

## Installation instructions

# Turbo 1050 Replica for Atari 1050 drive

Hi Atari fan!

thanks for your purchase of this item. The box contains the prebuilt and ready-to-use PCB "Turbo 1050 Replica" and this installation instructions.

### Attention:

The following instructions don't require professional skills in soldering or tinkering with electronic components, but if you've never open an Atari 1050 drive before, it's a good idea to ask a experienced friend for assistance.

These instructions doesn't contain any solder guide or "how to" – you had to have the knowledge ☺

### How to install the Turbo 1050 Replica

**First of all:** Please be sure that you take a fine working Atari 1050 disk drive for installing your Turbo 1050 Replica! Specially when the drive you want to use was lying some years on the shelf. Test it complete, format, write and read some disks in single and medium density. Use a sector copy program to copy some whole disks. When all of these standard operations will be fine, go ahead. The Turbo 1050 Replica doesn't cure any problems with a 1050 drive – if your drive will not work properly, please repair (or let somebody do it for you) it first.

Please follow these steps – you will find high resolution pictures in the ZIP-archive!

1. Open your Atari 1050 drive case and remove the drive mechanic.

**Hint::** Make a photo of the cables coming from the drive mechanic and connected on the 1050's PCB. Mark every single plug with a permanent marker to remember it's position and direction. Without this remedy it's very difficult to reassemble the mechanic again.

2. Remove the ROM or EPROM at socket U10. Take a look at **figure 1**. Keep this ROM (or EPROM) for the possibility to make your 1050 original again, if ever wanted.
3. Insert the Turbo 1050 Replica PCB into the ROM's socket (U10) as shown in **figure 2**.
4. Remove the four capacitors (C56, C57, C58 and C61) as shown in **figure 3**. The removal of these capacitors is needed to make the highspeed-mode of your Turbo 1050 work. These capacitors must never be installed again, even if your want to use the drive without the Turbo 1050 or with any other enhancement.
5. Solder the two wires from the attached cable I put into the bag to the both places shown in **figure 4 (red wire)** and **figure 5 (black wire)**. The red wire must be soldered at "TP10" (which stands for "TestPoint"). The black wire must be soldered at the end of resistor R66 pointed to the three big electrolytic capacitors in the middle of the 1050 mainboard.

6. At the Turbo 1050 Replica PCB is a red shunt/jumper mounted. By default the both pins are closed with this jumper. This is the right setup if you removed a ROM before. If there was an EPROM before located in U10, then please remove this jumper to make the Turbo 1050 Replica work. If you're unsure, look at the four white "resistors" in top of the empty socket U10 at **figure 1**. If all four resistors are like my picture, then this is a "ROM" setup – jumper must be close both pins at the Turbo 1050 Replica PCB. If the four white resistors have different connections than shown in the picture, remove the jumper from the Turbo 1050 PCB. Or simply try it out 😊
7. Plug the attached two pin cable at the most right upright pair of contacts like shown in **figure 2**.
8. Connect the mechanic again using your photos. Only connect the power cord to your drive. Switch the drive on and observe the mechanic. The motor starts spinning for a short time and the read-write-head's carriage will move for- and backward.
9. Switch the drive off, plug SIO-cable and computer to the drive, power on all devices and test the drive the usual way. All operations should work normally.
10. Reassemble the case of your 1050. You're finished!

### Testing normal operation

You need a well formatted single density disk for the following test. It must not contain any data, single density format (empty disk) is enough.

Select your 1050 with the Turbo 1050 Replica as D1:, remove any inserted disk and let the lever be in open position. Boot your ATARI XL/XE computer now. A small programm will be loaded from the Turbo's internal ROM offering you a little menu on your screen.



