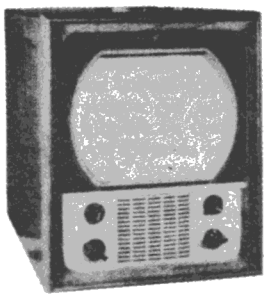
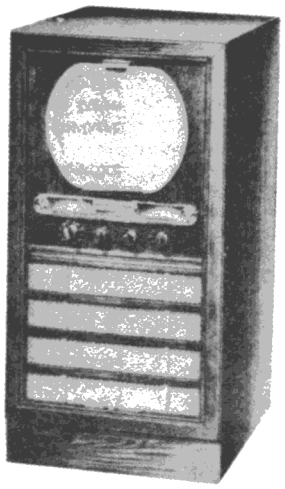
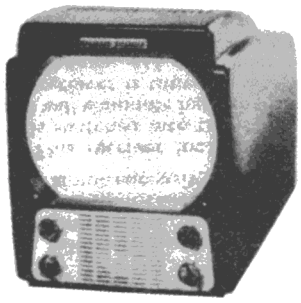


MODEL 10T4 MAHOGANY
MODEL 10T5 BLOND



MODEL 10C101
MAHOGANY
MODEL 10C102
BLOND



MODEL 10T1
MODEL 10T6

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SPECIFICATIONS

OVER-ALL DIMENSIONS:

Type	Height inches	Width inches	Depth inches
10T1, 10T6 (plastic)	14 13/16	11 3/4	20 1/4
10T4 (mahogany)	16 9/16	13 1/2	20 1/4
10T5 (blonde)	16 9/16	13 1/2	20 1/4
10C101 (mahogany)	33 1/8	17 1/4	20 7/8
10C102 (blonde)	33 1/8	17 1/4	20 7/8

ELECTRICAL RATING:

Frequency	60 cycles
Voltage	115 v. a-c
Watts	150 w.

INTERMEDIATE FREQUENCIES:

Television Video	45.75 mc
Television Audio	41.25 and 4.5 mc

AUDIO POWER OUTPUT:

Undistorted	1.0 watt
Maximum	2.0 watts

LOUDSPEAKER:

TYPE PM ALNICO

Model	10T1, 10T4, 10T5, 10T6	10C101, 10C102
Cone Diameter	4 1/2 in.	10-in.
Voice Coil Imp. (400 cps)	3.2	3.2

ANTENNA:

Type	Folded dipole, or equivalent
Impedance	300 ohms

R-F FREQUENCY RANGE:

Selector Switch Position	Frequency Range MC	Picture Carrier MC	Sound Carrier MC
No. 2	54-60	55.25	59.75
No. 3	60-66	61.25	65.75
No. 4	66-72	67.25	71.75
No. 5	76-82	77.25	81.75
No. 6	82-88	83.25	87.75
No. 7	174-180	175.25	179.75
No. 8	180-186	181.25	185.75
No. 9	186-192	187.25	191.75
No. 10	192-198	193.25	197.75
No. 11	198-204	199.25	203.75
No. 12	204-210	205.25	209.75
No. 13	210-216	211.25	215.75

TUBES:

Symbol		
V1	1st RF Amplifier	6AU6
V2	2nd RF Amplifier	6AG5*/6BC5
V3	Oscillator-Converter	12AT7
V4	1st IF Amplifier	6AG5*/6BC5
V5	2nd IF Amplifier	6AG5*/6BC5
V6	3rd IF Amplifier	6AG5*/6BC5
V8	Video Amplifier	12AT7
V9	Picture Tube Model 10T1	10BP4
	Models 10T4, 10T5, 10C-101, 10C102	10FP4
	Model 10T6	10FP4-A
V10	Vertical Multivibrator and Sweep Output	12SN7GT
V13	Horizontal Sweep Output	19BG6
V14	High Voltage Rectifier	1B3GT/8016
V15	Damping Tube	25W4GT
V16	Audio Limiter and Amplifier	6AU6
V17	Ratio Detector	6AL5
V18	Audio Amplifier	6SQ7
V19	Audio Output	25L6GT
V20	Sync Amplifier and Clipper	6SL7GT
V21	Horizontal Oscillator and AFC	12SN7GT
V22	AFC Discriminator	6AL5
V23	Audio IF Amplifier	6AU6
Y1	Video Detector	1N64
Y2	D-C Restorer	1N65/1N48

*Receivers manufactured after January 1950 used a Type 6BC5 tube in place of the high gm 6AG5 tube. Use a Type 6BC5 tube as replacement for the Type 6AG5 tube in these receivers.

CAUTION

HIGH VOLTAGES ARE USED IN THE OPERATION OF THIS TELEVISION RECEIVER. THE BACK COVER, WHILE IN PLACE, PREVENTS ACCIDENTAL CONTACT WITH THESE HIGH VOLTAGES AND SHOULD NOT BE REMOVED EXCEPT BY A QUALIFIED TELEVISION TECHNICIAN.

THE PICTURE TUBE IS A HIGH VACUUM TUBE AND, IF BROKEN, PIECES OF GLASS MAY FLY WITH FORCE IN ALL DIRECTIONS. ANY WEAKENING OF THE GLASS, AS MAY BE CAUSED BY CHIPPING, SCRATCHING, OR MORE THAN NORMAL PRESSURE, MAY CAUSE THIS TUBE TO BREAK. THE USE OF GLOVES AND SAFETY GLASSES IS RECOMMENDED WHEN IT IS NECESSARY TO REMOVE OR REPLACE THE PICTURE TUBE.

ALWAYS USE AN ISOLATING TRANSFORMER IN THE POWER LINE, WHEN SERVICING THESE RECEIVERS, TO PROTECT TEST EQUIPMENT.

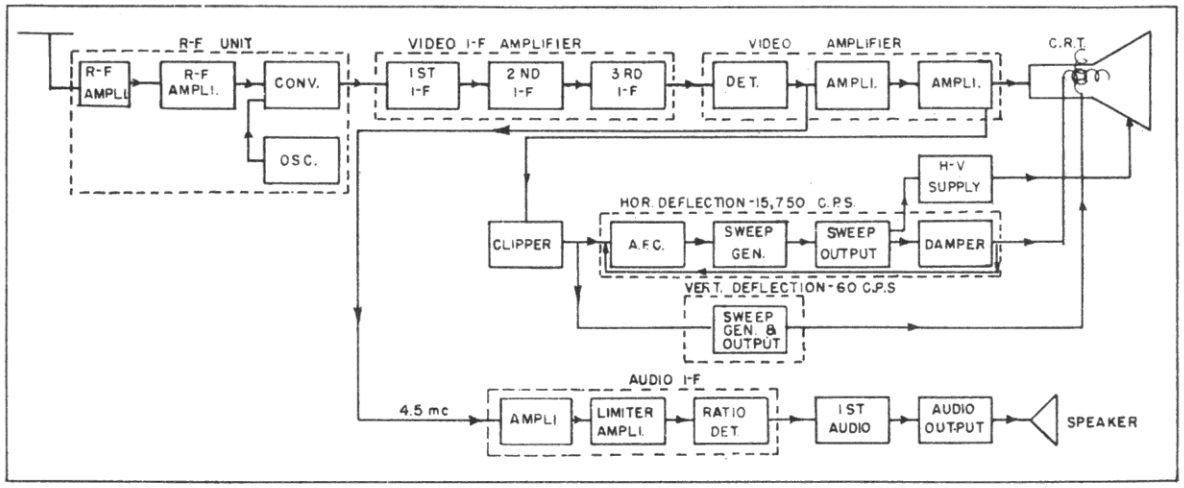


FIG. 1. BLOCK DIAGRAM MODELS 10T1, 10T4, 10T5, 10T6, 10C101, 10C102

GENERAL INFORMATION

The General Electric Models 10T1, 10T4, 10T5, 10T6 are table model type television-receivers providing reception on all twelve commercial television channels. The Models 10C101 and 10C102 are consolette type receivers, providing reception on all twelve commercial channels. The picture is produced on a 10-inch picture tube electromagnetically deflected.

Features of this line of television receivers include a two-stage r-f amplifier, balanced input impedance, selenium type rectifiers, intercarrier sound system, ratio detector, improved focus control, safe high voltage for the picture tube, automatic frequency control for horizontal sweep synchronization. Models 10T4, 10T5, 10C101 and 10C102 incorporate a built-in antenna. The head-end assembly which contains the r-f amplifier, the oscillator and converter section is mounted on a separate chassis which is insulated from the main chassis and is readily demounted. The local oscillator operates on the high-frequency side of the r-f channel frequencies for all channels.

The video i-f is stagger tuned to pass the video i-f of 45.75 mc and the sound i-f of 41.25 mc. As this receiver uses intercarrier sound i-f, the video signal is detected at Y1 as well as a 4.5 mc FM television sound signal which is the beat frequency between the 45.75 mc video i-f and the 41.25 mc sound i-f.

Horizontal and vertical sync signals are tapped off at the plate of V8B and fed into the sync amplifier and clipper, V20. The vertical sweep generator and output is a type 12SN7 tube connected as a multi-vibrator. The horizontal sync circuit contains a 6AL5 tube (V22) which is the automatic frequency control discriminator. V21A is a reactance tube which is one section of a 12SN7 tube, and V21B is a sine wave oscillator which is the other section of a 12SN7. V13 is a 19BG6 tube and serves as the horizontal sweep output tube. V15 (25W4GT) is a damper tube in the horizontal sweep output circuit. V14 (1B3GT/8016) is a rectifier tube to supply high voltage d-c from the kick voltage during the retrace period of the horizontal sweep developed at the horizontal output transformer, T312.

The 4.5 mc FM sound signal is fed into tube V23 (6AU6) which is a sound i-f amplifier. Tube V23 is coupled by a transformer T340 to the tube V16 (6AU6) which is a limiter amplifier. Tube V16 is coupled to tube V17 (6AL5) ratio detector by the ratio detector transformer T341. The television audio is then amplified by V18 tube (6SQ7) and coupled to the audio output tube 25L6GT which delivers its power to the loudspeaker through the output transformer.

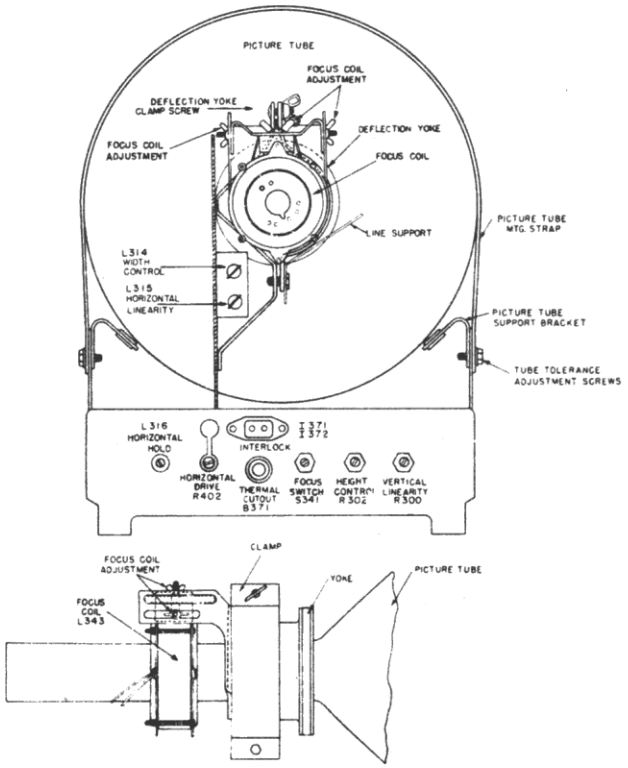


FIG. 2. PRESET CONTROLS

MODELS 10T1, 10T4, 10T5, 10T6, 10C101, 10C102

PREPARATION FOR USE

These receivers are shipped with the picture tube installed. Carefully unpack the receiver. A rubber band is used to secure the 1B3GT rectifier tube in its socket and a piece of glass tying tape is used to secure the 19BG6 tube in its socket during shipment. It is not necessary to remove these when installing the receiver, but they should be removed the first time the chassis is removed from the cabinet for service. The two tubes are easily accessible by opening the hinged high voltage shield.

Models 10C101 and 10C102. In order to prevent damage to the picture tube, all consolette type receivers have their focus coil moved close to the yoke assembly and a fiber shipping sleeve slipped between the focus coil and the tube neck. Loosen all wing nuts on the focus coil bracket, remove the shipping sleeve and move the focus coil back. Then focus and center the picture, using a temporary test power cord (see Preset Control Adjustment).

The picture tube is pressed against the mask for shipping purposes by means of a cable harness made of stainless steel. It may become magnetized sufficiently so as to shift or distort the picture. In order to prevent this undesired effect, it is recommended that this cable harness be removed and discarded at the time the receiver is installed.

RECEIVER INSTALLATION

1. If the built-in antenna is used, it is advisable to observe the reception in various locations of the room to obtain best results.

2. In case an outdoor antenna has to be used, the antenna lead-in should be as short as possible. During shipment the built-in antenna is connected to the dipole terminal, therefore it is necessary to disconnect the wires of the built-in antenna altogether and connect the transmission line (impedance 300 ohms) of the outdoor antenna installation to the antenna terminals.

Any type of antenna system may be used as long as it is connected by a balanced transmission line to the balanced input of 300 ohms of the receiver. The choice of the antenna depends on the operating area of the receiver, the number and location of stations to be received. In order to avoid multiple images (ghosts) and interferences, careful experimentation with the antenna system is necessary to obtain satisfactory reception. These problems may be aggravated in fringe areas and sometimes an elaborate installation has to be made to obtain satisfactory results.

For detailed information on antenna installations, refer to Chapter XIII of the Television Course.

3. A power outlet providing 110 volts at 60 cycles per second must be in easy reach of the television receiver.

4. Locate the receiver so that the room illumination, in daytime or nighttime, falling on the screen of the picture tube may be controlled. If this cannot be done, locate the receiver in such a position that light from a window does not fall directly on the screen of the picture tube. For nighttime use, it is unnecessary to turn out all lights when viewing.

5. Ventilation of the television receiver is very important. Slots are provided in the cabinet for ventilation. These slots should not be obstructed. Do not locate the receiver on or too near any heating device.

Note: Always wear safety glasses and gloves when handling a picture tube.

PRESET CONTROLS

THERMAL CUT-OFF—This is a protective circuit breaker to remove line voltage from the receiver in cases of excessive current drain or excessive heat within the chassis. A five minute period should be allowed to elapse before resetting this control.

FOCUS—The focus switch S341 on the rear panel should be set to the position which allows the front panel focus control R353 to focus the raster nearest the center of its rotation and to give uniform focus over the greatest picture area.

