Picture Area . . . . . 128 square inches

Tubes. . . . . Twenty-one plus two rectifiers

Speaker . . . . . 8-inch E.M. (3.2 ohm V.C.) Field Resistance-65 ohms

Antenna . . . . . Provision for external antenna using 300-ohm transmission line

Tuning . . . . . Rotary channel selector plus manual fine tuning adjustment.

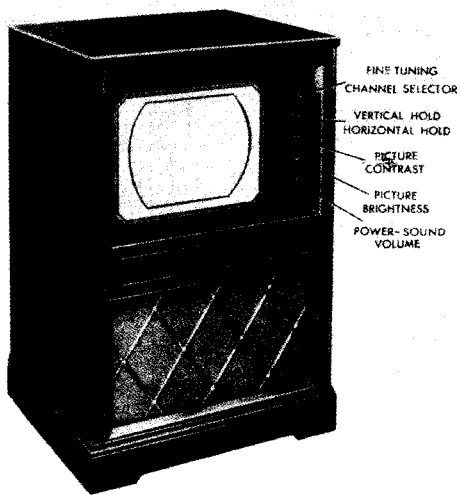
Tuning Range. . . . . Twelve pre-set channels.

Channel No.	Frequency (mc)	Channel No.	Frequency (mc)
2	54-60	8	180-186
3	60-66	9	186-192
4	66-72	10	192-198
5	72-82	11	198-204
6	82-88	12	204-210
7	174-180	13	210-216

Intermediate Frequency
Picture carrier . . . . . 26.25 mc
Sound carrier . . . . . 21.75 mc
Intercarrier sound system. 4.5 mc

Power Supply. . . . . 105-125 V. 60 cycles AC

Power Consumption . . . . . 235 Watts



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CARE OF THE KINESCOPE WINDOW

The window in front of the picture tube is made of safety glass, hence may be cleaned by any of the conventional window cleaning processes. Abrasive or strong solvent type cleaning solutions that may scratch the glass or damage the cabinet finish, however, should be avoided.

HIGH VOLTAGE WARNING

Operation of the receiver chassis outside of the cabinet involves a shock hazard. An interlock in the line cord disconnects the power when the back cover is removed. The HIGH VOLTAGE supply, while of low current capacity, operates at a 11,000 volt potential. Exercise all normal HIGH VOLTAGE precautions while working with this equipment.

KINESCOPE HANDLING PRECAUTIONS

The kinescope housing provides adequate protection against possible tube implosure while in the cabinet. Do not expose the kinescope or handle it in any way without providing personal protection in the form of shatterproof goggles and heavy gloves. The kinescope should be handled by qualified personnel only.

The kinescope envelope encloses a high vacuum and with the large surface area of glass involved, the stresses set up, particularly at the front rim of the tube, are considerable. An abnormal handling stress, accidental blow at a highly stressed surface, or even a scratch on the surface of the tube could cause it to implode or collapse with destructive violence.

NON-OPERATING CONTROL ADJUSTMENTS

The "non-operating" or screw-driver adjustments normally will require an occasional minor adjustment if any circuit work or tube changing is required. A test pattern, generated either locally in the shop or obtained from a television station is recommended for best results. Normal picture contrast and brightness should be maintained during the following adjustments for best results.

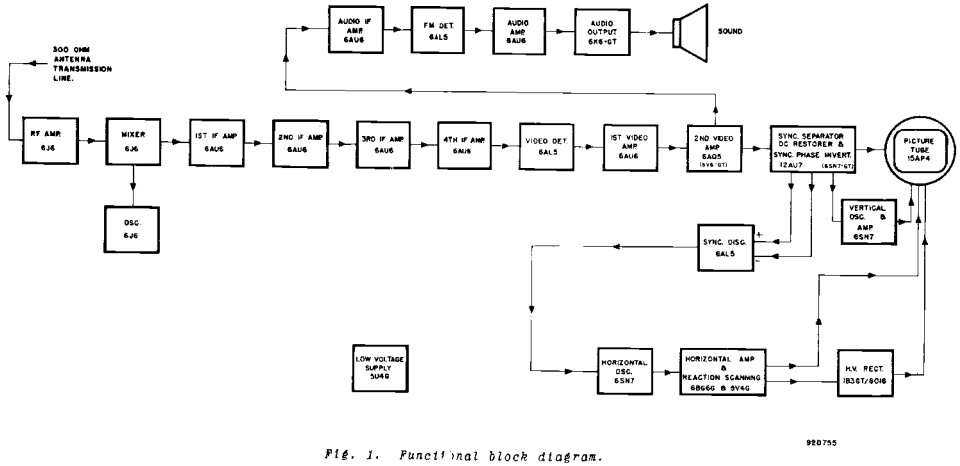

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Fig. 1. Functional block diagram.

