
CHAPTER 6: CONNECTING EXTERNAL DRIVES

This chapter describes how to connect an optional external diskette drive or tape drive to your GRiDCASE 1535 EXP computer and describes how to set the correct switch settings for these devices. For more detailed information on how to use these drives, consult the manual that accompanies each drive.

CONNECTING A 3 1/2-INCH POCKET DISKETTE DRIVE

The external Model 3401 3 1/2-inch diskette drive (also called the "pocket floppy") is equipped with its own diskette drive cable. You must connect the drive to the external peripheral connector (located on the back of the computer) using this special drive cable. The pocket drive receives both its data and its power through the drive cable connected to the computer. Figure 6-1 shows how to properly connect the pocket diskette drive to the computer.

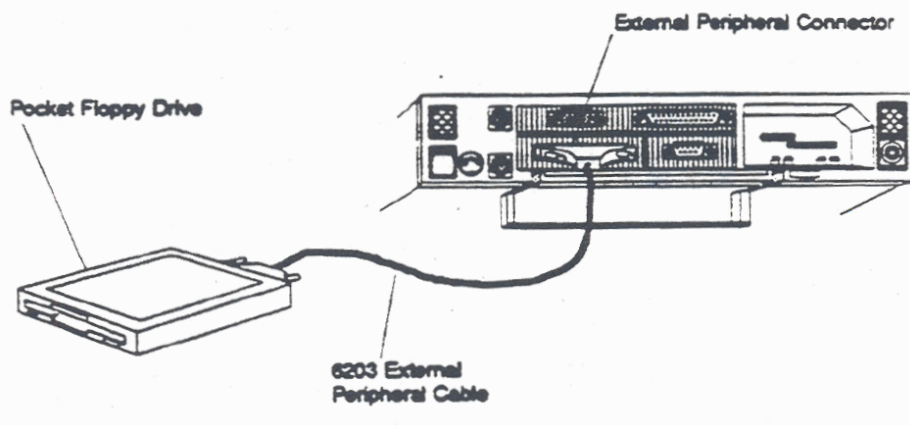


Figure 6-1. Connecting the 3 1/2-inch Pocket Diskette Drive

The pocket diskette drive works with any power option; an AC power source is not necessary to use the pocket diskette drive.

NOTE: If you have attached an expansion tray to your computer, you cannot use an internal power pack, or the computer will not start-up when you turn it on. If your computer is equipped with a plasma screen, you cannot use the internal/external AC power pack internally.

To connect a pocket diskette drive to the computer, follow the steps listed below.

1. Turn off the computer and any other external devices.

CAUTION

Before connecting or disconnecting any external device, always turn off the computer and all external devices. Failure to do so may damage your equipment.

2. Set the two DIP switches on the back of the drive to the correct setting for the configuration you want. These switches set the device's address, allowing the computer to exchange data with it. Refer to the section SWITCH SETTINGS FOR THE EXTERNAL DRIVES later in this chapter for more information on setting the switches.
3. Attach one end of the pocket diskette drive cable to the external peripheral connector on the back of the computer. If it doesn't fit easily the first time, turn the end of the cable over. (The connectors are D-shaped, and so can only be connected one way.) Tighten the thumbscrews on each side of the connector to attach the cable securely to the computer. Do not overtighten the thumbscrews.

CAUTION

Make sure you connect the cable to the external peripheral connector. It is physically possible to attach the cable to the printer connector. However, the external drive will not work when connected to the printer connector and may be damaged by such a connection.

4. Attach the other end of the pocket diskette drive cable to the pocket diskette drive.

5. Turn on the computer.

For instructions on how to use the pocket diskette drive, consult the manual that accompanies the drive.

CONNECTING A 5 1/4-INCH POUCH DISKETTE DRIVE

Two types of external 5¼-inch diskette drives are available for use with the GRiDCASE 1535 EXP: the Model 3402 360 KB drive and the Model 3404 1.2 MB drive. The instructions contained in this section apply to both drives.

The external 5¼-inch diskette drive (also called the "pouch floppy") is equipped with its own diskette drive cable. You must connect the drive to the external peripheral connector (located on the back of the computer) using this special drive cable. The pouch diskette drive must be powered by a separate AC power pack. Each pouch drive comes with an AC power pack, an AC power cord, and a DC cable. Figure 6-2 shows how to properly connect the pouch diskette drive to the computer.

