

**C= Commodore® 915**

3.5" High Density  
Floppy Disk Drive

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User's Guide

# Commodore® 915 3.5" High Density Floppy Disk Drive

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## User's Guide

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- Reorient the receiving antenna or AC plug.
- Change the relative positions of the computer and the receiver.
- Plug the computer into a different outlet so that the computer and receiver are on different circuits.

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Your house AC wall receptacle must be a three-pronged type (AC ground). If not, contact an electrician to install the proper receptacle. If a multi-connector box is used to connect the computer and peripherals to AC, the ground must be common to all units.

If necessary, contact your dealer or an experienced radio-television technician for additional suggestions. You may find the following FCC booklet helpful: "Hot to Identify and Resolve Radio-TV Interference Problems." The booklet is available from the U.S. Government Printing Office, Washington, DC 20402, stock no. 004-000-00345-4.

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# INTRODUCTION

The 915 3.5" Floppy Disk Drive is a high density 1.44 Mbyte drive that uses 3.5" double-sided, high-density microdisks, with 135 tracks per inch.

The 915 can read and write in either the 1.44 Mbyte or 720 Kbyte IBM® format. Note that use of the 1.44 Mbyte format requires *high density* floppy disks.

The 915 can be installed in a Commodore® PC40-III™, and in a Commodore®-Amiga® 2000 equipped with a PC-XT/AT® compatible A2286 Bridgeboard™.

Installed in the PC40-III, the 915 drive connects directly to the motherboard.

Installed in the Amiga 2000 for use with the A2286 Bridgeboard, the 915 drive connects to the floppy drive connector on the Bridgeboard.

This installation guide provides the necessary directions for the handling, installation, and testing of the 915 Disk Drive.

*CAUTION: Floppy disk drives must be handled carefully, and protected from shock. They should be cleaned every six months to one year, depending on usage. Use a drive cleaning kit, available from your dealer, or have your service center clean it for you.*

# INSTALLING THE 915 FLOPPY DISK DRIVE IN THE PC40-III

**WARNING:** *Before you start, make sure that no equipment is connected to the computer. DISCONNECT ALL PERIPHERALS AND POWER CORDS!* Installing the 915 with the power on could cause injury to yourself and damage to the equipment. Commodore will not be responsible for any injury or damage resulting from improper installation procedures. Such improper installation procedures will also void the warranties on the disk drive AND the computer.

## Overview

In the PC40-III the 915 disk drive can be installed in either of the two drive bays, which are located on the right side of the computer, as shown below.

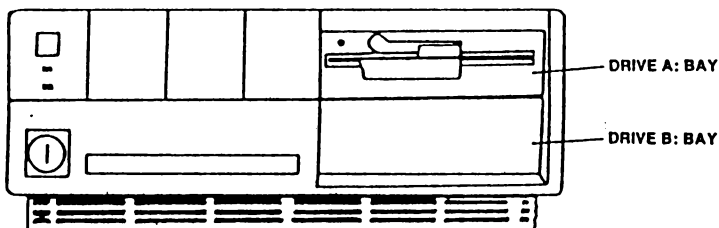


FIGURE 1. DRIVE BAY LOCATIONS ON PC40-III

The 915 is installed most often as the second drive (B:), occupying the lower drive bay. For this reason, the 915 is factory-set as the B: drive.

The 915 can also be installed as a replacement for the PC40-III's 5 1/4" drive (the A: drive), which occupies the upper drive bay. *If you want to use the 915 as your primary drive (A:), be sure to follow the instructions in the section entitled Reconfiguring the 915 as Drive A: on page 12.*

Before you begin, make sure that you have all the required parts:

- 915 3.5" floppy disk drive
- 4 screws

The only tools you will need are Phillips head screwdrivers #1 and #2.

Here are the general steps you will take to install the 915 in one of the drive bays:

1. *Remove the computer's top cover.*
2. *Remove the front panel and bezel plate, if necessary.*
3. *Move the hard drive to allow access to the floppy drive mounting screw holes.*
4. *Remove the original drive, if necessary.*
5. *Reconfigure the 915 as Drive A:, if necessary.*
6. *Insert the 915 in the drive bay.*
7. *Attach the 915 to the drive housing.*
8. *Connect the ribbon cable.*
9. *Connect the power cable.*
10. *Re-attach the hard drive in its original position.*
11. *Test the drive.*
12. *Reassemble the computer.*

The specific instructions on how to perform each of these steps are given in the following pages.

# 1 Removing the Top Cover

**WARNING:** Computer components are sensitive to static electricity. Contact with a computer when high levels of static electricity are present could damage a component. Touch a nearby grounded metal surface before touching the computer to help reduce static levels.

