NOTE: It is important to use only the included system software with the hardware in this box. Older versions of HyperDrive software may not function properly on this unit.

It is **extremely important** that the clip be centered over the 68000 before releasing the clip handle.

If the clip is offset by one or more pins on the 68000, **serious damage** could result to the leads on the 68000 processor.

If this damage occurs, the HyperDrive will have video problems.

Notice:

Two potential installation problems to be aware of:

Problem #1

There are 6 CMOS Hal integrated circuits on the Mac logic board which are all **electro-static sensitive.** One of these Hals is connected directly to the 10-pin connector on the Mac logic board. This part is susceptible to static discharge damage. This damage will result in a single bright line across the screen of the Mac, necessitating replacement of the Mac logic board. All handling of the Mac logic board or HyperDrive board pair should occur at a **static-safe work station.**

Problem #2

The Mac power supply/sweep board can be damaged if the anode on the CRT is discharged incorrectly during servicing or HyperDrive installation. Discharge the anode by connecting a ground clip to the shaft of a long screw driver and to the **ground wire** which connects to 1 of the 4 screws which hold the CRT in place. **DO NOT** connect the ground clip to the **sheet metal chassis** of the Mac. Otherwise, the high voltage discharge can pass through some of the components on the power supply/sweep board, damaging the components and resulting in no video output.
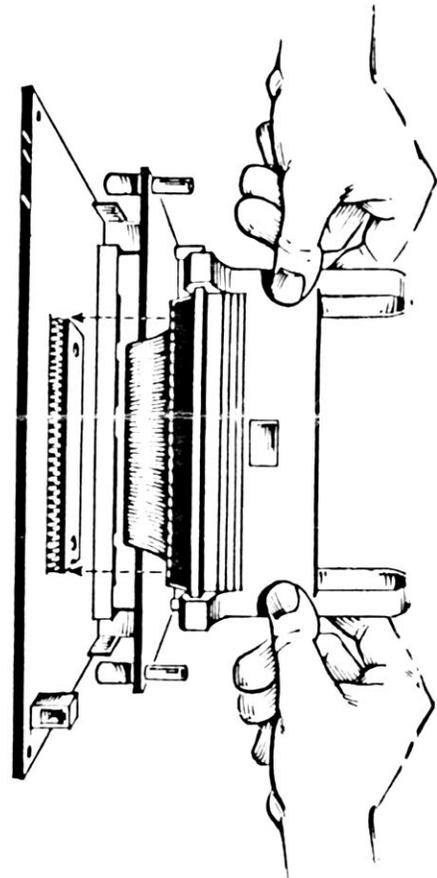
It is extremely important that the procedures outlined in the Mac Technical Procedures and in the HyperDrive Installation Manual be closely followed to avoid damage to the power supply/sweep and logic boards. Please contact General Computer if you have further questions or need information on static-safe work-stations.


ATTENTION

For your convenience, we have enclosed in your manual set, extra nylon screws. The nylon screws are for the clip product only.

DATE:

PART NUMBER   DESCRIPTION

HD10-MP   10M 110V HD WITH Elec & Eltek Power Supply

1.10M Drive Assmbly with UL Sticker_____

2. HDPlus Board Assembly_____

3. Power Supply and Filter Assembly_____

4. Fan Assembly_____

5. Dealer Kit V1_____

6. Customer Kit_____

7. Analog Power Cable_____

8. Sticker Kit-Spec Label,10 MEG,110W_____

9. Stickers on outside of box

a.10M 110V_____
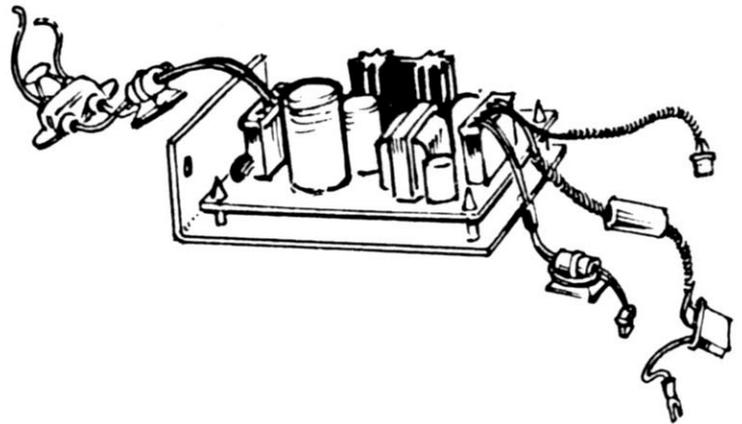
b. 2 GCC Safety Stickers_____

c. 2 Mac Plus Compatible Stickers_____
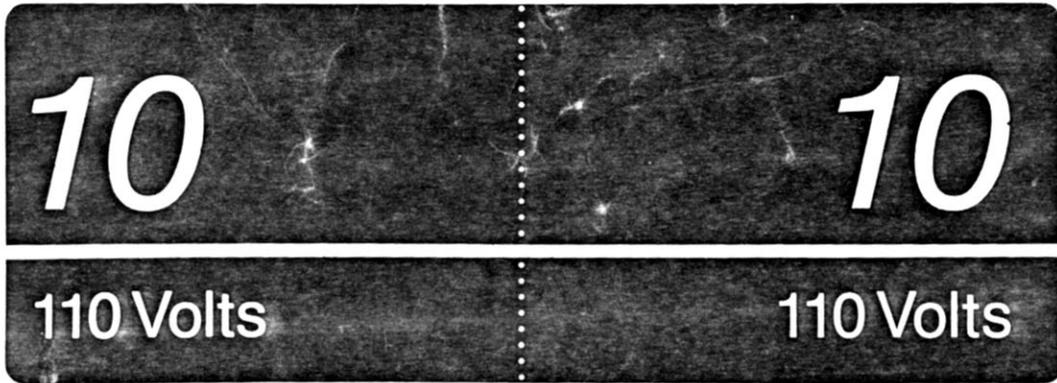
INSTALLING THE HYPERDRIVE POWER SUPPLY

1.
Set the computer upright.

There are two different power supplies found on General Computer HyperDrives:

This power supply has a line filter in the AC power cable,

On this power supply the line filter has been incorporated onto the power supply board and a ground wire has been added to the AC power cable.
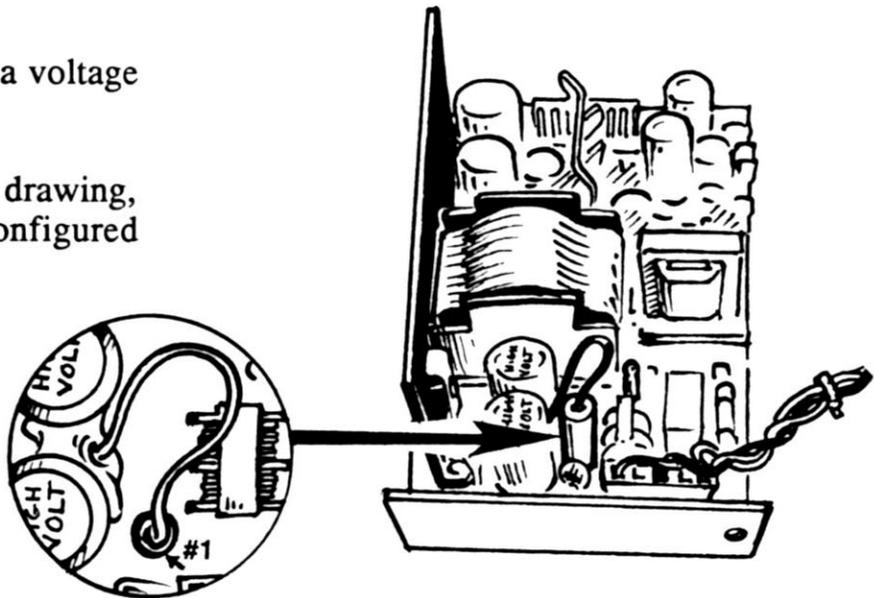
**The two different AC power cables are not interchangeable!**
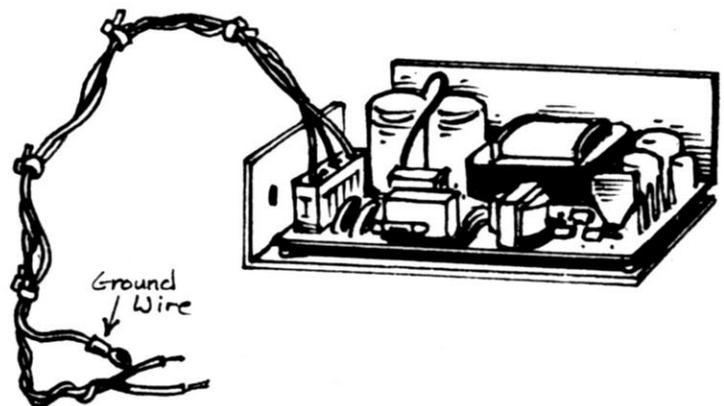
Ground Wire

The Power Supply with the ground wire in the AC power cable.

This power Supply also has a voltage select jumper wire.

If it is connected at #1 in the drawing, then this power supply is configured for 110V power systems.

