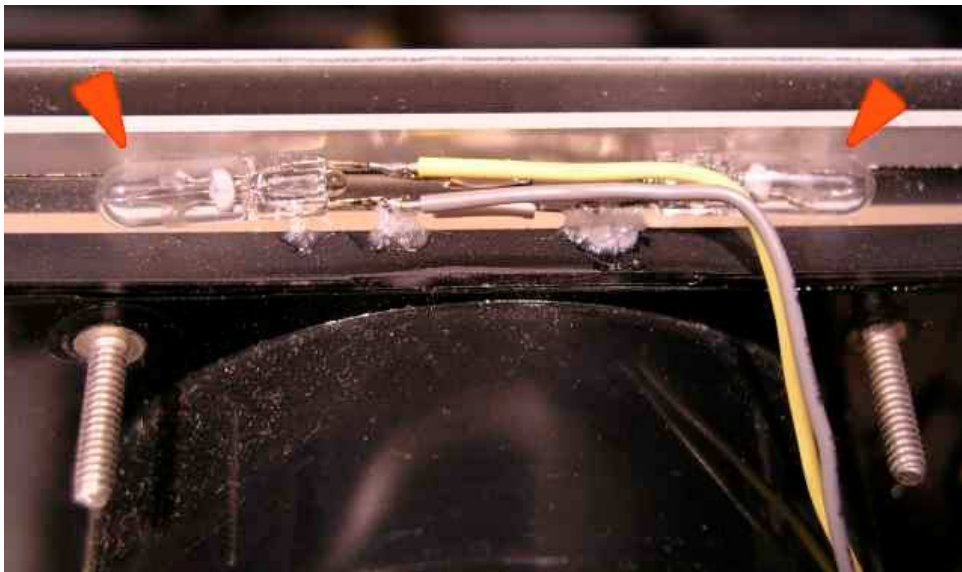


## Scale-Illumination for Drake-Tuners MN-4C and MN-7

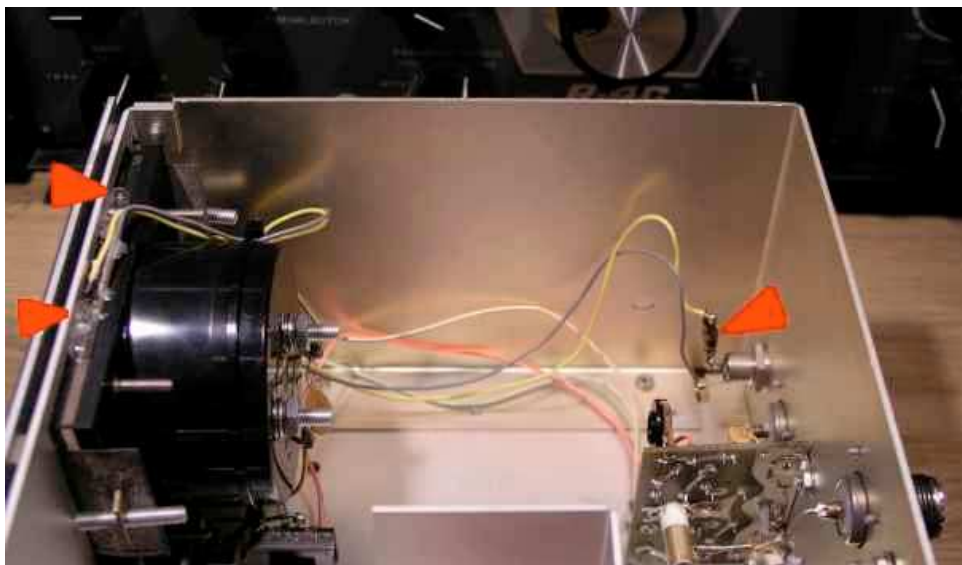
The scales of these tuners are not illuminated and therefore rather hard to read in a dimmed shack. An illumination can be made easily.

