KAYPRO®

Multi-Adapter User's Guide

THE MULTI-ADAPTER USER'S GUIDE

September, 1985 Part No. 4036-B

LIMITED WARRANTY

Kaypro Corporation warrants this computer accessory to the original purchaser to be in good working order for a period of ninety days from the date of purchase from an authorized Kaypro dealer. Kaypro makes no other warranty with respect to this device including, without limitation, no warranties as to its performance, merchantability, or fitness for any particular purpose.

Kaypro shall not be liable for any incidental or consequential damages related to the use of, or possible malfunction of this device. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty does not cover any device which has been the subject of abuse, accident, any modification whatsoever, or repairs by unqualified service facilities.

Kaypro will, at its option, repair or replace the product during the 90-day warranty period without charge. In order to obtain warranty service, the customer must provide proof of purchase date and return the unit to an authorized Kaypro service facility. Alternatively, the customer may obtain an R.M.A. number from the Kaypro Hardware Technical Support Department at 533 Stevens Avenue, Solana Beach, California 92075, and ship the unit prepaid to Kaypro.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

8/29/84

FCC INFORMATION

As Kaypro keeps in step with computer technology, the models and accessories have changes which affect FCC ratings. The proper rating is affixed to the back of each device, and the appropriate FCC information is given here.

FCC INFORMATION FOR CLASS A

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

If this accessory is used with peripheral devices, such as a printer or modem, then well-shielded cables must be used to preserve the radio interference characteristics.

FCC INFORMATION FOR CLASS B

This equipment generates and uses radio frequency energy and, if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference in radio or television, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.
Relocate the base unit with respect to the receiver.
Move the base unit away from the receiver.
Plug the base unit into a different outlet so that it and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

If this accessory is used with peripheral devices, such as a printer or modem, then well-shielded cables must be used to preserve the radio interference characteristics.

WARNING: If this equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules, only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

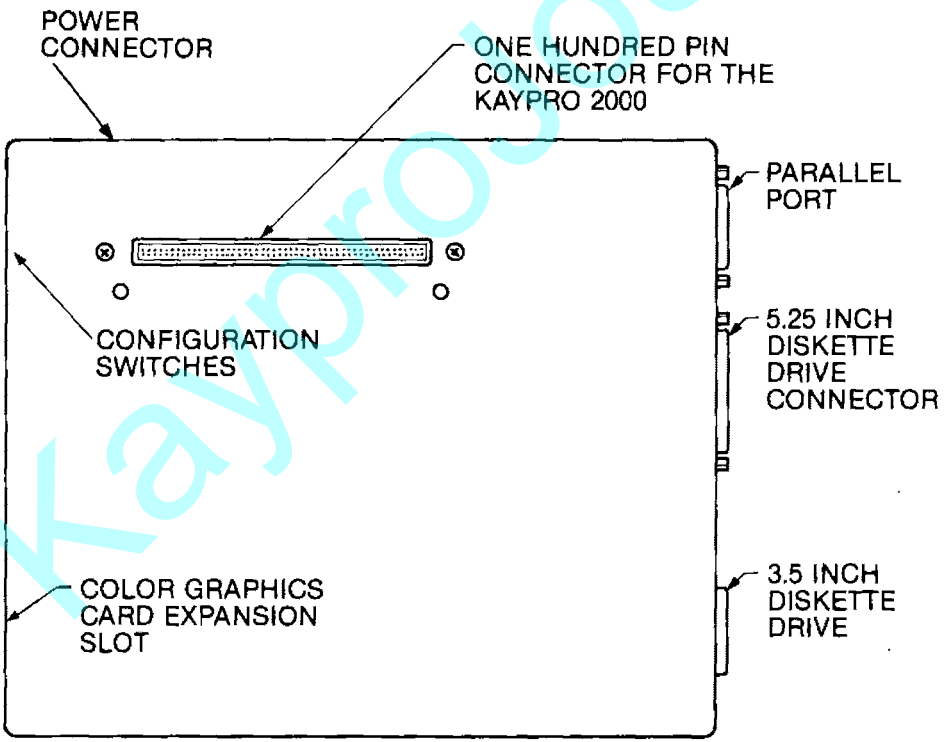
CONTENTS

INTRODUCTION

The KAYPRO 2000 MULTI-ADAPTER is an electronic device that enhances the performance of the KAYPRO 2000 computer by providing connections to additional drives, and a color monitor. The features of the KAYPRO 2000 MULTI-ADAPTER are:

One 3.5 inch drive connector
One 5.25 inch drive connector
One Parallel Printer Port
One expansion slot for a color graphics circuit card.

When your KAYPRO 2000 computer starts, the ROM version number is displayed. If your KAYPRO 2000 does not have the current ROM, version 1.08X and above, please consult your Kaypro dealer.



