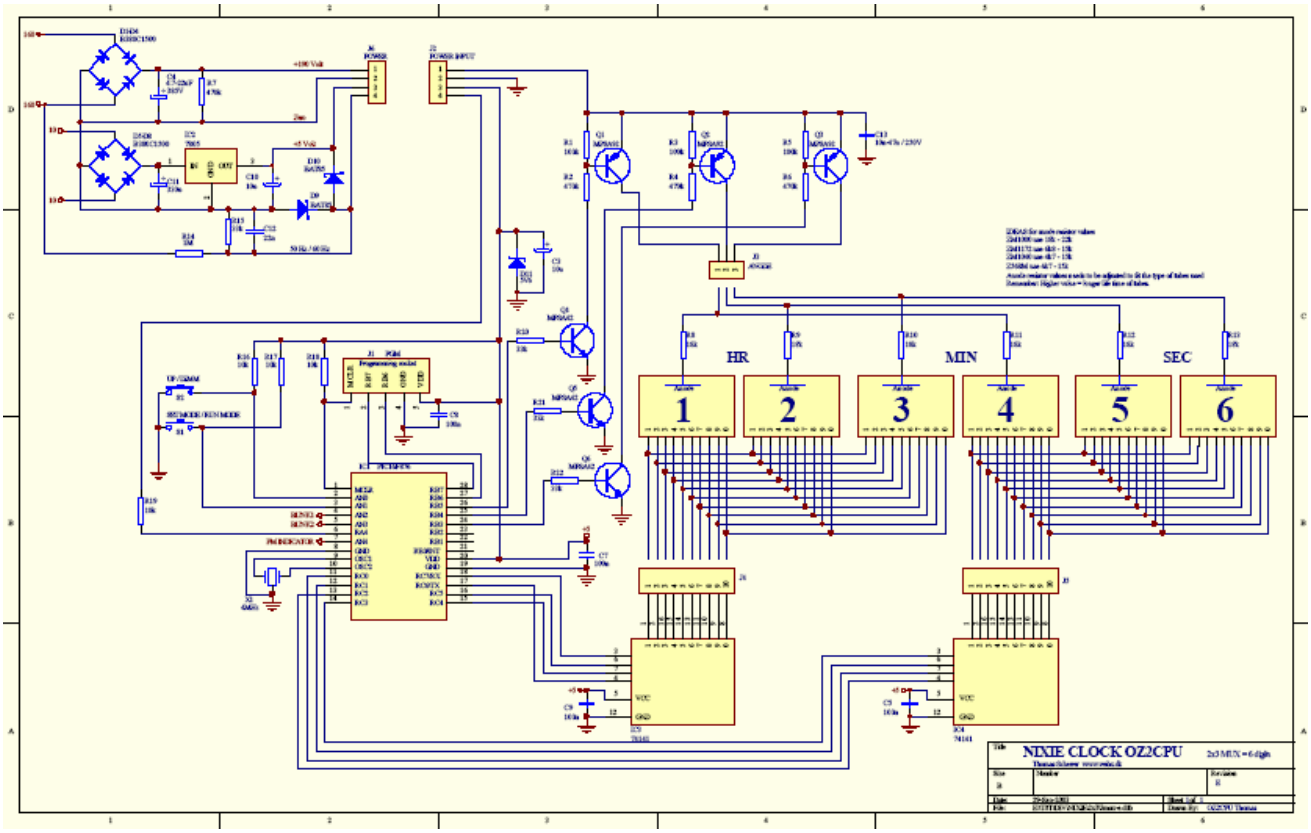
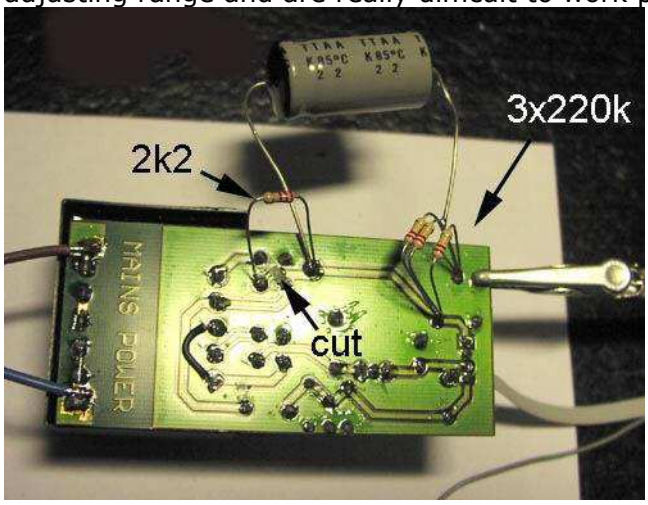
How to build the 2 digit B 7971 or the 2 digit ZM 1350 Clock

1. Assemble everything as shown in the schematic except for the 6 Nixie tubes. Use all parts from the kit. Please download all the schematics before you start.