**MN-4C:** In my MN-4C, i added two small bulbs many years ago (picture 1). They are rated with 12V and 50mA each. The supply-voltage is the heating from the T-4XC (12,6VAC). To reduce intensity and increase lifetime of the bulbs, a resistor of 21,5Ohms (two 43Ohms parallel) is in series with the bulbs (pictures 2 and 3).

**NOTE:** Avoid direct mechanical contact between the bulbs and the plastic of the meter; otherwise the plastic may be burnt.



**Picture 1: Two bulbs in the MN-4C, fixed with a drop of glue**



**Picture 2: Right: Series-R (2x43Ohms//) Left: Two bulbs**

The voltage-drop at the series-R is calculated with 2,15V, the bulbs are fed with 10,45VAC.



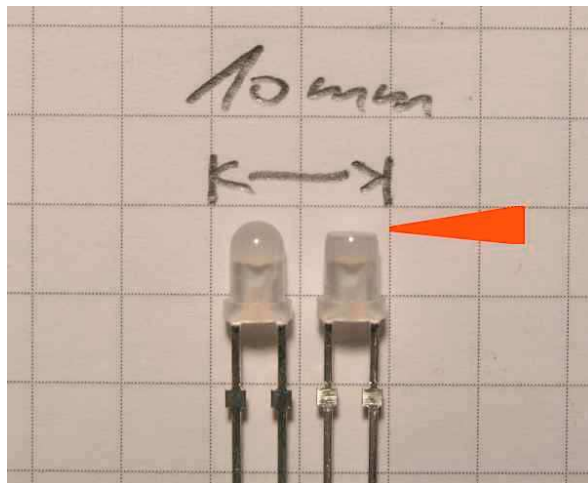
**Picture 3: DC-Connector at the rear**

#### MN-7:

In my MN-7, i added three small white LED's.

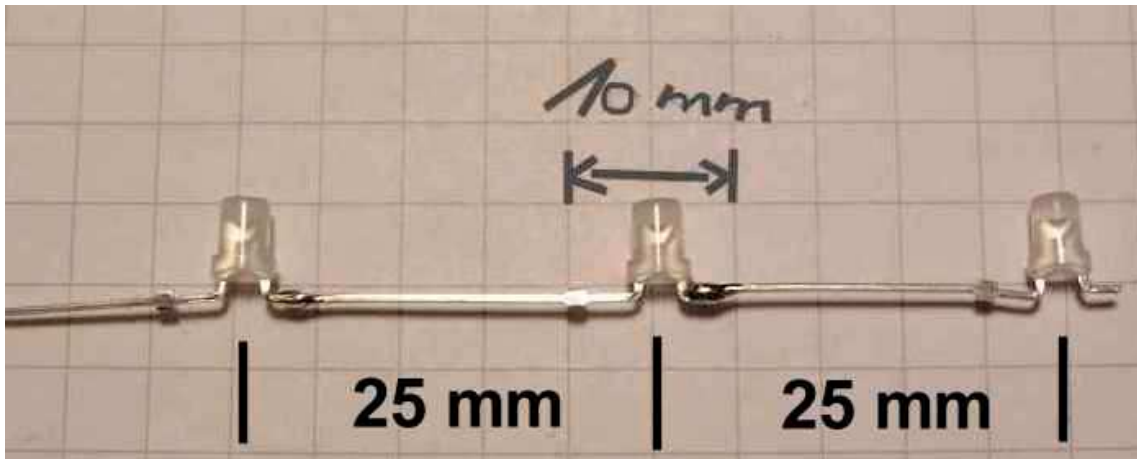
#### Modification of the LED's:

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 4).

