BUILDING YOUR OWN EICO 615 TUBE TESTER ADAPTER

If you own an EICO 667 Dynamic Conductance tube tester and you frequently encounter older 4, 5, 6, and 7-pin tubes, you probably wish you owned either the EICO 615 adapter, or the EICO 666 tube tester. In fact, prices on eBay for the 666 have fallen to the $100 level, with some very clean units selling for $150 Buy-it-Now. In comparison, the 615 adapters, which only appear once a year or so, sell quickly for $100 or more

But I'm trying to "thin out" my HAM shack, so I decided to build my own 615 adapter. You can do it for about $50. If you choose the same option, and you don't have a couple feet of a suitable 7-conductor cable handy, I recommend buying sockets, boxes, and 8-pin octal plugs in groups of 4 each, so you can build one for yourself, and then sell the other three on eBay to recoup your investment. You will surely MAKE money, because a well-made adapter should sell for $65 each or more. This is a tedious little project, but once you make the first one, the others will be easy. And the box I ended up using is an inexpensive but very sturdy Carlon junction box, available at Home Depot for about $7.

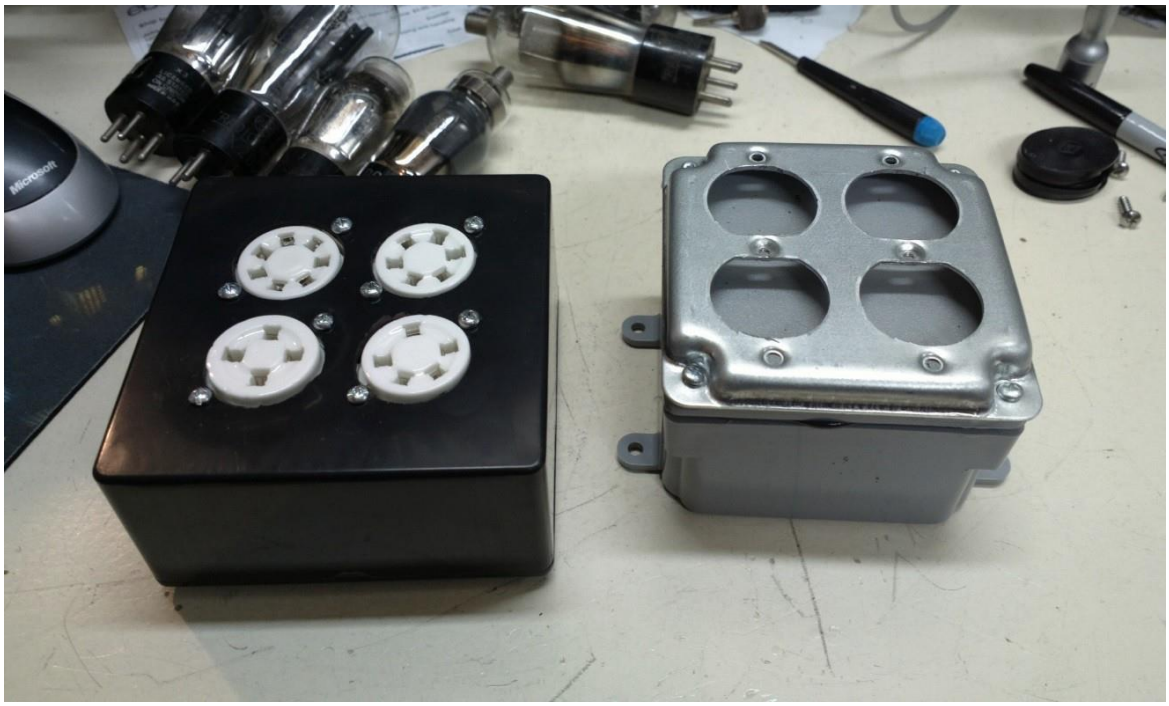
My first choice in a box turned out to be a little bit flimsy for the bottom-mount sockets that I bought. It was a 4.7 x 4.7 x 2-inch deep black Hammond box that cost $11.00 with free shipping on eBay.

The removable top plate was very thin, so I cut my socket holes in the lower half of the box, which makes wiring the sockets difficult.

