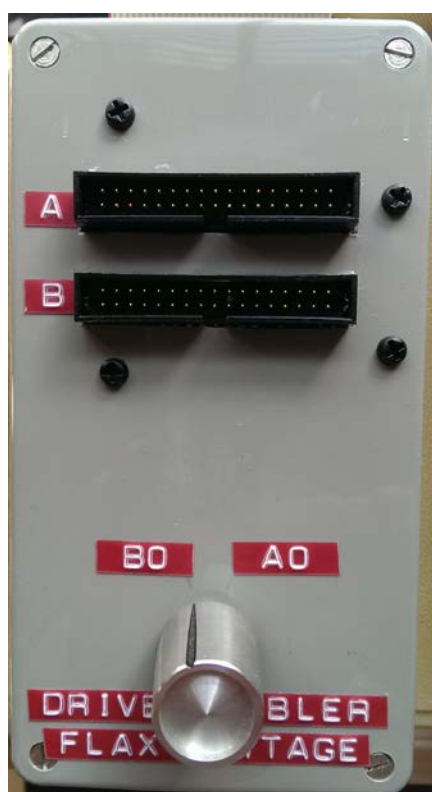


A Disc Duck for the BBC microcomputer



INTRODUCTION

During the preservation work at the Flax Cottage Educational Archive it became apparent that there was a need for a very flexible arrangement for disc drives. Standard floppy drives for the BBC microcomputer come as single drives or dual drives and generally as 5.25" drives. Rarer still are 3.5" drives.

What was needed was the ability to have custom drive configurations attached to the one computer. It is possible to build custom dual drives such as a 5.25" drive plus a 3.5" drive but these are fixed and to change the configuration to dual 3.5" drives or a Gotek drive emulator plus a 5.25" drive meant lifting the computer and disconnecting the one dual drive and replacing it with another every time a change was made.

This need prompted the design of a flexible dual drive adapter or Duck. The Duck would accept two single floppy drives and convert them to a dual drive. In addition it should be possible to switch which drive was drive 0.

