FORTH

for the BBC Microcomputer

Fitting the FORTH ROM

Your FORTH ROM may be placed in any spare 'sideways ROM' socket. These are located on the front right-hand side of the circuit board inside the BBC Microcomputer casing.

1. To get to the board, undo the four screws marked 'FIX'. Two of these are underneath the computer, and the other two can be found on the back.

2. Once the top is removed, release the bolts holding down the keyboard assembly. These are located on either side of the keyboard. Some machines have two bolts, others may have three.

3. There is no need to disconnect the keyboard completely, so the multi-wire connector to the main board can be left in place. Carefully displace the keyboard, rotating it clockwise through about 20 degrees so that the front right-hand side is accessible.

4. Locate the row of five large sockets. The four right-hand sockets (identified on the board as IC52, IC88, IC100, IC101) are sideways ROM sockets. The fifth from the right is the operating system socket (IC51).

Read the section overleaf about the operating priority of the sideways ROM sockets, and then insert the ROM as described in the section entitled 'Inserting the ROM'.

Sideways ROMs – operating priorities

The four sideways ROM sockets have an operating priority, decreasing from right to left; on hard reset, or when the computer is switched on, the language ROM in the rightmost ROM socket takes priority over the others. So the position of the FORTH ROM in relation to the other language ROMs will determine whether your machine starts up in FORTH or another language, eg BASIC.

If you are replacing the operating system ROM at the same time as fitting FORTH, then follow the same insertion procedure, and fit the ROM in the socket marked IC51 (fifth from the right).

Inserting the ROM

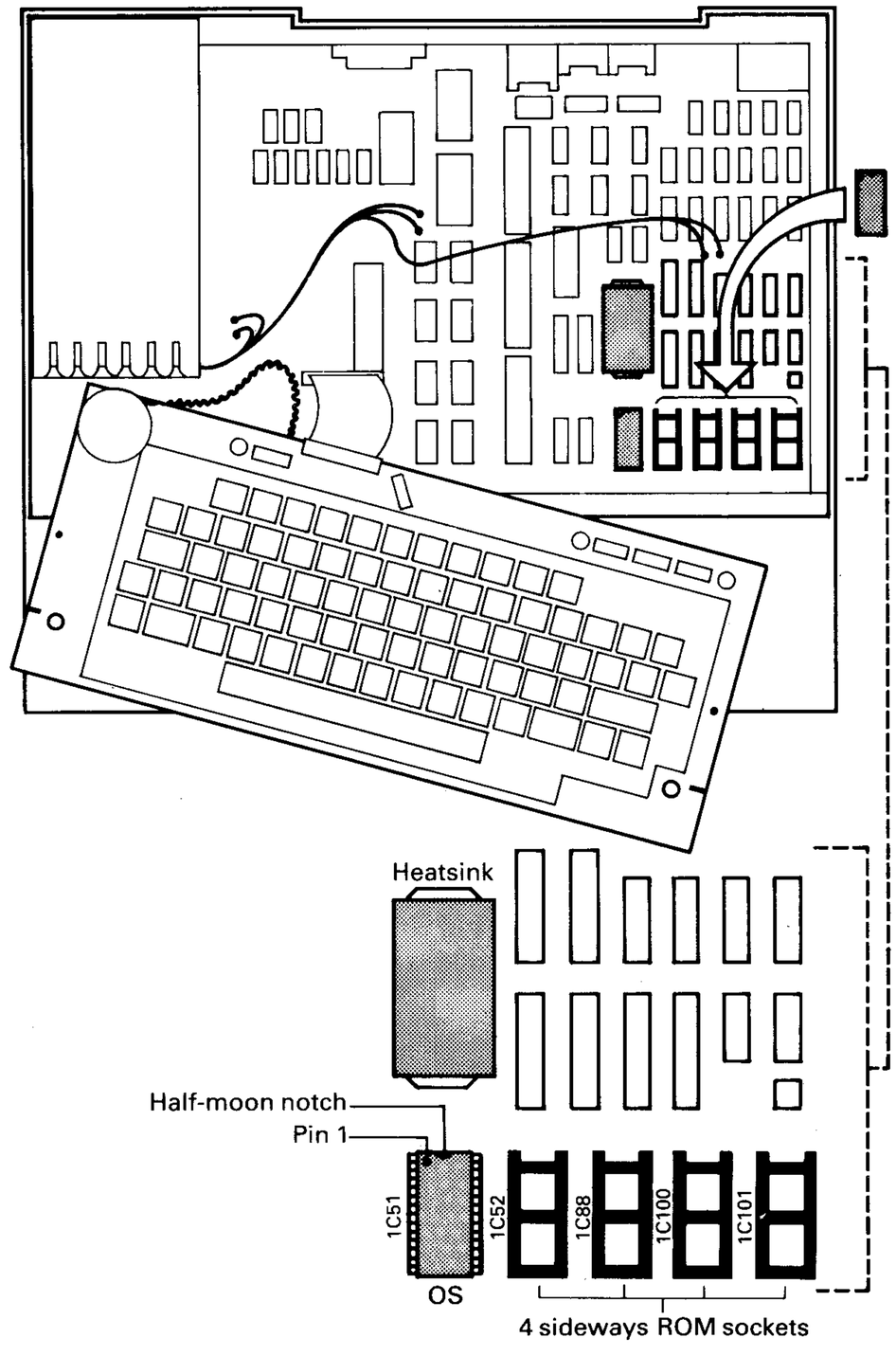
1. Before taking the ROM out of its protective packaging, identify Pin 1 on the ROM. It is either marked with a dot on the top, in the corner of Pin 1, or the half-moon notch at one end of the ROM identifies the end of the ROM nearest Pin 1. Pin 1 should be on the left if the notch is held up.
2. Hold the ends of the ROM between finger and thumb, and line up all the pins over the destination socket (see diagram). Pin 1 and the half-moon notch should point towards the back of the computer casing.
3. Now apply firm pressure to the ROM, but try not to force it! When the ROM is in, it appears to be slightly raised. Check that all the pins do enter the socket, and that none are bent out, or underneath.