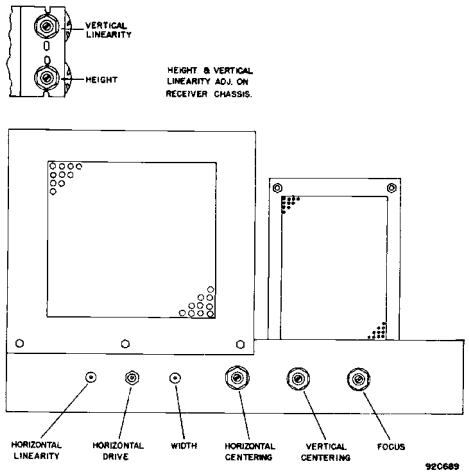

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Fig. 2. Rear chassis view, location of non-operating controls.

HORIZONTAL-OSC.,-DRIVE,-LINEARITY, -CENTERING AND WIDTH ADJUSTMENTS

1. Advance the HORIZONTAL DRIVE control (clockwise) as far as possible without causing crowding of the right hand side of the test pattern or producing picture instability. Insufficient horizontal drive will cause the raster to fall short of filling the mask horizontally. Should the HORIZONTAL HOLD control fail to hold the test pattern in the normal manner, set the HORIZONTAL HOLD control in the middle of its range and adjust the HORIZONTAL OSC. ADJ. screw for horizontal sync. (See Fig. 11 for location).

HORIZONTAL DRIVE CONTROL MISADJUSTMENT

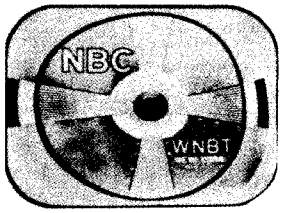

Figure 3.

WIDTH CONTROL MISADJUSTMENT

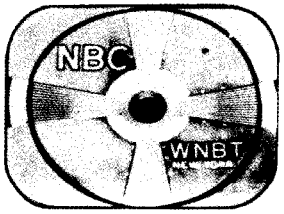

Figure 4.

2. Set the WIDTH and HORIZONTAL CENTERING controls so that the test pattern fits and centers in the horizontal dimension of the kinescope mask.

HORIZONTAL CENTERING CONTROL MISADJUSTMENT

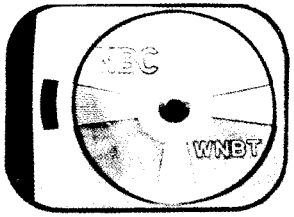

Figure 5.

HORIZONTAL LINEARITY CONTROL MISADJUSTMENT

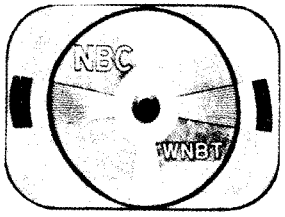

Figure 6.

3. Set the HORIZONTAL LINEARITY control so that the test pattern is symmetrical from left to right. A slight readjustment of the HORIZONTAL DRIVE control may be necessary when making this adjustment.

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VERTICAL-CENTERING,-LINEARITY, AND HEIGHT ADJUSTMENTS

HEIGHT CONTROL MISADJUSTMENT

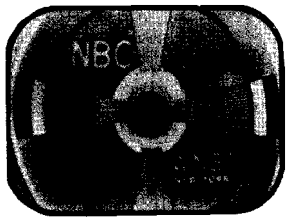

Figure 7.

VERTICAL CENTERING CONTROL MISADJUSTMENT

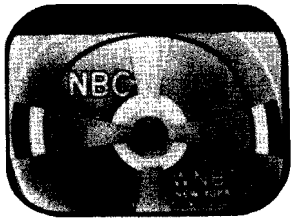

Figure 8.

VERTICAL LINEARITY CONTROL MISADJUSTMENT

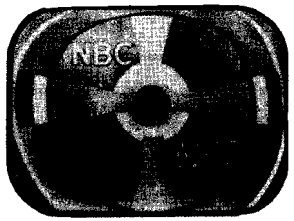

Figure 9.

1. Set the HEIGHT and VERTICAL CENTERING controls so that the test pattern fits and centers in the vertical dimension of the kinescope mask.

2. Set the VERTICAL LINEARITY control for a symmetrical test pattern in the vertical dimension. A slight readjustment of the HEIGHT and VERTICAL CENTERING controls may be required when making this adjustment.

Note - The sequence of "non-operating" control adjustments outlined above is suggested as a convenient method of approach and not an arbitrary procedure. Variations of the procedure is permitted to obtain the final result.

DISMANTLING FOR KINESCOPE REPLACEMENT OR ALIGNMENT ADJUSTMENTS

1. Remove the five front panel control knobs by pulling them straight from their shafts. The two dual control knobs must be removed in two pieces, removing the center unit first.

2. Remove the back cover. Note that the line cord and half of the interlock connector come along with the back cover.

3. Disconnect the interconnecting cables and ANODE CONNECTOR. (Snap-on type)

4. Remove the four bolts holding the chassis and tube mounting platform in the cabinet and slide the entire assembly from the cabinet. The KINESCOPE is now accessible for replacement or adjustment. The chassis support is cut out so that the f-m detector transformer primary adjustment and alignment connections for metering purposes, located under the chassis, are accessible without further disassembly.

