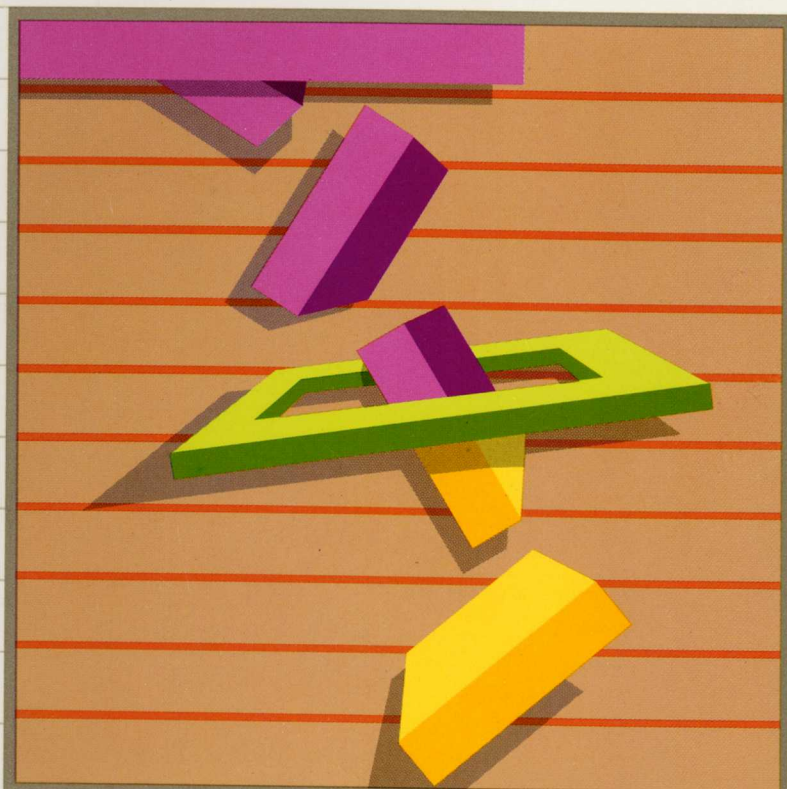


Apple II

**Cable and Connector
Guide**



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WARNING: 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.

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Preface

This Cable and Connector Guide is for you if you have a computer in the Apple II family, with lots of peripheral devices (and therefore lots of cables) attached to it. It shows you how to anchor those cables to the back panel of your computer, and it illustrates the importance of using clamps to hold peripheral device cables in place.

This book covers three models of the Apple II: the original Apple II, the Apple II Plus and the Apple IIe. (The Apple II and the Apple II Plus have the same case and back panel, so they will be covered together under the general heading **Apple II**.) Since cable clamps are different for the Apple II and Apple IIe models, be sure that you read the section that applies to your computer.

This book is designed for computer novices as well as veterans, but if you stumble over a computer term or forget the difference between a box clamp and a nut plate, refer to the glossary at the back of the book.

Cables, Connectors, and Clamps

The Apple computer is a versatile machine. You can use it for programming, word processing, composing, accounting, and a thousand other applications. The key to this versatility is the expansion slots (for peripheral cards) in the case. There are eight of these slots, so you can hook up a few disk drives, a printer, and a modem, and still have room left over for a music synthesizer and a graphics tablet.

Keeping Your Cables Straight

In this manual the term Apple II stands for the Apple II Plus as well as the original Apple II.

Where there's a peripheral device, there's also a peripheral device cable. This guide shows you the most efficient way to anchor cables to the back panels of Apple II and Apple IIe computers.

The first few disk drive cables don't pose a problem. It's when you add the printer and the modem cables that you can get your wires crossed.

You won't have that problem if you use the cable clamps that come packed with each peripheral device. These clamps not only enhance the appearance of the computer's back panel, they reduce the strain on cables and eliminate electromagnetic interference (EMI).

EMI

EMI is an unfortunate by-product of electrical devices and appliances. It shows up as snow on your neighbor's television screen or static on his radio. You know what it is if you've ever tried to watch TV while someone was using a hair dryer or an electric drill.

The Apple II and Apple IIe were engineered to control EMI. Used properly, the clamps discussed in this guide form a bond between the EMI shielding on the case and the shielding on cables.

The type of shielding on the case varies with the model and vintage of your computer. Apple IIe back panels are made of metal. Apple II back panels have a metal insert or a coat of conductive (metal) paint.

Peripheral Device Clamps

Most Apple peripheral devices come packaged with two clamps. One clamp is designed for Apple II back panels, the other clamp is designed for the new Apple IIe back panel.

Figure 1. Apple II back panel.

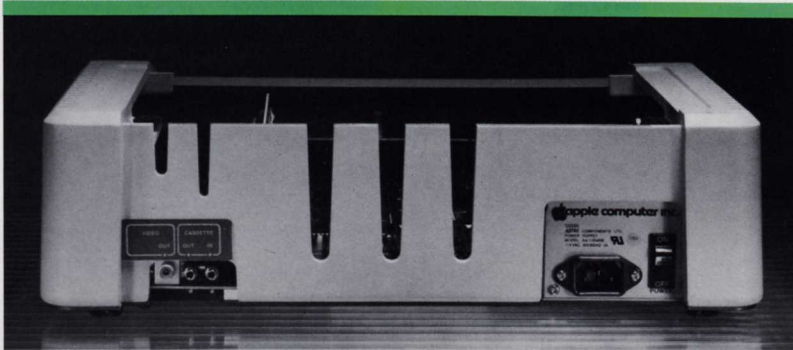


Figure 2. Apple IIe back panel.



Table 1 shows you which clamp goes with which back panel. (You'll learn how to use the various clamps later on in this guide.)

DB-9 and DB-25 clamps and nut plates are designed for use with D-style connectors. The numbers 9 and 25 refer to the number of circuits in each connector. Notice that the DB-9 nut plate may come in two styles: C-shaped or D-shaped.

If a peripheral device doesn't include the clamp you need for your computer, you can order the clamp separately. See Appendix C for the product number of the correct adapter kit.

Don't be alarmed by the number and variety of clamps. In the pages that follow you'll see how easy it is to use these clamps to connect cables to the back panel of your Apple IIe or Apple II.