PICTURE TILT—If the picture or raster does not square with the picture tube mask, loosen the wing nut at the top of the yoke clamping bracket and rotate the deflection yoke in the proper direction until the picture squares with the mask. Clamp the yoke tightly in place.

ION TRAP ADJUSTMENT—For models which use a 10BP4 picture tube, an ion trap is placed around the neck of the picture tube between the focus coil and the tube base. It is important that the Ion Trap be always adjusted for maximum brilliance. When adjusting the Ion Trap, if the raster gets too bright, reduce the brilliance control and readjust Ion Trap for maximum brilliance.

Two types of ion traps were used during production, one a double magnet type, the other a single magnet type. The double magnet type should be placed around the neck of the picture tube with the arrow pointing towards the focus coil.

PICTURE CENTERING—Centering of the picture or raster is accomplished by loosening the wing nuts which secure the focus coil and adjusting the position of the focus coil until the raster or the picture is centered.

The focus coil may be adjusted in four directions. 1. It may be moved vertically slightly by loosening the two side wing nuts. 2. It may be tilted about a horizontal axis slightly by loosening the two side wing nuts. 3. It may be moved horizontally slightly by loosening the top wing nut. 4. It may be rotated about its vertical axis by loosening the top wing nut.

NOTE: The focus coil should be kept as far back towards the base of the picture tube as possible to give uniformity of focus over the greatest picture area.

When making the adjustment, it is advisable to loosen all three wing nuts and make an approximate adjustment of the focus coil. Tighten the three wing nuts enough to maintain the focus coil in place but loose enough so it may be moved to a final position. After a final position has been found which gives good centering of the picture, tighten the three wing nuts securely.

A slight dimming of the picture may be encountered as the focus coil is moved towards the base of the picture tube. It may be necessary to lose some brightness to obtain good centering and uniformity of focus, since the brightness may be regained by increasing the brightness.

Do not leave the focus coil set in such a position as to give neck shadow at one edge of the picture. See Fig. 13.

HORIZONTAL HOLD—Rotate the front panel Horizontal Hold control R321 to the middle of its range. Adjust the core of the rear panel Horizontal Hold control L316 until the picture is synced and is phased at the center of the raster. Slight rotation of the front panel Horizontal Hold control (R321) either way should move the picture slightly left or right without losing sync.

Adjust the Contrast Control for a picture of low contrast. Check the front panel Horizontal Hold control R321 by rotating it slowly. The receiver should not lose horizontal sync. If the receiver loses sync readjust rear panel Horizontal Hold control L316 if necessary.

HORIZONTAL LINEARITY—The horizontal linearity control L315 adjusts the picture for correct horizontal proportions. For best adjustment, use a test pattern and adjust the Horizontal Linearity control until the distance from the center of the test pattern to the left- and right-hand edges of the test pattern measures approximately the same. The adjustment of this control is very broad and it should be made simultaneously with the adjustment of the Width Control L314 to get proper picture width and correct horizontal linearity. See Fig. 12.

HORIZONTAL DRIVE—The Horizontal Drive control R402 should be set at approximately ⅓ of its total rotation from the counter-clockwise end of its rotation. If white vertical bars or black beaded lines appear in the picture, the Drive control should be turned either way to just remove these bars.

WIDTH—Adjust the Width control L314 so that the edges of the picture extend approximately one eighth inch past the right- and left-hand edge of the mask and are not visible. See Fig. 11.

VERTICAL LINEARITY—This control R300 should be adjusted to give good vertical proportions to the picture. The adjustment should be made on a test pattern so that the distance from the center to the top and bottom edges of the pattern measures approximately the same. This adjustment will alter the height of the picture slightly. See Fig. 9.

HEIGHT—This control R302 changes the picture height and should be adjusted so that the picture extends approximately ⅛ inch beyond the top and bottom edges of the mask. This adjustment should be made simultaneously with Vertical linearity.

HIGH CHANNEL TRAP—This receiver incorporates a trap on the head-end unit which is switched into the antenna circuit on all low-band channels and will eliminate high-channel interference on these channels. If the receiver is tuned to Channel #5, a strong station operating on Channel #11 may beat with the second harmonic of the local oscillator to form an i-f frequency which will ride through unhindered and appear on the picture screen. In order to prevent the interfering signal from reaching the converter, a trap consisting of a fixed inductance and a variable capacitance is adjusted for maximum rejection of the interfering station. This type of interference is also possible on the Channels #4 and #6 due to interfering stations on Channel #8 and #13, respectively. The trap is adjusted at the factory approximately for Channel #11 rejection. It may be necessary to readjust the trap slightly for maximum rejection of Channel #11.

Adjustment of Trap—The adjustment of the trap can be made by means of a signal generator and an oscilloscope or an a-c meter as indicating device. The signal generator must be terminated to match 300 ohms impedance. For elimination of Channel #8, #11 or #13 interference, feed a strong signal of the picture carrier of the interfering station modulated with an audio signal into the antenna terminals and connect the indicating device to the picture tube grid. Set the band selector to the Channel #4, #5 or #6, respectively, and tune local oscillator of receiver for maximum deflection on indicating device. Then tune trimmers C226 and C225 for minimum signal on picture tube grid. Keep the capacity of the trimmers at approximately equal values which can be checked by the even length of the screw extensions of the trimmers.

When a minimum signal has been obtained, turn trimmer C225 half a turn clockwise and readjust trimmer C226 for a minimum. If this adjustment reduces the signal still further, continue the adjustment until the greatest rejection is obtained. In case, however, the signal increases, turn trimmer C225 counterclockwise half a turn and readjust C226. Continue the adjustment in this direction until the greatest rejection is obtained.

The adjustment of the trap can be made without instruments as follows: When the channel interference appears in the picture, set the tuning control for maximum interference. Then tune trimmer C225 and C226 for minimum interference or maximum rejection. Follow the same procedure as outlined above.

PICTURE DEFECTS

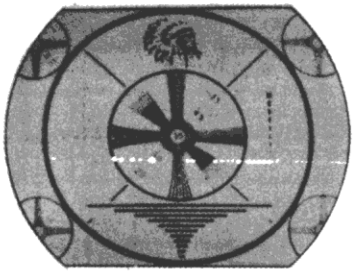
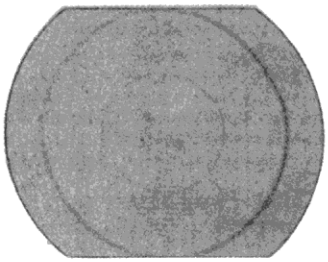
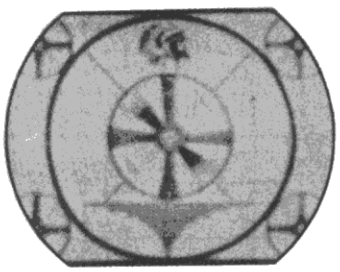
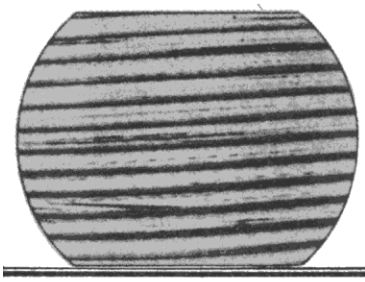


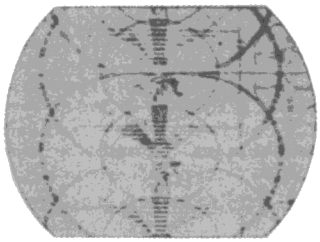
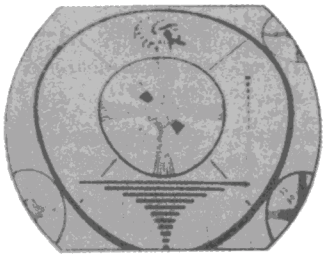
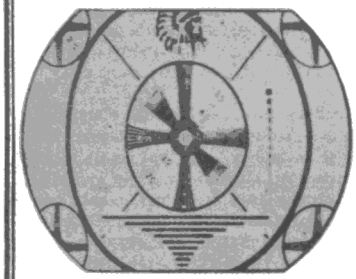
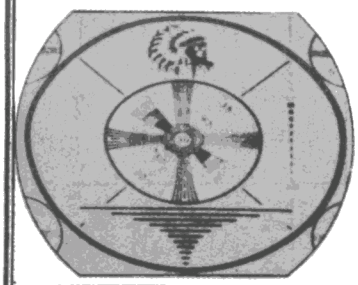
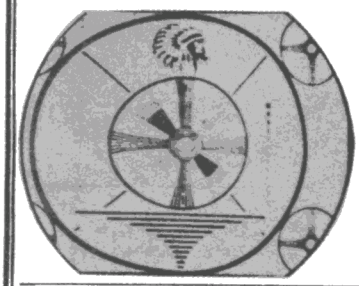
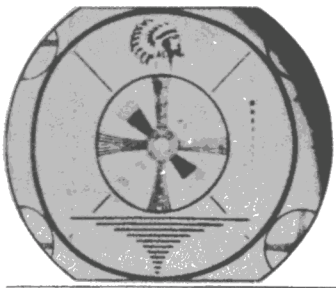
Fig. 3
Normal picture.

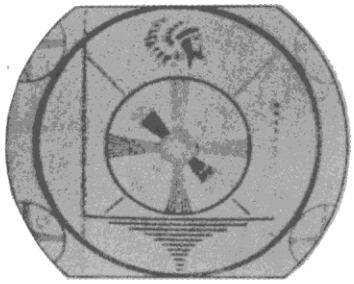
The following illustrations show picture defects which are caused by incorrect setting of operation controls, the preset controls or by interference picked up by the antenna. The possible remedy is indicated for each defect.

The adjustment of controls is most efficiently accomplished by the use of a test pattern, similar to that illustrated, which is normally transmitted just prior to the scheduled program.

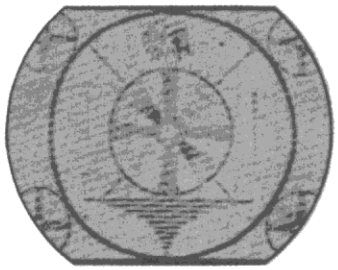
The normal picture, see Figure 3, should show good focus and a good contrast between blacks and whites with intermediate shades of gray. The picture should not tend to move vertically or horizontally and should have good linearity.

Picture	Defect	Remedy
	**Fig. 4** **Picture too light.**	1. Increase contrast control setting and/or reduce brightness. 2. Weak signal. This may be caused by insufficient pickup on antenna or defective lead-in. Ihsufficient pickup at maximum contrast usually is accompanied by "snow" on the picture.
	**Fig. 5** **Picture too dark (contrast).**	1. Reduce contrast control setting and/or increase brightness control setting. 2. Too strong signal. If it is not possible to reduce signal adequately with contrast control, install suitable resistor antenna pad.
	**Fig. 6** **Picture defocussed.**	1. Adjustment of front panel control. 2. Check for optimum uniformity of focus by moving focus coil (see installation and service adjustments,). 3. Check coarse focus control at rear of chassis. 4. Mistuning of receiver or misalignment.
	**Fig. 7** **Horizontal sync.**	1. Adjust Horizontal Hold control (front panel control). 2. Check adjustment of rear panel Horizontal Hold Control. 3. Horizontal Drive control set too far clockwise. 4. Signal improperly tuned.

Picture	Defect	Remedy
	**Fig. 8** **Vertical sync.**	1. Adjust Vertical Hold control (until picture shows no tendency to slide up or down or lock out of frame).
	**Fig. 9** **Vertical linearity.**	1. Adjust Vertical Linearity control. This adjustment may alter the Height Control adjustment.
	**Fig. 10** **Vertical height.**	1. Adjust Height control so that the top and bottom picture edges are just covered by mask. Recheck Vertical Linearity control setting.
	**Fig. 11** **Picture too wide.**	1. Adjust Width control so that the right and left picture edges are just covered by the mask.
	**Fig. 12** **Horizontal linearity.**	1. Adjust Horizontal Linearity control. This adjustment may require resetting of Width control.
	**Fig. 13** **Neck shadow.**	1. Misadjustment of Focus coil—tilted too far. 2. Ion trap improperly set, Model 10T1 only. 3. Deflection yoke not forward against bell of the picture tube.

Picture	Defect	Remedy
	**Fig. 14** **Barkhausen oscillation.**	One or several vertical dark lines when program is being received. 1. Readjust horizontal linearity control. 2. Change 19B6G sweep output tube.

PICTURE INTERFERENCES

	**Fig. 15** **Herringbone pattern over picture.**	This interference is caused by a television station operating on the next lower channel or by a short-wave radio transmitting and receiving equipment. Police and "ham" transmitters in your locality will usually cause the most severe conditions. The interference produces moving ripples or diagonal streaks or, in some cases, may cause loss of contrast of the picture. The use of an antenna wavetrap tuned to the interfering signal may assist. If the interference is from a TV or FM station, a transmission line shorted stub may remove the interference. If the pickup is on the lead-in, a shielded lead-in will help correct the trouble.
	**Fig. 16** **Diathermy interference.**	Diathermy equipment is used by hospitals and doctors and can be very annoying because it might ruin the reception completely. This interference manifests itself in a herringbone pattern or one or two dark bars moving slowly up or down the picture. If the disturbance is extremely strong, the interference pattern will remain stationary while the picture floats in the background. Improve your antenna installation using directive antenna systems and shielded transmission line.
	**Fig. 17** **Horizontal bars on picture.**	This interference is caused by adjacent channel sound or microphonics in receiver. If adjacent channel sound is responsible for this defect, readjust the adjacent channel traps L205 and L208 as outlined A microphonic video amplifier tube, V8, or oscillator tube V3, may cause the condition.
	**Fig. 18** **Ignition interference.**	Ignition interference from trucks, automobiles, and airplanes may be identified by streaks and splashes on the picture. The ignition system of trucks will produce the most intense interference pattern. Install antenna away from road carrying traffic. Shielded lead-in may help if interference is picked up on it.

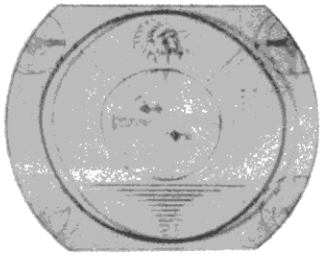


Fig. 19
Multiple images (ghosts).

This is caused by the television signal following a multiple path, one of which is the direct path, and the other is reflected from some object such as a tall building or a large storage tank or hills. The signal following the longer reflected path arrives later at the receiver producing the second image.

In case a built-in antenna is used, try to turn the cabinet until the ghost picture is dimmed out. If your receiver is connected to an outdoor installation, a reorientation of the antenna might improve the reception.