REMOVING THE KINESCOPE

Refer to the warning KINESCOPE HANDLING PRECAUTIONS. Read all warning notices on both tube and carton. Follow the dismantling instructions above to expose the KINESCOPE and proceed as follows:

1. Disconnect the KINESCOPE SOCKET at the base of the kinescope.

2. Measure the distance from the front face of the kinescope to the front edge of the cradle. Keep this dimension handy for the installation of a new tube.

3. Remove the STEEL BAND at the front rim of the kinescope and carefully slip the neck of the kinescope out of the FOCUS COIL and DEFLECTION YOKE. If it fails to slip out smoothly investigate and remove the cause of the trouble. Do not use force.

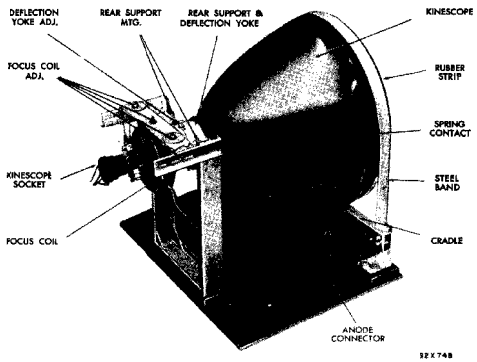

Fig. 10. Kinescope mounting detail.

INSTALLING THE KINESCOPE

1. Position the KINESCOPE so that the anode contact is located at bottom center as viewed from the screen of the tube.

2. Slip the KINESCOPE (socket first) through the REAR SUPPORT, DEFLECTION YOKE, and FOCUS COIL and seat it firmly against the REAR SUPPORT. If the tube fails to slip into place smoothly, investigate and remove the cause of the trouble. Do not use force. Check the distance from the front face of the kinescope to the front of the cradle. Refer to the measurement made in step 2 above. If this dimension is off; loosen the two REAR SUPPORT MTG. screws, position the tube correctly, lay on the RUBBER STRIP and STEEL BAND and fasten the band firmly about the front rim of the tube.

> CAUTION - To avoid charging the surface of the safety glass, the screen of the kinescope must not come in physical contact with the safety glass. Keep the surfaces at least 3/32-inch apart.

3. The REAR SUPPORT must seat firmly against the flare of the tube and be securely anchored in place by the two REAR SUPPORT MTG. screws. Check the two SPRING CONTACTS grounding the outer coating of the kinescope. A high potential is developed on the outer coating of the tube if these contacts are faulty.

4. The DEFLECTION YOKE must seat firmly against the flare of the tube. Check by loosening the single DEFLECTION YOKE ADJ. screw and pushing the DEFLECTION YOKE forward as far as it will go. Take up on the mounting screw temporarily to hold the coil in place.

5. Connect the KINESCOPE SOCKET, ANODE CONNECTOR, and inter-connecting cables and turn on the receiver.

6. After allowing a few minutes for warm up, turn on the brightness control.

With the brightness control set for slightly above average brilliance and the contrast control full counter-clockwise, adjust the FOCUS control until the line structure of the raster is clearly visible.

7. Set the HORIZONTAL and VERTICAL CENTERING controls at mid-position. If a corner of the raster is shadowed, it indicates that the electron beam is striking the neck of the tube. Loosen the FOCUS COIL ADJ. screws and rotate the coil about its vertical and horizontal axis until the entire raster is visible, approximately centered and with no shadowed corners. Tighten the adjustments with the coil in this position. The position of the FOCUS COIL along the neck of the tube affects the brilliance, hence the final position of the coil should be selected for optimum focus and brilliance as well as elimination of shadows.

8. If the lines of the raster are not horizontal or square with the picture mask, loosen the DEFLECTION YOKE ADJ. screw and rotate the DEFLECTION YOKE until this condition is obtained. Tighten the adjustment.

9. Follow the procedure under NON-OPERATING CONTROL ADJUSTMENTS and make any minor adjustments of the FOCUS COIL or DEFLECTION YOKE necessary to obtain the desired results. A slightly better average focus may be obtained by sliding the FOCUS COIL back and forth along the kinescope neck while adjusting the FOCUS control and watching the test pattern. The final adjustment of the focus coil should leave the raster approximately centered and with optimum brilliance.

MEASUREMENT OF H.V. POTENTIAL ON KINESCOPE ANODE

The second anode potential will be approx. 11,000 V. on a receiver that is functioning properly. Since the high potential for the kinescope anode is obtained from the horizontal output transformer, the "non-operating" control adjustments outlined above must be made or be known to be in proper adjustment before the H.V. measurement will have any meaning. Improper operation of the horizontal sweep circuit or circuit faults in the high voltage filter will generally account for an abnormal anode potential. If the anode potential is low, check the HORIZONTAL DRIVE adjustment outlined above.

> CAUTION HIGH VOLTAGE
> Do not use hand held flexible test leads when making the following measurement. Keep the hands clear of the circuit during measurement. A 11,000 V. potential exists in this circuit. Exercise all normal high voltage precautions.

