Date: Sat, 11 May 1996 03:15:21 -0400 (EDT)
From:
To: stephen e buggie <buggie@unm.edu>
Subject: Re: 3.5" UniDisk on a IIc

P. 1 of 2.

Oct. 2011
$13.00
plus
$2.22 shipping

Apple IIc Upgrade ROM Chip Installation Instructions

Here is the text of the instruction sheet I received with the ROM:

"The Apple //c ROM 342-0033(a) is an upgrade for the //c and is needed if you wish to access a UniDisk 3.5" attached to the drive port on the back of the computer. Installation of the ROM requires that you disassemble your Apple //c, you will need an I.C. Extracting tool, a soldering iron and an exacto blade or craft knife. The ROM will be installed in place of the old part, #342-0277.

1) Remove the top half of the case on your Apple //c.
2) Remove the keyboard, (It lifts out and the connector pulls off the motherboard.)
3) Familiarize yourself with what you see: (See Figure #1 below)
4) Using the exacto knife, cut jumper W1 so it is no longer connected.
5) With the soldering iron, place a bead of solder across jumper W2.
6) Install the new ROM (#342-0033) into the socket at location D-19, (MON) on the main board making sure to put the notch to the left and not bend any pins.
7) Re-assemble your computer, you are done. The Apple //c will now see and boot a disk in an external 3.5" UniDisk drive attached to the back."

Here is Figure #1 (as best as I can manage in ASCII):

Before:

```
      #####       #
       ###       ###
W1      #       #####   W2
        #
       ###      #####
      #####      ###
                  #
```

After:

```
      #####       #
       ###       ###
W1                #####   W2
                  #####
       ###        ###
      #####        #
```

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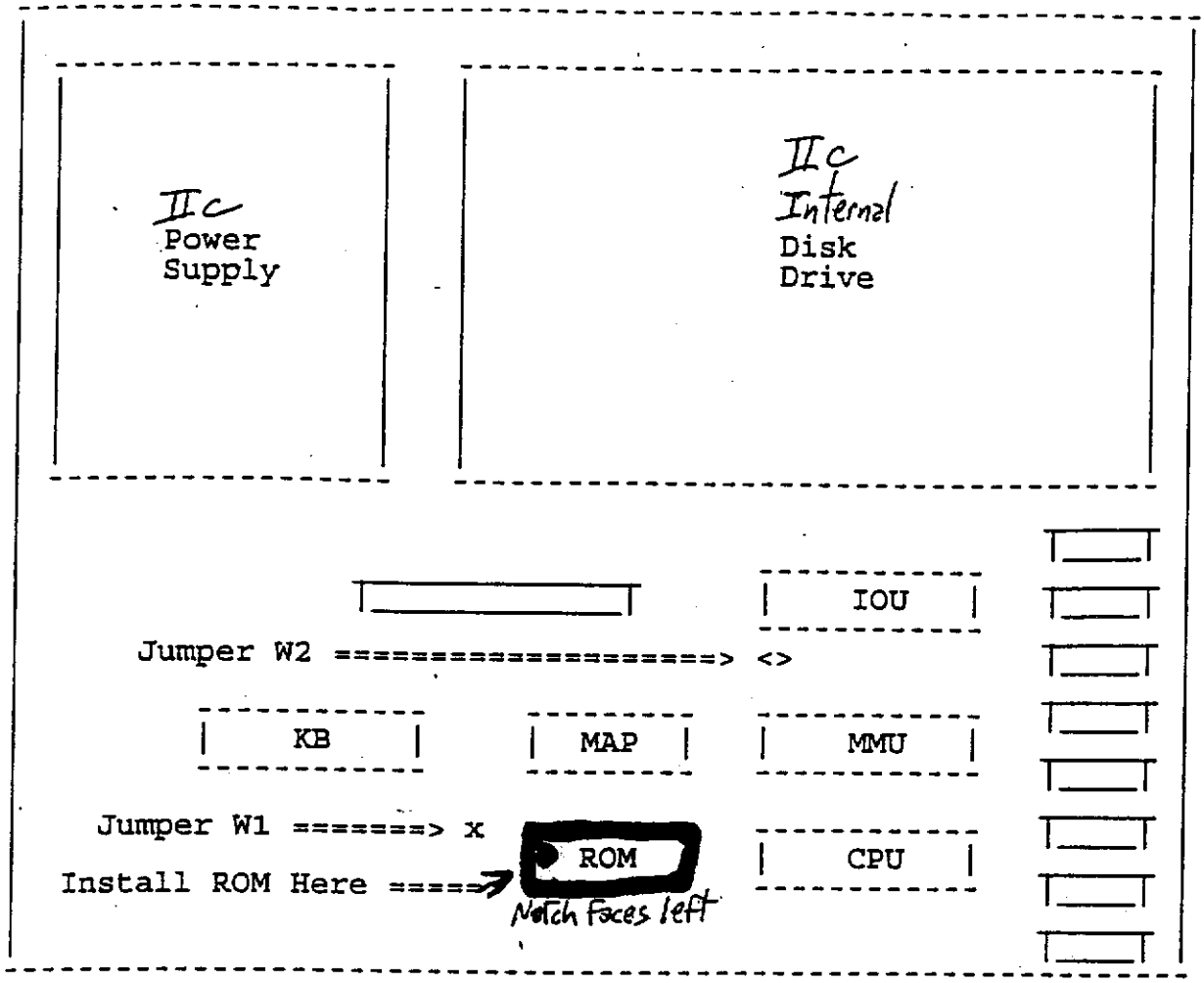

