

board can be left unhooked. The only ill effect will be a slight mis-convergence, mainly dynamic, at the edges. All of the commercial test jigs have static convergence magnets. Manufacturer's jigs, such as RCA, etc. have the complete convergence yoke and control board, of course. Mis-convergence can be ignored while servicing. In any case, convergence adjustments should **not** be done on the jig; the excess capacitance of the extension cables will cause mis-convergence when the set is put back together.

The worst problem in leaving the convergence board off will be in those sets where the vertical output tube cathode circuit returns to ground through the convergence circuitry. In these, you'll see a loss of height, verti-

flyback was replaced! If this kind of problem comes up, the set's own convergence yoke and board can be taken off, brought to the shop and slipped onto the tube in the test jig, for easier servicing.

Special hookups

The worst problem, of course, is in using the test jig on sets of a different make. This is where the cross-reference Handbooks, such as RCA's ICTJ book and others come in very handy. However, in emergencies, you can hook up practically all sets, by checking the deflection yoke connections.

There are at least four leads which must be properly hooked up. The horizontal deflection coil will have two, the "hot" and the return

pins 7 and 8 on the yoke socket, to complete the circuit. Any pincushion distortion, like misconvergence, can be ignored.

You can always check your jig hookup by remembering what the problem was in the home. For example, if the set was brought in for a sync problem, and now you have no vertical sweep, no high voltage, etc, this is a jig problem, and must be corrected before you can get on with the rat-killin'.

There is one problem, on all jigs, which you will notice, and which should be ignored. This will also show up when using a color set on its own picture tube, with extension cables, for that matter. This is a distinct smearing of fine horizontal detail in the picture. I've christened this "Jig-smear". It's

TV Test Jigs

time-saver that can replace the outside color TV service calls. and how you can use 'em.

by EUGENE CUNNINGHAM

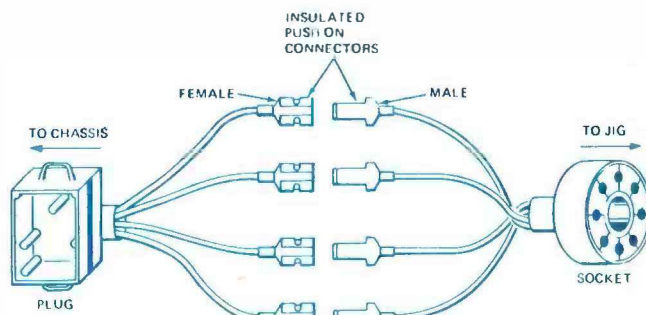


FIG. 2—HOME-MADE ADAPTER CABLES can be used to match almost any color TV set to your test jig. Matching plugs and sockets and insulated push-on connectors do the trick.

cal linearity, etc. In most of these, a dummy load can be used; this plugs into the convergence socket, completing whatever circuits would be left open in this particular chassis.

Actually, true convergence-trouble is uncommon, in the sense of part-failures. Most of it is due to mis-adjustments. Real trouble can always be identified by a few tests. If any control has no effect on the lines it's supposed to control, that's it. Check for defective controls, coils, wiring, clamp-diodes, and for the presence of the convergence pulse waveforms with the proper amplitude and polarity! One problem was solved by discovering, with the scope, that the convergence pulses were present, but were inverted! Someone had reversed the wiring to a pulse winding when the

leads. In some chassis, there will be a center-tap on the horizontal deflection coil. The later jigs have this connection on their yokes; in many cases, it can be left open without trouble. The inductance of the horizontal yoke winding is usually close enough to the original so that it will work.

For the vertical winding in the yoke, most sets use only two leads, hot and return. The main problem here is getting these hooked up so that the picture is right side up. Actually, it doesn't make any real difference, but it looks funny. In a few chassis, you'll find pincushion-correction networks connected between the two vertical windings of the yoke. Fig. 1 shows such a circuit, as used in Sylvania's D-12 chassis. This can be hooked up for test purposes by shorting between

caused by the added shunt capacitance of the picture-tube extension cable, in the video circuits. It is not too bad, but it must be recognized, so that you don't waste time checking video stages, alignment, etc. when it is not necessary! You can check out a couple of chassis which do have good horizontal resolution, and see exactly what I mean.

Emergency adapter cables

It should be possible to hook up any "standard" U.S.-built chassis to a test jig, if you have the right cables. In an emergency, you can make up this cable. Fig. 2 shows a rough sketch of how this could be done. The socket fits the yoke plug on the cable from the jig's yoke. The socket is of whatever type is used on the TV set. The

leads from the jig-yoke socket should be plainly tagged "H-Hot", "H-Ret" (urn) "H-CT", etc. By putting push-on connectors on these, and mating connectors on the leads from the "set-socket", as shown, you can cross-connect the two together so that each lead goes to the right pin of the set socket. (Insulate them! They bite!)

The schematic diagram will show you how the set is hooked up. By tracing each lead out as to its function, it should be fairly simple to match the connections.

Tube-type jigs vs transistor type

As a general rule, color sets with transistor deflection circuitry cannot be used on the same jig used for testing tube-type color sets. There is some disagreement about this among test-jig

Commercial test jigs

The first test-jigs were simply cabinets and yokes, plus the picture tubes, from old TV sets. Later on, as this became more popular, special cabinets were built for them, as you'll see. Fig. 3 shows the RCA 10J102/-104 test jig, with its built-in high-voltage meter. With the *ICTJ Handbook*, and suitable adapter cables, this will handle any tube-type color set, including several of the more popular imports.