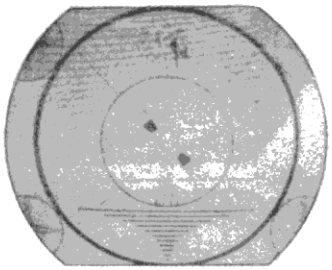


Fig. 20
"Snow."

1. Signal too weak; increase efficiency of antenna installation.
2. Adjust tuning control.

ALIGNMENT

GENERAL—

A complete alignment of the receiver tuned circuits is given in the following charts. Read all alignment notes prior to making an alignment. The procedure shown in the charts is based upon the use of the G-E test equipment specified and if other equipment is used which has different characteristics, the charts may have to be modified slightly. A diagram showing the location of adjustments used in alignment is shown in Figure 24.
Use the alignment service diagram, Figure 31 with the charts.

It is necessary to connect the low side of the test equipment to the B— bus of the receiver keeping the lead as short as possible.

Always permit a 15 minute warm-up period for the receiver and test equipment prior to attempting alignment.

To align the receiver with the picture tube removed, a Type 6SN7 tube with all pins clipped off except pins #7 and #8 may be used to complete the filament circuit. Plug pins #7 and #8 of the 6SN7 into pins #1 and #12 of the picture tube socket.

To protect the test equipment, always use an isolation transformer between the power line and the TV receiver.

TEST EQUIPMENT—The following test equipment is necessary.

1. R-F Sweep Generator (G-E Type ST-4A or Equivalent).

a. Frequency Requirements.

4.5 MC with 500 KC and 2 MC sweep width.
40-50 MC with approximately 10 MC sweep width.
50-90 MC, 170-220 MC with 15 MC sweep width.

b. Constant output in the sweep range.

c. At least 0.1 volt output.

2. Marker Generator (G-E Type ST-5A or Equivalent).

The marker generator must have good frequency stability, must be accurately calibrated and must cover the following frequencies.

41.25 MC for video I-F
42.50 MC for video I-F
44.20 MC for video I-F
44.50 MC for video I-F
45.00 MC for video I-F
45.75 MC for video I-F
47.25 MC for video I-F
4.5 MC for sound I-F and trap alignment
Picture and sound carrier frequencies for Channels #2 through #13

3. Balanced Output Adapter G-E ST-8A or Equivalent (See RF Note 1). See Fig. 33.

4. Oscilloscope (G-E Type ST-2A or Equivalent)—The oscilloscope should have good sensitivity and preferably a 5-inch screen with a good wide-band frequency response on the vertical deflection circuits. Although the high frequency response is not necessary for alignment, it is necessary when making waveform measurements.

5. Vacuum Tube Voltmeter—A vacuum tube voltmeter is necessary to measure the bias of 4 volts required for video and r-f alignments.

6. Detector Network—A crystal detector network as shown in Figure 21 is necessary to detect the response when aligning L269, the 4.5 mc trap.

7. Miscellaneous

One 10,000 ohm resistor to isolate the scope as noted in the charts.

One .01 mfd. capacitor to isolate the sweep generator as noted in the chart.

Impedance matching pad for r-f alignment as shown in Figure 33.

Bias battery to supply −4 volts as noted for video and r-f alignment.

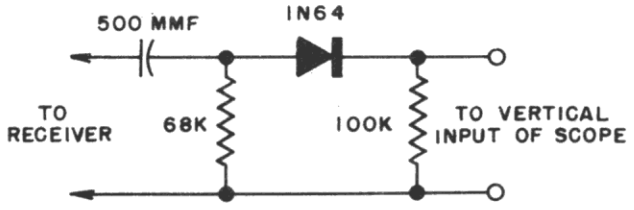


Fig. 21. Detector Network

VIDEO I-F ALIGNMENT NOTES.

1. Connect a bias battery from junction of C385, R382 and the Contrast control to B−. Connect positive of battery to B−. Adjust contrast control to give a −4 volts bias at the grid pin #1 of V4 measured with a VTVM. Disconnect VTVM leads during alignment.

2. The sweep generator should be properly terminated in its characteristic impedance. Couple the signal to the point of input through a .01 mf. capacitor. Keep leads as short as possible.

3. Before attempting i-f alignment, detune traps L208 and L205 for steps 1 through 5 by turning cores of these coils all the way out of the coil. Retune these traps to 47.25 mc as in step 6. Increase the scope gain so L205 and L208 may be adjusted as in step 6 to give maximum attenuation of the 47.25 mc marker.

4. The 41.25 mc audio I-F marker should be approximately 4% of the total amplitude of the curve. See Final Alignment Curve, Figure 22-E.

5. Set the Channel switch to Channel #12 or #13. When aligning the 1st video I-F, check for oscillator influence by turning the tuning control. If the shape of the response curve changes, switch to another channel where oscillator influence is not noted.

6. In most cases it is only necessary to perform an over-all alignment of the video i-f, as in step 7 of the Video Alignment Chart, to obtain i-f response curve of Figure 22-E.

When aligning the i-f coils, L245 will adjust the audio or low frequency side of tne i-f response curve, while L246 will adjust the video or high frequency side of the i-f response curve. L209 and L247 should be adjusted simultaneously to reduce the saddleback at the peak of the curve and to give maximum gain and retain 45.75 and 42.50 mc markers at the 50% mark.

7. Short L246, L245 and L209 during alignment of coils L247, L246 and L245, respectively, to prevent the coil preceding the signal input point from influencing the shape of the response curve.

8. The 45.75 mc marker should fall at the 50% point to give proper sideband response.

9. Adjust the signal input to give a video response curve of ¾ volt, as shown in Figure 22.

VIDEO I-F ALIGNMENT CHART

Step	Marker Generator Frequency	Sweep Generator Frequency	Signal Input Points Between	Connect Oscilloscope Between	Adjust	See Note No.
1	—	—	—	—	Detune L208 and L205 by turning cores out of coil.	3
2	44.5 MC	40-50 MC	V6 grid (pin 1) through .01 mf. cap. and B− on head-end shield. Short L246.	Junction of L249, R265, C273 through 10K ohms and B− on V8 socket.	Core of L247 for curve of Fig. 22-A. Place 44.5 marker at peak of curve.	1, 2, 7, 9
3	45.75 MC		V5 grid (pin 1) through .01 mf. cap. and B− on head-end shield. Short L245. Remove short on L246.		Core of L246 for curve of Fig. 22-B, to place 45.75 mc marker at peak of curve.	
4	42.50 MC, 45.75 MC		V4 grid (pin 1) through .01 mf. cap. and B− on head-end shield, short terminals of L209. Remove short on L245.		Core of L245 for curve of Fig. 22-C. 42.5 mc marker should be at approx. 65% point and 45.75 should fall near hi-frequency knee of curve.	
5	44.2 MC		Through .01 mf. to junction of L236 and L237 on second r-f switch wafer, and B− on head-end shield. Remove short on L209.		Cores of L209 and L247 for curve of Fig. 22-D. Adjust L209 for max. amplitude and L247 to flatten top of curve.	1, 2, 5, 9
6	47.25 MC				Cores of L205 and L208 for max. attenuation of 47.25 mc marker. See Fig. 22-E.	1, 2, 3, 5, 9
7	41.25 MC, 42.50 MC, 45.00 MC, 45.75 MC, 47.25 MC				Cores of L245, L246, L247 and L209 simultaneously for flat curve and position 45.00 and 43.25 mc markers as in Fig. 22-E. If necessary readjust L245 and L246 to place 42.5 and 45.75 mc markers at 50% as shown in Fig. 22-E.	1, 2, 4, 5, 6, 8, 9

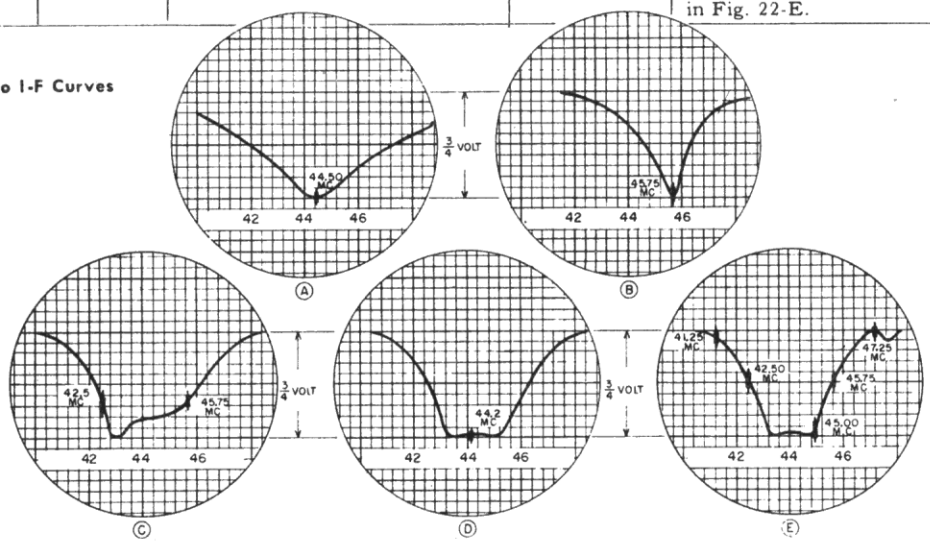


Fig. 22. Video I-F Curves

AUDIO I-F ALIGNMENT NOTES.

1. Audio i-f alignment is performed by putting in a 4.5 mc ±500 kc sweep and viewing the response curve as noted in the audio i-f chart. The primary and secondary of T341 should be aligned to give equal amplitude of the positive and negative peaks of the response curve with as straight a trace as possible connecting the peaks. The 4.5 mc marker zero beat point should be placed at the cross-over point of the base line and the curve.

2. As a final check, step 12 the secondary of T341 adjustment should be checked on a television signal if possible. Try several operating television stations and if buzz in the audio is heard, the secondary of T341 should be readjusted as follows.

Tune in the station and adjust the contrast control for a weak sound output. Readjust the secondary of T341 until the buzz is a minimum or disappears and the best quality audio is obtained.

3. Keep the input of the sweep generator low enough so that limiting does not take place, otherwise the response curve will broaden out permitting slight misadjustment. Check by increasing the output of the sweep generator, the response curve should increase in amplitude.

4. The secondary of T341 is adjusted for the curve of Figure 23-B. This adjustment should give as straight a slope as possible between the positive and negative peaks of the curve with the center of the 4.5 mc marker falling midway between the peaks.

5. The primary of T341 is adjusted for maximum of the positive and negative peaks with as straight a trace as possible between the peaks. If necessary, readjust the secondary of T341 so that the marker falls midway between the peaks.

6. An alternate method to the visual alignment is the sound output method using an operating television station, preferably when transmitting tone modulation during the test pattern.

(a) Tune the receiver for optimum detail.
(b) Keep the input below limiting level by reducing the contrast control or by using a resistor pad in the antenna circuit.
(c) Adjust primary and secondary of T340 for maximum sound output. Adjust primary of T341 for maximum audio output.
(d) Adjust the secondary of T341 for best quality audio (low distortion, least noise) and for minimum buzz in the output.

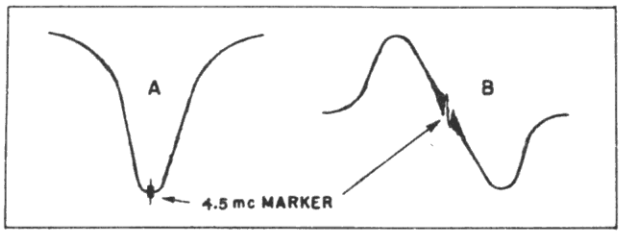
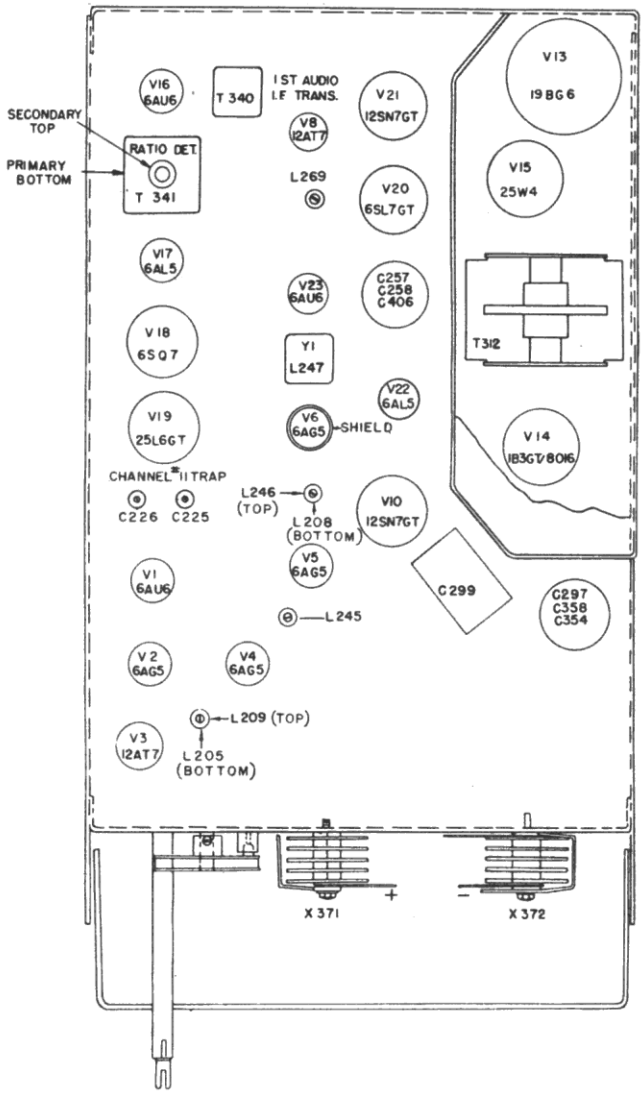


Fig. 23. Audio I-F Curves



NOTE: After January 1950, use a Type 6BC5 tube as a replacement for the Type 6AG5 tube used in these receivers. Model 10T6 was manufactured using Type 6BC5 tubes for V2, V4, V5 and V6.

Fig. 24. Tube and Trimmer Location

AUDIO I-F ALIGNMENT CHART

Step	Marker Generator Frequency	Sweep Generator Frequency	Signal Input Points Between	Connect Oscilloscope Between	Adjust	See Note No.
8	4.5 MC	4.5 MC ±500 KC keep signal below limiting level of receiver.	Pin 1 of V23 through .01 mfd. cap. and B−.	Junction of T340 (3), R363 and C350 through 10K and B−.	Primary and secondary of T340 for max. amplitude and symmetry of curve. See Figure 23-A.	1, 3
9			Pin 1 of V16 through .01 mfd. cap. and B−.	Junction of R343, C347 and R346 through 10K and B−.	Secondary of T341 to place zero beat of 4.5 mc marker and sweep at the cross-over of the curve and base line.	1, 3, 4, 5
10					Primary of T341 for equal amplitude of the positive and negative peaks with a straight line connecting these peaks. See Figure 23-B.	
11					Secondary of T341 to place zero beat of 4.5 mc marker at cross-over and sweep point of curve and the base line. See Figure 23-B.	
12	Recheck alignment of step 11 on operating station as in note 2.					

