



My TV Set 'Sees' Color Pictures

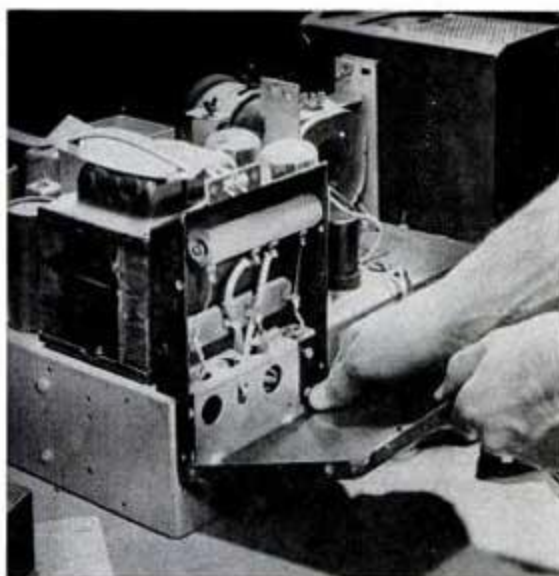
This \$4 adapter made a dual-purpose televiser out of a 630-type receiver. Here's how I built and wired it.

THOSE streaks and bars you may have seen on your screen lately are color television. They don't look like much on present sets, but with a few dollars' worth of parts you can turn them into good black-and-white images. I recently did just that on a set using the popular, widely licensed RCA 630 circuit. It doesn't hurt the set a bit—a flip of a switch and I'm back to regular reception. And later on I can simply add a motor-driven color wheel and get the pictures in full color.

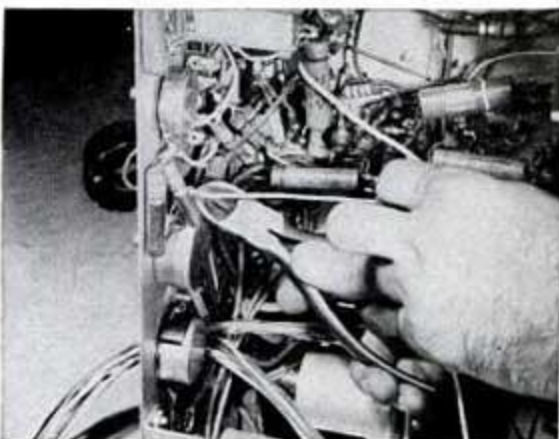
The fast-moving electron beam that paints a TV picture is guided by two oscillator circuits that whip it back and forth and up and down the tube face. To adapt a set you have to increase the speed of both the horizontal and vertical oscillators.

In a 630-type receiver this means changing three condensers. For convenience in adjusting the color picture, it is also desirable to add new controls for color focus, height, and vertical linearity. All the circuit changes—and the parts I used—are shown on the next two pages.

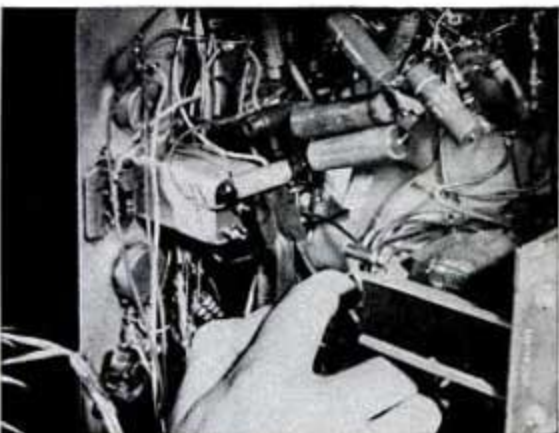
It is almost impossible to find condensers of exactly the right capacity, so I used an



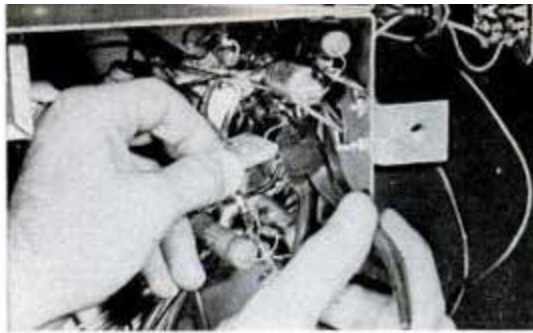
A black metal plate at the left rear of the 630 chassis covers a large resistor and two $\frac{3}{8}$ " holes. All leads from adapter can be fed to the chassis through the left-hand hole.



Three connections to rear-apron controls have to be cut so new leads can be installed. I cut the wires right at the control terminals.



Three condensers have to be removed. They can be used in the adapter box. In some 630 models, four condensers are affected.



This 4,700-mmf. mica condenser is taken out of the vertical oscillator circuit—(left, above)



and installed in adapter box (right) between shielded lead *d* and switch contact 10.

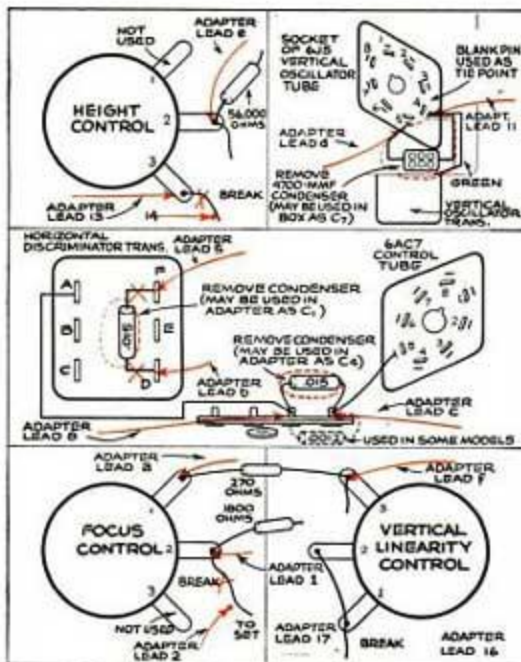
adjustable trimmer and a fixed capacitor in parallel in three of the circuits that I altered.