1. Connect a 50-megohm resistor string in series with a 300 microampere meter. Connect the free meter terminal to the chassis and the high side of the resistor string to the anode cap of the kinescope. The connection to the anode cap may be made with a fine wire slipped under the connector. Make up the resistor string with 5-megohm one or two watt resistors to provide a safety factor for voltage breakdown. If 5-megohm resistors are used, a total of ten will be required to obtain the 50 megohms. Make the setup self-supporting and allow adequate clearance between the resistor string and chassis parts to prevent high voltage breakdown.

2. Turn on the receiver and set the BRIGHTNESS and CONTRAST controls at minimum. The microammeter will read approx. 220 microamperes or 11,000 V. at the kinescope anode. The anode potential is measured in this manner (CONTRAST and BRIGHTNESS control at minimum; meter current approx. 220 microamperes) to simulate the kinescope load on the high voltage power supply.

ALIGNMENT PROCEDURE

Note - The following alignment adjustments do not require the use of the kinescope tube. It is recommended that the tube be removed if extensive alignment adjustments are to be made.

CAUTION - Removal of the kinescope tube exposes the HIGH VOLTAGE anode connector contact. Keep this lead and contact clear of personnel servicing equipment and grounded objects on the service bench. Exercise all normal high voltage precautions while working with the exposed units. See Figures 14 and 16 for high voltage points on the power supply chassis.

EQUIPMENT REQUIRED

Signal generator covering 4 mc to 30 mc
Signal generator covering 40 mc to 215 mc
Electronic voltmeter
Two 150-ohm carbon resistors
One .01 mfd. 600 V. tubular paper condenser.
One 1200 mmf mica condenser

F-M SOUND CHANNEL I-F ALIGNMENT

1. Connect the low frequency signal generator output between the control grid (pin 1) of the 6AU6 1st VIDEO AMP. tube (V-9) and chassis ground.

2. Connect the electronic voltmeter between pin 7 of the 6AL5 FM DET. tube (V-16) and chassis ground.

3. With the signal generator (unmodulated) set at 4.5 mc. set the 4.5 MC LIMITER GRID ADJ. and FM DET PRI. ADJ. (See Fig. 11) for maximum d-c voltage as measured by the electronic voltmeter. Adjust the limiter grid coil (L-14) before adjusting the f-m detector transformer (T-1) primary. Use just enough signal generator output to obtain approximately one volt at the electronic voltmeter.

4. Connect the electronic voltmeter across the 1000 mmf condenser (C-17) at the output of the f-m detector stage and adjust the FM DET. SEC. ADJ. of the f-m detector transformer (T-1) for the null.

5. Shift the frequency of the signal generator either side of 4.5 mc and touch up the FM DET. PRI. ADJ. for approximately equal peaks. Use just enough signal generator output to obtain one volt peaks for the best results.

6. After completing the alignment procedure and placing the receiver in operation again, carefully tune in a TV test pattern and adjust the 4.5 mc LIMITER GRID. ADJ. for maximum vertical wedge definition.

I-F AMPLIFIER ALIGNMENT

1. Connect the electronic voltmeter across resistor R-57 in the plate circuit of the 6AL5 VIDEO DET. tube (V-8). This resistor is located on the terminal strip between the 6AL5 VIDEO DET. tuoe (V-8) and the 6AU6 1st VIDEO AMP tube (V-9).

2. Connect the high side of the low frequency signal generator to the center tap of the H.F. mixer coil (L-5) through a 1200 mmf condenser for isolation. Connect the generator ground to the tuning unit frame near coil (L-5). (See Fig. 11).

3. Set the channel selector at channel 2.

4. Set the signal generator output (unmodulated) to develop two volts at the electronic voltmeter and adjust the five i-f amplifier coils, according to the following chart, for maximum d-c voltage as measured by the electronic voltmeter. Readjust the signal generator output as required to maintain the two-volt potential at the electronic voltmeter.

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I-F AMPLIFIER ALIGNMENT CHART

Signal Generator Frequency (No Modulation)	Adjustment (Refer to Fig. 11)	Stage Adjusted
22.8 mc	22.8 MC IF ADJ.	Mixer
25.8 mc	25.8 MC IF ADJ.	1st IF amp
23.8 mc	23.8 MC IF ADJ.	2nd IF amp
25.2 mc	25.2 MC IF ADJ.	3rd IF amp
26.3 mc	26.3 MC IF ADJ.	Video detector

5. Disconnect the high side of the signal generator from the C.T. of coil L-5 and connect it to the frame of the tuning unit so that the signal generator terminal leads form a loop around coil L-5. Adjust the coupling loop and signal generator output to produce a 1.5-volt peak at resistor R-57 and proceed with step 6.