If it is connected at #2 in the drawing, then this power supply is configured for 220V power systems.
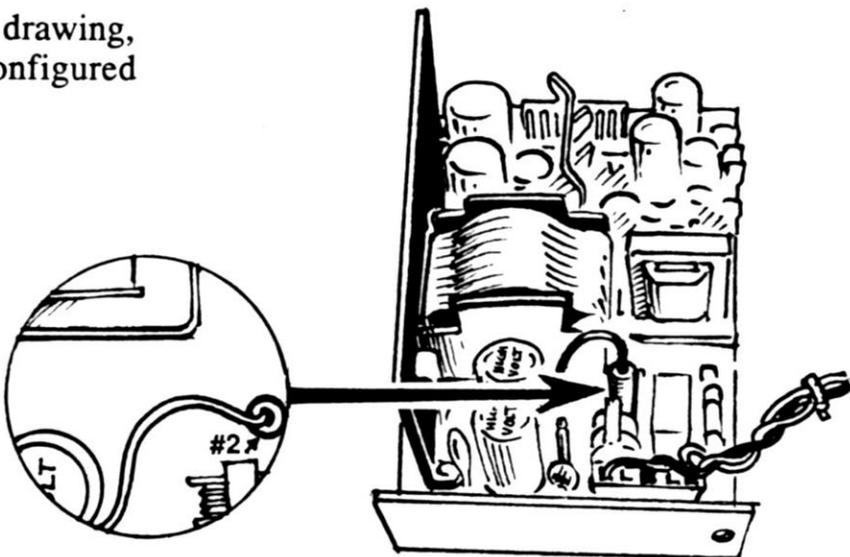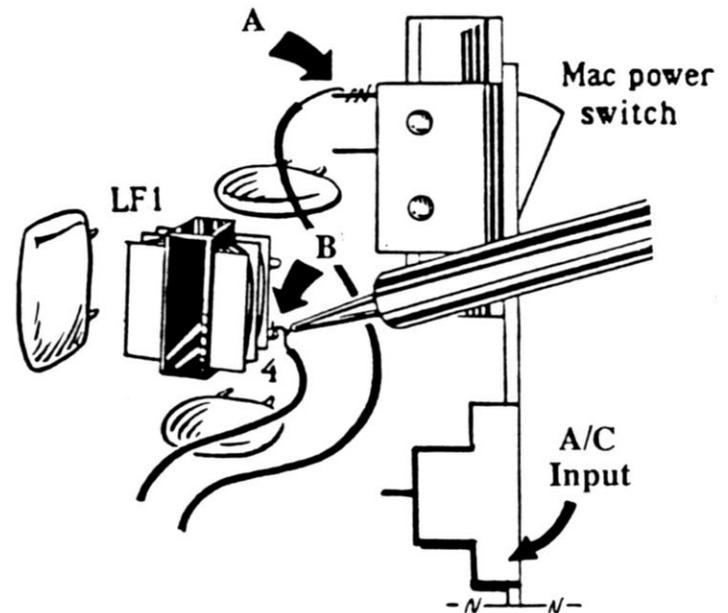
Solder the Power Cable

Wrap the tinned ends of the AC power cable firmly around the connection points as shown; **the black wire should be connected to point A, the top pin of the power switch,** and the other wire connected to point B, pin 4 of LF1 located on the circuit board just below power switch. Carefully squeeze the wire into place with needle nose pliers to make a solid mechanical connection.

While making these connections take care not to damage the <u>delicate wiring</u> on Part LF1.

Only after a solid mechanical connection has been made, heat the connection with a soldering iron and flow solder into the connection. Be sure to heat both the wire and the connection point until the solder flows to avoid a cold solder joint.

Connect the green ground wire to chassis ground on the Macintosh, as shown.
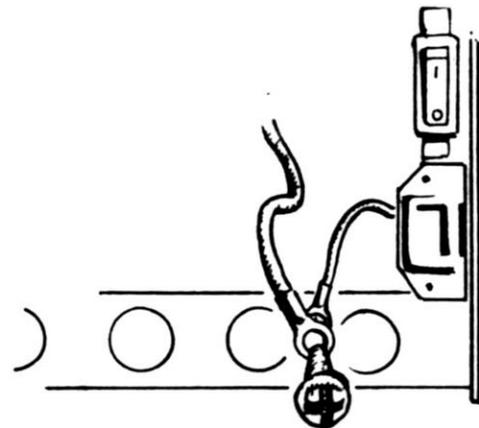
The Power Supply with the line filter in the AC power cable.

Solder Power Cable

Wrap the tinned ends of the power cable firmly around the connection points as shown; point A, the top pin of the power switch and point B, pin 4 of LF1 located on the circuit board just below power switch. Carefully squeeze the wire into place with needle nose pliers to make a solid mechanical connection.

While making these connections take care not to damage the <u>delicate wiring</u> on Part LF1.

Only after a solid mechanical connection has been made, heat the connection with a soldering iron and flow solder into the connection. Be sure to heat both the wire and the connection point until the solder flows to avoid a cold solder joint.

Gently rotate the power supply with the EMI filter, several times to twist the power cable.
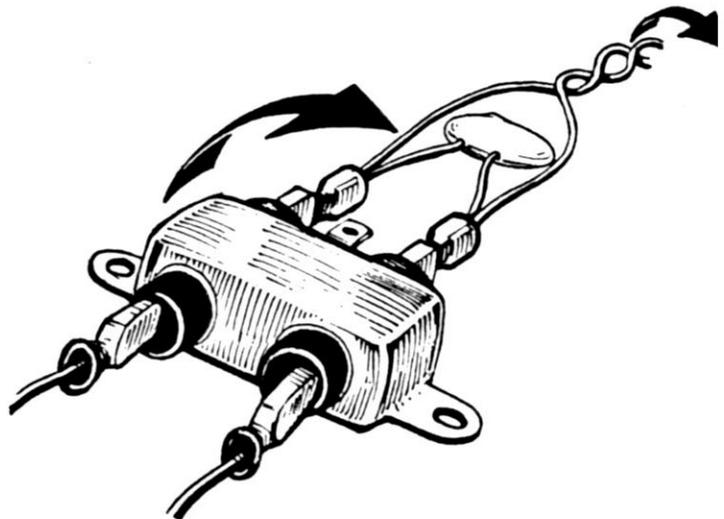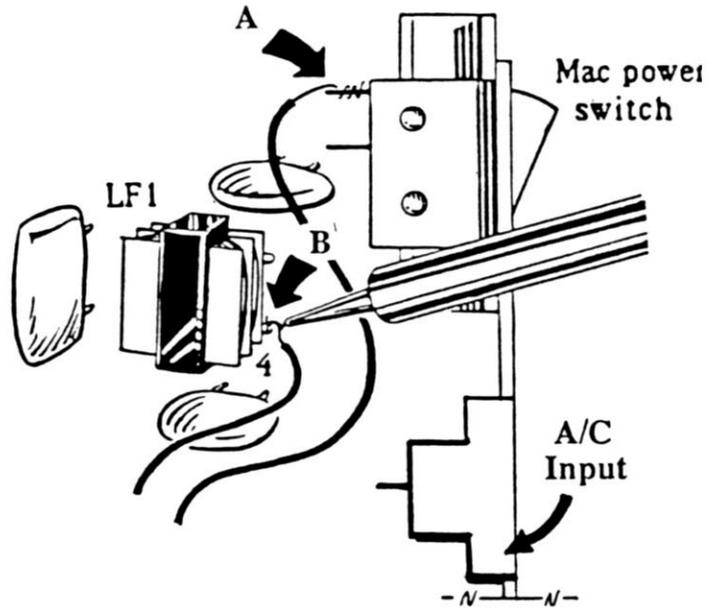
2.
Mount the Power Supply

Lay the Mac on its face again and remove the Torx mounting screw located at (X).

Hint: To prevent dropping the screw into the Mac while installing the power supply, it is suggested that the screw be placed through the hole in the mounting bracket of the power supply and held in place with a screwdriver as you lower the power supply into place.
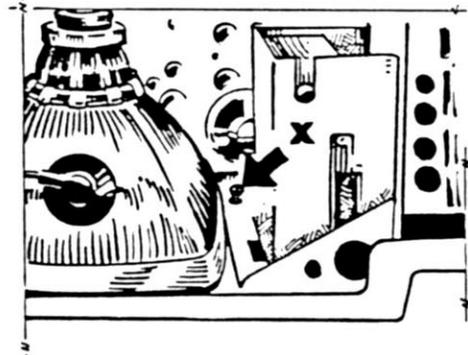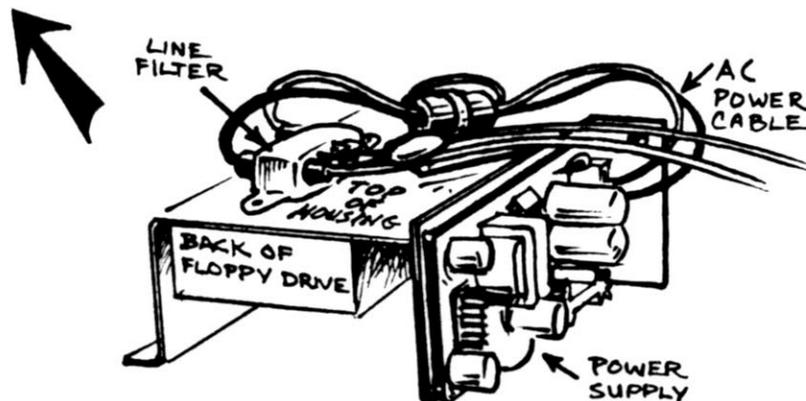
Secure the power supply by tightening the screw which was removed earlier at (X).

The AC power cable with the ground wire must run underneath the HyperDrive power supply and heat sinks on the Macintosh video board.
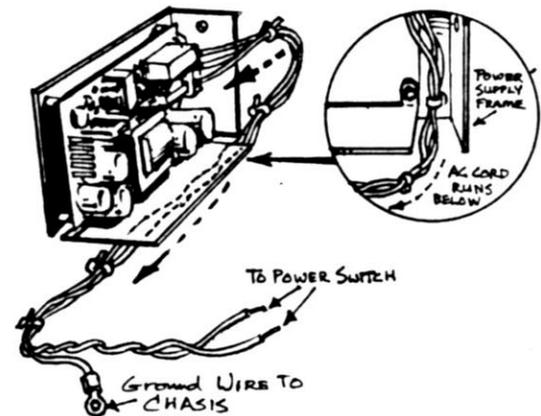
The AC power cable with the line filter should run above the HyperDrive power supply to allow the line filter to rest on the floppy drive housing.

ATTACHING THE CLIP ON A 512K BOARD

For installation of the clip on a MacPlus logic board, see "Macintosh Plus Clip Installation" instructions in this section of the binder.

Inspect the logic board and determine what kind of 68000 processor chip is on the board. There are two types of 68000 's, ceramic (which is pinkish in color) and plastic (which is black). **If the 68000 is ceramic, do not install a HyperDrive on this logic board. HyperDrives are to be installed on plastic 68000's only.**

Check carefully to make sure there is a gap between the 68000 chip and the logic board. If there is no gap, then this board cannot be upgraded with the HyperDrive Clip upgrade kit. If possible, swap this board with another to complete the upgrade.

