seat the diskette controller board in one of the long slot connectors while making absolutely sure the board is as far to the rear of the connector as possible (Not recommended).

If the controller card is misaligned, serious damage may occur to controller cards (including the Hard Disk Controller Card) and the motherboard in your AT.

4.0 HARDWARE INSTALLATION PROCEDURE.

Installing the Flagstaff Engineering 8 inch diskette system on your IBM PC, PC/XT or PC/AT computer is quite easy. The diskette controller card supplied with the system must be installed inside your computer. If you have previously installed IBM or third party controller cards in your computer, the procedure will be very familiar. If you have not installed a card inside the computer before, relax; you don't need to be an electronics engineer to complete the installation.

The installation procedure is presented as a step-by-step series of instructions. Please don't hook up any part of the system until you have read through the installation instructions at least once. Becoming familiar with the parts of the system and the instructions will allow you to install the system correctly in a minimum amount of time.

To install your Diskette Connection system, perform the following steps.

4.1 Set the power switch on the computer system and any other units connected to your computer (expansion unit, etc.) to the OFF position. Unplug ALL power cords from the computer unit, expansion unit, etc. *** WARNING *** Failure to completely power off all units and unplug ALL power cords could result in serious electrical damage to your computer system.

4.2 Unhook the monitor cable and then remove the monitor from the top of your computer. Move any external devices (keyboard, monitor, printer, etc.) away from your work area.

4.3 Remove the plastic shipping wrapper from the diskette drive(s) unit. Open the door(s) on the diskette drive(s) and remove the cardboard insert used to protect the drive heads during shipping.

4.4 The cover of your computer unit must be removed to install the diskette controller card. Remove the five cover mounting screws at the back of the computer.

4.5 Slide the cover toward the front of the computer unit and then set the cover aside. You can now access the system expansion slots located at the inside left rear of the computer unit.

4.6 If you are installing a Model S diskette controller card, follow instructions 4.6.1 through 4.6.11, then continue your installation by going to instruction 4.8 If you are installing a Model D diskette controller card, skip instructions 4.6.1 through 4.6.11 and start at instruction 4.7.

4.6.1 Model S Card Installation.

Install the Model S card by first locating the IBM diskette controller card supplied with the computer. The IBM diskette controller card is normally located in the expansion slot closest to the power supply.

The IBM card can be easily identified by the ribbon cable that runs between the card itself, and the 5 1/4 inch diskette drives already in the computer.

4.6.2 Mark the top of the ribbon cable connector attached to the IBM card with a small piece of masking tape, or felt tipped marker to indicate the top of the connector.

4.6.3 Unscrew the retaining screw located at the top rear of the IBM diskette controller card.

4.6.4 Lift the card free from its expansion slot.

4.6.5 Remove the ribbon cable connector that you previously marked with masking tape or felt tip marker from the IBM card.

4.6.6 Place the IBM card in a safe storage area.

4.6.7 Place the ribbon cable connector with the top previously marked onto the FRONT edge connector of your Flagstaff Engineering Model S diskette controller card. Remember, the front of the Model S card is the end without the metal bracket on it.

4.6.8 Route one end of the ribbon cable supplied by Flagstaff Engineering through the open slot in the back of the computer unit. Both connectors of the cable are exactly the same, so either end may be used. On dual drive systems, the cable end with one connector should be used.

4.6.9 Attach the connector of the ribbon cable supplied by Flagstaff Engineering to the edge connector at the rear of the Model S controller card. The colored stripe that appears on the cable should be matched with Pin 1 of the edge connector.

4.6.10 Hold the Model S controller card by the top and firmly press the bottom edge connector of the card into the expansion slot in the computer.

4.6.11 Place the retainer screw previously removed through the retaining bracket at the back of the Model S card and secure to the rear panel of the computer. The Model S controller card is now installed. Please go to step 4.8.

4.7 Model D Card Installation.

The Model D diskette controller card may be installed in any open system expansion slot in the computer. To install the Model D controller card, first remove the retaining screw from the expansion slot cover directly behind the system expansion slot you have selected to use.

4.7.1 Remove the expansion slot cover.

4.7.2 Route one end of the ribbon cable supplied by Flagstaff Engineering through the open slot in the back of the computer unit. Both connectors of the cable are exactly the same for single drive systems, so either end may be used. On dual drive systems, the cable end with one connector should be used.

4.7.3 Attach the cable to the edge connector of the Model D controller card. Remember, the rear edge of the card is the edge with the metal retaining bracket attached and is normally used for 8" drives. The front edge of the card is a 34 pin connector and is used for 5" and 3" drives.

4.7.4 Attach the connector of the ribbon cable supplied by Flagstaff Engineering to the edge connector at the rear of the Model D controller card. The colored stripe that appears on the cable should be matched with Pin 1 of the edge connector.

4.7.5 Hold the Model D controller card by the top and firmly press the bottom edge connector of the card into the expansion slot in the computer.

4.7.6 Place the retaining screw that you previously removed, through the retaining bracket at the back of the Model D card and secure to the rear panel of the computer. The Model D controller card is now installed.

4.8 DO NOT CHANGE any switch settings inside the computer.

4.9 If you are using a 5 1/4" or 3 1/2" drive without a built in power supply, the power cable needs to be installed.

4.9.1 On machines with one internal 5 1/4" drive, an unused cable and connector will be hooked the machines power supply. Plug the end of the Flagstaff Engineering power cable with the 'Y' connector on it into the socket on the computer's unused power cable.

Route the remaining end of the Flagstaff Engineering cable out the back of the computer. (Figure IN.5)

4.9.2 On machines with two internal 5 1/4" drives, unplug the power cable from one of the internal drives. Plug the 'Y' connector end of the Flagstaff Engineering power cable into the internal drive. Plug the remaining 'Y' socket into the power cable that was disconnected to the drive. Route the remaining end of the Flagstaff Engineering cable out the back of the computer. (Figure IN.5)

4.10 Replace the cover on the computer and secure the cover to the unit with the five cover mounting screws previously removed.

4.11 Reconnect all external device cables.

4.12 Attach the connector of the ribbon cable supplied by Flagstaff Engineering to the edge connector located at the rear of the diskette drive unit.

The colored stripe that appears on the cable MUST be at Pin 1 of the drive's edge connector. (Figures IN.2, IN.3, IN.4). If your diskette drive unit has two drives, your interface cable will have two cable connectors. Attach a connector to each drive.

4.13 Plug any power cables from the computer, diskette drives, expansion unit, etc. back into your electrical outlets.

4.14 Power on your computer system and external drives.

4.14 There should be no error messages displayed after the computer is powered up. If an error message is displayed, the most likely causes are improperly set switches inside the computer unit, cable(s) not reinstalled, or the controller card not properly seated in the expansion socket. If an error message occurs, power off the system and check for problems by going through the installation instructions to verify that all instruction steps have been completed. If the problem cannot be resolved, call us at 602-774-5188 for assistance.

