

# Installing 2-sided floppy drive into Philips VG-8230

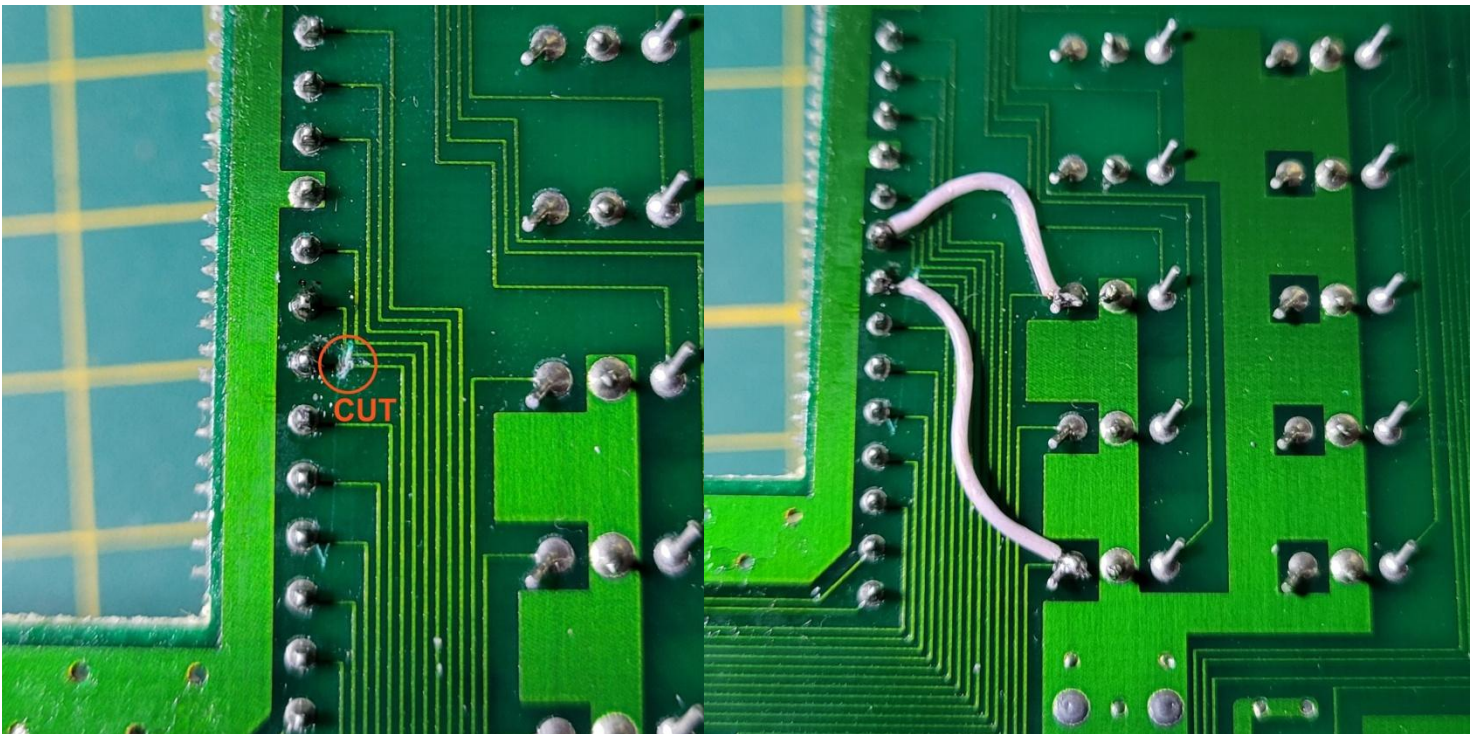
Fix created by RepairBas, pictures and testing by Wierzbowsky [RBSC]

By default the VG8230 computer has single-sided floppy drive that is not very practical, assuming that most of the software comes on 720kb diskettes. The installation of 2-sided (DS) floppy drive or Gotek floppy emulator into Philips VG-8230 computer requires the following modifications:

1. Rewiring the floppy connector
2. Installing the FDD interface board
3. Changing the disk BIOS
4. Applying the fix to the motherboard