Remove the screws at the base of the right and left sides of the computer, as shown below. Note that there are two screws on each side.

*Note: Save all screws and washers; you will need them later when you reassemble the computer.*

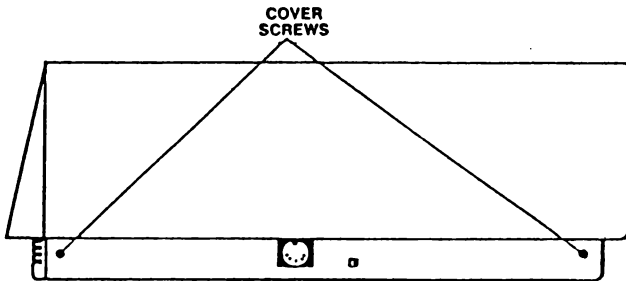


FIGURE 2. PC40-III SYSTEM UNIT — RIGHT SIDE

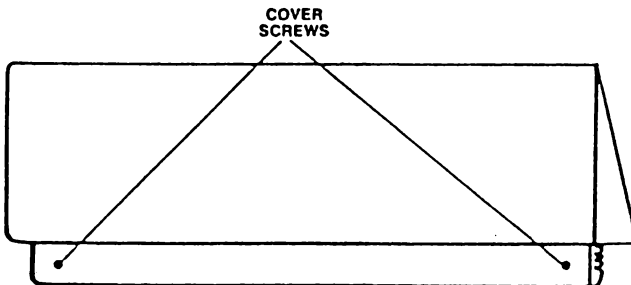
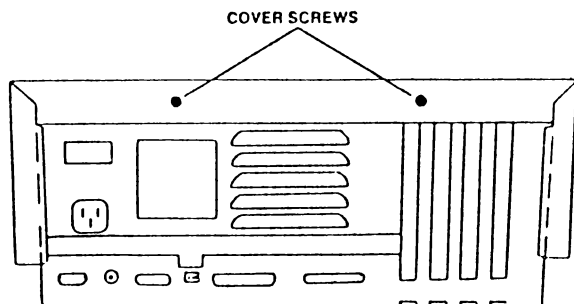


FIGURE 3. PC40-III SYSTEM UNIT — LEFT SIDE

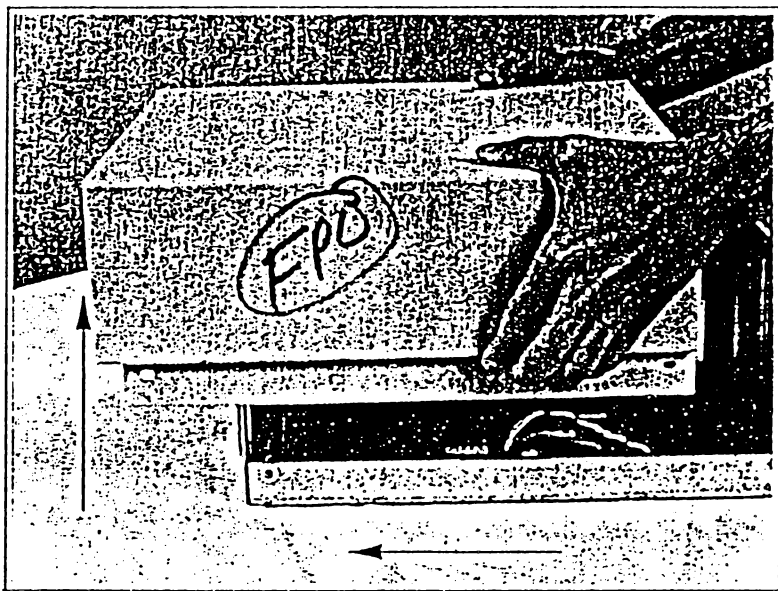
Remove the two screws in the rear that hold the cover to the computer.





*FIGURE 4. PC40-III SYSTEM UNIT — REAR*

To remove the cover, turn the computer so that you are facing the front. Grasp the cover on both sides, slide it away from you and lift up, as shown below.