Removing ROMs

To avoid bending any pins a ROM must be removed very carefully. Take a screwdriver or similar tool and gently prize up each end, a bit at a time.

Inserting the FORTH ROM

This diagram shows a plan view of the BBC Microcomputer. The top of the computer casing has been removed to reveal four sideways ROM sockets. The FORTH ROM can be inserted into any one of these sockets.



Calling FORTH

FORTH can be called from other languages, eg BASIC, by typing

*FORTH

The minimum abbreviation allowed is

*FO.

You will then be asked to select either a COLD or WARM start and the computer will wait for you to press either 'C' or 'W'. When you first enter FORTH a cold start should be selected. The warm start should only be used if you have pressed BREAK from within FORTH and wish to return immediately to the language.

Leaving FORTH

To switch to another language from FORTH use the 'OS" command, eg

OS' B.

will switch to BASIC.

Using FORTH

The book *'FORTH on the BBC Microcomputer and Acorn Electron'* describes all the commands available for the disk and cassette versions of FORTH. Since the ROM version is very similar to these, this book is strongly recommended as a User Guide for the Acornsoft FORTH ROM. The few differences which occur are listed below.

1. The ROM contains the dictionary from &8000 upwards; the users applications dictionary starts at PAGE+2. All display modes (0 to 7) are available.
2. The area marked 'reserved' in pages 4 to 7 of the memory map is used by the ROM to store data which may change during use.
3. The Editor and Assembler vocabularies are resident and are functionally identical to the disk and cassette versions. A machine code version of MATCH is provided so the words SAME, CCOUNT, 1MATCH and MATCHES, used by the high-level version, are not present.
4. Full text error messages are given. Unused error messages display the error number to allow for user defined errors.
5. On a cold start FORTH selects either the disk or tape filing system, depending on the filing system which is operative at that time.
6. The ROM version will run on the 6502 second processor.
7. The two words: ST-ADDR and START-KEYS have been deleted from the dictionary. None of the function keys are programmed on starting up as this is only necessary when running FORTH from the BASIC ROM.
8. The following words have been added:

$MSG

Pronounced: dollar-m-s-g
Stack Action: (n ...)
Uses/Leaves: 1 0
Status:
Description: The default action of the vectored word MESSAGE. It displays the text of error message number n. If text is not defined then just the error message number is displayed, allowing for user-defined errors.

(DISK)

Pronounced: bracket-disk
Stack Action:
Uses/Leaves:
Status:
Description: Used by DISK to select the disk filing system without changing the action of R/W. (The action of DISK is not changed and works exactly as in the disk and tape versions.)

<CMOVE

Pronounced: reverse-c-move
Stack Action: (from\to\count ...)
Uses/Leaves: 3 0
Status:
Description: This has the same action as the version defined in the User Guide but is faster in execution. The bytes are moved starting at the highest address in the block and progressing towards low memory. Compare with CMOVE.

?FILE

Pronounced: query-file
Stack Action: (... n)
Uses/Leaves: 0 1
Status:
Description: Returns a value indicating the current filing system as follows:

0 no filing system
1 1200 baud cassette filing system
2 300 baud cassette filing system
3 ROM pack filing system
4 Disk filing system
5 Econet filing system
6 Teletext/Prestel Telesoftware filing system

?R/W

Pronounced: query-read-write
Stack Action:
Uses/Leaves:
Status:
Description: Selects either the disk or the tape version of R/W, depending on the current filing system.

HIADDR

Pronounced:
Stack Action: (... addr)
Uses/Leaves: 0 1
Description: Returns, as a 16-bit number, the high part of an extended address.

HIMEM

Pronounced:
Stack Action: (... addr)
Uses/Leaves: 0 1
Status:
Description: Returns the address of the start of the screen display. Memory below this address is available to FORTH. HIMEM normally returns the same value as the constant LIMIT.

MODEADDR

Pronounced:
Stack Action: (n ... addr)
Uses/Leaves: 1 1
Status:
Description: Returns the address of the first byte of memory which would be used for the screen display in mode n. It does not change the display mode.

MOVE-BUFFERS

Pronounced:
Stack Action: (addr . . .)
Uses/Leaves: 1 0
Status:
Description: Relocates the mass-storage buffers so that the first unused byte after the buffers is at addr. The contents of the buffers are not changed but the values of the constants FIRST and LIMIT, and of the variables PREV and USE are altered to match the new location.

PAGE

Pronounced:
Stack Action: (. . . addr)
Uses/Leaves: 0 1
Status:
Description: Returns the lowest available address in RAM.

SSV

Pronounced: s-save
Stack Action:
Uses/Leaves:
Status:
Description: Used by CREATE-SCREENS to create a named file on disk. It is not intended for direct use from the keyboard.

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