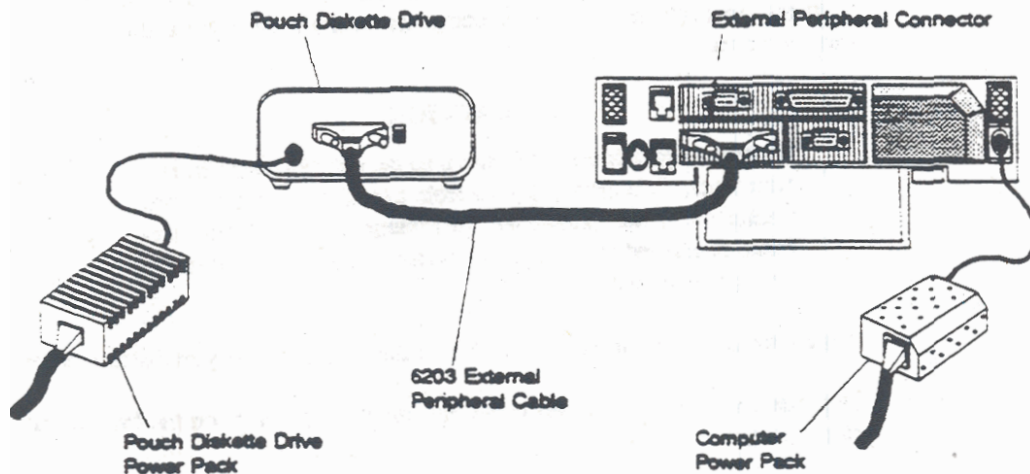


Figure 6-2. Connecting the 5¼-inch Pouch Diskette Drive

To connect the external 5¼-inch diskette drive to the computer, follow the steps listed below.

1. Turn off the computer and any other external devices.

CAUTION

Before connecting or disconnecting any external device, always turn off the computer and all external devices. Failure to do so may damage your equipment.

2. Set the two DIP switches on the back of the drive to the correct setting for the configuration you want. These switches set the device's address, allowing the computer to exchange data with it. Refer to the section **SWITCH SETTINGS FOR THE EXTERNAL DRIVES**, later in this chapter, for specific information on setting the switches.
3. Attach one end of the pouch drive cable to the external peripheral connector on the back of the computer. If it doesn't fit easily the first time, turn the end of the cable over. (The connectors are D-shaped, and so can only be connected one way.) Tighten the thumbscrews on each side of the connector to attach the cable securely to the computer. Do not overtighten the thumbscrews.

CAUTION

Make sure you connect the cable to the external peripheral connector. It is physically possible to attach the cable to the printer connector. However, the external drive will not work when connected to the printer connector and may be damaged by such a connection.

4. Attach the other end of the drive cable to the back of the pouch diskette drive.
5. Plug one end of the DC power cable into the DC connector on the back of the diskette drive.
6. Plug the other end of the DC power cable into the diskette drive power pack.

7. Plug one end of the AC power cord into the power cord socket on the back of the diskette drive power pack.
8. Plug the other end of the power cord into a wall outlet that accepts a three-prong plug. If a plug adapter is used, make sure it is properly grounded. Ensure that the power pack is resting on its bottom so that none of the air vents on the sides or top are blocked.
9. Turn on the computer.

For instructions on how to use the external 5¼-inch diskette drive, consult the manual that accompanies the drive.

SWITCH SETTINGS FOR THE EXTERNAL DRIVES

The pocket or pouch floppy diskette drives' address switches are located on the back of the drive to the right of the cable connector. The address switches are shown in Figure 6-3. The setting of these switches determines whether the drive is drive A or drive B.



Figure 6-3. Floppy Diskette Drive Address Switches

Table 6-1 shows the possible settings for the floppy diskette drive's address switches.

Table 6-1. Floppy Diskette Drive Address Switch Settings

Computer Configuration	Switch Positions		External Floppy Acts As:
	S1	S2	
Internal Floppy	DOWN/OFF	DOWN/OFF	drive A
	UP/ON	DOWN/OFF	drive B
Internal Hard Disk	DOWN/OFF	DOWN/OFF	drive A

The internal floppy diskette drive, if installed, is drive A when the external floppy diskette drive is set as drive B. The internal floppy diskette drive is drive B when the external drive is set as drive A.

CONNECTING AN EXTERNAL TAPE DRIVE

The Model 3403 external tape drive is equipped with its own tape drive cable. You must connect the drive to the external peripheral connector (located on the back of the computer) using this special drive cable. The tape drive must be powered by a separate AC power pack. Each tape drive comes with an AC power pack, an AC power cord, and a DC cable. Figure 6-4 shows how to properly connect the tape drive to the computer.

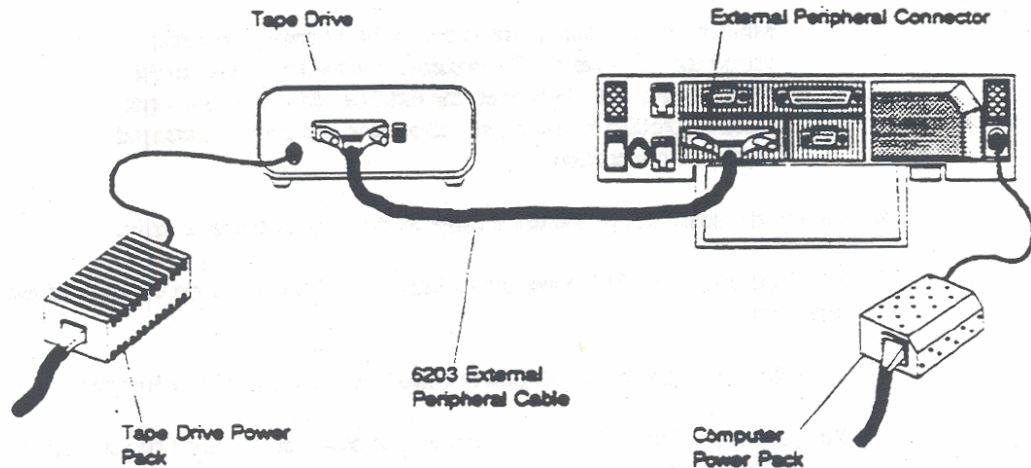


Figure 6-4. Connecting the External Tape Drive

To connect the external tape drive to the computer, follow the steps listed below.

