

## Picture Tube Tester, Rejuvenator

Since picture tubes are expensive, no one wants to discard one until its failure is beyond doubt and all restoration techniques have been tried. This combined tester and rejuvenator can be made from a minimum of low cost components, yet provides similar functions to a commercial instrument costing a good deal more.

Where a faulty picture tube is suspected, this tester will give a definite answer. It may be constructed mainly from oddment parts. Although the power transformer voltages are unusual they may be obtained by using two old radio transformers with the secondaries connected in series.

The circuit is similar to commercial instruments but, to avoid using a complicated and expensive switching system, connections are made via four 9 pin sockets mounted on the main panel, each socket being wired to provide a particular function. These are

used in conjunction with a wandering lead consisting of two (or more) picture tube sockets connected to a 9 pin plug. This is wired as shown. When the tester is completed, appropriate pins in the picture tube socket should be deliberately shorted and the results checked against the testing table.

The NE2 neon lamps should be mounted in such a way as to be visually shielded from each other. They should also be wired exactly as shown in the circuit in order that the left and right hand elements (as referred to

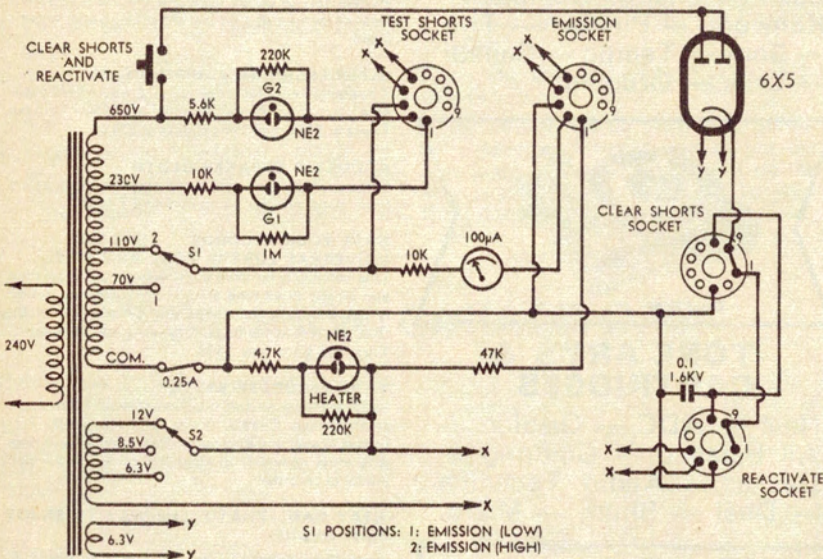
# READER BUILT IT – continued

in the testing table) will give the correct indication

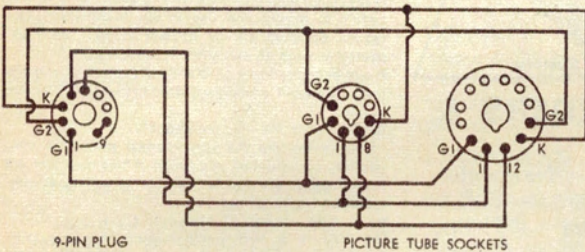
To use the tester, set S2 to 6.3V, plug into a power point, and connect the picture tube to the SHORTS TEST socket by means of the wandering lead. Wait two minutes and check which neon lamps are lit. If the tube tests "good," transfer the lead to the EMIS-

relative test and there may be wide differences between tests. A good tube should read nearly full scale on the meter but experience will indicate a minimum value below which a tube must be regarded as faulty.

If a heater-cathode short is indicated, do not use the CLEAR SHORTS socket, as this will do more harm than good. Rather, install a one-to-one

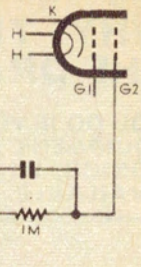


Main feature of the circuit is the use of four 9-pin sockets to provide the four main functions, thus avoiding the need for complex and expensive switches.



Left: wiring of the wander lead. Below: Chart showing the response of the neon lamps to good tubes or those having a variety of faults.

	HEATER NE2		G1 NE2		G2 NE2	
	Right	Left	Right	Left	Right	Left
Good Tube			X		X	
G1 Open					X	
G2 Open			X			
Cathode Open						
Heater-Cath. Short	X	X	X		X	
Heater-G1 Short	X	X	X	X		
Heater-G2 Short	X	X	X		X	X
G1-Cathode Short			X	X	X	
G2-Cathode Short					X	X
G1-G2 Short			X		X	X



Circuit modifications showing how a tube with a faulty G1 can be rewired to substitute G2.

ratio transformer in the picture tube heater circuit.

If there is a G1-cathode short, G1 may be discarded and G2 used in its place. The same applies if G1 is open.

For shorts other than heater-cathode transfer the lead to the CLEAR SHORTS socket. Press the CLEAR SHORTS button very briefly, not more than one quarter second. This should be done only when it is certain that the tube is faulty and there is nothing to be lost. If a customer is involved he should be advised of the risk.

If a tube tests OK in other respects, but has low emission, it may be left on a higher heater voltage for half an hour, then rechecked. If still low the reactivate function may be applied. Transfer the wandering lead to the REACTIVATE socket and press the REACTIVATE button briefly; not more than one quarter second. Transfer the wandering lead to the EMIS-

SION socket and recheck emission. As with the clear shorts test, the higher heater voltage and the reactivate function both involve a risk of further damage. They should only be undertaken when it is obvious that there is nothing to lose and at the customer's risk.

(Editor's Footnote: "Reader Built It" projects are published for the general interest of experimenters and as a source of ideas. Based on readers' contributions, they have not been tested in our laboratory and we cannot accept responsibility for them.)

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