



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

RAX UTILITIES

USER MANUAL



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

RAX UTILITIES

USER MANUAL

Document F/RU/080

2AUG83

Ffoss Ltd, 112, Bath Road, Slough, Berks, SL1 3SZ.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

RAX UTILITIES

USER MANUAL

CONTENTS

- 1 INTRODUCTION
- 2 LOADING THE RAX UTILITIES PROGRAMS
- 3 USING THE RAX UTILITIES PROGRAMS
- 4 FORMATTING A TAPE
- 5 RENAMING A TAPE
- 6 MICROCASSETTE TO MICROCASSETTE COPY
- 7 COPY USING EXTERNAL CASSETTE
 - 7.1 COPYING FROM EXTERNAL CASSETTE TO MICROCASSETTE
 - 7.2 COPYING FROM MICROCASSETTE TO EXTERNAL CASSETTE
- 8 ERROR MESSAGES.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

NOTICE

- 1 All rights reserved. This manual contains proprietary information which is protected by copyright. Reproduction of any part of this manual in any form whatsoever without FFOSS' express written permission is forbidden.
- 2 RAX is a trademark of FFOSS Ltd.
- 3 FFOSS reserves the right to change the contents of this manual without notice.
- 4 All efforts have been made to ensure that RAX UTILITIES is error-free and that the contents of this manual are accurate. Should any errors be detected, however, FFOSS would greatly appreciate being informed of them.
- 5 FFOSS shall not be liable for any errors in RAX UTILITIES or in the contents of this manual, or any damage in connection with the use of this material.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

1 INTRODUCTION

The RAX UTILITIES programs allow you to format, copy and rename RAX data tapes in a simple, easy-to-use fashion. The prompts are self-explanatory and complete error messages are given.

Before using a blank tape, it must be formatted to make it compatible with RAX. The application program initialises a newly formatted tape and, in most cases, assigns a unique name to the tape (volume name). In all cases, it is advisable to back up important data tapes by making identical copies in order to safeguard against data corruption and other risks such as fire or theft.

The RAX random access cassette system is designed so that information can be stored anywhere on a microcassette wherever there is free space. Applications programs such as Card Index, Mailing List, Diary and Ffosswriter will then read from the tape any information which is required and present the data in an ordered sequence even though the information may be stored randomly on the tape.

For the user of RAX UTILITIES in essence all that is required is to load RAX UTILITIES and to follow the appropriate route through the simple menus presented. The information that follows explains clearly in depth how to go about it.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

2. LOADING THE RAX UTILITY PROGRAMS

If the HX-20 contains programs that you wish to save, save them on tape before loading the utilities program, following the instructions in the HX-20 basic manual. Insert the utilities program tape into the machine and rewind the tape using the WIND command.

Type:-

LOAD "CASO:RUTIL",R or simply RUN"

and press return.

The screen will display:-

Searching

until the machine finds the program, when the message:-

Found: RUTIL

is displayed.

The operating program is then read into the HX-20. This program simply selects the relevant programs to be loaded from tape depending on the function you require.

While the program is being loaded, the message:-

RAX UTILITIES
Copyright 1983 by
Ffoss Ltd.

is displayed.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

3. USING THE RAX UTILITY PROGRAMS

Once the initial program is loaded, the display shows the message:-

- 1 - Format
- 2 - Copy volume
- 3 - Rename volume
- 4 - Exit to basic

This is the main menu from which your selection must be made: the programs associated with your selection are loaded from tape when you type the required number. To return to BASIC immediately, type 4.

If you wish to format a blank tape so that it can be used as a RAX data tape, select program 1 by typing 1. The display then shows the message:-

```
FORMAT V - 1.1  
Copyright 1983 by  
Ffoss Ltd.  
Loading
```

The formatting program is then read into the machine. Turn to section 4 for instructions on using the format program.

