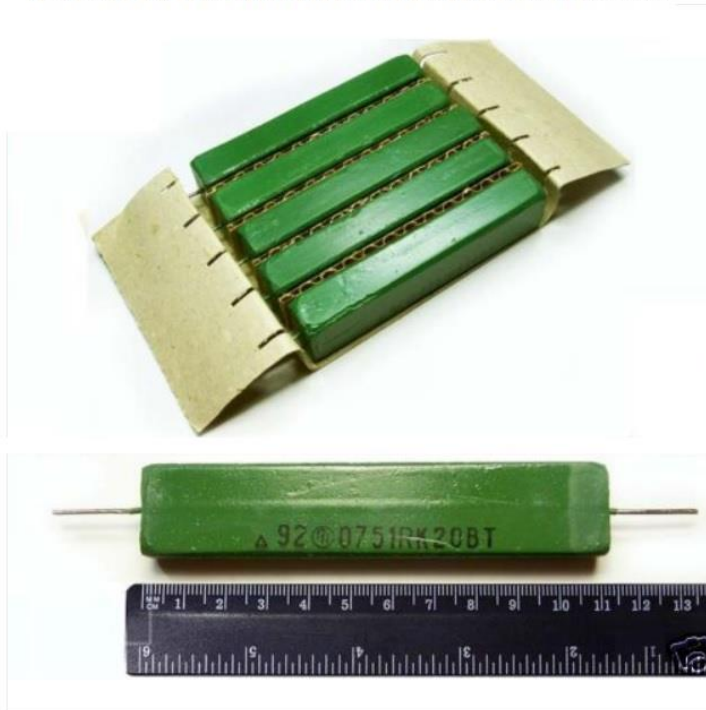


8 OHM 60 WATT NON INDUCTIVE LOADS FOR AMPLIFIER TESTING.

Les Carpenter, G4CNH, 29th June 2022

I needed a pair of non-inductive loads for amplifier testing and found on eBay some Russian 24 Ohm block resistors that would be suitable if I placed three in parallel to make 8 Ohms. They are each rated at 20 Watts so all together would give me a 60 watt load.

24 Ohm 20 Watt Non-inductive Load Power Resistor



Main problem for me was how to mount them, I decided to buy some 3 inch Meccano strips from eBay, bend them to make twelve saddle clips and use them to mount the resistors inside an enclosure. Thermal paste would be applied to each such that the case would absorb some of the heat; it is not proposed to run at full power for anything like a long period of time. The resistors will be formed into two banks of three, each mounted on the case halves opposite each other.

A suitable case of 200mm x 200mm x 70mm was found to be the MB33 manufactured by Takachi Electric Industrial. This was obtained from RS under their part number 244-746. Also required were two pairs of Red and Black terminal posts, RS 423-239 and 423-201.

To enable an oscilloscope to be connected, I added a pair of insulated BNC sockets RS 680-7371.

The thermal paste was HTCP20S by Electrolube under the RS Part number of 300-8489.