1. Turn off the computer and any other external devices.

CAUTION

Before connecting or disconnecting any external device, always turn off the computer and all external devices. Failure to do so may damage your equipment.

2. Set the two DIP switches on the back of the tape drive to the DOWN or OFF position for the hard disk configuration. These switches set the device's address, allowing the computer to exchange data with it.
3. Attach one end of the drive cable to the external peripheral connector on the back of the computer. If it doesn't fit in easily the first time, turn the end of the cable over. (The connectors are D-shaped, and so can only be connected one way.) Tighten the thumbscrews on each side of the connector to attach the cable securely to the computer. Do not overtighten the thumbscrews.

CAUTION

Make sure you connect the cable to the external peripheral connector. It is physically possible to attach the cable to the printer connector. However, the external drive will not work when connected to the printer connector and may be damaged by such a connection.

4. Attach the other end of the drive cable to the back of the tape drive.
5. Plug one end of the DC power cable into the DC connector on the back of the tape drive.
6. Plug the other end of the DC power cable into the tape drive power pack.
7. Plug one end of the AC power cord into the power cord socket on the back of the tape drive power pack.
8. Plug the other end of the power cord into a wall outlet that accepts a three-prong plug. If a plug adapter is used, make sure it is properly grounded. Ensure that the power pack is resting on its bottom so that none of the air vents on the sides or top are blocked.
9. Turn on the computer.

For instructions on how to use the external tape drive, consult the manual that accompanies the drive.

CHAPTER 7: USING THE OPTIONAL EXPANSION TRAY

This chapter describes how to use the optional expansion tray (Model 32300). It describes how to attach and detach the expansion tray, as well as how to insert and remove expansion cards. This chapter also explains expansion card limitations and power supply considerations that arise out of the use of expansion cards with the GRiDCASE 1535 EXP computer.

For specific technical information, such as system interrupt and DMA channel assignments, that may be helpful when installing an expansion card, see Appendix D.

The basic configuration of the expansion tray includes mounting brackets for two expansion cards. One of the expansion slots is IBM PC/AT-compatible; the other is IBM PC/XT-compatible. The two slots accommodate full-size expansion cards. Support brackets are also provided for shorter cards.

An auxiliary removeable fan is included. When installed, the fan occupies part of one of the expansion slots. The auxiliary fan must be installed if the card(s) installed in the expansion tray draw a total of more than three watts of power.

EXPANSION CARD LIMITATIONS

The following restrictions govern the use of PC/AT and PC/XT expansion cards with the GRiDCASE 1535 EXP. Read these restrictions carefully.

- Cards that require electrical connections to components other than the expansion bus are not supported (e.g., some card-mounted hard disks require a direct connection to the computer's main power supply; such cards cannot be installed in the GRiDCASE 1535 EXP).
- Cards that attempt to take over the functions of the CPU are not supported. This includes cards that explicitly use the "Master" line on the bus.

- Cards that contain additional extended or expanded (EMS) memory are not supported. Up to 8 MB of memory is available as an internal option.
- Cards that are wider than a single standard expansion slot are not supported (e.g., some card-mounted hard disks are 1-1/2 or even 2 slots wide; such cards cannot be installed in the GRiDCASE 1535 EXP).
- A video card installed in the expansion unit (e.g., an EGA or VGA card) will drive an appropriate external monitor. It will not, however, drive the computer's built-in screen.
- A card that acts as the MS-DOS COM1 or COM2 device will not operate when installed in a GRiDCASE 1535 EXP computer. This is because COM1 and COM2 are both used by built-in devices. If the card can be set to COM3 or COM4, it will work.
- For systems equipped with the standard LCD screen, the total power consumption of expansion cards installed in the expansion tray cannot exceed 25 watts.
- For systems equipped with the optional plasma screen, the total power consumption of expansion cards installed in the expansion tray cannot exceed 10 watts.
- If the total power consumption of expansion cards installed in the expansion tray exceeds three watts, the auxiliary fan must be installed in the expansion tray.

CAUTION

Do not use a card or a combination of cards that exceeds the wattage limit (see above). Using a card or a combination of cards that draws too much power may damage the expansion tray and the computer.

- Running the processor at low speed is NOT recommended when the expansion tray is attached to the computer; some expansion cards may not be able to operate correctly when the computer is running at low speed.