SETTING UP THE KAYPRO 2000 MULTI-ADAPTER

1. Remove the MULTI-ADAPTER along with the packaging materials from the box and place it on the work surface. The box should contain your KAYPRO ownership documents and the MULTI-ADAPTER power supply.

2. Carefully remove the packaging materials from around the MULTI-ADAPTER. Be careful not to jar or drop the unit. Save the packaging material, because you may wish to ship the MULTI-ADAPTER in the future.

3. Position the KAYPRO 2000 MULTI-ADAPTER on the work surface so that the one-hundred pin connector is in the upper left portion of the top panel. The posts that are adjacent to the connector should be below the connector. See the illustration on the previous page.

4. Plug the tubular steel end of the power cord from the power supply into its receptor on the rear panel of the MULTI-ADAPTER.

5. Plug the two pronged end of the power cord from the power supply into a wall socket.

Operating the MULTI-ADAPTER when it is not connected to its power source can damage the unit. Operate the MULTI-ADAPTER only when it is receiving power.

CONNECTING THE KAYPRO 2000 COMPUTER

To connect the KAYPRO 2000 to the KAYPRO 2000 MULTI-ADAPTER, do the following:

1. Place the diskette drive protector in the diskette drive of the KAYPRO 2000.

2. Close the cover of the KAYPRO 2000.

3. Turn the computer over and place it on a surface that will not scratch the top cover.

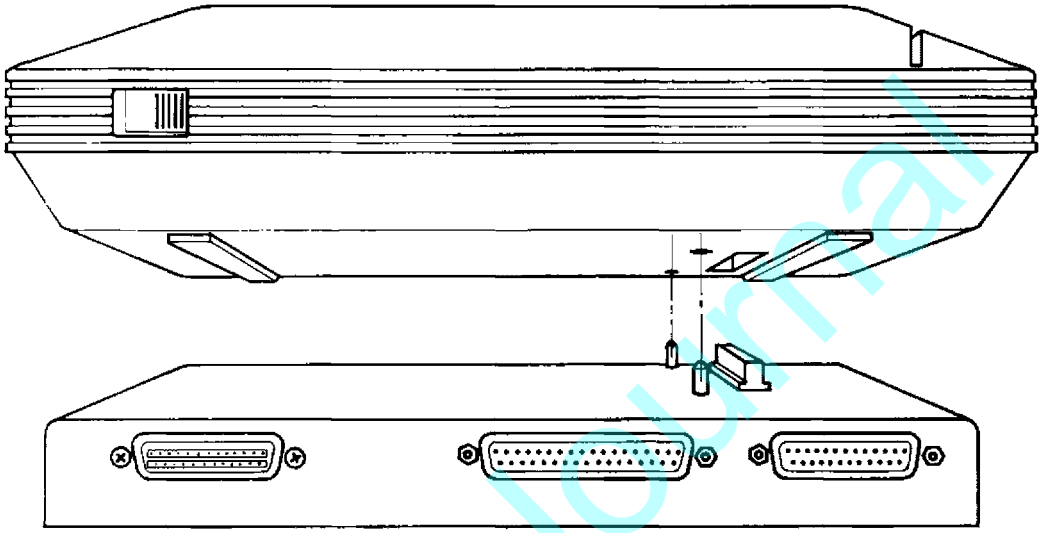
4. Remove the rubber cover from the one-hundred pin connector on the bottom of the computer. Notice the two holes below this connector. These holes and connector correspond to the two posts and the other connector on the MULTI-ADAPTER.

5. Turn the computer back over and hold it from the sides, so that the words KAYPRO 2000 are facing you.

6. Hold the computer over the MULTI-ADAPTER and line the rear bottomedge of the computer up with the rear-top edge of the MULTI-ADAPTER.

7. Look under the computer and make sure that the posts and connector on the MULTI-ADAPTER line up with the holes and connector on the computer.

8. Gently lower the computer onto the MULTI-ADAPTER. Make sure that the posts, holes and connectors join smoothly.



9. Open the KAYPRO 2000.

DRIVE DESIGNATIONS AND MS-DOS

Your KAYPRO 2000 has one drive: the A drive. When using the MULTI-ADAPTER, up to two more drives are available.

If you connect a 3.5" diskette drive to the MULTI-ADAPTER, that 3.5" drive becomes the B drive. Connect a 5.25" drive and it becomes the C drive.

MS-DOS always tries to start, or "boot", from the A drive, so you should always place a diskette containing the MS-DOS operating system in the A drive rather than the B or C drive.

MS-DOS works from one drive at a time. That drive is called the "logged diskette drive". To switch logged diskette drives, type the letter of the drive followed by a colon. For example, if you wish to switch the logged diskette drive from the A drive to the C drive, at the A> prompt:

Type: C:
Press RETURN.

The logged diskette drive is now C, and the prompt has changed to C>.