If you wish to alter the name of an existing RAX data tape, select program 3. The display then shows the message:-

```
RENAME V - 1.0  
Copyright 1983 by  
Ffoss Ltd.  
Loading
```

The rename program is then read into the machine. Turn to section 5 for instructions on using the rename program.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

If you wish to make a copy of an existing RAX data tape, select program 2. In fact, this option allows the choice of copying a RAX data tape directly to another formatted microcassette tape or copying a RAX data tape to or from an external cassette. The external cassette copy cannot be used with the RAX system, but it is ideal for use as back-up storage. Furthermore, copying from one microcassette to another is fairly time-consuming and requires two tapes to be swapped in and out of the machine several times. Copying to an external cassette and then back to a blank, formatted microcassette is faster and requires little intervention.

The display shows the message:-

```
Copy using:-  
1 - Microcassette only  
2 - External cassette  
3 - Exit to menu.
```

To copy from one microcassette to another, select program 1. The display then shows the message:-

```
MCOPY V - 1.0  
Copyright 1983 by  
Ffoss Ltd.  
Loading
```

The microcassette to microcassette copy program is then read into the machine. Turn to section 6 for instructions on using this program.

To copy between a microcassette and an external cassette, select copy program 2. The display shows:-

```
ECOPY V - 1.0  
Copyright 1983 by  
Ffoss Ltd.  
Loading.
```

The program is then read into the machine. Turn to section 7 for instructions on using this program.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

GENERAL

After loading any of the above programs the Utilities tape is rewound automatically.

Once loaded, the programs are run automatically. They all give the option of returning to the main Utilities menu at their respective main menus. To do this, type a "U".

Note that RAX UTILITIES disables the BREAK and MENU keys in order to avoid problems which may occur if these keys are pressed during tape access. The keys are re-enabled on Exit back to BASIC.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

RE-ENTERING UTILITIES SELECT

Within the utilities programs there is an option to return to the main utilities selection at the respective program main menus. E.g., in FORMAT it is:-

Format or Utilities
(F/U) ?

If you type "U", then the system will revert to the main Utilities select menu, i.e.

- 1 - Format
- 2 - Copy Volume
- 3 - Rename Volume
- 4 - Exit to Basic

If you now select a new utility, the program will need to read the new utility from tape, and so prompts:-

Load RAX UTILITIES
tape and press
any key

The tape should be inserted and any key pressed.

WARNINGS

Do not allow the HX-20 batteries to run down whilst using any of the RAX utility programs. Formatting and copying tapes takes some time, and so it is advisable to connect the HX-20 charger whilst using the programs or to ensure that the machine is fully charged.

If possible, avoid using the RESET button on the HX-20, and switching the HX-20 off while any RAX UTILITY program is running. This can have unpredictable effects, and can cause corruption of data tapes.

When Exit is selected in the Utilities programs, a return to Basic is made, clearing all programs stored.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

4. FORMATTING A TAPE

Once the format program is loaded, the screen shows the main prompt line:-

```
Format or Utilities  
(F/U) ?
```

When you have finished formatting tapes, type U to return to Utilities select. (See Re-entering Utilities.)

To format a tape, type F. The display then shows:-

```
Load blank tape  
and hit any key
```

Insert a tape into the machine and press anykey. The screen shows:-

```
SURE (Y/N)?
```

The format program has the effect of erasing any data or programs already on the tape. If you are sure that the tape contains no programs or data that you wish to save, type Y. Otherwise type N to return to the main prompt.

If you typed Y, the format operation begins. The process takes about 45 minutes each side for an MC30 cassette.

When the tape is formatted, the display shows:-

```
Format complete
```

and returns to the main prompt.

If an error occurs during formatting, the program displays an error message before returning to the main prompt. See section 8 for a description of the error conditions.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

5. RENAMING A TAPE

Once the rename program is loaded, the screen shows the main prompt line:-

```
Rename or Utilities  
(R/U) ?
```

When you have finished renaming tapes, type U to return to Utilities select. (See Re-entering Utilities.)

To rename a tape, type R. The display then shows:-

```
Load tape  
and hit any key
```

Insert the tape that you wish to rename and press any key. The tape is then checked while the message:-

```
Checking tape
```

is displayed.