5.0 SYSTEM VERIFICATION

5.1 To use the Flagstaff Engineering diskette controller card and external drive(s) with your computer system, a software I/0 driver MUST be included in DOS when DOS is booted into your system. Complete instructions for installing the correct device driver are provided in the Diskette Connection Software Documentation Manual.

5.2 After installing the required device driver(s), the program 'CHECK8.EXE' should be run to verify correct operation of the Diskette Connection System. Complete instructions for running CHECK8.EXE are provided in the Diskette Connection Software Documentation Manual.

5.3 The program should run to completion without any permanent errors, and no more than 6 temporary errors. If an error message occurs during the program followed by the message, "UNKNOWN ERROR", stop the program immediately by pressing the CTRL key and C key, and power down the machine.

5.4 The message, "UNKNOWN ERROR", indicates that the controller card is misaligned in the expansion slot, or that the card is not making contact with all the connectors in the expansion slot.

5.5 Remove the controller card and reseat the card as described in section 4.0.

6.0 TROUBLE SHOOTING THE SYSTEM

This section documents common problems and corrective actions that may be taken to resolve the problem.

6.1 MACHINE WON'T BOOT

CAUSE: Diskette Controller Card improperly seated in expansion slot.

ACTION: Power off machine and reseat card.

CAUSE: IBM floppy controller card has been replaced by Model D controller card instead of required Model S card.

ACTION: Restore original IBM card to system and put Model D card in empty expansion slot.

6.2 601 ERROR

(Occurs during boot operation.)

CAUSE: IBM floppy controller card has been replaced by Model D controller card instead of required Model S card.

ACTION: Restore original IBM card to system and put Model D card in empty expansion slot.

6.3 UNKNOWN ERROR MESSAGE

(Utility and diagnostic programs report UNKNOWN ERROR when executed.)

CAUSE: Indicates controller card is misaligned in the expansion slot, or that the card is not making contact with all the connectors in the expansion slot.

ACTION: POWER DOWN MACHINE IMMEDIATELY. Remove the controller card and reseat the card as described in section 4.0.

6.4 DRIVE NOT READY MESSAGE

(Utility and diagnostic programs report DRIVE NOT READY when executed.)

CAUSE: Diskette drive unit unplugged.

ACTION: Make sure power cord for Diskette drive(s) is plugged in.

CAUSE: Diskette drive unit powered off.

ACTION: Make sure diskette drive power switch is on.

CAUSE: Diskette drive not connected to controller card.

ACTION: Reseat ribbon cable connectors on diskette controller card and diskette drive(s).

CAUSE: Inoperative 5 Volt power supply in diskette drive

ACTION: Return diskette drive to Flagstaff Engineering for repair and service.

CAUSE: Device driver not being loaded when the machine is booted.

ACTION: Make sure a CONFIG.SYS file exists on the DOS volume that the machine is booted from. The CONFIG.SYS file must specify the correct device driver for the system. The device driver must be included on the same DOS volume as the CONFIG.SYS file.

6.5 SECTOR or TRACK NOT FOUND

(Utility and diagnostic programs report SECTOR or TRACK NOT FOUND when executed.)

NOTE* This message is normal in many programs during format identification. If message is followed by "GOOD OPERATION", then everything is as it should be. If the message persists, the following problems may be occurring:

CAUSE: Diagnostics being performed on hard sector diskette.

ACTION: Use double sided, double density soft sectored diskettes for diagnostic checks on system.

CAUSE: Transfer and conversion programs supplied by Flagstaff Engineering only operate with certain system specific diskette formats.

ACTION: Use diskettes formatted as required by the target or source system.

CAUSE: Diskette in backwards.

ACTION: Always insert diskette with the label facing away from the on/off switch on Flagstaff Engineering Diskette Drives.

6.6 DISKETTE WRITE PROTECTED

CAUSE: 8" diskette being used WITHOUT write protect tabs on diskette or 5 1/4" diskette being used WITH write protect tabs on diskette.

ACTION: When the sensor notch on a 5 1/4" diskette is covered by a write protect tab, the diskette is write protected. Remove the tab to enable write operations to the diskette. 8" diskettes are exactly opposite from 5 1/4" diskettes. When the sensor notch does not have a tab covering it, the diskette IS write protected. Cover the notch with a write protect tab to enable write operations to the diskette.

6.7 DMA ACROSS 64K MESSAGE

(Utility and diagnostic programs report DMA ACROSS 64K when executed.)

CAUSE: IBM PC/XT/AT design limits DMA access to memory available up to 64k block boundary. Usually only occurs on PC/AT when less than 20K memory remains between memory used for system load and first 64k byte memory boundary.

ACTION: Change 'BUFFERS' statement in CONFIG.SYS file. Each additional buffer allocated uses 528 bytes. System should be first run with BUFFERS=4. If message occurs, increase buffers to 16, or 20. If message still occurs, call Flagstaff Engineering Technical Support for assistance.

6.8 DMA OVERRUN MESSAGE

(Utility and diagnostic programs report DMA OVERRUN when executed.)

CAUSE: Usually occurs only when system is installed on PC Compatibles and Clones. Generally due to unsupported IBM defined control signals on bus or BIOS incompatibility.

ACTION: Replace system with IBM PC, PC/XT, or PC/AT, or call Flagstaff Engineering for assistance. We can usually provide modified device drivers/controller cards to support many PC clones.

6.9 8" DRIVE LIGHT ALWAYS ON

NOTE* When system is used with a Desktop PC/36, some emulator and router operations may result in the 8" drive light staying on. This does indicate a problem in this instance.

CAUSE: 50 conductor ribbon cable is reversed on edge connector at rear of drive.

ACTION: Power down computer and disk drive. Remove cable from rear of drive. Untwist cable and reconnect.

IBM PERSONAL COMPUTER
8" DISKETTE SYSTEM DOCUMENTATION

SECOND EDITION (OCTOBER 1982)

FLAGSTAFF ENGINEERING - COPYRIGHT INSTRUCTIONS

Our programs and documentation are protected by the 1982 Copyright Laws. We authorize the use of our programs and documentation for a single IBM Personal Computer. These copyrighted materials are not to be given or sold to any other party without the express written consent of Flagstaff Engineering. Our diskettes are not copy protected, and it is permissable to make backup copies of the diskette or save them on a hard disk. However, please do not give these programs to unauthorized persons.

Under the new copyright laws, a company is responsible for the actions of their employees in stealing copyrighted material. Therefore, make sure they are kept in a secure manner.

If you have any questions, please call us to make arrangements for additional use of our materials.