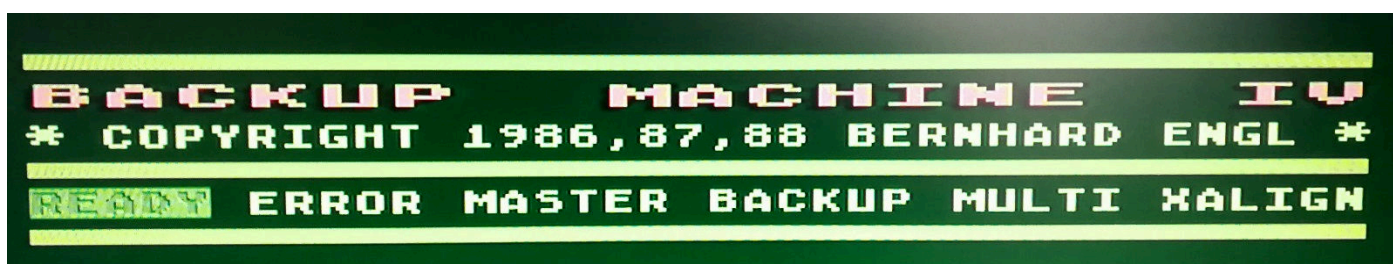
START = Will install Highspeed-Load-Routine in Stack-Area. Best for BASIC and standard DOS usage

SELECT = Will use the page 6 for Highspeed-Code. Best for boot and non-DOS games etc.

OPTION = Start the Maintenance Box or Copy Tool

You should insert the disk you want to boot from before pressing START or SELECT. A single "BOOT ERROR" will always appear, this is absolute normal.

Or you press OPTION and will see the main menu:



When the READY sign is blinking, the Turbo 1050 is idle. In all other cases a copy operation is in progress! Because the usage and menu of the Turbo 1050 is very simple, keep on your focus on what you do!

To enter the Maintenance Box please press OPTION twice:



You will see this screen now. Insert your single density formatted disk and press START. Now the tool will check your standard drive rotation speed.

If your drive is working fine and the disk is well formatted, then the following screen should appear:



Anything between 287.50 and 289.20 RPM is fine, more close to 288.xx is better. Use the pot VR2 at the 1050 mainboard to adjust the standard rotation speed to match 288 RPM in best case. Let the 1050 operate 5-10 minutes (to get warm) before adjusting!

To test the slow mode, press SELECT. You should hear reduced rotation speed also and should get a screen looking like this:



The slow mode rotation of 270 RPM is directly dependent on the right standard speed. When standard rotation speed is not close to 288 RPM, then this one would also didn't hit the target of 270.

When nothing happens after pressing SELECT, check the attached cable and correct solder points for the red and black cable. These wires are only needed for the slow mode operation.

Press OPTION to quit the Maintenance Box and return to the main menu.

### Using the Copy Tool ("Backup Machine")

The Turbo 1050 Replica has a built-in copy program for protected disks. When you boot your 1050 with open disk lever and press OPTION to load the tools, the main menu is already your starting point for the copy program.

**Hint:** In case of the very simple user guidance there a chance to mix up source and destination disks more than using other copy tools. So it's ALWAYS a good idea to write-protect the source disk you want to copy to protect your original from an unwanted write access!





When the READY sign is blinking, you can start your copy. Insert the source disk first. Press SELECT at this point to enable/disable XALIGN mode. With XALIGN mode switched on the copy will be much slower, but more precise. Use this only when standard copy won't work.

Start your copy with pressing START. The MASTER sign will start blinking, indicating that the source disk is required or read. The Turbo 1050 Replica first analyzes the whole disk, then move back to track 0 and start reading the disk. Dependent on the data on the disk you've to flip source and destination disks two or three times.

When the memory is full, Turbo 1050 Replica stops spinning the drive and the BACKUP sign is blinking. Now you have to insert an empty disk to write to. At this point you can press SELECT to enable multi-write mode (make more than one copy). The MULTI sign will be light on.

Press START to write the copy to the destination disk. The source data will be written to the destination disk (this disk mustn't be formatted before).

In standard mode (no multiple copies) after writing the MASTER sign will blinking again to advise you to insert the source disk again.

In multiple copies mode the BACKUP sign now blinks for the next destination disk. If the following disk is the last copy you want to make, just press START to begin writing. If more than the actual disk should be written, press SELECT to enable multiple copy mode again. Repeat this (SELECT then START) as long you want to make more copies from the actual part.

If all parts are read and written, the READY sign will blinking. If any read or write error will occur, the ERROR sign is light up. You've to start again (read error) or can repeat while write errors.