6. Check the i-f amplifier frequency response by tuning the signal generator from 21 mc through 26.25 mc and observing the change in d-c voltage at the electronic voltmeter. If the signal generator output is set for an electronic voltmeter reading of 1.5 volts at the peak i-f amplifier response, the d-c voltage should not drop below one volt between the two peaks normally obtained with this i-f amplifier. If the response is unsatisfactory, repeat the procedure or try slight modifications of the recommended settings to obtain the desired response. Avoid resonating the coils with the iron core at the bottom end of the coil form. (Adjustment screw near limit of its travel.)

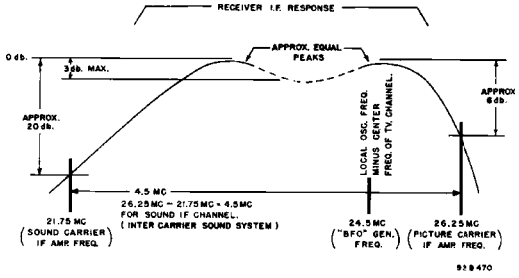


Fig. 12. I-F amplifier response

Check the two carrier i-f responses, 21.75 mc and 26.25 mc. The 21.75 mc response will be approximately 20 db below the peak response (Approx. 0.15 volt) and the 26.25 mc response will fall approximately 6 db below the peak (Approx. 0.4 volt). Refer to Fig. 12.

The average i-f amplifier sensitivity, when feeding the signal generator output through the receiver as described in step 2, will run approx. 250 to 1500 microvolts for the one volt d-c peak measured at resistor R-57. (Receiver's oscillator operating on channel 2.)

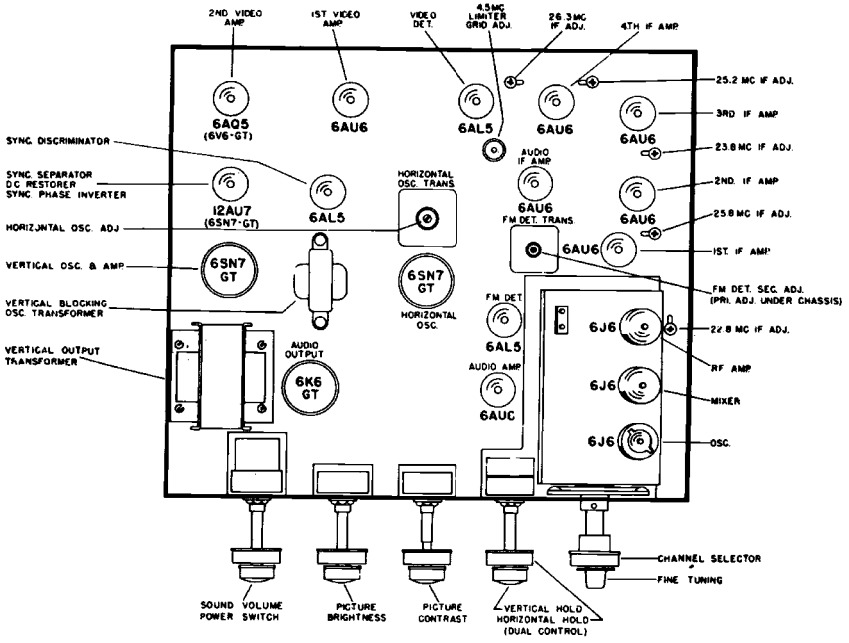
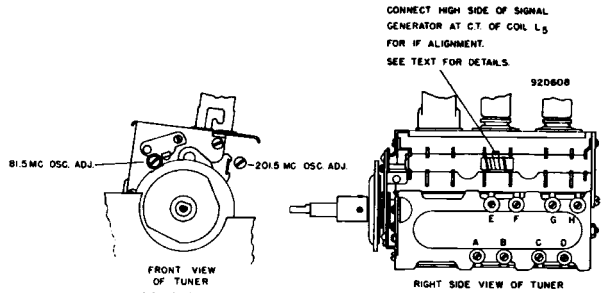


Fig. 11. Top view, alignment points.



CARRIER vs I-F FREQUENCY CHART

Channel No.	Channel Freq. (mc)	Picture Carrier Freq. (mc)	Sound Carrier Freq. (mc)	Receiver Osc. Freq. (mc)	Picture IF Freq. (mc)	Sound IF Freq. (mc)	Picture IF less Sound IF (mc)
2	54-60	55.25	59.75	81.5	26.25	21.75	4.5
3	60-66	61.25	65.75	87.5	26.25	21.75	4.5
4	66-72	67.25	71.75	93.5	26.25	21.75	4.5
5	76-82	77.25	81.75	103.5	26.25	21.75	4.5
6	82-88	83.25	87.75	109.5	26.25	21.75	4.5
7	174-180	175.25	179.75	201.5	26.25	21.75	4.5
8	180-186	181.25	185.75	207.5	26.25	21.75	4.5
9	186-192	187.25	191.75	213.5	26.25	21.75	4.5
10	192-198	193.25	197.75	219.5	26.25	21.75	4.5
11	198-204	199.25	203.75	225.5	26.25	21.75	4.5
12	204-210	205.25	209.75	231.5	26.25	21.75	4.5
13	210-216	211.25	215.75	237.5	26.25	21.75	4.5

STATION CHANNEL ALIGNMENT

1. Due to the broad frequency response of the i-f amplifier, it is necessary to use a 24.5 mc signal generator or oscillator (unmodulated) as a beat frequency oscillator (BFO) in order to locate the center frequency of the i-f amplifier response for the correct local oscillator adjustment. The "BFO" generator should be loosely coupled by means of a wire from the generator output placed in close proximity to the 6AL5 VIDEO DET. tube (V-8).

