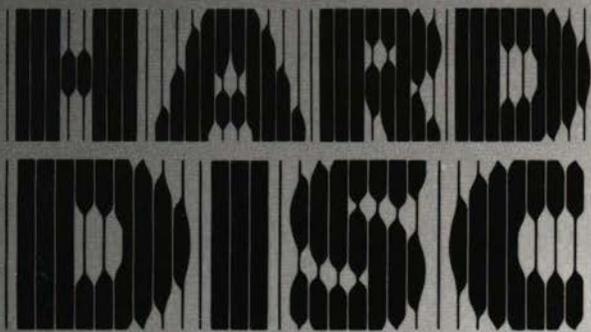


HARD DISC BACKUP
for the Archimedes, A3000
and A5000 systems.



Companion

Hard Disc Companion

User guide

Hard Disc Companion

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Hard Disc Companion was written by Graham Jones.

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1. Introduction

Hard Disc Companion version 2 is a new release of the best selling hard disc backup utility for the Archimedes, A3000 and A5000 systems. It has been completely re-written, and is twice as fast at backing up as version 1. New features have been added, and the user interface has been vastly improved. However the ease-of-use and reliability of version 1 have been maintained. Main features include:

- Full, Incremental and Differential backup types
- Fast backup procedure
- Configuration scripts
- Backup to floppies or other devices (such as a second hard drive)
- Suitable for backing up networks
- Restore backup data to any device or directory
- Backup only specified files, or files having selected filetypes
- Ignore specified files, or files having selected filetypes
- Search facility to locate files in backup data
- Retrieve individual files from backup data
- Verify whilst backing up, for additional security
- Suspend backup and resume at a later date
- Facility to display backup history
- Choices file for customised start-up
- Estimate number of floppies discs required
- Estimate time required to perform the backup

Hard Disc Companion provides a structured approach to the backing up of hard discs, and recovery of those files in the event of a hard disc failure. In addition, a Retrieve facility allows you to restore individual files should they be accidentally erased or incorrectly modified. Hard Disc Companion is intended for backing up hard discs to a set of floppy discs, but may be used to transfer files from any device to another. It correctly handles files which are too long to fit on a single floppy, splitting them across a number of consecutive discs.

The rigorous approach encouraged by Hard Disc Companion is to produce Full backups at regular intervals, say once a month. Such backups contain all the files on the hard disc. In between Full backups, say once a week, Incremental backups should be made. These contain only those files added or updated since the last backup. In the event of a hard disc failure, the Full backup and all the Incremental backups may be used to restore all the data to the hard disc. Using the above timescales the maximum period lost would be one week. Where the hard disc is being used daily for saving important data, a weekly Full backup and daily Incremental backup is recommended.

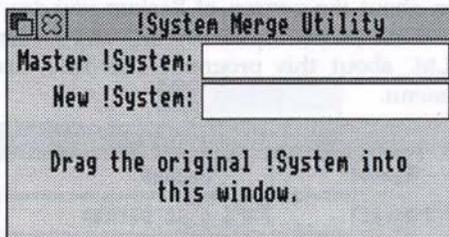
With the widespread availability of very large capacity hard drives comes the problem of backing up such large amounts of data onto relatively small capacity floppy discs. As many as a hundred floppy discs might be required to backup all the files on a large hard drive, and the time to do this would be prohibitive. Incremental backups are fast and efficient because they only backup new or modified files, but Full backups are very time-consuming. You can make backups much more efficient by being more selective about what should be backed up. Hard Disc Companion provides facilities to backup only selected objects, or to ignore selected objects. These choices are made using simple drag operations, and may be saved in configuration scripts for future use.

2. Installation

The first thing to do is to copy Hard Disc Companion onto your hard disc. To do this, enter the desktop and open a directory display on your hard drive and on your Hard Disc Companion master disc. Now drag *!Backup* from the floppy to the hard disc. If you wish to backup more than one hard disc drive, you should make a copy on each one. The other Hard Disc Companion programs *!Restore* and *!Retrieve* are contained in the *!Backup* directory, and will be copied at the same time.

The file *ReadMe* on the Hard Disc Companion master disc describes any last minute changes to the programs. To read it, load it into Edit or a similar text editor. When you have finished, place your Hard Disc Companion master disc in a safe place.

Hard Disc Companion uses the shared C library module *Clib*, which is stored in the *!System* directory on your hard disc. The most up-to-date version of this module available at production time is supplied with the package, so you need to update the version in your *!System* directory. To do this, run the *SysMerge* application on the Hard Disc Companion master disc by double-clicking on *!SysMerge*. The following dialogue box is displayed.