FLAGSTAFF ENGINEERING - 8" DISKETTE INSTALLATION

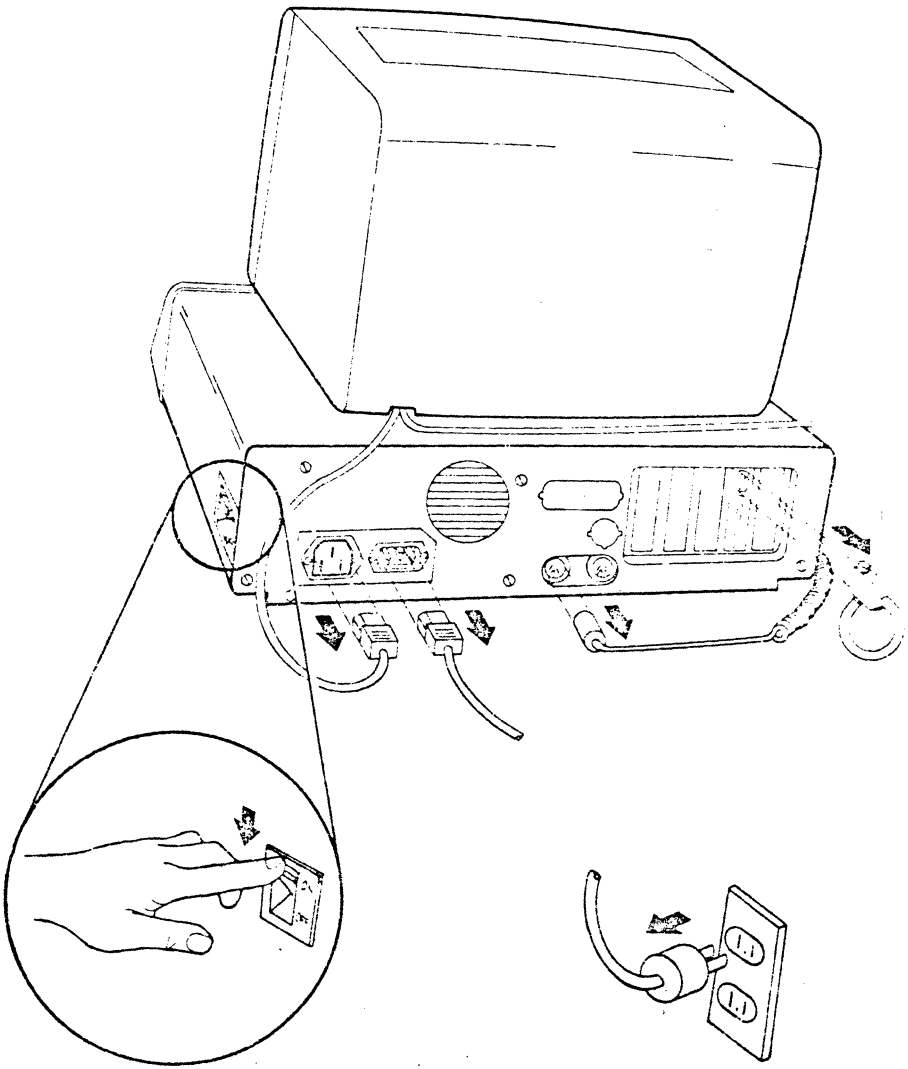
The 8" diskette system consists of an 8" d[illegible]tte drive in an enclosure and a 5' ribbon cable that connects to the IBM diskette controller card. To install the system you must insert our modified IBM controller card in place of the standard IBM card. To remove the cover from the IBM PC there are two screws in the back lower corners. After removing these screws the top cover slides forward. The diskette controller card is the one with a ribbon cable running to the internal 5" drives (the card is near the power supply). The card is fixed by a single screw in the top bracket. When removing the card be sure to disconnect the signal cable running to the 5" drives. This cable must be reconnected when the modified IBM card is installed. Be sure the card is seated properly in the I/O socket. To make the PC recognize the additional drive switch S1 on the main board must be changed. Switch 1,7,8 are set to off. After replacing the top cover, the 5' connecting cable should be plugged into the card and also into the 8" drive. The drive should [illegible]en be plugged into a 110 VAC outlet. This comp[illegible]es the physical installation of the system.

To verify the drive is working properly, insert a scratch double-sided 8" diskette in the drive. If you use a single sided diskette an error message is displayed but the program will still run. Load the "DISK10" program. This program is the I/O driver for the diskette system and must be loaded before the utility programs are run. No load message is displayed when this program is running. Next, load the diagnostic program called "CHECK8". The progra will then prompt the operator to select drive 1 or and will then perform a number of checks to verify reading, writing, seeking, and single-double densit operation. Any errors that are found will display a message describing the problem. If no errors are found a message is displayed saying the drive is OK This program can be run at any time to check out th 8" diskette system.

If any problems occur in the installation p[illegible]ease call us at 602-774-[illegible]88.

Preliminary Steps

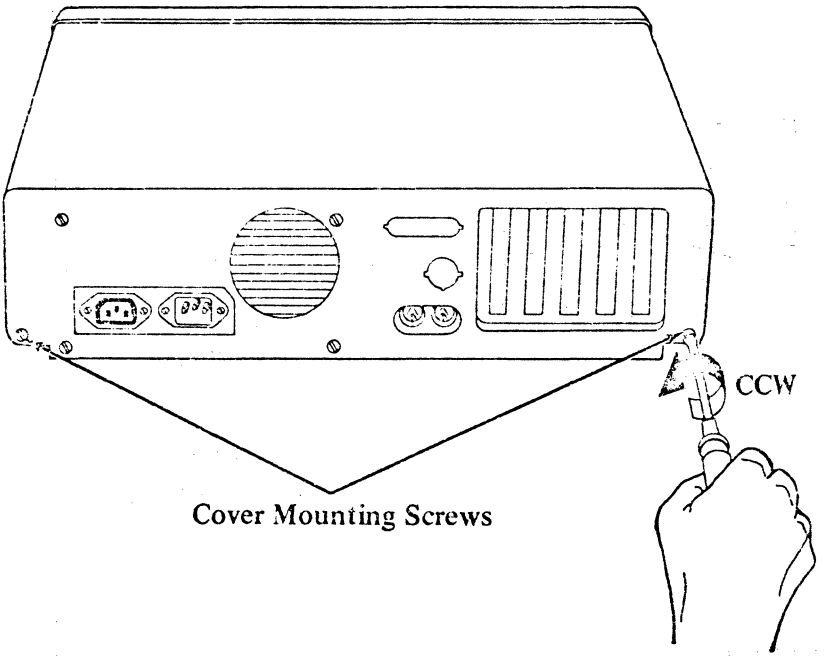
- Position System Unit switch to OFF.
- Position any external option power switches to OFF (printer, TV, cassette, etc.).
- Unplug System Unit and all other options from wall outlet.
- Disconnect all cables from rear of System Unit.