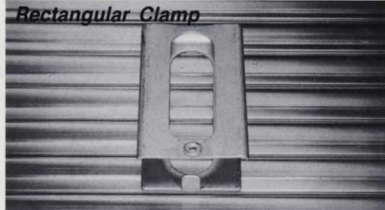
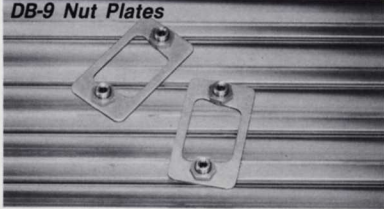
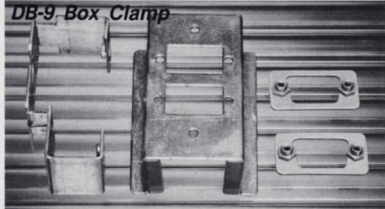
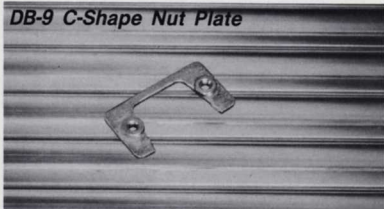

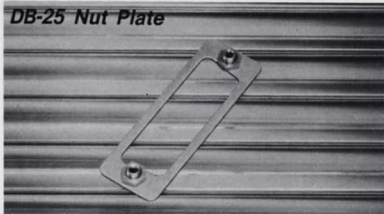
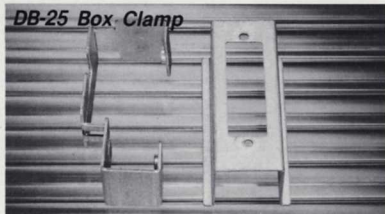
These aren't detailed installation instructions—you'll find step by step procedures in the appropriate peripheral device manual. Be sure to read the complete installation instructions before attaching a peripheral device to your computer.



Warning

Make sure the power switch on the back of your computer is turned OFF before you install any peripheral device or clamp.

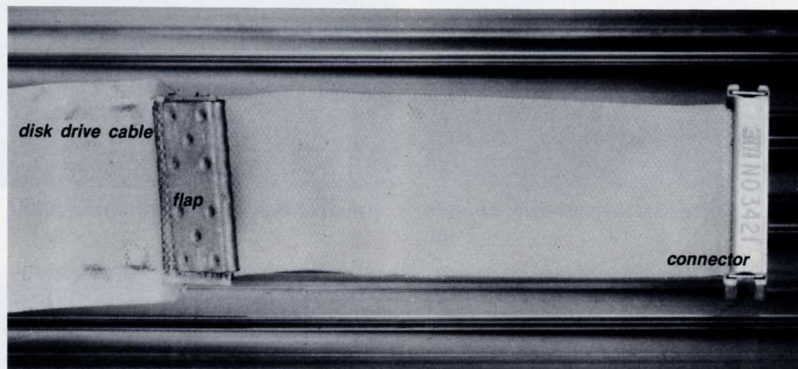
Table 1. Apple II and Apple IIe clamps.

Peripheral Device	Apple IIe Clamp	Apple II Clamp
Disk Drive	<p><i>U-Shape Clamp</i></p> 	<p><i>Rectangular Clamp</i></p> 
<p>Graphics Tablet <i>Old tablets (pre 1/83) don't use either clamp.</i></p>	<p><i>DB-9 Nut Plates</i></p> 	<p><i>DB-9 Box Clamp</i></p> 
Silentype	<p><i>DB-9 C-Shape Nut Plate</i></p> 	<p><i>DB-9 Box Clamp</i></p> 
<p>Super Serial Card Parallel Interface Card</p>	<p><i>DB-25 Nut Plate</i></p> 	<p><i>DB-25 Box Clamp</i></p> 

Installing Disk Drive Cable Clamps

Figure 3. Disk drive cable.

Notice the metal flap on the cable attached to your disk drive.



This metal flap is fastened to metal shielding on the disk drive cable. When the flap is in contact with the back panel of the Apple II, the EMI shield that surrounds the computer extends to include your disk drive cable as well.

The Apple IIe Disk Drive Cable Clamp

This is the Apple IIe disk drive cable clamp.

Notice how the flap fits into the clamp and how the clamp attaches to the Apple IIe back panel.

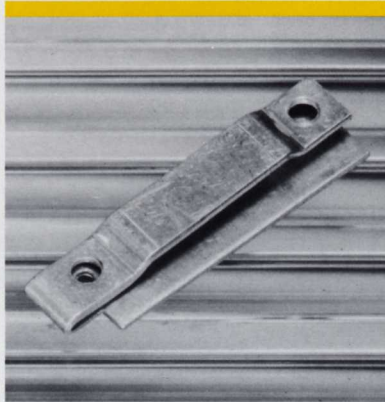


Figure 4. Apple IIe disk drive cable clamp.



Figure 5. Slide cable and flap into clamp.

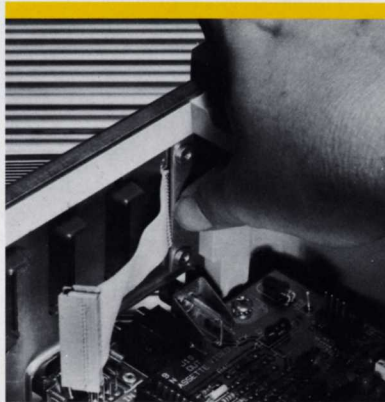


Figure 6. Hold clamp up to opening in back panel.

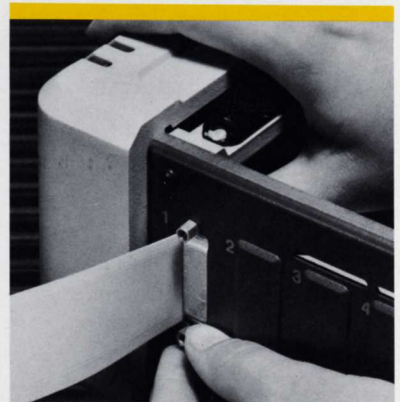


Figure 7. Insert and tighten screws.

The Apple II Disk Drive Cable Clamp

This is the Apple II disk drive cable clamp.

This clamp can hold up to four disk drive cables. Here's how it works:

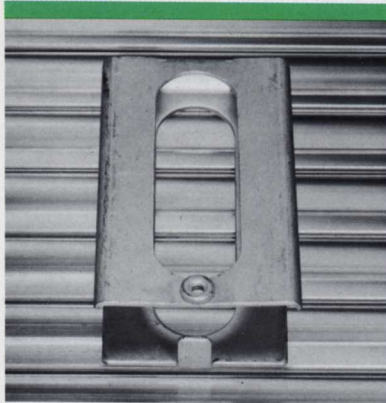


Figure 8. Apple II disk drive cable clamp.

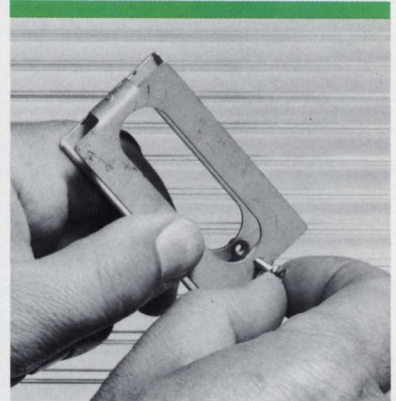


Figure 9. Insert screw, but don't tighten yet.