Now drag your current *!System* directory into this dialogue box; the icon labelled *Master !System* will display the pathname of this directory. Next, drag the *!System* directory from the Hard Disc Companion master disc into the dialogue; the icon labelled *New !System* will display the pathname of this directory. The new *!System* will be merged with the old one, and the message *!System Updated* should appear. You may now quit the *SysMerge* application by clicking on the dialogue box close icon.

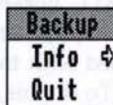
3. Getting started

This chapter introduces the Backup dialogue box, and describes the various configuration options. The backing up procedure is described in chapter 4. To load Backup, open a directory display on the directory containing the Backup application, and double-click on *!Backup*. The Backup program is loaded, and its icon displayed on the icon bar.



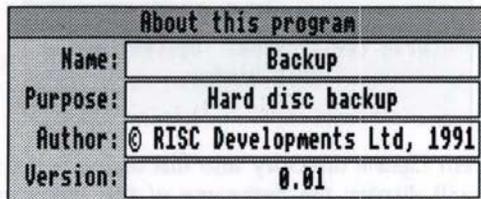
Icon bar menu

Click **Menu** on the Backup icon on the icon bar to display the following menu:



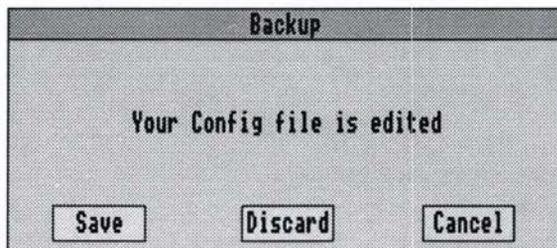
Info

Info gives information about the version of Backup you are using. The version number displayed should be quoted in any correspondence with RISC Developments Ltd. about this program. The **Info** dialogue box is also available on the **Misc** menu.



Quit

Quit exits Backup, and removes it from the computer's memory. It displays a dialogue box requesting confirmation if the configuration script has been changed but not saved.



Backup dialogue box

Click **Select** on the Backup icon on the icon bar to display the Backup dialogue box shown below.

This box displays the names of the source and destination devices and the type of backup selected. As the backup progresses it gives the percentage of the backup complete and the approximate time to completion. Icons at the bottom of the dialogue box allow you to start, stop, or suspend the backup. These options are described fully in chapter 4.

Click **Menu** over the Backup dialogue box to display the Backup menu.

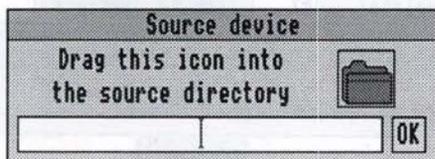
Backup	
Misc	⌵
Source	⌵
Destination	⌵
Backup type	⌵
Files	⌵
Filetypes	⌵

The options on this menu allow you to configure the backup for your requirements, and save the configuration for future use. These facilities are described below.

Source device

The **Source** option allows you to specify which device you wish to backup, and the directory from which the backup will commence. To set the source device, open a directory display on the root directory of the hard disc drive. This will normally be the \$ directory, but you can choose to start the backup at any directory. For example, on a network you may want to backup only your user root directory &.

Now choose the **Source** option, and drag the 'directory' icon from the source device dialogue box to the directory display you have opened.

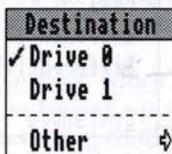


The name of the source device will be automatically read from the directory display, and displayed in the Backup dialogue box to the right of the word **Source**:

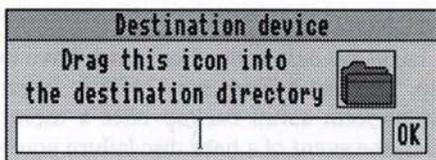
Alternatively, you may type in the source pathname in the writable icon provided in the source device dialogue box, and then click on **OK**. This should be the full pathname of the source device, including the drive specification and \$ or &. Otherwise the error `Bad source` will be displayed.

Destination device

If you are backing up to floppy discs, choose the drive you wish to use from the **Destination** menu. The name of the floppy drive you choose is displayed in the Backup dialogue box. The drives available depend on the floppy drives you have connected, and the configuration setting **Configure Floppies**.



If you are backing up to a device other than floppy discs, e.g. to another hard drive, choose **Other**. The **Other** option allows you to specify any destination device and directory by dragging the 'directory' icon from the dialogue box to the required directory display.

