ARCHIMEDES HARD DISC UPGRADE

This leaflet provides information on the following:
- installing the upgrade
- using the hard disc
- care and handling of the hard disc
- formatting the hard disc

INSTALLING THE HARD DISC UPGRADE

This hard disc upgrade is intended to be fitted by an Acorn Computers' authorised dealer who will install, format and test the hard disc unit. In order to use hard discs on the Archimedes 300 series, it is also necessary to have a Hard Disc Podule installed. This Podule should also be fitted and tested by an Acorn Computers' authorised dealer. On the Archimedes 400 series, the hard disc interface circuitry is integral and hence a Hard Disc Podule is not required.

The hard disc upgrade installer should give this leaflet to the user when returning the upgraded Archimedes.

USING THE HARD DISC

The hard disc installed in the Archimedes gives you access to approximately 20Mb of filing space on which to store programs and data. The hard disc is similar in use to a floppy disc except that the hard disc is permanently `present' whenever the Archimedes is switched on. The Advanced Disc Filing System (ADFS) provides facilities for the storage and retrieval of data on both the floppy disc and hard disc systems installed in the Archimedes.

It may be necessary to change the configuration of the Archimedes to allow access to the hard disc. The following configuration options may need to be set:

```
*CONFIGURE HardDiscs 1
```

causes the machine to expect one hard disc drive on initialisation

```
*CONFIGURE Drive 4
```

causes the machine to select drive 4 by default, ie the internal hard disc drive

```
*CONFIGURE FileSystem 8
or
*CONFIGURE FileSystem ADFS      (for Arthur 1.2 onward)
```

selects the ADFS to be the default filing system on initialisation

The hard disc is represented on the desktop by a hard disc icon. This icon will appear at the bottom left of the main desktop screen (next to the floppy disc icon) once the hard disc drive is fitted and the Archimedes is configured to recognise its presence. The contents of the hard disc can be viewed and manipulated from the desktop in the same way as for a floppy disc. Further information on the use of discs and the ADFS can be found in the *Welcome Guide,* the *ADFSDemo* tutorial program in the *Welcome Suite* and in the *User Guide,* chapter *Filing Systems.*

It is possible for hard discs to develop `defects' during normal use. In this context, a defect is a very small area of the hard disc surface which is no longer able to store data reliably. This type of defect is not unusual in hard disc systems and is not normally symptomatic of a failure in the equipment. It is however important that the ADFS, which organises where data is stored on the disc, is `told' where these defects are located in order that it can avoid using these areas for future data storage. Such defects maybe first noticed as 'Disc errors' during normal use of the hard disc.

There is currently only one way of informing the ADFS of the location of these defects and this requires that the hard disc be reformatted. During the verification process that always follows reformatting, all disc surfaces are checked for their ability to store data accurately. If any areas are found to be unreliable, then the locations of these areas are added to a list of defects which is then stored on the hard disc itself. The ADFS can then consult this list to determine where the defects on the hard disc are located and hence where not to store data.

It may be necessary, therefore, to reformat the hard disc occasionally. The method of formatting the hard disc is different to that for a floppy disc. For details, see the section on *Formatting the hard disc* later in this leaflet.

CARE AND HANDLING OF THE HARD DISC

The hard disc unit is a delicate mechanism and requires careful handling. When the hard disc is in operation, the magnetic read/write heads are located very close to the surfaces of the rotating discs within the drive unit. As the gap between the read/write heads and the disc surfaces is extremely small, it is possible that if the Archimedes were jolted, the heads could momentarily touch the disc surface. This could cause damage to areas of the disc coating where the data is stored or under more extreme conditions actually damage the heads themselves. It is thus possible that moving the Archimedes while the hard disc is in operation could cause corruption of data on the disc or even irrepairable damage to the disc unit.

When the Archimedes is switched off, and particularly when it is to be transported, the hard disc can be made much more immune to the adverse effects of movement by `parking' the drive heads. Parking the drive heads involves moving them to a special area of the disc surface where no data is stored and where contact between the heads and the stationary surface of the disc will do no harm. In order to park the drive heads, enter the following commands:

*ADFS⏎

*BYE⏎

when the screen prompt reappears, the drive heads will be parked.