R-F ALIGNMENT NOTES.

1. Disconnect the transmission line to the antenna terminals from the head-end terminals.

Couple the output of the G-E sweep generator to the head-end terminals through a balanced output adapter, G-E ST-8A. Couple the adapter to the head-end terminals through a 300-ohm transmission line and a resistor pad, as shown in Figure 33-A.

If a balanced output for the sweep generator is not available, a resistor matching network as shown in Figure 33-B may be used.

On some sweep output generators, the terminating resistor is added, while on others it is necessary to add the terminating resistor as shown in Figure 33-B.

2. It is necessary to connect a bias battery from the junction of the contrast control, C385, and R382 to B−. Connect plus of bias battery to B−. Adjust the contrast control to give a −4 volts bias measured from pin 1 of V2 to the head-end chassis B−.

3. Shunt L209 with a 680-ohm, ½-watt resistor during r-f alignment to prevent the oscillator from influencing the response curve. Connect approximately 400 mfd. of electrolytic capacitors, 350 volt, from the head-end B+ supply to B− to reduce the effect of hum on the response curves.

4. On all channels the picture carrier marker should not be less than 67% of the peak of the r-f response curve. The sound carrier marker should not be less than 50% of the peak of the response curve. On the high channels the picture carrier marker should ride up nearer to the top of the curve provided the sound carrier marker does not go below 50%. On the low channels the picture carrier marker should ride as high up on the curve as possible and still keep the sound carrier marker above 50%.

5. Coils for Channels #12 through #7 are fixed inductances. Check the alignment on these channels as in steps 14 through 19 for proper curve. Readjust L228 and L238 for proper curve if necessary.

6. Coils for Channels #5 and #4 are fixed inductance. Check the alignment on these channels for proper curve. Readjust coils L226 and L236 to give proper curve on Channels #6, #5 and #4.

7. The coil for Channel #2 is a fixed inductance. Check the alignment on this channel for proper curve. Readjust L223 and L233 to give proper curve on Channels #3 and #2.

R-F ALIGNMENT CHART

Step No.	Marker Generator Frequency	Sweep Generator Frequency for Channel	Signal Input Point	Connect Oscilloscope Between	Channel Switch Setting	Adjust	See Note
13	211.25 MC and 215.75 MC	No. 13 with 15 MC sweep	Antenna terminals at head-end. See note 1.	Junction of L209, C214, R210 through 10K and B− at head-end chassis.	No. 13	Screw of L228, screw of L238 for Fig. 25-B.	
14	205.25 MC and 209.75 MC	No. 12 with 15 MC sweep			No. 12	—	
15	199.25 MC and 203.75 MC	No. 11 with 15 MC sweep			No. 11	—	
16	193.25 MC and 197.75 MC	No. 10 with 15 MC sweep			No. 10	—	1, 2, 3, 4, 5
17	187.25 MC and 191.75 MC	No. 9 with 15 MC sweep			No. 9	—	
18	181.25 MC and 185.75 MC	No. 8 with 15 MC sweep			No. 8	—	
19	175.25 MC and 179.75 MC	No. 7 with 15 MC sweep			No. 7	—	
20	83.25 MC and 87.75 MC	No. 6 with 15 MC sweep			No. 6	Screw of L226 to place 83.25 MC marker and screw of L236 to place 87.75 MC marker as shown in Fig. 25-A.	
21	77.25 MC and 81.75 MC	No. 5 with 15 MC sweep			No. 5		1, 2, 3, 4, 6
22	67.25 MC and 71.75 MC	No. 4 with 15 MC sweep			No. 4		
23	61.25 MC and 65.75 MC	No. 3 with 15 MC sweep			No. 3	Screw of L223 to place 61.25 MC marker and screw of L233 to place 65.75 MC marker as shown in Fig. 25-A.	
24	55.25 MC and 59.75 MC	No. 2 with 15 MC sweep			No. 2		1, 2, 3, 4, 7

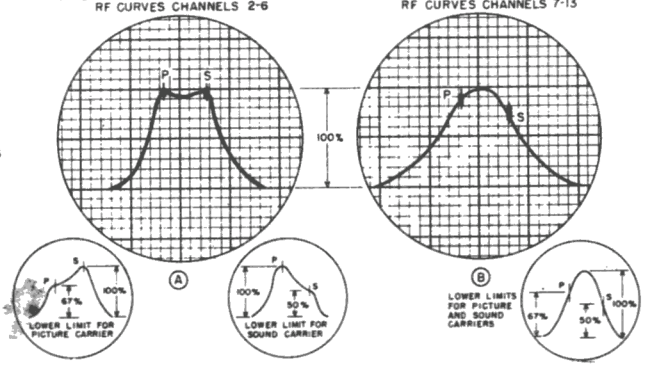


Fig. 25. R-F Alignment Curves

OSCILLATOR ALIGNMENT NOTES:

Before attempting this oscillator alignment, it must be certain that the video i-f stages and r-f stages are properly aligned as outlined previously.

1. Disconnect the 300-ohm line from the r-f head-end terminals and connect sweep generator to head-end properly terminating sweep generator output cable as shown in Figure 33. See note 1 of r-f alignment.

2. Alignment is made by viewing the response curve at the output of the video i-f detector.

3. Use a video carrier marker as shown in each step of the Alignment Chart.

4. The oscillator inductance for Channels #12 through #7 are fixed. The alignment on these channels should be checked to see that the tuning control C213 will move the video carrier marker up and down the entire high frequency side of the response curve. Readjust L215 if necessary.

5. On Channel #6 through #2 set the tuning control C213 at the center of its rotation and make the indicated adjustment so that the video carrier marker falls at the 50% mark on the high frequency slope of the response curve.

OSCILLATOR ALIGNMENT CHART

Step No.	Marker Generator Frequency	Sweep Generator Frequency for Channel	Signal Input Point	Connect Oscilloscope Between	Channel Switch Setting	Adjust	See Note
25	211.25 MC	No. 13 with 15 MC sweep	Antenna terminals of head-end. See note 1.	Junction of L249, R265, C273 through 10K ohms and B− at V8 socket (pin 3).	No. 13	L215 by squeezing or spreading turns slightly.	
26	205.25 MC	No. 12 with 15 MC sweep			No. 12	—	
27	199.25 MC	No. 11 with 15 MC sweep			No. 11	—	1, 2, 3, 4
28	193.25 MC	No. 10 with 15 MC sweep			No. 10	—	
29	187.25 MC	No. 9 with 15 MC sweep			No. 9	—	
30	181.25 MC	No. 8 with 15 MC sweep			No. 8	—	
31	175.25 MC	No. 7 with 15 MC sweep			No. 7	—	
32	83.25 MC	No. 6 with 15 MC sweep			No. 6	Screw of L266.	
33	77.25 MC	No. 5 with 15 MC sweep			No. 5	Screw of L265.	
34	67.25 MC	No. 4 with 15 MC sweep			No. 4	Screw of L264.	1, 2, 3, 5
35	61.25 MC	No. 3 with 15 MC sweep			No. 3	Screw of L263.	
36	55.25 MC	No. 2 with 15 MC sweep			No. 2	Screw of L262.	

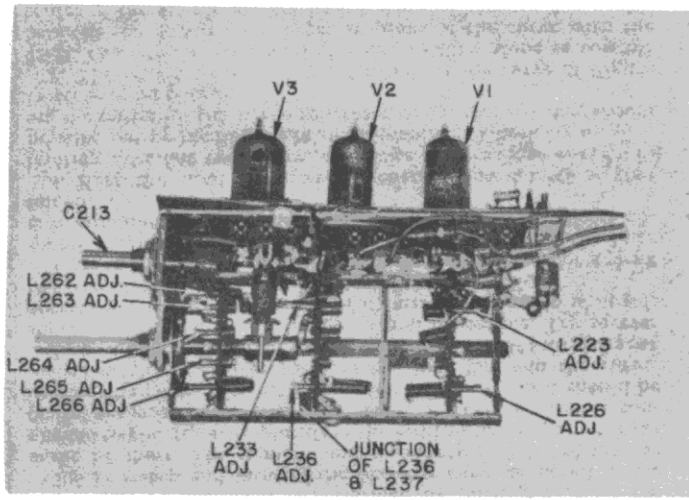


Fig. 26. R-F Head End

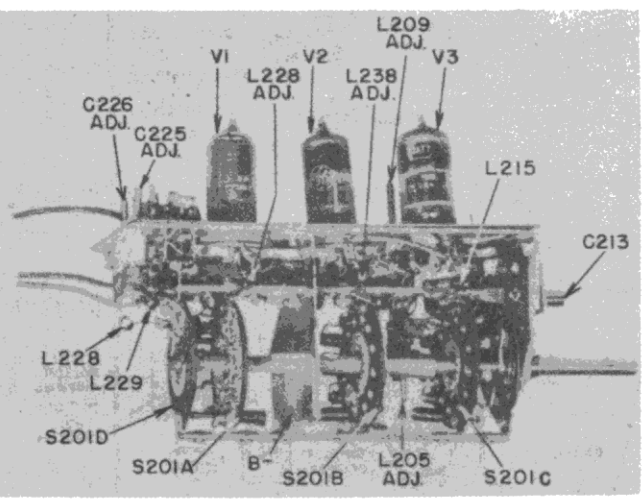


Fig. 27. R-F Head End

ADJUSTMENT OF VIDEO AMPLIFIER 4.5 MC TRAP (L269.)

This trap is used to remove 4.5 mc audio i-f from the video amplifier which shows up in the picture as an interference pattern. This trap will very rarely require adjustment. Adjustment is as follows:

1. The trap (L269, C344, C345) is adjusted for minimum amplitude of the 4.5 mc marker. Use a detector network as shown in Figure 21 connected from junction of L258 and C269 to B− to detect the signal.

2. Adjust the vertical hold control to remove the vertical pulses from the response curve.

3. Short horizontal oscillator coil L316 to remove horizontal oscillator interference in the response curve.

4.5 MC TRAP (L269) ALIGNMENT CHART

Step	Marker Generator Frequency	Sweep Generator Frequency	Oscilloscope	Adjust	See Notes
37	4.5 MC	4.5 MC ±1 MC	Across 100K resistor as shown in Fig. 21. (See Note 1.)	L269 for min. amplitude of 4.5 mc marker. Increase scope gain.	1, 2, 3

PRODUCTION CHANGES

1. I-F TRAP.

Early production receivers had an I-F trap added in the head-end unit connected between pin 2 of tube V1 and pin 1 on tube V2. All sets with this trap had the coil detuned and the screw bent so that the slug could not be adjusted. On later production receivers, this trap was removed.

2. IMPROVEMENT OF PICTURE QUALITY.

In order to improve the picture quality of this receiver, the plate load resistor (R275) of the first video amplifier, V8A, was reduced from 2200 ohms to 1500 ohms (URD-053). The reduction in gain affected by this change was compensated for by reducing the value of the screen resistor (R247) of the first video IF amplifier tube, V4, from 82,000 ohms to 47,000 ohms (URD-089).

3. REDUCTION OF BACKGROUND NOISE DUE TO HARMONICS OF AUDIO I-F.

Harmonics of the audio i-f have a similar effect on the picture as noise under weaker signal reception. A simple check for this condition is to short the limiter, V16, grid to cathode and observe the picture when receiving a station. If there is a noticeable drop in noise, the following changes should be made:

An r-f choke (L350), RLI-085, and a 5000 mmf. capacitor (C357), RCW-3014, is added to the sound i-f amplifier. This involves the removal of the connection to the pin 7 of V16 and the junction of resistors R344 and R345 from the B− bus. These two points are then connected together and returned to B− through the r-f choke (L350). The capacitor (C357) by-passes this choke and connects to chassis ground (not B−).

The choke location should be from pin 7 of V16 to the nearest B− bus point, while the capacitor (C357) should connect from pin 7 of V16 to a ground lug under the discriminator transformer mounting nut. On some receivers it will be found that the capacitor C357 is added between the junction of R344 and R345 to chassis ground. This capacitor location should be moved and connected as indicated in the above procedure.

4. CHANGE OF BANDWIDTH.

Early production receivers had a bandwidth of 3.5 mc at the 50% response point. In order to prevent sound in the picture, the i-f bandwidth was reduced by 0.25 mc. See Video Alignment curve, Figure 22-E.

5. CHANNEL #11 TRAP.

A trap was added to the head-end unit. Catalogue No. RJX-037 is a head-end unit which incorporates the trap. The adjustment of the trap is given on page 2.

6. 4.5 MC INTERFERENCE.

This causes similar condition described under paragraph (3). In order to completely eliminate this trouble, a 5000 mmf. capacitor (RCW-3014) was connected between socket terminals #4 and #7 of tube V16.

7. CENTERING THE PICTURE.

Inability to center the picture horizontally, without neck shadow or the swinging of the focus coil to an extreme angle from its normal plane, is caused by excessive current being "bled" through the horizontal deflection coils. To correct this condition, the screen voltage connection for the 19BG6 output tube (V13) was made directly to B+ as follows: Remove the junction of R403 and C411 from the junction of C324 and the horizontal deflection coils. Reconnect the junction of R403 and C411 to the +250 volt bus.

8. NOISE AT LOW SETTING OF VOLUME CONTROL.

At low volume settings, the adjustment of the volume control produces noise in the speaker which is caused by a circulating current in the volume control induced through the 470 mmf. capacitor, C368. The noise may appear as a scratching sound similar to a "dirty" volume control or as a "bloop" as though the receiver was going in or out of oscillation.

The capacitor, C368 (470 mmf.), is of a molded mica type and runs from the B− bus to a terminal on the TB adjacent to the V18 tube socket base. Simply remove this capacitor from the circuit.