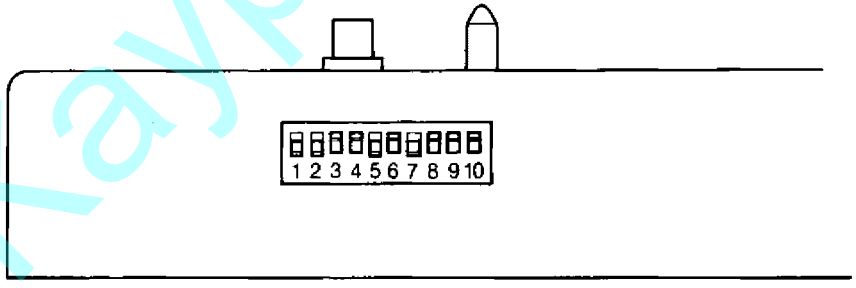
Many commands in MS-DOS have the drive designation as part of their syntax. For instance COPY, DIR, CHKDSK, FORMAT and SYS all are affected by the addition of another drive. Re-read your MS-DOSUser's Guide, taking special notice of drive designations in commands.

SWITCH SETTINGS

It is possible to set up the MULTI-ADAPTER in many different ways; to have many different configurations of accessories. For example there may be one 5.25" diskette drive, or a 5.25" drive and a 3.5" drive, or a single 3.5" drive. With all of these configurations one may or may not use an external RGB monitor. If you have a circuit card installed that has a parallel port designated LPT1, you may want to designate the MULTI-ADAPTER's parallel port LPT2. It becomes complex.

Once you choose how many drives you are going to have, and what type they will be, what the parallel port will be designated, and what type of display you will use, you must set the configuration switches to match your choice. The switches are located on the left side of the MULTI-ADAPTER below the upper left corner. The MULTI-ADAPTER is shipped with these switches set for an LCD display and one drive, the internal A drive of the KAYPRO 2000. The chart on the next page assumes that the internal A drive of the KAYPRO 2000 is always active, so when the chart specifies '3.5" Drive only', it means that only one 3.5" drive exists in addition to the internal drive in the KAYPRO 2000.

SWITCH CONFIGURATION



SWITCH SETTINGS

Up = U -- Down = D

System Configuration	1	2	3	4	5	6	7	8	9	10
As Shipped	U	D	U	U	D	U	U	U	U	U
3.5" Drive Only	D	D	U	U	D	D	U	U	U	U
5.25" Drive only	D	D	U	U	D	U	D	U	U	U
5.25" and 3.5"	D	D	U	U	D	U	D	U	U	U
RGB Only	U	D	U	U	D	U	U	U	D	U
3.5" and RGB	D	D	U	U	D	D	U	U	D	U
5.25" and RGB	D	D	U	U	D	U	D	U	D	U
3.5", 5.25",RGB	D	D	U	U	D	U	D	U	D	U
RGB Card W/LPT1	U	D	U	U	D	U	U	U	D	D

Switch 1

This switch saves power if there are no drives. Place this switch in the up position if there are no drives attached to the MULTI-ADAPTER.

Switch 2

This switch defines whether or not any drives exist. Since there is always at least one drive in the system (the internal drive), switch two must always be set in the down position.

Switch 3

This switch designates the existence of a numeric co-processor. If there is a co-processor installed in the KAYPRO 2000, set this switch to the down position, if there is no co-processor, set the switch to the up position.

Switches
4 and 5

These switches, in tandem, determine the display type:

4	5	
U	U	No display attached.
D	U	40 Columns by 25 rows.
U	D	80 Columns by 25 rows.
D	D	Monochrome display.

Switches
6 and 7

These switches define the number of drives in the system:

6	7	
U	U	One drive, the internal KAYPRO 2000 drive.
D	U	Two drives, the internal 3.5"drive and an external 3.5" drive.
U	D	Three drives, either an internal 3.5", an external 3.5" and a 5.25", or an

internal 3.5" and an external 5.25". If there is only one 3.5" drive, it functions as both the A and B drive.

D D

Four drives. Not possible with the MULTI-ADAPTER.

Switch 8

MS-DOS can make use of only 640 kilobytes of RAM, but the KAYPRO 2000 can possess 768 kilobytes. Switch eight activates or deactivates the "extra" 128 kilobytes of internal RAM, if they exist. Deactivate this internal RAM if you are using a circuit card that uses memory space D0000 - EFFFF hex. The up position makes the internal RAM active, the down position makes it inactive.

Switch 9

The LCD screen and an external monitor should not be operated at the same time. Set the switch to the up position if you are using the internal LCD screen, set it to the down position if you have an RGB card installed in the MULTI-ADAPTER.

