AppleService
Technical Procedures

Apple Profile

PROFILE TECHNICAL PROCEDURES

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ProFile Technical Procedures

Section 1

Apple IIe ProFile Limited Data Recovery Program, Version 2.0

Contents:

A. INTRODUCTION

The ProFile 5/10 Limited Data Recovery Program runs on a
128K Apple IIe system and can be used to recover data
stored on a ProFile that has been used with any computer
from the Apple II or Apple /// families. It works with
DOS and ProDOS based file structures and therefore, will
not recover or recognize MacWorks or Lisa based ProFiles.
The recovery program attempts to copy customer's files
from a damaged ProFile to the exchange unit. Although
there is no guarantee that data can be transferred, in
most cases data recovery is possible if the ProFile
passes the self test after being turned on.

NOTE: Data can only be transferred to a Profile with a
storage capacity as great or greater than the damaged
Profile. (You cannot, for example, transfer data from a
10 megabyte damaged Profile to a 5 megabyte good Profile
-- there would not be enough room for all the data.)

If the ProFile READY light does not come on to a steady
state within 24 hours, data cannot be recovered using
this program. Special arrangements must then be made
with Level 2 for data recovery.

The importance of regular backups should be emphasized to
the customer.

B. WHAT YOU SHOULD DO FIRST

First, make a back-up copy of the Recovery Program
diskette! You will be using a system with known bad
hardware attached to it, so don't take the chance of
destroying the software accidentally. You may make a
copy of the program using the COPYA program on the DOS
System Master diskette, or the ProDOS Filer, Volume Copy.
Put the original away in a safe place.

C. SOFTWARE OVERVIEW

The program is designed to recover a large portion of
data found on a damaged ProFile. In order to use this
program the customer's ProFile must complete the power-up
cycle, which includes a testing sequence. That is, the
red "READY" indicator must be on and steady. If this
does not occur, data recovery is not possible. (If the
source/bad ProFile has difficulty completing the power-up
cycle, leave it on for 24 hours. If left on long enough,
most ProFiles warm up enough to complete the cycle.)

The program copies data from the customer's ProFile to the exchange unit. If the program has difficulty writing to the Exchange ProFile, it should stop. Something could be wrong with the Exchange unit, so try another Exchange unit. The program verifies the integrity of the destination (Exchange) ProFile, does a direct block transfer from source (bad) to destination (good), then manipulates the destination data to rebuild file and directory structures. The program does not modify the source (bad) ProFile in any way.

As the program proceeds, those blocks which the program has problems reading are identified. At the conclusion of the data transfer, the program examines each file to see if any of its blocks were among those which couldn't be copied. A printed record indicates the uncopied files as being suspect and, most probably, unusable. While this is going on, the master allocation map for the entire ProFile is also being rebuilt. The allocation map tells which blocks are used and which are free for use.

Our testing has shown that the program is able to recover most of the data from those ProFiles that become "READY".

D. EQUIPMENT REQUIRED

    Apple IIe System (128k)
    Monitor
    Compatible Printer (optional)
    Printer Interface Card installed in slot 1 (optional)
    ProFile Interface Card (2 required)
    ProFile Interface Cable (2 required)

E. SETTING UP THE SYSTEM

    1. Turn the power off on the Apple IIe and remove the cover.

    2. If you wish a printout of the results, install a correctly configured interface card for the desired printer in slot 1.

    3. Configure the Apple IIe with two ProFiles as follows: Install the ProFile interface cards in any two slots other than slots 3 or 6. Seat the cards firmly in the slots.

4.   Connect ProFile cables from the ProFiles to the
     ProFile interface cards. If setting up a printer,
     use the printer cable to connect the printer to the
     printer interface card.

5.   Connect the monitor, ProFiles, and printer (if used)
     to the power source.

F. RUNNING THE PROGRAM

1.   Turn on the monitor.

2.   If using a printer, turn it on and make sure it is
     on-line.

3.   Place the Recovery Program Diskette in the Apple IIe
     disk drive.

4.   Turn on the Apple IIe and the program will start.

5.   Turn on both ProFiles.

6.   **Wait** until the "READY" lights on both ProFiles show
     steady red. This usually takes only a minute or so,
     but can take up to 24 hours for a bad ProFile. If
     the source/bad ProFile has some difficulty completing
     the power-up cycle and testing sequence, leave the
     ProFile on at least 24 hours, if at all possible.
     (If left on long enough, ProFiles sometimes warm up
     enough to complete the cycle.)

7.   **NOTE:** The program has help screens throughout. To
     access them, hold down the **OPEN-APPLE** key while
     typing **?** (remember to shift for the ?). These
     screens clarify what the program is requesting. Use
     them if you become confused while running the
     program. The steps which follow will make no
     reference to the help screens.

8.   When the program starts you will see the Title Page
     message below:

**This program will attempt to recover data from a 5 or 10 megabyte
hard disk and save the data to another 5 or 10 megabyte hard disk.**

**Before running this program you must have a source (bad) and
destination (good) drive connected and turned on.**

9. Check to see that you have connected the ProFiles and that they are in the READY state.

   Press <RETURN>. The screen now displays the following message:

   If you have a printer connected in slot 1, the program can make hard copies of the names of files transferred and results of the data recovery.

   If you wish a printed report, make sure that the printer is connected, turned on, and correctly configured or the program will not continue.

   Do you want a printed report (Y/N)?

10. This message indicates that if are going to respond to this prompt with Y (you wish a printed report), the printer must be correctly configured and on-line, or the program will hang when it attempts to send information to the printer.

    Respond to the prompt with Y or N and press <RETURN>.

    The screen now displays the following information:

    The following hard disk drives are attached to this system

    __ megabyte hard disk drive in slot __

    __ megabyte hard disk drive in slot __

    Enter the slot number that corresponds to the source/bad hard disk drive you want to recover data FROM, then press RETURN.