## Using Turbo 1050 Replica with DOS

To get the maximum speed the Turbo 1050 Replica offers it's mandatory to format the disk with it.

1. Boot your 1050 with open disk lever, wait until menu appears, insert DOS disk, press START
2. After your DOS is loaded, insert a new disk and format it using Single, Medium or Double Density
3. Write DOS or the files you want to use to that disk

When you now boot this disk the same way, it would loaded with very high speed. Without formatting the disks with the Turbo 1050 Replica the access is much slower, due to the fact that the Turbo 1050 Replica has no trackbuffer. The speed enhancement will be made due a clever sector interleave in conjunction with the Turbo 1050 highspeed routine.

If you use some DOS version like XDOS 2.4 or you have one of the tools (or patched operating systems) including Hias' Highspeed-SIO-routines, than you can directly boot from such disks. Hias' highspeed SIO has the special Turbo 1050 highspeed protocol built-in, so there's no need to load TURBODRIVE with open disk lever before.

Sys-Check owners can use the "Genuine XL operating system with Hias HS routines" ☺

Each „Turbo 1050 Replica” PCB was built into a 1050 drive for test. Formatting, Writing and Reading back of a disc were performed. Readout disc compared with the source. And speed changing also were tested.

You get a fully tested and working PCB. Any technical issue with the Turbo 1050 Replica is very implausible.

In case of any trouble with your Turbo 1050 Replica equipped Atari 1050 drive please contact me or an experienced friend for assistance.

V1.0 – tfhh – 05/2018



Figure 1: Remove ROM or EPROM (U10)