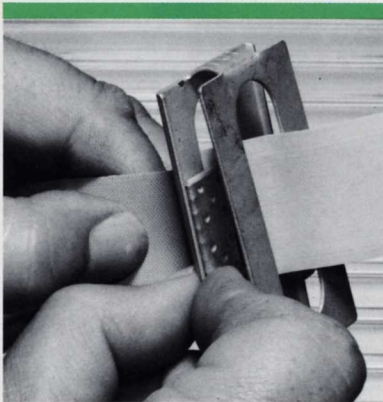


Figure 10. Fit disk drive cable flap into clamp.

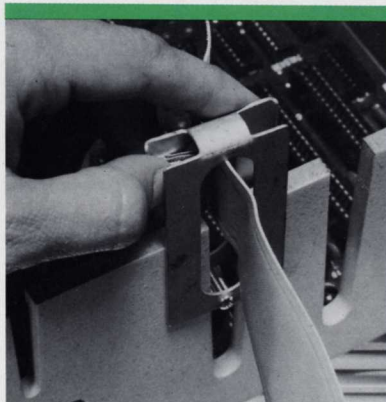


Figure 11. Slide clamp into notch in back panel. Make sure flap is on inside of back panel.

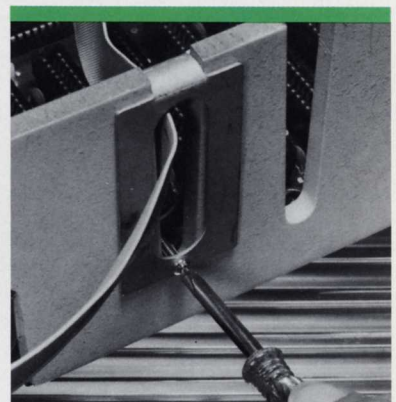
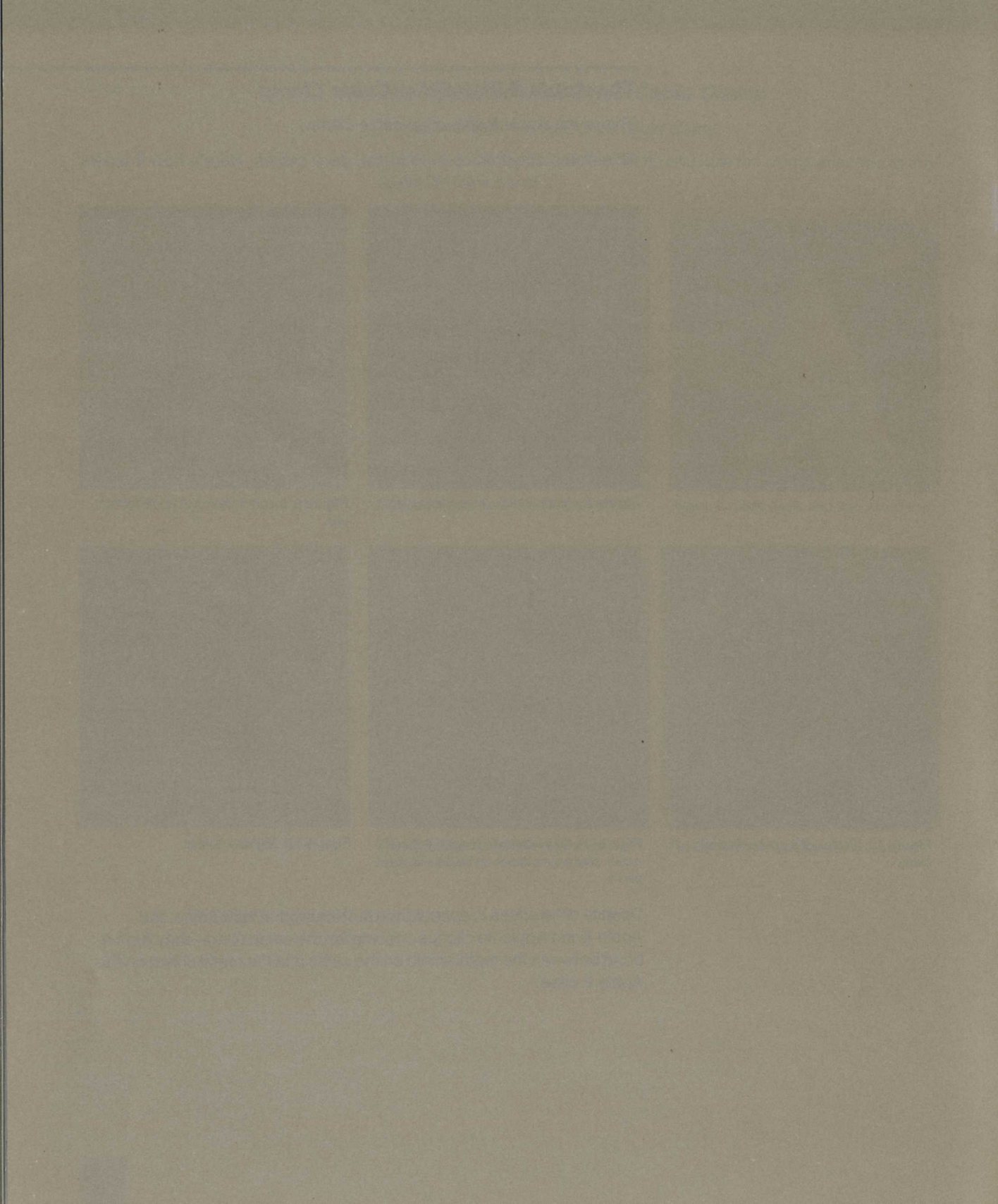


Figure 12. Tighten screw.

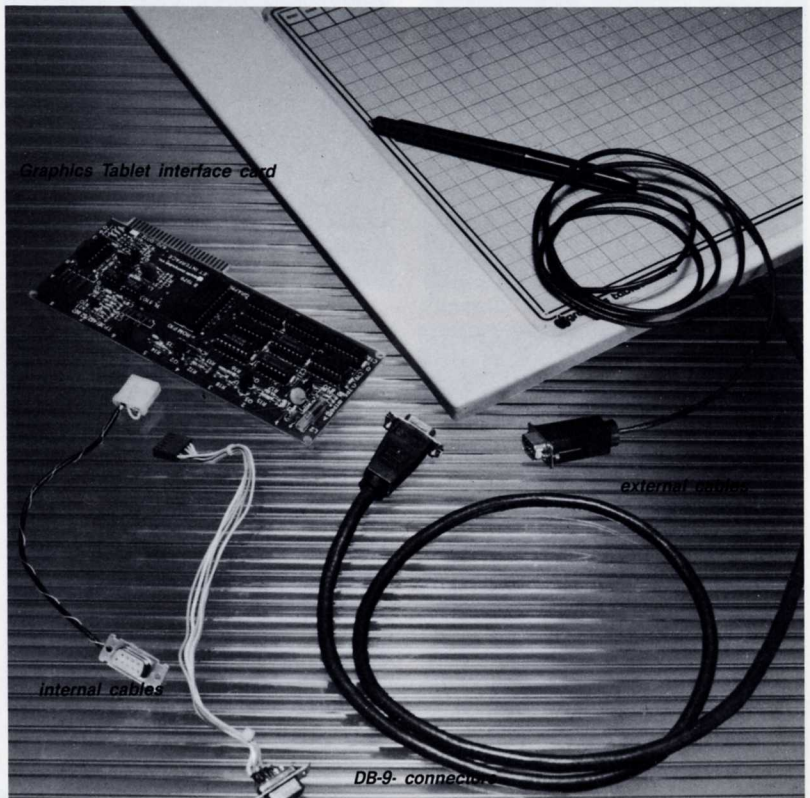
Despite differences in appearance and method of installation, the Apple II and Apple IIe clamps accomplish the same thing—they form a bond between the metal shield on the cable and the metal shield on the Apple II case.