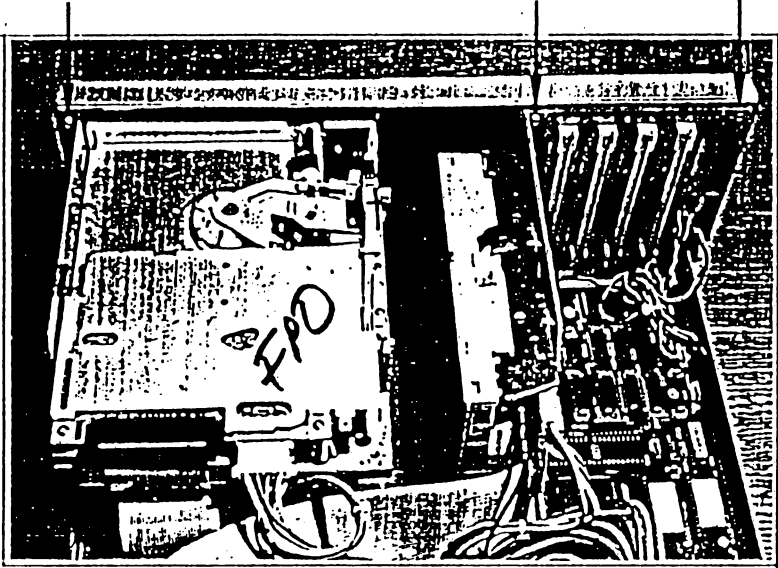
*FIGURE 5. REMOVING COVER*

If the cover becomes stuck while sliding it or lifting it, check to see if any wires or cables are caught on the cover. Carefully untangle them and continue removing the cover. If the cover still seems to stick, do not force it. Shift the cover away from you, gently alternating pressure on each side.

## 2 Removing the Bezel Plate (If Necessary)

If you are installing the 915 as a second drive (the B: drive) in the lower bay, you must remove the protective plastic plate (called a bezel) on the front panel, to open the lower bay drive slot.

To do this, first locate and remove the three screws that connect the front cover to the computer, as shown below.



*FIGURE 6. REMOVING FRONT COVER SCREWS*

While taking care not to disconnect the wires that connect the front cover to the motherboard, lift the top edge of the front cover away from the computer, and pull it out as shown below.



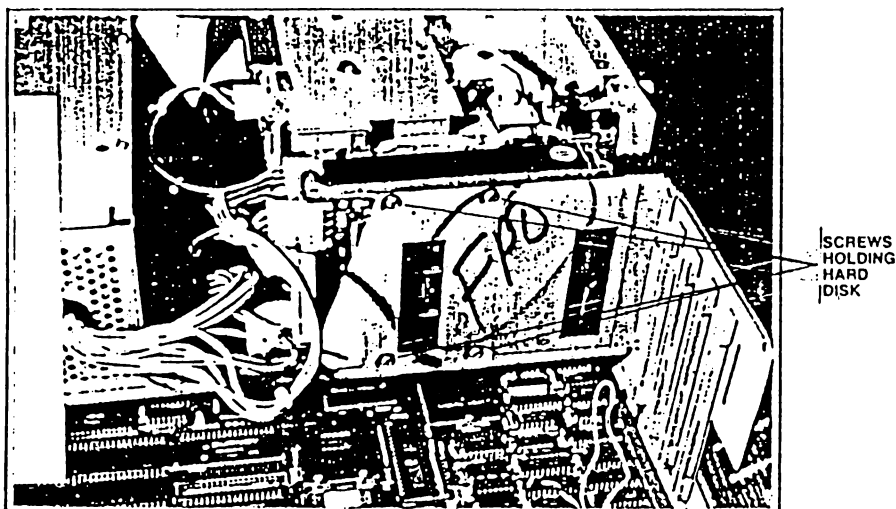
*FIGURE 7. REMOVING BEZEL*

Remove the two screws and the bezel plate as indicated above.

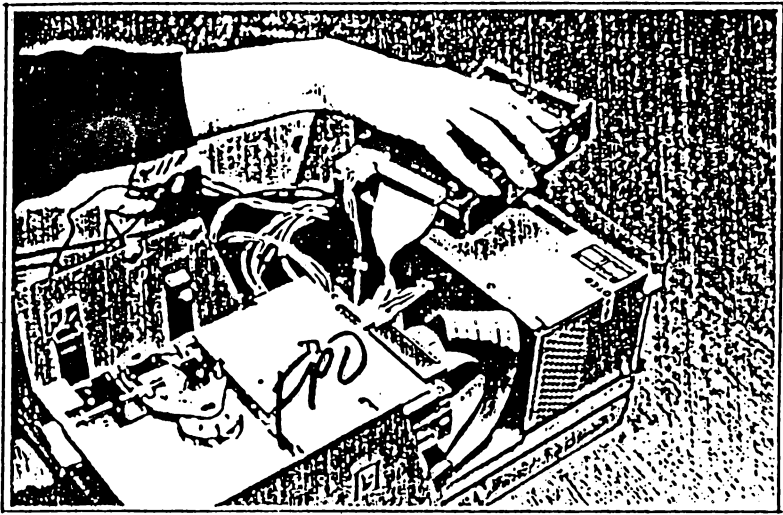
### 3 Moving the Hard Drive

To reach the floppy disk drive screws during installation or removal, you must move the hard disk drive located to the left of the floppy drive bays. Remove the four screws holding the hard drive and, leaving the cable connected, move the hard drive out of the way, as shown below. (After the new floppy disk drive is installed and tested, you must replace the hard drive in its normal position before testing the floppy drive.)

