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The Z80 Second Processor requires that the BBC Microcomputer with which it is used contains special software. This is provided in the form of two sideways ROMs:

– MOS version 1.2 upwards
– DNFS version 1.2 upwards (DFS), version 3.5 upwards (NFS)

These ROM chips may already be fitted to your BBC Microcomputer – this leaflet contains instructions on how to find out. If the versions fitted in your computer are not suitable, or the chips are not fitted at all, then you will find the Z80 package contains either the chips themselves or a voucher redeemable at your dealer. This leaflet contains fitting instructions so that you can fit the ROMs yourself, or if you prefer, your dealer will fit them for you free of charge.

Finding out whether your BBC Microcomputer is suitable

To discover whether your computer contains the correct ROMs, there is no need to open up the computer. Simply follow this procedure:

Connect your BBC Microcomputer to a suitable monitor (using the lead packed with the monitor) or to the aerial socket of a television (using the lead packed with your computer).

Switch on your computer and monitor (or television). You will see the usual start-up message, the exact form of which depends on the ROMs fitted to your computer.

Type

*HELP

followed by **RETURN** and a message listing the ROMs in your computer should appear. If an error message appears, you will need to replace your operating system before using the above procedure to check the DFS and NFS versions.

Look for the three lines:

```
OS  1.20
DFS 1.20
NFS 3.50
```

If some lines very similar to these but with lower version numbers appear, eg

```
DFS 0.90
```

then you will have to replace one or more of the sideways ROMs in your BBC Microcomputer.

You will need to replace the operating system ROM if `OS 1.20` is not displayed. The ROM is marked with a line of characters ending in B04, and you should obtain a new one from your dealer using the voucher from the Z80 package.

If the DFS and NFS messages appear but one or both version numbers are lower than those shown above, you will need to remove *both* ROMs and replace them with the combined DNFS ROM from the Z80 package. If only the DFS message appears (with any version number), you need to replace the DFS ROM with the combined ROM.

Note that if no DFS message is displayed, it is unlikely that your BBC Microcomputer can accept the whole Z80 package. You should consult your dealer.

Replacing the sideways ROMs in your BBC Microcomputer

Use the process described above to establish which ROMs you need to replace. The ROM sockets are located on the front right-hand side of the circuit board inside the BBC Microcomputer casing. First of all unplug your BBC Microcomputer. To fit the new ROMs you will have to:

Open your BBC Microcomputer

Undo the four screws which hold the casing together – on some computers these will be marked 'FIX'. Two of these screws are at the back of the computer, the other two are underneath near the front.

Once the top is removed, undo 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.

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

You will now be able to see the five ROM sockets, as shown in the diagram.

Identify which ROMs to replace

The operating system
If the * HELP message did not include OS 1.20, you will need to replace the operating system ROM. The replacement will be marked with a number ending B04. The one in your machine will be in the leftmost ROM socket.

The disc and network filing systems
If the * HELP message included the DFS line and possibly the NFS line, but with too low a version number, you will need to remove the DFS and the NFS ROMs, if fitted. The NFS ROM will be marked NFS, and the DFS will be marked DFS. You should fit the combined NFS and DFS in the rightmost of the sockets that are now free. This ROM will be marked DNFS.

Carefully replace the ROMs

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

Inserting a ROM
Locate the half-moon notch at one end of the ROM. This end should face away from the keyboard when the ROM is inserted.

Holding the ends of the ROM between finger and thumb, line up all the pins over the destination socket. Now press the ROM gently but firmly into its socket. Don't force it! When it is all the way in it appears to be slightly raised. Check that all the pins have entered the socket, and that none are bent out or underneath.

Notes

The order of the ROMs has an effect on the BBC Microcomputer when it is operating without the Second Processor. If you have changed the order of the ROMs for any other purpose, the Z80 will not function properly unless the DNFS is the rightmost filing system fitted.

If your BBC Microcomputer did not previously have an NFS fitted, you will notice a change in the amount of free memory when operating without the Second Processor.

Replacing sideways ROMs

Heatsink

Half-moon notch
Pin 1

IC51
IC52
IC88
IC100
IC101

OS

Four sideways ROM sockets