2. Connect the high frequency signal generator output to the receiver's antenna transmission line through the two 150-ohm carbon resistors, one connected in each conductor of the transmission line.

3. Clip on an .01 mfd condenser between pin 2 of the kinescope (V-19) and pin 1 of the 6AU6 AUDIO AMP tube (V-17). The connection at pin 2 of the kinescope can be made at the terminal strip under the chassis provided for the socket leads of this tube.

4. Set the "BFO" generator at 24.5 mc (No modulation).

5. Set the FINE TUNING control in the center of its range.

6. Set the channel selector at channel number 2, the high frequency signal generator at 57 mc. and adjust the 81.5 mc OSC. ADJ. screw for a rough audio beat note, using the speaker as a detector.

7. Set the channel selector at channel number 7, the high frequency signal generator at 177 mc. and adjust the 201.5 MC OSC. ADJ. screw for a rough audio beat note.

8. Disconnect the .01 mfd condenser and connect the electronic voltmeter across resistor R-57 in the plate circuit of the 6AL5 VIDEO DET. tube (V-8) as for i-f amplifier alignment.

*9. Set the channel selector at channel 6, the high frequency signal generator at 85 mc and adjust trimmers A,B,C and D for maximum voltage as measured by the electronic voltmeter. Use just enough signal generator output to obtain approx. one volt at the electronic voltmeter. Note that trimmers A and B and trimmers C and D must be adjusted simultaneously since the mixer and amplifier tubes are operating in push-pull circuits.

*10. Set the channel selector at channel 13, the high frequency signal generator at 213 mc. and adjust trimmers E,F,G, and H for maximum voltage following the same procedure used in step 9. This completes the alignment of the tuning unit.

The overall sensitivity for the receiver will run approximately 200 microvolts for one volt DC at resistor R-57 when measured in the above manner.

*Step 9 and 10 are not ordinarily required. Adjustment of the trimmers should be undertaken only if the resonant circuits in the tuner have been serviced.

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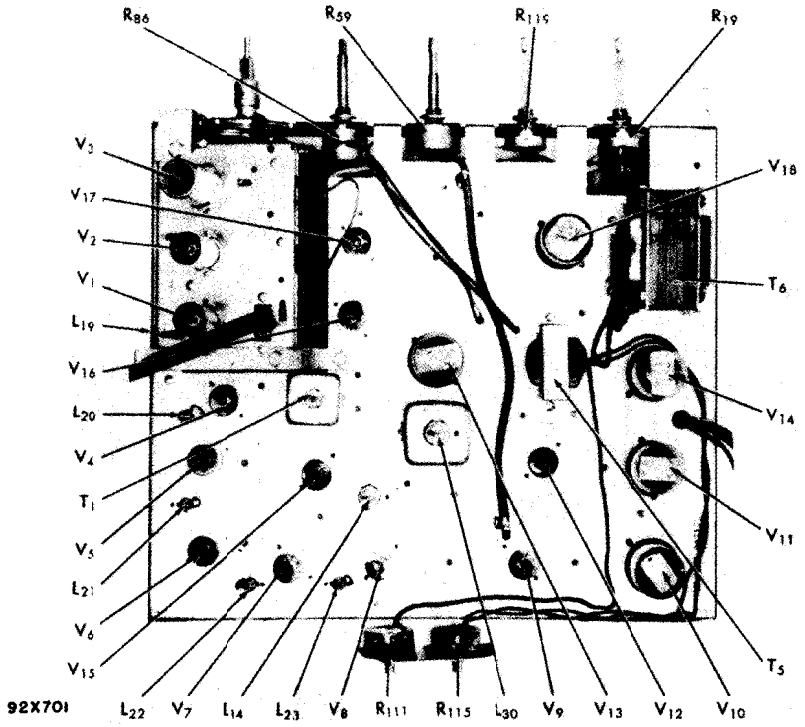

Fig. 13. Top view, receiver chassis, component location.