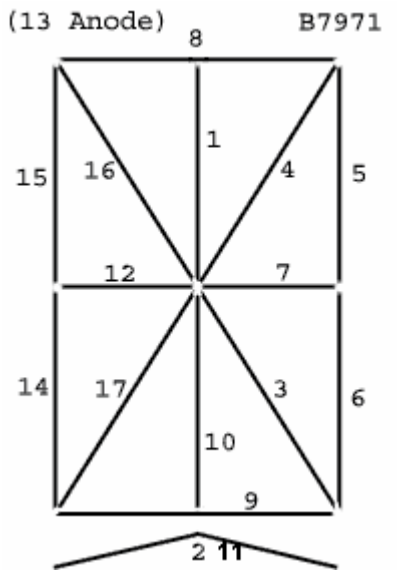
Use the capacitor (from JP Wuesten) instead of C4 with the value 4,7-22 uF. The rest is done as shown in the photo. The power supply is modified so that the anode voltage is just under 180 volts unloaded and drops to about 150-170 volts when the clock is running. Maybe you have to fine adjust the voltage. If you have ghosting (digits that should have been off are a little bit lit) then lower the anode voltage. If digits that should be on, do not properly light, increase the anode voltage. In combination with this adjusting the anode resistors (the resistor in series with the anode supply for each tube) may help in some cases. Some tubes that are old and worn may have a very small adjusting range and are really difficult to work perfectly.



This shows a test board. Please solder the components on the component side. The capacitor in the picture is to be replaced by the “JP Wuesten“ one.

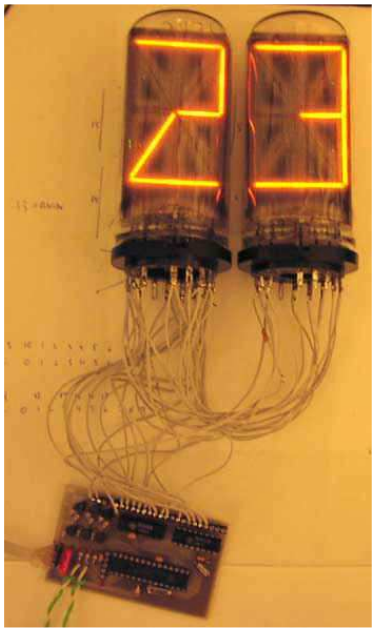
2. Connection the two B7971 tubes.

The two anodes – one anode from each tube go via two 8k2 to the two first Anode driver outputs on J3 pin 1 and 2. The cathode pin number on the kit is just connected to the same pin number on the B7971 sockets. Pins 18, 19, 20 on kit are left unconnected.



See 2 /11 – they are the underline that lights up when the clock is in set mode. Pin 2 and 11 are internally connected in the B7971 tube, so of course only pin2 has to be connected to pin 2 on the tube. Pin 11 on the clock kit is left unconnected.

Here is the B7971 socket connections to digits. Just only solder a wire to pin 2 from kit pin 2.



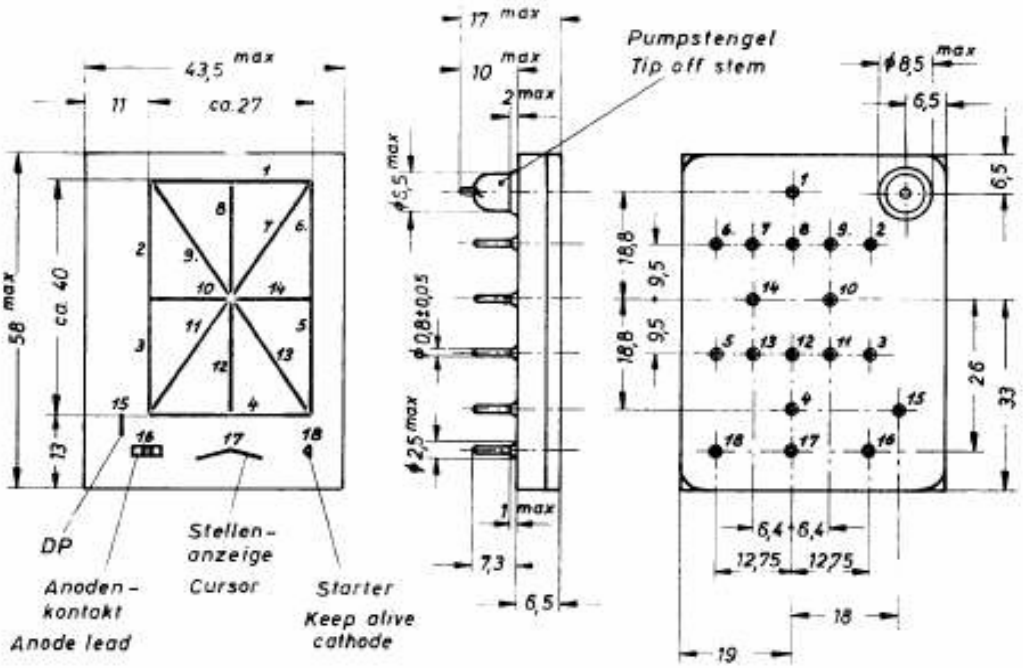
3. Connecting the two ZM1350 tubes.