THE CIRCUIT

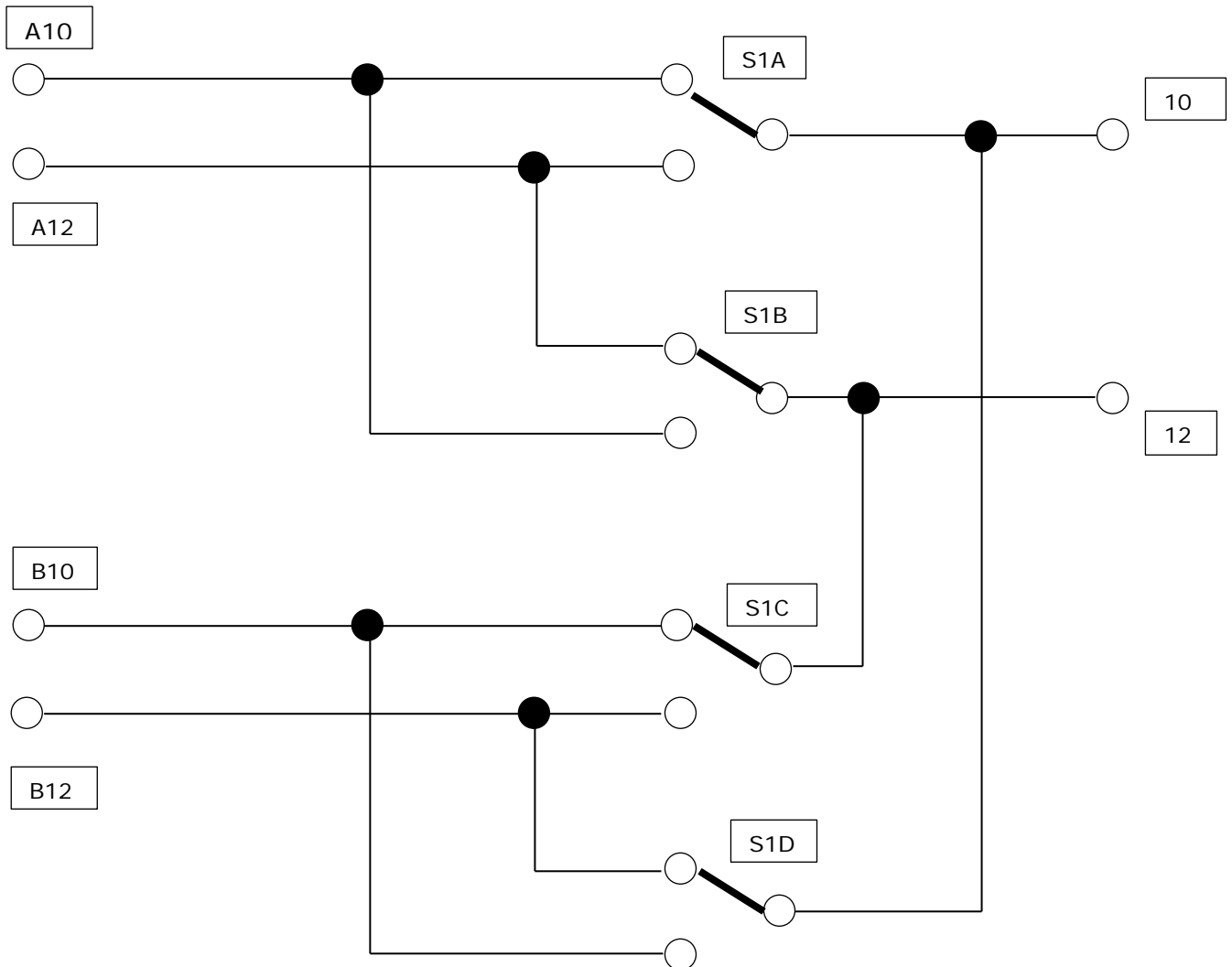


Figure (i) Switching circuit to swap pins 10 and 12 on 34-way disc drive

Single drives for the BBC Microcomputer are generally hard-wired to be drive 0. To combine two such drives into a single cable and to address them as Drive 0 and Drive 1 requires that wires 10 and 12 in the 34-way disc drive cable are swapped for the disc drive acting as Drive 1. The above circuit shows how a switch may be used to manually swap the drives. Any combination of single drives may be combined into an effective dual drive.

COMPONENTS

34-way ribbon cable 80cm long
 4 pole 2 way rotary switch
 Switch knob
 34-way IDC socket

34-way IDC circuit mounted plug x 2
 Small piece of matrix board
 Plastic project box

CONSTRUCTION

The first stage involved soldering the 34-way plugs onto the matrix board and connecting pin 1 of each socket together, then pin 2 and so on, with the exception of pins 10 and 12.