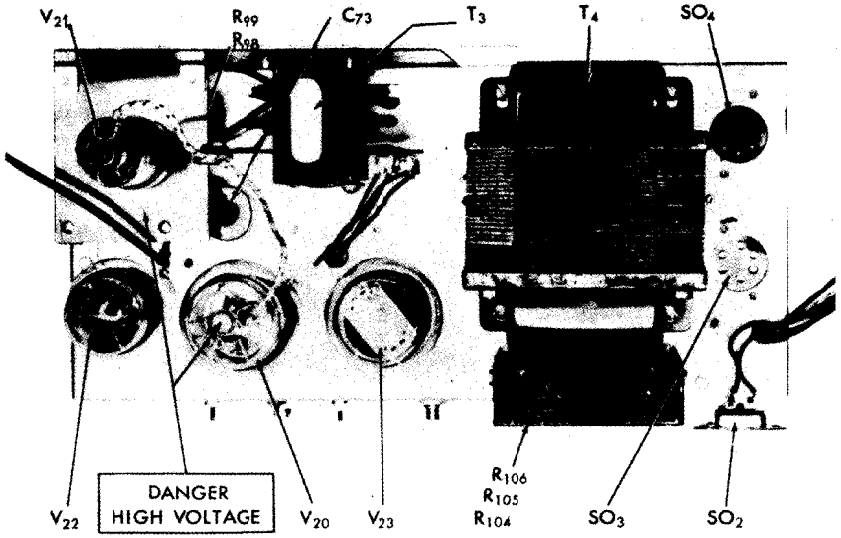

Fig. 14. Top view, power supply chassis, component location.

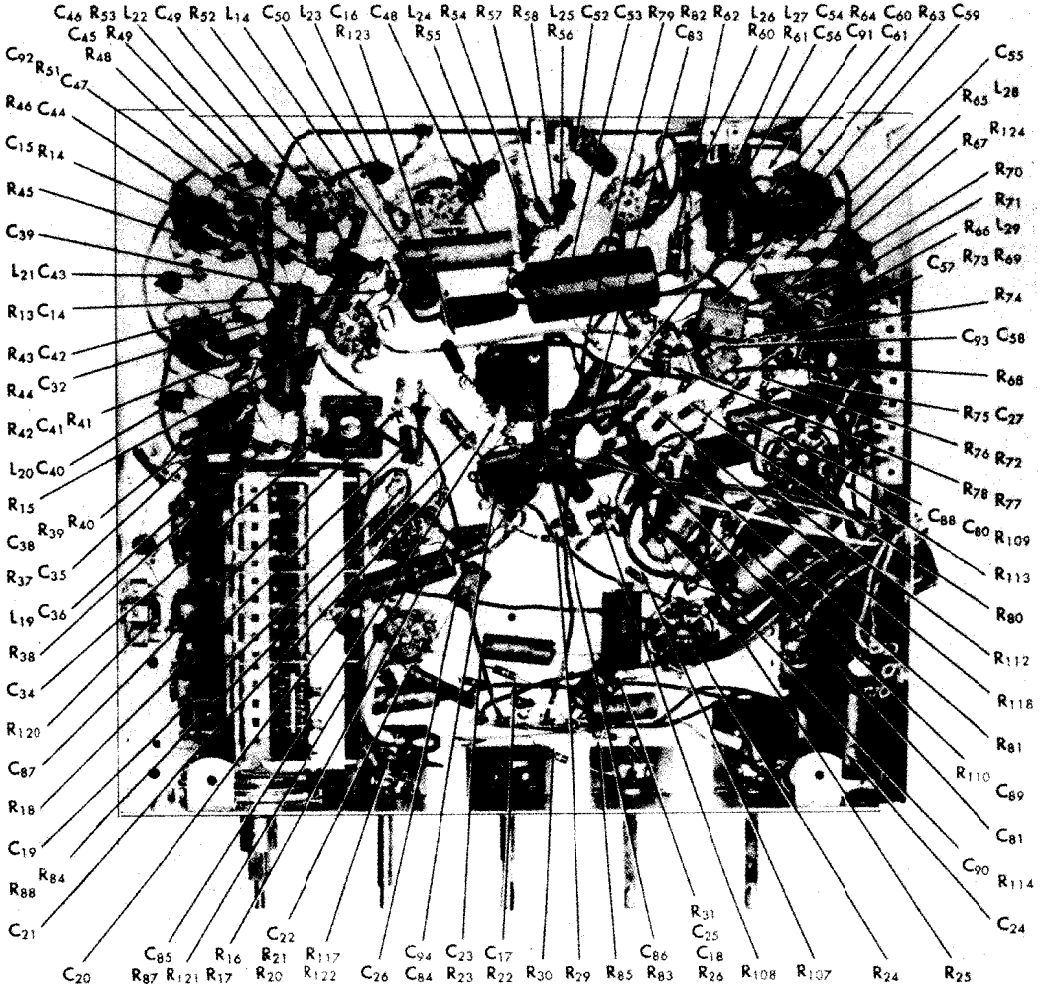

Fig. 15. Bottom view, receiver chassis, component location.

