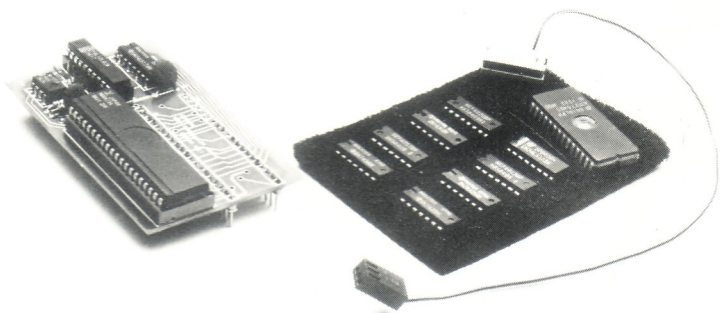


# CUMANA

## QFS USERS HANDBOOK AND FITTING INSTRUCTIONS



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## Chapter 1

# **QFS Fitting Instructions**

### **BEFORE ATTEMPTING TO FIT THE QFS READ THESE INSTRUCTIONS CAREFULLY**

If you are unsure of your ability to carry out the fitting, contact your supplier who will arrange to have the installation done for you.

Before proceeding ensure that the computer and peripherals are disconnected from the mains supply.

The first step in upgrading your computer is to gain access to the main circuit board and the keyboard. This is achieved by unscrewing the 4 large screws marked (A) in fig 1. The cover of the case can now be removed.

The next step is to remove the keyboard. Locate and unplug the ribbon cable connecting the keyboard to the main circuit board. (Care must be taken not to strain the actual cable). Loosen and remove the two nuts and bolts marked (B) in fig 1 which secure the keyboard to the case. Carefully lift and remove the keyboard to expose the plug connecting the loud speaker to the main circuit board. Disconnect this plug from the main circuit board, the keyboard should now be free of the main computer. Put your keyboard in a safe place until you are ready to re-assemble your computer.

As supplied by Acorn, the BBC micro has keyboard links which alter certain start up options. Since you now have the lid removed, it may be wise to study appendix (B) in your disk drive manual and decide which link/s you require as fitting can be done more easily at this stage.

The complexity of the remaining work will depend on the age of your computer, so determine the issue number printed on the main circuit board. The approximate position of the issue number is indicated in fig 2. When carrying out the following refer to figure 2 at each stage.

**(1)** On all issue boards – issue 1 onwards – ensure that:-

- (a) Link S9 is omitted
- (b) Link S12 is omitted
- (c) Link S13 is omitted
- (d) Link S18 is fitted to the top 2 positions
- (e) Link S20 is fitted to the top 2 positions
- (f) Link S21 is two links which must be fitted in the left to right position
- (g) Link S22 is fitted to the top 2 positions
- (h) Link S32 is fitted to the left hand 2 positions
- (i) Link S33 is fitted to the left hand 2 positions

**(2)** In addition to step (1) above, if your main circuit board is issue 3 or earlier the following will have to be carried out.

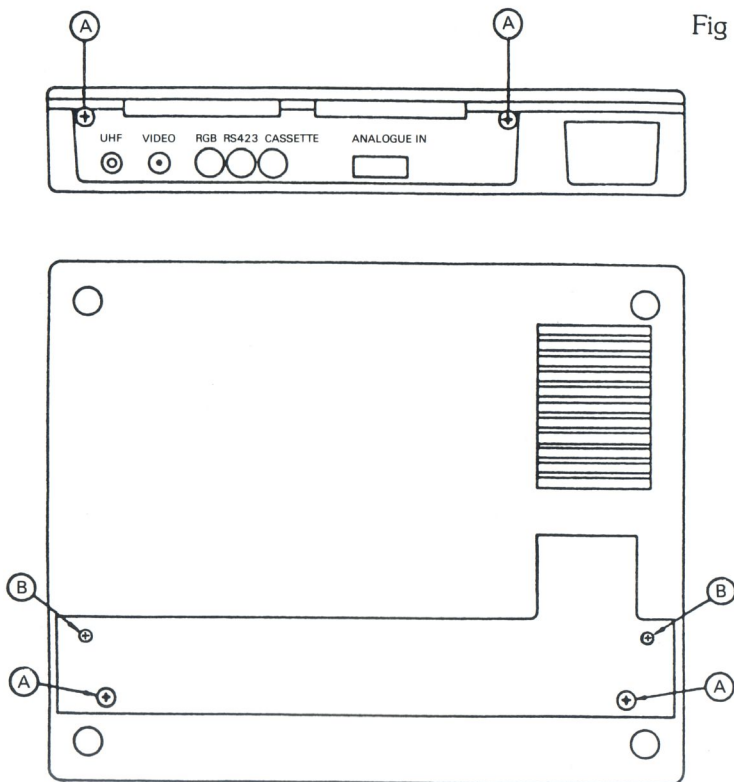
- (a) Locate IC 27 pin 9 and then cut the track linking IC 27 pin 9 to the right hand side of link S9. Use a sharp knife to do this.
- (b) Carefully cut pin 9 of IC 27 as close to the main circuit board as possible, now lift the pin into a horizontal position.
- (c) Now solder a piece of insulated wire between the raised pin of IC 27 and the right hand side of Link S9.