11. Enter the slot number of the bad drive (the one you want to recover information from) and press <RETURN>.

    A verify screen appears showing which are the source and destination hard disk drives and how many megabytes of storage capacity each has. There is a warning that any information on the destination/good drive will be erased by the data that will be transferred to it. You are asked if the good and bad drives are identified correctly.

12. Check to see that the drives are identified
     correctly. Then, execute one of the following three
     options.

     Enter Y or Yes if the disk drives are identified
     correctly. The program will continue.

     Enter N or No if the drives are NOT correct. You can
     then type in the correct slot numbers.

     Press ESC to restart the program. The program will
     go to the title page.

     The final verify screen is now displayed. This is
     your final chance to be sure that the ProFiles are
     correctly designated.

13. Verify that the ProFiles are correctly designated
     source/bad and destination/good.

     Type in RECOVER.

     The status screen is now displayed:

**This program is recovering data from the source/bad
__ megabyte disk drive connected to slot 5**

**And copying the recoverable data to the destination good
__ megabyte hard disk drive.**

Verifying internal data structures
Processing block number _____ of 19456 total blocks
or, (occasionally):
Rebuilding file number _____

     During the operation of the program, different
     messages will appear on the screen to let you know
     what is happening within the program. The recovery
     procedure will take up to 40 minutes, depending upon
     how much data can be recovered, and what problems are
     encountered.

     The Exit screen tells you when the recovery is
     complete.

14. On completion of the program, messages will be listed to the printer. (You may verify file transfer by rebooting with the ProDOS Filer diskette and listing the files.)

15. Power down both ProFiles. The exchange unit goes to the customer, and the other unit goes to Level 2.

16. Turn the other equipment off, remove the program diskette and put it away in a safe place.

G. INTERPRETING THE RESULTS

Give your customer the printed results of the data recovery procedures and a copy of how to interpret these results. In the following explanation, examples of the printout are shown in bold face printing. These statements are interpreted as follows:

Apple IIe Hard Disk Limited Data Recovery   **Version 2.0**
Results:
Trouble accessing   **0 blocks** (a number other than 0 might appear)

All accessible directories are listed below. Individual files which contain problem blocks are also listed.

The resolution of the individual files on the ProFile is shown as a running status, displaying the directory names as they appear on the ProFile. If a file contains one or more "suspect" blocks, its name will appear.

These files are not deleted as they may, in fact, still be partially usable. An example of this would be an ASCII file, such as one created by AppleWriter. An attempt should be made by the customer to access these files. If the attempt results in "unusual" things happening, then delete them.

Block Conflict Report

This message appears if two or more files claim use of the same block. Another pass through the ProFile directories is made to resolve it. Along with this message the directory names are listed on the print-out. Those files which conflict with each other will be listed.

An attempt is made to resolve the disputed block address. If the conflict is resolved, no further mention is made of the files. If the program is unable to decide the correct ownership of the block, the following message appears: **Unable to repair all block conflict errors. Try your files.** This indicates that the files have not been copied to the good ProFile. On conclusion of the program, use the ProDOS Filer program to attempt to copy the conflicting files from the bad source ProFile to the good Profile or to a diskette. The address conflict will be resolved in the copy process.

Summary of Allocation Map Changes

This summarizes the changes made to the master allocation map. This will include the total number of blocks available on the ProFile (**blocks on volume**), the number of blocks in use (**blocks used**), and the number still available (**blocks available**).

Block(s) released from allocation map

A statement will also appear regarding the number of blocks, if any, released from the allocation map. If blocks were released, the original allocation map "thought" that more blocks were in use than really were. The ProFile returned to your customer contains the updated, correct allocation map.

ProFile Technical Procedures

Section 2

ProFile Troubleshooting and Exchange Procedures

Contents:

Refer to the <u>Lisa/Macintosh XL Technical Procedures</u> for repairing ProFiles used with a Lisa®/Macintosh™ XL computer.

INTRODUCTION

When a customer returns a ProFile™ 5 or 10 megabyte hard disk drive for servicing, the unit will need to be exchanged **if the ProFile itself is defective.** However, there are two other possible causes of ProFile problems: 1) bad interface cards or cables, or 2) a sudden bump or power outage to the ProFile while data was being read or written. The troubleshooting procedures in this section will allow you to check for these problems and to perform a functional test to determine whether the ProFile itself is defective or not.

If the customer wishes to try to recover data from the old ProFile, run the Limited Data Recovery program (described in **Section** 1) and record the data onto your exchange unit. If data recovery is successful, the ProFile itself is probably not defective: the problem was probably caused by a bump or a power outage during data access.

If the troubleshooting procedures show that the ProFile is defective, turn to the exchange procedures included in this section. If the ProFile is not defective give it back to the customer (after restoring the recovered data).

TROUBLESHOOTING

Materials Required

FOR APPLE II OR IIe

Known Good   Customer's

Apple II or IIe   ProFile Interface Card
ProFile Interface Card   Interface Cable
Interface Cable   ProFile
ProFile
ProDOS User's Diskette

Refer to **Apple IIe Service Notes** for important information
about the Interface Card.

FOR APPLE /// OR /// PLUS

Known Good   Customer's

Apple /// or /// Plus   ProFile Interface Card
ProFile Interface Card   Interface Cable
Interface Cable   ProFile
ProFile
System Utilities diskette

Refer to **Apple /// Troubleshooting** for important information
about the Interface Card.

Using the Troubleshooting Flowchart

CAUTION: Always wait until the ready light on the ProFile is
steady before turning the ProFile off. Always turn off the
computer and the ProFile before exchanging any item.

The Troubleshooting Flowchart is used to determine if the
ProFile is the defective item.

The flowchart consists of rectangles and diamonds. The
rectangles contain instructions to be followed. The diamonds
contain questions which must be answered to determine the
path by which to leave them. Always follow the flowchart
through to the end to check the system completely.

