



MODEL CRA

TV PICTURE TUBE TEST ADAPTER

FOR MODELS 666 - 666K TUBE TESTERS

- Enables measurement of useful cathode emission (beam current) and inter-element leakage in ohms of monochrome tv picture tubes.
- Extra long cable—the tube stays in the set and you save valuable time.
- Both you and the customer can see the condition of the tube — increases tube sales.
- Safe and rugged construction.

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EICO

LABORATORY PRECISION AT LOWEST COST!

EICO MODEL CRA TV PICTURE TUBE TEST ADAPTER

The TV Picture Tube Test Adapter enables owners of Model 666 Tube Testers to obtain a proportional reading of useful cathode emission (beam current) and the values of inter-element leakage in ohms* for monochrome tv picture tubes. The adapter is designed to provide a rapid and efficient check of picture tubes without the necessity of removing the picture tube from the cabinet. Actually, by using this adapter, it is no more trouble to test the picture tube than any other tube in the tv set. If you are not completely familiar with the operation of the Model 666 Tube Tester, read the instruction manual carefully. The instructions given therein apply when the adapter is used.

NOTE: The tests provided by the Model 666 and the CRA adapter can only serve as a trouble-shooting aid when searching for the cause of an unsatisfactory picture. The tests provided are restricted to inter-element leakage and the useful emission capability of the cathode. A picture tube may pass these tests and still be defective for causes other than low emission or inter-element leakage. However, if the tube fails these tests it is definitely defective or has reached the end of its useful life.

To use the adapter with your tube tester, follow the procedure given below.

- 1) If the picture tube is in the tv set, **TURN THE SET OFF****.
- 2) Disengage the picture tube socket in the tv set from the picture tube base and fit the 12 pin socket of the CRA adapter on the picture tube base in its stead. Note that the second anode (high) voltage is **NOT** supplied during this test. At this point, the octal plug of the adapter should **NOT** be connected to the tube tester, nor should it be connected to the tube tester until the instruction is given.
- 3) Insert the power plug of the Model 666 tube tester in a 105-125 volts AC, 50/60 cps wall outlet.
- 4) Turn the tube tester on by rotating the **LINE ADJ.** control clockwise from **AC-OFF**.
- 5) Set the **TRANSISTOR TEST** selector to **TUBE**.
- 6) Make the line adjustment by holding down the **LINE** button while turning the **LINE ADJ.** control until the meter pointer is over the **LINE ADJ.** mark on the meter (center scale). Release the **LINE** button at the conclusion of the adjustment. No further line adjustment will be required.
- 7) Press the **RESET** button to release any button which may be down from a previous setting.
- 8) Move all 12 lever switches down to the "1" position.
- 9) Consult the CRA chart and look up the tube type to be tested.

* Except between pins 6 and 9, 7 and 10, and between elements and the conductive coating. Pin 6 is tied to pin 9 and pin 7 is tied to pin 10 in the adapter socket.

10) The first 3 settings following the tube type are for the **FIL.** selector, **GRID** control, and **PLATE** control, in that order. Set these controls accordingly.

11) The next 12 settings are for lever switches 1,2,3,4,5,6,7,8,9,C,V, and S in that order. Set these levers accordingly.

12) Check all settings to make sure that no mistake has been made.

13) Insert the octal plug of the CRA adapter into the octal socket on the tube tester. Connect the cap clip lead of the tube tester to the capped lead of the adapter only when testing oscilloscope types (5UP1 or 5UP7).

14) Allow one full minute for warm-up of the picture tube filament.

15) Refer to the buttons listed in the **LEAK.** column. The buttons that are **NOT** underlined are for the grids. The button that is underlined is for the cathode. Press down each of the grid buttons, one at a time, observing the meter each time. For a good tube, the meter reading will be greater than 5 megohms. Then press down the cathode button (underlined) and the **H-K LEAKAGE** button simultaneously. For a good tube, the cathode-heater leakage reading thus obtained will be greater than 1 megohm. (Failure to press down the **H-K LEAKAGE** button together with the cathode button will result in a low ohms reading close to full-scale, which is **NOT** significant). In general, tubes failing to meet these standards should be discarded. In any case, **DO NOT PERFORM THE MERIT TEST ON ANY TUBE HAVING AN INTER-ELEMENT LEAKAGE LESS THAN 100K OHMS, AS THIS MAY DAMAGE THE TUBE TESTER.**