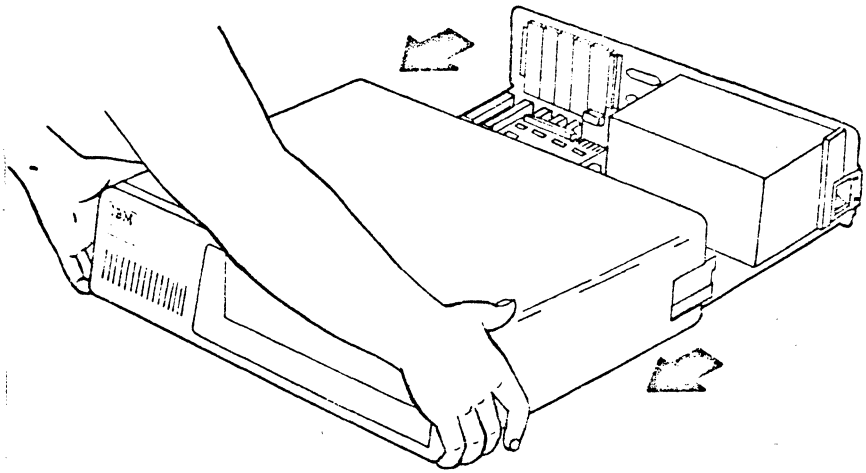
1. Set your keyboard and all external options in an area away from the system work surface.

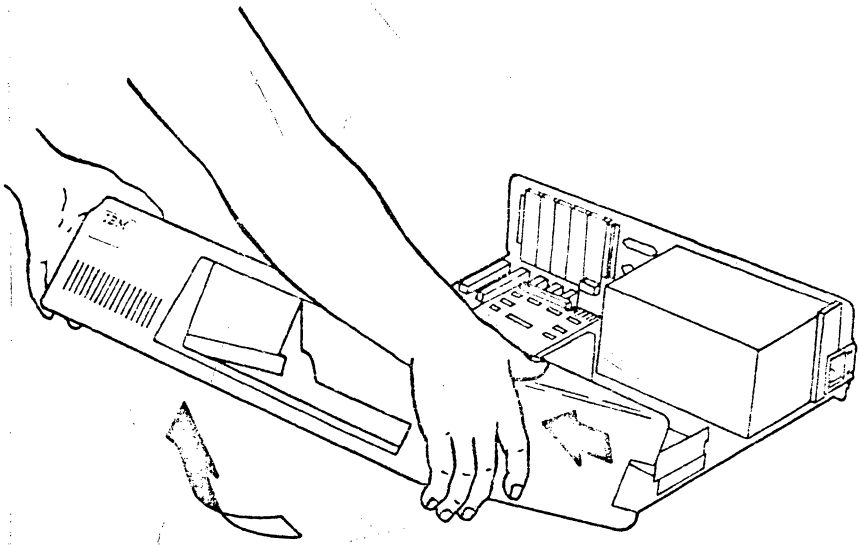
2. Position the System Unit to allow access to the rear.

3. Use a flat blade screwdriver and loosen the two cover mounting screws counterclockwise (CCW) as shown in figure below.

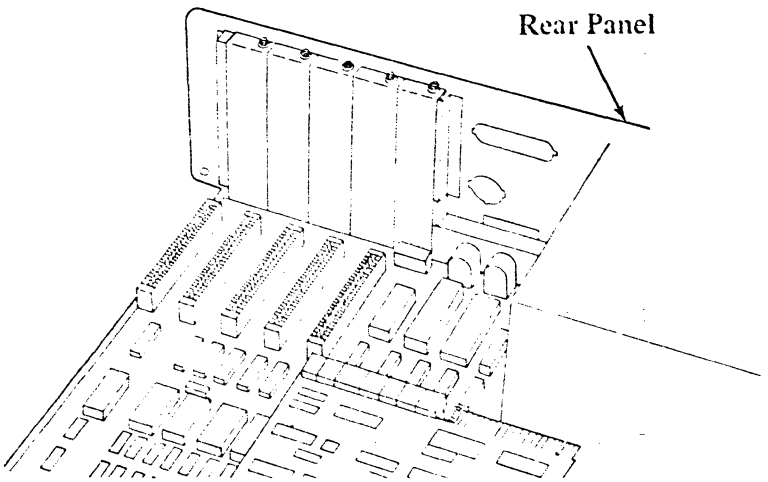


4. Carefully slide the System Unit cover away from the rear and towards the front as indicated by figure below. When cover will go no further, tilt cover up and remove cover from base and set aside.



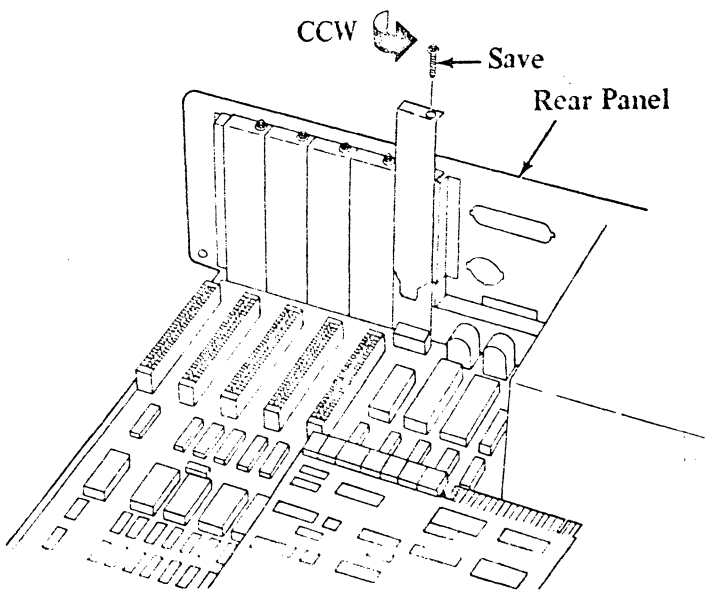


5. Look at the inside left rear of your System Unit. There are five system expansion slots. You may install your option in any one of the five unused slots. **(IBM recommends using system expansion slot number 5.)**

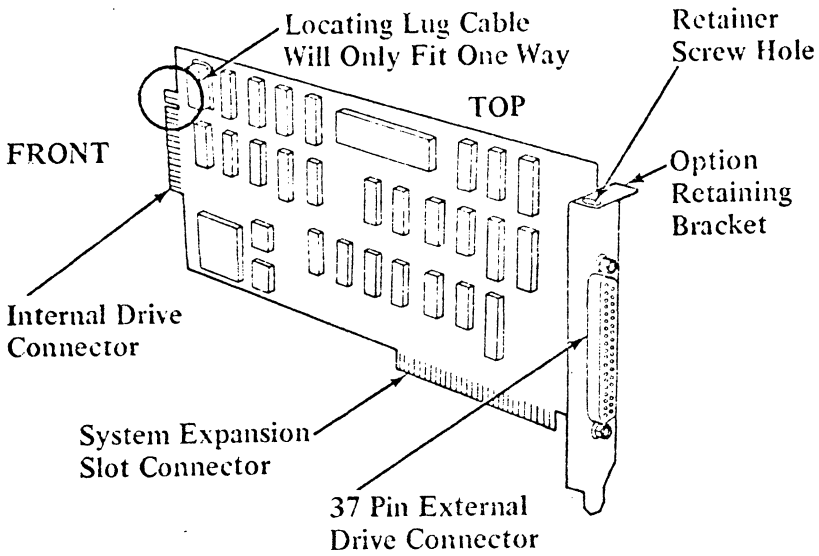


Note: Screw must be saved for installation of option.