I mounted a two-deck, 8-pole, double-throw wafer switch in a 2" by 4" by 4" steel box and connected all the parts on and around the switch. Only six circuits are affected, so I left two of the eight switch poles unconnected. I put the horizontal and vertical connections on separate wafers.

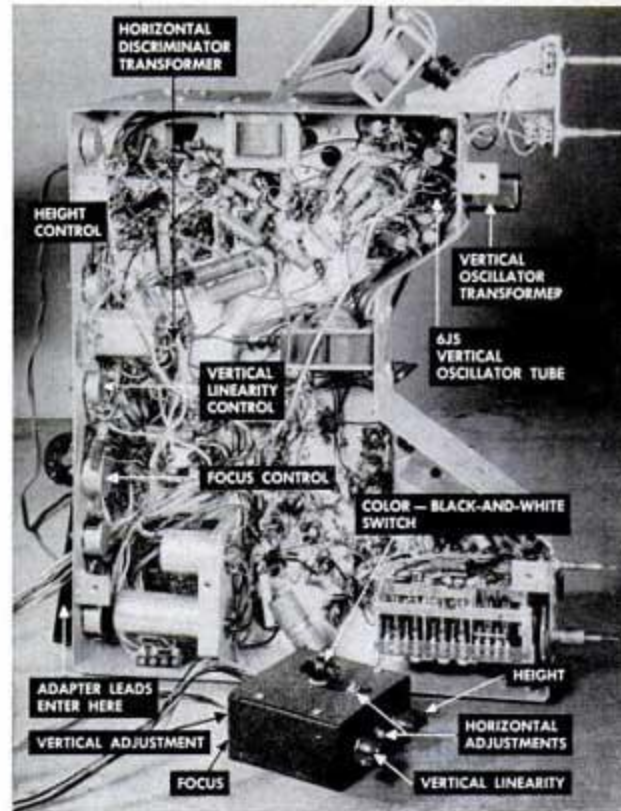
To keep from getting wires and contacts mixed up, I worked out the code shown in the diagrams. I numbered the switch contacts from 1 to 18 and taped corresponding numbers on the wires connected to the contacts. I taped the letters *a* to *f* on the leads that go to other points in the box.

In my receiver I found a single .015-mfd. capacitor connected between terminal A on the horizontal-discriminator transformer and pin 5 of the 6AC7 control tube. In many 630s there is an additional .0012-mfd. capacitor—shown by dotted lines in the diagrams—in parallel with it. Where two are used, they should both be removed and installed in the adapter as C4.

When I finished, I taped the splices and insulated the shielded cables. Then I reassembled the receiver and adjusted the black-and-white image as it was before. Next, I tuned in a color broadcast, switched the adapter to "color," and adjusted the new controls. —Norman L. Chalfin, Culver City, Calif.



This is the completed installation. Labels show places where wiring changes were made.



PARTS FOR ADAPTER BOX				SWITCH CONTACT NUMBERS	LEADS TO ADAPTER BOX
CIRCUIT	KEY	PARTS USED	WHAT IT DOES		
Color Focus	R1	1,500-ohm wire-wound potentiometer	Adjusts focus of color picture	1, 2, 3	1, 2, a
Color Phase	C2, C3	.0035-mfd., 400-volt paper cond. (C2) in parallel with .001-mfd. trimmer (C3)*	Allows horizontal "lock-in" circuit to operate at color-scanning rate	4, 5, 6	Two-conductor shielded cable containing wires 5 and b. Shield grounded at set and adapter
Black-and-White (B&W) Phase	C1	.015-mfd., 400-volt paper cond. (may be taken from set)	Restores orig. circuit for B&W reception		
Color Frequency (Horizontal)	C5, C6	.0035-mfd., 400-volt paper cond. (C5) in parallel with .001-mfd. trimmer (C6)*	Raises horizontal scanning frequency to 29,160 cycles for color reception	7, 8, 9	Two-conductor shielded cable containing wires 8 and c. Shield grounded at set and adapter
B&W Frequency (Horizontal)	C4	.015-mfd., 400-volt paper cond. (or .015 and .0012 in parallel. See text. May be taken from set)	Restores horizontal frequency to 15,750 cycles for B&W reception		
Color Frequency (Vertical)	C8, C9	.002-mfd., 400-volt paper cond. (C8) in parallel with .0005-mfd. trimmer (C9)*	Raises vertical scanning frequency to 144 cycles for color reception	10, 11, 12	Two-conductor shielded cable containing wires 11 and d. Shield grounded at set and adapter
B&W Frequency (Vertical)	C7	4,700-mmf. mica (May be taken from set)	Restores vertical frequency to 60 cycles for B&W reception		
Color Height	R2	2.5-megohm potentiometer	Adjusts height of color picture	13, 14, 15	e, 13, 14
Color Vertical Linearity	R3	5,000-ohm potentiometer	Adjusts vertical linearity of color picture	16, 17, 18	16, 17, f

OTHER PARTS: Two-deck, 8-pole, double-throw wafer switch (two poles not used)
 Adapter box, 2" by 4" by 4" or larger steel cabinet
 Three 60" lengths two-conductor shielded cable
 Nine 60" lengths No. 18 stranded hook-up wire (color-coded for identification)
 *All trimmers are compression-type mica