9. REDUCTION OF REGENERATION ON CHANNEL #6.

a. The 5000 mmf. capacitor (C283) adjacent to the 3rd video i-f coil which connects between the B− bus and chassis, should have its leads shortened as much as possible. Proceed as follows: Shorten the lead to the ground lug as much as possible by soldering the lead to the chassis immediately below the point where this capacitor connects to the B− bus. Connect an 800 mmf. ceramic capacitor (RCW-3026) from pin #2 of V4 tube to the B− at the head-end at the edge of head-end plate next to the $\frac{3}{16}$-inch diameter hole. Realign the video i-f to give a flat top curve at a bias voltage of −4 volts.

b. The built-in antenna lead must be shortened by 4 feet. This length is taken off at the end of the lead which runs under the shelf of the chassis.

c. To reduce regeneration when using a regular antenna system, reverse the transmission leads at the antenna terminal board.

d. The bias to the 3rd video i-f tube V6 is increased by reconnecting the ground return side of the grid resistor, R240, from the junction of R221 and R250 to the junction of R250 and L246. This connects R240 to the opposite end of the 47 ohm resistor R250.

10. IMPROVEMENT OF HORIZONTAL PULL-IN RANGE.

To improve horizontal pull-in range, the limiting resistor (R395) in series with the drive control was changed from a value of 4700 ohms to 10,000 ohms. At the same time the tolerance on the capacitor C403, 1000 mmf., was changed from 20% to 10%, the new Stock No. being UCU-1052.

11. CHANGE FROM 6AG5 TO 6BC5 TUBES.

Early production model 10T6 used 6AG5 type tubes for V2, V4, V5 and V6. These were changed in late production to type 6BC5 tubes. When replacing any 6AG5 tubes use 6BC5 tube type for replacement.

TELEVISION TROUBLE SHOOTING CHART

The following is a listing of possible troubles and their cures. This is not intended as a comprehensive coverage of all troubles possible, but only serves as a guide in locating some of the more difficult problems. From time to time this information will be supplemented by service bulletins.

SYMPTOM	CHECK	REMARKS
1. No raster on picture tube.	a. Waveform at output of T312. b. Tube V14, 1B3GT/8016. c. Filter circuit of tube V14. d. Picture tube (V9). e. Check high voltage anode cap for good connection to picture tube. f. For defective Brightness control. g. For low anode voltage. h. Check V13 and V21 for waveforms. i. Damper tube (V15).	a. Check waveforms, using waveform diagram, Fig. 31. b. If filament of V14 glows orange, high voltage is produced. g. Check deflection yoke or width control for shorted turns.
2. Raster normal, no picture or sound.	a. Oscillator V3-B. b. Antenna or lead-in. c. R-f amplifiers, converter, i-f video or sound amplifier stages.	b. With contrast control full clockwise, a noise pattern should be seen on the screen, and noise heard in the speaker.
3. Picture normal, no sound.	a. Tubes V23, V16, V17 and V18. b. For defective speaker. c. Alignment of T340 and T341. d. Audio amplifier stage.	
4. No raster, sound normal.	a. Picture tube (V9). b. D-c restorer Y1, (1N65).	
5. Normal picture, no vertical sync.	a. V20 waveforms. b. Waveform on input of V10A.	
6. Picture normal, no horizontal sync.	a. V20, V21 waveforms. b. Tubes V20, V21 and V22. c. Free-running speed of 15,750 cps.	
7. Raster edge not straight—Keystone.	Deflection yoke. For shorted turns.	
8. Picture jumpy.	a. Gassy or noisy 19BG6 (V13) tube. b. For noisy sweep or sync circuit tube. c. For excess noise pickup on antenna or lead-in. d. Adjustment of hold controls.	
9. Poor picture detail.	a. For mismatch between transmission line and antenna or receiver. b. For misalignment of i-f and r-f circuits. c. Defective video chokes. d. Focus control to make sure to be of sufficient range. e. For overload of video ampl.; check contrast control operation.	a. Transmission line too close to metal objects. b. Retune receiver. d. Check position of focus coil.
10. Neck shadow.	a. Centering of focus coil about neck of picture tube. b. Yoke not forward against bell of picture tube. c. Ion trap adjustment (model 10T1).	See Fig. 13
11. Poor focus.	a. Setting of focus coil.	a. In some cases it may be necessary to move the focus coil back slightly along the neck of the picture tube.
12. Barkhausen oscillation.	a. 19BG6 sweep output tube. b. Setting of drive control R402.	Shows up as one or several vertical lines on picture. See Fig. 14
13. Hum.	a. Reverse the power cord plug in the house outlet. b. Audio circuits.	
14. Reduction of sweep width.	a. For defective yoke. b. For defective transformer, T312. c. Shorted width control, L314.	
15. Poor sensitivity.	a. Alignment. b. Diode Y1. c. B+ voltages using socket voltage chart.	

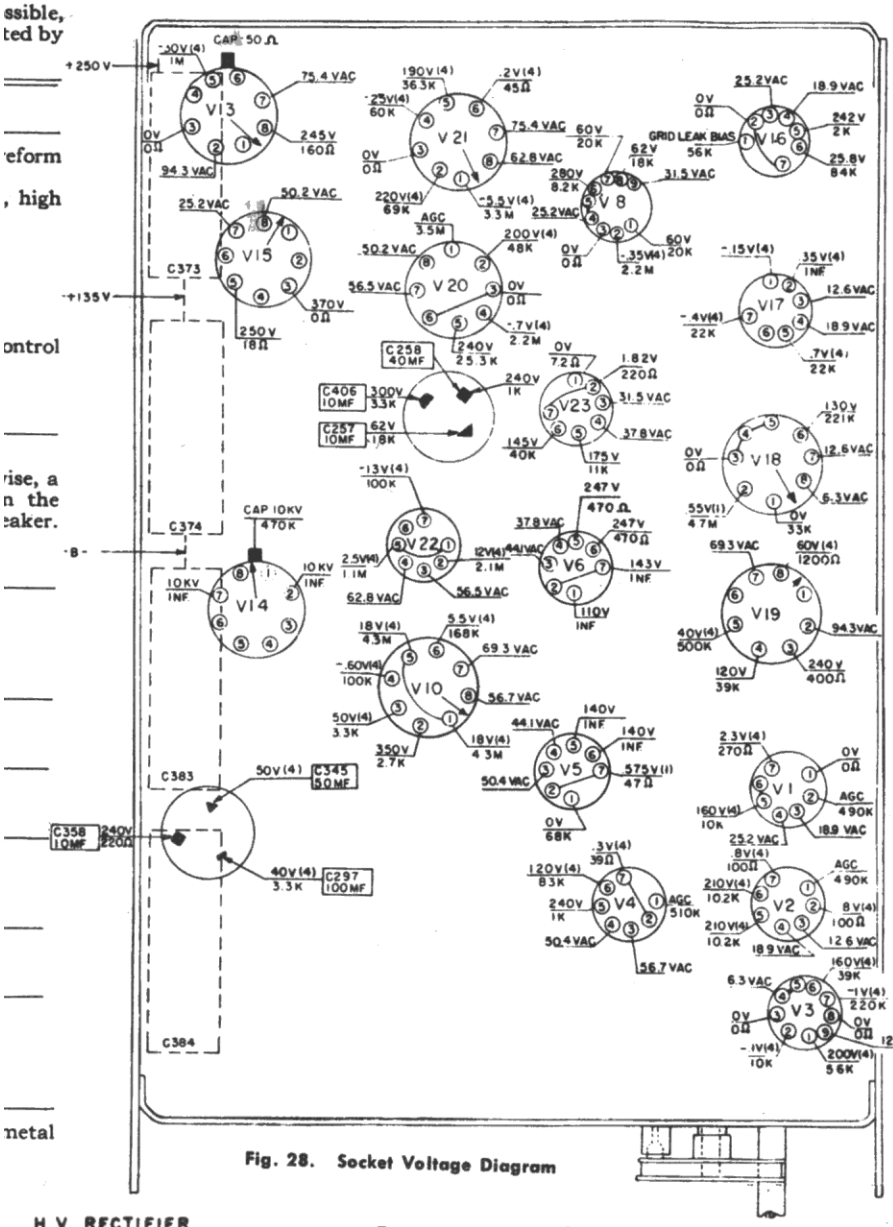
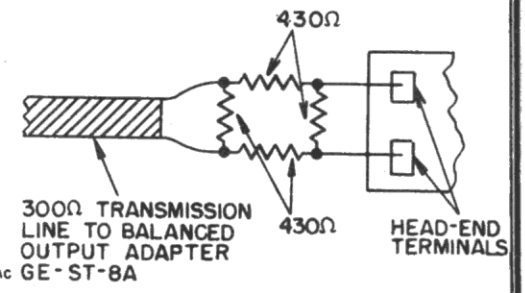
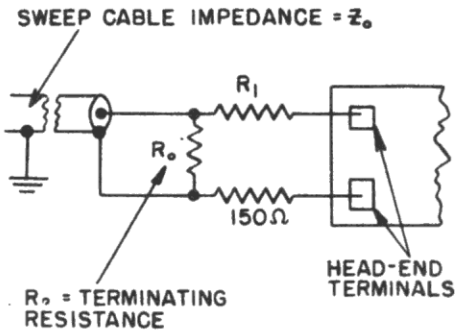


Fig. 28. Socket Voltage Diagram



Ⓐ



Ⓑ

Z_0	R_0	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

Fig. 33. Sweep Generator Termination

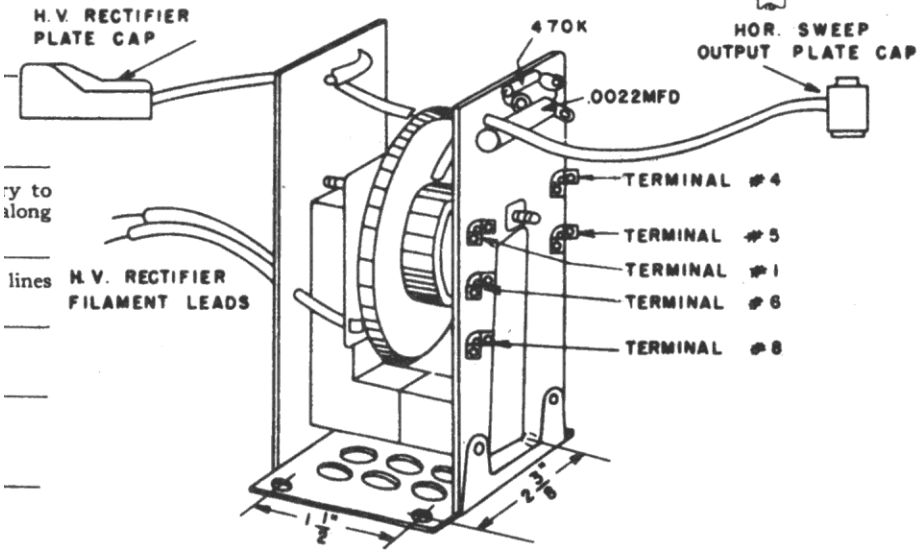


Fig. 32. T312 Transformer Connections

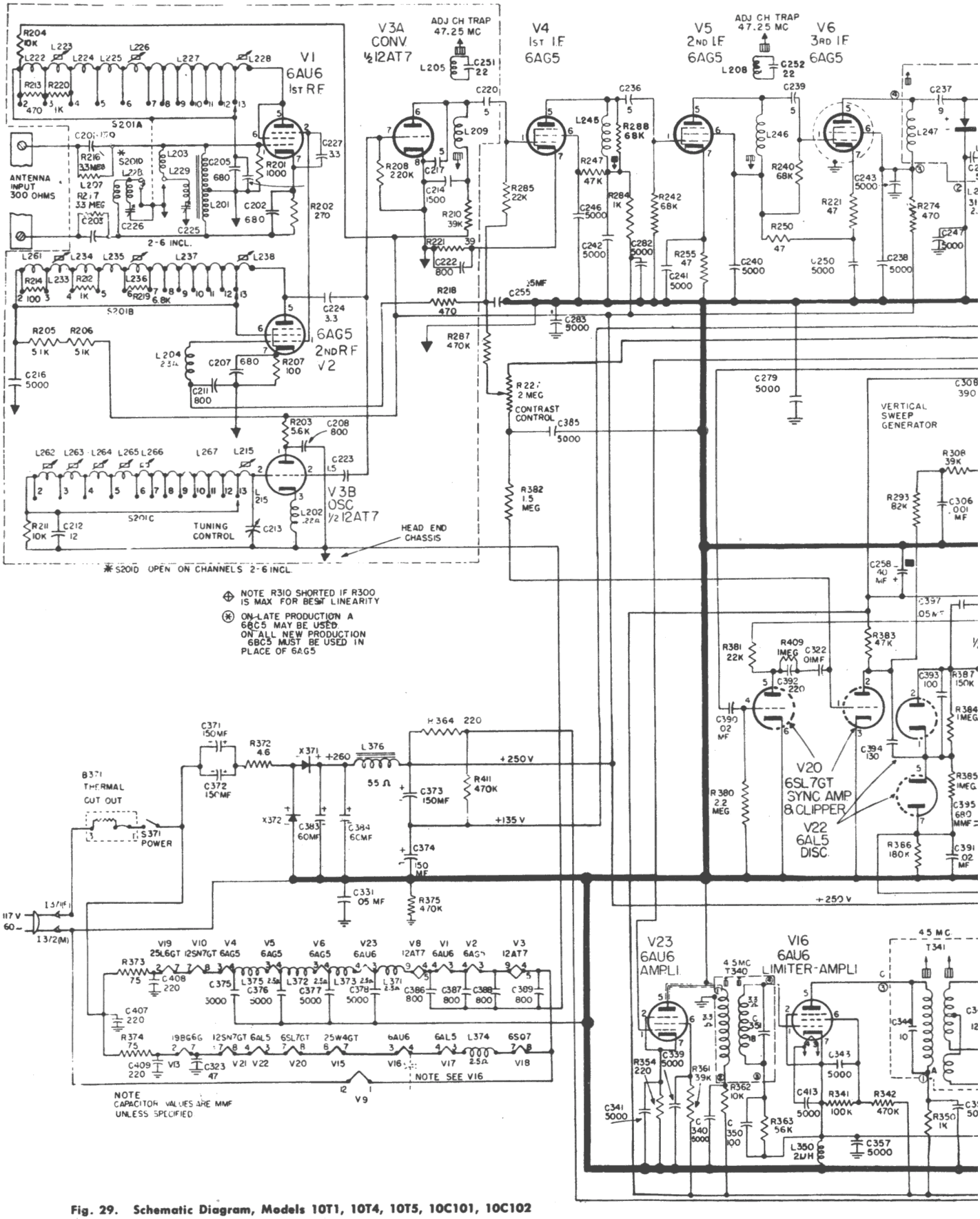
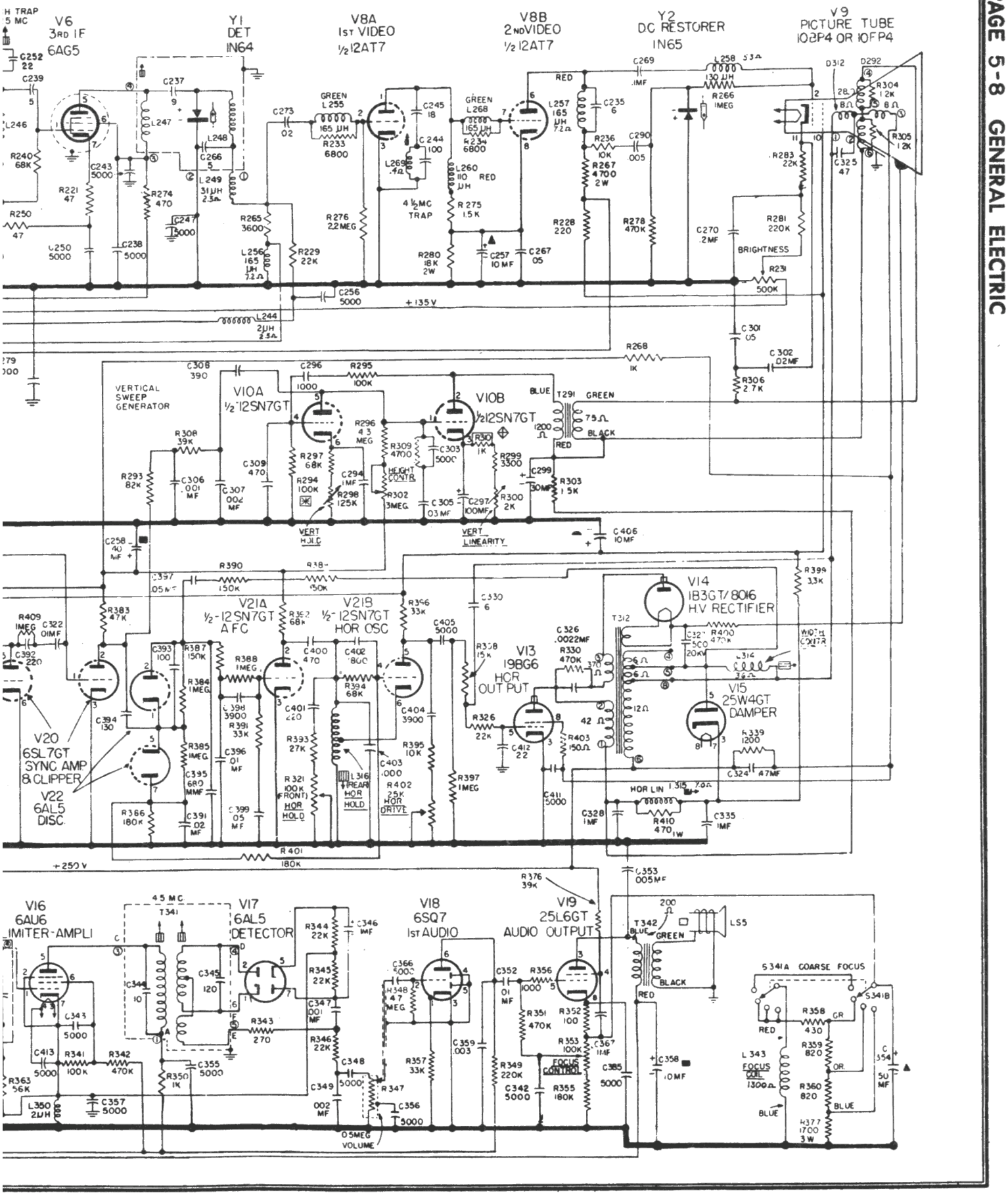