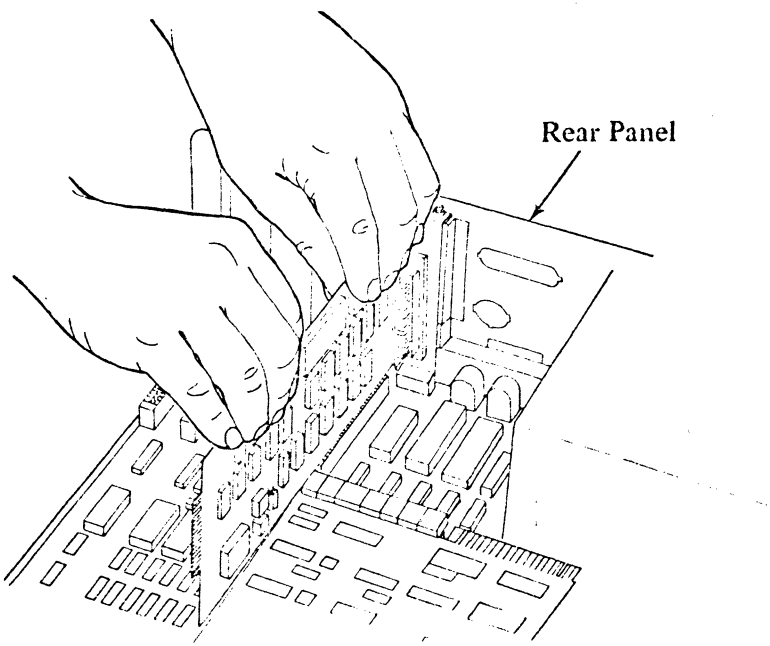
6. Use a flat blade screwdriver or a 3/16" nutdriver and remove the screw that holds the system expansion slot cover in place by turning it counterclockwise (CCW).



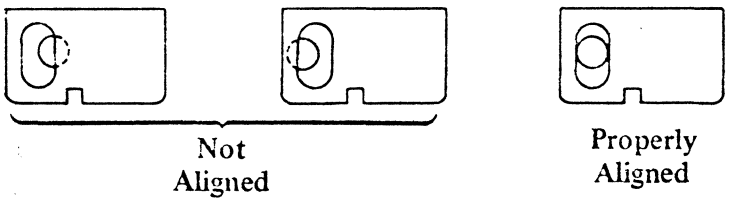
7. Look at the figure below to familiarize yourself with the 5-1/4" Diskette Drive Adapter.

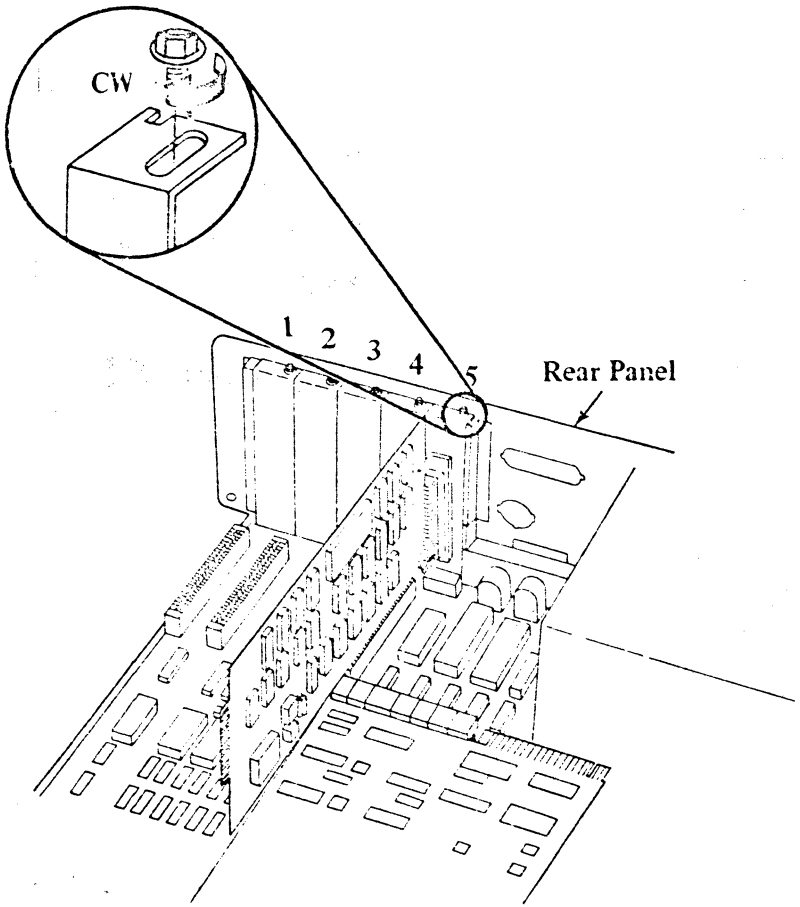


8. Hold option by the top corners and firmly press into any one of the unused expansion slots. **(IBM recommends using system expansion slot number 5.)**

