

IMPORTANT NOTE: These instructions are part of the DIY kit you purchased. They may not be passed on or published without my prior permission!

Instruction Laserprint CDM-1

SOLIDCOREAUDIO

Caution: You work on parts of the device which are sensitive to electrostatic discharge. Be shure that you are not charged!

Steps for building the laserprint

- a) Servicing the CDM-1 drive
- b) Pre-adjusting the laser-voltage and measuring 4 resistors
- c) Desoldering the parts that are being reused
- d) Solder 1
- e) Solder 2
- f) Solder 3
- g) Installing the new print, adjusting laser-voltage

The following is included in the DIY kit:

- see separate BOM

You will need the following things:

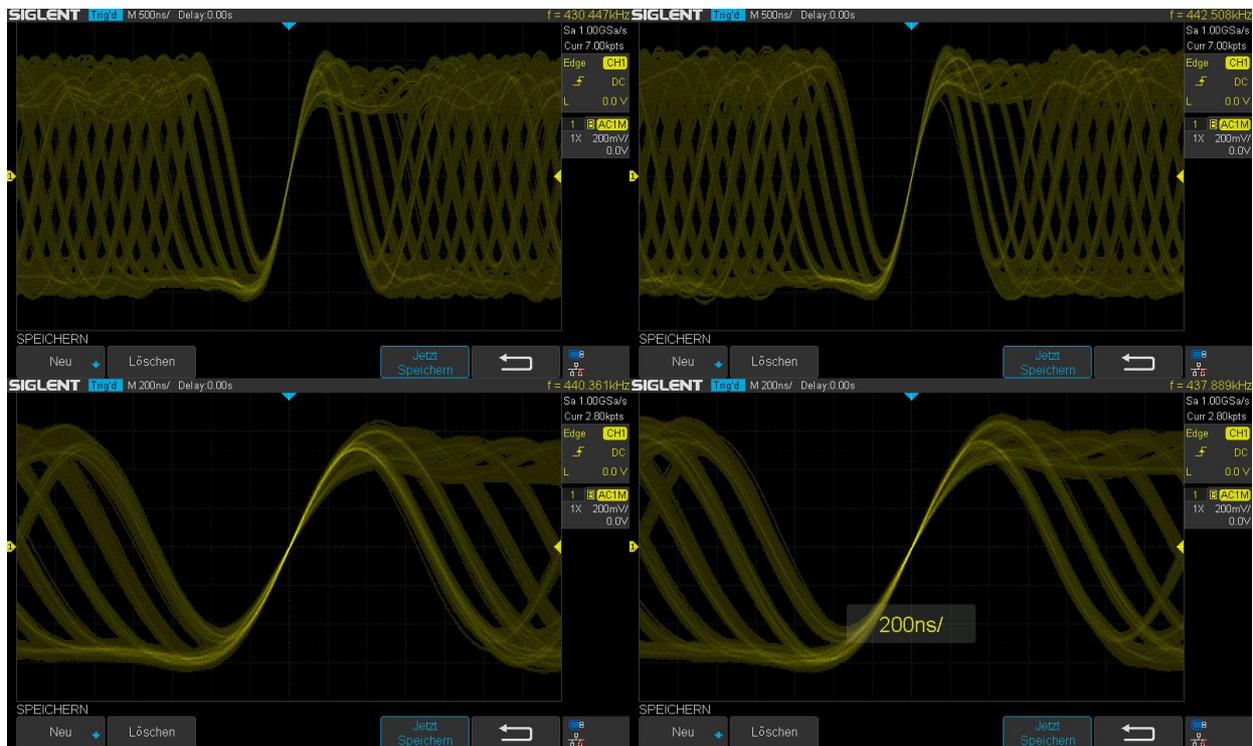
- clean working space
- good solder iron, middle and fine solder-tip, solder, desolder-pump, third hand
- digital multimeter
- Oscilloscope for checking the Eye-Pattern and adjusting the azimuth of the Laser

a) Servicing CDM-1 drive

Andreas Schlüter (nanocamp) provides a wonderful instruction to service the drive! These services are:

- Demounting the platter and cleaning the shaft and the bearing (I would not follow his suggest to work with sanding paper on the shaft).
- Flat grinding the axial bearing, if you want to use the included teflon washer, you have to grind away more. The washer has a thickness of 0.5mm. Roughly adjust the focus of the laser.
- Cleaning the inner laser lenses: desolder four solderpads of the flexprint at the laser (BE CAREFUL, THE FLEXPRIINT IS SENSITIVE TO HEAT). There is a „nose“ at the laser with which the laser can be turned counterclockwise in its holder until it is loose. Use a slotted screwdriver therefor. Now you can lift the laser and clean the inner lenses with optical fluid and optic-paper (the one you would use for your very expensive camera). Mounting is just reverse order.

- Adjusting the azimuth of the laser: demount the cable for the hf-signal and strip a bit of the white cable thus you can grab the signal with a contact hook of your probe of your oscilloscope. Analyse the Eye-Pattern and loosen the two screws of the bearing block of the radial tracking device so you can move it a little. While doing so, you will see that the Eye-Pattern is changing. This is because depending on the axial alignment more or less light is falling back on the photodiode. Correct adjustment is found when the signal on the oscilloscope is maximum.



(left before, right after. You can see, that the eyes are more open on the right hand. During measuring you will also recognize that with correct alignment the pattern is more stable vertically.)

- Resistance radial tracking device bearing: loosen the hexagon bolt of the radial drive and re-tighten it only that much, that all clearance in the bearing is gone. Check the clearance by tipping the radial tracking device. The correct tension is found when the device is just swinging less freely compared to loose bolt.
- Now focus can be adjusted precisely.
- Having the motor print unmounted already, take a look at the 4 transistors. You might desolder these and realign them so they don't touch the laser print when reinstalled.

b) Adjusting laser voltage and checking of 4 variable resistors

Now set the laservoltage to 500mV (see instructions at <https://nanocamp.de/>). Actually it is not the voltage of the laser that is being measured but the voltage that is being produced by the guidance photodiode. If you want to know, how much current the laser is drawing, measure the voltage drop over the 47 Ohms-resistor after the trimmer for the laser. It will be around 0.3 mA.