If a rectangle contains more than one instruction, follow the
first instruction and then leave the rectangle to continue
through the flowchart. If the first instruction does not fix
the problem, the chart will return you to the rectangle so
that you can follow the second instruction, and so on.

IMPORTANT: If replacing an item does not solve the problem,
make sure you put the original item back in place before
replacing the next item recommended.

Here's What to Do:

1. Set up the appropriate **KNOWN GOOD** computer. Do not turn
   on the computer.

2. Connect the customer's ProFile. Use the customer's
   ProFile Interface Card and Interface Cable. Be sure all
   cable connections are secure.

3. Go to the **Troubleshooting Flowchart.** Start with the
   rectangle **Power on the ProFile.**

   The ProFile will take 1 to 6 minutes to come up to the
   ready state. The ready state is identified by the LED
   being on steadily, with no flashing.

4. Follow the flowchart through to the end.

TROUBLESHOOTING FLOWCHART

```
                    ┌──────────────────────┐
                    │ Power on the ProFile.│
                    └──────────────────────┘
                               │
                               ▼
                        ╱ Ready ╲         NO
                       ╱  Light   ╲──────────────────────────────►  ┌──────────────────────┐
                       ╲ Steady?  ╱                                 │  Check connections.  │
                        ╲       ╱                                   └──────────────────────┘
                           │                                                   │
                          YES                                                  ▼
                           │                        YES              ╱ Ready ╲
                           ▼              ┌─────────────────────────╱  Light   ╲
            ┌──────────────────────────┐ │                          ╲ Steady?  ╱
            │ If customer wishes, run the│◄┘                           ╲      ╱
            │ Limited Data Recovery Program│                             │
            │ as explained in Section 1. │                             NO
            └──────────────────────────┘                               │
                           │                                           ▼
                           ▼                                 ┌──────────────────────┐
                     ╱ Partial ╲        NO                   │ Exchange LED Cable.  │
                    ╱ or complete data ╲──────────────►      └──────────────────────┘
                    ╲ recovery?      ╱                                   │
                     ╲             ╱            YES                      ▼
                        │              ┌───────────────────────╱ Ready ╲
                       YES             │                       ╱  Light   ╲
                        │              │                       ╲ Steady?  ╱
                        ▼              │                        ╲       ╱
         ┌──────────────────────────┐ │                           │
         │ Perform the ProFile Functional Test, │                NO
         │ as explained in this section. (Use the│               │
         │ "defective" ProFile and customer's    │               ▼
         │ Interface card and cable.)            │  ┌──────────────────────────────┐
         └──────────────────────────┘             │ Exchange ProFile.              │
                        │                          │ Perform the ProFile Functional Test, │
                        ▼                          │ as explained in this section. (Use the│
                  ╱ Passes ╲   YES   ┌──────────────│ customer's Interface card and cable.) │
                 ╱  Test?   ╲───────►│ ProFile is not defective. │
                 ╲        ╱          │ Give ProFile to customer. │   │
                    │                └──────────────┘              ▼
                   NO                        ▲  YES          ╱ Passes ╲
                    │                        └──────────────╱  Test?   ╲
                    ▼                                       ╲        ╱
```

┌─────────────────────────────┐   ┌─────────────────────────────┐
│ 1. Exchange Software.   │   │ 1. Exchange Software.   │
│ 2. Exchange Interface Cable. │   │ 2. Exchange Interface Cable. │
│ 3. Exchange ProFile Interface Card │   │ 3. Exchange ProFile Interface Card │
│ 4. Exchange Profile.   │   │ 4. Exchange Profile.   │
└─────────────────────────────┘   └─────────────────────────────┘

┌─────────────────────────────┐   ┌─────────────────────────────┐
│ Perform the ProFile Functional Test, │   │ Perform the ProFile Functional Test, │
│ as explained in this section.│   │ as explained in this section.│
└─────────────────────────────┘   └─────────────────────────────┘

```
   NO      ╱ Passes ╲  YES    ┌──────────────────────────┐  YES   ╱ Passes ╲   NO
 ◄────────╱  Test?   ╲───────►│ ProFile is not defective.│◄──────╱  Test?   ╲────────►
          ╲        ╱          │ Give ProFile to customer.│       ╲        ╱
                              └──────────────────────────┘
```

ProFile Functional Test

This procedure allows you to determine whether the customer's ProFile is really defective or not.

IMPORTANT: A ProFile contains 32 blocks which are **NOT ALLOCATED** (or accessed) unless a data block is bad. If a data block is bad, the ProFile writes to one of these normally inaccessible blocks. If the functional test shows that the ProFile has 21 bad blocks or fewer, the ProFile is considered functional and should not be returned for exchange.

1. In this test, use the customer's interface card and cable if possible. Otherwise use a known-good interface card and cable.

   Using the ProDOS User's Diskette (IIe) or System Utilities diskette (///):

   a. Reformat the customer's ProFile.

   b. Verify the volume two or three times. **No more than 21 Bad Blocks** should be displayed each time. (Verification of the ProFile takes approximately 4 to 8 minutes.)

   c. Write and read to the ProFile to verify that it is functioning correctly.

2. If you were able to complete all of step 1 successfully on the customer's ProFile, copy the customer's files from the exchange ProFile back onto the customer's ProFile and return the exchange ProFile to your service stock. Give the customer his ProFile.

<div align="center">OR</div>

   If the customer's ProFile does not meet the specified criterion in step 1b, give the customer the exchange ProFile, with his recovered data, and perform step 1b **ONLY** to check the exchange ProFile. **DO NOT REFORMAT.**

EXCHANGING THE PROFILE

Materials Required

Medium Phillips screwdriver
Protective pad

Unpacking the Exchange Module

1. Carefully remove the exchange module from its packaging.

2. A ProFile cover marked "SHIPPING FIXTURE" is attached to the spares kit ProFile. Remove this cover from the ProFile.

3. Verify that all modules are present, all connections are proper, and that there are no loose or broken wires or foreign materials.