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Hope this helps.

FURTHER COMMENTS: IIC UPGRADE ROM CHIP #342-0033

by Steve Buggie
October 1997

WHY UPGRADE? There are two reasons for installing the IIC upgrade ROM chip:

(1) <u>The computer will get the "checkerboard self-test."</u> This self-test is activated by holding down the open-apple and closed-apple keys when the computer is powered up. A checkerboard pattern will appear on the screen for one minute, followed by the words, "SYSTEM OK." The checkerboard self-test will identify bad components, especially any bad RAM chips among the 16 RAMs in main memory or auxiliary memory. RAM chips are the most likely components to fail in the IIc; they fail because of overheating resulting from poor ventilation. Their exact locations are identified by the error message. RAMs can be desoldered from the IIc motherboard and replaced. 16-pin sockets can be installed at most RAM locations; two of the 16 RAM locations cannot be socketed because the internal disk drive limits their height.

(2) <u>3.5" 800K Unidisk capability</u>: After the upgrade ROM chip has been installed, the IIc will be able to operate a 3.5" 800K Unidisk external drive (white casing, model # A2M2053). The platinum grey Apple 3.5 drive (model #A9M 0106) is different and will NOT work on the IIC.

Shareware Solutions II

An Exciting Apple II Journey Into The Future

Volume 2, Issue 6 **Winter, 1996**

Apple II Drive Tuner

An article appeared in Volume 1, Issue 4 that described the innovative and ingenious uses of Apple II computers that Dr Stephen Buggie had employed with his college level Psychology students. In somewhat of a turn around, Dr Buggie is now utilizing his teaching skills to assist Apple II owners to fix their broken or faulty Apple brand Disk II 5.25" disk drives.

Dr Buggie has been an avid collector of Apple II equipment, and he has discovered that 90% of the used 5.25" disk drives that are sold as faulty will work perfectly after just a few minor mechanical adjustments.

Dr Buggie has prepared a two-sided 5.25" disk that can help almost anyone to repair a 5.25" disk drive. Side 1 of the disk contains an excellent article that describes all of the various models of 5.25" disk drives that work with different models of Apple II computers. He also discusses in detail the three major symptoms that "broken" 5.25" disk drives exhibit and he describes the adjustments that will restore 90% of those 5.25" drives to health. Those adjustments affect the rotational speed of the drive, the end-stop alignment and the center-track alignment.

The second side of the disk contains DOS 3.3 based diagnostic software that will, among other things, test the speed and alignment of 5.25" disk drives. If any adjustments are needed, you can then use Dr Buggie's article as a guide to performing the repairs.

The diagnostic software is Aptest, and it was developed and distributed by Call-Apple. Even though it dates back to 1980, I had never heard of Aptest before, and was pleased when I contacted the successor to Call-Apple – The Tech Alliance – and learned that Aptest is freeware.

Dr Buggie's Apple II Drive Tuner disk is now available from the Shareware Solutions II library, on 5.25" disk only, for $5.

For those of you who feel you lack the skills necessary to disassemble and repair 5.25" disk drives, you'll be pleased to learn that Dr Buggie is now offering an incredibly inexpensive repair service for Apple brand Disk II drives.

Dr Buggie asks for only a $5 per drive labor charge, plus shipping and handling, and states that the labor charge will be levied only if the repair is successful! He can also adjust other types of 5.25" drives, such as Disk IIc or half-height clone drives, provided that the suspected fault is mechanical and not electrical.

Electrical repairs can be performed on the Disk II and on full-height clones because the Integrated Circuits are socketed. Although rarely needed, Dr Buggie can replace faulty Integrated Circuits on the analog board for $1 each.