This may seem to be a rewire of an existing link. However, the main circuit board is double sided and the previous operation was to disconnect the under side from the top side.

**(3)** If your main circuit board is an issue 1 or 2, S8 must be fitted in addition to steps (1) and (2) above.

This completes the preparation for the fitting of the QFS.  
PLEASE CHECK THE PREVIOUS WORK CARRIED OUT  
BEFORE PROCEEDING ANY FURTHER.

Fig 1



## Final Fitting

Fit the seven integrated circuits supplied into the empty sockets on the main circuit board as follows:-

**Some of these devices are sensitive to static. Therefore, please install immediately after you have removed them from the conductive foam they are packed in.**

**Note:** The 74LS123 is already mounted in a socket. This arrangement plugs into the socket of IC87. All IC's should be inserted into the sockets with the groove or notch denoting pin 1 facing towards the rear of the computer.

Integrated circuit

7438

7438

MC14013

MC14013

MC14020

74LS123 (mounted in socket)

Empty socket

IC 79

IC 80

IC 83

IC 84

IC 85

IC 87

**Note:** The numbers may vary on the above components due to different manufacturers coding. The last three digits should remain the same, in all cases.

Fit the QFS hardware into the 40 way socket marked IC 78. Note this will only go in one-way round due to the position of the keyboard connector. See Fig. 2.

Great care must be taken to align the pins of the QFS with the socket as a broken pin will render the QFS useless.

Fit the 2 way cable, with the DIP Connector and Integrated Circuit mounting arrangement into the socket for IC86.

Fit the QFS ROM into socket IC 88 or a paged ROM socket of your own priority.

#### IMPORTANT

ENSURE THAT ALL THE ITEMS YOU HAVE JUST FITTED ARE CORRECTLY ORIENTATED IN THEIR RESPECTIVE SOCKETS.

The fitting of the QFS Disk upgrade is now complete and you may reassemble your computer. First reconnect the loudspeaker plug, refit the keyboard using the fixing nuts and bolts, reconnect the ribbon cable connecting the keyboard to the main circuit board and finally refit the cover of the computer case.

On Power-up your screen should display:

BBC COMPUTER 32K

QFS 2.00

BASIC

>

## Chapter 2

### **Format Utility**

The QFS disk filing system differs only slightly from the ACORN counter part, (DFS). The QFS command summary is identical to that of the (DFS) and so direct compatibility with software is maintained. There are however some additions to the QFS which relieve the need for the format program found on the diskette supplied with your drive.

**Because the QFS has its own built in formatter programme, you should not therefore try and use the QFS with the formatter diskette supplied with your Cumana disk drive.**

#### **Using the QFS Format Utility.**

The QFS format utility must be used to prepare new disks before you can begin to save files to them. The command is entered by typing:-

\*FORMAT or \*FO.

And then by responding to the following prompts the new disk will be formatted.

The first question is:

Drive number?

Enter a number in the range 0 to 3 according to the drive you wish to use. If you enter either 0 to 1 you will then be asked:

Format both sides (Y,N)?

If you have double sided drives and you require both sides to be formatted, then reply 'Y' for yes. If you only require one side to be formatted, then reply 'N' for no.

The next question is:

Density (S,D)?

The QFS can format disks in either single (S) or double (D) density. Single density is used by the Acorn DFS, so reply 'S' if you require the disk to be compatible with all other BBC micros. Otherwise reply 'D'. QFS double density puts 18 sectors of 256 bytes on each track compared with 10 sectors per track in single density. If you use double density the storage available to you will be increased by 80 percent, so allowing much more space for your files.

Next question:

**Tracks (35,40,80)?**

If by chance you are not using a CUMANA disk drive and the drive is quite old it may not be able to format to 40 tracks, so a 35 track option is supplied. When replying to this prompt, only one key stroke is required (3, 4, or 8).

The computer then asks for a name and number for the disk displaying the following defaults as shown:

**DISK NAME OK?: USER  
DISK NUMBER OK?: 000**

By simply pressing <RETURN> the defaults are used (USER and 000). Otherwise type in the name/number you require. The name can be up to 8 characters long.

Finally:

**Parameters ok & disk loaded (Y,N)?**

Press 'Y' to format the disk or press 'N' if you have made a mistake.

As the computer formats the disk it displays messages to show the stage it has reached:-

**DRIVE n  
FORMATTING TRACK nn  
VERIFYING TRACK nn**

If the computer cannot verify a track it will be indicated by either "C" or "R" next to the track number. On completion the computer displays either:



NUMBER OF FORMAT ERRORS nn  
Retry to format disk (Y,N)?

OR:-

NUMBER OF FORMAT ERRORS 00  
Format another disk with  
disk number incremented (Y,N)?

Do not try to use a disk that has produced errors, it may result in the loss of a program or data file. Try reformatting, if this fails try another disk.

Fig 2