4. Keep the cover and shipping materials for use later.

CAUTION: The ProFile is a mechanical device with motors and moving parts. Rough handling -- such as dropping the drive, sharply jarring it, or allowing heavy objects to fall on it -- can cause a malfunction. Whenever it is necessary to turn the ProFile over, be sure to rest it on a protective pad.
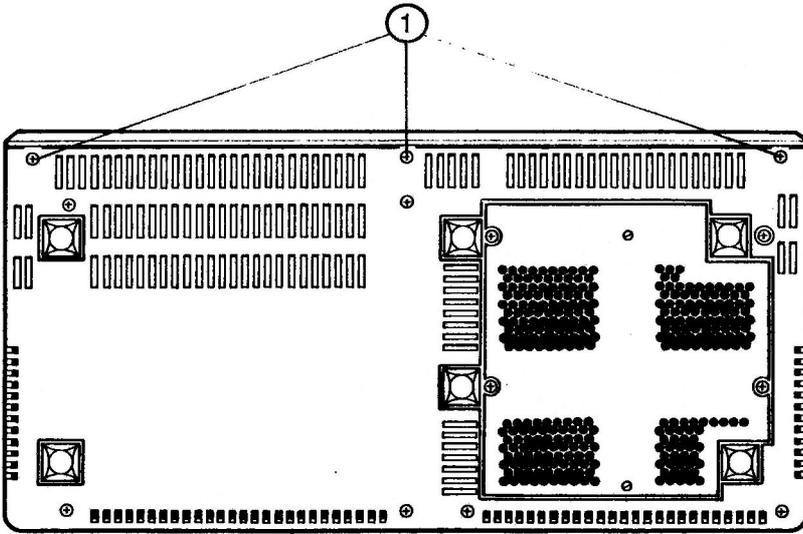
FIGURE 1
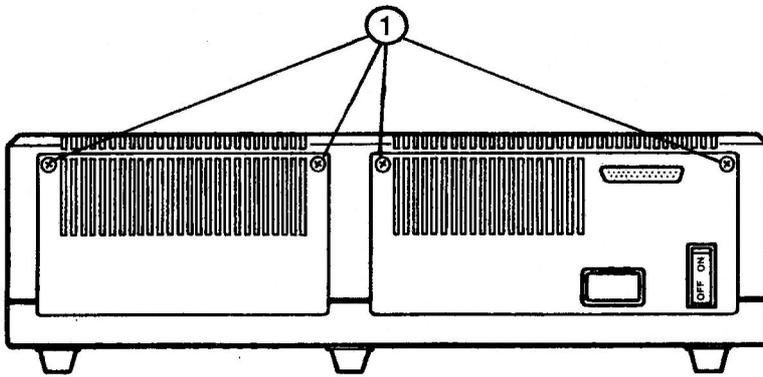
FIGURE 2
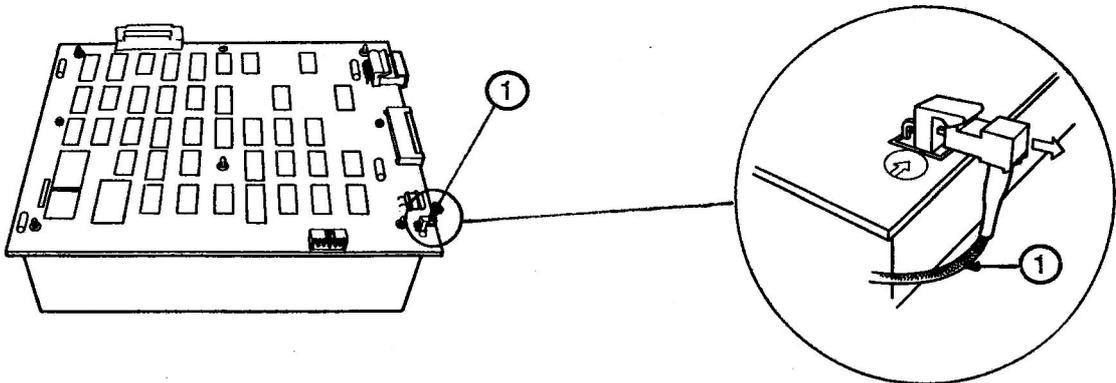
FIGURE 3

FIGURE 4

Removing the Cover

1. Be sure the customer's ProFile is turned off. Disconnect the power cord and ribbon cable from the rear of the ProFile.

2. Turn the ProFile over, lay it on the protective pad, and remove the three Phillips-head screws from under the front panel (Figure 1, #1).

3. Turn the ProFile right side up; remove the four screws from the two plates on its back (Figure 2, #1).

4. Lift the cover off carefully and rest it on the far side of the case, taking care not to pull on the LED cable.

5. Unplug the LED cable from its socket on the controller board (Figures 3 and 4, #1).

Replacing the Cover and Rear Plates

1. Attach the customer's LED cable to its connector on the controller card of the exchange unit (Figure 3, #1). Make sure the LED cable exits down and away from the card (Figure 4, #1).

2. Attach the customer's two rear plates to the exchange unit using the four screws. Do not tighten the screws at this time (Figure 2, #1). **NOTE:** The serial number is stamped on one of the rear plates and must be transferred to the ProFile which the customer will keep.

3. Place the customer's ProFile cover onto the exchange module. (Hint: The four slots on the back of the cover fit between the inner and outer rear plates. Line up the back first; then pull the cover gently forward and down. Check around the cover to make sure the LED cable isn't caught between the cover and the base.)

4. Tighten the four rear-plate screws.

5. Turn the ProFile over and replace the three screws on the bottom front edge (Figure 1, #1).

6. Turn the ProFile right side up. Reinstall the power cord and ribbon cable.

7. Attach the ProFile cover marked "SHIPPING FIXTURE" to the unit to be returned for servicing.

SUMMARY OF PROCEDURES (CHECKLIST)

When a customer brings in a non-working ProFile, follow the steps outlined below.