Also, be sure to check that the leads of the 68000 are clean, straight, and undamaged. Only then can you be sure of a firm connection with the clip.

Next, inspect the Clip attached to the HyperDrive logic board. Make sure all the connector fingers are straight, clean and even. If they are not, do not use this clip to install a HyperDrive.
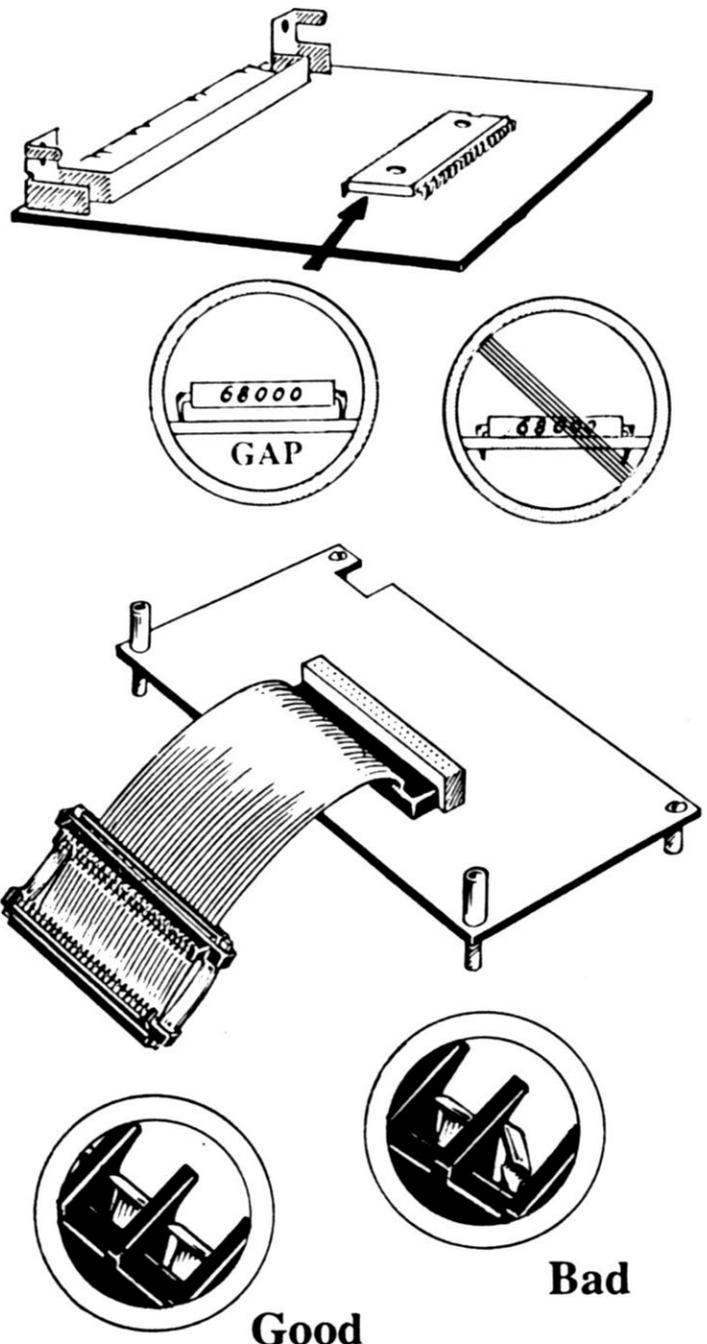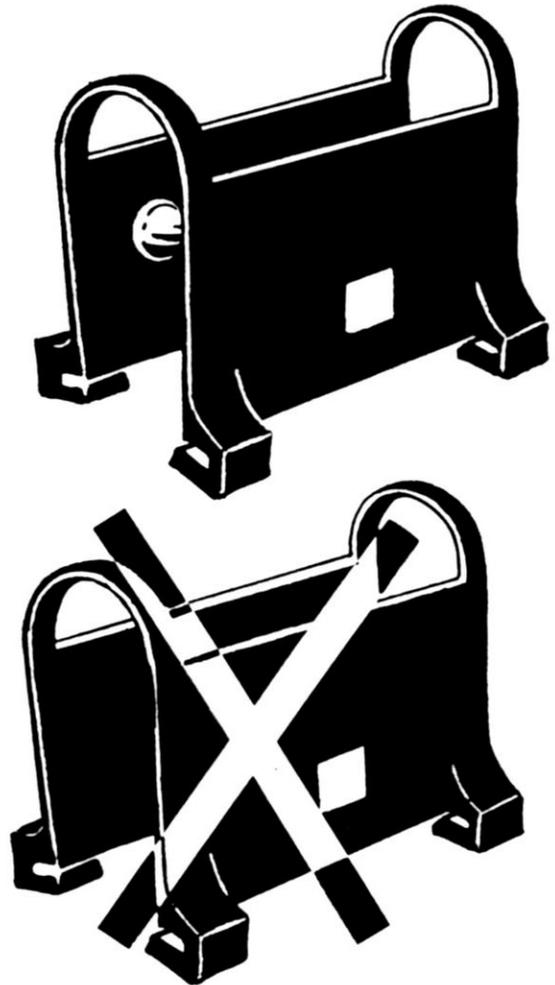
About the Clip Installation Tool

Your clip installation tool comes in two versions.

Use the Clip Installation Tool with Bumpers for installation onto black plastic 68000 chips. These bumpers protect the clip from being over stressed or sprung. This is important since the dimensions of the plastic 68000 are slightly smaller than that of the ceramic 68000.

Do not use the Clip Installation Tool without Bumpers. It was used for installation onto pink ceramic 68000 chips. **Installation of HyperDrives onto ceramic 68000 chips is no longer supported by General Computer.**

GENERAL
COMPUTER

Reading the previous page and reviewing the video tape will enhance your understanding of the following procedure.

Attach the clip installation tool to the clip by securing the four hooks on the tool tightly to the four corners of the clip, one corner at a time.
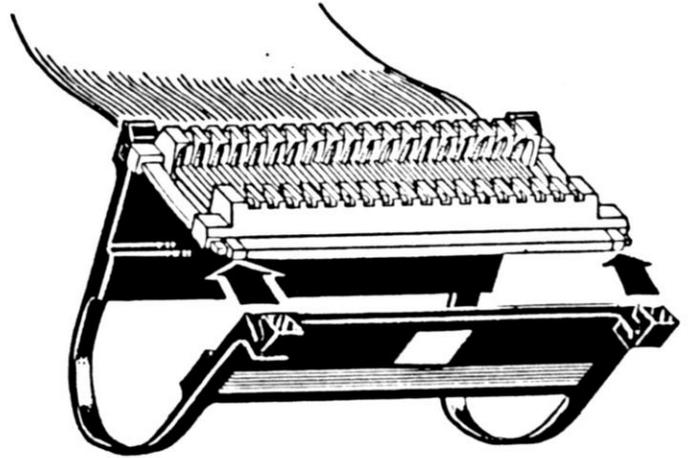
Lay the HyperDrive logic board upside down on the Macintosh logic board as shown.
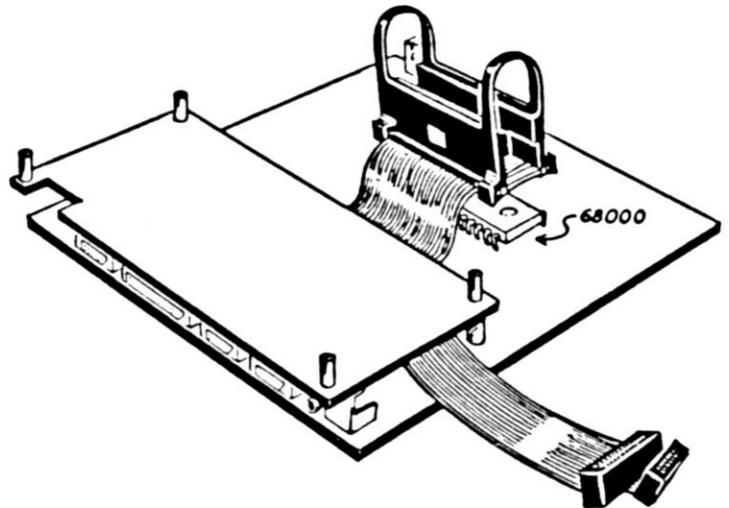
Gently squeeze the installation tool while carefully centering left and right over the 68000. **It is important that you do not squeeze open the clip wider than necessary or the clip will not make a firm contact.**
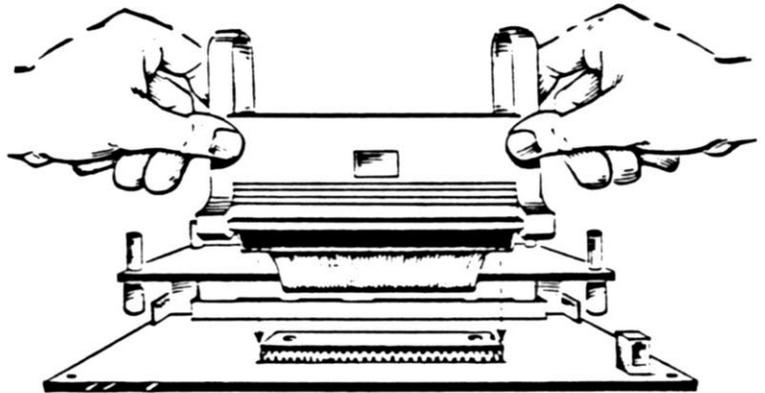
Slip one side of the clip tightly against and under one side of the 68000. Now rock the other side of the clip into position against and under the other side of the 68000 as shown.
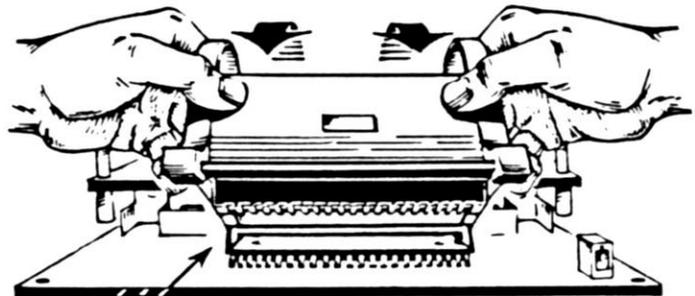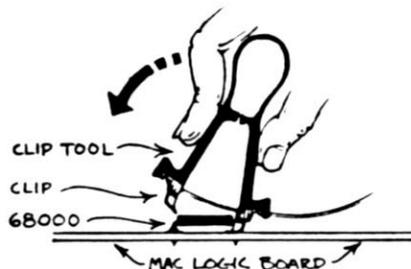
Take care not to handle the clip and the 68000 too roughly. **Leads to the 68000 can be bent or otherwise damaged and would no longer make a firm, clean connection with the clip.**
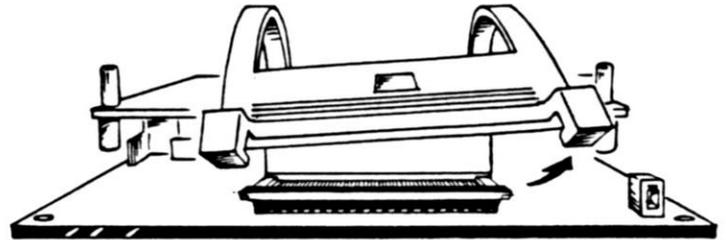
USE ROCKING MOTION FROM BACK TO FRONT