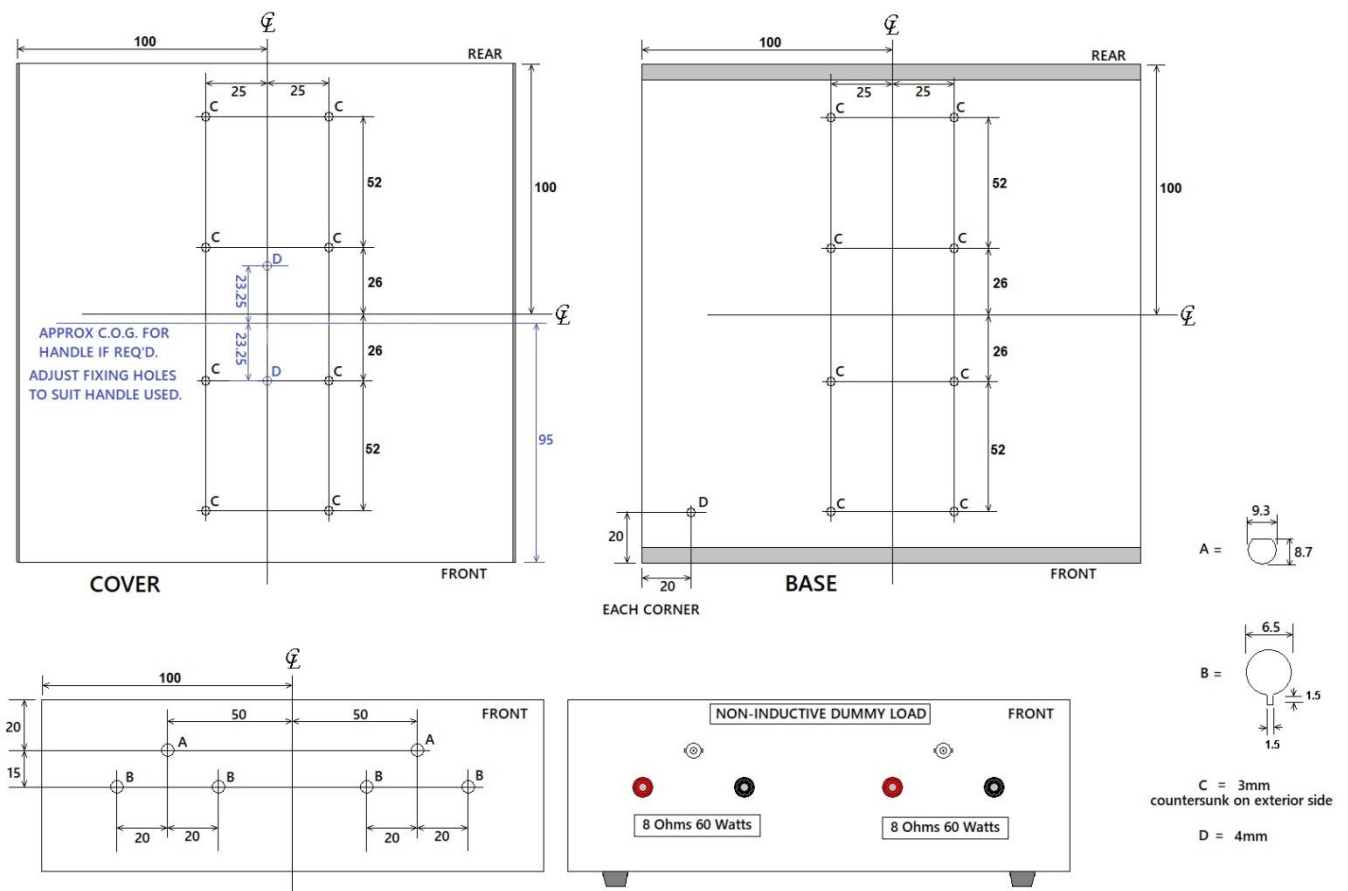
To mount the clips I used sixteen M3 x 10 screws with counter sink heads plus of course sixteen M3 nuts. I added four rubber feet bought on Ebay and mounted using M4 x 10 pan head screws.

Bondloc B243 was used on all fixings as a medium strength screw lock.

I later realised that a handle would be useful for handling this cubical case, finding one the required length was not easy. I settled for a 97mm replacement brief case handle and its mounting holes are shown in Blue on the drill drawing, obviously these would change if you fit a different handle.

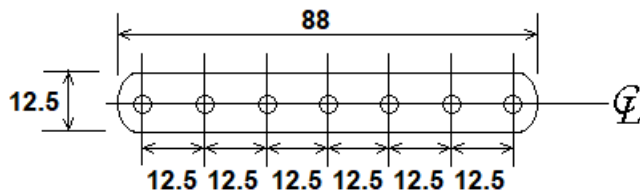
Before fitting the handle I balanced the unit on some tubing to find the centre of gravity (C.O.G.), mounting the handle as required so that the unit was nice to carry.