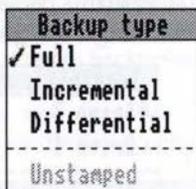


The name of the destination device will be automatically read from the directory display and displayed in the Backup dialogue box to the right of the word **Destination:**. Alternatively, you may type in the destination pathname in the writable icon provided in the destination device dialog box, and then click on **OK**.

Please note that the **Other** option should not be used when backing up to floppy discs. It assumes that the entire backup is to be saved on one device and will not prompt for the insertion of a new floppy disc when the first one is full.

Backup type

The **Backup type** menu allows you to choose the type of backup you wish to perform.



Full backup

This type of backup backs up all the files on the source device which match the files and filetypes specifications described below. A Full backup is the first type of backup that you should perform.

Incremental backup

This type of backup backs up only those files which have been added or modified since the last backup. The last backup may be Full, Incremental or Differential. Typically you might perform a full backup once a month, and an incremental backup once a week. In the event of a hard disc failure you will need to restore the full backup and all the incremental backups to recover all the files. Please note that the Full backup and each Incremental backup must use a separate set of floppy discs. If you are backing up to another destination, such as another hard disc, each backup must be stored in a different destination directory.

Differential backup

A Differential backup backs up only those files added or modified since the last Full backup. Operation is similar to an Incremental backup, but you may use the same set of floppy discs for each backup you make. Differential backups are slower than Incremental backups, but require fewer sets of discs. In the event of a hard disc failure you will need to restore the Full and the Differential backup to recover all the files.

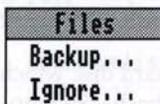
Unstamped files

Incremental and Differential backups rely on the timestamps of files to determine whether they should be backed up. It is possible for some files not to have timestamps, especially those transferred to your Archimedes, A3000 or A5000 system from another type of computer system. If **Unstamped** is selected, all unstamped files will be backed up by the Incremental and Differential backups; otherwise they are ignored. The default setting is that **Unstamped** is selected.

Please note that files added to the hard disc which have timestamps older than the date of the last backup will not be backed up when doing an incremental or differential backup. You can force timestamped files to be restamped after copying by setting the **S** option of the **Copy** command. This option is normally unset, but details of how to set it are given in your computer user guide.

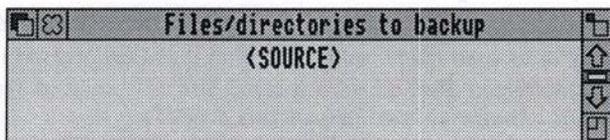
Files specification

Normally Hard Disc Companion backs up all the files and directories specified by the Source device path. The Files option however allows you to specify the precise files and directories that you wish to backup. You may specify a list of objects that will only be backed up, and/or a list of objects that will always be ignored.

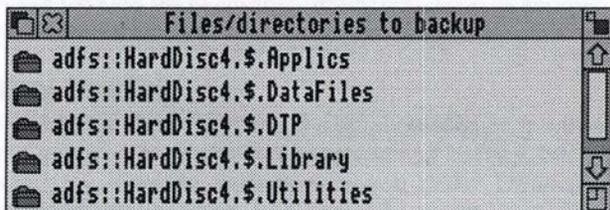


Backup files

The Backup option on the Files menu allows you to specify files and directories to be backed up. Click on Backup to open a window listing the files/directories which will be backed up. Initially it contains the word <SOURCE>, indicating that all files on the source device will be backed up.



You may drag files/directories into the window to create a list of objects to be backed up.



When the backup commences, Hard Disc Companion will backup only those files and directories specified in this window, ignoring the usual source device path. Typically this option is used to backup specific directories on your hard disc containing important files which are updated regularly.

Click **Menu** over the window to display the following menu:



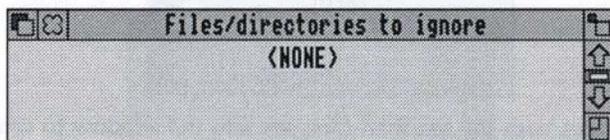
Del. allows you to delete a selected object, or a selection of objects. To select an object click **Select** on its name in the window. Click **Adjust** on further objects to add them to, or remove them from, the selection.

Select all selects all the objects in the window.

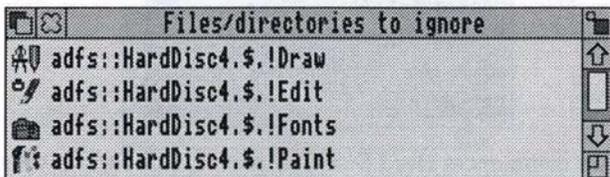
Clear selection de-selects all objects.

