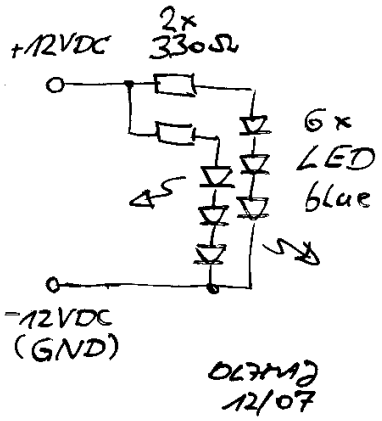
Blue LED for Drake 7-Line and the C-Line

The standard lamps in the old Drake-rigs are not the optimum for the blue foils in the meter- and frequency-scales. Some OM´s propose to replace them by blue LED´s.

7-Line: TR-7, R-7 and RV7:

In the TR-7 (also R-7 and RV-7), it can rather easily be done, because the lamps are fed with 12VDC. The circuit is shown in picture 1. 3 LED´s and one resistor (330-Ohm) are in series.

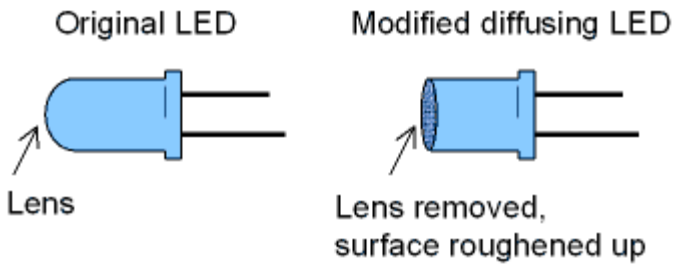


Picture 1: Schematic for TR-7, R-7 and RV7

Totally 6 LED´s are used for an optimum illumination of the scale and meter.

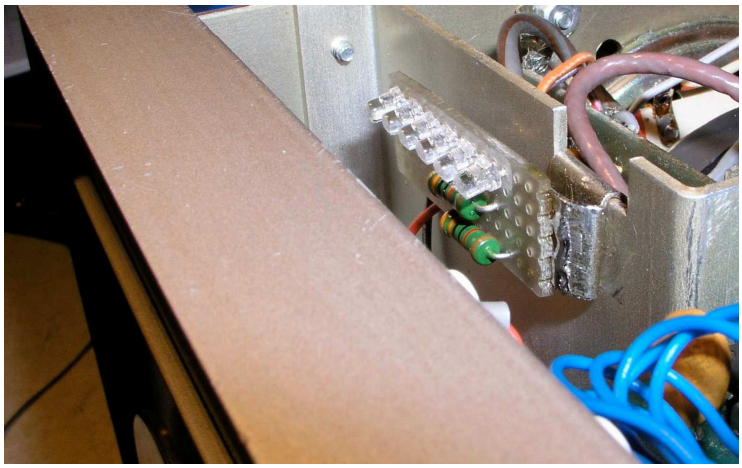
Picture 2: TR-7 and R-7, Meter-illumination

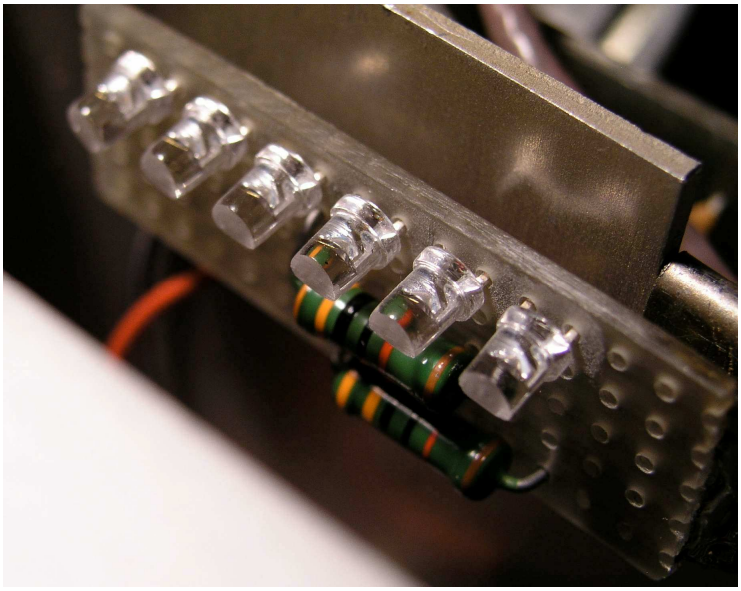
Modification of the LED´s:
The original LED´s had a rather good focussing lens which resulted in bright and small spots in the illuminated scale. Therefore i recommend to remove the lens with a file or rasp and to make the surface rough to have a good diffusing effect (picture 3).