Run the Limited Data Recovery program with an Apple IIe:

____ Turn on monitor and printer; be sure printer is on-line.

____ Connect exchange ProFile (use slot 3 for the known good Interface card).

____ Connect customer's ProFile (use slot 4 for the known good Interface card).

____ Turn on Apple IIe and run the Limited Data Recovery program (see Section 1 under this tab).

____ Power down and disconnect both ProFiles.

____ Check whether the customer's ProFile is defective by performing the ProFile Functional Test procedures. If the customer's ProFle is not defective, return to the customer or service stock.

If the customer's ProFile is defective, replace with the exchange ProFile.

____ Remove both rear plates from the customer's ProFile.

____ Remove the cover from the customer's ProFile.

____ Unplug the LED cables from the controller cards of both ProFiles. Attach the customer's LED cable to the appropriate connector on the controller card of the exchange ProFile.

____ Transfer the two rear plates from the customer's ProFile onto the exchange ProFile. Note that the serial number is on one of these plates.

____ Attach the customer's cover to the exchange ProFile, fitting it into place over the two rear plates.

____ Transfer the ProFile cover marked "SHIPPING FIXTURE" onto the unit to be repaired.

____ Pack the repair unit in one of the approved packagings (see **Appendix A**).

____ Complete all shipping documentation.

Section 3

Illustrated Parts List

The figures and lists below include all piece parts that can
be purchased separately from Apple for the ProFile, along
with their part numbers. These are the only parts available
from Apple. Refer to your Apple Service Programs manual for
prices.

NOTE: For ProFile interface cards for Apple II/II+, Apple
IIe and Apple ///, see parts list section for appropriate
computer.

Contents:

FIGURE 1

MARKED WIRE

914.0 ± 5.0
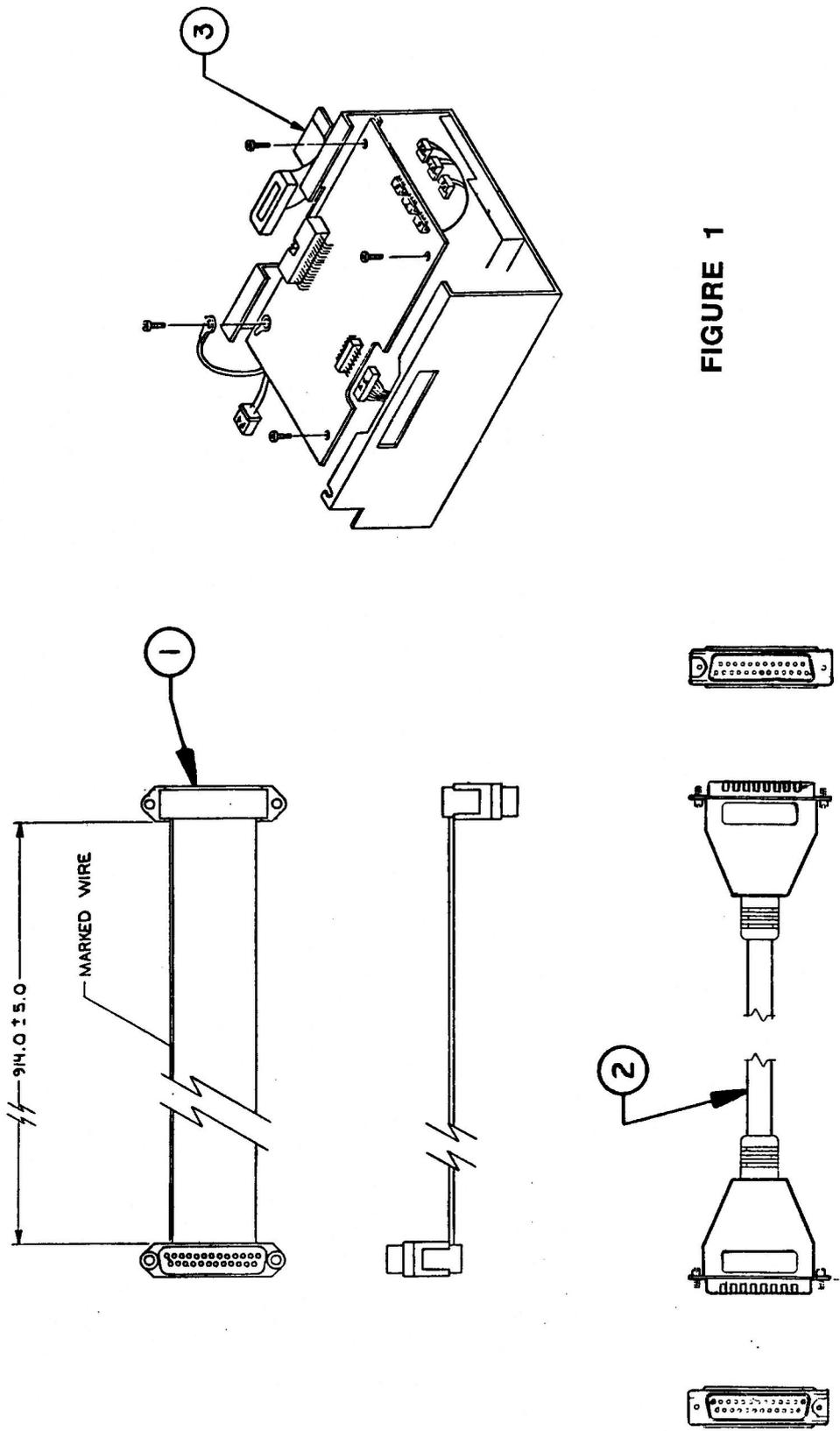
PROFILE - CABLES (Figure 1)