## Rewiring floppy connector

Rewiring the floppy connector should be done on the bottom side. First of all, tracks to pins 8 and 9 should be cut. Then 2 wires must be soldered from pins 8 and 9 to the motherboard:



## Installing the FDD interface board

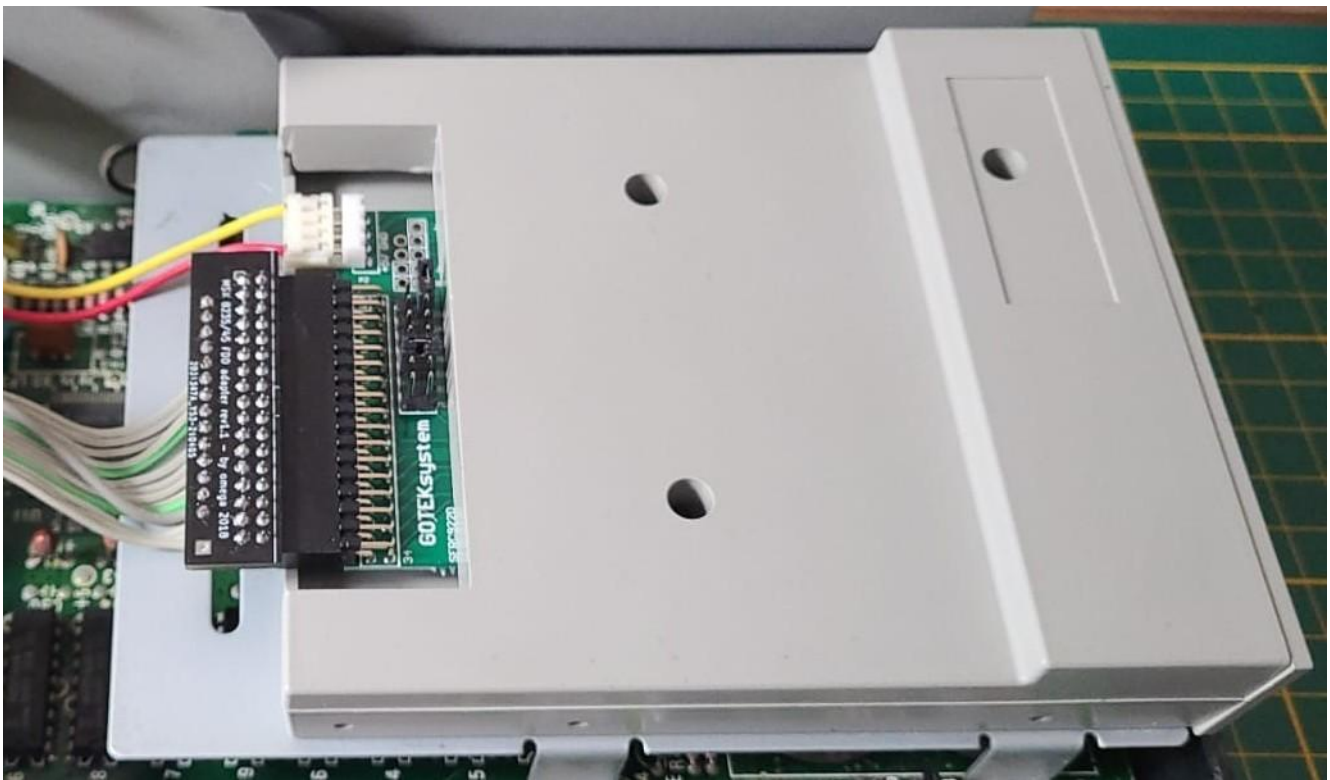
To be able to use the dual-row 34-pin connector with the old single row FDD interface cable of the VG8230, it's necessary to obtain the special converter board that was created by Omega. These boards can be purchased here:

<https://www.msx.org/forum/msx-talk/trading-and-collecting/wts-vg-8235nms-8245-fdd-adapter-boards>

Alternatively, you can rewire the original connector like described here:

<http://bas-ditta.info/doc/Inbouw%20720%20kB%20diskdrive%20in%20Philips%20VG%208235-00.pdf>