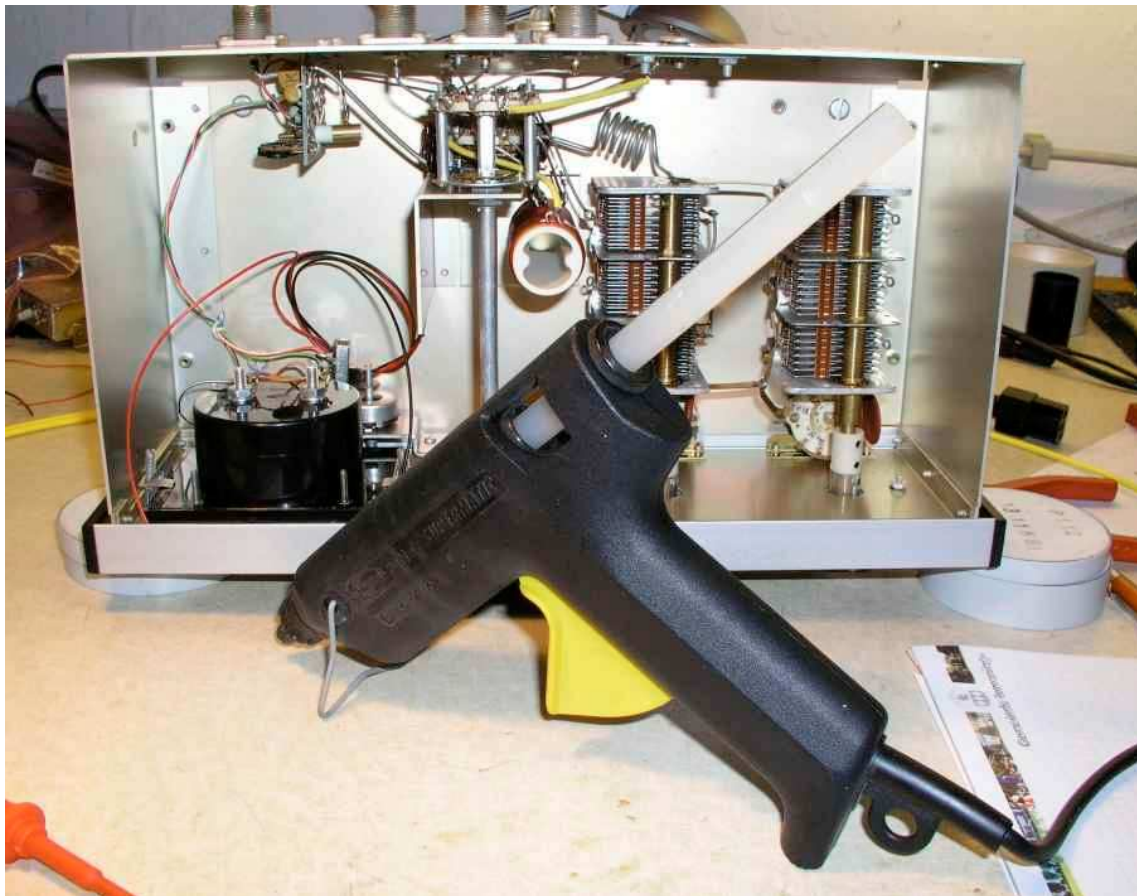


**Picture 4: Modified white LED's**

Then, three LED's are connected in series with a space of app. 25mm (picture 5). The LED's are fixed with hot glue (pictures 6 and 7). Before fixing, test the best position and the adjusting of the LED's direction.