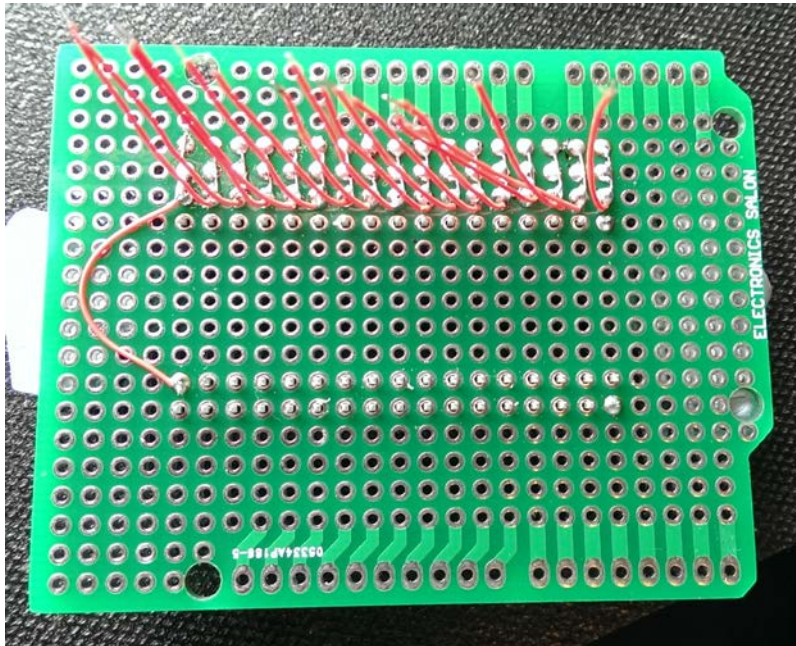


Figure (ii) fixing the sockets to the matrix board

The inter-wiring was made with 34AWG insulated wire used for wire-wrapping. The extension to the connection to the top socket was for connecting the ribbon cable which would plug into the BBC computer.

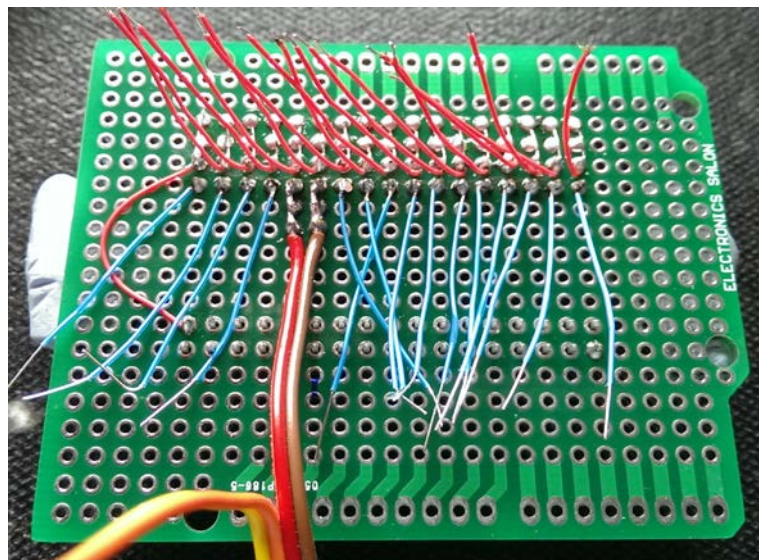


Figure (iii) fixing the connections to pins 10 and 12

A section of rainbow ribbon cable was used to connect to pins 10 and 12 on each 34-way socket.

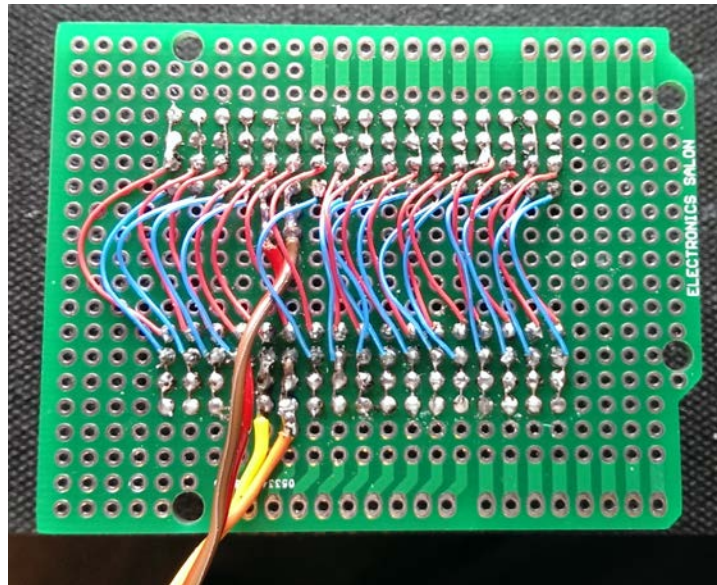


Figure (iv) socket inter-wiring

The sockets were then wired in parallel taking care not to bridge between the pins on each socket. The next stage was to connect the 34-way cable to the matrix board, leaving lines 10 and 12 unconnected (Figure v below).