Picture 3: Modification of the LED´s

Picture 4 and 5 show the modified LED´s in place (TR-7 and R-7).



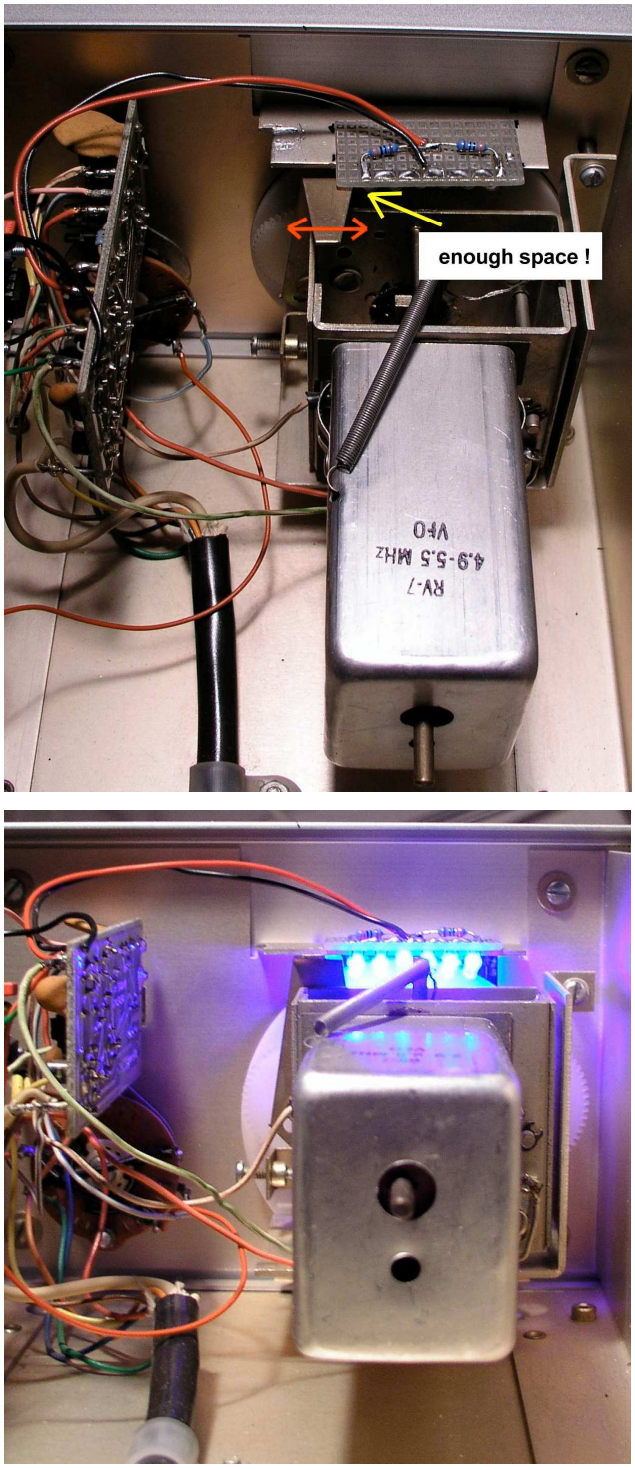


Picture 4 and 5: TR-7 and R-7, LED´s for meter-illumination

The whole circuit is soldered onto a small piece of an experimental board. The clamps of the original sockets of the bulbs are used now as fixture for the LED´s. The 12VDC-supply is taken from the same pins, the original lamps had been connected to.