If the tape contains no data, the message:-

```
Tape empty  
Rename aborted
```

is displayed before return to the main prompt. Otherwise the current tape name is shown, or else the message "No volume name" and you are asked if you wish to change the name or name the volume by the prompt:-

```
Change it (Y/N) ?  
or  
Name volume (Y/N) ?
```

Replying N for "no" aborts the process and the program returns to the main prompt.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

Typing Y at this stage causes the prompt:-

Enter volume name
(1 - 20 characters)

to be displayed. Type in the new volume name, which must be no longer than 20 characters long, and press RETURN. This name is then written to tape in place of the old name, if any, and the message:-

Updating tape

displayed before the program returns to the main prompt.

If the operation is successful, the message:-

Rename complete

is displayed. If an error occurs at any stage, an error message is displayed. See section 8 for a description of error conditions.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

6. MICROCASSETTE TO MICROCASSETTE COPY

When the program is loaded, the display shows the main prompt line:-

Copy or Utilities
(C/U) ?

When you have finished copying tapes, type "U" to return to Utilities select. (See Re-entering Utilities.) To copy a tape, type C. The display shows:-

Load source
tape and hit any key

The source tape is always the tape being copied from, and the destination tape the tape being copied to. Take care not to mix the source and destination tapes up.

Insert the RAX data tape to be copied into the machine and press any key. The tape is then checked for the correct RAX format data. Once checked, the source tape name is displayed, if any, along with the prompt:-

Continue (Y/N) ?

If you wish to continue, type Y for yes. Otherwise type N to exit back to the main prompt.

If you typed Y, the display shows:-

Load destination
tape and hit any key.

Remove the source tape and **insert a formatted tape** into the machine and press any key. The destination tape is then checked.

In some cases, the destination tape will be too short to accept the entire contents of the source tape. Clearly this will be the case where the source is an MC60 cassette and the destination an MC30; there is, however, sufficient difference between tapes of the same nominal length, even from the same manufacturer, to cause one tape to contain several more data blocks than another. If this occurs, a warning is displayed, and you are prompted to select either to continue regardless, or to try a new tape, or to exit back to the main prompt. If the destination tape is too short and you opt to continue anyway, you are prompted to re-load the source tape so that the data blocks which will be lost can be checked. You are told whether they are empty or contain valid data, and given the option of continuing or aborting the operation. If you continue at this stage, you must re-load the destination tape for initialisation.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

If the destination tape is long enough to hold all the data for the source tape, or you opted to copy the maximum possible data on to a shorter destination tape, the display shows the source tape name (if any) and the number of passes required to complete the copy. In general it takes seven passes to copy an MC30 cassette if you have no memory expansion unit. With an expansion unit less passes will be necessary.

A pass refers to a tape swap. The MCOPI program works by reading data from the source tape and writing it out to the destination tape. Since tapes can contain a great deal more data than the HX-20 can hold in its memory at one time, the information must be copied in sections. On each pass, you are prompted to load the source tape. The program reads as much data from the tape as possible, then prompts you to load the destination tape. The data previously loaded is then written to the destination tape before the program continues to the next pass.

The program checks the destination tape to make sure that it has been formatted. If the tape is found to contain valid data, the display shows the destination tape name (if any) and asks if you wish to erase it. This is followed by the prompt:-

SURE (Y/N) ?

Typing Y in response causes the tape to be re-initialised and any data previously stored on it is lost.

Having determined that the destination tape can be written to, the program requests you to enter a new name for the tape. This must be no more than 20 characters long, **and must be different from the name of the source tape.** Type the required name followed by RETURN. The destination tape is then initialised while displaying the message:-

Initialising
destination tape



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

The tape copy procedure now starts. The program prompts by displaying:-

Pass 1 read
Load source
tape and hit any key.

Insert the source tape into the machine and press any key. The system first checks that the correct tape has been loaded and then proceeds to read the first section of data. If you have loaded the wrong tape, the message:-

Wrong tape
Continue (Y/N) ?

is displayed. To resume copying, press Y and then load the correct tape when the prompt:-

Load source
tape and hit any key

is displayed. Otherwise press N to abort the copy.