Case drilling

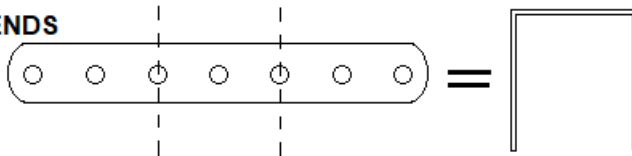


Meccano strip rework

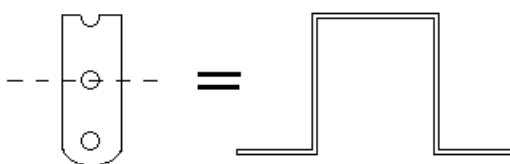
MECCANO 3" STRIP



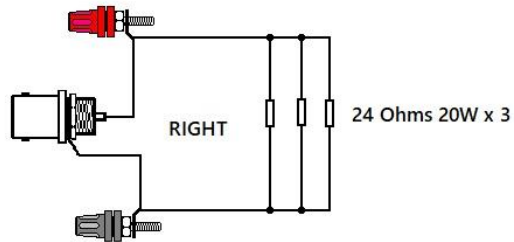
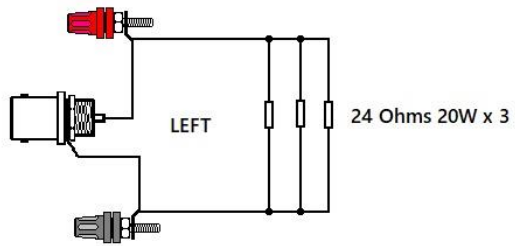
FIRST BENDS



SECOND BENDS TO FORM SADDLE



Circuit



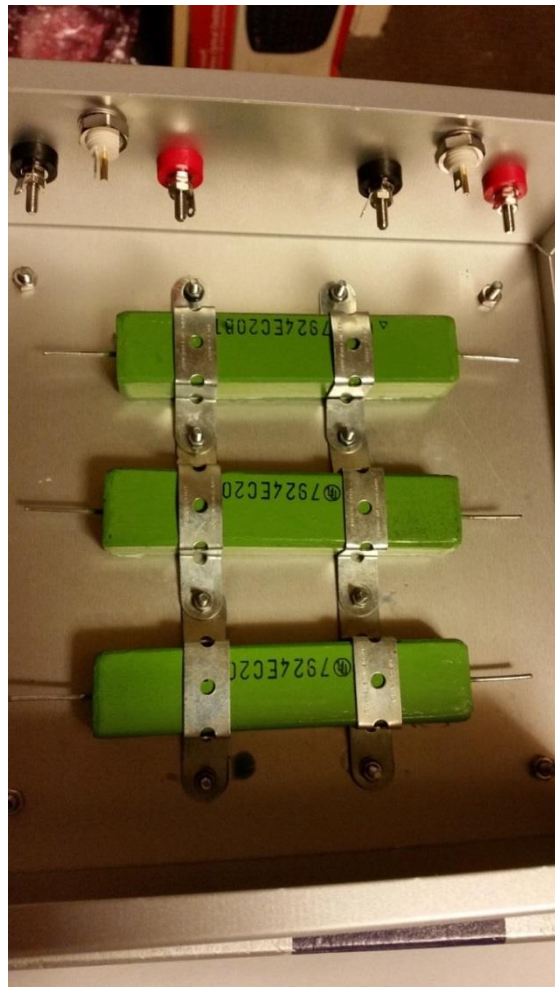
Anything to add?

Perhaps a 1k Ohm resistor feeding the BNC just in case it gets shorted out?

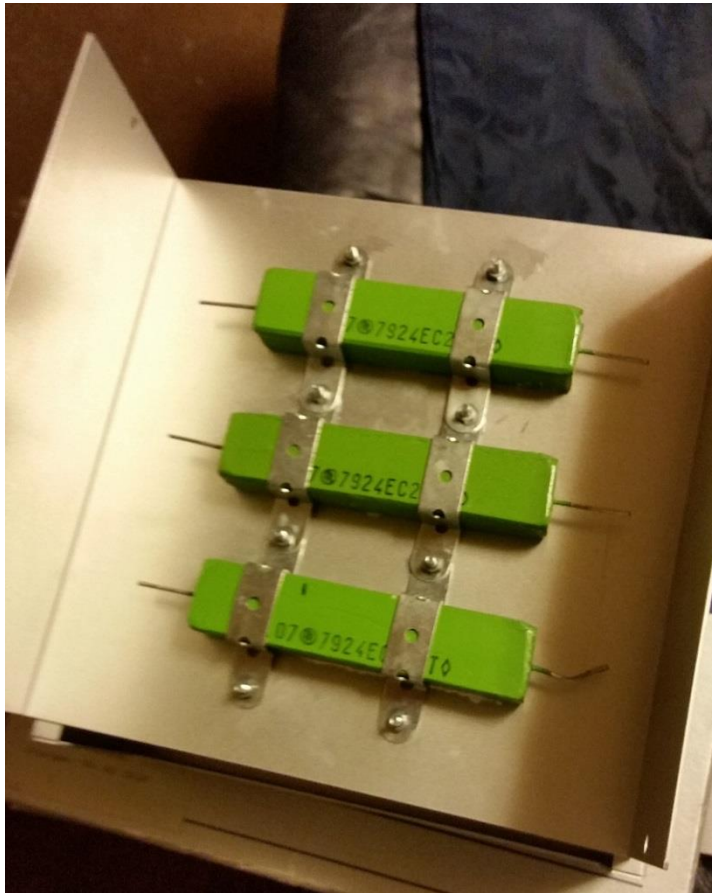
See Page 6.