Fig. 29. Schematic Diagram, Models 10T1, 10T4, 10T5, 10C101, 10C102

MODEL 10T1, 10T4, 10T5,
10C101, 10C102



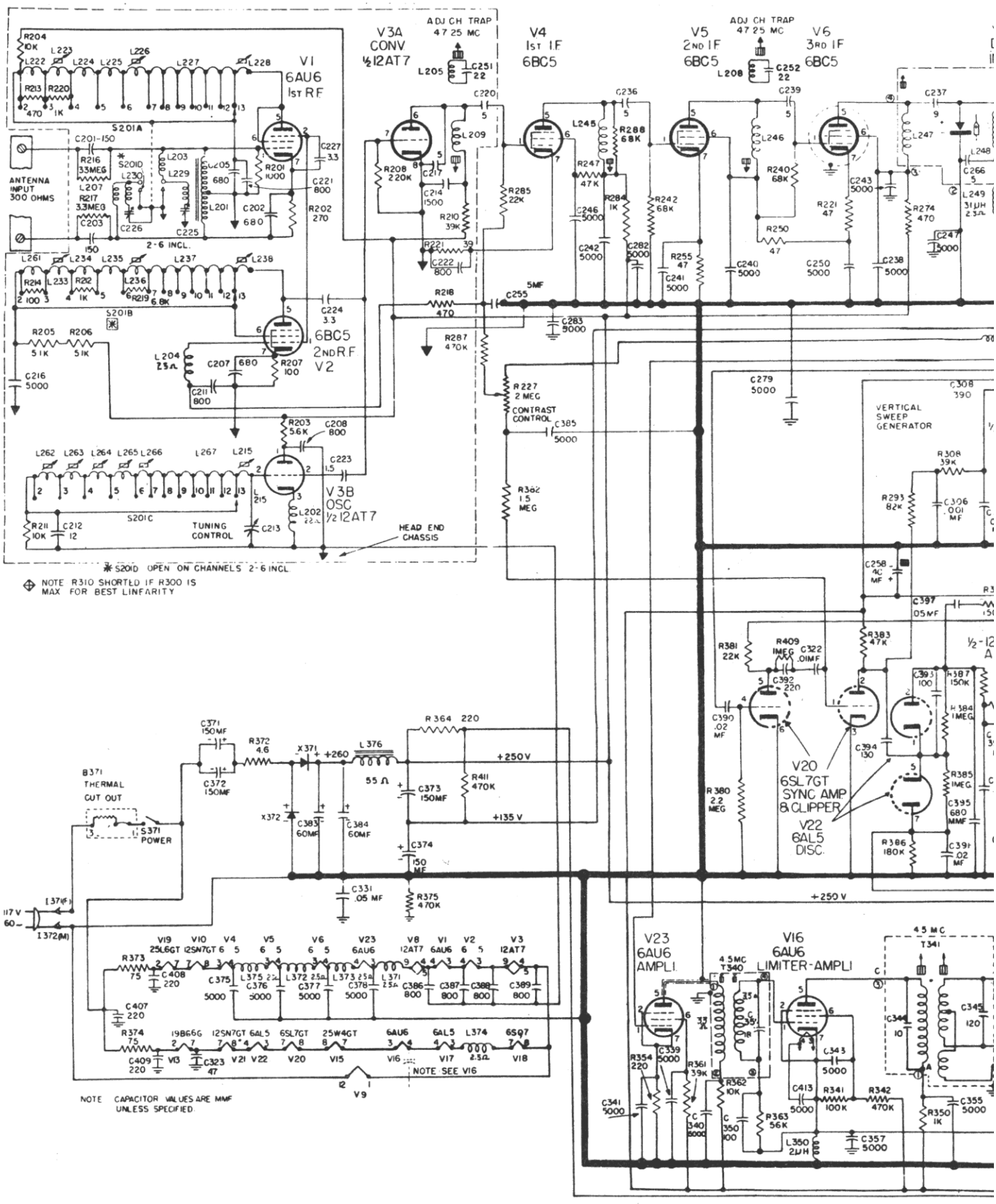
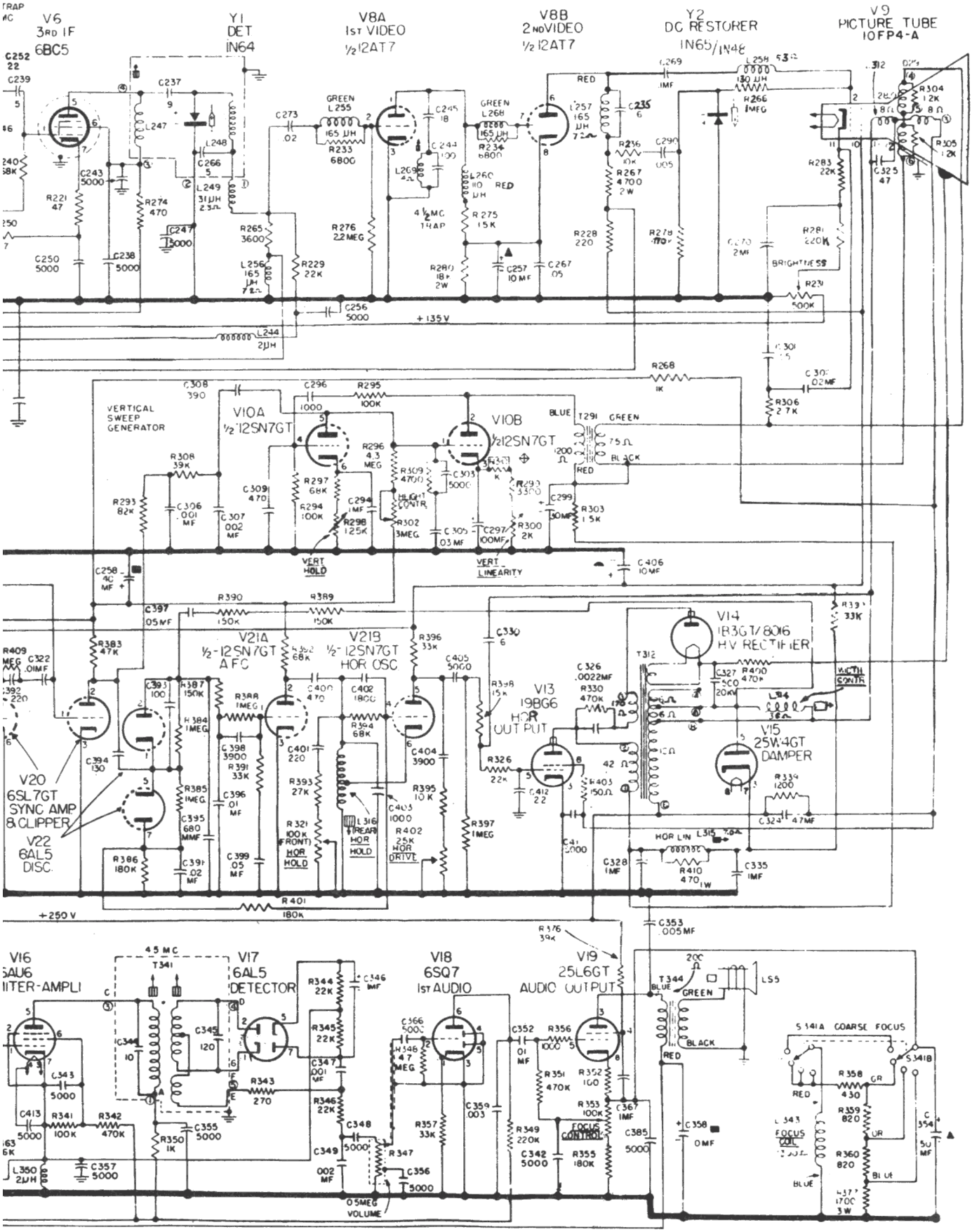
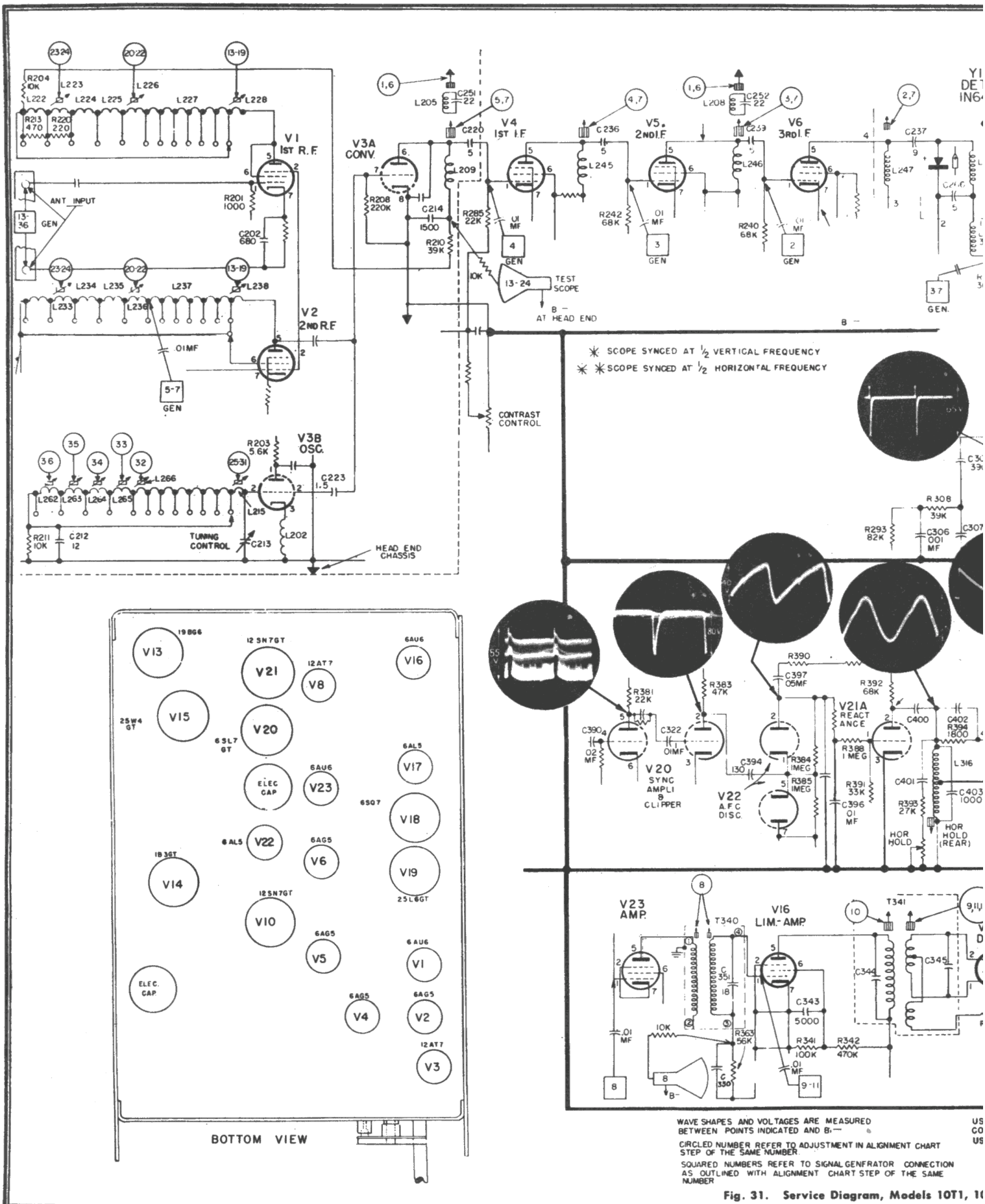