ACCESSING THE EXPANSION SLOTS

This section explains how to access the expansion slots inside the expansion tray. You can access the expansion slots whether or not the expansion tray is attached to the computer.

To gain access to the expansion slots, remove the expansion tray cover, as explained below:

1. Turn the expansion tray upside down (its "feet" should point up) and place it on a firm, flat surface.
2. If the expansion tray is attached to the computer, release the two side latches. If a latch doesn't completely release, press down firmly on that corner with one hand while disengaging the latch with the other hand.
3. Remove the five phillips-head screws that secure the expansion tray cover and lift off the expansion tray cover.

Figure 7-1 shows the expansion tray with its cover removed.

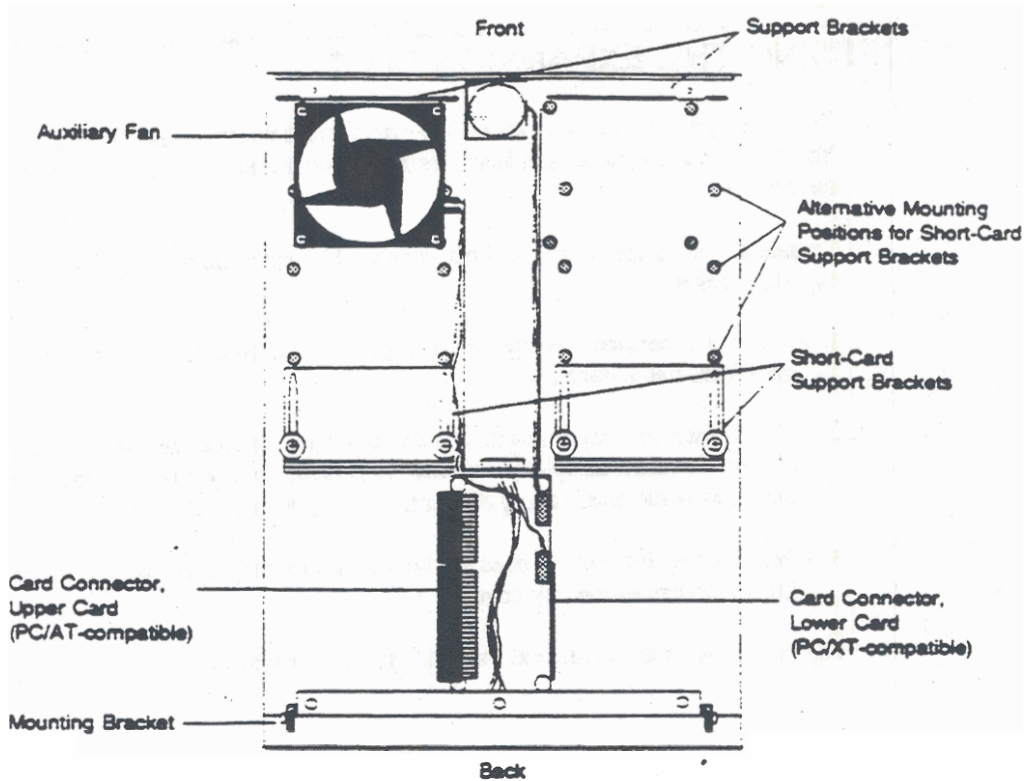


Figure 7-1. Bottom View of the Expansion Tray

POSITIONING THE AUXILIARY FAN

The auxiliary removable fan included inside the expansion tray must be installed if the total power consumption of all expansion cards exceeds three watts. If the total power consumption of all expansion cards is less than three watts, you may remove the fan to provide more space.

The auxiliary fan can be positioned on either side of the expansion tray; this provides flexibility for installing full-length expansion cards on either side of the expansion tray. When the fan is repositioned or removed, it is also important to change the position of the plastic vent covers inside the expansion tray cover. If the vent covers are improperly positioned, the expansion tray is not effectively cooled.

NOTE: The small fan in the middle of the expansion tray is not removeable. Do not attempt to remove this fan.

To reposition or remove the auxiliary fan, follow the steps below:

1. Loosen the four phillips-head screws that secure the auxiliary fan to the expansion tray (see Figure 7-2). (You don't need to remove these screws from the fan, just completely loosen them.)
2. Lift up the fan. Take care not to lose the four standoffs under the fan that keep it elevated above the expansion tray.