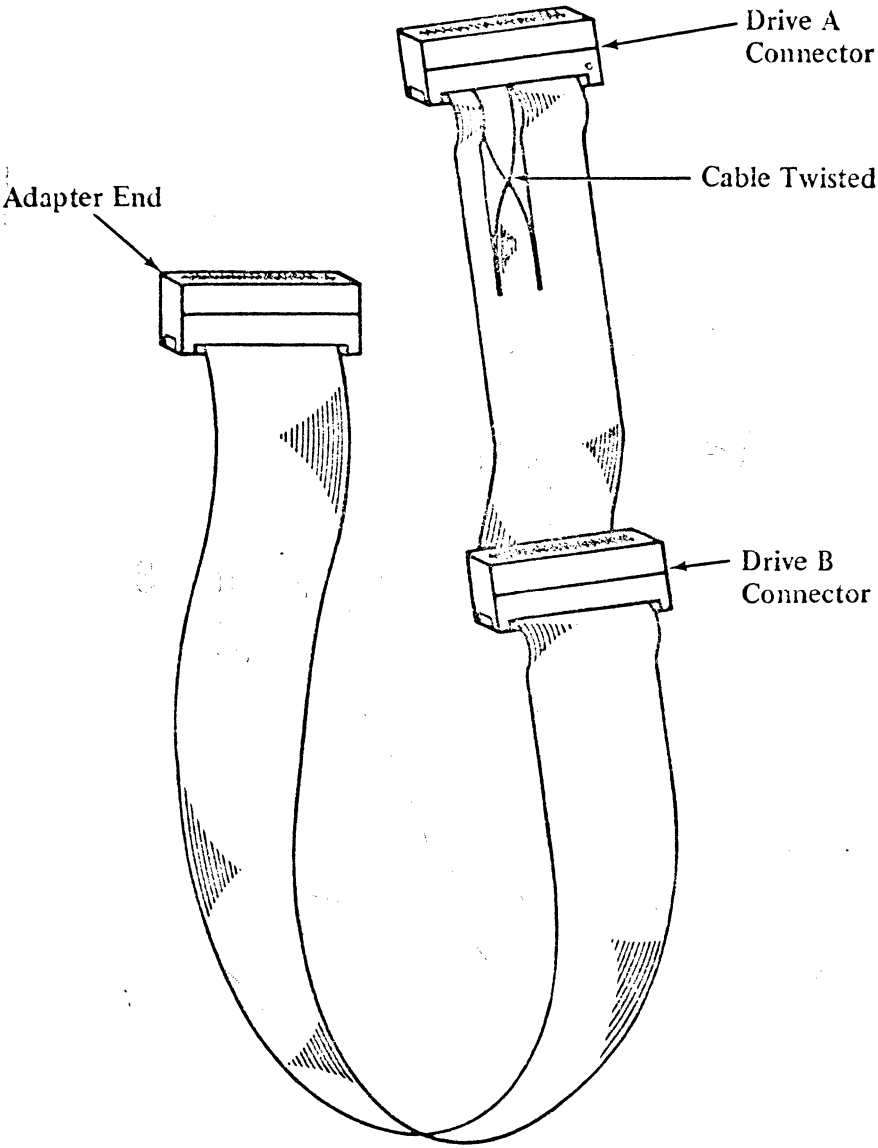


9. Align the hole in the option retaining bracket with the hole in the rear plate of the System Unit. Start the screw clockwise (CW) and then tighten with a flat blade screwdriver or 3/16" nutdriver.

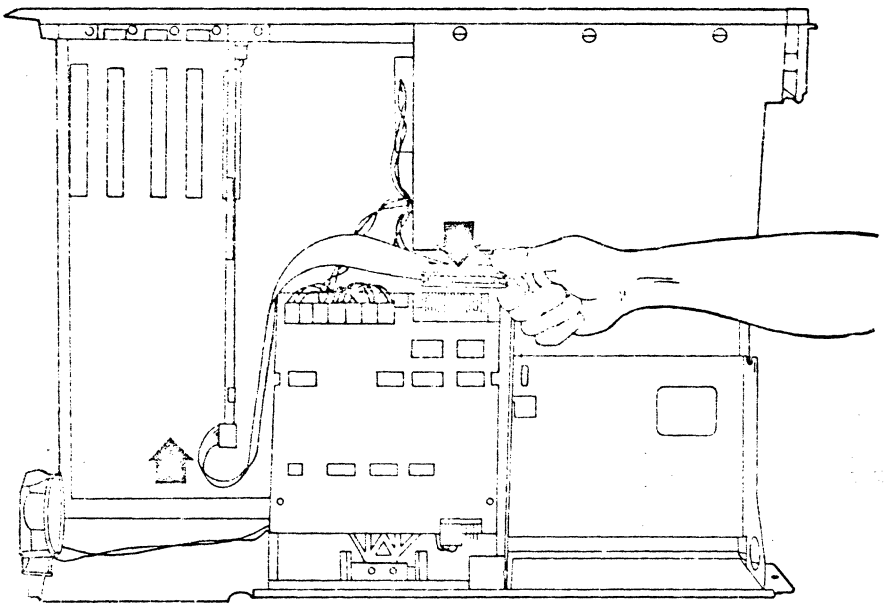




10. Familiarize yourself with signal cable before installing connector.



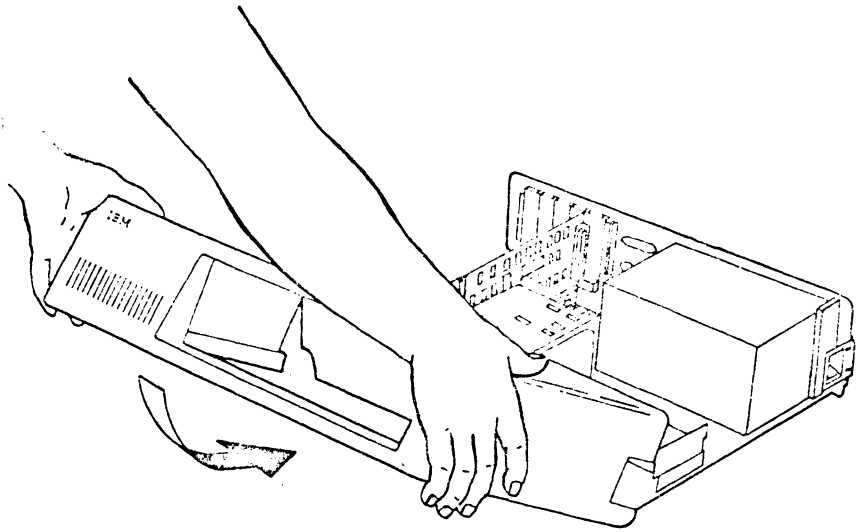
11. Connect Adapter End of cable to 5-1/4" Diskette Drive Adapter and to the "A" Diskette Drive.