The photo on the next page shows the Hammond Box from the inside. I decided early on in the project that I didn't want to use a metal box. Many 615 adapter have rust on them because they are metal. Also, if you want to set your adapter in your 667's lid, the metal may cause paint damage. However, you could use metal because standard workshop double duplex outlet covers are a very close match. The mounting holes line up, but the outlet holes need to be enlarged a bit because the tube sockets are 1.2 inches in diameter and the flat sides of the duplex covers interfere. I used a Dremel Moto-Tool with a little metal grinding bit to fix that, but a round file works also.

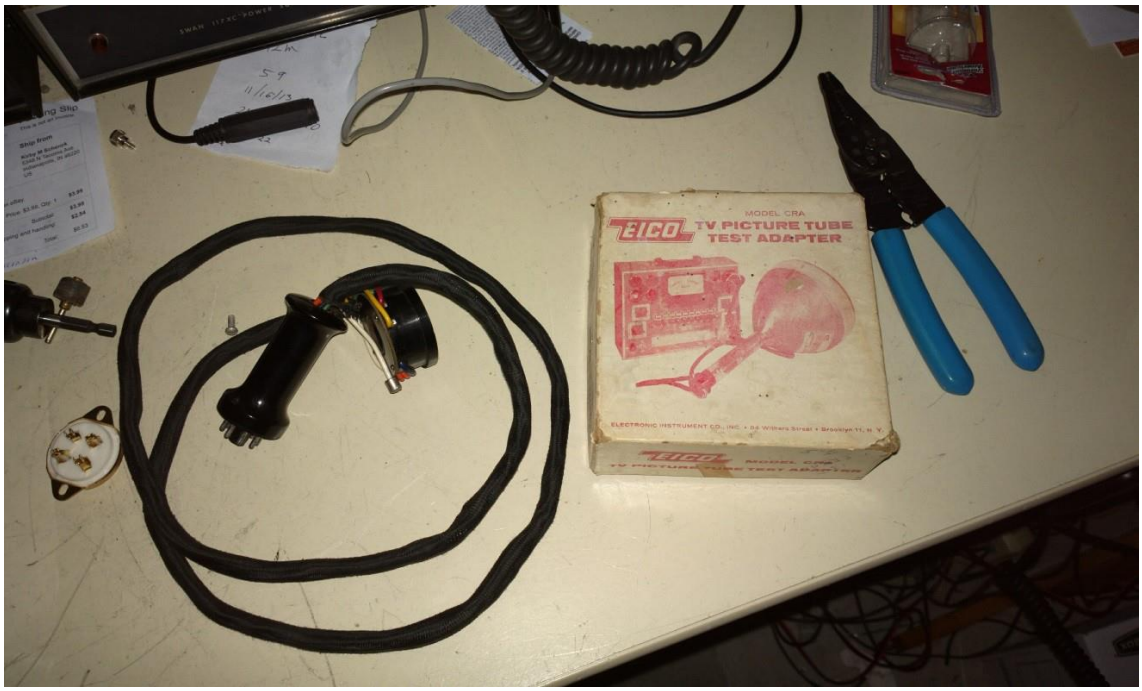
The metal outlet cover also makes a good template for drilling the holes in the plastic box. I used a 1.25-inch barrel-style wood bit (again, about $5 from Home Depot) and found that the cleanest holes were made by running the bit in reverse after the pilot hole was drilled. Position the metal template like I did to guide the cutting bit.

This is what I originally created. It didn't look bad but the top flexed too much for my liking. I was already looking into the Home Depot/Carlon 4 x 4 x 2-inch junction box when I took this photo.



Once I decided that the outlets would fit in the smaller Carlon box, I ran with that design. This is a MUCH thicker and sturdier box, but once again I recommend cutting the socket holes by running the boring bit in reverse.