Installing Graphics Tablet Cable Clamps

The Graphics Tablet is attached to an interface card inside the computer by means of two DB-9 connectors: one on the graphics pen cable and one on the graphics tablet cable.

Figure 13. Graphics tablet and interface card.



To prevent electromagnetic interference, the metal DB-9 connectors on the internal cables must be clamped to the computer's back panel as shown.

The Apple IIe Graphics Tablet Cable Clamps

These are the clamps that anchor the DB-9 connectors to the back panel. Notice that the metal plates, called nut plates, have a D-shape cutout in the center and a nut on either end. These plates hold the nuts a fixed distance apart to make it easier to insert the screws that secure the DB-9 connectors to the back panel.

Here's how they work:

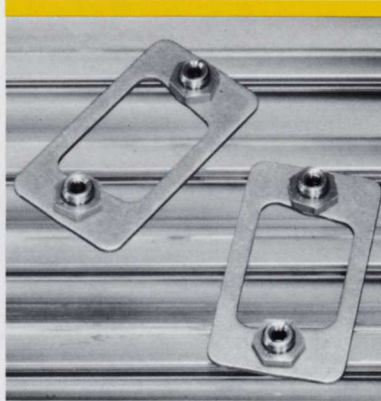


Figure 14. DB-9 nut plates.

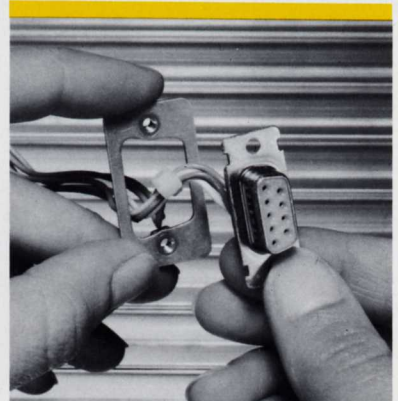


Figure 15. Fit nut plate over connector.

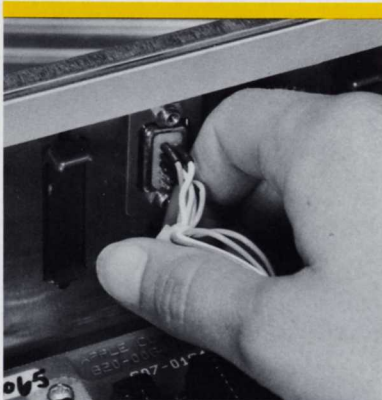


Figure 16. Put connector and nut plate up to back panel.



Figure 17. Insert and tighten screws.

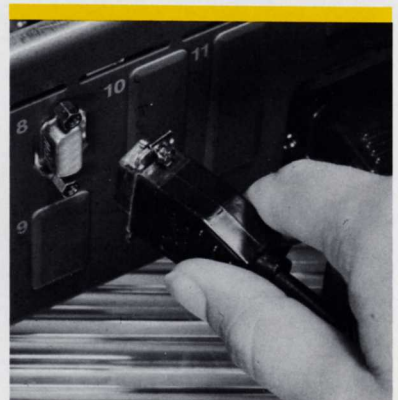


Figure 18. Plug in external cable.

Repeat this procedure for the other connector.

The Apple II Graphics Tablet Cable Clamp

This is the clamp that anchors the DB-9 connectors to the Apple II back panel.

This two-piece clamp has one opening for the graphics tablet DB-9 connector and another opening for the graphics pen DB-9 connector. Once the connectors are attached to the clamp, the clamp slides into one of the large notches on the back panel of the Apple II.

Here's how it works:

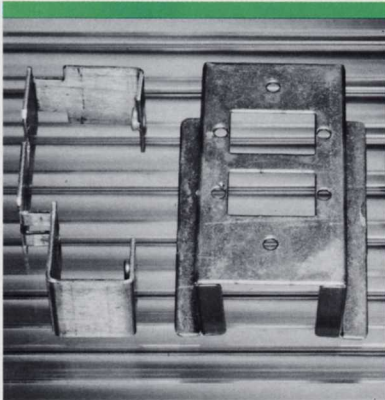


Figure 19. DB-9 cable clamp.



Figure 20. Thread cable and connector through nut plate and opening in clamp.



Figure 21. Attach connector to clamp using the screws and nut plate.

Repeat this procedure for the second DB-9 connector.

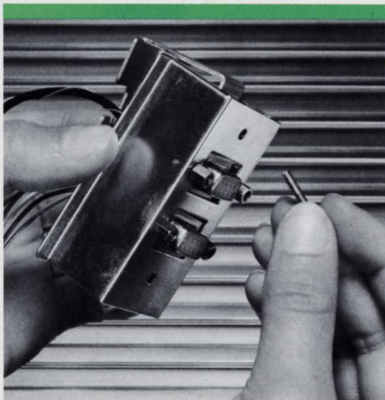


Figure 22. Assemble cable clamp.



Figure 23. Slide assembled clamp into notch in back panel.