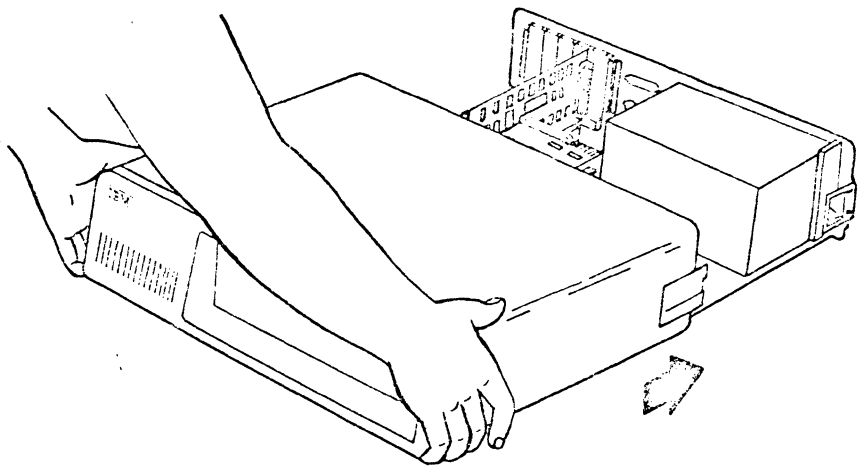


12. This completes installation of 5-1/4" Diskette Drive Adapter and signal cable.

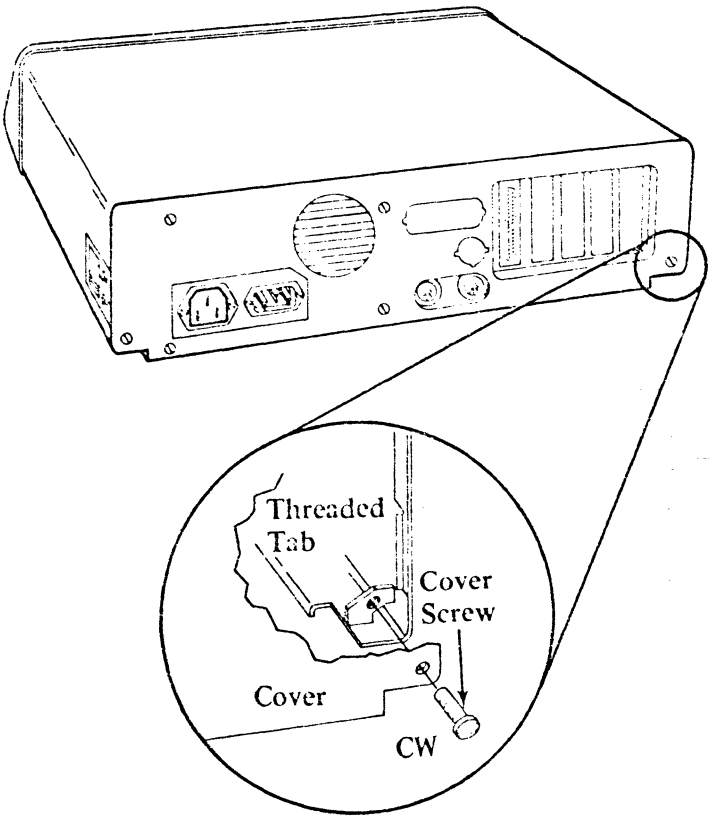
Note: If you have any other options to install, do so now before replacing cover.

13. Replace the System Unit cover by positioning the cover as shown and carefully sliding it toward the rear of unit.





14. When the cover is all the way to the rear align the screw with the threaded tabs and tighten. Use flat blade screwdriver and turn clockwise (CW).



15. The System Unit is now ready to be cabled as shown in Section 2, "Setup Procedure."

16. To verify the operating capability of the "A" Diskette Drive, run a test procedure by (loading) the Diagnostic Aids diskette and follow the procedure in Section 4, "Problem Determination Procedures."

System Board Component Diagram

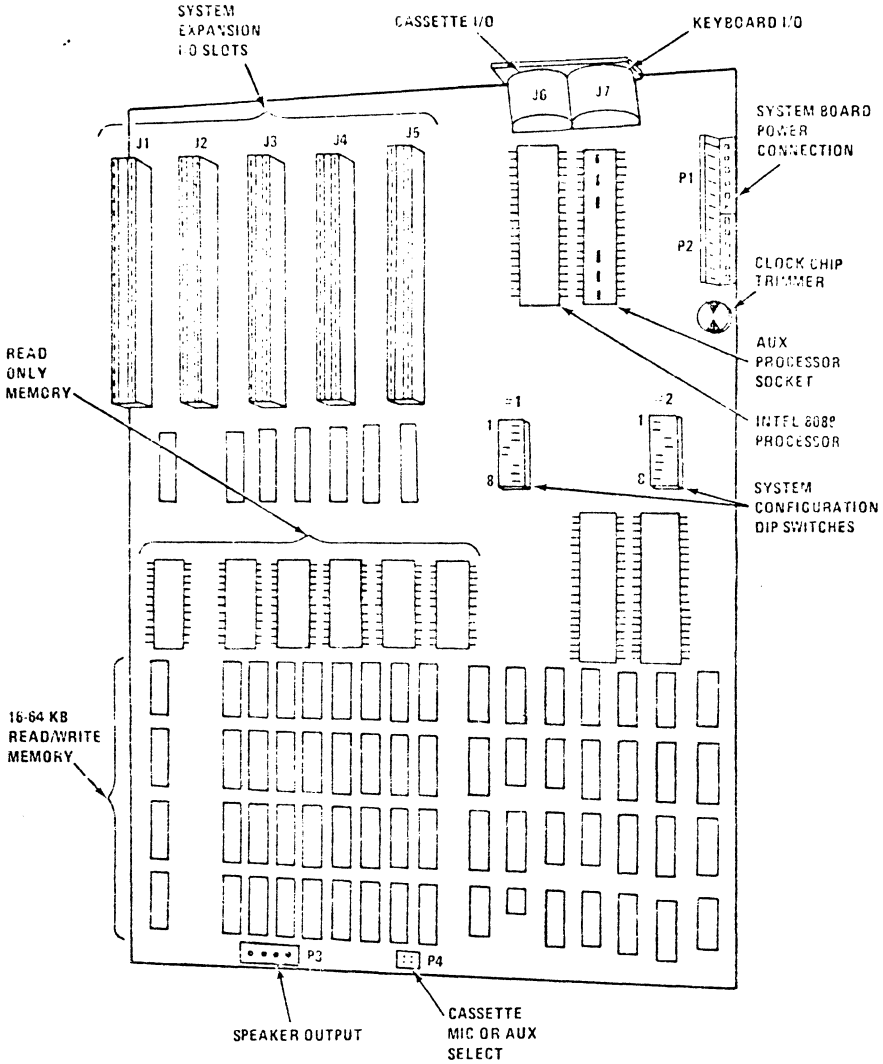
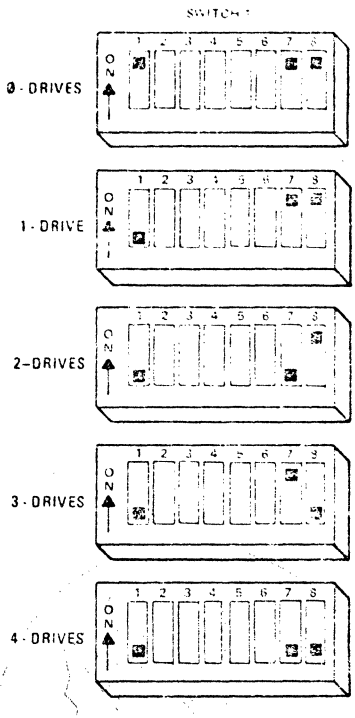
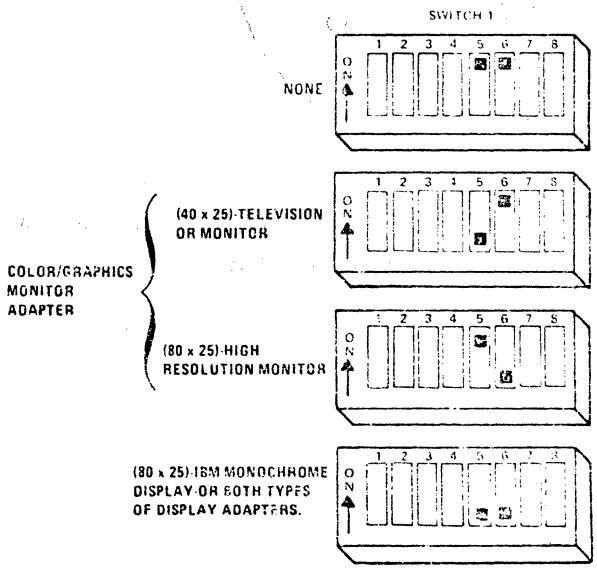


Figure 4. SYSTEM BOARD COMPONENT DIAGRAM

5-1/4" Diskette Drives Switch Settings



Monitor Type Switch Settings



NOTE: SOME TELEVISIONS AND MONITORS OPERATED IN (80 x 25) MODE MAY HAVE CHARACTER LOSS.