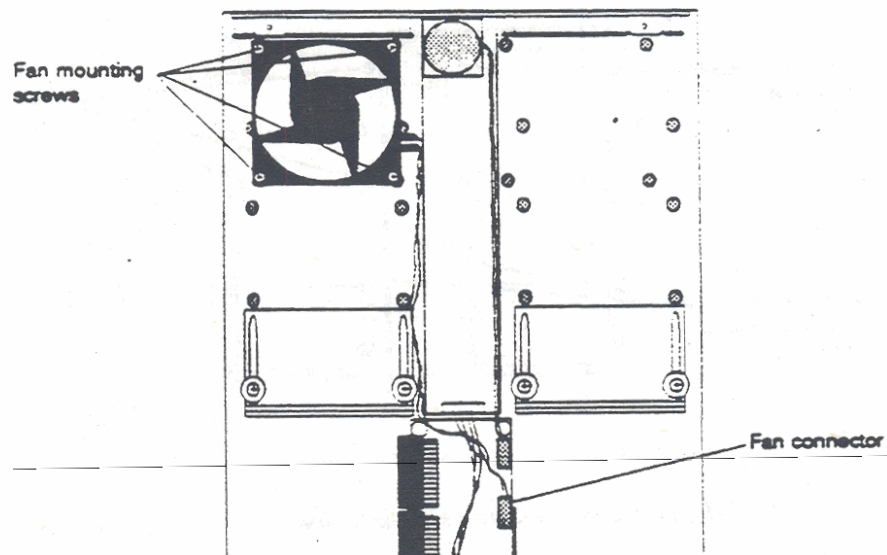


Figure 7-2. Removing the Auxiliary Fan

3. If you are removing the auxiliary fan, unclip the fan connector from the circuit board in the center of the expansion tray. Keep the fan, the four screws, and the four standoffs for later use.
4. If you are repositioning or reinstalling the auxiliary fan, place the four standoffs over the fan screw holes on the opposite side of the expansion tray. Figure 7-3 shows the location of the fan screw holes on each side of the expansion tray.
5. Carefully place the auxiliary fan over the standoffs so that the four screws go through the standoffs and into the screw holes in the expansion tray. Tighten the four screws, but don't over-tighten them.
6. Ensure that the wires carrying power to the auxiliary fan do not cross over the two metal shields on either side of the circuit board in the center of the expansion chassis. Route the fan wires around the edge of these metal shields. If the fan wires cross over the metal shields, they could be pinched between the shields and the expansion tray cover.

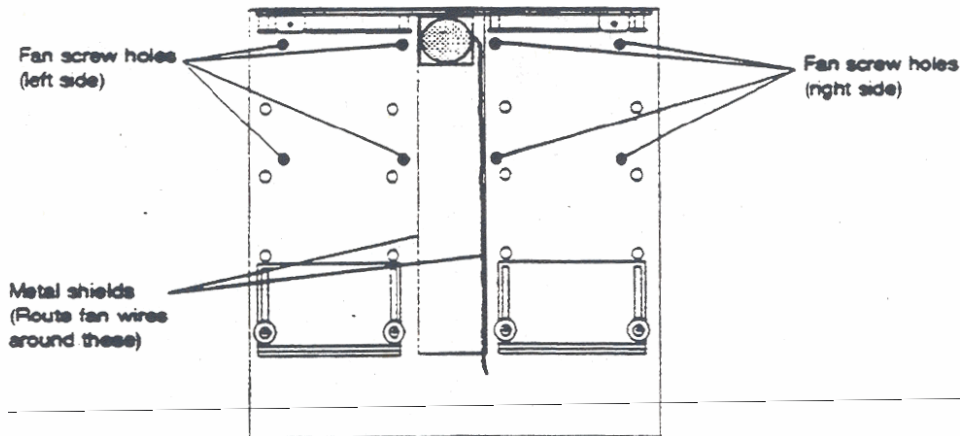


Figure 7-3. Auxiliary Fan Screw Hole Locations

7. If you are reinstalling the auxiliary fan, plug the fan wires into the fan connector on the circuit board in the center of the expansion tray.

- Change the positions of the plastic vent covers inside the expansion tray cover so that the expansion tray is properly cooled. Table 7-1 summarizes the proper vent cover positions, depending on how the auxiliary fan is positioned. The diagram in Figure 7-4 shows which vents must be covered; this diagram matches the one inside the expansion tray cover. Note that the small vent in the center should never be covered.

Table 7-1. Vent Cover Positions

Fan Position	Cover These Vents
Right side	Bottom left vent (opposite side from fan) Side right vent (same side as fan)
Left side	Bottom right vent (opposite side from fan) Side left vent (same side as fan)
No auxiliary fan	Both bottom vents (both side vents should be left open)

MOVE VENT COVERS
IF FAN IS MOVED

CHANGER L'EMPLACEMENT
DES CACHES SI LE
VENTILATEUR EST DEPLACE

BRINGEN SIE DIE ABDECKUNGEN
JE NACH POSITION DES
VENTILATORS AN

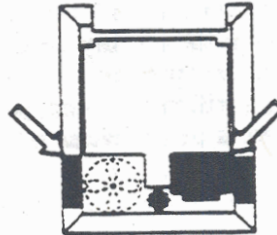
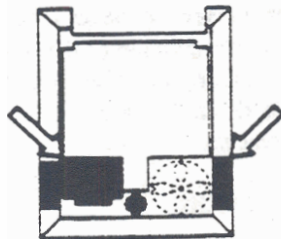
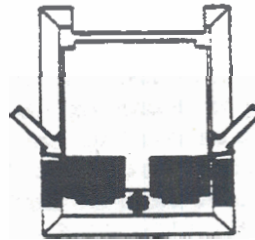


Figure 7-4. Vent Cover Positions

INSTALLING AN EXPANSION CARD

Figure 7-1 shows the card connectors in the expansion tray.