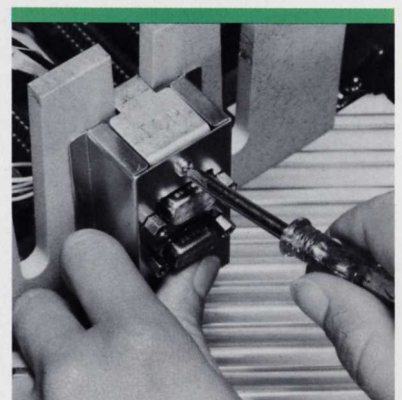


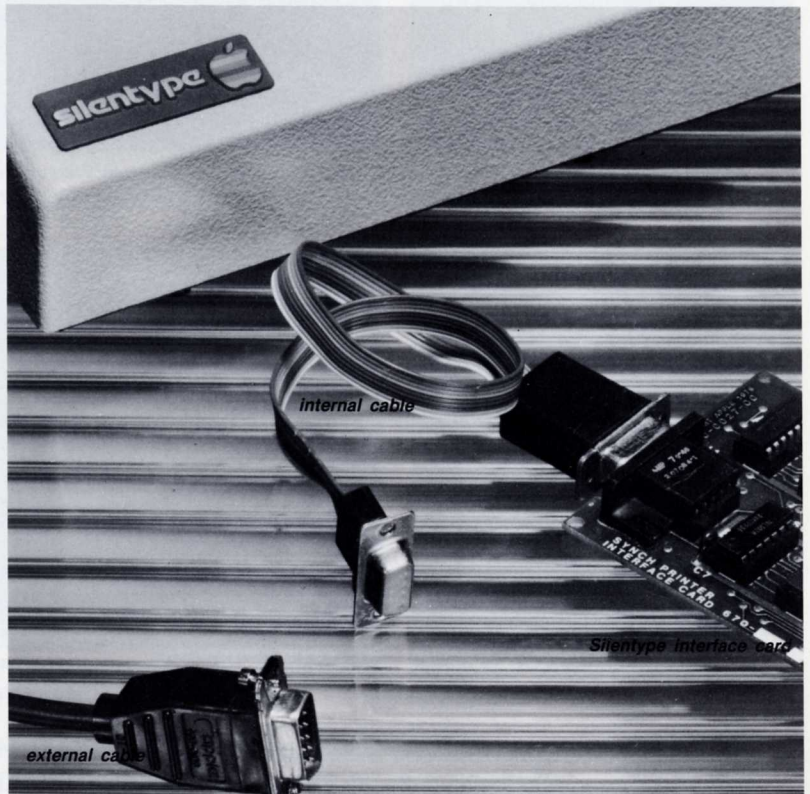
Figure 24. Secure clamp to back panel by tightening screws.

Though the connector and most of the clamp sit outside the back panel, one face of the metal clamp is in contact with the shielding on the inside of the back panel, so the EMI shield remains intact.

Installing Silentype Cable Clamps

The Silentype printer is attached to an interface card inside the computer by means of a DB-9 connector.

Figure 25. Silentype and interface card.



To prevent electromagnetic interference, the metal DB-9 connector on the internal cable must be clamped to the computer's back panel as shown.

The Apple IIe Silentye Cable Clamp

This is the Apple IIe DB-9 clamp. Actually it's just a pair of nuts held in place by a C-shaped metal plate called a nut plate.

Here's how it works:

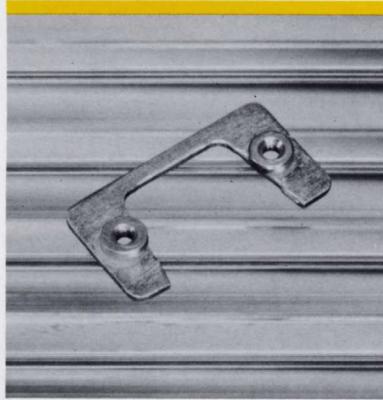


Figure 26. C-shaped nut plate.

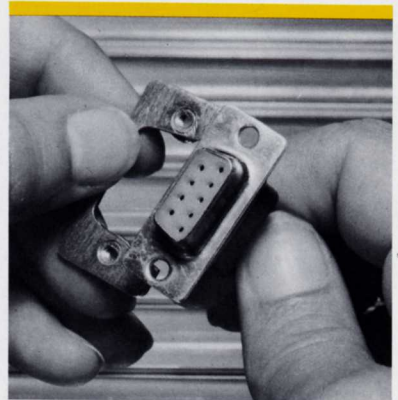


Figure 27. Fit nut plate over connector.

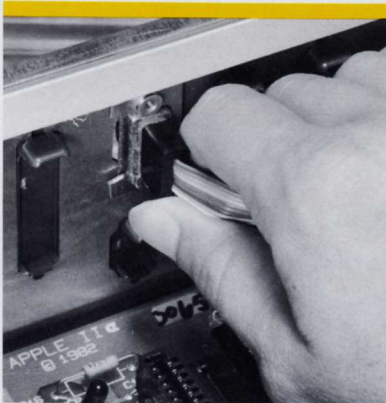


Figure 28. Put connector up to back panel.

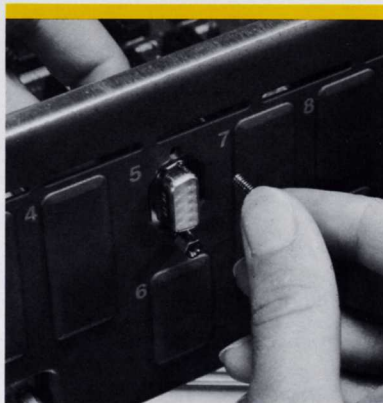


Figure 29. Insert screws.

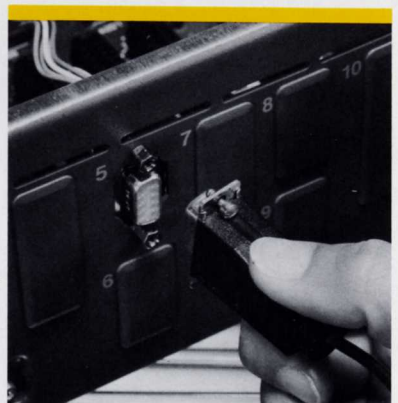


Figure 30. Plug in external cable.

The Apple II Silentype Cable Clamp

This two-piece clamp, which can hold one or two DB-9 connectors, slides into one of the large notches on the back panel of the Apple II. Here's how it works:

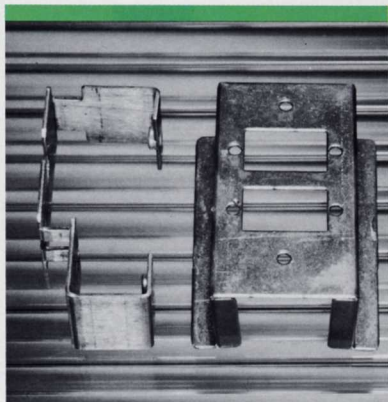


Figure 31. DB-9 cable clamp.

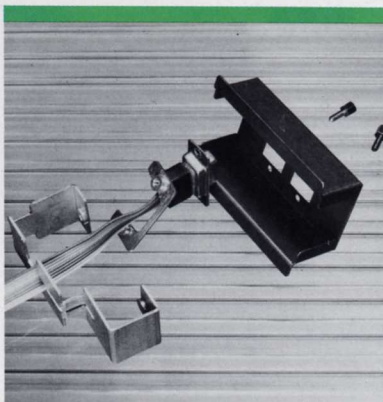


Figure 32. Thread connector and cable through opening in clamp and through nut plate.