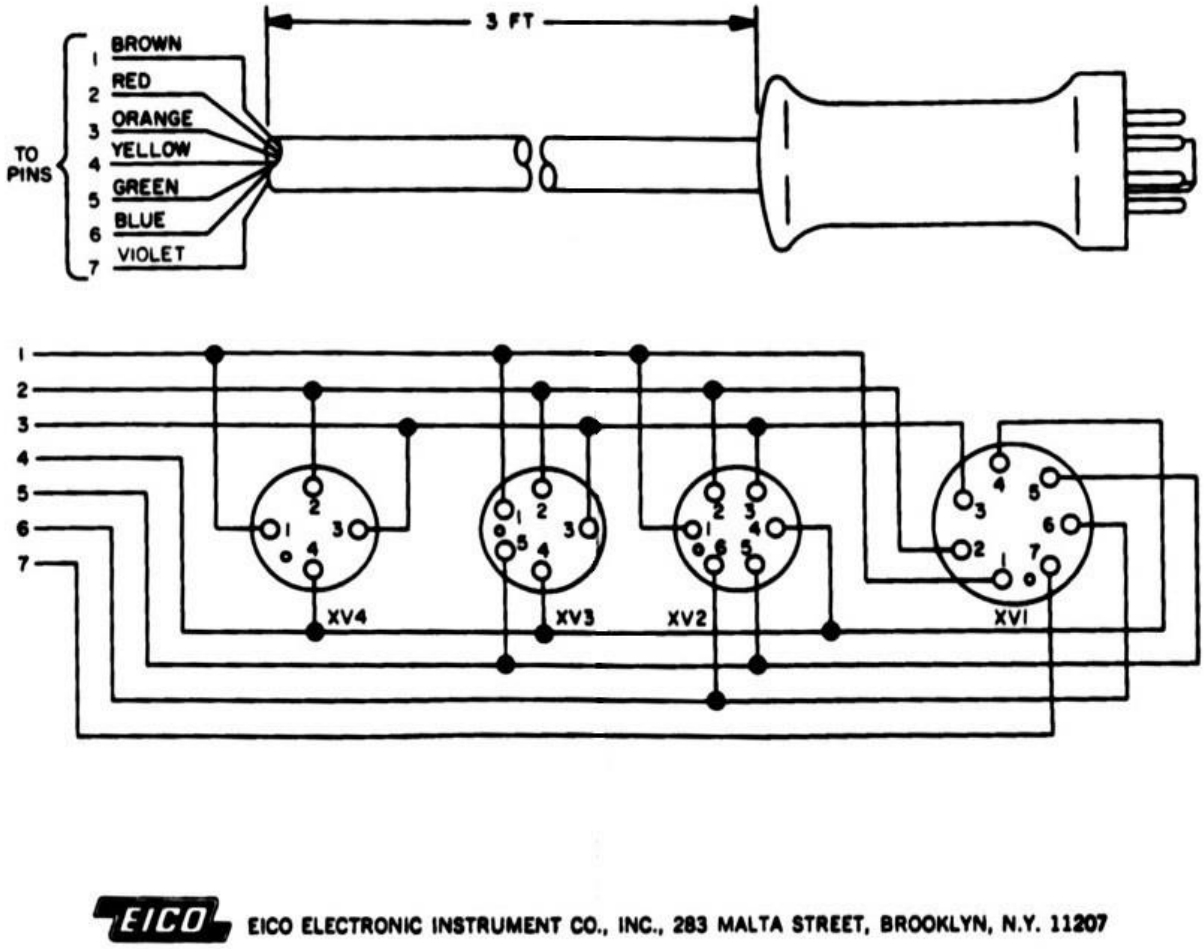
One issue is the wire. I was lucky because I already had an EICO black & white picture tube test adapter that I bought years ago for $5. No one uses black and white picture tubes any more so I decided to sacrifice it. It even had the little 615-style octal plug, although it was wired differently. The wire on this is 3-feet long, so if you have one of these and decide to use it, you could cut the cable in half and put an 8-pin plug back on the section with the picture tube socket so you could still use it. I have a Sencore Super Mack so I didn't need to do that.



If you have to buy 7-conductor cable, you may end up paying $25-$30 for a 10-20 foot piece, which is why I recommended buying the other parts in groups of four. The cable should be stranded, and I would use an 18 or 20-gauge cable. Belden 9439 seemed like a good choice because it was the right size and it's flexible. I'm pretty sure Alpha 1898 would also work but I haven't actually handled that cable so I'm not sure how flexible it is. One of the cables I initially bought was an 18-ga power cable which was much too stiff, so I wasted $13.00.