The two card connectors face in opposite directions. One is above the circuit board and one below. The slot above the circuit board accommodates both IBM PC/AT-compatible expansion cards and IBM PC/XT-compatible expansion cards, whereas the slot below accommodates only IBM PC/XT-compatible expansion cards.

To install an expansion card, follow the steps listed below:

1. Make sure any DIP switches and/or jumpers on the expansion card are set correctly, as specified in the card manufacturer's documentation. See Appendix D for information that may be helpful when configuring the card.
2. Using a phillips-head screwdriver, remove the screw from the mounting bracket on the expansion tray. Don't lose the screw; you will need it later to secure the mounting bracket of the expansion card.
- 3a. If you are installing a full-length card, remove the short-card support bracket. Save the bracket and the screws for possible reinstallation later.
- 3b. If you are installing a short card, loosen the two screws securing the short-card support bracket and slide the bracket to accommodate the length of the card you are installing. Leave the screws loose until the rest of the installation procedure is complete. Note that the short-card support bracket can be moved to three alternative mounting points to accommodate odd-size expansion cards (refer to Figures 7-5 and 7-6).

You can install a 3/4-length expansion card on the same side of the expansion tray as the auxiliary fan by reversing the position of the support bracket. Remove the support bracket and turn it around so that the bracket edge is near the auxiliary fan. Also, pull the plastic card support off of the bracket and place it on the reverse side of the bracket.

CAUTION

Make sure that the components on the card are not in contact with the metal part of the support bracket. If they are, this may cause damage to the card.

4. Orient the expansion card so that its edge connector (the striped flange that protrudes from one edge of the card) points inward toward the expansion slot and is aligned with the expansion slot.
5. Align the plain end of the expansion card with the support bracket (either the short-card support bracket or the support bracket at the front of the expansion tray). Then slide the card into the computer.
6. Make sure the edge connector is completely inserted in the expansion slot. Press gently but firmly on both ends of the expansion card, rocking it back and forth slightly until the connector is fully inserted. At this point, the plain end of the card should be fully inserted in the support bracket, and the mounting bracket at the other end of the card should be pressed firmly against the flange to which it attaches.
7. Using the screw you removed at Step 2, secure the expansion card's mounting bracket to the flange that protrudes from the back of the expansion tray.
8. If you are installing a short card, make sure the card is firmly seated in the short-card support bracket, and then tighten the two screws that secure that bracket.
9. Reattach the expansion tray cover with the five phillips-head screws.

CAUTION

When reattaching the expansion tray cover, ensure that the latches on either side of the cover are not caught between the cover and the expansion tray when the cover is screwed down. Hold the latches away from the expansion tray when placing the cover onto the expansion tray.

Figure 7-5 shows the installation of a full-length card. Figure 7-6 shows the installation of a short card.

For GRiDCASE 1535 EXP technical information that may be helpful when installing an expansion card, see Appendix D.