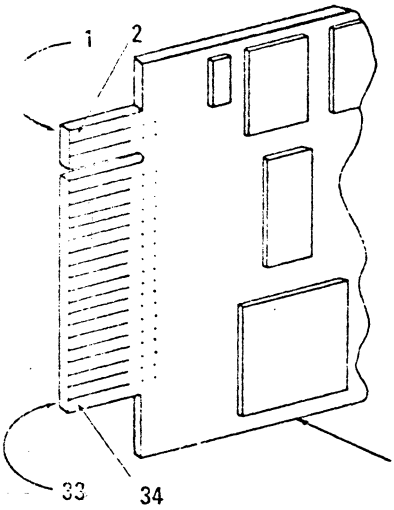
FLAGSTAFF ENGINEERING - 8" DISKETTE CABLE

The IBM diskette controller card can support a total of 4 disk drives. The first two drives are 5" internal drives and the last two drives are the external drives. With the modification to the IBM controller card the external drives can be 8" instead of 5" drives. This cable is a ribbon cable with a 50 pin card edge connector on the end that plugs into the 8" drive and a 37 pin D style connector on the end that plugs into the [illegible] The following pins are used:

NAME	IBM PIN	DISKETTE PIN
HEAD SELECT	18	14
DRIVE SELECT 1	9	26
DRIVE SELECT 2	8	28
DIRECTION	11	34
STEP	12	36
WRITE DATA	13	38
WRITE GATE	14	40
INDEX	6	20
TRACK 00	15	42
WRITE PROTECT	16	44
READ DATA	17	46
IN USE	N/C	16
HEAD LOAD	N/C	18
LOW CURRENT	N/C	2
DRIVE SELECT 3	N/C	30
DRIVE SELECT 4	N/C	32
DISK 2 SENSE	N/C	10
DISK CHANGE	N/C	12
READY	N/C	22
GROUND	22,24,26,28,30	15,17,19,21,23

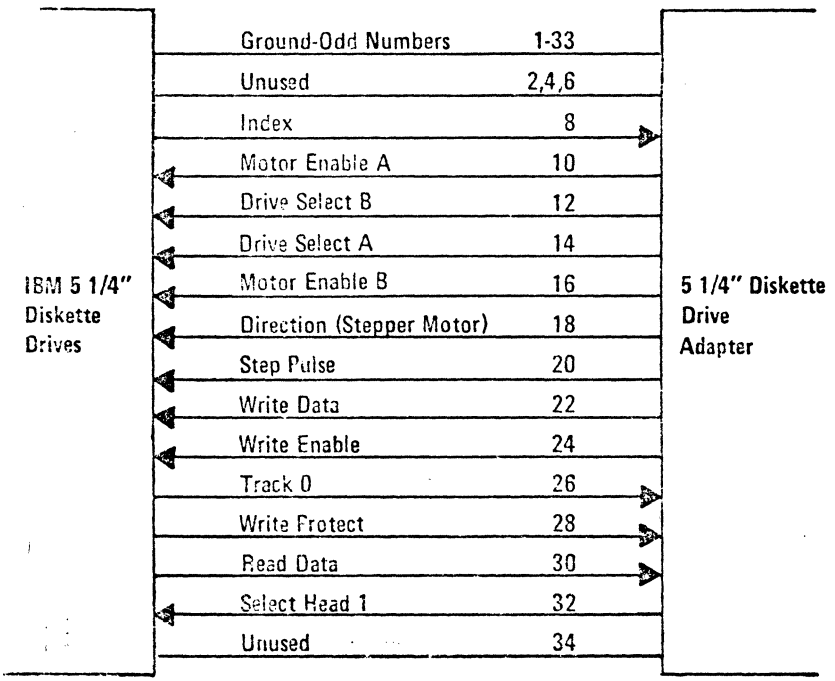
The 37 pin connector is a TRW-CINCH DC-37P. The 50 pin connector is a 3M 3415-0001 and the flat cable is 3M 3365-50.

5-1/4" Diskette Drive Adapter Internal Interface Specifications

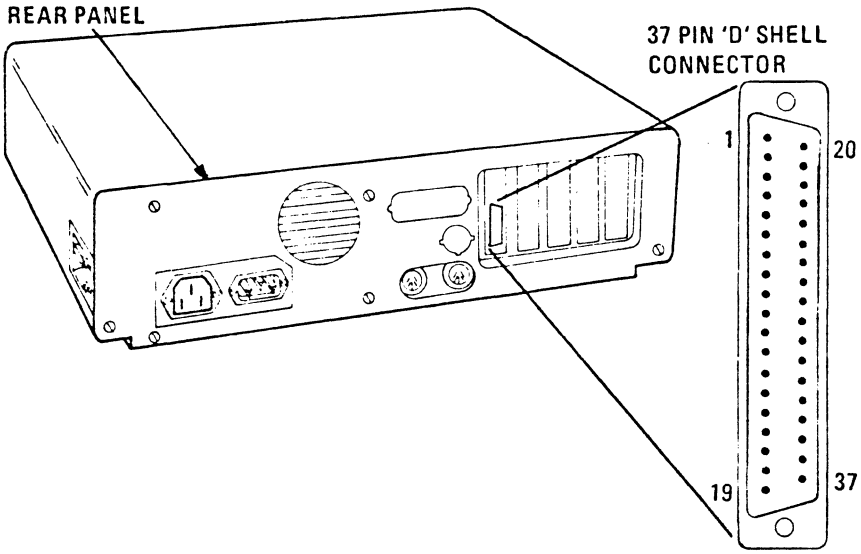


34 PIN KEYED
EDGE CONNECTOR

NOTE: LANDS 1–33 ARE ON THE BACKSIDE OF THE BOARD, LANDS 2–34 ARE ON THE FRONT, OR COMPONENT SIDE.



5-1/4" Diskette Drive Adapter
External Interface Specifications



AT STANDARD TTL LEVELS		Pin no.	
External Drives	Unused	1 - 5	5¼" Diskette Drive Adapter
	Index	6	
	Motor Enable C	7	
	Drive Select D	8	
	Drive Select C	9	
	Motor Enable D	10	
	Direction (Stepper Motor)	11	
	Step Pulse	12	
	Select Head 1	13	
	Write Enable	14	
	Track 0	15	
	Write Protect	16	
	Read Data	17	
	Write Data	18	
	Ground	20 - 37	