The LED´s should be arranged and bended for an optimum and evenly illumination.

The illumination of the frequency-scale of the PTO´s requires a little bit more care, because the small board could interfere with the PTO-gear (lever) – see picture 6!

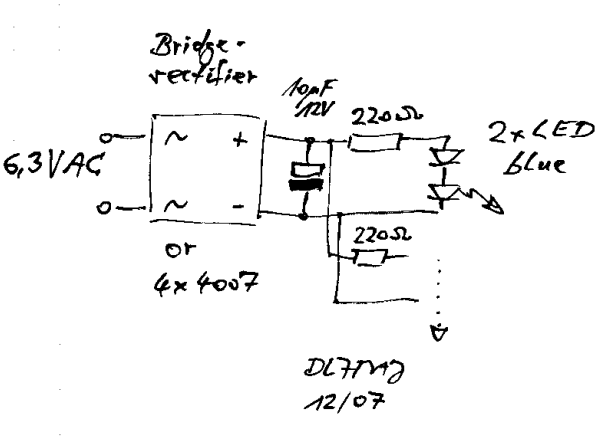


Picture 6 and 7: Illumination of the PTO in the RV7 (similar in the TR-7 and R-7)

The board is fixed with some drops of glue.

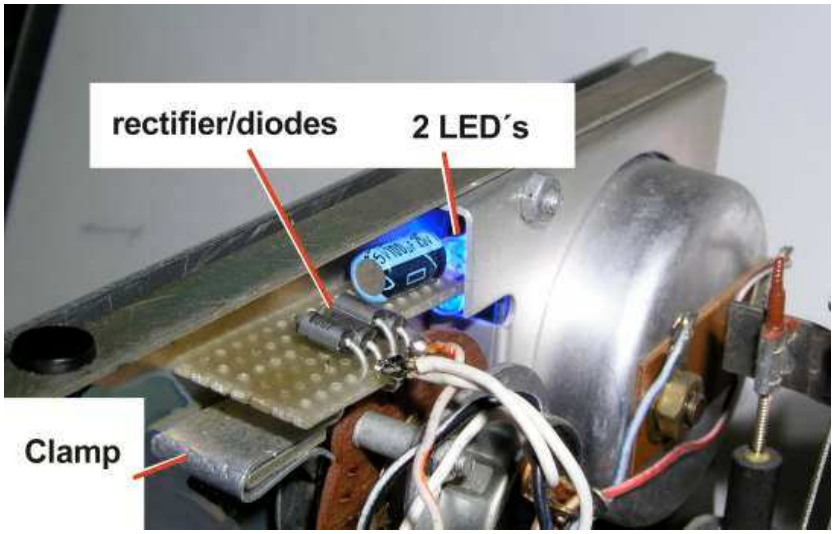
C-Line: R-4C and T-4XC:

The easiest way is to simply exchange the lamp by LED´s with an additional series resistor – but this would cause the LED to flicker with 50Hz/60Hz (halfwave).
A LED should be connected to DC, so i propose to use a circuit like this (picture 8):