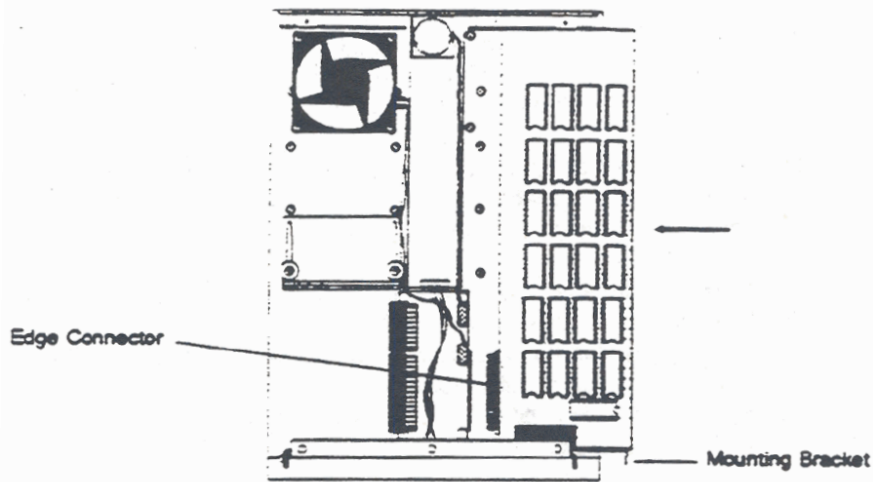


Figure 7-5. Installing a Full-Length Card

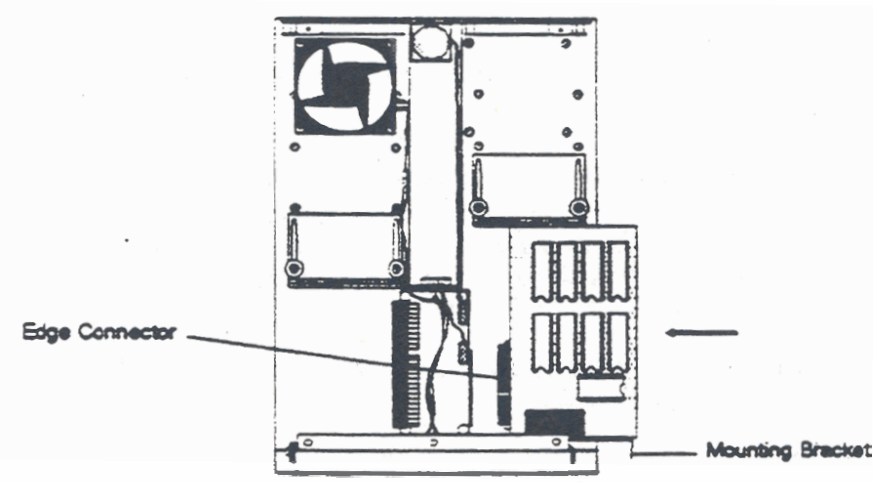


Figure 7-6. Installing a Short Card

ATTACHING THE EXPANSION TRAY

This section explains how to attach the expansion tray to your GRiDCASE 1535 EXP computer.

CAUTION

Before you attach the expansion tray to your GRiDCASE 1535 EXP computer, make sure that the computer is turned off and power to the computer is disconnected.

To attach the expansion tray to your GRiDCASE 1535 EXP computer, follow these steps:

1. Turn the expansion tray right side up and place it on a firm, flat surface. (The bus connector should be visible on the top of the tray.)
2. Position the tray so that the end of the tray with latches faces away from you and the end with locator tabs faces towards you (see Figure 7-7). Push the top of the latches away from the tray so that they are hanging outward.

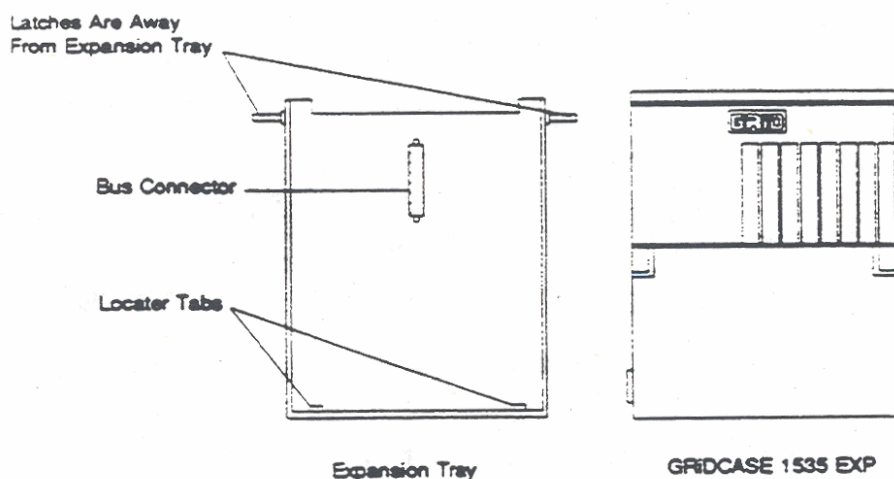


Figure 7-7. Preparing to Attach the Expansion Tray to the Computer

3. If the computer leg is extended, close it.
4. Remove the connector cap from the bus connector located on the underside of the computer and store the cap for future use.
5. Close the screen of the computer, and pick it up with the keyboard end facing you. The computer should be right side up.
6. Lower the keyboard end of the computer onto the expansion tray at about a 15° angle and slide it towards you until the locator tabs on the expansion tray slip into the matching slots on the computer (see Figure 7-8).
7. Carefully lower the back end of the computer, making sure that the hard disk projection is aligned with the corresponding cutout in the expansion tray. Press firmly on the back end of the computer so that the computer rests flat against the expansion tray.
8. Fasten the two side latches that secure the expansion tray to the computer.

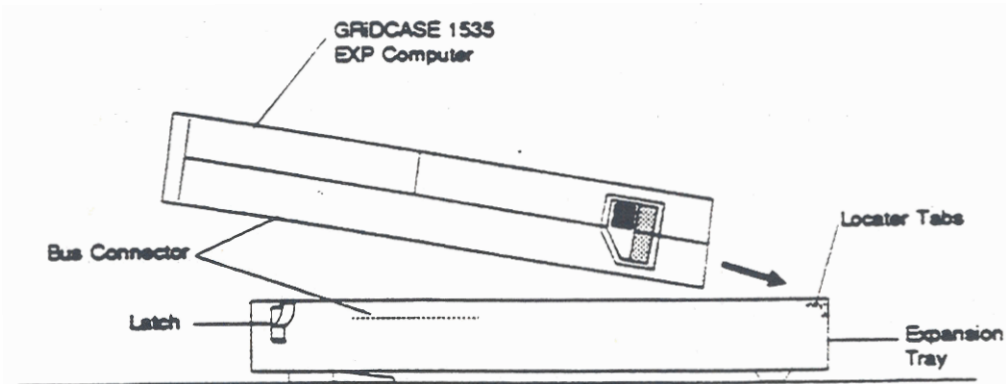


Figure 7-8. Attaching the Expansion Tray

The expansion tray has two collapsible legs on its bottom at the rear. Pull these legs open to prop up the rear of the computer; this provides a better typing angle for the keyboard.