16) Perform the **MERIT** test on tubes which have been found satisfactory on leakage tests by first pressing down the button listed in the **MERIT** column and then pulling down the **MERIT** lever switch. With the **MERIT** lever held down, read the merit of the tube (as to usable cathode emission) on the colored areas (**GOOD**, **?**, **REPLACE**) and percent markings (0-140) on the scale. Under the conditions of test, the colored areas correspond to the manufacturer's limits for **NEW** tubes. It should be noted that picture tubes can degenerate with use too far outside the limits established by the tube manufacturers, and still give an acceptable picture. If, on the **MERIT** test, a tube reads below 80% on the 0-140% scale (lower limit of green or **GOOD** area), the tube **MAY** still have adequate emission capability to provide an acceptable picture. To determine whether this is the case or not, turn the **GRID** control up slowly from 7 to 50 on the **GRID** dial while holding down the **MERIT** lever. If the tube has adequate emission capability to give an acceptable picture, the meter reading will increase, approaching or even passing 80% on the 0-140% dial scale. If there is little or no increase in the in the meter reading, the tube is certainly defective.

** If the picture tube is in the set, do not make any connections or tests before the tv set is turned off. Do not turn the tv set on while making the test, nor before you have disconnected the adapter from the set.

If you have any trouble in using the adapter, check the cable connections with an ohmmeter or other continuity tester as shown in the following table.

CABLE CONNECTIONS

CRT Socket Pin#	1	2	3	4	5	6	7	8	9	10	11	12
To Octal Plug Pin#	1	2	3	4		5	6	top cap	5	6	7	8

TV PICTURE TUBE CHART FOR USE WITH MODEL 666 TUBE TESTER

TYPE	FIL.	GRID PLATE	LEVERS	V	S	LEAK	MERIT	TYPE	FIL.	GRID PLATE	LEVERS	V	S	LEAK	MERIT
5UP1	6.3	95 100	25146 66114	3	5	2,3,4,C	C	16EP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
8XP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16EP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
10BP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16EP4B	6.3	7 95	25111 41111	3	5	2,6,Z	6
10BP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	16FP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
10BP4C	6.3	7 95	25111 41111	3	5	2,6,Z	6	16GP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
10BP4D	6.3	7 95	25111 41111	3	5	2,6,Z	6	16GP4B	6.3	7 95	25111 41111	3	5	2,6,Z	6
10CP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16GP4C	6.3	7 95	25111 41111	3	5	2,6,Z	6
10DP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16HP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
10FP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16HP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
10FP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	16JP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
10KP7	6.3	7 100	25111 41111	3	5	2,6,Z	6	16JP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6
10RP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16KP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
10SP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16KP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12JP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16LP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12KP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16LP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12KP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	16MP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12LP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16MP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12LP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	16QP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
12LP4C	6.3	7 100	25111 41111	3	5	2,6,Z	6	16RP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12QP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16RP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12QP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	16SP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12RP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16SP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12SP7	6.3	7 100	25111 41111	3	5	2,6,Z	6	16TP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12TP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16UP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12UP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16VP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
12UP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	16WP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12UP4B	6.3	7 100	25111 41111	3	5	2,6,Z	6	16WP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
12YP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	16XP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
12ZP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	16YP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
12ZP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	16ZP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14BP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	17AP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14CP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17ASP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
14DP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17ATP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14EP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17ATP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14FP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17AVP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14GP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17AVP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14HP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17BKP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14KP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17BKP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14KP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	17BP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14QP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17BP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14QP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	17BP4B	6.3	7 95	25111 41111	3	5	2,6,Z	6
14RP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17BP4C	6.3	7 100	25111 41111	3	5	2,6,Z	6
14RP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	17CP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14SP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17CP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14UP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17FP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
14XP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17FP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
14XP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	17GP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
15AP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17HP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
15CP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17HP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
15DP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17HP4B	6.3	7 95	25111 41111	3	5	2,6,Z	6
15DP4A	6.3	7 100	25111 41111	3	5	2,6,Z	6	17JP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
16ABP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17KP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16ACP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17LP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16ADP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17LP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
16ADP7	6.3	7 100	25111 41111	3	5	2,6,Z	6	17QP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16AEP4	6.3	7 85	25111 41111	3	5	2,6,Z	6	17QP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6
16AP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17RP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16AP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	17SP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16AP4B	6.3	7 95	25111 41111	3	5	2,6,Z	6	17TP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16CP4	6.3	7 100	25111 41111	3	5	2,6,Z	6	17UP4	6.3	7 95	25111 41111	3	5	2,6,Z	6
16DP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	17VP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
16DP4A	6.3	7 95	25111 41111	3	5	2,6,Z	6	17YP4	6.3	7 100	25111 41111	3	5	2,6,Z	6
16GP4	6.3	7 95	25111 41111	3	5	2,6,Z	6	19AP4	6.3	7 95	25111 41111	3	5	2,6,Z	6