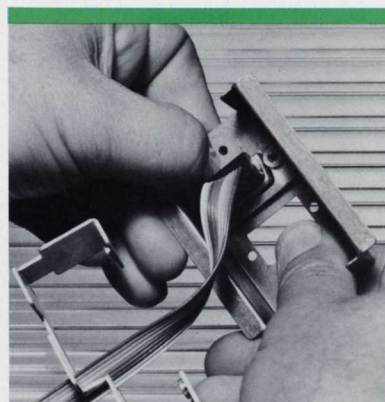


Figure 33. Attach connector to clamp using screws and nut plate.

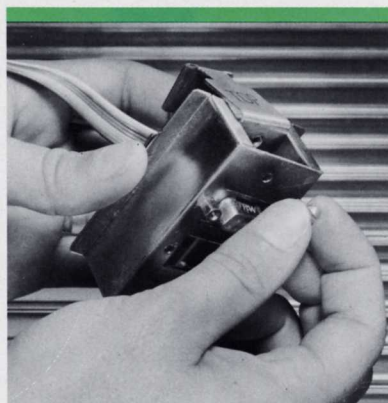


Figure 34. Assemble clamp, but don't tighten screws yet.

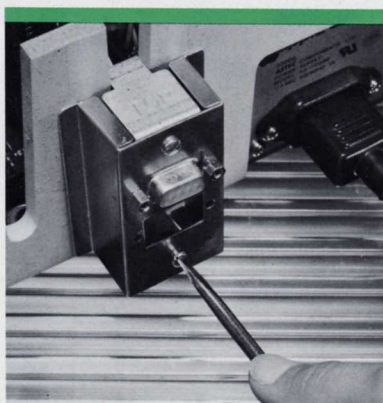


Figure 35. Slide clamp into notch in back panel and tighten screws.

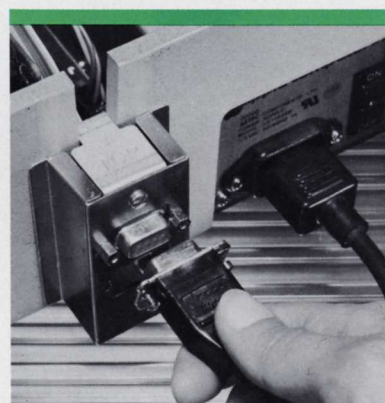


Figure 36. Plug in external cable.

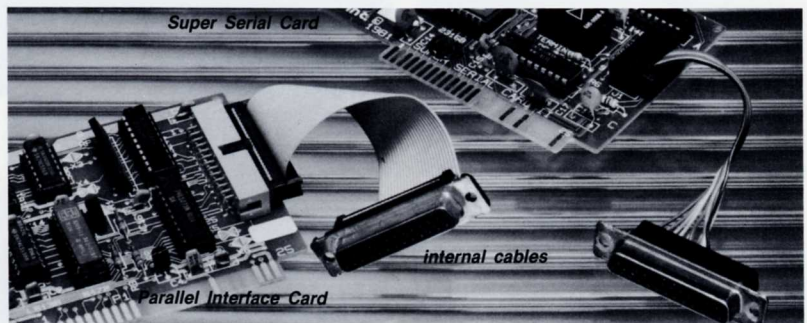
Notice that the Silentype connector occupies only one opening in the DB-9 cable clamp. You can use the other opening to connect another DB-9 type peripheral device cable to the back panel.

Though the connector and most of the clamp sit outside the back panel, one face of the metal clamp is in contact with the shielding on the inside of the back panel, so the EMI shield remains intact.

Installing Super Serial Card and Parallel Interface Card Cable Clamps

Figure 37. Interface cards.

The Super Serial Card and the Parallel Interface Card allow your Apple II to communicate with a wide variety of peripheral devices.



DB-25 connectors on the Super Serial Card and the Parallel Interface Card cables connect the cards to peripheral devices outside the computer. To prevent electromagnetic interference, the metal DB-25 connectors on the interface cards must be clamped to the computer's back panel as shown.

The Apple IIe DB-25 Cable Clamp

This is the Apple IIe DB-25 cable clamp. Actually it's just a pair of nuts held in place by a rectangular metal plate called a nut plate.

Here's how it works:

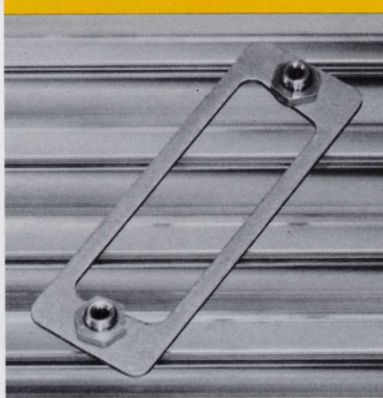


Figure 38. Apple IIe DB-25 cable clamp.

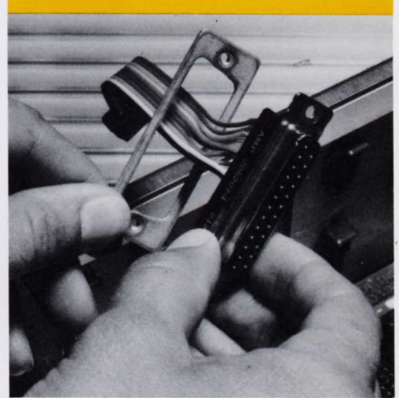


Figure 39. Fit nut plate over connector.

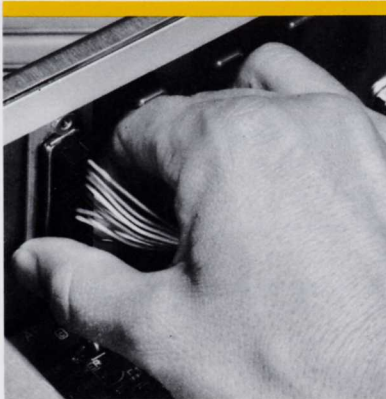


Figure 40. Put connector and nut plate up to back panel.



Figure 41. Insert and tighten screws.

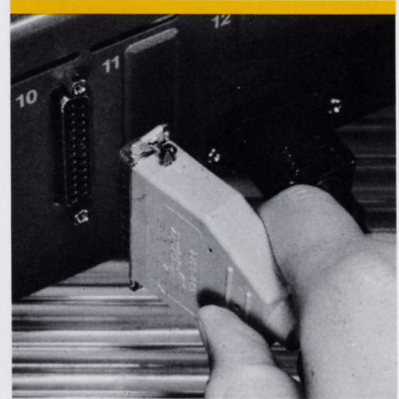


Figure 42. Plug in external cable.

The Apple II DB-25 Cable Clamp

This is the Apple II DB-25 cable clamp.

When assembled, this two-piece box clamp anchors the DB-25 connector to the back panel of the Apple II.