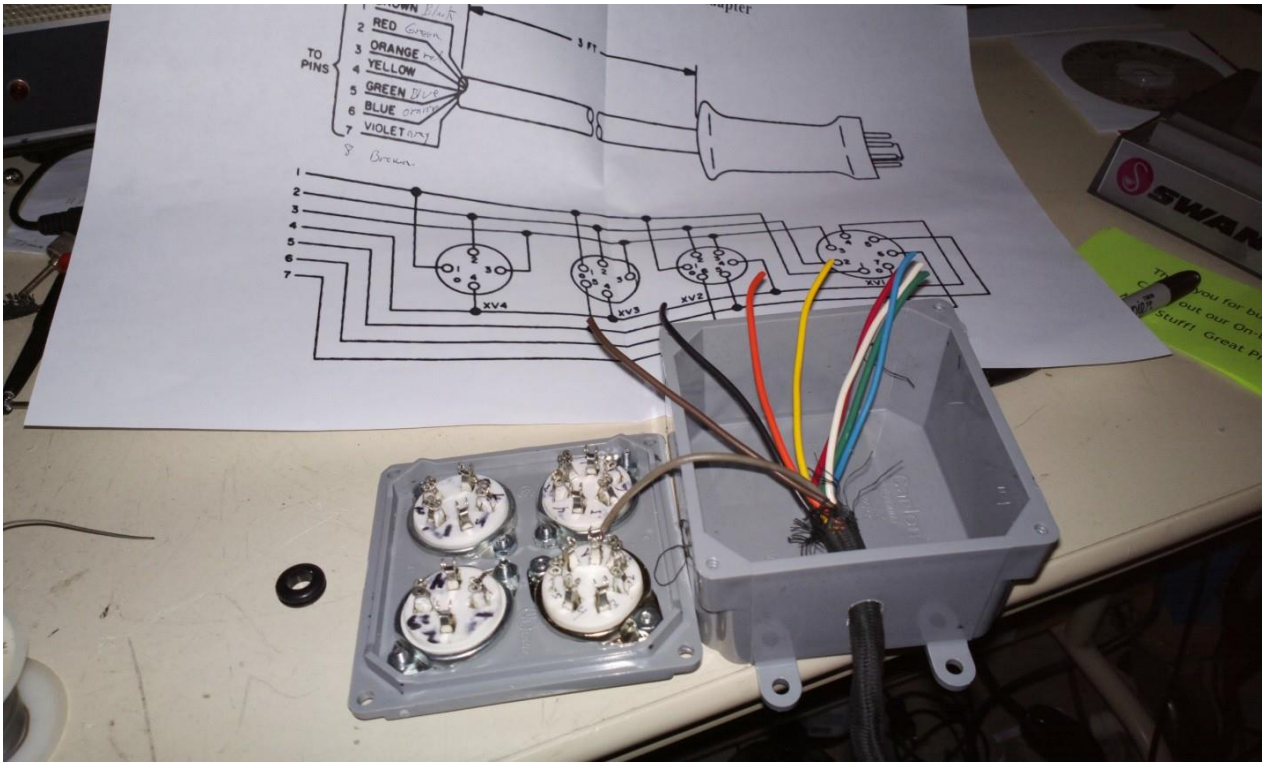
Once I had the holes cut I got right to the wiring part. The schematic for the 615 adapter can be found below.