Item	Part No.	Description
1	590-0046	Cable I/O
2	590-0202	Cable, External
3	590-0048	Cable, Controller to Analog
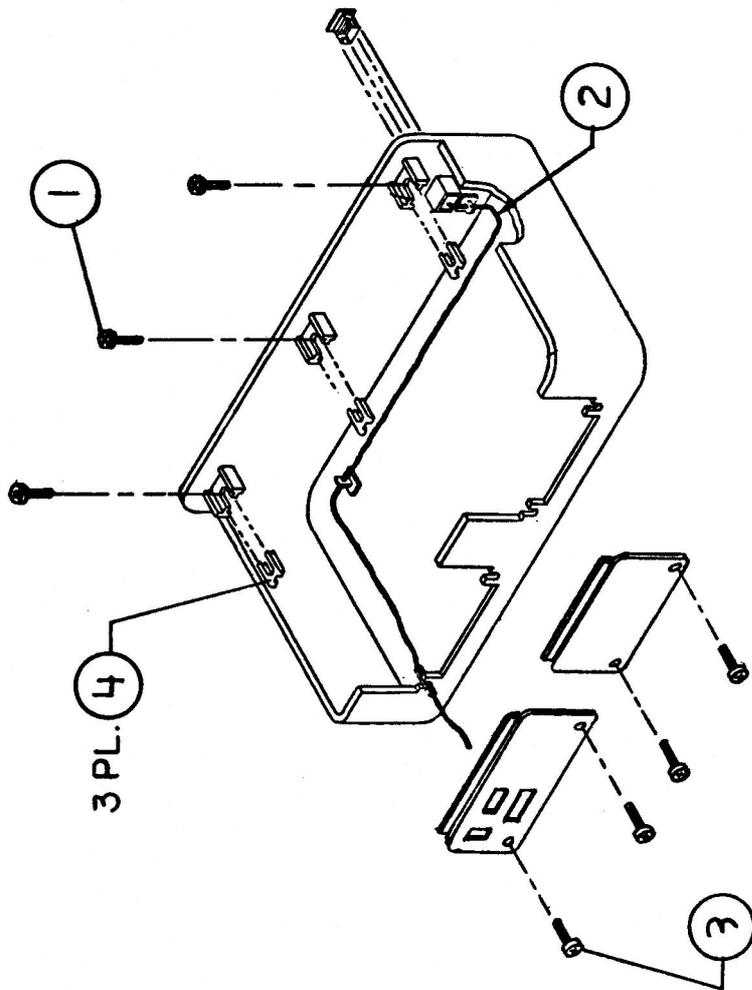
FIGURE 2

PROFILE - PIECE PARTS (Figure 2)

Item	Part No.	Description
1	430-1001	Screw, Tapping, 8-18 x 0.437 PN CRS
2	590-0047	Cable LED
3	403-1606	Screw, 6-32 x 3/8 Panhead
4	835-0005	Nut Speed "J"

FIGURE 3

POWER SUPPLY

② 6 PL.

①
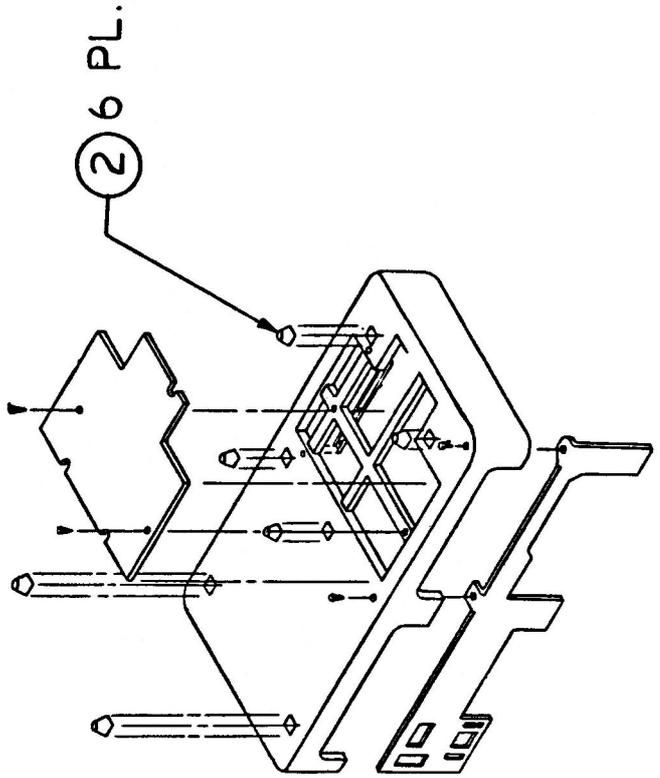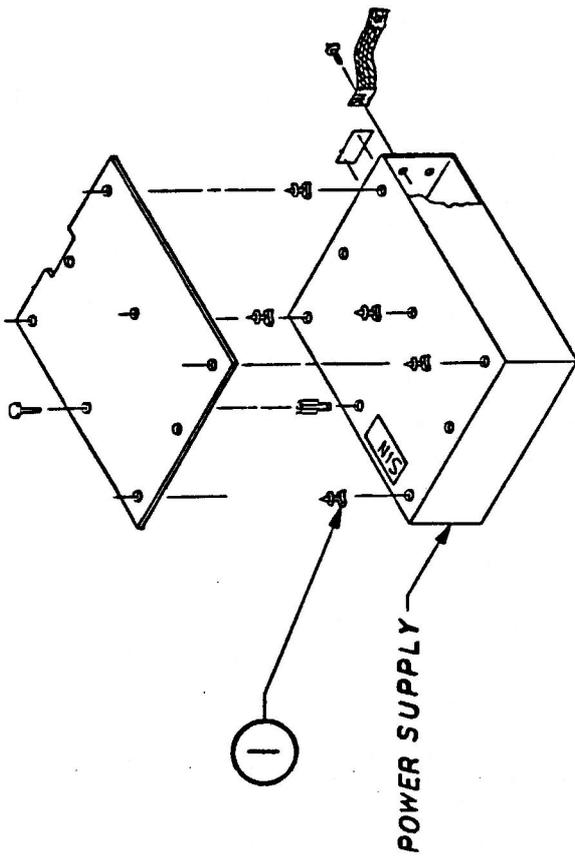
PROFILE – MISCELLANEOUS PARTS (Figure 3)