DON'T FORCE CLIP STRAIGHT DOWN OVER 68000 CHIP, IT WILL BREAK TEETH !
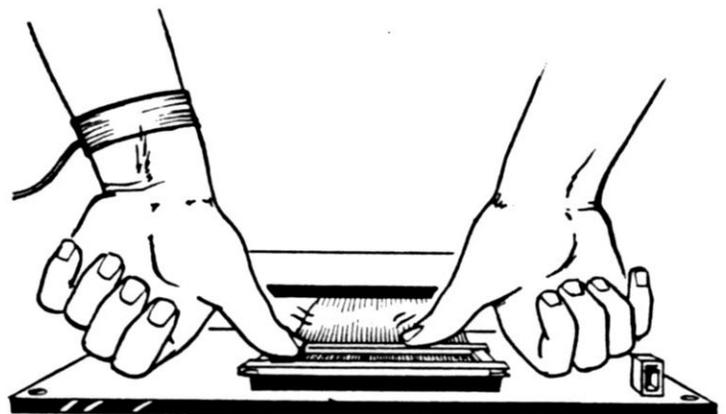
CLIP TOOL
CLIP
68000
MAC LOGIC BOARD

Release pressure from the installation
tool and remove the tool from the clip,
one corner at a time.

Test by prying under the metal ends of
the clip with your fingers as shown. If
it comes off, repeat the process of
clipping to the 68000.
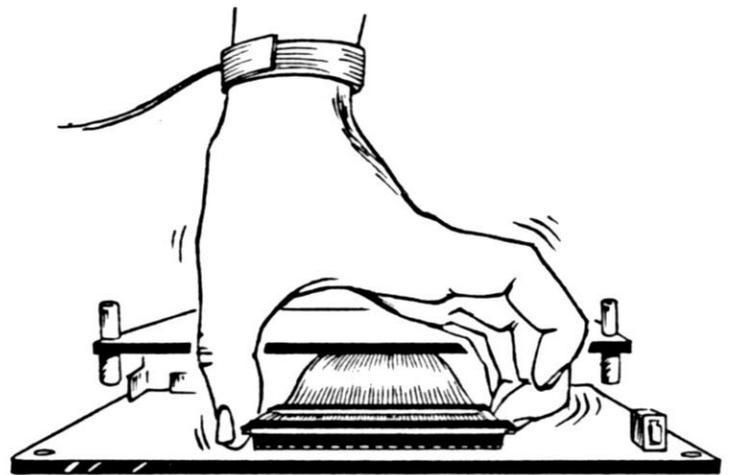
If it remains in place, press down on
the clip with your fingertips to assure
a good firm connection.

For a final test look at the logic board from a three quarter view and note the position of the clip on the 68000. It should be level in relation to the board and cover the 68000 completely and evenly. No clip connector fingers should be visible from the ends.
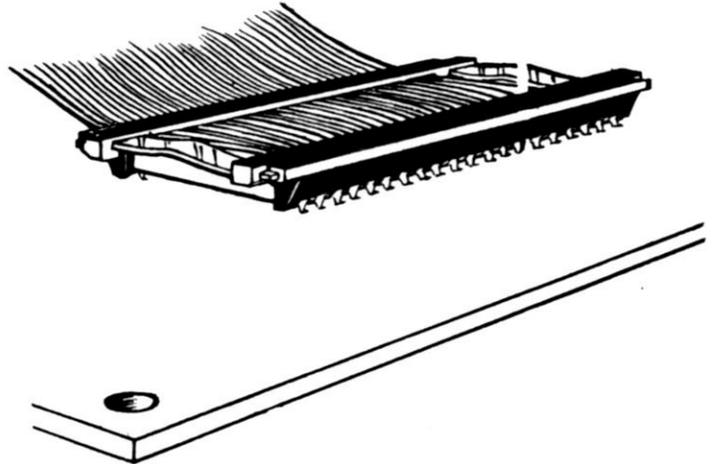
Flip the HyperDrive logic board over aligning with the plastic standoffs over the holes in the Macintosh logic board. It should fit around the keyboard connector.

With the nylon screws provided, attach the two logic boards. It may be necessary to loosen the top two screws on the HyperDrive logic board. <u>Be careful not to over tighten the nylon screws</u>, as they will strip easily.

Warning:
Do not pick up the logic board assembly by the HyperDrive board alone, as it may break the stand-offs.
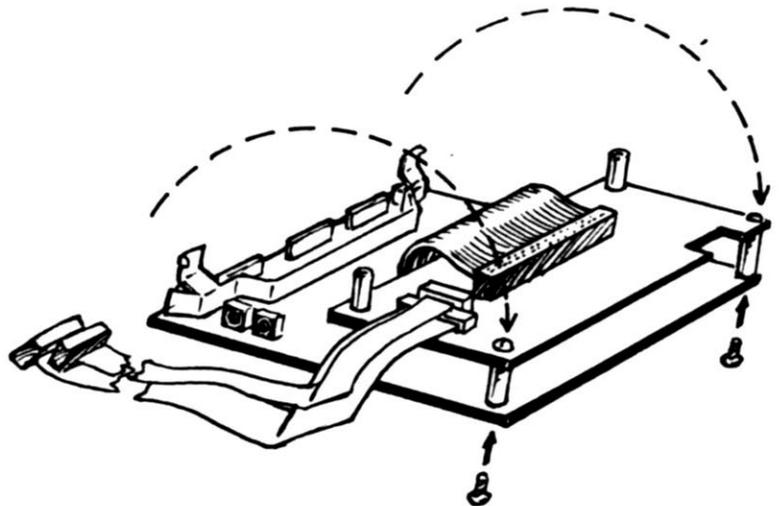
MACINTOSH PLUS CLIP INSTALLATION

Attaching the clip to a Macintosh Plus is a little different than to a Macintosh. In this section we will cover the differences only. **Be sure to read the preceding section entitled, "ATTACHING THE CLIP" before reviewing this section.**

Because of the positioning of the RAM on the Macintosh Plus logic board it is necessary that the row of RAM nearest the 68000 be removed, as shown, before attaching the clip. **Be careful not to damage the delicate plastic fingers that hold the RAM module during removal.**
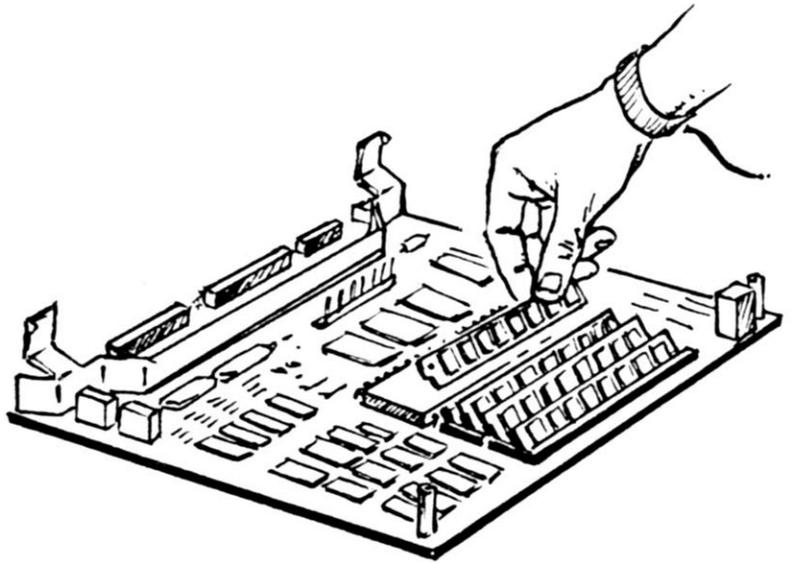
Attach the clip and check the connection carefully as described in the previous section.

