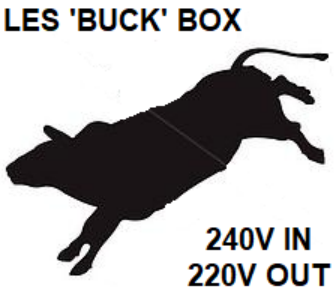
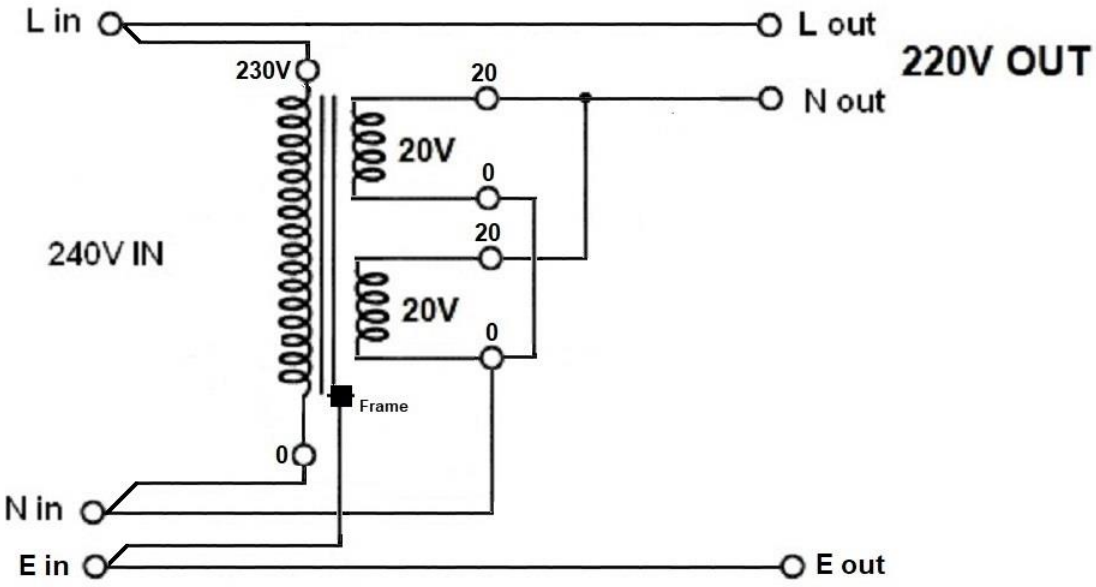


Buck Box!

This is a box to help 220V designed Chinese equipment to operate on the UK mains supply which can be between 240 – 250V.
It was primarily designed to operate the Authors Yaqin MC100B power amplifier, the circuit is quite simple.

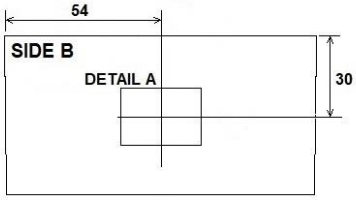


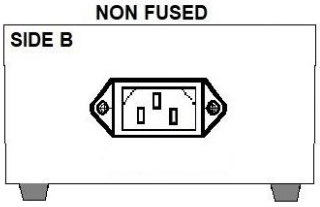
Construction is best left to the individual as some parts may be in the proverbial spares box.
The Author used a RS 20V 50VA transformer, stock number 504-628, this being 79L x 65D x 62H with 92mm fixing centres. The box chosen was a Camden Boss BIM2006/26-GY/GY (RS stock 505-577), it measures 190 x 110 x 90 so plenty of room inside for wiring.
Adding four rubber feet is recommended as they protect the bottom from scratches and also allow the use of Pan Head screws for a more reliable transformer mount.
Choice of power connections is also left to the individual; you could have a cable gland at both ends of the box or have a plain or fused IEC plug for input. RS in the UK supply a 5 metre length of 3-core cable with a IEC socket at one end and this was useful in enabling the Buck Box to be mounted down at floor level. The drawings in this document just show what the Author did; he adopted the usual output circuit of placing the 20V winding in the Neutral line as it relieves the low voltage winding from the full line voltage. It also ensures that a heavy fault current to Ground will not place undue strain on the transformers 20V winding as there is a direct path link between the fault and the supplies safety fuse.
The drawings adopted by the author are on the following page, note that the supply input can be either through a fused or non-fused input connector, the non-fused version would be most suitable for UK supplies where a protection fuse is mounted into the plug connecting to the mains supply.

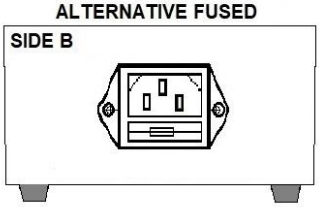
Parts List

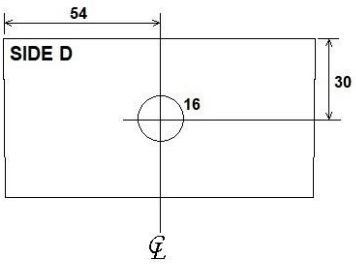
Qty.	Ref.	Description	UK supplier
1	Item 1	Camden Boss 2000 Grey, BIM2006/26-GT/GY, 190 x 110 x 90mm	RS COMPONENTS 505-577
1	Item 2	Power input, C14, non-fused. Alternative straight fused input	RS COMPONENTS 811-7207 RS COMPONENTS 811-7213
4	Item 3	Rubber Foot	FARNELL 320237
1	Item 4	Power Transformer 230V Primary, 2 x 20V 25VA Secondary's	RS COMPONENTS 504-628
1	Item 5	M16 Cable Gland with Locknut	RS COMPONENTS 669-4667
1	-	5 Metre Cable with IEC power connector	RS COMPONENTS 901-0753
A/R		Nuts/Bolts/Washers for Items 2, 3 and 4.	