Here's how it works:

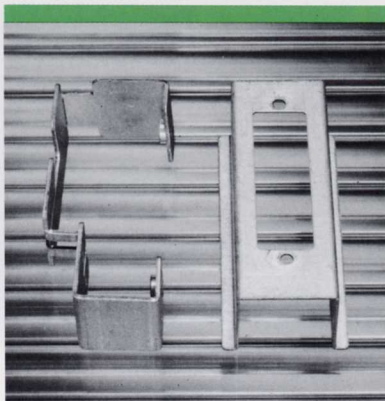


Figure 43. Apple II DB-25 cable clamp.

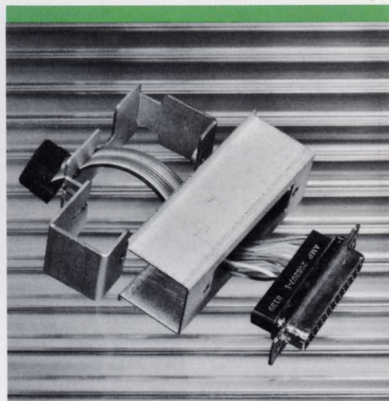


Figure 44. Thread connector and cable through openings in clamp.

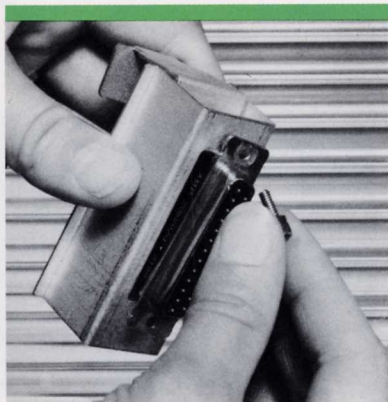


Figure 45. Assemble clamp, but don't tighten screws yet.

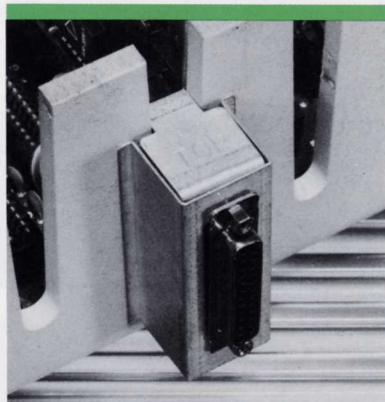


Figure 46. Slide clamp into notch in back panel.

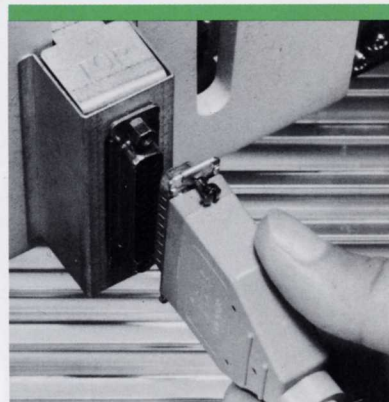


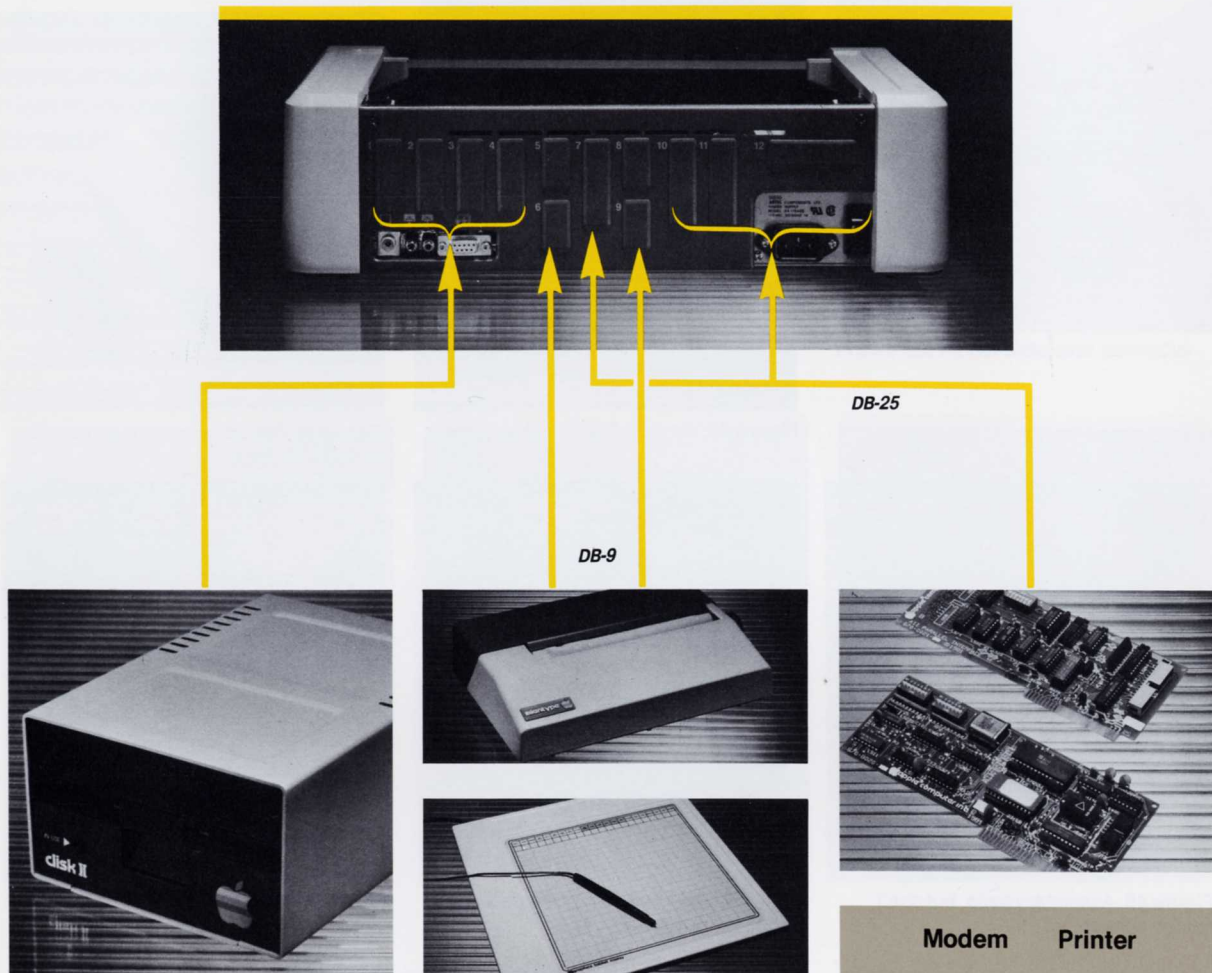
Figure 47. Plug in external cable.

Though the connector and most of the clamp sit outside the back panel, one face of the metal clamp is in contact with the shielding on the inside of the back panel, so the EMI shield remains intact.