Item	Part No.	Description
1	860-0200	Standoff Plastic
2	865-0005	Foot, .52HT SQ
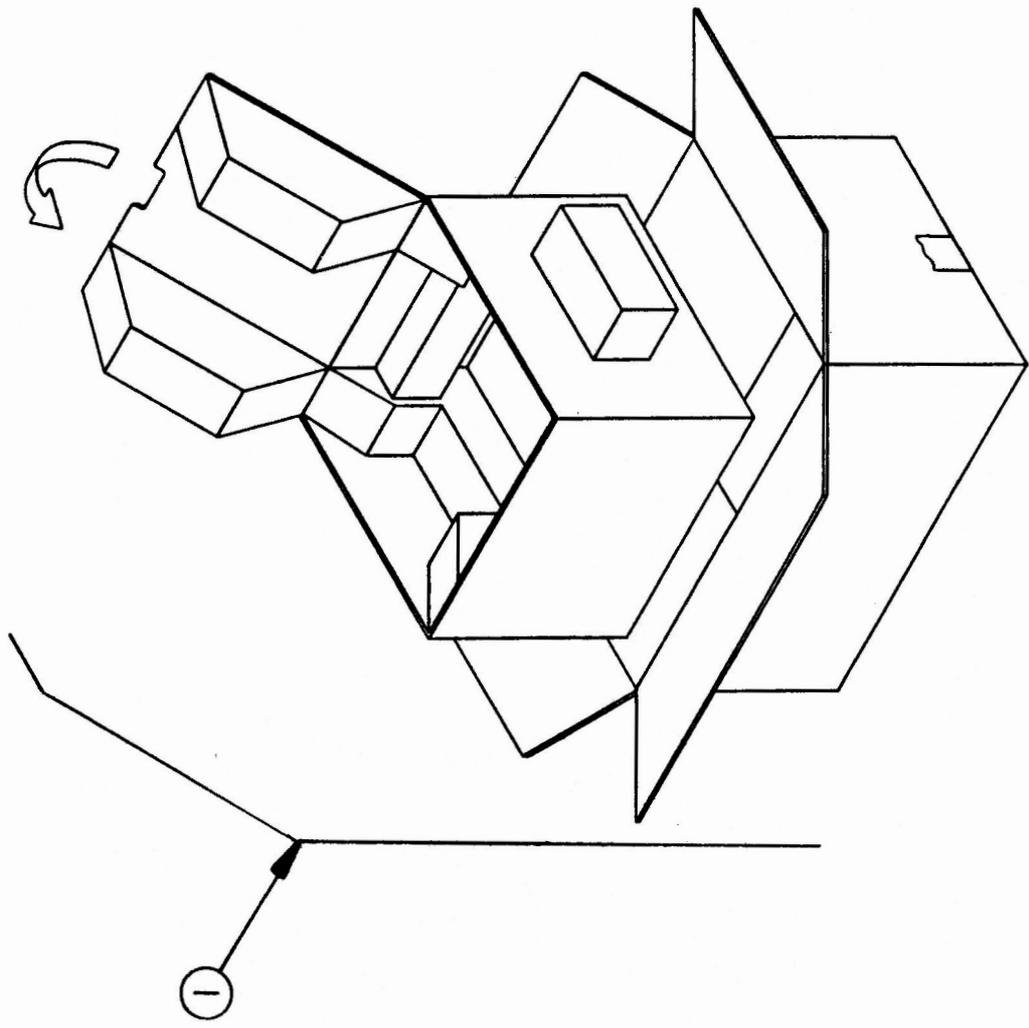
FIGURE 4

PROFILE - PACKAGING (Figure 4)

Item	Part No.	Description
1	602-0129	ProFile Packaging

PACKAGING FOR SHIPMENT

There are two different Apple-approved shipping packages
available for the ProFile. When returning a ProFile, one of
the approved packages must be used.

New Style

The new packaging is smaller and easier to use (see Figure
1).

FIGURE 1

ACCESSORY BOX

TOP PAD

END PAD,
(2 PIECES)