Ignore files

The **Ignore** option on the **Files** menu allows you to specify files and directories that must be ignored and not backed up. Click on **Ignore** to open a window listing the files and directories which are to be ignored. Initially it contains the word <NONE>, indicating that no objects will be ignored.



You may drag files/directories into the window to create a list of objects to be ignored.

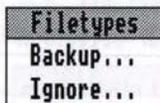


Typically this option is used to ignore files or directories which are temporary or unimportant, or files/directories for which you have separate backups. For example, you may wish to ignore the Paint, Draw and Edit applications, for which you will probably have copies on your master applications disc. You may wish to ignore your PC partition, which can be backed up more efficiently using MS-DOS commands (see appendix A).

The program will prevent you from doing various nonsensical things, such as trying to backup the same files twice, or trying to ignore and backup the same directory. Note that that you can ignore objects within a directory you wish to backup, but you cannot backup objects within a directory you have chosen to ignore.

Filetypes specification

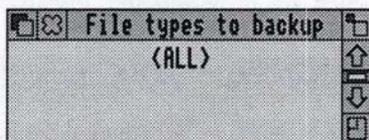
The **Filetypes** option allows you to specify the filetypes of the files you wish to either backup or ignore.



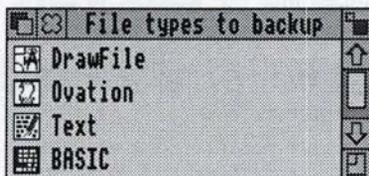
Please note that you can only specify filetypes to backup OR filetypes to ignore. **You cannot specify both at the same time.** If you specify filetypes to backup, the **Ignore** option will be shaded, and vice versa.

Backup filetypes

The **Backup** option on the **Filetypes** menu allows you to specify the filetypes of the files to be backed up. Click on **Backup** to open a window listing the filetypes which will be backed up. Initially it contains the word <ALL>, indicating that all filetypes will be backed up.

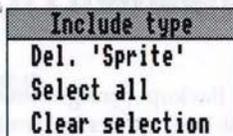


You may drag files with the required filetypes into the window to create a list of filetypes to be backed up.



When the backup commences Hard Disc Companion will backup only those files with filetypes specified. Typically this option is used to backup important data files which are updated regularly.

Click **Menu** over the window to display the following menu:



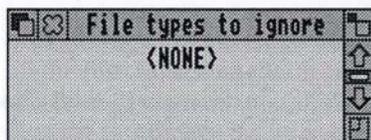
Del. allows you to delete a selected filetype, or a selection of filetypes. To select a filetype click **Select** on its name in the window. Click **Adjust** on further filetypes to add them to, or remove them from the selection.

Select all, selects all the filetypes in the window.

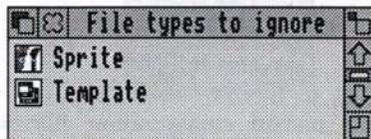
Clear selection, de-selects all filetypes.

Ignore filetypes

The **Ignore** option on the **Filetypes** menu, allows you to specify the filetypes of the files to be ignored. Click on **Ignore** to open a window listing the filetypes which will be ignored. Initially it contains the word <NONE>, indicating that no filetypes will be ignored.



You may drag files with the required filetypes into the window to add their filetypes to the list.



Typically this option is used to ignore files which are temporary or unimportant, or data files for which you have separate backups.

Filetypes may be deleted from the **Ignore** window in the same way as described above for **Backup** filetypes.

Saving the configuration

Save choices

Save choices saves the current Backup configuration in a script file which is automatically executed each time Backup is run. It allows you to customise the Backup start-up configuration to your exact requirements. The following settings are saved in the script file:

```
Source device
Destination device
Backup type
Unstamped, ON/OFF
Verify, ON/OFF
Files to backup
Files to ignore
Filetypes to backup
Filetypes to ignore
```

Please note that configuration scripts are saved as plain ASCII text files, and with care may be edited directly.

Save config

Save config saves the current Backup configuration like **Save choices** above, but in a named file.



It allows you to create a named configuration files for different backup applications.

To re-load a configuration file, double-click on its icon in a directory display, or drag it to the Backup icon on the icon bar.



The configuration settings will be loaded, and the name of the file displayed in the title bar of the backup dialogue box. The backup will not commence until you click on **Start**.