Replace the RAM, making sure that it snaps firmly into place under the plastic fingers.
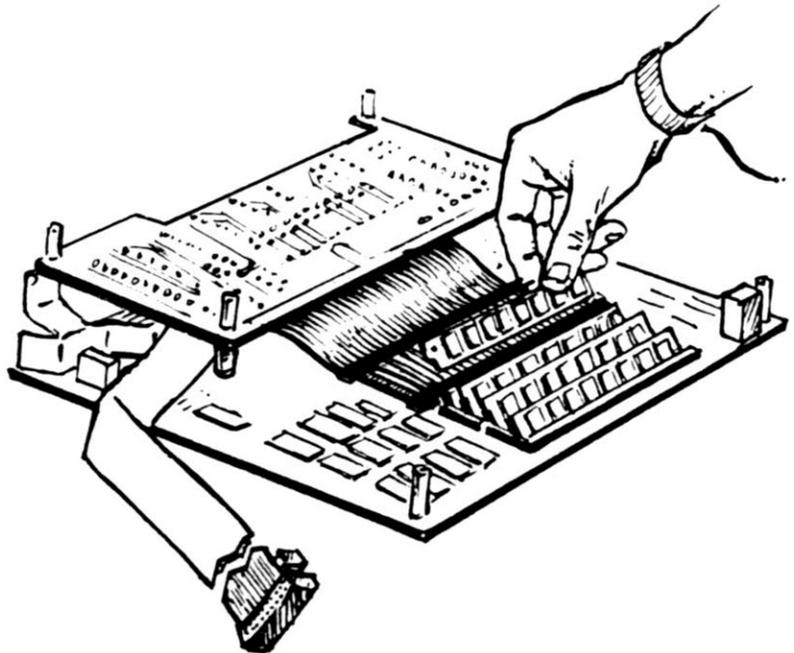
Flip the HyperDrive logic board over aligning with the plastic standoffs over the holes in the Macintosh Plus logic board. It should fit around the keyboard connector. You may notice that the cable alingment is at a slight angle, this is correct. With the nylon screws provided, attach the two logic boards. It may be necessary to loosen the top two screws on the HyperDrive logic board. <u>Be careful not to over tighten the nylon screws</u>, as they will strip easily.
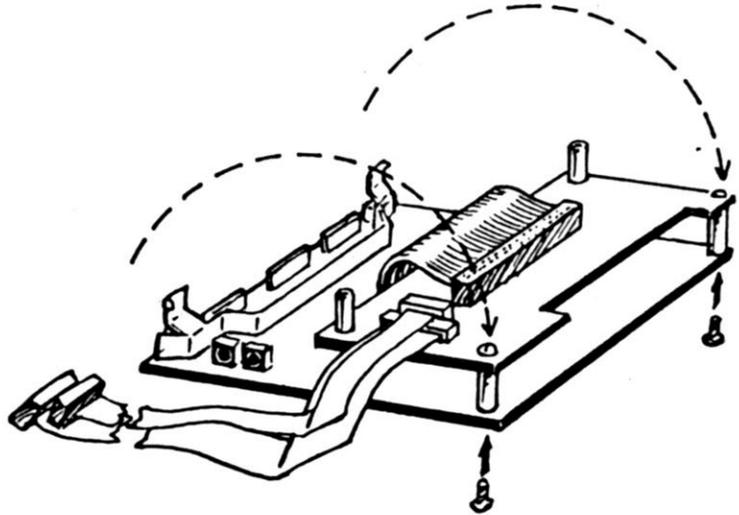
Note:
The plastic standoffs should be $11/16''$, tall enough that the HyperDrive logic board completely clears the RAM on the Macintosh Plus logic board, as shown.
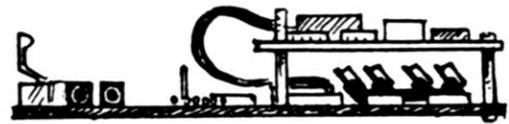
**GOOD**

BAD

Caution:
Be sure that this is a Macintosh Plus compatible HyperDrive logic board. It can be recognized by the length of the cutout on the board. If the cutout is, as shown, only large enough to accomodate the keyboard connector, then this HyperDrive logic board can only be used on a Macintosh 512K.
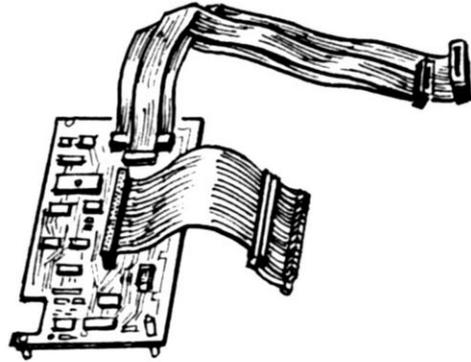
On a Macintosh Plus compatible HyperDrive logic board the cutout extends, as shown, for most of the length of the board.
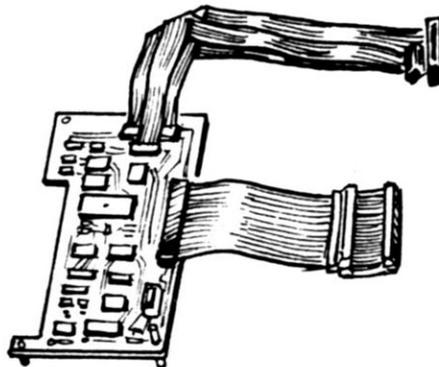
Warning:
Do not pick up the logic board assembly by the HyperDrive board alone, as it may break the stand-offs.

MOUNTING THE LOGIC BOARD

Begin by making sure the floppy drive ribbon cable's free end is positioned through the chassis cutout as shown. Also make sure that the floppy drive cable is connected firmly to the floppy drive.

The wiring harness from the HyperDrive power supply ends in three connectors; one for the fan, one for the hard disk drive and one for the logic board assembly.

Position them as follows:

The logic board connector has three wires and is identified as number **1** in the drawing. Position this through the opening under the floppy drive. The ferrite of this connector should be placed on top of the floppy drive ribbon cable.

The hard disk connector has three wires and is placed to keep it from being trapped by the hard disk. It is identified as number **2** in the drawing.

The fan cable, number **3**, should just rest on the floppy drive for now.
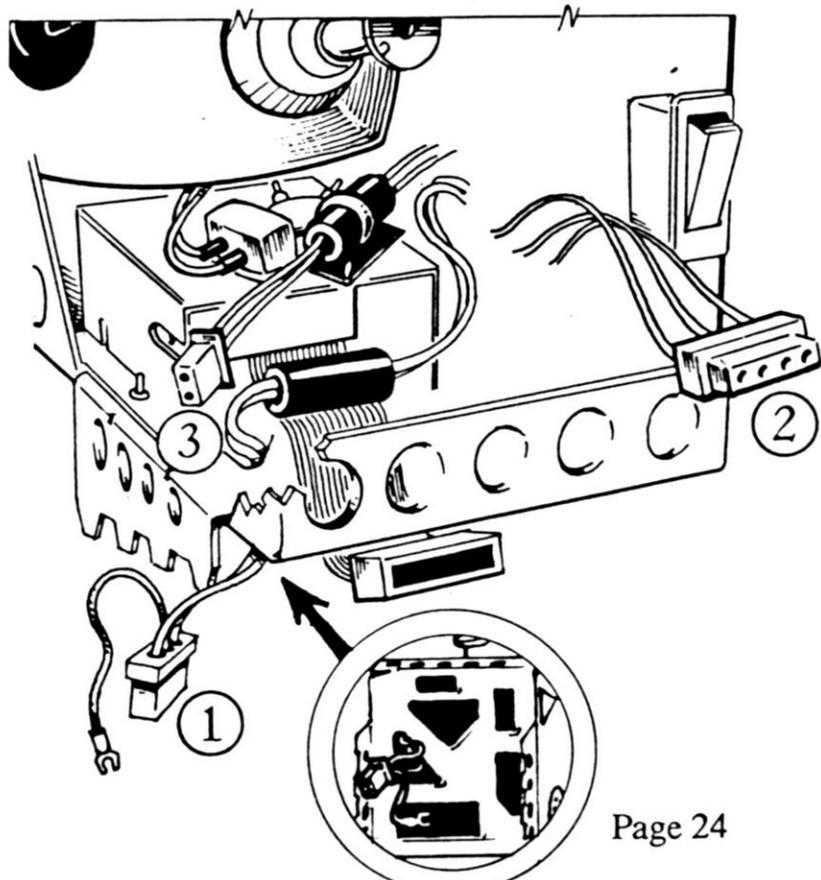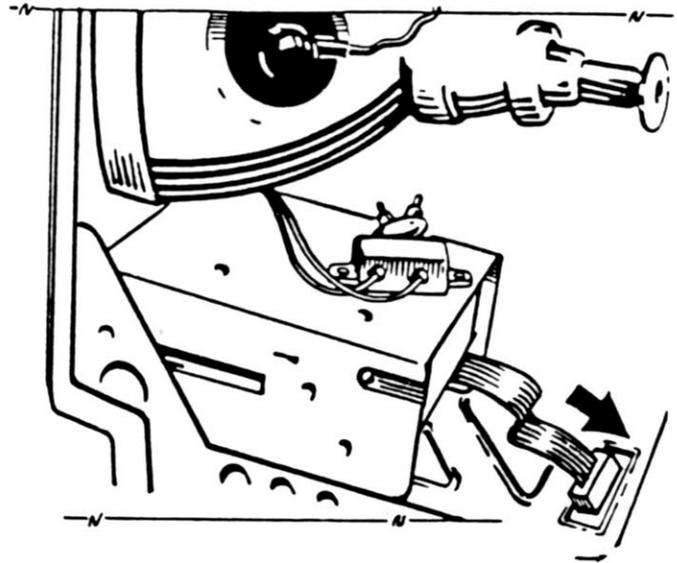
Set the Macintosh on its face and connect the logic assembly power connector ground wire as shown in the illustration.
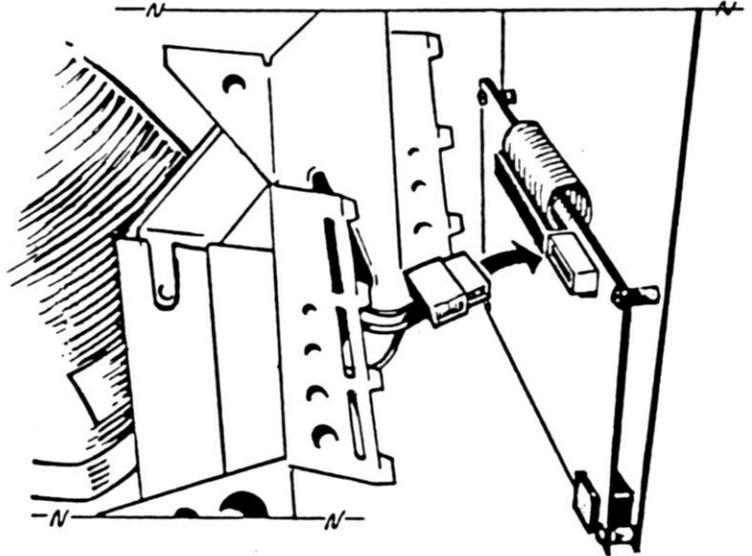
This spade end ground wire must be firmly connected prior to remounting the Macintosh logic board.
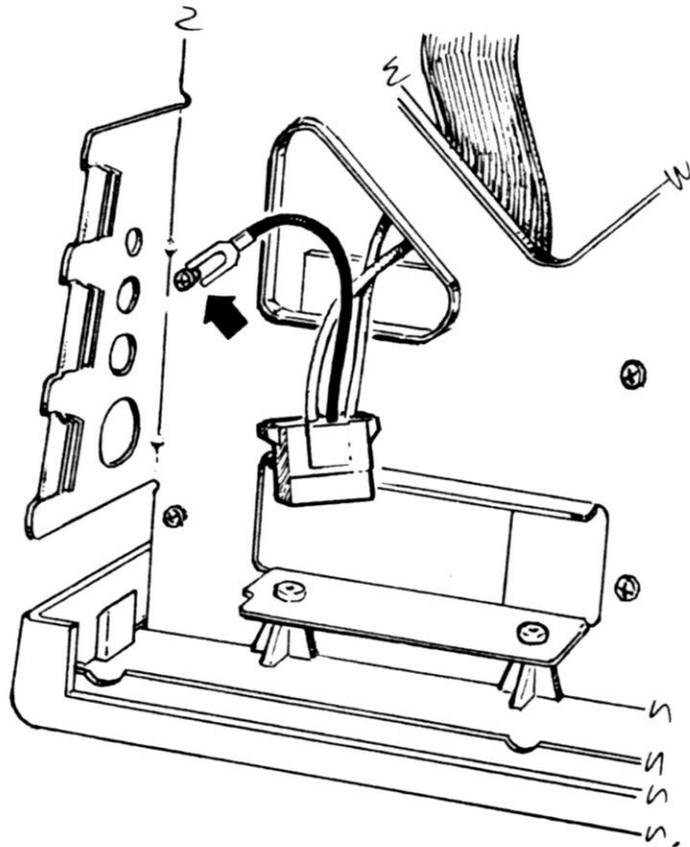
Begin mounting the logic board assembly by feeding the ribbon cables from the logic board through the chassis cut-out.
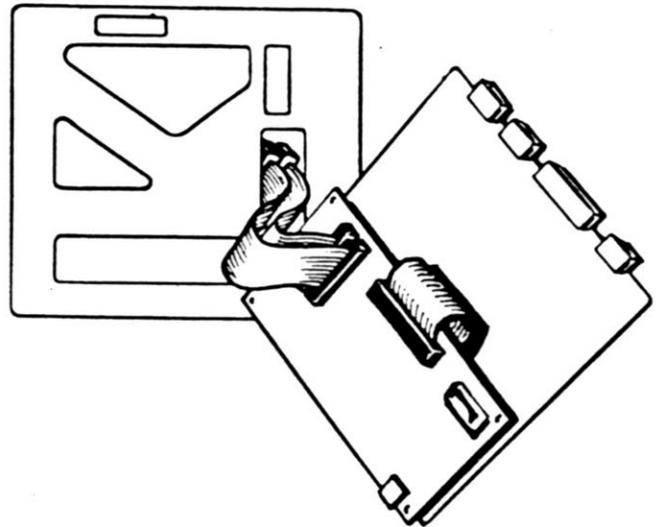
Now, connect the logic board assembly connector to the HyperDrive logic board.