Fig. 30. Schematic Diagram, Model 10T6


V6
3RD IF
6BC5
Y1
DET
1N64
V8A
1ST VIDEO
½12AT7
V8B
2ND VIDEO
½12AT7
Y2
DC RESTORER
1N65/1N48
V9
PICTURE TUBE
10FP4-A
VERTICAL
SWEEP
GENERATOR
V10A
½12SN7GT
V10B
½12SN7GT
V20
6SL7GT
SYNC AMP
& CLIPPER
V22
6AL5
DISC.
V21A
½-12SN7GT
AFC
V21B
½-12SN7GT
HOR OSC
V13
19BG6
HOR
OUTPUT
V14
1B3GT/8016
H.V. RECTIFIER
V15
25W4GT
DAMPER
V16
6AU6
IITER-AMPLI
V17
6AL5
DETECTOR
V18
6SQ7
1ST AUDIO
V19
25L6GT
AUDIO OUTPUT
+135 V
+250 V
VERT HOLD
VERT LINEARITY
HEIGHT CONTR
REAR HOR HOLD
HOR HOLD
HOR DRIVE
HOR LIN
WIDTH CONTR
BRIGHTNESS
FOCUS CONTROL
VOLUME
4½ MC TRAP
4.5 MC
T341
T344
T312
T291
S141A COARSE FOCUS
S141B
L343 FOCUS COIL
LS5

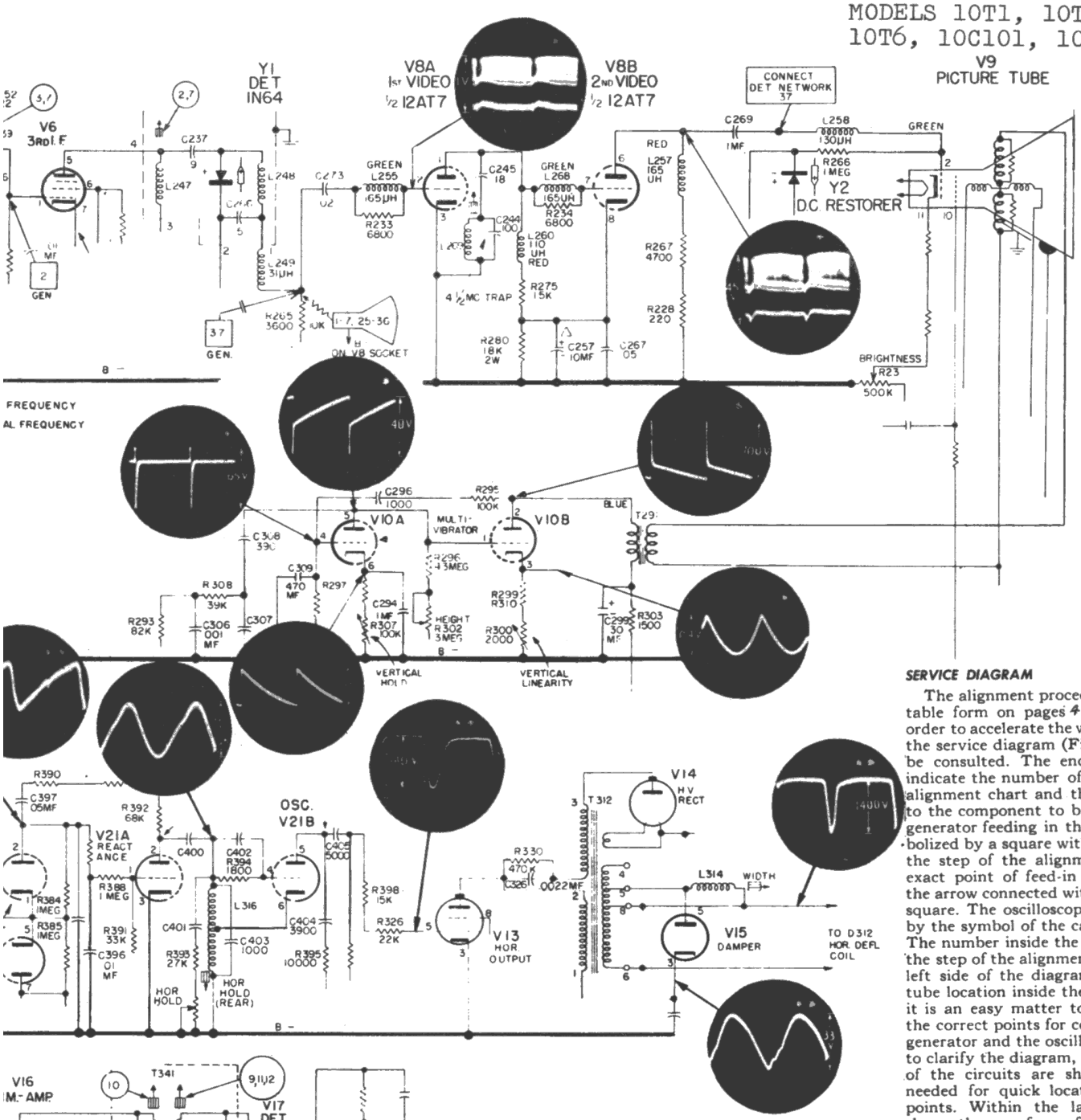


WAVE SHAPES AND VOLTAGES ARE MEASURED BETWEEN POINTS INDICATED AND B.—

CIRCLED NUMBER REFER TO ADJUSTMENT IN ALIGNMENT CHART STEP OF THE SAME NUMBER.

SQUARED NUMBERS REFER TO SIGNAL GENERATOR CONNECTION AS OUTLINED WITH ALIGNMENT CHART STEP OF THE SAME NUMBER

Fig. 31. Service Diagram, Models 10T1, 1



VOLTAGES ARE MEASURED [illegible] INDICATED AND B—

REFER TO ADJUSTMENT IN ALIGNMENT CHART [illegible] NUMBER

REFER TO SIGNAL GENERATOR CONNECTION [illegible] ALIGNMENT CHART STEP OF THE SAME

USE SCOPE WITH GOOD WIDEBAND FREQUENCY RESPONSE
COUPLE SCOPE TO POINT INDICATED
USE G.E. ST-2A SCOPE WITH PROBE OR EQUILAVENT

. **Service Diagram, Models 10T1, 10T4, 10T5, 10T6, 10C101, 10C102**

SERVICE DIAGRAM

The alignment procedure is shown in table form on pages 4 through 6. In order to accelerate the whole procedure, the service diagram (Figure 29) should be consulted. The encircled numbers indicate the number of the step of the alignment chart and the arrow points to the component to be adjusted. The generator feeding in the signal is symbolized by a square with the number of the step of the alignment chart. The exact point of feed-in is indicated by the arrow connected with the numbered square. The oscilloscope is represented by the symbol of the cathode ray tube. The number inside the symbol refers to the step of the alignment chart. On the left side of the diagram is shown the tube location inside the chassis so that it is an easy matter to locate quickly the correct points for connection to the generator and the oscilloscope. In order to clarify the diagram, only those parts of the circuits are shown which are needed for quick location of the test points. Within the large circles are shown the waveform of an average television receiver, wherein the controls have been adjusted for a normal picture with correct contrast, height, width and linearity. Most measurements must be made when a signal is being received.

The oscilloscope of which the vertical amplifier has been precalibrated is used to make measurements at the point indicated by the arrow connected to the individual waveshape within the circle. The oscilloscope is synced at half of the respective sweep frequency of the circuit being analyzed.

UNIVERSAL REPLACEMENT PARTS

Cat. No.	Symbol	Description
*UCC-035	C306, 347	CAPACITOR—.001 mf., 600 v., paper
*UCC-036	C307, 349	CAPACITOR—.002 mf., 600 v., paper
*UCC-037	C359	CAPACITOR—.003 mf., 600 v., paper
*UCC-039	C290	CAPACITOR—.005 mf., 400 v., paper
*UCC-041	C302, 391, 390, 273	CAPACITOR—.02 mf., 400 v., paper
*UCC-042	C305	CAPACITOR—.03 mf., 600 v., paper
*UCC-045	C267, 301, 399, 397, 331, 361	CAPACITOR—.05 mf., 400 v.
*UCC-048	C269, 294, 328, 335, 367	CAPACITOR—.1 mf., 600 v.
*UCC-050	C270	CAPACITOR—.2 mf., 200 v.
*UCC-052	C342, 255	CAPACITOR—.5 mf., 600 v., paper
UCG-1005	C217, 220, 236, 239, 266	CAPACITOR—5 mmf., 500 v., silver mica
UCG-1012	C412	CAPACITOR—22 mmf., 500 v., silver mica
UCG-2006	C212	CAPACITOR—12 mmf., 500 v., silver mica
UCG-2010	C245, 351	CAPACITOR—18 mmf., 500 v.
UCU-002	C235	CAPACITOR—6 mmf., 500 v., mica
*UCU-028	C350, 393	CAPACITOR—100 mmf., 500 v., mica
UCU-036	C407, 408, 409	CAPACITOR—220 mmf., 500 v., mica
*UCU-048	C395	CAPACITOR—680 mmf., 500 v., mica
*UCU-052	C296	CAPACITOR—1000 mmf., 500 v., mica
*UCU-1036	C392, 401	CAPACITOR—220 mmf., 500 v., mica
UCU-1042	C308	CAPACITOR—390 mmf., 500 v., mica
*UCU-1044	C309, 400	CAPACITOR—470 mmf., 500 v., mica
UCU-1052	C403	CAPACITOR—1000 mmf., 500 v., mica
UCU-1058	C402	CAPACITOR—1800 mmf., 500 v., mica
UCU-1512	C251, 252	CAPACITOR—22 mmf., 500 v., mica
UCU-1520	C323, 325	CAPACITOR—47 mmf., 500 v., mica
UCU-2031	C394	CAPACITOR—130 mmf., 500 v., mica
*UCU-2066	C398, 404	CAPACITOR—3900 mmf., 500 v., mica
UCW-032	C201, 203	CAPACITOR—150 mmf., 300 v., ceramic
UCW-048	C202, 207	CAPACITOR—680 mmf., 300 v., ceramic
UJB-014		TERMINAL STRIP—4-terminal
UJB-016		TERMINAL STRIP—6-terminal
UJB-017		TERMINAL STRIP—Double, 2-terminal
*UOP-487	LS5	SPEAKER—4-inch PM, Models 10T1, 10T4, 10T5, 10T6
*UOP-1047	LS5	SPEAKER—10-inch, same as S-100D-7 for Models 10C101, 10C102
*URD-015	R246	RESISTOR—39 ohms, ½ w., carbon
*URD-017	R221, 250, 255	RESISTOR—47 ohms, ½ w., carbon
*URD-025	R207, 214, 352	RESISTOR—100 ohms, ½ w., carbon
*URD-029	R403	RESISTOR—150 ohms, ½ w., carbon
*URD-033	R228, 354	RESISTOR—220 ohms, ½ w., carbon
*URD-035	R202, 343	RESISTOR—270 ohms, ½ w., carbon
*URD-041	R218, 213, 274	RESISTOR—470 ohms, ½ w., carbon
*URD-045	R405	RESISTOR—680 ohms, ½ w., carbon
*URD-049	R201, 212, 284, 356, 350, 220, 310	RESISTOR—1000 ohms, ½ w., carbon
*URD-051	R339, 304, 305	RESISTOR—1200 ohms, ½ w., carbon
*URD-055	R275	RESISTOR—1500 ohms, ½ w., carbon
*URD-059	R306	RESISTOR—2700 ohms, ½ w., carbon
*URD-065	R395, 309	RESISTOR—4700 ohms, ½ w., carbon
*URD-069	R219	RESISTOR—6800 ohms, ½ w., carbon
*URD-073	R236, 362	RESISTOR—10,000 ohms, ½ w., carbon
*URD-077	R398	RESISTOR—15,000 ohms, ½ w., carbon
*URD-081	R229, 283, 285, 326, 346	RESISTOR—22,000 ohms, ½ w., carbon
*URD-083	R393	RESISTOR—27,000 ohms, ½ w., carbon
*URD-085	R357, 370, 391	RESISTOR—33,000 ohms, ½ w., carbon
*URD-087	R297, 308, 361	RESISTOR—39,000 ohms, ½ w., carbon
*URD-089	R383, 247	RESISTOR—47,000 ohms, ½ w., carbon
*URD-091	R363	RESISTOR—56,000 ohms, ½ w., carbon
*URD-093	R240, 242, 288, 394, 297	RESISTOR—68,000 ohms, ½ w., carbon
*URD-095	R293	RESISTOR—82,000 ohms, ½ w., carbon
*URD-101	R387	RESISTOR—150,000 ohms, ½ w., carbon
*URD-103	R355, 401, 386	RESISTOR—180,000 ohms, ½ w., carbon
*URD-105	R281, 349, 208	RESISTOR—220,000 ohms, ½ w., carbon
*URD-113	R287, 375, 278, 342, 351, 411	RESISTOR—470,000 ohms, ½ w., carbon
*URD-121	R266, 384, 385, 388, 397, 409	RESISTOR—1 meg., ½ w., carbon
*URD-125	R382	RESISTOR—1.5 meg., ½ w., carbon
*URD-129	R276, 380	RESISTOR—2.2 meg., ½ w., carbon
*URD-133	R216, 217	RESISTOR—3.3 meg., ½ w., carbon
*URD-137	R348	RESISTOR—4.7 meg., ½ w., carbon
*URD-1062	R265	RESISTOR—3600 ohms, ½ w., carbon
*URD-1073	R211	RESISTOR—10,000 ohms, ½ w., carbon
*URD-1081	R344, 345	RESISTOR—22,000 ohms, ½ w., carbon
*URD-1097	R294, 295, 341	RESISTOR—100,000 ohms, ½ w., carbon
*URD-1136	R296	RESISTOR—4.3 meg., ½ w., carbon
*URE-033	R364	RESISTOR—220 ohms, 1 w., carbon
*URE-041	R410	RESISTOR—470 ohms, 1 w., carbon
*URE-049	R268	RESISTOR—1000 ohms, 1 w., carbon
*URE-053	R303	RESISTOR—1500 ohms, 1 w., carbon
*URE-061	R399	RESISTOR—3300 ohms, 1 w., carbon
*URE-067	R203	RESISTOR—5600 ohms, 1 w., carbon
*URE-073	R204	RESISTOR—10,000 ohms, 1 w., carbon.
*URE-081	R381	RESISTOR—22,000 ohms, 1 w., carbon.
*URE-085	R396	RESISTOR—33,000 ohms, 1 w., carbon.
*URE-087	R376, 210	RESISTOR—39,000 ohms, 1 w., carbon.
*URE-093	R392	RESISTOR—68,000 ohms, ½ w., carbon
*URE-101	R389, 390	RESISTOR—150,000 ohms, 1 w., carbon
*URE-113	R400	RESISTOR—470,000 ohms, 1 w., carbon
*URE-1040	R358	RESISTOR—430 ohms, 1 w., carbon
*URE-1047	R359, 360	RESISTOR—820 ohms, 1 w., carbon
*URE-1061	R299	RESISTOR—3300 ohms, 1 w., carbon
*URE-1066	R205, 206	RESISTOR—5100 ohms, 1 w., carbon
*URF-065	R267	RESISTOR—4700 ohms, 2 w., carbon
*URF-079	R280	RESISTOR—18,000 ohms, 2 w., carbon.