When the first section of data has been read from the source tape, the program displays the message:-

Pass 1 write
Load destination
tape and hit any key

Remove the source tape and insert the destination tape into the machine and press any key. The system checks that the correct tape has been loaded and then proceeds to write the data to tape.

Each read and write tape swap forms one pass of the copy process. On each pass, you are prompted to load the source tape and then the destination tape. The process continues until the entire source tape (or as much as possible) has been copied to the destination tape, when the message:-

Copy complete

is displayed.

If an error occurs during copying, you are given the option of attempting the operation again (Try again (Y/N) ?). If it is a fatal error, typing N for "no" will result in the copy being automatically aborted. Typing Y causes the operation to be attempted again. **It is always worth retrying at least once.**



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

For non-fatal errors, you are given the option of ignoring (stepping over) the bad data block which caused the error. In these cases, typing N at the "Try again (Y/N) ?" prompt causes the message:-

Ignore bad block
(step over) (Y/N) ?

to be displayed.

Typing N for "no" aborts the operation, while typing Y for "yes" causes the operation to continue at the next data block following the one which caused the error. Bear in mind, however, that tapes with missing data blocks can lead to problems with application programs.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

7. COPY USING EXTERNAL CASSETTE

This program copies a RAX data microcassette to or from an external cassette. To use this program, you must have an external cassette player connected to the HX-20, **and the cassette player must include a remote control facility.** For instructions on connecting an appropriate cassette recorder to the HX-20, refer to the HX-20 operation manual. **No user intervention is necessary during the copying process.**

Care must be taken to ensure that the cassette player is properly connected **and that the playback/recording level is set correctly.** Since the HX-20 can exercise very little control over an external cassette unit, it is impossible to detect many errors, such as no tape or end of tape.

It is, however, possible automatically to detect errors on a microcassette. If an error occurs, you are given the option of repeating the operation (Try again (Y/N) ?). If the error is fatal, i.e. would cause an application program to crash when it comes to access the tape, then typing N will result in the copy being automatically aborted. Typing Y causes the operation to be attempted again: **it is always worth retrying at least once.** For non-fatal errors, typing N for "no" at the "Try again" prompt will then give you the option of ignoring (stepping over) the bad data block which caused the error. Bear in mind, however, that missing data blocks can lead to problems with application programs which may expect to find valid data where there is none.

When the copy program is loaded, the display shows the main prompt line:-

Copy or Utilities,
(C/U) ?

When you have finished copying tapes, type U to return to Utilities select. (See Re-entering Utilities.) To copy a tape, type C followed by RETURN. The display shows:-

Source tape ?
E = External cassette
M = Microcassette

To copy from an external cassette to a microcassette type E. To copy from a microcassette to an external cassette, type M.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

7.1 COPYING FROM EXTERNAL CASSETTE TO MICROCASSETTE

Having defined the external cassette as the source tape by typing E above, the display shows:-

Load source
tape, press play
and hit any key

Place the cassette that you wish to copy into your cassette player and make sure that it is rewound. Press the "play" key on the cassette player and press any key on the HX-20. The display shows:-

Checking source tape.

The first few blocks of data are read from the cassette and a check made that the data is of the correct format. If the cassette continues to play for more than one minute, this suggests that the program is unable to find the data. **Check that you have loaded the right tape, check the leads between the HX-20 and the cassette player and check the volume level.**

When the program has read the first few data blocks from tape, the display shows the name of the data tape (if any) and asks if you wish to continue by displaying:-

Continue (Y/N) ?

If you wish to continue, type Y for yes. Otherwise type N to exit back to the main prompt.

If you typed Y, the display shows:-

Load destination
tape and hit any key

Load a **RAX formatted** microcassette into the HX-20 and press any key. The destination tape is then checked.

In some cases, the destination tape will be too short to accept all the data from the source tape. If this occurs, a warning is given along with the prompt:-

Continue (Y/N) ?