The board assembly will not slide into position like a normal Mac board.

Using a gentle prying motion at the points indicated in the illustration, carefully ease the board assembly into the brackets. Then slide the logic board assembly into its final position by pushing down about 1/4", while applying slight pressure with your thumb at point A on the board.
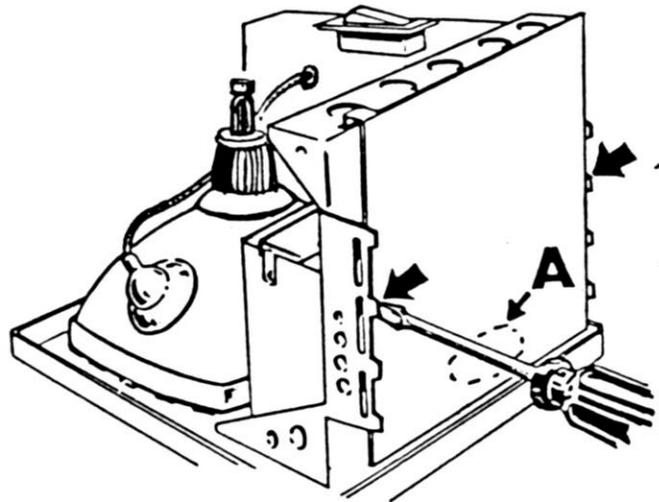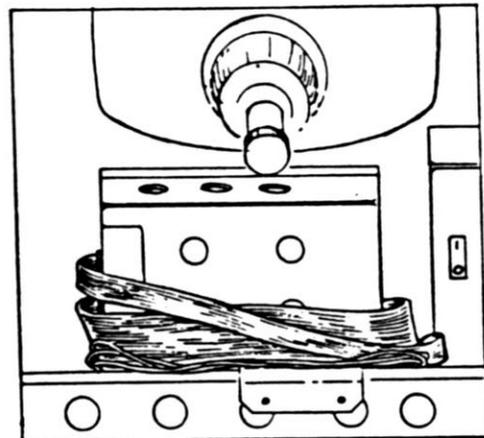
Set the Macintosh upright.

Reattach the floppy drive cable to the Macintosh logic board.

Replace the Macintosh logic board cable with the one provided in your HyperDrive Kit.

Position the HyperDrive hard disk ribbon cables as shown.

MOUNTING THE HARD DISK DRIVE

Using two $3/16$" screws, fix the flat mounting plate to the inside of the Macintosh chassis as shown. It should be flush with the top lip on the inside of the chassis. Do not completely tighten these screws yet.

Next, determine whether the Macintosh has a 400K or an 800K floppy drive. (The housings are different sizes.)

If the Macintosh has an 800K floppy drive, fix the narrow side of the reversible right angle mounting plate to the outside of the hard drive bracket using two $1/4$" screws, as shown. This is important because the 800K floppy housing is shorter, and longer side of the mounting plate will reach under it, as shown.