**HARD DRIVE HANDLING PRECAUTIONS:** Hard drive failures may occur if the hard drive is subjected to electrical or physical shock. When removing the hard drive, be sure all equipment is disconnected. Discharge any static electricity by touching a nearby grounded metal surface before you touch the computer or hard drive. Handle the hard drive gently. Do not drop or bump.



*FIGURE 8. REMOVING HARD DISK SCREWS*



*FIGURE 9. MOVING HARD DISK*

## 4 Removing the Original Drive (If Necessary)

If you are replacing a drive, locate the 4-pin power connector and the 34-pin cable connector attached to the original drive, as shown below. Disconnect both connectors by carefully pulling each connector away from the drive.

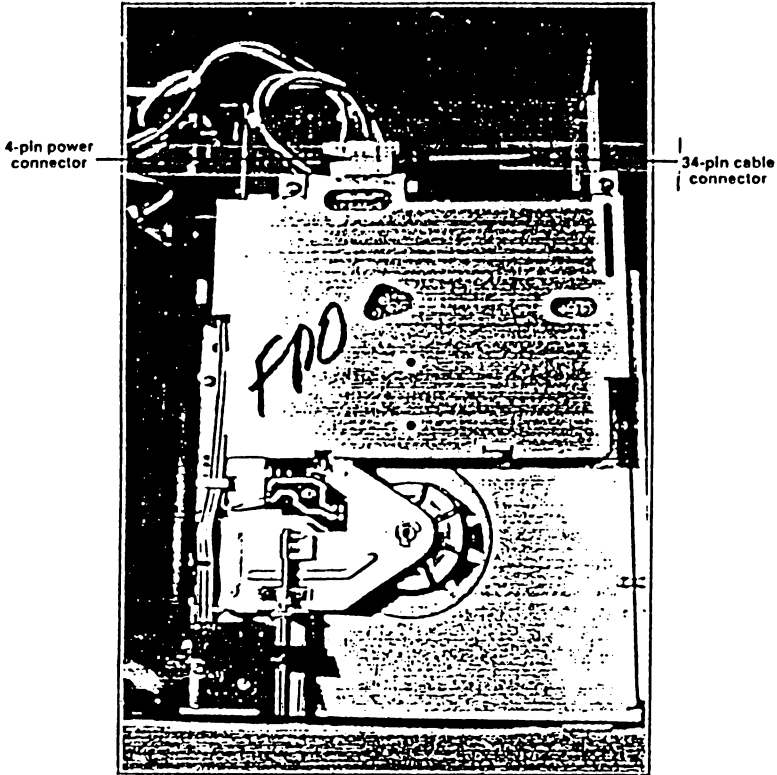
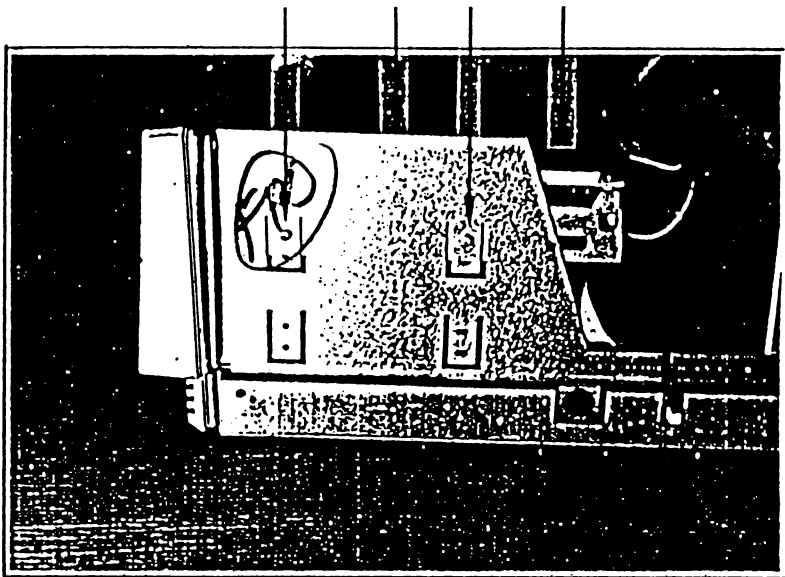


FIGURE 10. CONNECTOR LOCATIONS

Locate and remove the four screws that attach the original drive to the drive housing, as shown below.