If you are in desktop, proceed as follows:

- position the pointer on the hard disc icon which appears at the bottom left of the desktop screen

- click the menu button of the mouse on the hard disc icon and a window containing the word bye will appear

- position the pointer on the word bye, click select and the drive heads will be parked.

It is good practice to park the drive heads everytime you switch the Archimedes off. If you intend to move the Archimedes then always transport it in appropriate packaging and take care not to subject it to undue bumping and jarring.

With careful handling, the hard disc drive installed in your Archimedes will operate reliably over a long period. If a failure of some sort should occur, which corrupts the data on the hard disc, it may be very difficult or even impossible to recover that data. The data on your hard disc may represent many hours of work and it is vital therefore to keep up-to-date backup copies of important data. Data may be copied onto floppy discs and these floppy discs then labelled, and stored in a separate location to your Archimedes. For advice on copying files from the hard disc to floppy discs, see the *Welcome Guide* (copying using the desktop) and the *User Guide* (copying using *COPY). Alternatively, ask your supplier for information on backup systems which enable you to copy the entire contents of your hard disc onto a removeable media.

FORMATTING THE HARD DISC

When your Archimedes is returned following the hard disc upgrade, the hard disc will be formatted and ready for use. The hard disc formatting utility, a BASIC program called HFORM, will be supplied on the hard disc in the Library directory. You should copy HFORM onto a floppy disc for possible future use.

> WARNING: reformatting your hard disc will destroy all data stored on the disc. It is essential that data which you wish to keep is copied to another media, eg floppy disc, before the disc is reformatted.

In order to reformat your hard disc, load and run the HFORM program from either the hard disc or from your backup copy on floppy disc. HFORM (in the Library directory) can be accessed from either the desktop (double-click select on HFORM) or from BASIC (CHAIN "HFORM").

HFORM will prompt you for the various parameters required to format the hard disc, these parameters are referred to collectively as the hard disc drive `shape'. The shape used by HFORM will be that read from the drive unless you specify otherwise. If the shape cannot be read from the drive, then you will have to select or specify the shape. In most cases, the shape will be read correctly from the drive and HFORM will give you the correct parameters for the hard disc drive fitted to your Archimedes. You will only have to enter a new shape if you are adding a new and previously unformatted drive or if the information on your drive has been corrupted or is incorrect.

For example, if you are reformatting your hard disc to add some defects to the list and your Archimedes is fitted with a 20Mb NEC hard disc, HFORM will prompt you as follows: (Press ⏎ if you wish to use the default values given.)

1   Format which drive (4 or 5)? 4 ⏎
           4 is the value for the internally fitted hard disc drive
           5 is the value for an external (second) hard disc drive (if fitted)

2   The shape written on the disc matches that of a 20Mb NEC disc. Do you wish to retain this shape (Y/N)?

3   Sectors per track? 32 ⏎

4   Heads? 4↵
          maximum value = 8

5   Cylinders? 612↵

6   Low current cylinder? 1023↵

7   Precompensation cylinder? 256↵

8   Parking cylinder? 672↵

HFORM will now list the current defects (if any) in the defect list and invites you to change the list. You may wish to add a new defect because the ADFS has previously returned an error message, such as:

```
Disc error 10 at :4/00831E00
```

You can use this logical address (ie 00831E00) directly in HFORM by selecting option C.

> NOTE:if you are adding more than one defect by logical address, you must add them in descending order of magnitude. You must also complete the entry of any or all logical address defect before adding any defect by (physical) cylinder, head and sector address, ie by option B.

Option B is normally only used to establish an initial defect list on a brand new, previously unformatted disc. It is also necessary to use option B to re-establish the defect list in the unlikely event that it has been corrupted, eg due to a power failure during a previous format operation. Under these circumstances, it would be necessary to remove the top cover of the Archimedes to gain access to the written defect list stuck to the body of the hard disc drive. The defect information can then be typed into HFORM via option B. (See the *Welcome Guide* section How *to change the internal batteries* for information on how to remove the top cover of the Archimedes). Always disconnect the Archimedes from the mains by unplugging the power supply cable, before removing the top cover.

Select option A when the changes to the defect list are complete.

Confirm your intention to format the disc by typing Y ↵ when prompted.

HFORM will now format and verify the hard disc. If the verification process detects any additional defects, you can simply add them to the defect list by confirming with Y ↵ when prompted. HFORM will then repeat the formatting and verification process in order to include the new defects.

The formatting process is now complete.