If the Macintosh has an 400K floppy drive, fix the wide side of the reversible right angle mounting plate to the outside of the hard drive bracket using two $1/4$" screws, as shown. This is necessary because the 400K floppy housing is longer, and will not allow the mounting plate to pass when inserting the hard drive into the Macintosh.
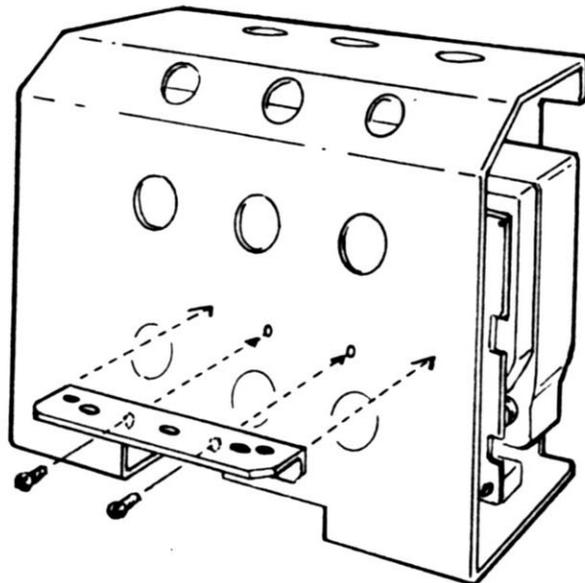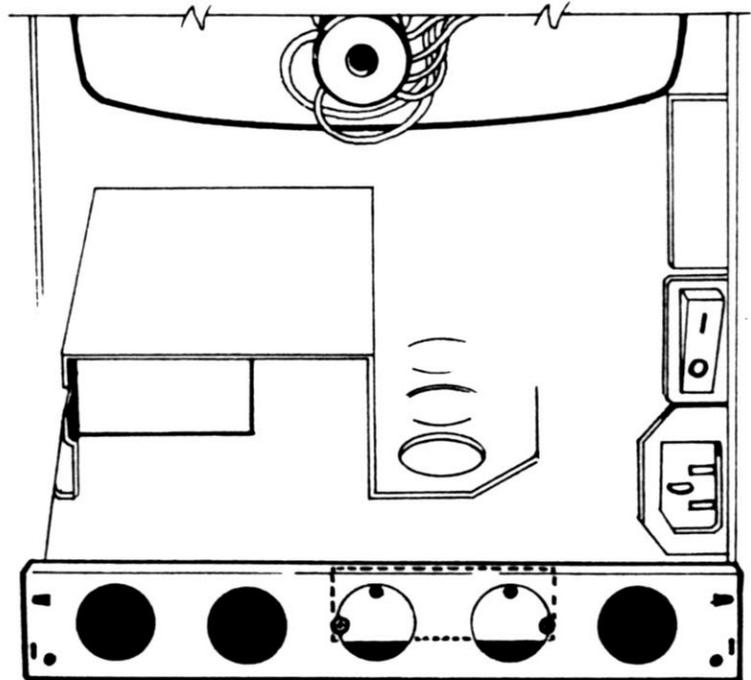
Place the hard disk in the Macintosh as shown. Be careful not to pinch the logic assembly power connector between the hard disk bracket and the Macintosh chassis.
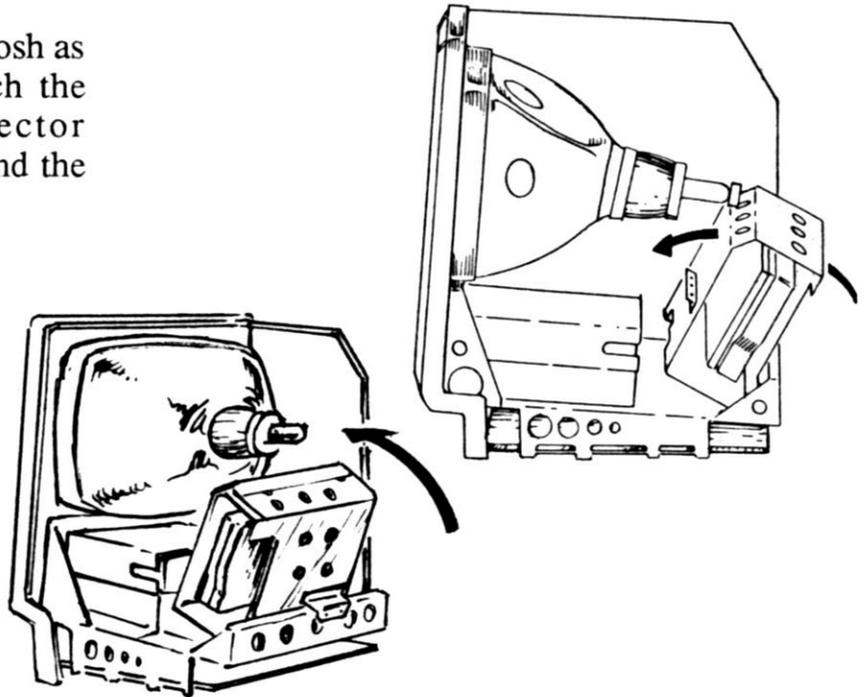
Be sure that the right angle mounting plate goes under the floppy disk housing. This should bring the rear mounting plate on the hard disk housing flush with the outside of the Macintosh chassis. The three screw holes in the right angle mounting plate should not be hidden by the floppy disk housing.
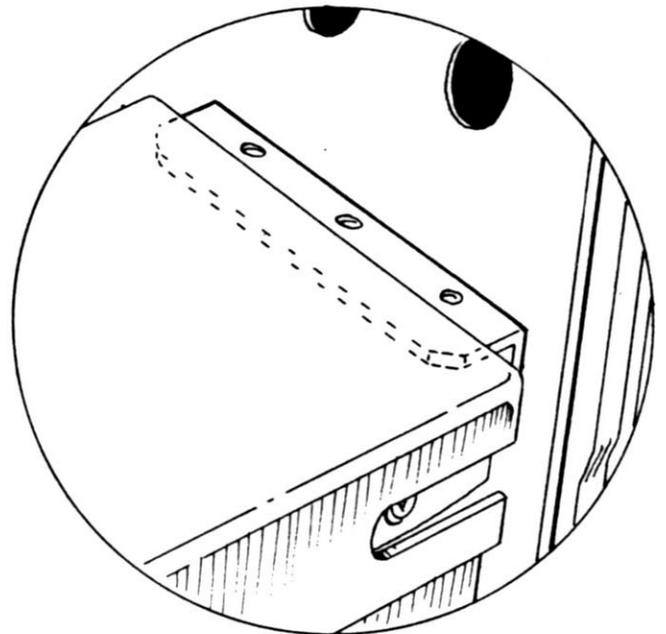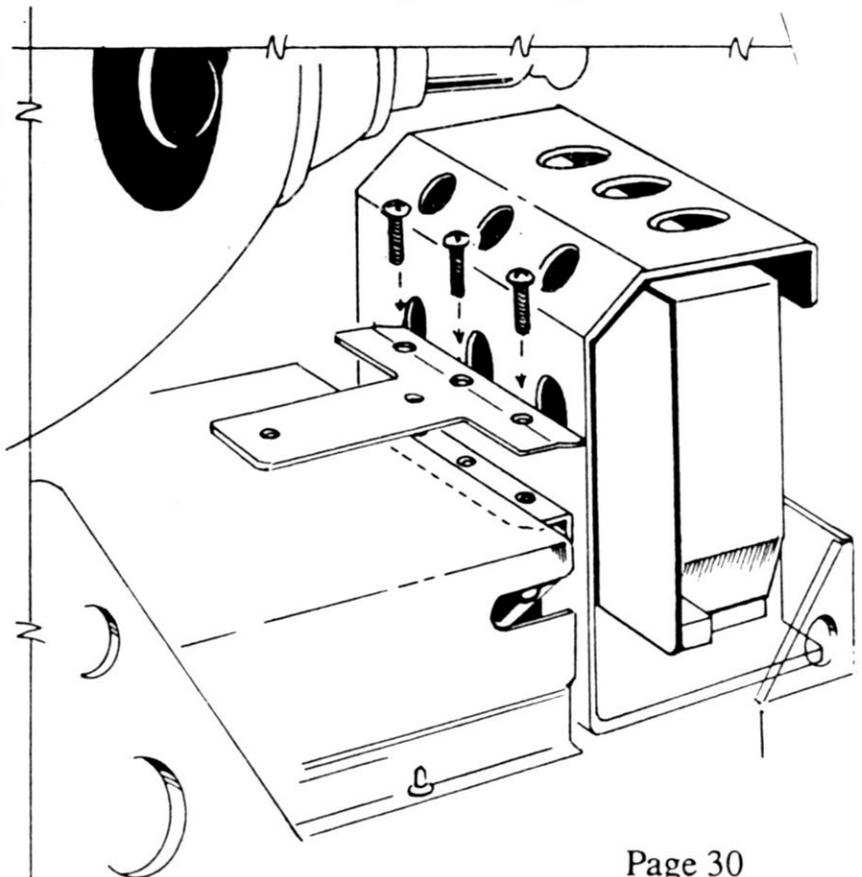
Using two $1/4$" screws, fix the hard disk bracket to the Macintosh chassis by screwing it to the flat mounting plate as shown. Do not completely tighten these screws yet.
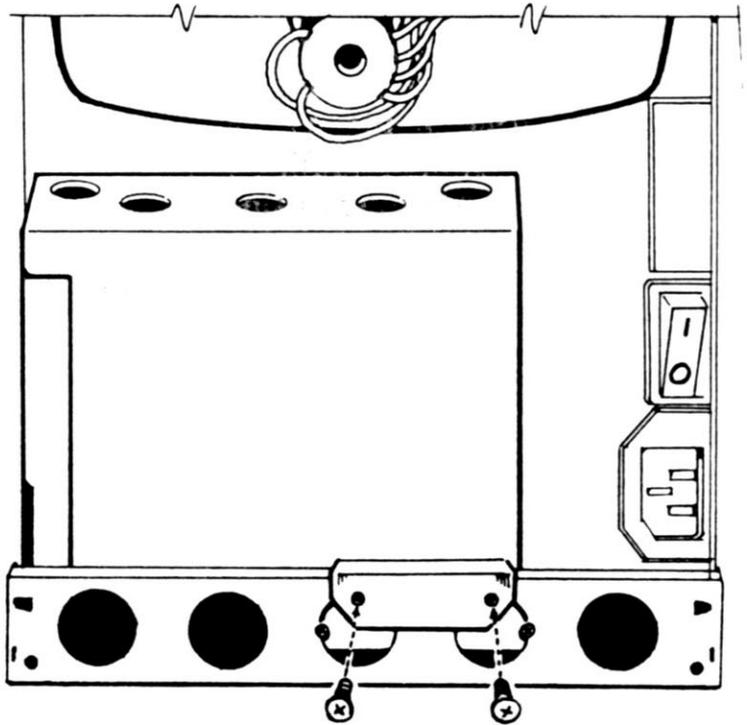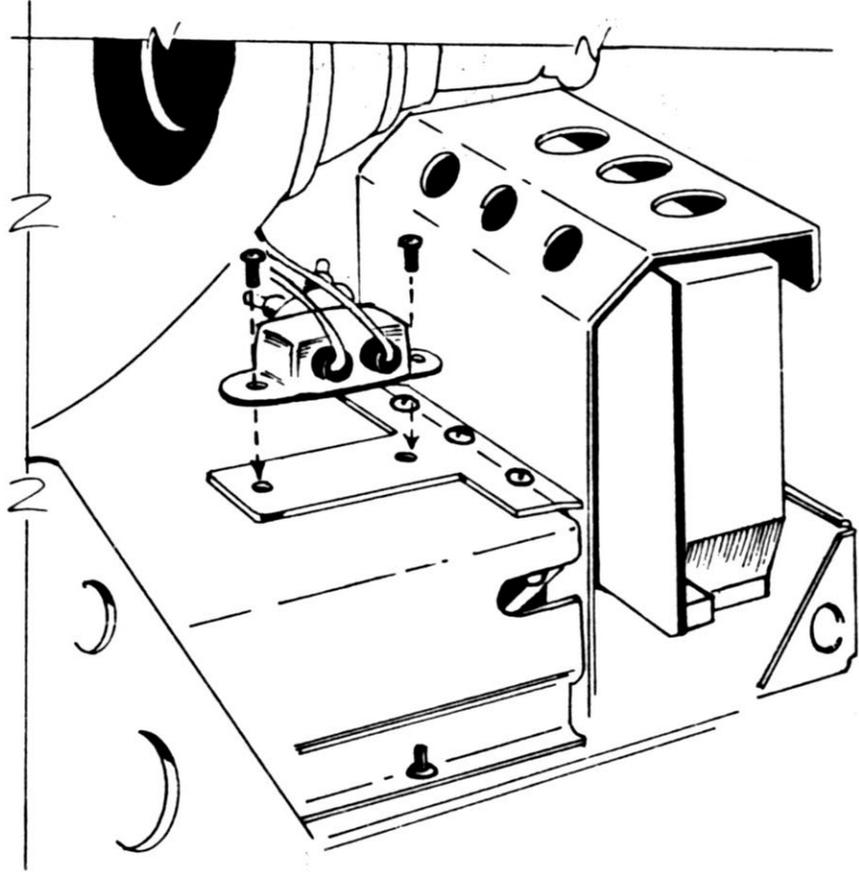

Using three $1/4$" screws, fix the clamping plate to the right angle mounting plate as shown. This should clamp the floppy drive housing between the plates.

Tighten all mounting screws now.

**If the HyperDrive power supply
has a line filter in the AC power
cable** then attach the line filter to the
clamping plate as shown, using two
$^3/_{16}$" screws.