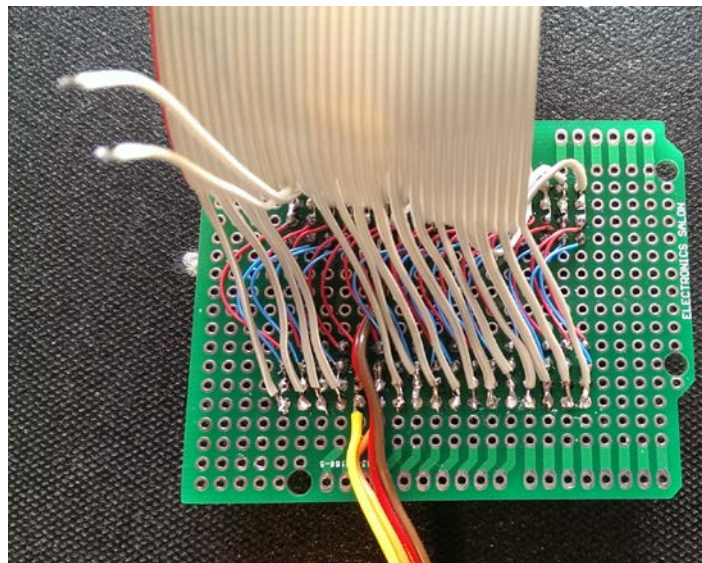


Figure (v) connecting the drive cable

After the socket wiring was complete, the next step was to mark and drill the plastic project box. The box chosen was a grey ABS project box. Masking tape covered the top surface

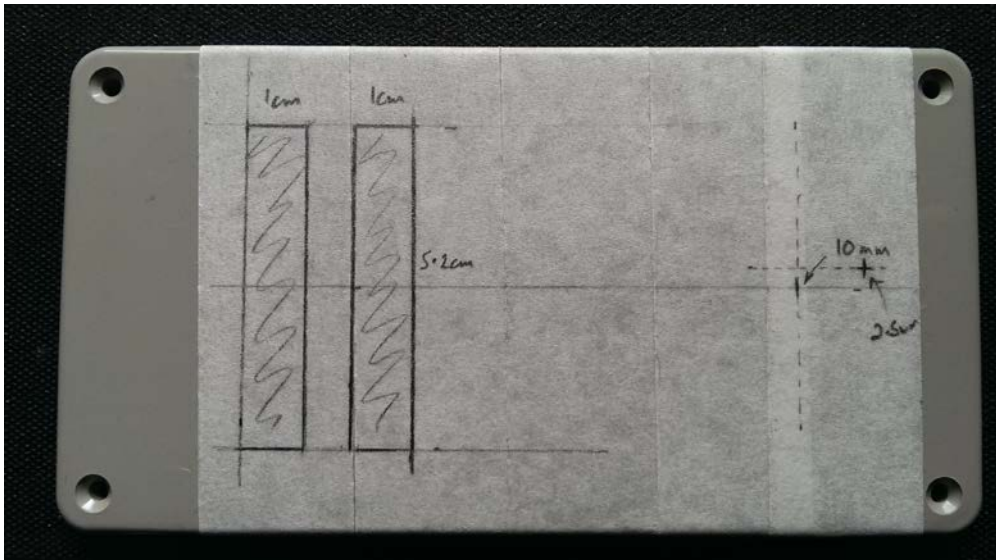


Figure (vi) marking the box

of the box to protect it whilst drilling. The rectangular holes for the 34-connectors were cut using a Dremel tool with a thin cutting blade and finished using a sharp knife and fine file.

