



The best name in memory

**Cumana Ltd.,
Pines Trading Estate, Broad Street,
Guildford, Surrey, GU3 3BH.
Tel: (0483) 503121 Telex: 859380
Fax No. 503326**

CA400S INSTALLATION INSTRUCTIONS

Introduction

This document details the installation of an external 5.25" floppy disk drive for the Archimedes computer.

The kit you have been supplied should contain the following:-

- 1 x 5.25" Disk Drive
- 1 x Buffer Board attached to a back panel by a 34 way ribbon cable
- 1 x 5.25" Diskette containing DISK.SYS device driver
- 1 x set of instructions
- 1 x Warranty Card

Fitting the Buffer Board

1. Remove the top cover of the computer, this is described on pages 43 and 44 of the Archimedes Welcome Guide.
2. Turn the unit round until the rear faces you. You should notice that there are some panels running along the back of the unit.
 - a. Remove one of these panels by unscrewing the two screws, one at either end of the panel (do not lose the screws, you will require them later).
 - b. Feed the Buffer Board through the empty slot on the rear of the computer.
 - c. Fix the back panel which is attached to the Buffer Board, to the unit, ensuring that the connector (on the panel) is on the left hand side of the unit (as viewed from the back).
3. Turn the unit until the front faces you, inside the computer there is a 34 way ribbon cable which connects the first internal drive (Drive 0) to the main board of the computer. Note which side the coloured strip on the cable is and keep this information as you will require it later. Carefully remove the connector from the main board.
4. Orientate the Buffer Board so that the components are on the side which is facing the front of the unit. You will notice a half twist in the cable, this is correct.

5. Carefully plug the ribbon cable you removed in (3) onto connector PL4, ensuring that the coloured strip is on the same side as originally noted in (3).
6. Insert the Buffer Board into the vacant socket on the main board, ensuring that the connector fits centrally into the socket. If you are not careful you will bend or even break the pins in the socket, this will render the machine un-usuable.
7. a. In the single drive machine there is a spare DC Power connector on the 4 wire cable attached to Drive 0. Connect this to PL1 on the Buffer Board.
b. In a dual drive machine you will require a DC adapter cable (DCC52535) to utilise the power connector reserved for the hard drive. Please contact your supplier to obtain this.
8. Refit lid but do not secure until testing is complete.

Connecting the Floppy Drive

1. After you have unpacked the drive place it on a flat surface and plug the ribbon cable from the drive into the socket on the back of the main unit, which you have fitted in the above section.
2. Apply power to the drive, then your computer and check that no drive active lights are on. Check the screen the following should be displayed:-

Arthur 0.20 (06 JUN 1987) 1024K
Acorn ADFS
Arthur Supervisor
* -

If all is correct continue to **TESTING THE DRIVE**. If not, switch off and re-check the complete installation.

TESTING THE DRIVE

You must first re-configure your system before using your addition drive. Please refer to pages 90 and 91. *CONFIGURE OPTIONS in the Archimedes User Guide.¹¹

1. Using ADFS

Get a blank unformatted 5.25" disk and insert this into your new drive. Ensure that the switch on the front of the drive is set to 80 tracks. Enter the following command and press return:-

FORMAT 1 L

Answer Y to the question:

Are you sure (Y/N) ?

The following will be displayed:

Formatting xx

You will notice that xx starts as 00 and increases to 79, then the following will be displayed:

Verifying ...

If all goes well the following will be displayed:-

Formatted 640K

This disk is BBC Master compatible.

Now we will test the drive using the highest capacity formatter, enter the following command and follow the instructions as before:

FORMAT 1 D

The same information will be displayed as before but instead of formatting 640K the following is displayed:-

Formatted 800K

If your drive has passed the above test without fault you may proceed to use the system as normal, after securing the lid.

2. Using the IBM Emulator

If you wish to use your drive with the IBM Emulator then follow the instructions below.

- a. After you have booted the system place a blank unformatted 5.25" disk into your drive and set it to 80 track.
- b. Enter the following:-

FORMAT B:

Press return and follow the instructions displayed on the screen.

If all goes well the following will be displayed:-

```
Format complete  
730112 bytes total disk space  
730112 bytes available on disk
```

Format another (Y/N) ?

Due to the nature of the IBM Emulator you can only format floppy disks as 720K.

To allow you to format floppy disks as 360K, we have supplied the DISK.SYS device driver. To use this please read the next section.