4. Backup procedure

Pre-backup pass

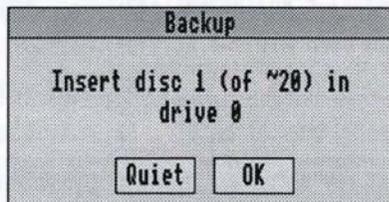
If you are using a 1Mb system, before starting the backup you should quit any other applications loaded. The extra memory gained will speed up the backup. Once you have ensured that the source, destination and backup type are set correctly, you may start the backup by clicking on Start.



The first thing that happens during a backup is an analysis of the source device. This builds a log file of all the files to be backed up, and estimates the number of floppies required to contain them. If you wish to abandon the backup at this stage, press **Escape**. When the log file is complete the backup will commence. If you are not backing up to floppy discs, the backup will commence immediately, and a message will be displayed when the backup is complete. You can abandon the backup at any time by clicking on **Stop**.

Floppy disc set

If you are backing up to floppy discs you will be prompted to insert the first floppy disc of the disc set.



The number ~20 is an estimate of the number of discs required for the backup assuming 800K per disc. Hard Disc Companion will erase any discs inserted, formatting them if necessary. Each disc will be given a unique name; the number at the end of this name identifies the number of the floppy in the set. Click on **Quiet** to erase the disc and use it for the backup without any further prompts. Otherwise, click on **OK** for confirmation of the disc in the drive.



Now click **OK** if you wish to erase the disc, or **Cancel** if you would prefer to use another disc.

As the backup progresses you will be prompted to insert floppy discs as they are required. Mark each disc clearly with its number. A message will be displayed when the backup is complete, giving the amount of data backed up and the time taken. You can abandon the backup at any time by clicking on **Stop**. However the backup will not stop until the current disc read or write operation is completed.

Backup progress

During the backup, progress information is displayed in the main Backup dialogue box. **Complete** shows what percentage of the backup has been completed, and **Time to complete** is an estimate in minutes of how much longer the backup will take to complete. This value is only updated after each chunk of data a written to the destination device. The estimate will become more accurate as the backup progresses. The estimated time is based on the time taken to insert and copy earlier floppy discs, and assumes that future floppies are inserted at the same rate. It cannot account for long delays in inserting floppies discs.

Verifying the backup

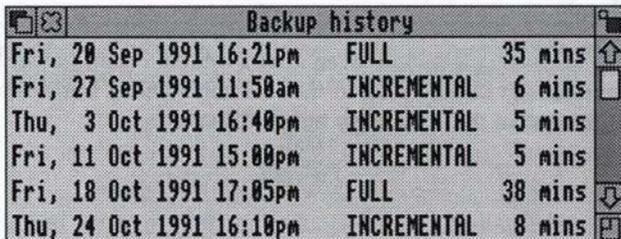
Floppy disc errors that occur during the backup are detected by the program, allowing you to insert a replacement disc for the faulty one. However there remains the rare possibility that a floppy disc error may go unnoticed by the operating system. If this occurs, you may not be able to restore the backup. If **Verify** on the **Misc** menu is selected, each chunk of data is verified by reading it back immediately after it has been written.

If **Verify** fails, Backup assumes that the current floppy disc is faulty and requests a replacement disc.

Please note that **Verify** slows down the backup considerably, but should be seriously considered if you are backing up important data.

History file

Choose **History** on the **Misc** menu to open a window showing the history of backups made.



Backup history		
Fri, 20 Sep 1991 16:21pm	FULL	35 mins
Fri, 27 Sep 1991 11:50am	INCREMENTAL	6 mins
Thu, 3 Oct 1991 16:40pm	INCREMENTAL	5 mins
Fri, 11 Oct 1991 15:00pm	INCREMENTAL	5 mins
Fri, 18 Oct 1991 17:05pm	FULL	38 mins
Thu, 24 Oct 1991 16:10pm	INCREMENTAL	8 mins

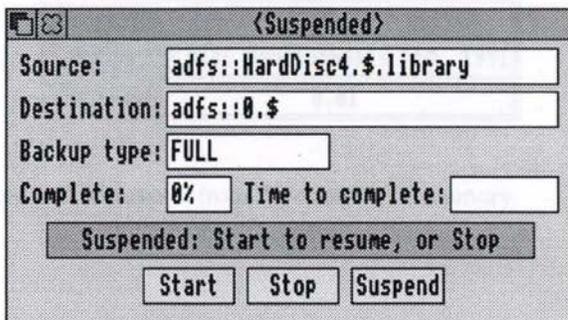
The date and time the backup was made is displayed, followed by the backup type and the time the backup took.

If you wish to start a new history file, delete the file *History* from inside the *!Backup* application. Hard Disc Companion will then create a new blank history file next time Backup is used.