Switch 10

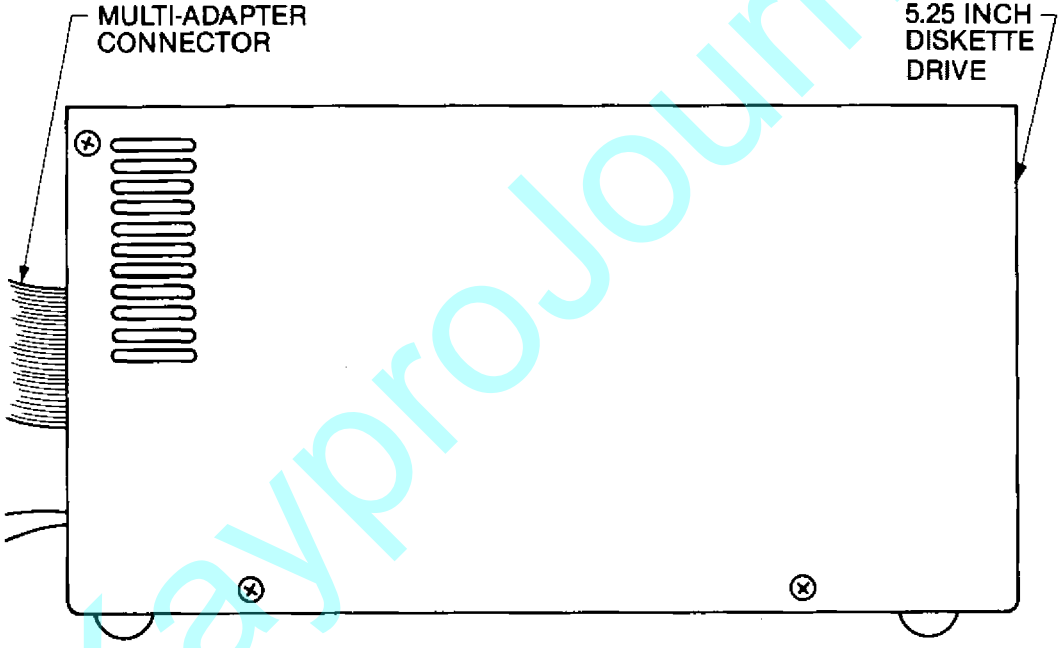
This switch changes the designation of the parallel port from LPT1 to LPT2. When you do this, *any drives attached to the MULTI-ADAPTER become disabled*, they will not work. Set the switch to the up position for normal operation, set it to the down position to change the parallel port to LPT2 and disable any external drives.

THE 5.25 INCH DISKETTE DRIVE

CONNECTING TO AN EXTERNAL 5.25 INCH DRIVE

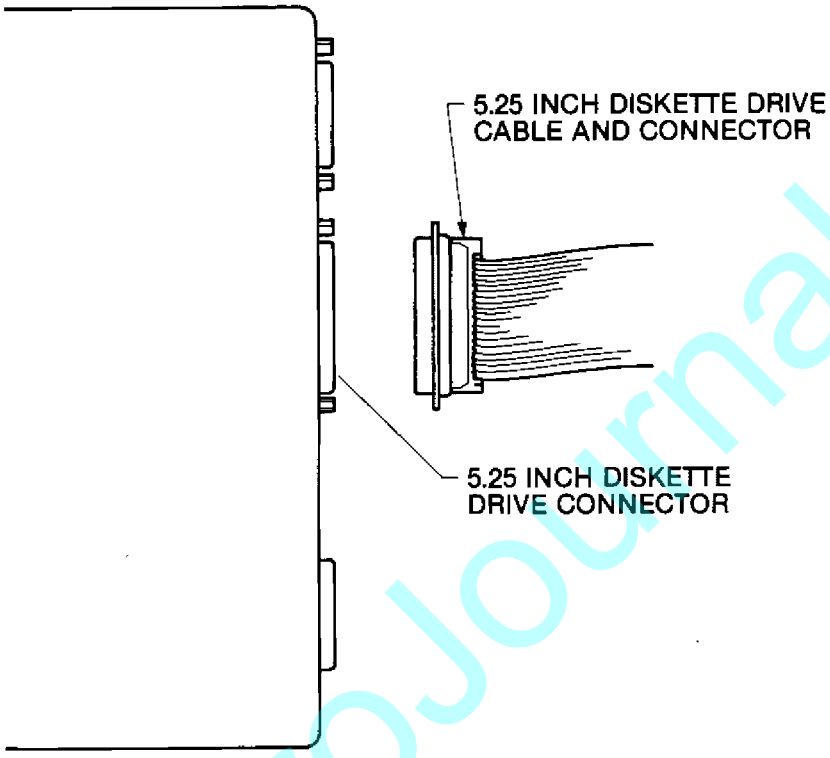
To connect the MULTI-ADAPTER to an external drive. do the following:

1. Open the box and carefully remove the drive. Save the packaging materials in case the the drive is ever transported. The drive has a power cord and ribbon cable attached to it. The ribbon cable connects the drive to the MULTI-ADAPTER.