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

Typing N for "no" aborts the copy and exits back to the main prompt. Typing Y causes the program to display:-

Copy max possible
or try new tape
(C/N) ?

If you wish to try out a different destination tape which may be long enough to contain all the data, type N. If you wish to continue and copy as much data as possible, type C.

If the destination tape is long enough to hold all the data, or you opted to copy the maximum possible data on to a shorter destination tape, the tape is checked to make sure that it is RAX formatted. If the tape is found to contain valid data, the display shows the tape name (if any) and asks you if you wish to erase it. This is followed by the prompt:-

SURE (Y/N) ?

Typing Y in response causes the tape to be re-initialised and any data stored on it is lost.

Having determined that the destination microcassette can be written to, the program requests you to enter a new name for the tape. This must be no more than 20 characters in length and can include spaces and punctuation. Type the required name followed by RETURN. The destination tape is then initialised while displaying the message:-

Initialising
destination tape.

The tape copy procedure now starts. The program reads data from the external cassette up to the limit of the HX-20 memory, converts the data into a RAX compatible format, and then writes the information to the microcassette. Since the HX-20 cannot hold all the data from the tape at any one time, the copy is performed in a number of passes with each pass copying a section of the data. During the copy, the display shows the total number of passes required to complete the copy and the number of the current pass.

When the copy is finished, the display shows the message:-

Copy complete



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

If the destination tape were too short to hold all the source data, the lost blocks are checked to test whether they contain valid data and either the message:-

Lost blocks empty

or

Lost blocks not empty

is displayed.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

7.2 COPYING FROM MICROCASSETTE TO EXTERNAL CASSETTE

If you defined the source tape as a microcassette by typing M in response to the source tape question prompt, the display shows:-

Load source
tape and hit any key

Insert the microcassette that you wish to copy into the machine and press any key. The tape is then checked for the correct RAX format data.

Once checked, the source tape name is displayed (if any), along with the prompt:-

Continue (Y/N) ?

If you wish to continue, type Y. Otherwise type N to exit back to the main prompt.

If you typed Y, the display shows:-

Load destination
tape, press record
then hit any key

Load an empty cassette into the cassette player, make sure that it is fully rewound, press the "record" and "play" buttons, and press any HX-20 key. The cassette is then initialised while the screen shows the message:-

Initialising
destination tape

The tape copy procedure now starts. The program reads the RAX data from the microcassette up to the limit of the HX-20 memory, converts the data into a suitable format, and writes the data to the external cassette. Since the HX-20 cannot hold all the data from the tape at any one time, the copy is performed in a number of passes, with each pass copying a section of the data. During the copy, the display shows the total number of passes required to complete the copy, and the number of the current pass.

When the copy is finished, the display shows the message:-

Copy complete

and the program returns to the main prompt.



112 Bath Road,
Slough, Berks,
SL1 3SZ
Tel: Slough (0753) 820277

CONFIDENTIAL

Ffoss Ltd.

8. ERROR MESSAGES

The error messages described below indicate that a fault has occurred. In some cases, you are given the option of attempting the operation again or even of ignoring (stepping over) the cause of the fault.

Tape too short

The destination tape is not long enough to contain all the data from the source tape. Try a different tape.

Invalid name

An attempt was made to enter a destination tape name which was more than 20 characters long, or empty, or the same as the source tape name.

Source tape empty

The source tape was found to contain no data.

Tape corrupt

The latest tape access operation failed.

Wrong tape

The system was expecting a different tape from the one currently loaded. Insert the correct tape.

Tape not formatted

An attempt was made to copy from or to a tape which is incompatible with the RAX system. Select the format option and format the tape. Note that a completely blank tape will cause the machine to search to the end of the tape before this error message is given.

Tape not loaded

The system tried to access a tape and found that no tape was loaded, or else there was no cassette drive fitted.

Tape I/O error

The system found corrupt data when reading from a tape, or could not write data to tape.

Bad tape

The tape in use was found to be corrupt.