DETACHING THE EXPANSION TRAY

This section explains how to detach the expansion tray from the GRiDCASE 1535 EXP computer.

CAUTION

Before you detach the expansion tray from your GRiDCASE 1535 EXP computer, make sure that the computer is turned off and power to the computer is disconnected.

To detach the expansion tray from your computer, follow these steps:

1. Place the computer right side up on a firm, flat surface. The screen should be closed.
2. Position the computer so that the end with latches is facing away from you, then undo both latches. If a latch doesn't completely release, press down firmly on that corner with one hand while disengaging the latch with the other hand.
3. Pull out the handle from the rear of the computer.
4. Push down firmly on the handle to pop the computer up from the expansion tray.
5. Using the handle, slide the computer away from you, out from under the locator tabs at the front of the expansion tray, then lift it off of the expansion tray.
6. Replace the connector cover on the bus connector on the underside of the computer.

REMOVING AN EXPANSION CARD

This section explains how to remove an expansion card from a slot in the expansion tray. You don't need to detach the expansion tray from the computer to remove an expansion card.

Follow the steps listed below to remove an expansion card.

1. Disconnect the power and any cables attached to the computer or to the expansion cards.
2. Close the computer screen and turn the unit upside down.
3. Remove the expansion tray cover by removing the five phillips-head screws and undoing the two side latches. Lift off the expansion tray cover and set it aside.
4. Using a phillips-head screwdriver, remove the screw that secures the card's mounting bracket to the expansion tray.
5. Slide the card out of the slot, toward the edge of the computer. If necessary, use a gentle, end-to-end rocking motion to loosen the card from the edge connector. You may find it helpful to loosen the support bracket before pulling the card out. Handle the card by its edges only.

CAUTION

Do not extract the card by prying against the mounting bracket with a screwdriver or other instrument. This may bend or break the mounting bracket.

6. Reinstall the expansion card mounting screw so that it doesn't get lost.
7. Reinstall the expansion tray cover with the five phillips-head screws.
8. Close the latches.

POWER SUPPLY CONSIDERATIONS

This section provides information concerning power consumption, heat generation, and battery life.

Power Consumption

The actual power consumption of expansion cards varies tremendously. Knowing the actual power requirements of your expansion card(s) is important, because it determines whether or not you can use a particular card or combination of cards in the expansion tray, and whether or not you must use the auxiliary fan.

For systems equipped with standard LCD screens, the total power consumption of expansion cards installed in the expansion tray cannot exceed 25 watts. For systems equipped with optional plasma screens, the total power consumption cannot exceed 10 watts.

In any case, if the total power consumption of expansion cards installed in the expansion tray exceeds three watts, the auxiliary fan must be used.

CAUTION

Do not use a card or a combination of cards that exceeds the wattage limit (see above). Using a card or a combination of cards that draws too much power, or neglecting to use the auxiliary fan may damage the expansion tray and the computer.

NOTE: When using the expansion tray with the GRiDCASE 1535 EXP computer, you cannot use an internal power supply. If you use an internal power supply by mistake, the computer will not start up when you turn it on. If your machine is equipped with a plasma screen or a 100 MB hard disk, you cannot use the internal/external AC power pack internally under any circumstances.

Heat

Vent holes in the bottom of the expansion tray allow the passage of heated air from the expansion tray. As long as these vent holes remain unobstructed, you should not encounter any heating problems.

Observe the following precautions to ensure that the expansion tray does not overheat:

- The auxiliary fan must be installed if the total power consumption of all expansion cards installed in the expansion tray exceeds three watts.
- The two side vents and the two large bottom vents must be selectively covered on the inside of the expansion tray cover, depending on the position of the auxiliary fan. See Table 7-1 and Figure 7-4 for details on covering these vents.
- Do not remove the feet from the bottom of the expansion tray cover. These feet provide enough clearance between the vent holes and your work surface to allow the passage of heated air from the expansion tray.
- Do not stack the computer on top of any smaller object, such as a book, leaving the expansion tray's feet hanging over the edges of the object. This has the same effect as removing the feet; that is, no clearance remains under the computer for the expulsion of heated air from the expansion tray.
- If the expansion tray cover becomes hot to the touch, as soon as you safely can (i.e., after saving any files you are working on), turn off the computer. After the expansion tray cover has cooled, turn the computer back on. Make sure the expansion tray vent holes are unobstructed. If checking and—if necessary—correcting those conditions does not solve the overheating problem, your expansion card(s) may be overloading the power supply. Contact the GRiD Resource Center at 1-800-284-GRID (4743) for help in isolating your problem.

Battery Life

The battery life of the external attachable battery depends almost entirely on the power consumption of the card(s) you install in the expansion tray. Cards that have a higher power consumption cause the battery to discharge faster.