2. The DB-37 connector to which the 5.25" drive connects is located on the right side of the MULTI-ADAPTER, between two smaller connectors. Position the drive on the work surface, so that the ribbon cable can reach from the MULTI-ADAPTER to the connector on the drive, with several inches of slack.

3. Plug one end of the ribbon cable into the DB-37 connector on the MULTI-ADAPTER, and the other end into the DB-37 connector on the drive.



You may wish to connect the MULTI-ADAPTER to the KAYPRO PC Card, which enables you to use the drive in a KAYPRO 16 or an IBM PC, as the C drive for your KAYPRO 2000. If so, plug one end of the ribbon cable into the DB-37 connector on the MULTI-ADAPTER, and the other end into to the DB-37 connector in your PC.

4. Tighten the screws on either side of both connectors alternately, first one then the other until the connections are firm and tight (but not too tight).

5. Plug the power cord into a wall socket, and turn the 5.25 inch drive on, using the power switch located on the rear panel of the drive.

Each 5.25" diskette holds 354 Kilobytes (See "BYTE" in the KAYPRO 2000 USER'S GUIDE glossary). These diskettes are functionally similar to the 3.5 inch micro-floppy used in the A drive of the KAYPRO 2000, and you should follow the precautions for diskettes described in the KAYPRO 2000 USER'S GUIDE. The differences between 5.25" and 3.5" diskettes are: the

structure of the diskettes, the write protect notch, the magnetic surface and the diskette capacity.

THE DISKETTE STRUCTURE

Generally, 5.25" diskettes are more easily damaged then their 3.5" counterparts. 5.25" diskettes are flexible, rather then rigid, and the user should take extra care not to damage them by bending or flexing.

THE WRITE PROTECT NOTCH

In the upper right corner of any 5.25" diskette is the write protect notch. When this notch is covered, the computer cannot write information to the diskette. This protects valuable data and programs. To write-protect a diskette, cover the notch with a small paper sticker, provided with the diskettes

THE MAGNETIC SURFACE

The magnetic surface--the actual surface that the information is stored upon--is more exposed on 5.25" diskettes then on a 3.5" diskettes. You can see the surface through the pill shaped access slot at the bottom of the diskette, and around the hole in the center of the diskette. DO NOT TOUCH THE MAGNETIC SURFACE, do not allow dust or dirt to come into contact with it.

DISKETTE CAPACITY

5.25" diskettes hold 354 kilobytes of information, about half of the 713 kilobytes that a 3.5" diskette holds.

INSERTING DISKETTES

To insert a 5.25" diskette, do the following:

1. Open the 5.25" diskette drive and remove the cardboard drive protector.

2. Clasp the 5.25" diskette gently along its top edge. Remember not to touch the magnetic surface.

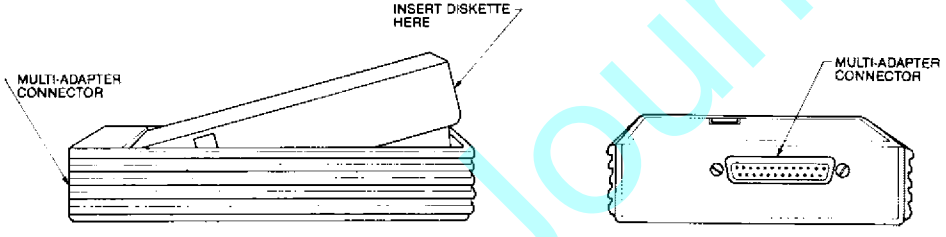
3. Insert the diskette into the open diskette drive with the write protect notch down and the label facing to the left.

4. Close the drive.

THE 3.5 INCH DISKETTE DRIVE

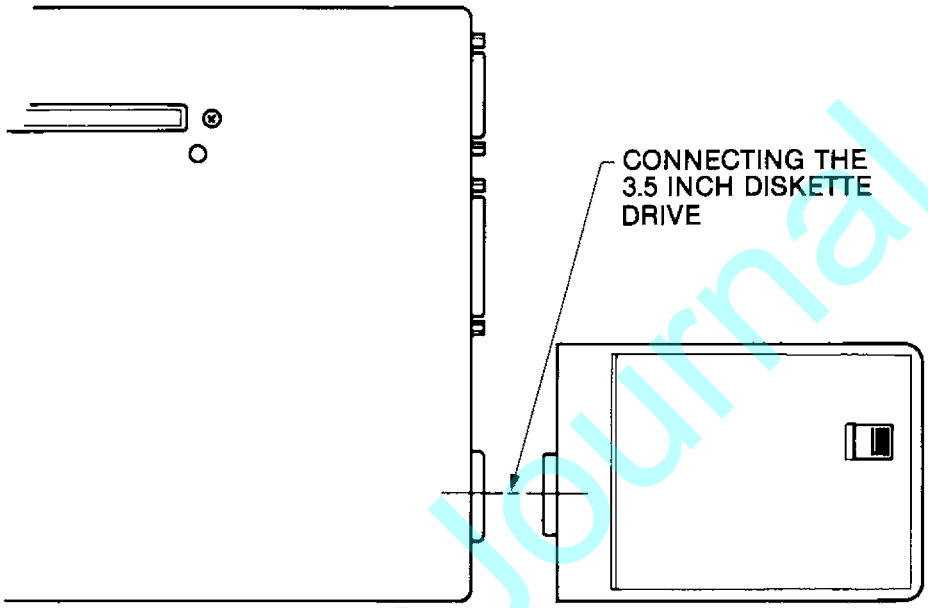
The external 3.5" drives connects to the MULTI-ADAPTER through a standard DB-25 connector on the right side of the MULTI-ADAPTER. To connect the drive:

1. Open the box and carefully remove the 3.5 inch diskette drive. Save the packaging materials in case the the drive is ever transported.



2. The DB-25 connector for the 3.5" drive is located on the right side of the MULTI-ADAPTER, below the lower right corner of the unit. Position the drive on the work surface, so that the DB-25 connector on the drive is aligned with the DB-25 connector on the MULTI-ADAPTER.

3. Slide the 3.5" drive into the MULTI-ADAPTER, so that the connectors join smoothly.



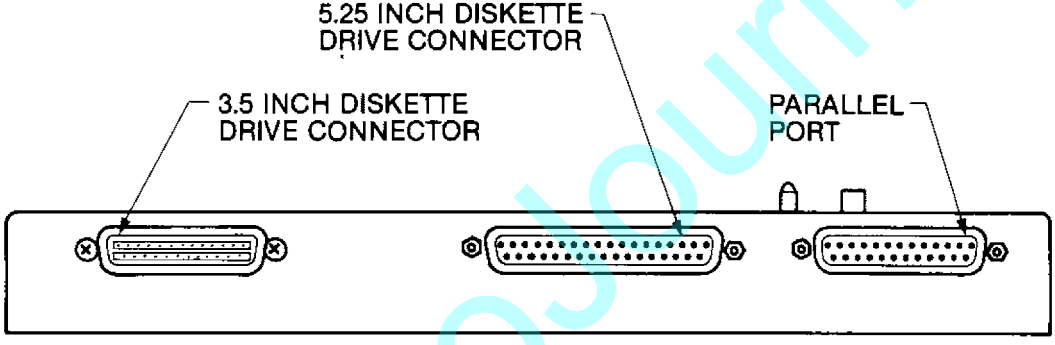
Any accidental impact can disconnect the drive from the MULTI-ADAPTER,which in turn can damage a diskette and cause the loss of valuable data. Be careful not to bump or jar the 3.5" drive when it is connected to the MULTI-ADAPTER.

The external 3.5" drive is identical in function and operation to the internal 3.5" drive in your KAYPRO 2000, with the exception that the external drive is the B drive rather than the A drive.

THE PORTS

THE PARALLEL PORT

The parallel port is located on the right side of the MULTI-ADAPTER below the upper-right corner, and has two recesses for screws on either side of it. It is CENTRONICS parallel port with a DB-25 connector and is used to connect your computer to a parallel printer.



INSTALLING THE RGB COLOR GRAPHICS CARD

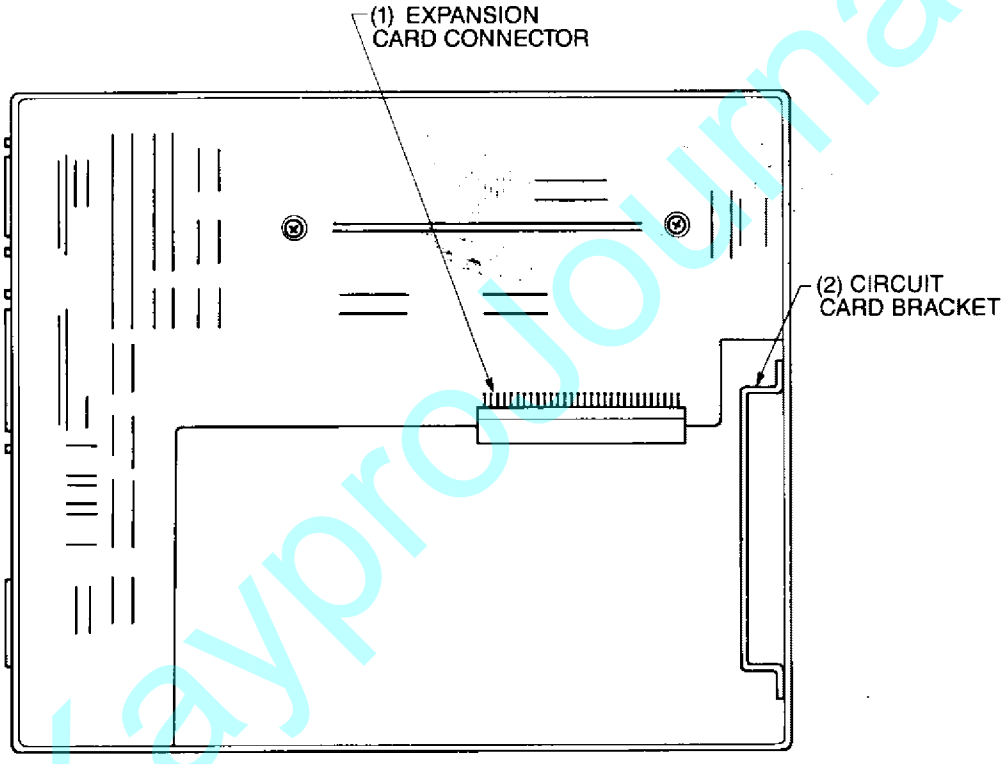
The phrase "RGB" is an acronym for Red-Green-Blue, and denotes the type of monitor being used. An RGB monitor is a color video unit, capable of displaying high resolution graphics. The MULTI-ADAPTER has an expansion slot for a color graphics circuit card, which allows you to use an RGB monitor.