Then the power connector has to be connected to the installed floppy drive or Gotek emulator. Please make sure that you connect the power plug correctly or you will damage your floppy drive/emulator! The correctly installed Gotek emulator will look like that:



## Changing the disk BIOS

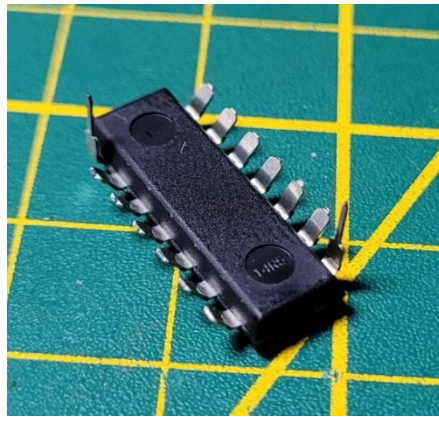
Changing the disk BIOS is quite straight-forward: remove the old floppy drive and carefully pull out the old disk BIOS EPROM from its socket at U50. Then either erase the old 27C128 EPROM with the UV EPROM eraser and write the 16kb disk BIOS from another Philips computer, for example 8245 or 8250. Otherwise take a new 27C128 EPROM and write the disk BIOS there. Install back the chip into its socket.

After the new disk BIOS and 2-sided floppy drive gets installed, it will be possible to use 720kb floppy disks, however, booting to MSX-DOS will be not possible yet. The fact is that the VG8230's motherboard has a hardware bug with memory management that prevents the MSX-DOS from booting correctly. This was one of the reasons why Philips came up with 8235/00 computer soon after releasing VG8230. To fix the problem with the motherboard it's necessary to perform a few changes. The description is below.

## Applying the fix to the motherboard

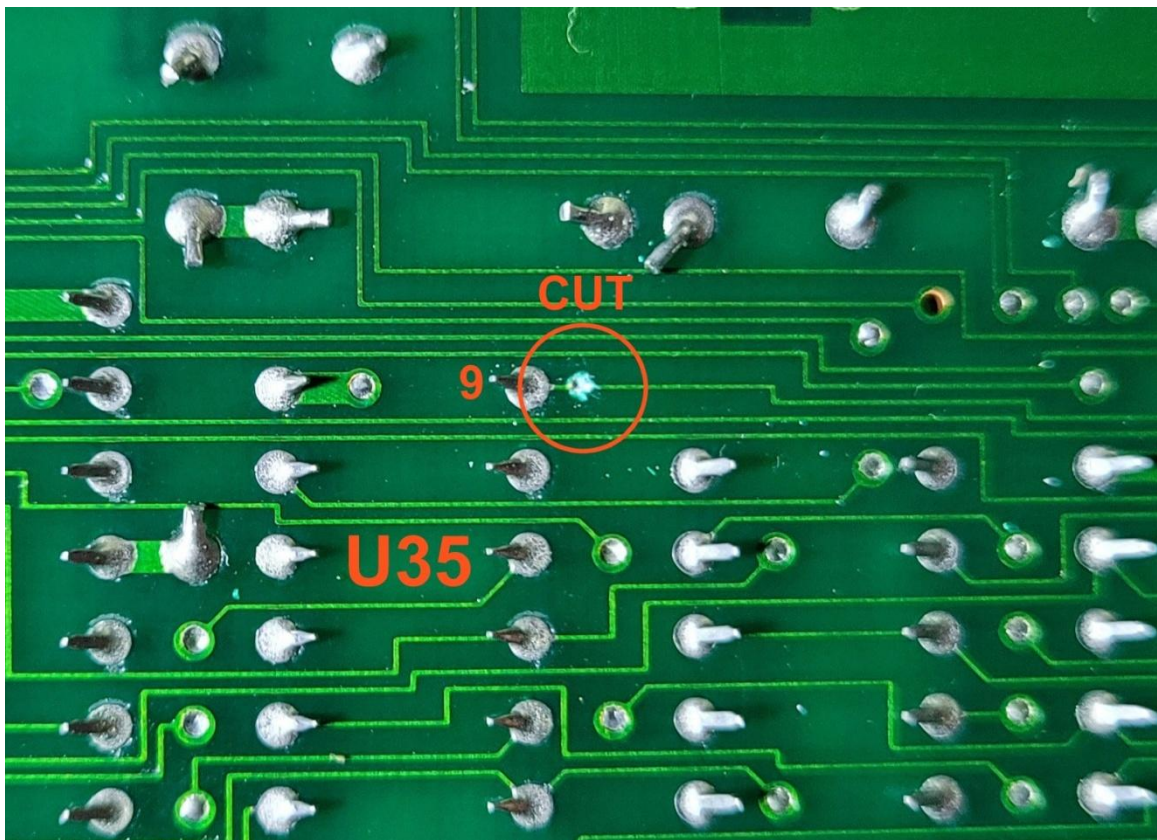
**Performing this fix requires basic soldering skills, so do not attempt it unless you know how to solder electronic components or how to repair circuit boards! Otherwise you may damage your MSX!**