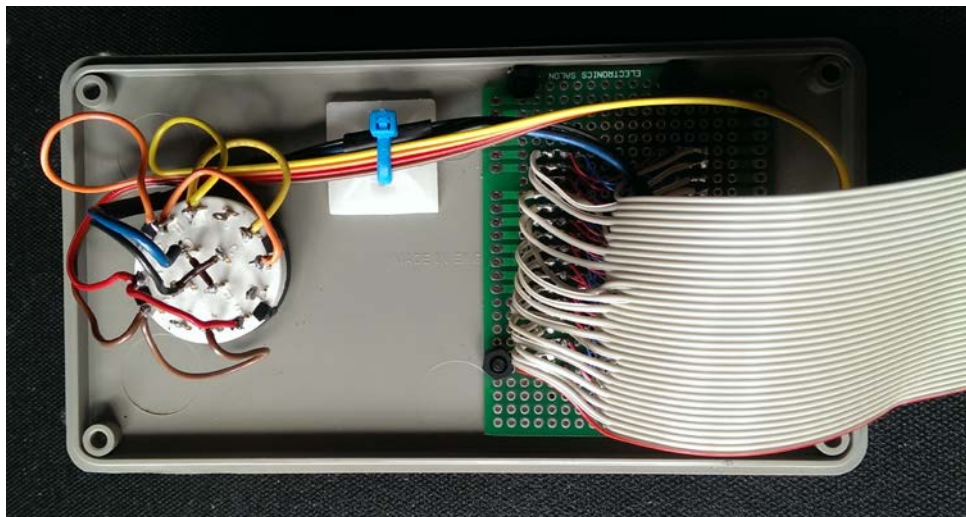


Figure (vii) wiring the switch

Figure vii shows the components in situ, fastened to the box lid and the connections to the rotary switch. To allow the ribbon cable to leave the box a thin slot was filed in the case.

The bottom of the case had four rubber feet attached to allow the box to stand neatly and to stop the box sliding about. The 34-connectors were labelled A and B and the switch labelled to show which connector was 0 and which was 1. This is shown in Figure vii.

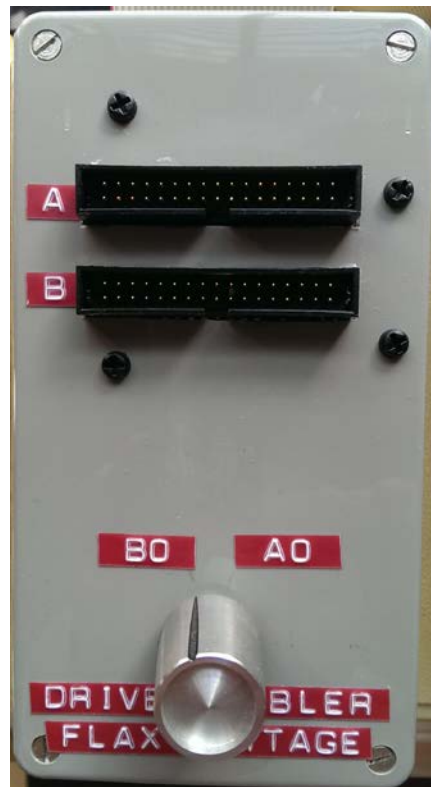


Figure (viii) the completed Duck

USE

The ribbon cable to the box had a 34-way IDC socket attached and this socket plugged into the disk drive connector underneath the BBC computer.

With the computer switched off two single disc drives were plugged into connectors A and B on the Duck. The drives may be self-powered (preferred) or powered from the BBC computer (in this case a power doubler connector would be needed).

Figure viii above shows drive B switched to 0, leaving drive A as drive 1. The drives can be switched from 1 to 0 and vice versa with the computer powered up though it may be necessary in some cases to press Break if the change has not been recognised.

This Duck has worked reliably for the last two years and is especially useful when working with a Gotek drive emulator fitted to one of the connectors.