Kaypro Corpoartion recommends the use of the PERSYST COLOR II circuit card in the MULTI-ADAPTER. To install this card, first prepare the work surface. It should be wide, flat and stable. Have a soft cloth handy on which to rest the MULTI-ADAPTER. As for tools, you will need a large phillips screwdriver and a small phillips screwdriver.

1. Using the large screwdriver, remove the four screws that are located on two sides of the MULTI-ADAPTER: the side directly above the one-hundred pin connector, and the side directly below.

2. Turn the MULTI-ADAPTER over and rest it on a soft cloth.

3. Place your finger in the gap between the circuit card slot cover and the housing of the MULTI-ADAPTER. Position the tip of your finger on the bottom panel. Push up (remember, the unit is upside down) slowly and with increasing pressure until the bottom panel comes free from the housing. If you cannot exert enough pressure to free the bottom panel use the small screwdriver to push up, but remember to be gentle. Exert minimal pressure at first, then slowly increase it. Never hit or even tap the panel in an attempt to free it. Put the bottom panel aside.



4. Remove the two screws on both sides of the circuit card bracket, which is now located in the lower right corner of the open MULTI-ADAPTER. Remove the bracket from the MULTI-ADAPTER.

5. Attach the circuit card to the bracket using the small screwdriver and a phillips head screw. The connector on the bracket is located at one end, and is a small hole for the screw. The connector on the card is a

notch cut into the metal plate near the right angle bend in the plate. When the two are joined, the DB-9 connector on the card should extend through the slot in the bracket.

6. Position the card--bracket assembly in the MULTI-ADAPTER with the copper colored connector directly below its corrosponding connector on the MULTI-ADAPTER mainboard. The circuit card bracket should be about an inch (1.5 centimeters) below its original position.

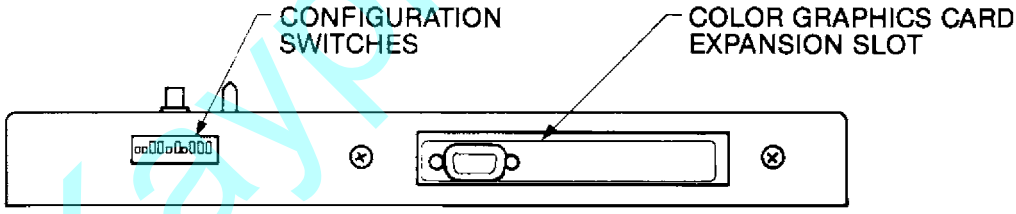
7. Move the card upward, pushing the copper colored connector into the connector on the mainboard, and returning the bracket to its original position. If the connector does not move smoothly into place, use a gentle back-and-forth rocking motion to set it correctly.

8. Replace the bracket screws on the outside of the MULTI-ADAPTER.

9. Replace the bottom cover, and re-attach all the screws.

THE RGB VIDEO PORT

With the RGB card installed, and the unit re-assembled and right side up, the RGB video port is located on the left side of the MULTI-ADAPTER, below the lower left corner of the unit.



The RGB video port has a DB-9 connector, and is used to connect the MULTI-ADAPTER to an RGB monitor. The cable to make this connection is available from your dealer.

THE KAYPRO PC CARD AND CABLES

The KAYPRO PC CARD is an electronic device that connects the KAYPRO 2000 MULTI ADAPTER to a diskette drive in a computer that uses the MS-DOS or PC-DOS operating system.