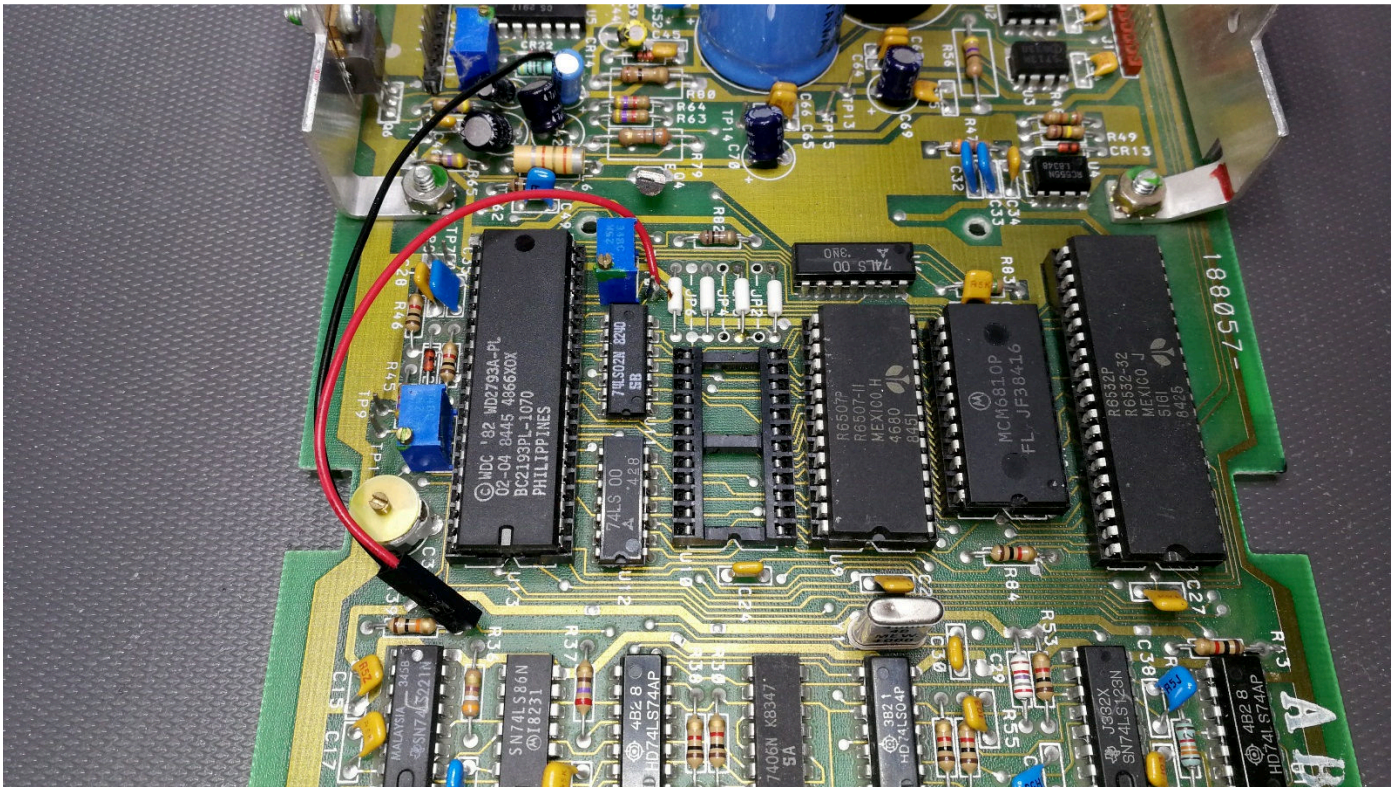


Figure 2: How to plug in the Turbo 1050 Replica in the free ROM/EPROM socket (U10):