Suspending and Resuming

You may suspend the current backup by clicking on **Suspend** in the Backup dialogue box. You will have to wait until the current disc operation is completed until the message - will suspend is displayed. This message indicates that the backup will be suspended after the current floppy disc (or directory in the case of **Other** destination) is full. It is generally most convenient to suspend backups when the floppy disc prompt window is open.

When the backup has been suspended the Backup dialogue box displays the message **Suspended: Start to resume, or Stop**.



<Suspended>

Source:

Destination:

Backup type:

Complete: Time to complete:

Suspended: Start to resume, or Stop

At this stage you may click on **Start** to resume the backup from where it was suspended, or **Stop** to clear the suspended state. After clicking on **Stop** the backup cannot be resumed.

You may also quit Hard Disc Companion at this stage; the suspended state is retained so that when it is re-loaded the backup may be resumed. The backup resumes by prompting for a new floppy (or in the case of a reset etc., the floppy that was interrupted). It re-starts any file that was started but not completed on the previous floppy.

It is possible to resume a backup even after a system crash, power failure or reset. The program doesn't do anything in these circumstances, but relies on the log file as it was at the end of the last floppy before the crash.

Suspending and Resuming

Verifying the backup



5. Restore

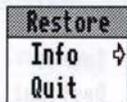
The Restore program restores files and directories from a backup to the hard disc. It will restore full, incremental and differential backups, re-creating full pathnames as required. During a backup the Restore program is copied onto the first floppy disc in the backup set. To run it, insert this disc and double-click on *!Restore*. The Restore program will be loaded, and its icon displayed on the icon bar.



If you have backed up to an **Other** destination, such as hard disc, you will find *!Restore* in the same directory as the backup data.

Icon bar menu

Click **Menu** on the Restore icon on the icon bar to display the following menu:



Info

Info gives information about the version of Restore you are using. The version number displayed should be quoted in any correspondence with RISC Developments Ltd. about this program. The **Info** dialogue box is also available on the **Misc** menu.

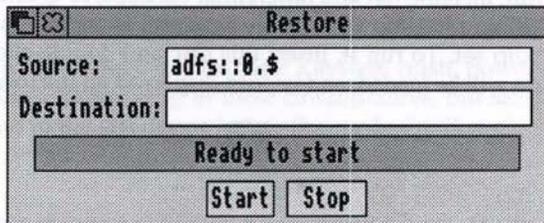
About this program	
Name:	Restore
Purpose:	Restore hard disc backup
Author:	© RISC Developments Ltd, 1991
Version:	0.01

Quit

Quit exits Restore and removes it from the computer's memory.

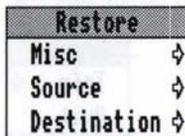
Restore dialogue box

Click **Select** on the Restore icon on the icon bar to display the Restore dialogue box.



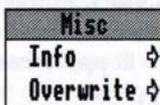
This box displays the names of the source and destination devices, and provides icons to start and stop the restore procedure.

Click **Menu** over the Restore dialogue box to display the following menu.



The options on this menu allow you to configure the Restore program for your requirements.

The Misc menu

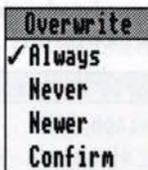


Info

Info gives the standard **Info** dialogue box giving information about the version of Restore you are using.

Overwrite

Overwrite provides a menu of options which determine what happens when you attempt to restore files which already exist on the destination device.



If **Always** is selected, existing files will always be overwritten, even if they are locked.

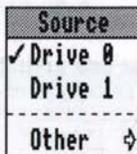
If **Never** is selected, existing files are never overwritten.

If **Newer** is selected, the file with the latest datestamp will be retained.

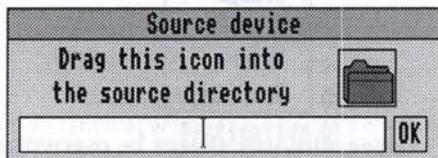
If **Confirm** is selected, you will be asked for confirmation before existing files are overwritten.

Source device

If your backup is on floppy discs, choose the drive you wish to use from the menu. The name of the floppy drive you choose is displayed in the Backup dialogue box. The drives available depend on the floppy drives you have connected, and the configuration setting **Configure Floppies**.



If you are restoring from a device other than floppy discs, for example from another hard drive, choose **Other**. The **Other** option allows you to specify the directory which contains your backup data by dragging the 'directory' icon from the dialogue box to the required directory display.