Lately, a new item has been added. This is the portable test-jig, 10J103 (tube) or 10J105 (transistor) seen in Fig. 5. It uses an 18-inch color picture tube, and has the built-in high-voltage meter, and all of the features of the bigger jigs. The cabinet is made of high-impact plastic, and has feet so that it will stand anywhere on

As I said before, practically all of the major U.S. setmakers provide test-jigs for use with their own sets. Adapter cables for different models of their line are available. Magnavox, for example, provides a continuously updated cross-reference, and conversion data, for the necessary adapter cables to use the jig with newer models. These can be bought from the Magna-Par parts depots, ready-made, or assembled in the shop, using the right plugs, sockets, etc.

Universal test jigs

There are companies who make test jigs for use with sets of all makes. Some of these make the jigs for the manufacturers.

The Pix-O-Scope jigs. The Pix-O-Scope Company, 3311 Shelby St., In-

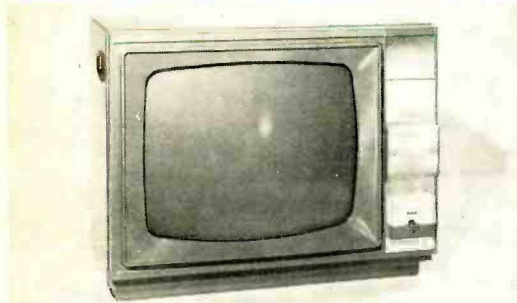


FIG. 3—RCA 10J102/104 TEST JIG has dc voltmeter.



FIG. 4—ADAPTO-SCOPE universal yoke connector.

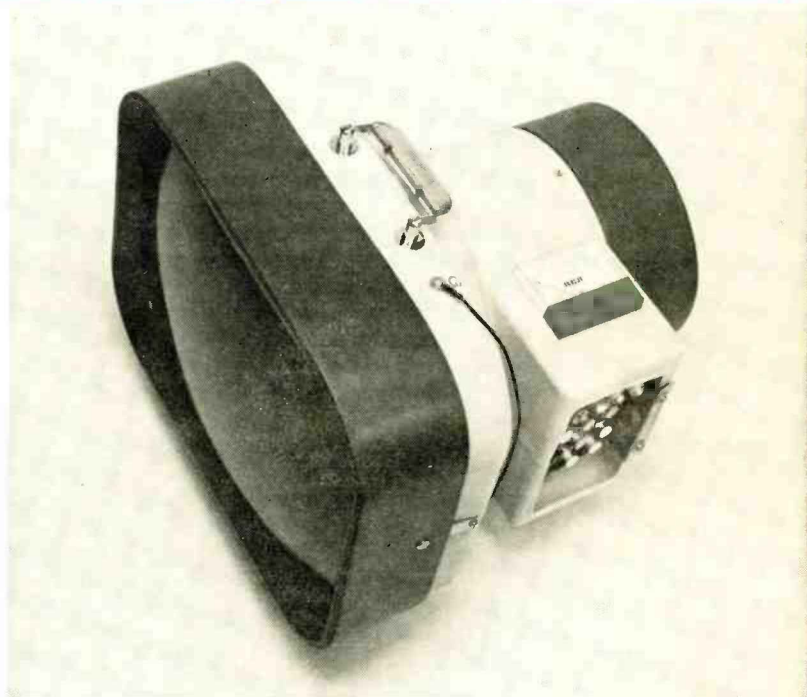


FIG. 5—RCA PORTABLE JIGS. One for tube, the other for solid-state sets.

manufacturers. The deflection components for the tube-type jigs (and sets) have quite a bit higher impedance than their transistor-type counterparts.

RCA does not recommend trying to use tube jigs on solid-state stuff. They have two versions: in the large-tube type, the 10J102 matches all tube type RCA sets back to the CTC-7, including the 21-inch round, and 19-, 20-, 23- and 25-inch rectangulars. The 10J104 is used for the transistor color sets. It has the same yoke and associated components as solid-state CTC-40 chassis.

Other jig-makers have different ideas. The statements and claims here are those given us by the companies, and most of them have been checked out.

the bench. A carrying handle is included, for case in moving this compact jig to any place needed. It can even be carried into the customer's home; this is mainly for the purpose of using the jig's picture tube as a sub, to convince the owner that his picture tube really *is* bad.

RCA does not recommend trying to "convert" tube-type jigs for use with solid-state deflection components. However, their engineers tell me that it is **not** necessary to buy two complete test-jigs! You can buy the tube-type jig, and a set of the "neck components" (deflection and convergence yokes, convergence board, etc) of the type used in the transistor sets. If needed, these can be installed on the picture tube already in the jig, in about 10-15 minutes.

dianapolis, Ind. 46227, makes three test jigs for tube-type sets. The basic version is the P-1 seen in Fig. 6. It comes completely assembled ready to go. All necessary cables are provided; high-voltage and pix-tube socket extensions, a 21-25-inch pix-tube socket adapter, and their patented *Adapto-Scope* yoke hookup lead (Fig. 4). This allows the connection of the P-1 jig to any standard color TV yoke. This is done by plugging the standard color-coded leads into the yoke-socket on the TV chassis; red for "horizontal hot"; blue for "horizontal return"; yellow, "vertical hot"; Yellow with tracer, "vertical return".

No convergence board is used. The static magnets are mounted on the tube-neck, including a blue lateral. For initial setup, the yoke is adjusted