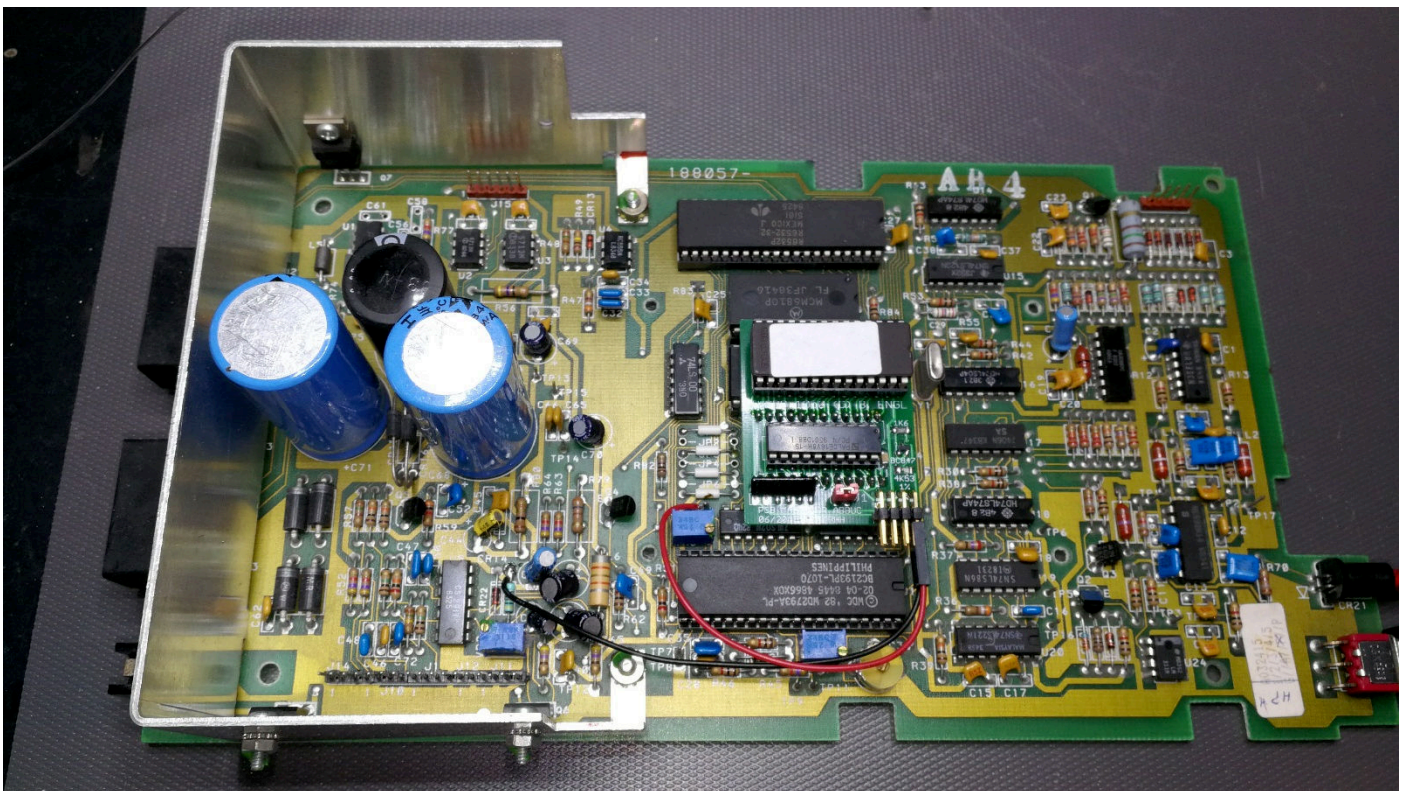




Figure 3: Remove these four capacitors

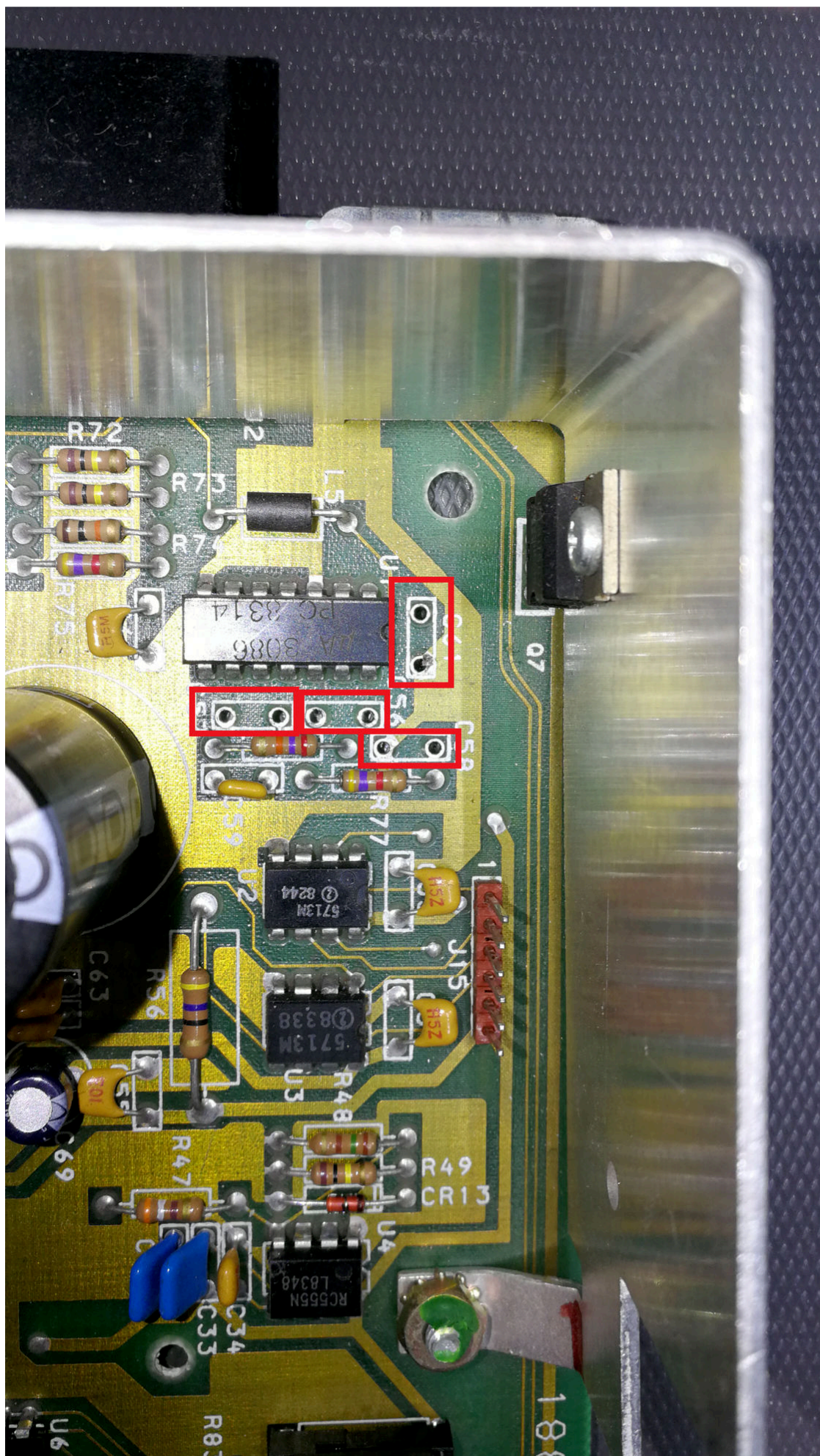