*FIGURE 11. DRIVE HOUSING SCREWS*

Carefully slide the original drive out of the front of the computer. Never force the drive or drag the bottom across anything. Slide the drive slowly and support its weight. Put the drive and the screws aside, in a safe place.

## 5 Reconfiguring the 915 as Drive A: (If Necessary)

The 915 will usually be installed as the second drive (B:) in the lower drive bay. If you want to install the 915 as your primary drive (A:) in the upper drive bay, you must re-jumper the drive, or have your dealer or service center re-jumper it for you. To re-jumper the drive, locate the set of jumper pins between the rear of the drive and the 34-pin ribbon connector as shown below. The jumper (the black plastic block), is on the second set of pins from the right, labeled 1. To change the drive to the A: setting, carefully pull the jumper straight up and off, and replace it on the pins marked 2.

If your drive jumper pin set does not look like the one shown, call your dealer or service center for resetting information.

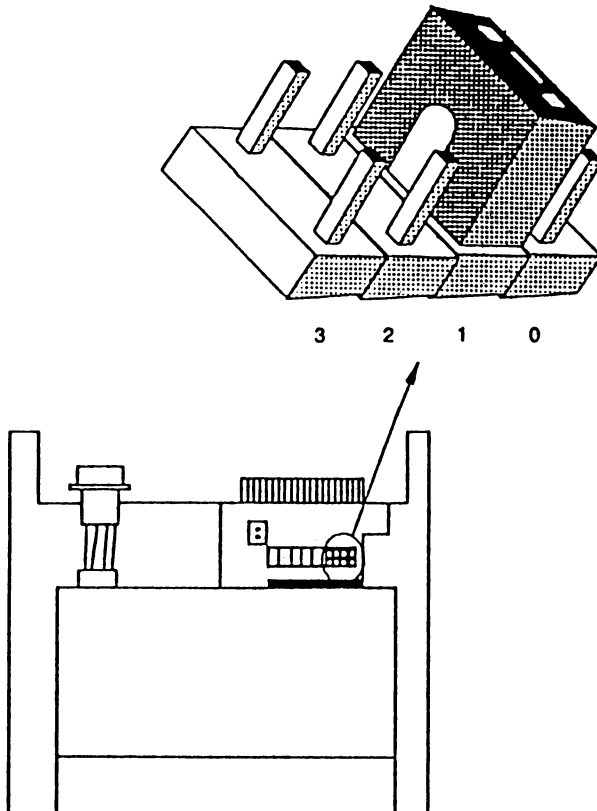


FIGURE 12. JUMPER PIN SETTING



## 6 Inserting the 915 in a Drive Bay

While keeping the 915 level, insert the back end (the end with the cable connectors) into the drive slot, as shown below. Carefully slide the drive into the slot until the front end is flush with the front of the computer. If at anytime the drive seems to catch on something, gently lift it up and back, and then continue the insertion procedure. *(Note: Due to ongoing product improvements, your drive may not look exactly like the one shown below.)*

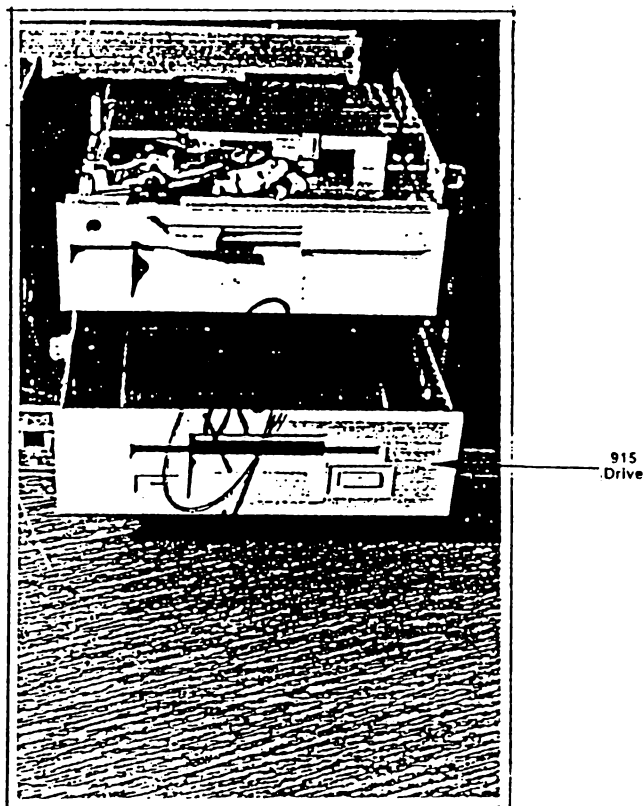


FIGURE 13. INSERTING DRIVE IN BAY

## 7 Attaching the 915 to the Drive Housing

There are two sets of mounting holes on the drive itself and two sets on the disk drive housing. Install the four mounting screws in the mounting holes as follows:

- In the *lower* bay (Drive B:), use the *lower* set of holes on the *drive* and the *upper* set of holes on the *drive housing*.
- In the *upper* bay (Drive A:), use the *lower* set of holes for both the *drive* and the *drive housing*.

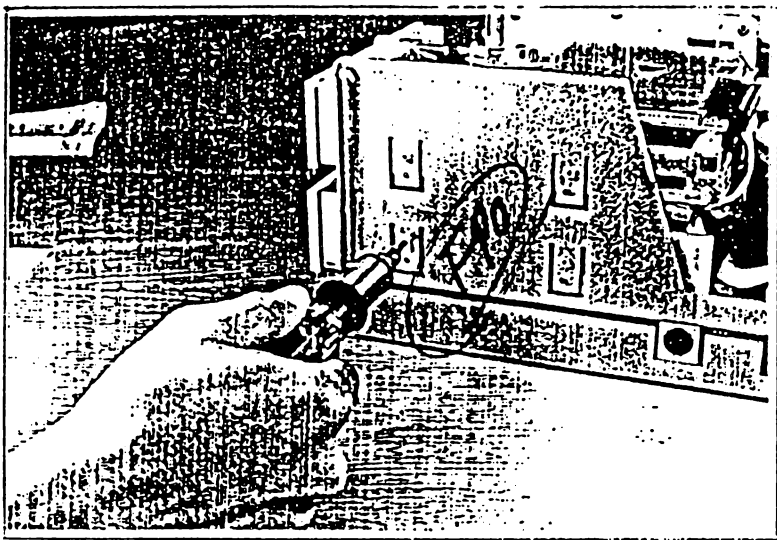


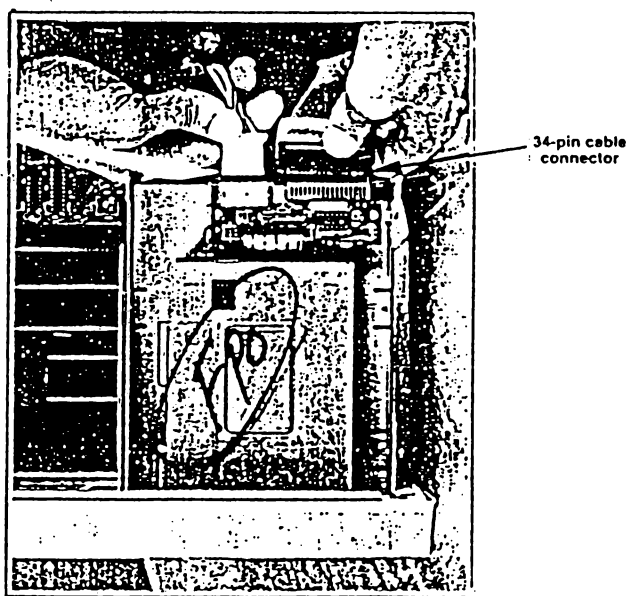
FIGURE 14. DRIVE MOUNT SCREWS BEING TIGHTENED

When the drive is firmly attached, the next step is connecting the ribbon cable.

## 8 Connecting the Ribbon Cable

The 915 connects to the motherboard with the 34-pin flat ribbon cable, located behind the drive housing and in front of the metal box containing the power supply, as shown in the figure below. Locate the ribbon cable and hold it so that the colored stripe is on the right, towards the right side of the computer.

Note that the cable has two connectors. The one closer to the motherboard is used for a drive in the lower drive bay (Drive B:), while the one at the end of the cable is used for a drive in the upper drive bay (Drive A:). Align the connector with the tab at the right rear of the disk drive, as shown below. The connector is keyed so that it can only fit the correct way. Gently slide the connector onto the tab. If the ribbon cable does not fit over both tabs, call your Commodore dealer.



*FIGURE 15. CONNECTING RIBBON CABLE*

Note: In the photos on this and the next page, the top drive has been removed for a better view of the cable connections for a drive being installed in the lower bay. However, it is not necessary to remove the top drive to install a 915 in the lower bay.