Schematic Diagram for 615 Tube Tester Adapter

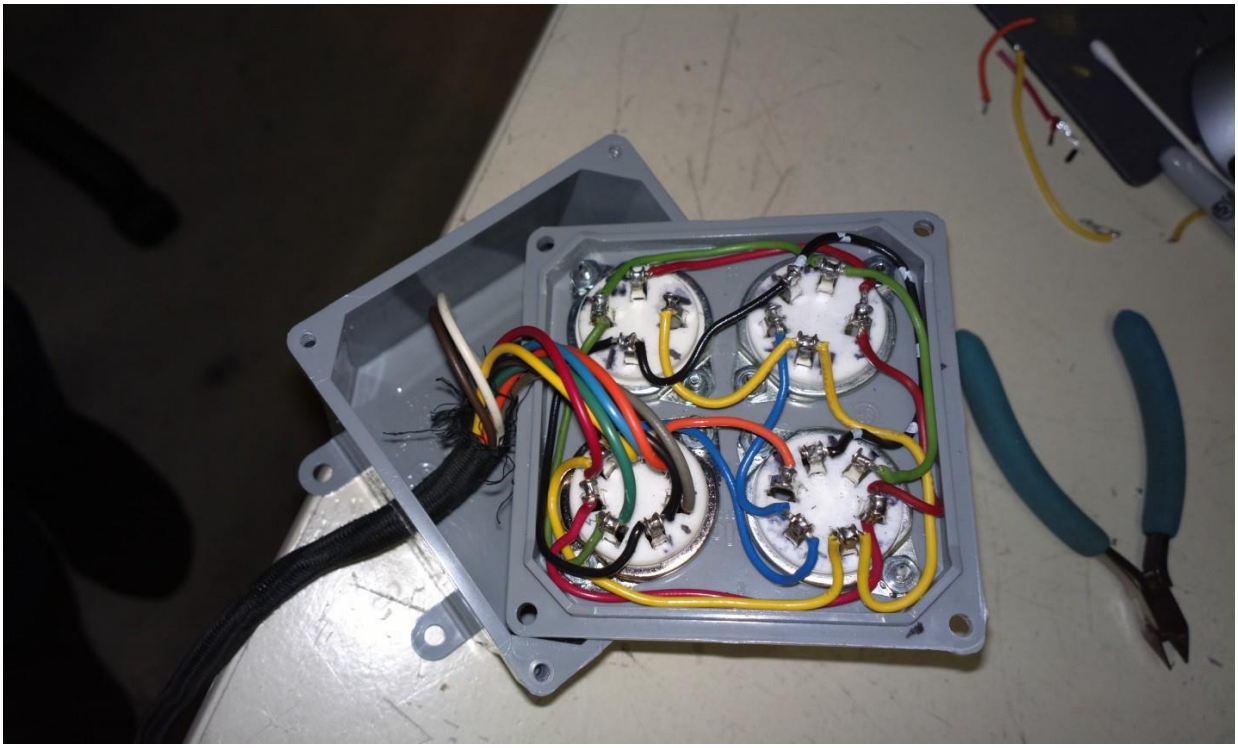


EICO ELECTRONIC INSTRUMENT CO., INC., 283 MALTA STREET, BROOKLYN, N.Y. 11207

I printed mine out on 11" x 17" paper so I could make notes and corrections because the wire colors used in my cable and plug were different than shown in the schematic. I labeled my ceramic sockets with a magic marker. Remember, from the top, the pins are numbered COUNTER-clockwise. Some web sources have that backwards. The numbers shown above are as viewed from the BOTTOM (lug side) of the sockets. Mark the dots which represent the "keyway" with a magic marker. I even labeled my sockets.