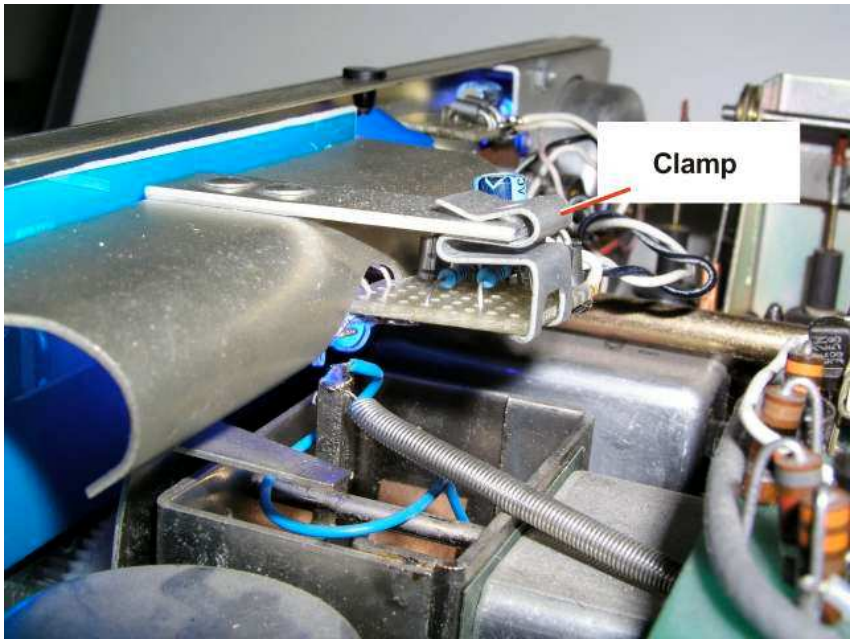
Picture 8: Schematic

The 6.3VAC is rectified (fullwave) and smoothed by an electrolytic capacitor. The resulting DC-voltage is sufficient for two LED´s in series with 220 Ohms.
The whole circuit is soldered onto a small piece of an experimental board. The clamps of the original sockets of the bulbs are used now as fixture for the LED´s. The board can be soldered to this clamp. The original wires for the bulbs (6.3VAC) can now be used for this circuit.

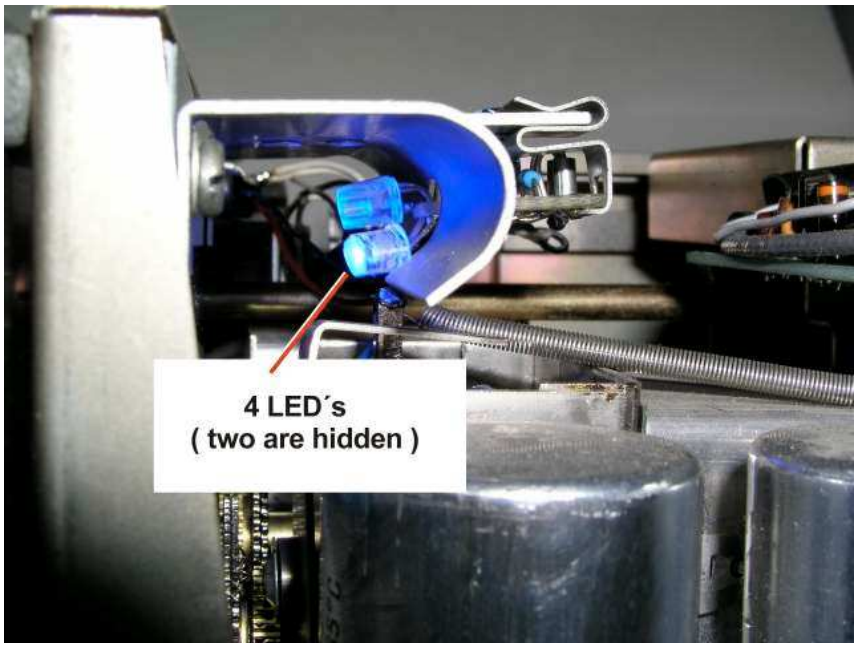


Picture 9: Meter illumination

For the meter, only two LED´s are sufficient (picture 9).