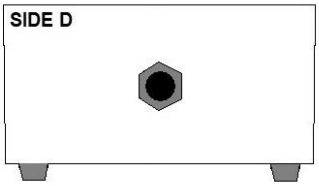
BOX DRILLING AND ASSEMBLY

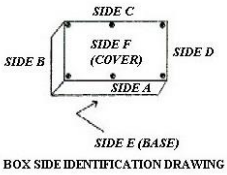




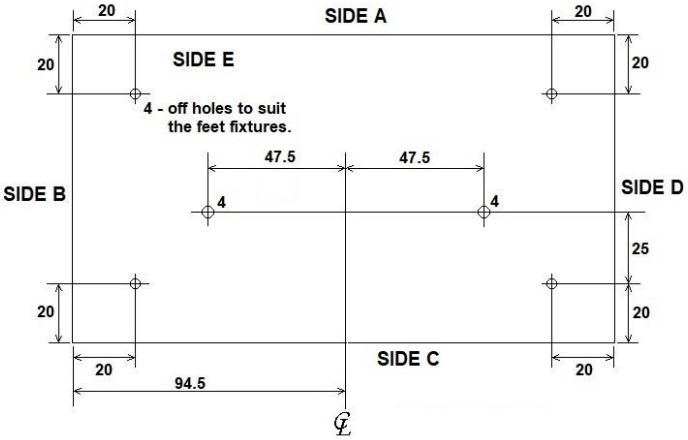


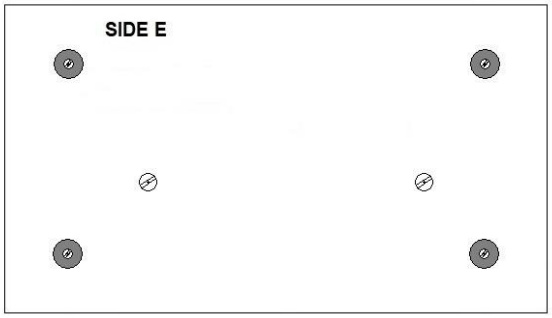


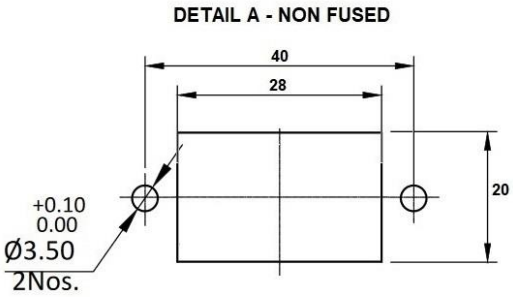


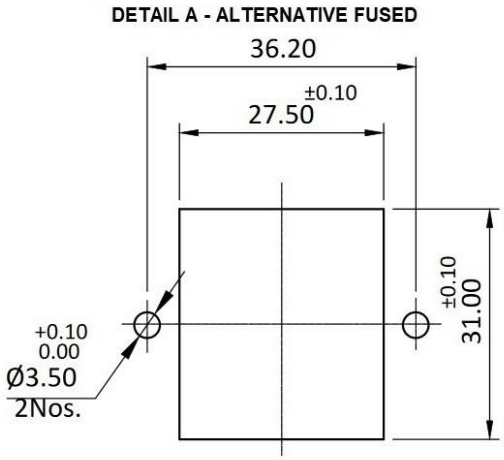


BOX SIDE IDENTIFICATION DRAWING









POST FITTING REMARKS

You will notice that the bias voltages will be significantly lower than what you had the amplifier set to when it was being over-driven.
So reset your bias voltages, the Author found his Yaqin 100B was almost 100mV lower than when the KT88 heaters were being run at over 7 volts!

Parts Cost as at 27th Feb 2021

Ref.	Description	UK supplier	Inc VAT
Item 1	Camden Boss 2000 Grey, BIM2006/26-GT/GY, 190 x 110 x 90mm	RS COMPONENTS 505-577	£11.89
Item 2	Power input, C14, non-fused. Alternative straight fused input	RS COMPONENTS 811-7207 RS COMPONENTS 811-7213	£0.90 £2.50
Item 3	Rubber Foot	CRICKLEWOOD FTR194	£2.10
Item 4	Power Transformer 230V Primary, 2 x 20V 25VA Secondary's	RS COMPONENTS 504-628	£21.55
Item 5	M16 Cable Gland with Locknut	FARNELL 1174593	£2.51
-	5 Metre Cable with IEC power connector	RS COMPONENTS 901-0753	£6.79
	Nuts/Bolts/Washers for Items 2, 3 and 4.		

Minimum Cost £45.74

No doubt other savings can be made by careful search of places like eBay.

Demo of the box in action:-

http://www.g4cnh.com/public/100B_With_Buck_transformer.mp4