Assembly

Base Unit:



Top Cover:



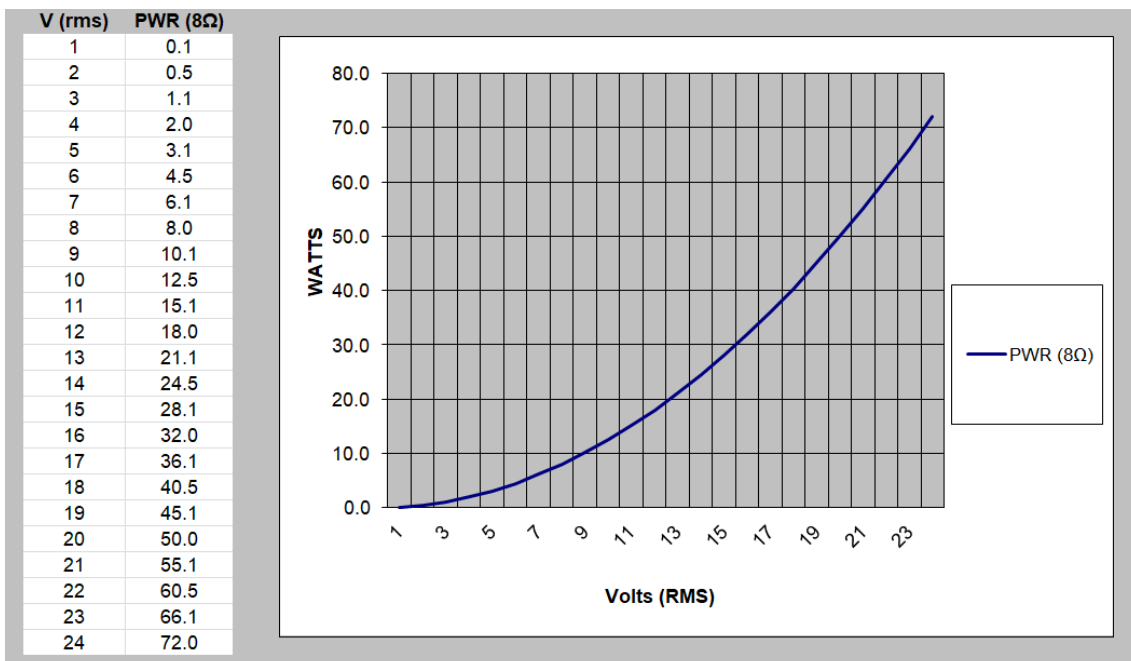
Front:



Overall View from front.



Power label for placing on top.



I later added a ¼" Stereo Jack socket (RS 139-1969) central between the BNC sockets so I could monitor with headphones.

Also added were 2 off 270 Ohm 1W (RS 214-1052) and 2 off 680 Ohm 1W (RS 683-5568) resistors, the 680 Ohms in the Positive leg to reduce the volume applied to the headphones.

The 270 Ohm resistors act as a safeguard against shorting together speaker output Grounds having different DC voltages on them. The resistors should preferably be film types so they go open circuit quickly under unexpected fault conditions. Note how they also protect against accidental short circuits at both the headphone and BNC sockets, they will not noticeably affect the RMS voltmeter readings with its 1 Meg Ohm input impedance but any power measurements should be taken without headphones being connected.