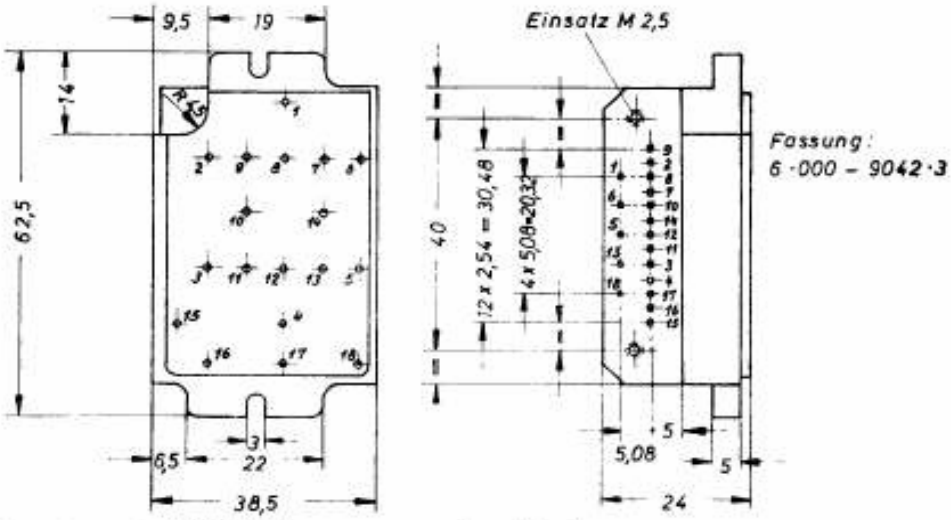
The ZM 1350 has different segment counting from the B7971!

ZM 1350

VARISYMBOL

Planares Gasentladungs-Informationsanzeigeelement
Planar Gas Discharge Information Display

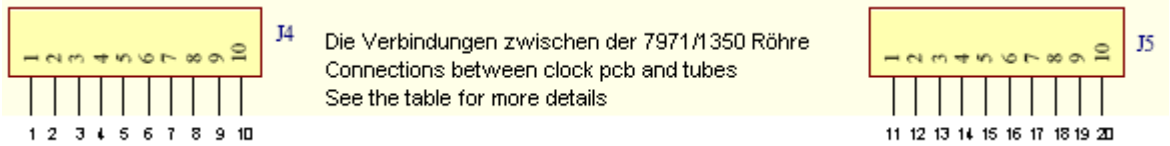




Bei Einbau in gedruckte Schaltungen verwendbare Buchsen:
Minibuchsen B 0.7 oder B 0.8 der Fa. Multi-Contact AG, Basel
Vertical-PV-Buchsen der Fa. Berg Electronics, 6051 Dietzenbach
Component Test Receptacles No. 380598 der Fa. AMP, 607 Langen

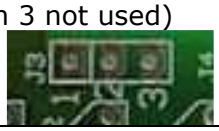
AEG-TELEFUNKEN

As you can see, segment 8 of the ZM1350 corresponds with segment 1 of the 7971.



The numbers 1-20 in the table correspond with J4 (1-10) and J5 (1-10) as shown in the picture above.

Table showing the segments of the 7971 and ZM1350

Burroughs 7971 Segment	**Clock pcb pin**	**ZM1350 Segment**
1	1	8
2 (underline)	2	17 (underline)
3	3	13
4	4	7
5	5	6
6	6	5
7	7	14
8	8	1
9	9	4
10	10	12
12	12	10
14	14	3
15	15	2
16	16	9
17	17	11
Anode 13	Anode J3 Pin1 for tube 1 /Pin 2 for tube 2 (Pin 3 not used) 	Anode 16

The ZM1350 or the B7971 have to be connected the way shown in the table.

At power up it will display the software version 53 for about 1 sec. Then it will flick-flack the digits for 1 sec while counting the mains frequency. It will then show the mains frequency it has counted, for 1 sec then it will go to the normal clock operation.

This clock has automatic 50 / 60 Hz mains frequency selection. Just like version 5.2 that works for normal 10 digit Nixie tubes).

To set the clock simply press SET, then the segments at the bottom of the tubes will light to indicate that the SET mode is active. Now press the UP button to set the hours. Then press SET to go to Minutes and again press UP. To start the clock press SET one last time.
If you want to change the clock from 24 to 12 HR Mode just press the DIM button for 3 seconds and the release it. To set the clock back to 24 HR version just do the same again.

Have fun with those great tubes. www.nixieclocks.de