## 9 Connecting the Power Cable

The 915 connects to the power supply with a 4-pin power cable, located on the left side of the power supply housing at the rear of the computer. There are two sets of power cables, one for Drive A and one for Drive B. Each set of cables ends in a four-pin plastic connector.

Align the power cable connector, as shown below, with the power connector located at the rear of the disk drive. Note that both connectors have rounded corners on one side. The power connector from the computer must be oriented the same way as the one on the drive. Do not plug in the computer yet!

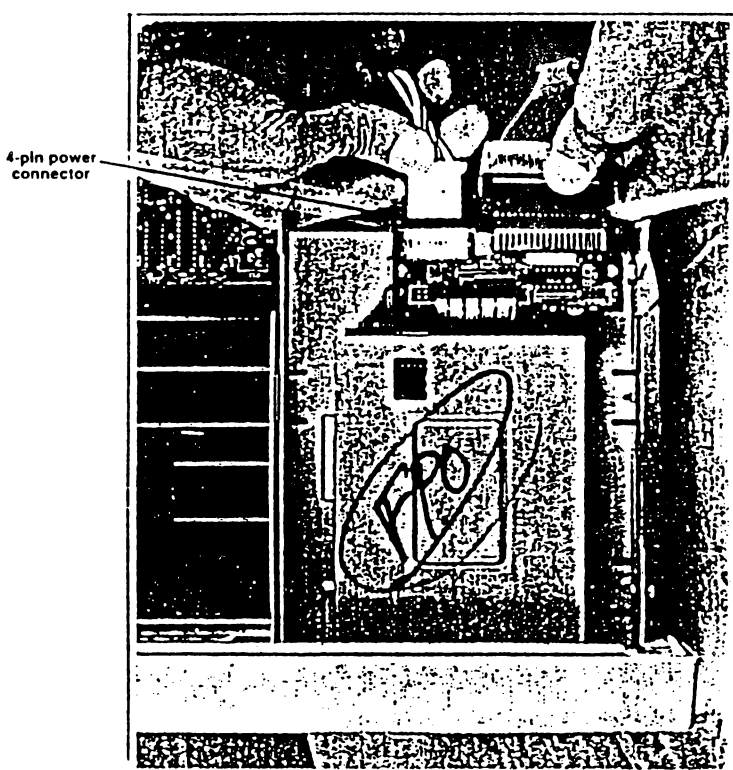
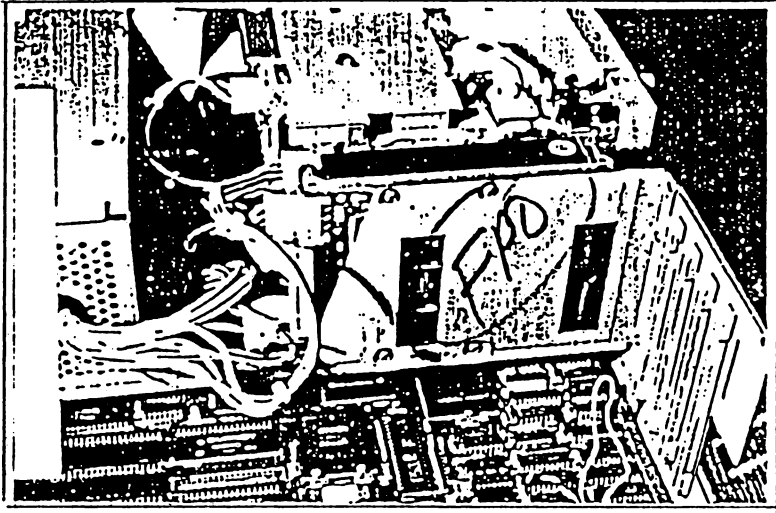


FIGURE 16. CONNECTING POWER CABLE

# 10 Re-attaching the Hard Drive

Re-attach the hard disk in its original position. Observe the handling precautions noted in Step 3.



*FIGURE 17. HARD DISK RE-ATTACHED*

# 11 Testing the 915

Once the 915 is properly installed, the disk drive should be tested before the cover is replaced. The test involves formatting a disk to confirm that the 915 is reading and writing properly. For the test you will need a blank, unformatted, high density, 135 tpi disk.