Please note that it is more difficult to fix the analog board on newer 5.25" half-height drives because the Integrated Circuits on those are soldered.

The shipping charges requested by Dr Buggie for shipment within the United States is $5 for 1 drive, $9 for 2 drives, $13 for 3 drives, $16 for 4 drives, $19 for 5 drives. If you send him more than 5 broken disk drives, send $19 plus an additional $3 per disk drive.

If you have questions as to whether Dr Buggie can fix your particular brand of 5.25" disk drive, first contact him by mail or e-mail, describing in detail the symptoms your drive is exhibiting.

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Hacking Platinum: Mac to Apple II

Save your Apple 3.5" drive with a Mac Transplant!

by Stephen Buggie

Users who are devoted to the Apple II for the long haul may wonder which component will become the major maintenance bottleneck as we enter the 21st century. My vote goes to the Apple "Platinum" 3.5" drive. Because of their delicate and heavily used mechanisms, they are likely to become scarce sooner than such items as the CPU, interface cards, or display monitor.

3.5" disk drives have dropped in price, as have other components; but, they are still costly to replace or repair. For example, just getting the read/write heads replaced runs about $80. Fortunately, 3.5" drive mechanisms (including heads) are cheaply and abundantly available from a surprising source: the Macintosh world!

The basic Sony 3.5" mechanism is shared by Mac and Apple II. It stores 800K of data on a two-sided disk. Unlike the IBM version with its constant rotational speed, Mac/Apple II drives maintain constant head velocity by varying the rotational speed as the head assembly approaches or moves away from the disk hub. In fact, the platinum 3.5" drive supplied with the IIgs is directly Mac-compatible, although Mac does ignore the manual eject button.

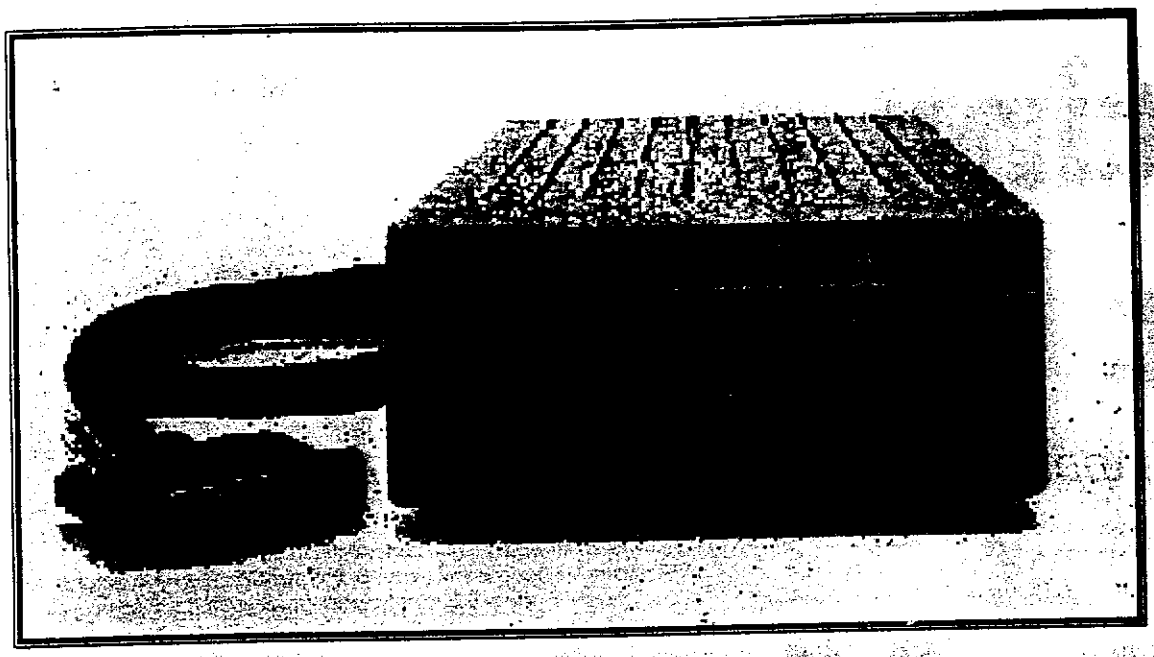
An older version of the external Mac 3.5" drive lacks the manual eject button and, in its casing, is plug-incompatible with Apple II. However, thanks to advice provided by Ken Watanabe, I learned that the inner mechanism is identical among all versions of 800K Mac and Apple II drives! This is good news for Apple II users who wish to transplant the abundantly available mechanism into their platinum 3.5" drive casing.