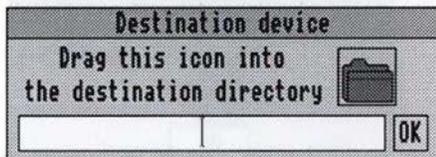


The name of the source device will be automatically read from the directory display, and displayed in the Restore dialogue box to the right of the word **Source**:. Alternatively, you may type in the source pathname in the writable icon provided in the dialogue box, and then click on **OK**.

Please note that the **Other** option should not be used when restoring from floppy discs. It assumes that the entire backup is on one device and will not prompt for the insertion of extra floppy discs.

Destination device

The **Destination** option determines to which device and directory files are to be restored. By default it is blank, which means that files are restored to the same location from which they were backed up. If you wish to restore files to a different location on the same hard disc or on a different hard disc, drag the 'directory' icon from the dialogue box to the required directory display.



The name of the destination will be automatically read from the directory display, and displayed in the Restore dialogue box to the right of the word **Destination**:. Alternatively, you may type in the destination pathname in the writable icon provided in the dialogue box, and then click on **OK**.

If you specify a new destination, Restore strips the drive specification and \$ directory from the original pathname, and appends the remainder to the new destination specification. For example, if the new destination is:

```
adfs::HardDisc5.$new
```

and the pathname of the file to be restored is:

```
adfs::HardDisc4.$applics.DTP.letter
```

the pathname of the restored file becomes:

```
adfs::HardDisc5.$new.applics.dtp.letter
```

Restoring a Backup

Once you have ensured that the **Source**, **Destination** and **Overwrite** options are set correctly, you can proceed with the restore by clicking on **Start**. If you are restoring from floppy disc you will be prompted to insert the first floppy disc of the set.



When you have inserted the correct disc, click on **OK**. The program will now restore the files from the floppy disc to the destination. Please note that Restore does not erase your hard disc. After the first disc has been restored you will be prompted to insert the next disc of the set. If you have lost a floppy disc or if it has become corrupted, you may miss it out and insert the next disc. Restore will warn you that you have not inserted the correct disc, and ask if you wish to continue.

If a file cannot be restored due to a floppy disc error, a warning is given and Restore proceeds to the next file that can be recovered.

You can stop the restore procedure by clicking on **Stop** in the main dialogue box. You will be asked for confirmation before the restore is abandoned. Please note that the restore procedure cannot be stopped during a disc operation, so there may be a short delay before the operation takes effect.

It is recommended that you close all directory displays on your hard disc during the restore procedure. Failure to do so may result in the error message *!Sprites not found* being displayed when restoring applications. This error is simply the consequence of restoring *!Boot* files before their corresponding *!Sprites* files, and can be ignored.

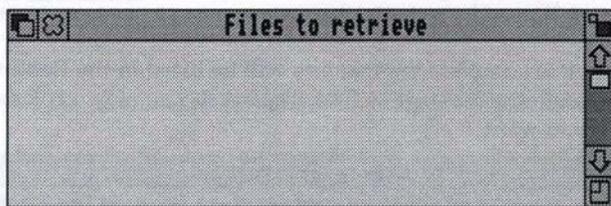
Please note that in the event of you losing the first disc of a floppy set, or accidentally deleting the Restore program, a copy of it is kept within the Backup application. Open a directory display on *!Backup*, hold down **Shift** and double-click **Select**. Now double-click on *!Restore* to run it.

6. Retrieve

The Retrieve program allows you to restore individual files from a backup to your hard disc. Typically it is used when you accidentally delete a file from the hard disc and wish to recover it from the backup. The Retrieve program is automatically copied onto the last disc in the floppy set, so insert this disc and double-click on *!Retrieve*. The Retrieve program is loaded and its icon displayed on the icon bar.



If you have backed up to another destination, such as a hard disc, you will find *!Retrieve* in the same directory as the backup data. Click **Select** on the Retrieve icon on the icon bar to display an empty window which will be used to list the objects found by your search.

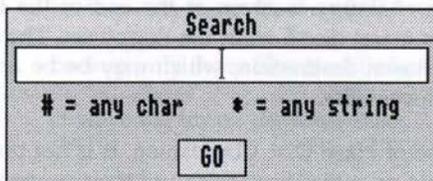


To locate a file in the backup data you must use the Retrieve search facility to find it. The search is carried out on a log file which is generated during the backup and saved in the *!Restore* directory. The log file contains the name and location of each file backed up.

Click **Menu** over the Retrieve window to display the Retrieve menu.



Now choose the **Search** option. The following dialogue box will be displayed.