**NOTE:** Before you actually start the test, you must run the PC40-III Setup utility, described in the *PC40-III Operations Guide*. This informs the system that a 3.5" drive has been installed. Press Ctrl-Alt-Esc and the main Setup screen will appear. Use the up/down cursor keys to move to the Diskette 1 or Diskette 2 items (Diskette 1 if you have installed the 915 as Drive A: or Diskette 2 if you have installed the 915 as Drive B:). Use the left/right cursor keys to move through the predefined values until you reach 1.44 M (indicating a high-density 3.5" floppy drive). Then press END to exit Setup and update the drive settings. The PC40-III will reboot automatically with the new settings in effect. (See Chapter 4 of the PC40-III Operations Guide for complete details on using the Setup utility.)

Before starting the test, check all the connections to ensure that none have become loose during installation.

Connect the monitor and the keyboard, and plug the computer into the power outlet. Turn on the system and boot MS-DOS®.

<p><b>WARNING: Do not touch the insides of the computer while the power is on!</b></p>
--

The MS-DOS prompt will then appear on the screen. If you have installed the 915 in the lower bay, as Drive B:, then at the MS-DOS prompt you would type:

**format B: <Enter>**

The system will respond:

**Insert new diskette for drive B:  
and strike ENTER when ready**

(If you have installed the 915 in the upper bay, as Drive A:, then in the above command and response the letter A would replace the letter B.)

Insert the blank disk in the 915 drive and press *Enter*. The system will respond:

**Head:0 Cylinder:0**

The system will count the heads and cylinders during the formatting process and then will respond:

**Format complete  
Format another diskette (Y/N)?**

Type *N* and press *Enter*; you will then be returned to the MS-DOS prompt.

If the disk does not format correctly, and you are certain that all the equipment, cables, etc. are properly connected, the disk may be defective. Try formatting a second blank disk. If the second disk still does not format correctly, there may be a problem with the Setup utility. Run the Setup utility (Ctrl-Alt-Esc). If the drive is properly identified as to position (Diskette 1 or Diskette 2) and type (1.44 M), then there may be a problem with your system. Contact your dealer or service center for assistance.

For additional information on the Format command, see the *MS-DOS User's Guide/User's Reference* manual.

# 12 Reassembling the Computer

If the drive test is successful, you can now reassemble the computer, as follows:

- ***TURN OFF AND UNPLUG THE COMPUTER AND ALL PERIPHERALS!***
- Re-attach the front cover if necessary.
- Re-attach the top cover.
- Re-connect all peripherals.
- Plug in the computer and peripherals.

Your 915 should now be ready for use.



# INSTALLING THE 915 FLOPPY DISK DRIVE IN THE AMIGA 2000

You can install the 915 floppy drive in an Amiga 2000 for use with an A2286 AT-type Bridgeboard. Simply follow the instructions given in the *A2088/A2286 User's Guide* for installation of the 5 1/4" floppy drive. Just interpret every reference to the 5 1/4" drive as a reference to the 915 3 1/2" drive.

**NOTE:** Be sure to reconfigure the 915 as Drive A:. See page 12 of this manual for instructions on reconfiguring the 915 as Drive A:. Also, you need to use the A2286 Setup utility to tell the Bridgeboard that Drive A: is a 1.44 M (3.5") drive. To run the Setup utility, press Ctrl-Alt-Esc and the main Setup screen will appear. Use the up/down cursor keys to move to the Diskette 1 item. Use the left/right cursor keys to move through the predefined values until you reach 1.44 M (indicating a high-density 3.5" floppy drive). Then press E to exit Setup and update the drive setting. The A2286 Bridgeboard will reboot automatically with the new setting in effect. See the *A2088/A2286 User's Guide* for complete details on using the A2286 Setup utility.

After you run the Setup utility you should test the drive, as described in Step 11 of the procedure for installing the 915 in a PC40-III.

# TECHNICAL SPECIFICATIONS

- 3.5 inch, 135 tracks per inch, double-sided, high-density, micro floppy disk drive.
- 2 Mbyte unformatted capacity, 1.44 Mbyte formatted capacity in 80 cylinders and 160 tracks.
- Data transfer rate of 500 Kbits per second.
- Power supplied by the computer.

## 34-pin Ribbon Cable Signal Interface

Pin Number		Signal	Direction
Signal	Ground		
2	1	Mode Select	Input
4	3	Key	X
6	5	Select 3	Input
8	7	Index	Output
10	9	Select 0	Input
12	11	Select 1	Input
14	13	Select 2	Input
16	15	Motor On	Input
18	17	Direction Select	Input
20	19	Step	Input
22	21	Write Data	Input
24	23	Write Gate	Input
26	25	Track 00	Output
28	27	Write Protect	Output
30	29	Read Data	Output
32	31	Side Select	Input
34	33	Disk Change	Output

## 4-pin Power Cable Interface

Pin Number	Power Name
1	+5V DC
2	ground
3	ground
4	+12V DC





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