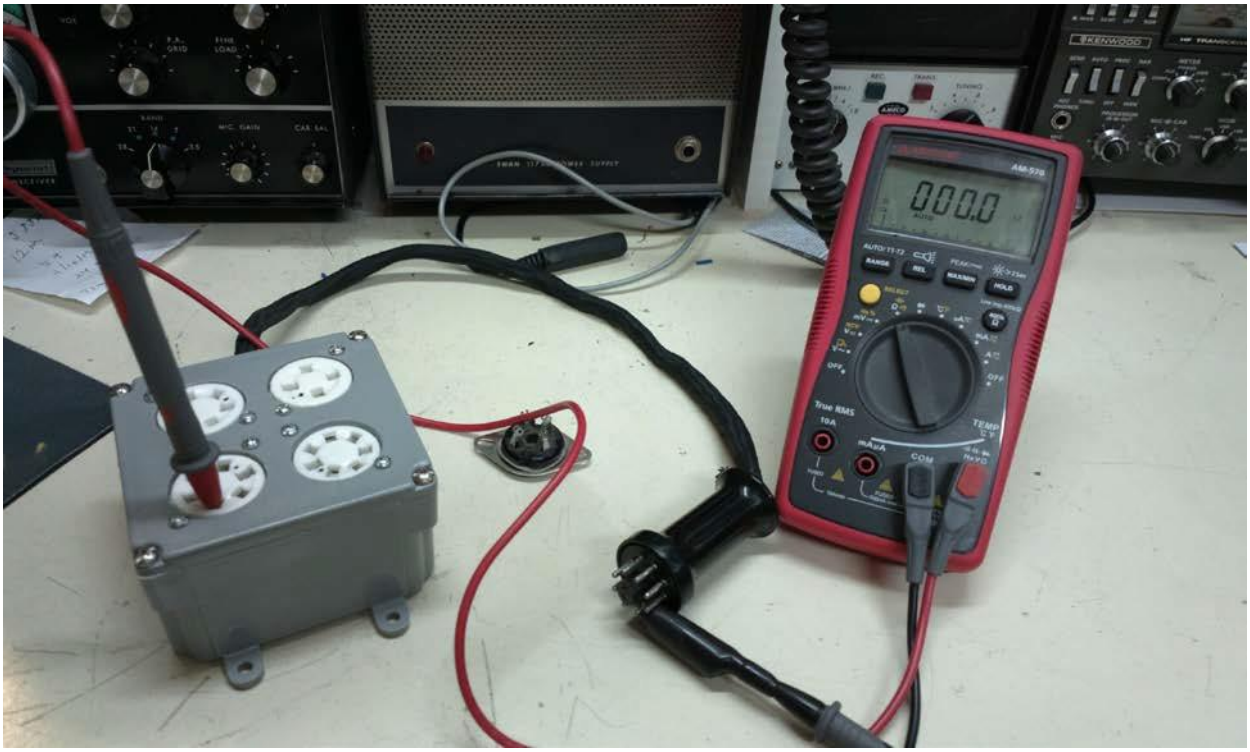


My EICO cable had eight wires for the plug, plus a floating white wire for a plate cap lead, so I had two spares that I didn't use. I considered having a plate/grid cap lead on my adapter, but the 667 has such a long built-in lead that it reaches the adapter, whether you put it in the lid, or next to it.



I ran all wires to the 7-pin socket first. That makes the rest of the wiring easier. Basic 18-20 gauge hookup wire works well for connecting the rest of the sockets, or you could strip some individual conductors from your 7-conductor main cable (especially if you had to buy 20 or 30 feet of it).

Once everything is wired, I recommend testing each connection from the tube side. It helps to mark the “keyway” spot on each socket so you can identify pin 1. Remember, the numbers go counter-clockwise when viewed from above. I have some old Bakelite sockets that are numbered. The new ceramic ones are not.



This is a critical step, because a wiring fault could cause damage the tube or worse, your tube tester. Once you verify that all the sockets are wired correctly, it’s time to test some old tubes. This UY224 tests as a 24A. One advantage to the Carlon box is that it’s cheap and it goes well with the color of the 667’s case.

So, how much do I have invested in mine? I took the "expensive" way out and bought one of each socket from a mail-order house that charges a large amount for shipping. And I bought a project box that I didn't use plus a 5-foot chunk of 18-guage power cable that I ended up not using because it was too stiff, so my total for the project was around $70. But if you avoid the mistakes I made, you can do this for about $50, even if you must buy an 8-pin octal plug with shroud and some Belden wire. If you plan to work on old tube equipment, it's worth it.

Below is a cost estimate for buying four of each of the sockets, shrouded octal plugs, Carlon boxes, and 15-20 feet of Belden 9439, Alpha 1898, or similar wire. At the end is my estimate of what this box would sell for on eBay, and what you might make from building four of these and selling three so you can get your own for free. These prices are based on prices on 3/22/2016, and the sockets were from Cary Electronics in China, and include free shipping. Their sockets are a "regular" on eBay.

DESCRIPTION	**EBAY PRICE FOR 4 PIECES**
8-PIN OCTAL PLUG W/ COVER	$22.00. This is an average
4-PIN CERAMIC TUBE SOCKET	$8.00 ($7.64 actual)
5-PIN CERAMIC TUBE SOCKET	$9.00 ($8.54 actual)
6-PIN CERAMIC TUBE SOCKET	$8.00 ($7.64 actual)
7-PIN CERAMIC TUBE SOCKET	$8.50 ($8.15 actual)
15-20 FT OF 7-CONDUCTOR WIRE (Belden 9439, Alpha 1898, etc.)	$30.00. This is an average
CARLON 4 X 4 X 2 IN. JUNCTION BOX	$28.00 (4x $6.88 + tax)
TOTAL	**$113.50**

If you sell three of your home-made adapters on eBay for $65 each plus shipping, you will make around $75 after eBay and PayPal fees, plus your own adapter will be "free". So, it may be worth the extra effort.