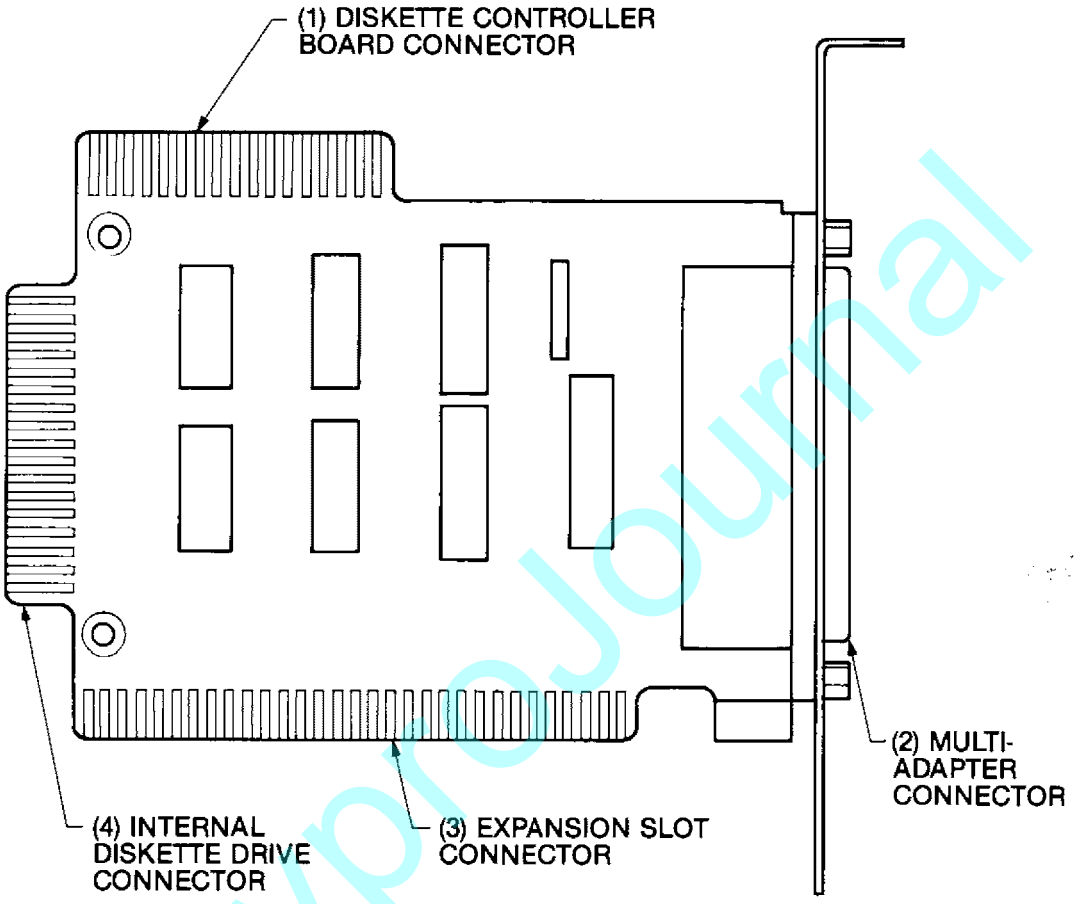
INSTALLATION

There are two versions of the Kaypro PC Card and Cables, one for the IBM PC and the other for the Kaypro 16. Make sure that you have the correct product for your computer.

To install the KAYPRO PC CARD you should have one small phillips screwdriver, one small slotted screwdriver and a work surface composed of a wide, flat stable area. Place your personal computer on the work surface.

1. Open the KAYPRO PC CARD box. Remove the card and the three cables, and place them on the work surface.

2. Read the instructions in your computer manual on how to install circuit cards. Follow those instructions when installing the KAYPRO PC CARD. Install the card in an expansion slot adjacent to the diskette controller card. The connector on the KAYPRO PC CARD that attaches to the expansion slot(3) is the largest one, and has a notch beside it. Do not replace the computer cover after installing the card. If you have a KAYPRO 16 or 16/2, do not re-attach the card cage.



4. In the PC there is a ribbon cable that runs from the diskette controller board to the internal diskette drive (The A drive). Disconnect the end of that cable that is attached to the diskette controler board, and reconnect it to the appropriate connector(4) on the KAYPRO PC CARD.

5. Connect one end of the ribbon cable provided to the diskette controller board and the other to the appropriate connector(1) on the KAYPRO PC CARD.

6. Check all the connections to make sure they are correct.

7. If you have a KAYPRO 16 or 16/2, replace the card cage and cover,

otherwise simply replace the cover.

If the 5.25" drive does not work, make sure the MULTI-ADAPTER configuration switches are set correctly (See the section titled Switch Settings).

When the KAYPRO 2000 MULTI-ADAPTER is connected to the external port on the KAYPRO PC CARD, the A drive in your PC acts as the C drive for your KAYPRO 2000. If the MULTI-ADAPTER is connected to your PC, *DO NOT USE YOUR PC AND YOUR KAYPRO 2000 AT THE SAME TIME*. This can cause the operating system of either computer to cease functioning, and cost you valuable data.

INDEX