Please note that the current version of the IBM Emulator only supports two floppy disk drives, so if you already have two internal drives you will have to disconnect drive 1 in order to use the external 5.25" drive.

Provided this test has been successful you may secure the lid and continue to use your system.

Instructions for configuration of the DISK.SYS device driver software

Once you have installed the disk drive hardware you may use it as an ordinary drive. However, there are limitations within MS-DOS which will prevent you from formatting a disk of 40 tracks in your new drive. We therefore include a software device driver which will enable 40 track formatting to take place. The device driver file (**DISK.SYS**) conforms to standard MS-DOS guidelines, and it should be copied into the root directory of your boot disk. It is installed with an additional command in your existing **CONFIG.SYS** file. The command takes the basic form :- **DEVICE = DISK.SYS** followed by particular options. The only option that you will need for standard use is the Physical Drive number. This is allocated by MS-DOS during initialisation of your machine and can usually be determined from the following table:-

Disk Drive	Physical Drive Number	Drive Specifier
First internal floppy drive -	0	A:
Second internal floppy drive -	1	B:
First external floppy drive - (only one internal)	1	B:
First external floppy drive - (two internal)	2	C:

The easiest way to understand the operation of the **DISK.SYS** device driver is to look at an example :-

Let's assume that you have added a second floppy drive (externally) to a machine originally fitted with one floppy drive only. In this case, the first floppy drive is physical drive 0 and the second drive is 1. The command in the **CONFIG.SYS** file should read **DEVICE = DISK.SYS /P:1** the /P:1 tells MS-DOS that you wish the driver to be attached to physical drive 1 (the second floppy drive). Once you have added this command to your **CONFIG.SYS** file, you should reboot your machine. As MS-DOS recognises the command and loads **DISK.SYS** into memory, you will see the following message displayed:-

Cumana - Disk driver Version 3.01

Physical Drive B is now also Logical Drive C

This means that your new floppy drive can be accessed as drive B: or drive C:: If you now try to format a disk in this drive, the command **FORMAT B:** will produce an 80 track disk, while the command **FORMAT C:** will produce a 40 track disk. This is because the new drive, when accessed as B: is directly under control of MS-DOS and the track count during formatting is limited to 80. Accessing the same disk as drive C: uses the installed DISK.SYS software which allows formatting of 40 tracks. This limitation only applies to formatting - if a formatted 40 track disk is in your new drive, files can be copied to and from it as drive B: or drive C::.

In practice, the actual message that you will see on starting your machine may vary. This will depend upon how many drives there are connected to your machine and on whether there are any RAM drives configured. Ideally, the **DEVICE = DISK.SYS /P:1** command should be in the first line of your **CONFIG.SYS** file. When the message is displayed, make a note of the new logical drive letter that your drive can be accessed with and always use that letter for formatting disks in the new drive. Note that the identifying letter on any RAM drives may be altered when using **DISK.SYS**.

For non-standard disk formats, there are other options that may be configured into the **DISK.SYS** driver. These are as follows:-

DISK.SYS command format:- **DEVICE = DISK.SYS /P:v [/D:w /H:x /S:y /T:z]**

Options enclosed in the square brackets are optional.

Options

/P:v - where v is the Physical Drive number. Must be specified.

These options are only required for NON-STANDARD use, don't use them unless you are sure of what you are trying to achieve.

/D:w - where w is the drive type as follows:-

0 = 360K (Max)	floppy
1 = 1.2M (Max)	floppy
2 = 720K (Max)	floppy

Default is 0

Note that the Drive Type 1 is for special controllers only.

/H:x - Where x is the number of heads on the drive. Default is 2 (double sided)

/S:y - Where y is the number of sectors per track. Default is 9

/T:z - Where z is the number of tracks. Default is 40

As a final check to see that you have installed **DISK.SYS** properly, ensure that there is a disk in your new drive and display a directory using the **DIR** command from the MS-DOS prompt. Check that the correct drive access light comes on. Now display a directory using the new Logical drive letter noted in the sign on message. The same drive light should come on - if it doesn't, the physical drive number following the **/P:** option in the **CONFIG.SYS** file is incorrect. Change it, reboot your machine and try again. No harm can come to any of your disks as long as you do not write to them until you are certain that you have installed the drive correctly.

The following table is supplied to act as a quick reference for using disks on the 5.25" drive.

Operating System	Disk capacity (K)	40/80 Track Switch Position
ADFS	640 (L)	80
ADFS	800 (D)	80
MS-DOS	360 (DISK.SYS INSTALLED)	40
MS-DOS	720	80