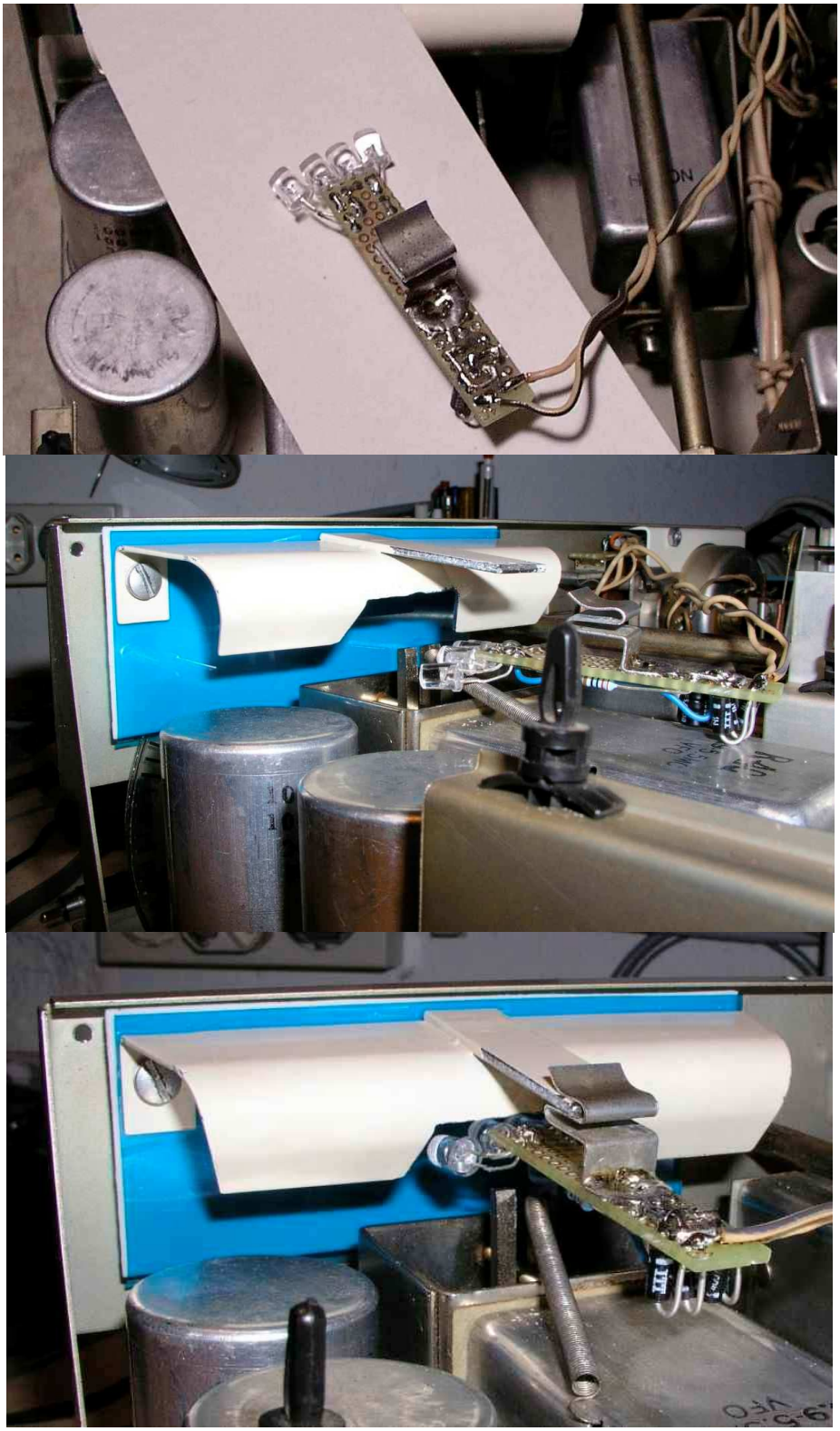
Picture 10: Frequencyscale illumination



Picture 11: Diffusor LED´s

For a better and more constant illumination of the whole frequency-scale, i used 4 LED´s with two series resistors (2 LEDs with one resistor acc. Picture 1).
The LED´s should be arranged and bended for an optimum and evenly illumination - see pictures 10 and 11.

In my second R-4C, i used a different construction (pictures 12, 13 and 14). The 4 LED´s are arranged parallel and the hole in the reflector of the frequencyscale had to be made bigger.



Pictures 11, 12 13: Alternative construction

These are the results:

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