SPECIALIZED REPLACEMENT PARTS

*RAB-100		BACK—Cabinet back, Models 10T4, 10T5
RAB-113		BACK—Cabinet back for 10C101 or 10C102
*RAC-061		BACK—Cabinet back, Model 10T1 and 10T6 to match RAC-081
RAC-081		CABINET FRONT—For Model 10T1 and 10T6 plastic cabinets
RAF-001		MOULDING—For safety glass support for 10C101, 10C102
RAF-002		MOULDING—For safety glass support, Models 10C101, 10C102
RAG-026		GRILLE—Metal grille bars for RAV-105
RAV-102		CABINET—For Model 10T4
RAV-105		CABINET—Mahogany, for 10C101
*RCC-059	C353	CAPACITOR—.005 mf., 1000 v., paper
*RCE-089	C297, 354, 358	CAPACITOR—10 mf., 350 v., 50 mf., 100 v., 100 mf., 50 v., electrolytic
*RCE-090	C346	CAPACITOR—1 mf., 50 v., electrolytic
*RCE-091	C372, 373, 374, 371	CAPACITOR—150 mf., 150 v., electrolytic
*RCE-092	C299	CAPACITOR—30 mf., 450 v., electrolytic
*RCE-094	C383, 384	CAPACITOR—60 mf., 350 v., electrolytic
*RCE-100	C257, 258, 406	CAPACITOR—10 mf., 450 v., 40 mf., 300 v., 10 mf., 150 v., electrolytic
RCN-018	C322, 396	CAPACITOR—.01 mf., 600 v., paper
*RCN-023	C327	CAPACITOR—500 mmf., 20,000 v., hi-voltage
RCN-027	C386, 211	CAPACITOR—800-800 mmf., dual
RCN-028	C224, 227	CAPACITOR—3.3 mmf., silver mica
RCN-029	C237	CAPACITOR—9 mmf., silver mica
*RCU-286	C330	CAPACITOR—6 mmf., 800 v., mica
RCU-290	C296	CAPACITOR—1000 mmf., 1000 v., mica
*RCW-026	C214	CAPACITOR—1500 mmf., 300 v., ceramic
*RCW-1045	C223	CAPACITOR—1.5 mmf., paper, ceramic
*RCW-3014	C238, 240, 241, 242, 243, 246, 247, 250, 216, 256, 279, 282, 283, 339, 303, 340, 341, 342, 343, 348, 355, 366, 375, 356, 376, 377, 357, 378, 385, 405, 411, 413	CAPACITOR—5000 mmf., 450 v., ceramic
*RCW-3026	C208, 387, 388, 389, 221	CAPACITOR—800 mmf., 350 v., ceramic
*RCW-3027	C205	CAPACITOR—680 mmf., ceramic
RCY-059	C213	TRIMMER—Tuning control
RCY-060	C225, 226	TRIMMER CAPACITOR — High channel trap
RDB-021		BUTTON—Detent button for selector switch
*RDC-032		CORD—For tuning control
*RDE-044		ESCUTCHEON—(Knob) Model 10T1 and 10T6
RDE-061		OVERLAY—For cabinet of 10C101 or 10C102
RDE-063		ESCUTCHEON—For 10C101, 10C102
RDE-064		ESCUTCHEON—Knob escutcheon for cabinet RAV-102 for 10T4
RDE-065		OVERLAY—Metal overlay for RAV-102 cabinet for 10T4
RDK-188		KNOB—Blonde, for Channel Selector Switch for 10T5 or 10C102
RDK-189		KNOB—Blonde, for ON-OFF Volume control, Horizontal Hold and Brightness control for 10T5 and 10C102
RDK-190		KNOB—Blonde, for Tuning control for 10T5 and 10C102

Cat. No.	Symbol	Description
RDK-191		KNOB—Blonde, for Focus Vertical Hold and Contrast control for 10T5 and 10C102
RDK-192		KNOB—Mahogany, for Channel Selector switch for 10T1, 10T4, 10T6, and 10C101
RDK-193		KNOB—Mahogany, for ON-OFF volume control, Hor. Hold and Brightness control for 10T1, 10T4, 10T6, and 10C101
RDK-196		KNOB—Mahogany, for Tuning control for 10T1, 10T4, 10T6, and 10C101
RDK-197'		KNOB—Mahogany, Models 10T1, 10T4, 10T6, and 10C101, for Focus, Vertical Hold and Contrast control
RDM-017		MASK—Rubber mask for 10C101 or 10C102
RDW-033		SAFETY GLASS—For 10C101
RDW-035		SAFETY GLASS—For RAV-102 cabinet for 10T4
RDW-037		SAFETY GLASS—Model 10C102
RDW-038		SAFETY GLASS—Models 10T1, 10T6
REI-014		TUNING SLUG—Brass, for L228, L238
REI-016		IRON CORE—Video detector assembly
*RER-004	X371, 372	RECTIFIER—Selenium rectifier, 250 ma
RET-003		ION TRAP—For 10BP4 picture tube as used in Model 10T1
*RHC-023		CLIP—Clip for safety glass for Model 10T1, and 10T6
RHC-024		CLIP—For electrolytic mounting
RHC-030		CLIP—For safety glass of Model 10T1, and 10T6
*RHF-007		FEET—Cushioned feet for Model 10T1 and 10T6 cabinet
RHG-004		GROMMET—⅜ inch
RHG-010		GROMMET—For shock mounted tube socket
*RHS-032		SCREW—10-24x1" Philips filister head screw
*RHS-033		SCREW—10-24x½" filister head
*RHS-035		SCREW—6 wood screw with washer head
*RII-021		INSULATOR—For volume control for Models 10C101, 10C102
*RII-023		INSULATOR—For deflection yoke
*RII-024		INSULATOR—Volume control insulator, Models 10T1, 10T4, 10T5, 10T6
*RII-025		INSULATOR—Rectifier insulator
*RII-026		INSULATOR—Hi-voltage insulator
RII-038		INSULATION GUIDE
*RJC-008		CONNECTOR—Hi-voltage anode connector assembly for Models 10C101, 10C102
*RJC-017		ANODE CONNECTOR—Models 10T-1, 10T4, 10T5, 10T6
*RJJ-007	I372	RECEPTACLE—Power cord receptacle, male, riveted on chassis
*RJS-003		SOCKET—Tube socket, octal, for V18, V19, V10, V20
*RJS-030		SOCKET—Tube socket, octal, for V13
RJS-085		SOCKET—Tube socket for V15
*RJS-127		SOCKET—9-pin tube socket for V3
*RJS-132		SOCKET—7-pin tube socket for V17, V22
*RJS-133		SOCKET—7-pin shielded tube socket for V5, V6, V16
*RJS-135		SOCKET—Tube socket, shock mounted, for V21
*RJS-136		SOCKET—Tube socket for V1 or V2; tube socket, 7-pin, for V3, V7
*RJS-138		SOCKET—Tube socket, 9-pin, for V8
*RJX-032		SOCKET—Picture tube socket assembly, Models 10T4, 10T5, 10T1, and 10T6
RJX-036		R-F HEAD-END—Completely aligned with tubes, 44 mc I-F for 10T1, 10T4, 10T5, and 10T6
RJX-038		R-F HEAD-END—Completely aligned with tubes, Models 10C101, 10C102
*RLC-091	L316	COIL—Horizontal oscillator coil
RLC-095	L262	COIL—Oscillator Channel #2
RLC-096	L263	COIL—Oscillator Channel #3
RLC-097	L265	COIL—Oscillator coil, Channel #5
RLC-098	L266	COIL—Oscillator coil, Channel #6
RLC-099	L215, 228, 229	COIL—Oscillator coil, Channel #13
*RLD-013	D312, 292, C325, R304, 305	DEFLECTION YOKE
RLD-019	L314	COIL—Horizontal size coil
RLD-020	L315, R410	COIL—Linearity coil
*RLF-023	L201	COIL—Input coil
*RLF-024	L249, 204, L248	CHOKE—R-F choke, 31 uh; choke coil
*RLF-026	L343	COIL—Focus coil
RLI-003	L202	CHOKE—Cathode choke, 1.4 mh
*RLI-038	L256, 257	CHOKE—Video compensating
*RLI-070	L222	COIL—1st R-F, Channel #2
*RLI-071	L223	COIL—1st R-F, Channel #3
*RLI-072	L224, 234	COIL—1st and 2nd R-F, Channel #4
*RLI-074	L226	COIL—1st R-F Amplifier (Channel #6)
*RLI-075	L228	COIL—1st R-F Amplifier (Channel #13)
*RLI-077	L233	COIL—R-F, Channel #3
*RLI-080	L236	COIL—R-F 2-channel #6
*RLI-081	L238	COIL—2nd R-F, Channel #13
*RLI-083	L203, 207	COIL—R-F input coil
*RLI-085	L371, 372, 373, 374, 375, 244, 350	COIL—Heater choke, 2 uh
RLI-093	R233, 234, L255, 268	CHOKE—Video comp. choke, 110 uh
RLI-096	L245	COIL—I-F coil
RLI-097	T340, C351	COIL—1st audio I-F transformer
RLI-098	L261	COIL—2nd R-F, Channel #2
RLI-099	L264	COIL—Oscillator and R-F, Channel #4
RLI-100	L269, C244, 245	TRAP COIL—4.5 mc video trap coil
RLI-106	L225	COIL—1st R-F, Channel #5
RLI-107	L235	COIL—2nd R-F, Channel #5
RLI-108	L260, R237	COIL—Video peaking coil
RLI-109	R235, L258	CHOKE—Video comp. choke, uh
RLI-110	L246, 208	COIL—2nd I-F plate coil
RLP-016	L209, 205	COIL—Converter plate coil
RLX-029	L247, 248, C266, C237, IN64	VIDEO DETECTOR ASSEM.
*RMF-003		CLAMP—For tube V13
RMF-007		SPRING CLIP—For interlock plate
*RMM-084		CUSHION — Picture tube cushion, Models 10C101, 10C102
RMM-114		CUSHION—Picture tube cushion
RMM-115		CUSHION—Picture tube cushion on chassis for Models 10T1, 10T4, 10T5, and 10T6
RMM-116		CUSHION—Picture tube cushion
RMM-117		CUSHION—Picture tube cushion (on control mtg. bracket) for 10T1, 10T4, 10T5, and 10T6
RMM-131		CORK—Short glass cork for Models 10C101, 10C102
RMM-132		CORK—Long glass cork, for Models 10C101, 10C102
RMM-134		SHIELD—Corona shield and wire mount for V14 tube socket
*RMS-130		SPRING—For tuning control
*RMS-184		STRAP—Picture tube strap, Models 10T1, 10T4, 10T5, and 10T6
RMS-202		STRAP—Picture tube clamping strap for Models 10C101 and 10C102
*RMU-050		SHAFT—Tubular shaft for tuning control, Models 10T1, 10T4, 10T5, 10T6
RMU-055		SHAFT—Extension shaft
RMU-058		SHAFT—Tubular tuning shaft for 10C101, 10C102
*RMX-169		PULLEY AND HUB ASSEMBLY—For tuning control
*RMX-138		SCREEN—For 10T1, 10T6 cabinet top
*RRC-095	R300	POTENTIOMETER—2000 ohm, 2 w., vertical linearity control
*RRC-096	R302	POTENTIOMETER—3 meg., height control
*RRC-098	R298, 321	POTENTIOMETER — Dual, 100,000 ohms (Vertical Horizontal Hold Models 10T1, 10T4, 10T5, 10T6)
RRC-099	R347, 353, S371	POTENTIOMETER — Dual, 100,000 ohms, focus, 500,000 ohms, volume and power switch, Models 10T1, 10T4, 10T5, 10T6
*RRC-108	R402	POTENTIOMETER—25,000 ohms, ½ w., horizontal drive potentiometer
*RRC-109	R227, 231	DUAL POTENTIOMETER—500,000 ohms, 2 meg. (Brightness control) Models 10T1, 10T4, 10T5, 10T6
RRC-124	R227, 331	POTENTIOMETER—Dual Brightness 500K, and Contrast 2 meg., controls, Models 10C101 and 10C102
RRC-125	R298, 321	POTENTIOMETER — Dual Vertical, 100K, and horizontal hold control, Models 10C101, 10C102
RRC-126	R347, R353, S371	POTENTIOMETER—Dual Focus and Volume control and switch for Models 10C101 and 10C102
*RRW-041	R373, 374	RESISTOR—75 ohms, globar
RRW-045	R377	RESISTOR—1700 ohms, 5 w., w.w.
RRW-048	R372	RESISTOR—4.6 ohms w.w.
RSR-002	B371	THERMAL CUTOUT
*RSW-066	S341	SWITCH—Focus switch
*RTD-008	T341, C345, C344	TRANSFORMER — Ratio detector transformer
*RTL-096	L376	REACTOR—Filter reactor
*RTO-062	T342	TRANSFORMER — Audio output 10T1, 10T4, 10T5, 10T6
*RTO-064	T291	TRANSFORMER—Vertical sweep output transformer
*RTO-066	T342	TRANSFORMER—Audio output for Models 10C101, 10C102
*RTO-071	T312, R330, C326	TRANSFORMER—Horizontal sweep output
*RWL-019	I371	POWER CORD—Interlock, female, Models 10T1, 10T4, 10T5, 10T6
*RWL-021	I373	POWER CORD—(8 ft.) female, receptacle, Models 10C101, 10C102
*RYN-004		NAMEPLATE—G-E nameplate, Model 10T1, 10T6

*Parts used on Previous Receivers.

MODELS 10T1, 10T4, 10T5, 10T6, 10C101, 10C102