**Picture 5: Three white LED's prepared for the MN-7**

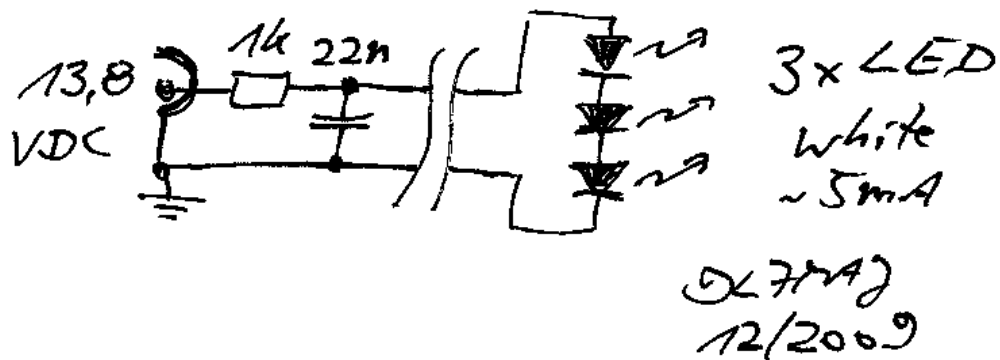


**Picture 6: Hot Glue**



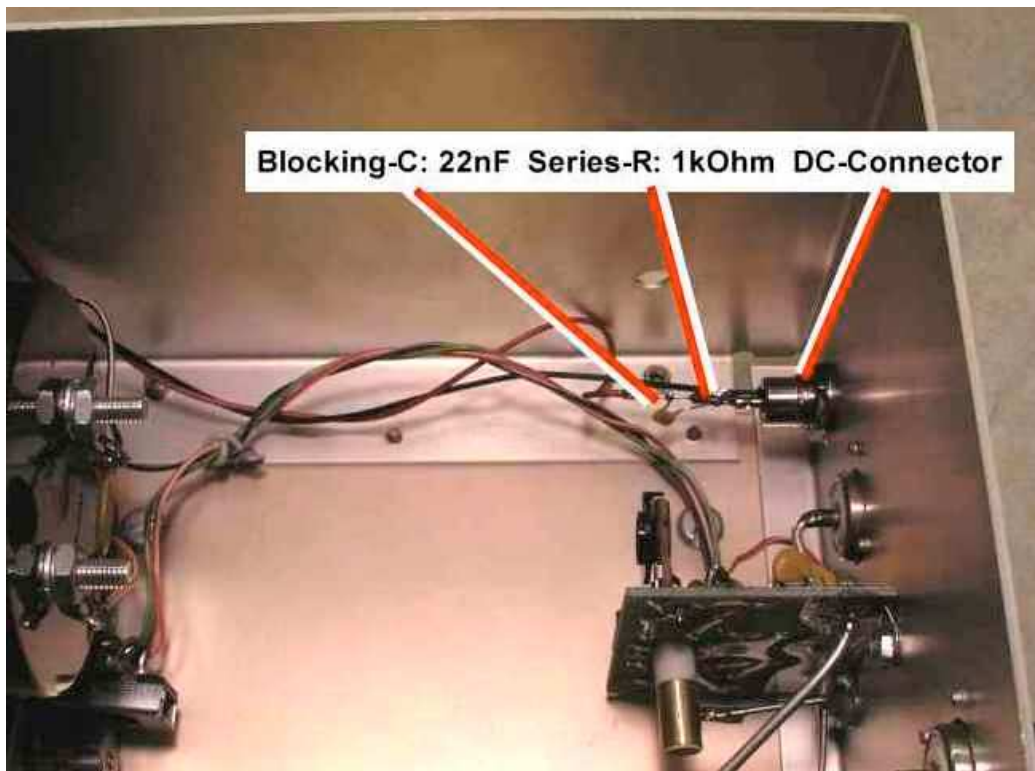
**Picture 7: Fixed LED's with hot glue**

The schematic is shown in picture 8: A series-R (1kOhm) is necessary for the supply-voltage of 13,8VDC (PS-7 for TR-7). The C (22nF) is for HF-blocking in case of transmitting to avoid overloading the LED's.



**Picture 8: Schematic**

Pictures 9 and 10 show internal details of the modified MN-7.



**Picture 9: R,C and connector**



**Picture 10: DC-Connector at the rear**

Picture 11 compares the version with 3 white LED's (MN-7) versus 2 bulbs (MN-4C).  
Decide yourself, what's better.



**Picture 11: Comparison: 3 x LED (white) versus 2 x Bulbs**

The actual brightness of the scales is higher, but for reasons of making a good picture, i reduced the intensity of my camera.

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