Attach the two ribbon cables and the
HyperDrive power supply cable to the
hard disk as shown. The position of
the power connector may vary,
depending upon the drive
manufacturer. Position the cables so
that they are clear of the heat sinks on
the Macintosh power supply, and run
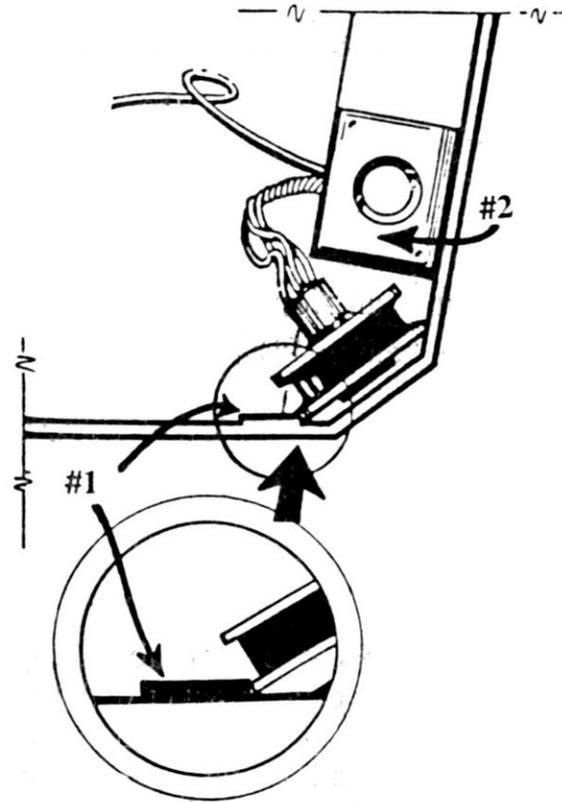behind the hard disk bracket.
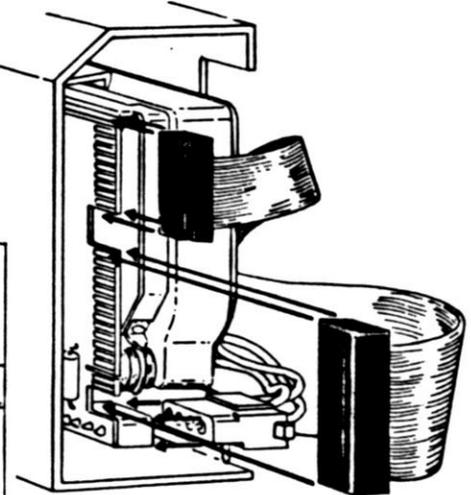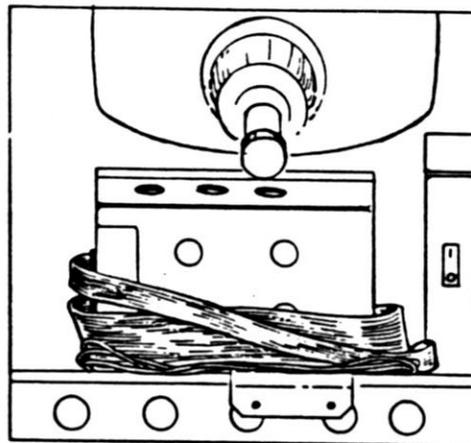
MOUNTING THE FAN

Clip the fan into the upper right corner of the Mac's cover opposite the power supply and press firmly into place. It is important to seat the fan so the lower front edge is against the ridge in the Mac cover, as shown with **#1** in the illustration.

Warning:
The fan must be in the right corner of the cover as shown.

Now mount the controller box by unpeeling the double-sided tape and placing it next to the fan, **#2** in the illustration.

GENERAL
COMPUTER
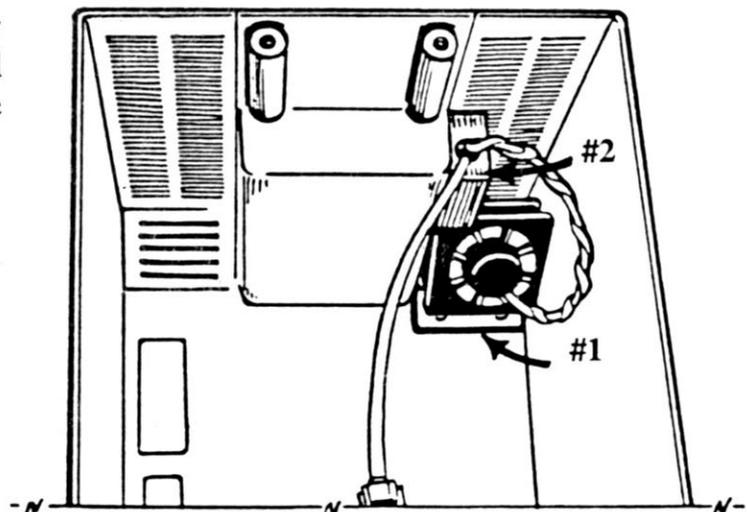
FAN AND DUCT WORK INSTALLATION

1.

Remove the fan from the plastic duct work with a gentle prying motion.

2.

Attach the plastic duct work to the top of the hard disk drive bracket with the two (2) screws provided. See the illustration for the proper orientation of the duct work atop the drive.

3.

Feed the fan power cord and controller box through the hole in the duct work and position fan within grooves so that the motor hangs down, toward the drive.
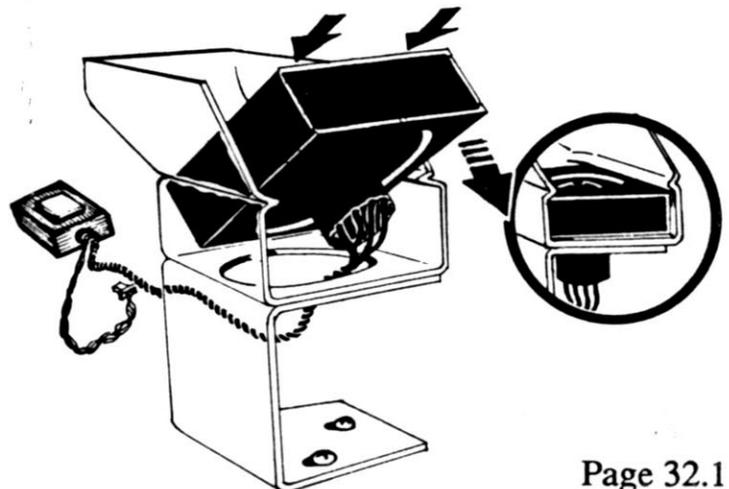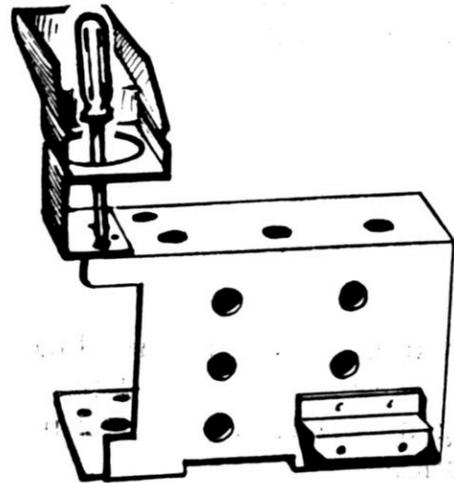
4.
Mount the fan controller box with the double-sided tape on the underside of the duct work as pictured. The fan power connector should be attached to the cable coming from the HyperDrive power supply and the wires should be tucked in to prevent pinching when the Macintosh housing is replaced.
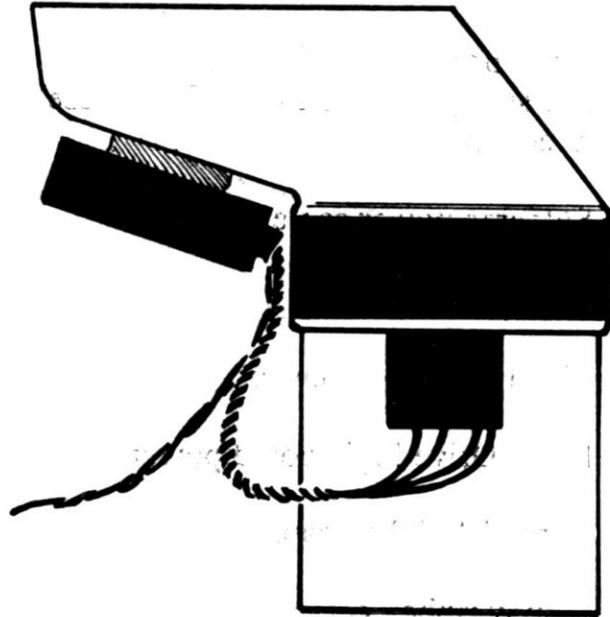
REASSEMBLY OF THE MACINTOSH

Review Connections

Before proceeding further, check to make sure you have made all of these connections:

- Soldered power cable

- Hard disk power

- Mac logic board power

- HyperDrive logic board power

- Hard disk ribbon cables

- Floppy ribbon cable connection

Turn on the Macintosh

It is important at this point to test the hard disk by turning it on. If it boots to the desktop screen as shown, turn the power off.

If the Macintosh does not boot directly from the hard disk, or if you notice any other problems, turn off the power, recheck the connections, and try again.
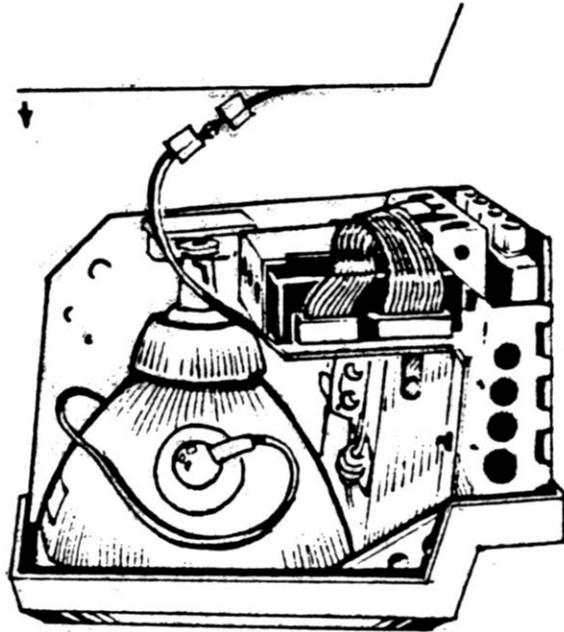
If the Macintosh still does not boot directly from the hard disk, or any other problem persists, call General Computer Technical Support.

Connect the Fan and Ferrites

Lay the Macintosh face down.

Connect the fan power supply.

Attach the fan ferrite to the hard disk bracket as shown by peeling the backing off the mounting tape and pressing it into the proper location.

Be careful not to cover any of the ventilation holes of the hard disk bracket when attaching this ferrite.

Attach the line filter ferrite to the top of the floppy housing as shown.