Search string

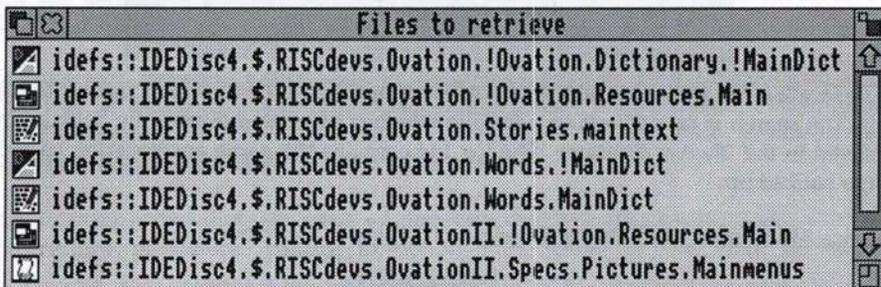
Now enter the name of the file you wish to retrieve, and click on GO. You should enter either the full pathname including filing system and drive specification, or (more usefully) a wildcarded filename. Two wildcard characters are available; * matches any string and # matches any single character.

If you search for **utility*, Retrieve will match all files whose pathnames end with *utility*. This is typically how the search facility is used.

If you search for **utility**, Retrieve will match all files whose pathnames includes the string *utility*. On some common strings this will give a very large number of matches. Retrieve can only find up to 50 matches of a particular string, and if this is exceeded an error message will be displayed. In this situation you should expand the search string to make it more specific.

If you search for **utility#*, Retrieve will match all files whose pathnames end with *utility* followed by a single character e.g. *utility1*, *utility2* etc.

When the search is complete the matches will be listed in the Retrieve window. If there are no matches, a message will be displayed. You may scroll through the list to find the file you want.



When you have located the file you wish to recover, drag it from the window into a directory display of your choice. If you are retrieving from a floppy disc set, Retrieve will prompt you to insert the floppy disc on which the backed up file is stored. The number of floppy is given at the end of the floppy disc's name, so *160OctPS_5* means insert disc 5 from the floppy set. The retrieved file will then be copied to your chosen destination, which may be anywhere on your hard disc, or on another floppy disc.

In the current release of Hard Disc Companion, it is not possible to retrieve more than one file at a time or entire directories and their contents. Please note that the log file which lists all the files in a backup set is stored within the *!Retrieve* application. For this reason you cannot run Retrieve from one backup to retrieve files from another.

Appendix A - PC Partition

The Acorn PC Emulator allows part of the hard disc to be partitioned for use with the MS-DOS operating system. This partition appears in the Acorn filing system as a single file, normally called *Drive_C*, and whose length is determined by the user. It is not recommended that you backup this file using Hard Disc Companion since it may be very long yet contain only a few MS-DOS files. We recommend that you ignore it using the ignore files option described in chapter 3, and then backup the files separately using the MS-DOS commands **BACKUP** and **RESTORE**. A brief outline of these commands is given below, but please refer to your MS-DOS user guide for further details.

BACKUP

BACKUP makes backup copies of files from the hard disc onto pre-formatted floppy discs. Note that the **/s** option must be specified in order to copy the contents of sub-directories.

Syntax:

```
BACKUP<drive>:[<pathname>] <target drive>:[<options>]
```

<drive>:<pathname> is the name of the drive to be backed up. If <pathname> is omitted, all files are copied.

<target drive >: is the destination floppy drive

<options> are:

/s	backup from all sub-directories
/m	backup only those files modified since the last backup
/a	add files to target disc, i.e. do not erase it
/p	pack as many files as possible onto the target disc
/d:<date>	backup only those files modified after specified date
/t:<time>	backup only those files modified after specified time
/l:<filename>	create a log file on the source disc

RESTORE

RESTORE copies files back to the hard disc that were backed up using BACKUP. Files are copied back to the same directory from which they were backed up.

Syntax:

```
RESTORE <drive1>: [<drive2>:] [<pathname>] [<options>]
```

<drive1>:	the drive containing the backup files
<drive2>:	the hard drive onto which the files are to be restored
<pathname>	the name of the files to be restored. If omitted, all the files on <drive2> will be restored
<options> are:	
/a:<date>	restore only those files modified after specified date
/b:<date>	restore only those files modified before specified date
/e:<time>	restore only those files modified earlier than the specified time
/l:<time>	restore only those files modified later than the specified time
/m	restore only those files modified since the last backup
/n	restore only those files no longer on the destination
/p	prompt for permission to restore read-only or hidden files
/s	restore files in all sub-directories