First of all, buy the 74LS86 logic chip in DIP16 casing from any electronics store. Using the pliers carefully bend all pins except for 7 and 14 a bit upwards and cut them as shown on the below picture:

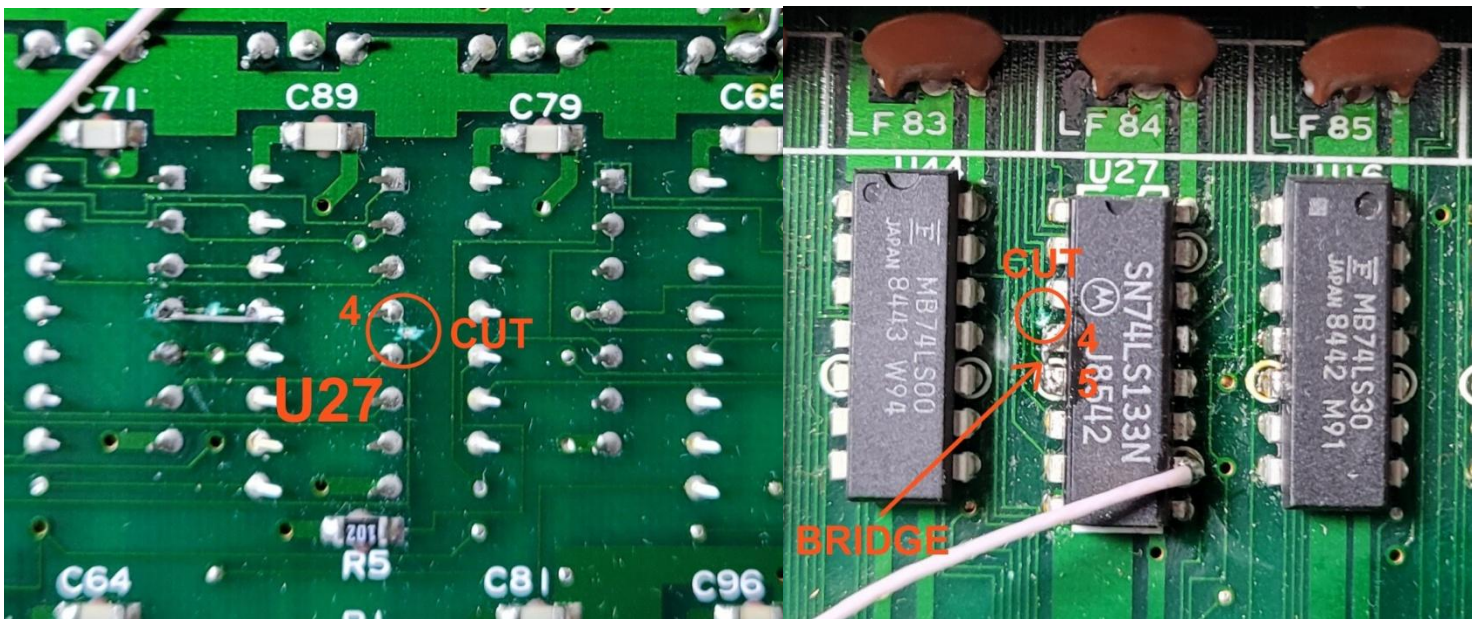


Then solder this chip on top of the U45 chip on the motherboard. Make sure that you correctly position the new chip before soldering. Put some solder onto the pins 1 to 6 - this will be necessary to solder wires to them later.