BOXED
PROFILE
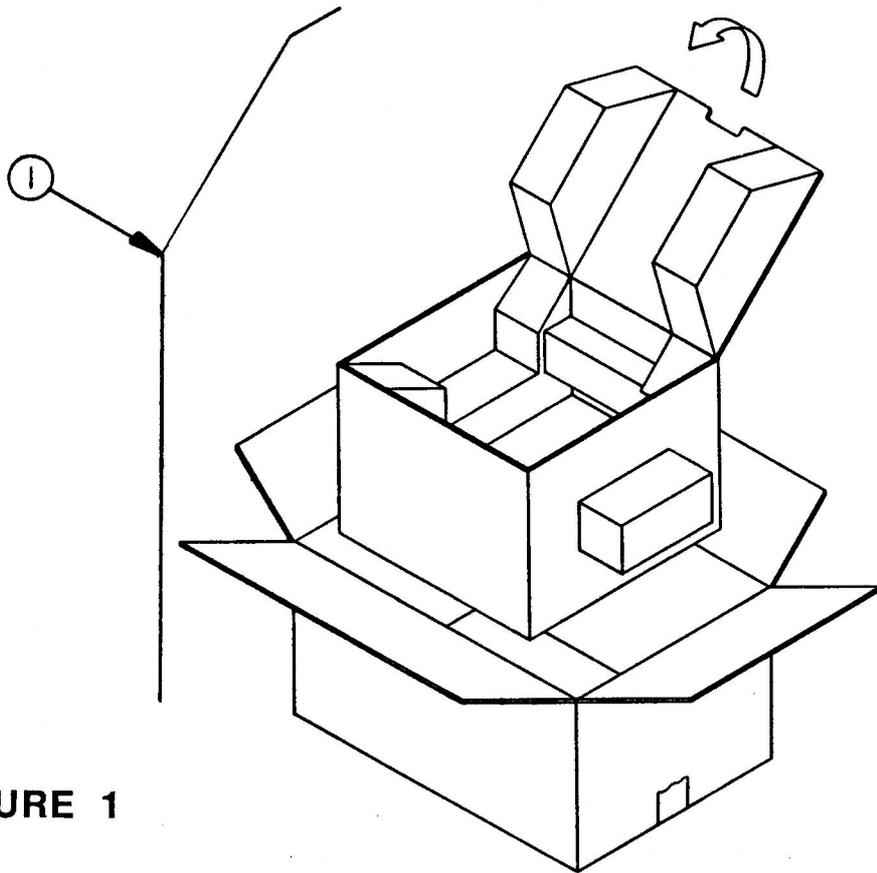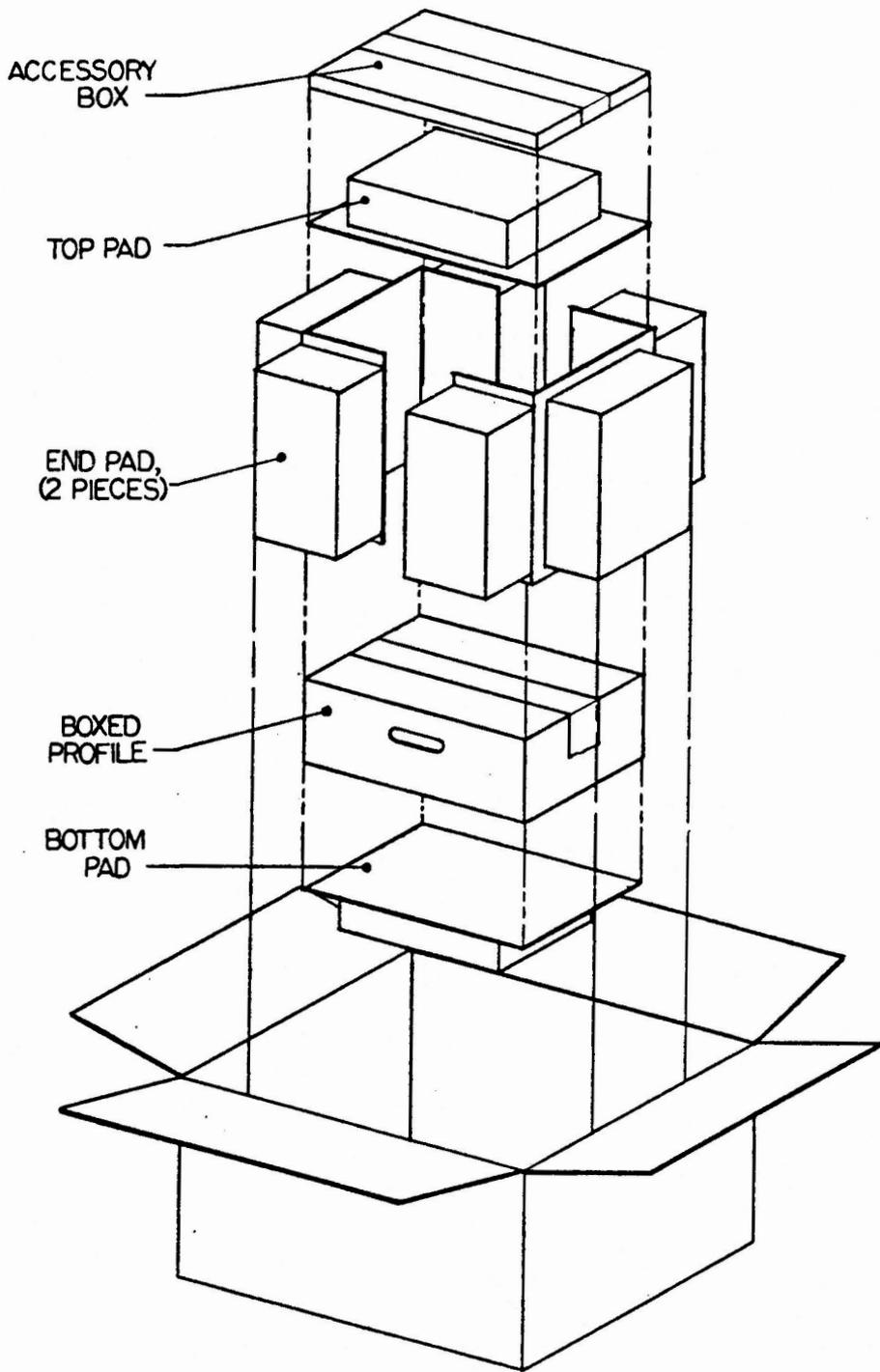
BOTTOM
PAD

FIGURE 2

Old Style

The following instructions refer to Figure 2 unless otherwise stated.

1. Set the packing box on the floor with the flaps facing out.

2. Bend the two end pads (foam side out) and slide them into the box.

3. Slide the bottom pad (foam side down) into the box between the end pads.

4. (For this step only, refer to Figure 3.) Place the end caps snugly onto the ends of the ProFile and place the ProFile into its own small box.

5. Place the boxed ProFile snugly between the end pads and slide it down so that it rests on top of the bottom pad.

6. Lay the top pad (foam side up) on top of the ProFile.

7. Place the accessory box on top of the top pad.

8. Close the short end flaps of the packing box; then close the side flaps.

9. Secure the flaps with shipping tape.

10. Secure shipping documentation to the top of the box.

FIGURE 3