So, why are Mac types a good source for these wondrous devices? Well, although Apple II owners continue to use and, even, add 3.5" drives, the units have declined in their utility for Mac owners who have shifted to hard drives, CD-ROM, etc. and away from floppies. If a Mac user has not already dumped his/her 3.5" drive at a swap meet, it is probably in some closet waiting to be rescued by a II user. Older Macs with good internal drives represent another low-cost source.

The actual salvaging operation is fairly simple. If you get an early version of the external Mac mechanism, it will be mounted in a plastic casing which, except for the missing eject button, resembles the Apple II platinum drive. Remove the mechanism from the casing, but save its round external cable and db-19 plug — that cable/plug can be used later to adapt flat-ribbon Apple II drives for use with the IIgs or IIIc!

The internal 800k drive mechanism can be salvaged from any mid-vintage Mac except for early models (Mac 128, Fat Mac 512)— those two models used a quaint single-sided 400k drive. Suitable models include the Mac Plus, Mac

Step-by-step, its an easy solution to hacking your Platinum 3.5"



SE, Mac II, or other Macs that have the standard DSDD 800K mechanism— newer Macs have incompatible high density drives.

Be sure to get a genuine Mac Sony drive mechanism, not a clone. (The suitability of non-Sony clones is uncertain.) Salvaged internal drives must be removed from the Mac internal mounting bracket. Just take out the four side-mounted bolts, and slide the mechanism forward.

You should anticipate that an internal drive from an older Mac may have seen plenty of use. If you have a choice, go for an external drive or an internal unit from an owner who used it "only to play Mac games". If buying by mail, it's a good idea to have the drive's head assembly protected from damage in case of rough handling. Ask the seller to ship the unit with a disk inserted.

Once you've gotten the mechanism, move everything— mechanism, worn out Apple II drive, containers to hold bolts, etc.— to a well-lighted work area that gives you plenty of elbow room. Tools needed include small and medium Phillips-head screwdrivers, small long-nosed pliers, and a felt-tip marker pen. If the area is at all subject to static electricity, take the usual precautions (e.g. wear a grounded wrist strap and/or touch tools and hands frequently to grounded metal).

The first step is to remove the worn/defective mechanism from its Apple II platinum case. Flip the casing on its back and rest it on cloth or newspaper with the front facing you. Remove the four shiny bolts from the bottom of the casing. Pressing lightly on the external cable's grommet, lift off the casing. It should come off cleanly. Use the marker pen to label "front-bottom", "left", etc. on the drive mechanism module.

At the unit's rear, observe that wire pairs terminate in RED and BLACK plugs. Write "R" and "B" on nearby metal surfaces to identify positions of the two plugs. Use the small pliers to pull each plug from its mounting pins. Now, you can slide the mechanism module forward and lift it away from the case top. The wire-pairs from the eject-button and In-Use LED should remain tucked into their plastic side-braces.

The next step is to remove the actual mechanism from its shell. Remove the two medium Phillips mounting bolts (with flat washers) from each side. Remove the single medium Phillips bolt/washer that is centered on the upper-rear metal shroud, lift away the should, and look inside.

Note that the round external cable terminates in a familiar IDE-20 flat-ribbon connector that plugs into the mechanism. Unplug the connector and slide the mechanism forward and out. It should have a shiny 'tin can' metal cover which you will want to place on the replacement mechanism. Mark "Front" and "Back" on the cover. To remove it, 'unsnap' it from the back, lift, and slide off toward the rear.

You are now ready to begin reassembly, but pause to appreciate what is before you. Hold the old mechanism and its Mac replacement side-by-side — they should appear identical. You can also check the age of each mechanism. Date of manufacture is coded on a sticker on the pancake motor (e.g., 8809 = September 1989).

To reassemble the drive with the new mechanism, simply reverse the steps outlined above: Slide on and snap down the 'tin can' cover, slide-in the mechanism, press-in the ribbon connector, etc.. Move slowly and avoid forcing anything. Take the time at each step to check for proper fit. Once the case bottom is re-attached with the four shiny bolts, you're ready to plug in and try out the 'new' drive!

Contact: You can reach the author, Stephen Buggie at 505-863-2390. Or via email at buggie@unm.edu, and, via mail, at Univ. of New Mexico-Gallup, 200 College Rd, Gallup NM 87301.

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October 20, 2011

to: Walter de Waal
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Sarasota, Florida 34238-2602

Apple II Super Serial
Card — broken jumper block
with photocopied manual

No cost for extra enclosed
disks.

Stephen Buggie