Now it's necessary to make a few cuts on the motherboard. A cut can be made with a sharp knife. Make sure that you don't damage any other tracks when making the cut. First, cut the track that goes to pin 9 of U35 chip on the bottom side of the motherboard as shown on this picture:



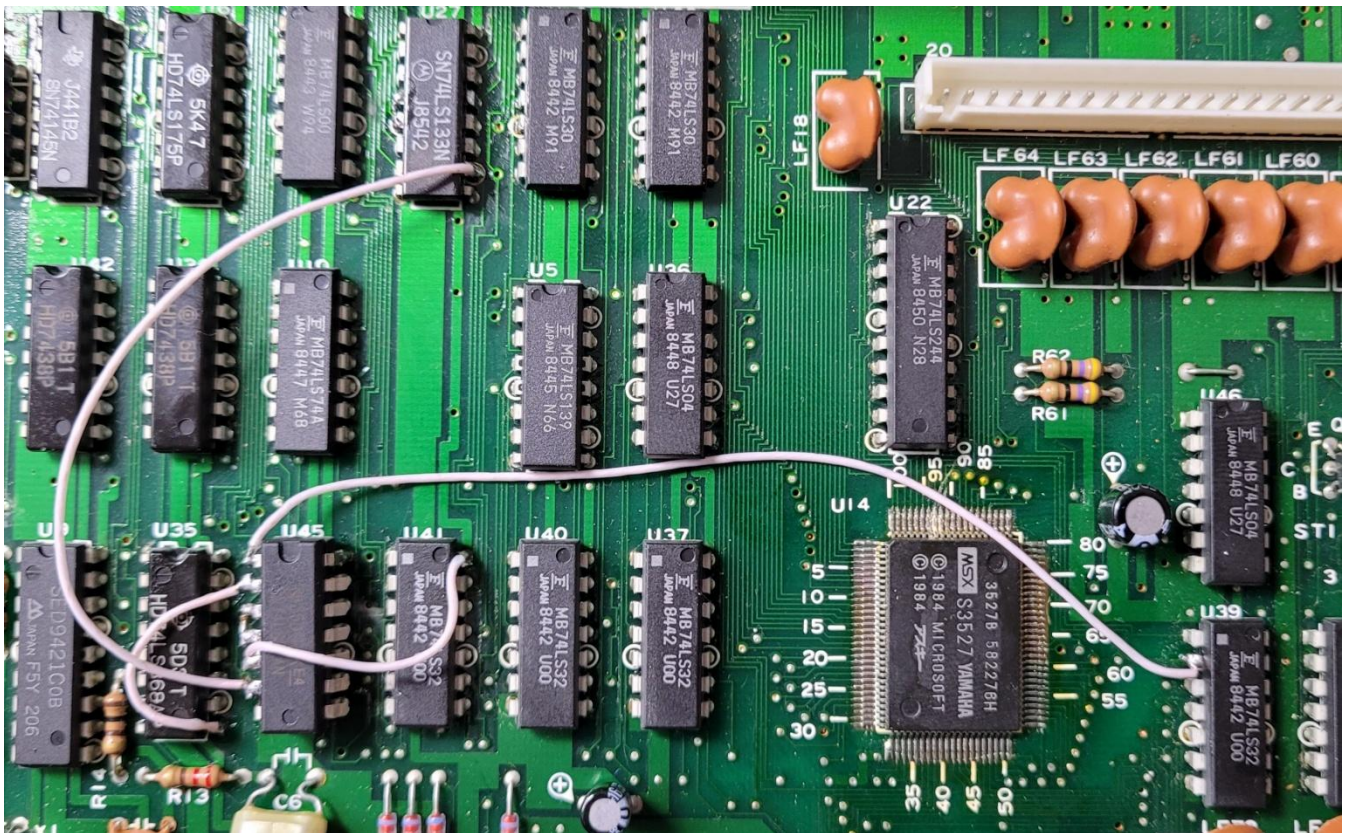
Then locate the U27 chip and put a wire between pins 4 and 5. Then carefully cut both tracks that go to pin 4 on both sides of the motherboard, as shown on these pictures:



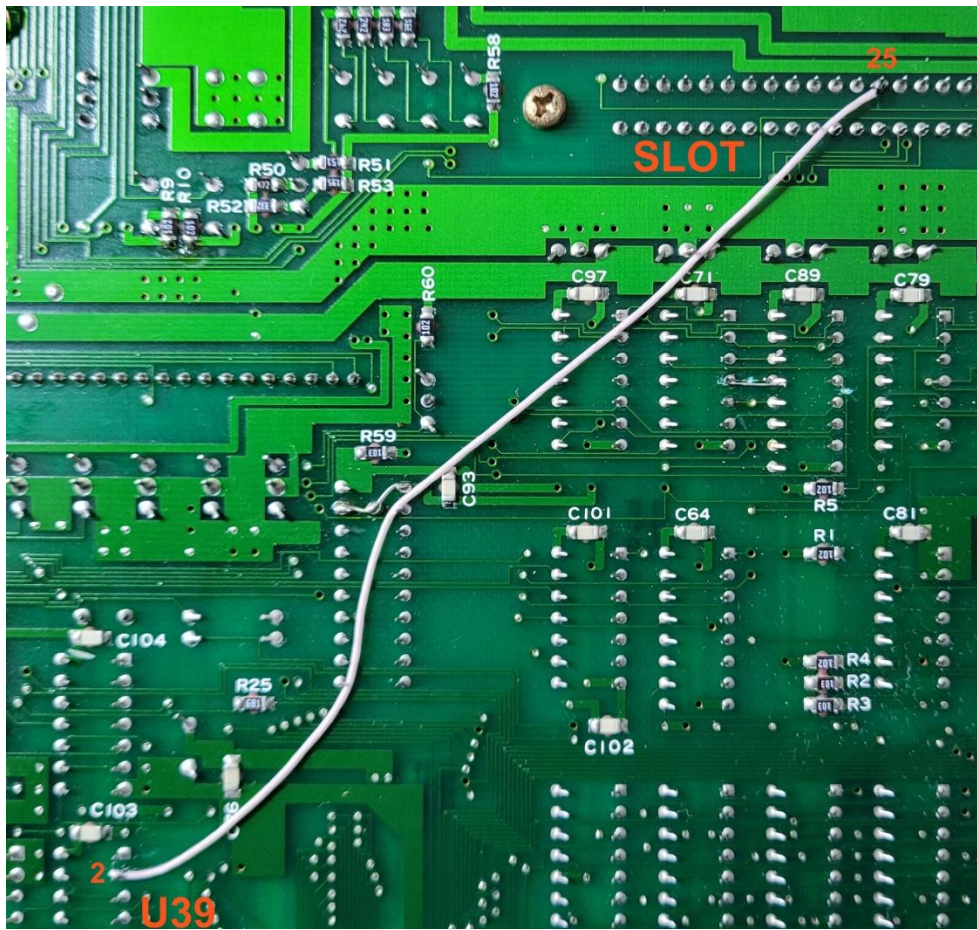
And finally, a few wires need to be soldered on the top and bottom sides of the motherboard to complete the fix. The following connections need to be made:

- 74LS86 pin 1 - U39 pin 2
- 74LS86 pin 2 - U35 pin 9
- 74LS86 pin 3 - 74LS86 pin 4
- 74LS86 pin 5 - U41 pin 16 (VCC)
- 74LS86 pin 6 - U27 pin 10

Below is the picture of the completed wiring on the top side of the motherboard:



On the back side of the board it's necessary to solder only one wire from pin 25 of the cartridge slot to pin 2 of the U39 chip. Below is the picture of the completed wiring on the bottom side of the motherboard:



After those modifications the computer is ready to correctly work with 2-sided floppy drives and to load MSX-DOS from diskettes. The end result after installing Gotek floppy emulator can be found on the picture below.