Figure 4: Where to connect the red wire

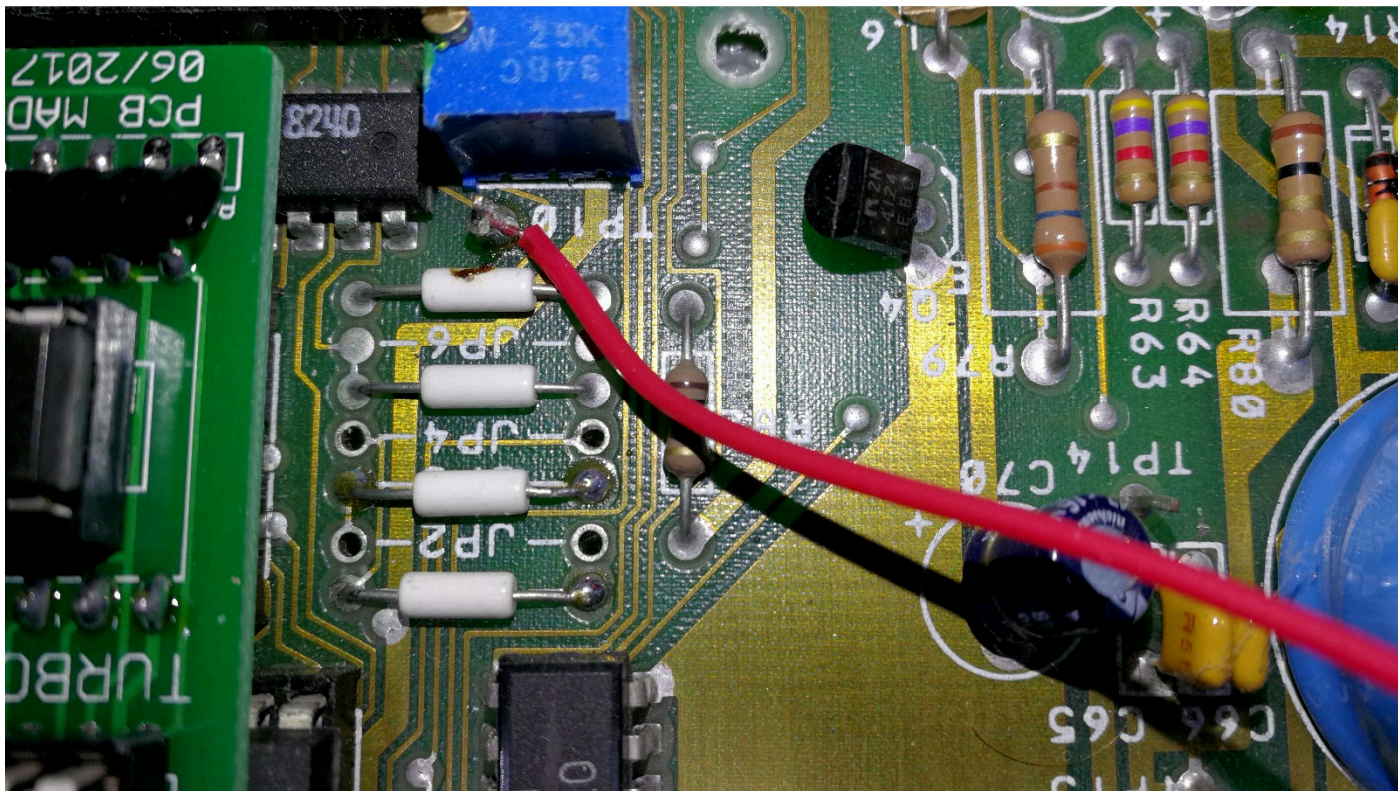


Figure 5: Where to connect the black wire