Appendix A: The Apple IIe Back Panel

The openings in the Apple IIe back panel correspond in size and shape to the D-style connectors on Apple peripheral device cables. Table 2 shows you which peripheral device goes with which opening in the back panel.

Table 2. Apple IIe back panel.

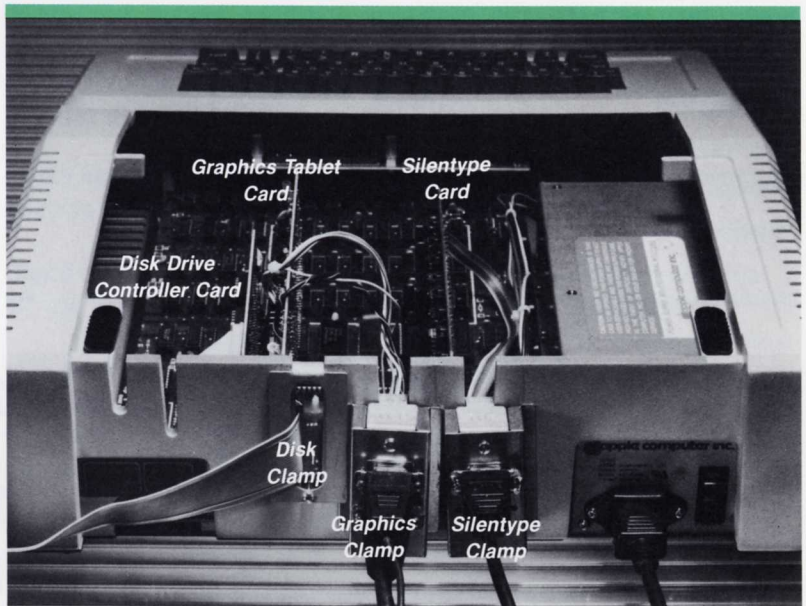


Appendix B: The Apple II Back Panel

The Apple II back panel has notches for peripheral device clamps and cables. It doesn't matter which notch you use for a given peripheral device cable, but it's a good idea to use the notch closest to the peripheral device interface card inside the computer (assuming that notch is vacant).

For example, if your disk drive controller card is in slot 6, you should put your disk drive cable clamp in the first large notch on the left (as you face the back panel). If your Silentype card is in slot 1, put your Silentype cable clamp in the first notch on the right. If your Graphics Tablet card is in slot 5, put your Graphics Tablet cable clamp in the only remaining large notch—the middle one. (The small notches on the left are for hand controls and other devices that use thin, round cables.)

Table 3. Apple II back panel.



Appendix C: Clamps Packaged With Peripheral Devices

Table 4 matches peripheral devices to the clamp or clamps they come with. Some packages include both the Apple IIe and the Apple II cable clamps. Others contain only the Apple II clamp. Notice that there are adapter kits for those who want to use an Apple II peripheral device with an Apple IIe computer.

<i>Product</i>	<i>Number</i>	<i>Clamp</i>	<i>Notes</i>
Disk II Disk Drive (with controller card)	A2M0044	Apple II	
Disk II Disk Drive (without controller card)	A2M0003	Apple II	
Disk II Disk Drive (with controller card)	A2M0044E	Apple II & IIe	
Disk II Adapter Kit	A2M2006	Apple IIe	For an Apple IIe and an old disk drive.
Graphics Tablet	A2M0029	Apple II	
Graphics Tablet	A2M2007	Apple II & IIe	
Silentype	A2M0036	Apple II	
Silentype	A2M2045	Apple II & IIe	
Silentype Adapter Kit	A2M2009	Apple IIe	For an Apple IIe and an old Silentype.
Super Serial Card	A2B0044	Apple II	
Super Serial Card	A2B0044	Apple II & IIe	Sticker on box indicates that there's an Apple IIe cable clamp inside.
Parallel Interface Card	A2B0021	Apple II	
Parallel Interface Card	A2B0021	Apple II & IIe	Sticker on box indicates that there's an Apple IIe cable clamp inside.
DB-25 Adapter Kit	A2M2004	Apple IIe	For an Apple IIe and an old Super Serial card or old Parallel Interface card.

Table 4. Peripheral device clamps.

Glossary

back panel The rear face of the computer. The Apple IIe has rectangular openings for peripheral connectors, while the Apple II has large notches.

DB-9 connector A 9-pin connector in the shape of a D. The Silentype and the Graphics Tablet both use 9-pin connectors.

DB-9 box clamp A clamp designed to hold two DB-9 connectors to the back panel of the Apple II.

DB-9 nut plate A clamp designed to hold one DB-9 connector to opening 5, 6, 8, or 9 of the Apple IIe back panel.

DB-25 A 25-pin connector in the shape of a D. The Super Serial Card and the Parallel Interface Card use DB-25 connectors.

DB-25 box clamp A clamp designed to hold a DB-25 connector to the back panel of the Apple II.

DB-25 nut plate A metal plate designed to hold one DB-25 connector to opening 7, 10, 11, or 12 on the back panel of the Apple IIe.

Disk II disk drive A model of disk drive made by Apple Computer, Inc. for use with the Apple II computer. It uses 5 1/4" floppy disks.

disk drive cable The cable that connects the disk drive to the disk drive controller card. The metal flap protruding from the cable is a clamp attached to a metal shield on the disk drive cable. When the flap is in contact with the inside of the Apple II back panel (or in contact with a metal clamp that is in contact with the back panel), the EMI shield that protects the computer extends to include the disk drive cable.

disk drive clamp (Apple IIe) A clamp designed to hold one disk drive cable to opening 1, 2, 3, or 4 on the Apple IIe back panel.

disk drive clamp (Apple II) A clamp designed to hold up to four disk drive cables to the back panel of the Apple II.

disk drive controller card A printed circuit board that connects the disk drive to the computer and controls its operation.

expansion slots Connectors inside the Apple II for peripheral cards. (Also called peripheral slots.)

graphics tablet An electronic medium for creating computer pictures.

interface card A peripheral card that implements a particular interface by which the computer can communicate with a peripheral device like a printer or a modem.

parallel interface An interface in which many bits of information (usually 8) are transmitted simultaneously over different wires or channels.

parallel interface card A card that allows an Apple II to exchange data with printers and other devices in parallel format.

peripheral card A removable printed circuit board that plugs into an expansion slot inside the computer and expands or modifies the computer's capabilities by connecting a peripheral device or performing a peripheral function.

peripheral device A device used with a computer, like a monitor, a disk drive, a printer, or a modem.

serial interface An interface in which information is transmitted sequentially, one bit at a time, over a single wire or channel.

Silentype A thermal printer made by Apple Computer, Inc. Thermal printers print by applying small points of heat to specially treated, heat sensitive paper.

Super Serial card A card that allows an Apple to exchange data with other computers, printers or other devices in serial format.



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