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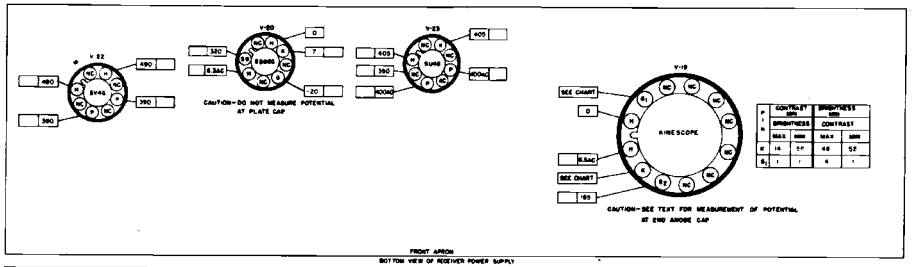

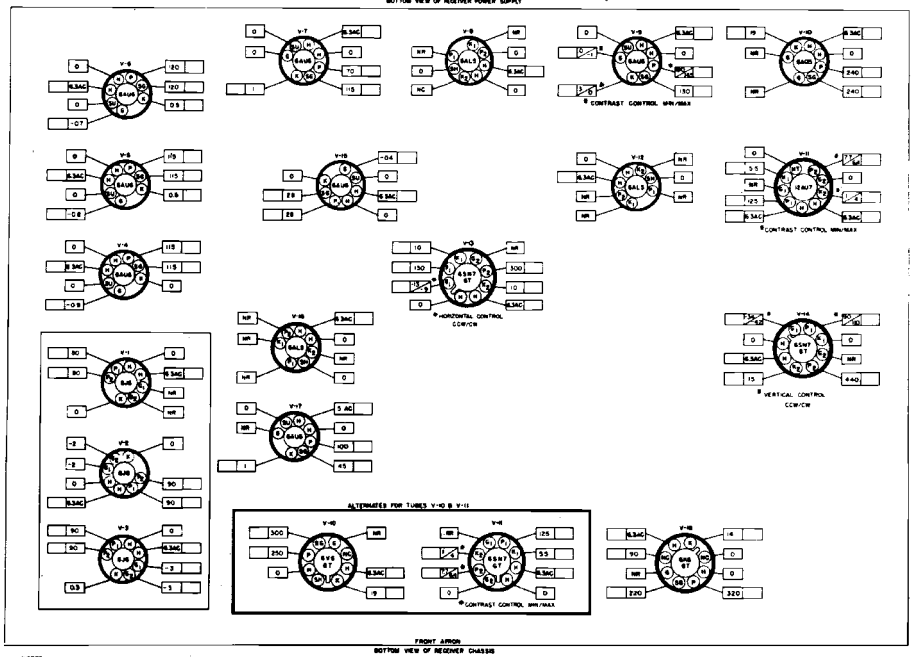

Fig. 19. Tube socket voltage chart.

SERVICE PARTS LIST

Ref. No.	Description	Hallicrafter's Part No.
	ELECTRICAL PARTS	
	COILS AND TRANSFORMERS	
L-1	Coil, antenna (Part of tuner ass'y)	
L-2	Coil, LF, antenna stage (Part of tuner ass'y.)	
L-3	Coil, LF, mixer stage (Part of tuner ass'y.)	
L-4	Coil, HF, antenna stage (Part of tuner ass'y.)	
L-5	Coil, HF, mixer stage (Part of tuner ass'y.)	
L-6	Coil, LF, oscillator stage (Part of tuner ass'y.)	
L-7	Coil, HF, oscillator stage (Part of tuner ass'y.)	
L-14	Coil, 4.5 mc sound trap	51B1132
L-15	Coil, focus	51C1128
L-16	Deflection yoke	53B140
L-19,20,21, 22,23	Coil, i-f amplifier	50A872-1
L-24	Coil, video peaking	51A1079
L-25	Coil, video peaking	51A1080
L-26	Coil, video peaking	51A1130
L-27	Coil, video peaking	51A1082
L-28	Coil, video peaking	51A1131
L-29	Coil, video peaking	51A1129
L-30	Coil, horizontal sweep osc.	50B411
L-33	Coil, WIDTH control	51B1072
L-34	Coil, HORIZONTAL LINEARITY control	51B1071
T-1	Transformer, ratio detector	50B406
T-2	Transformer, audio output (Part of speaker ass'y.)	
T-3	Transformer, horizontal output	55C121
T-4	Transformer, power	52C170-2
T-5	Transformer, vertical oscillator	55B115
T-6	Transformer, vertical output	55C114
	CONDENSERS	
C-1	Tuning condenser ass'y. (Part of tuner ass'y.)	
C-2,4,19, 21	330 mmf. 500 V., ceramic	47B20331K5
C-3,8	1500 mmf. 500 V., ceramic	47B20152K5
C-5,6	1.5 mmf. 500 V., bakelite	47A160-3
C-7,10,12	550 mmf. 500 V., ceramic	47B20501K5
C-9,11	4.7 mmf. 500 V., bakelite	47A160-6
C-14	3.3 mmf. 500 V., bakelite	47A160-5
C-15	.01 mfd. 200 V., tubular	46AU103J
C-16,54, 55,57	.05 mfd. 600 V., tubular	46AY503J
C-17,32,34, 35,38,41, 42,44,45, 47,92	1000 mmf. 500 V., ceramic	47B20A102N5
C-18,22,23	.01 mfd. 600 V., tubular	46AY103J
C-20	5 mfd. 50 V., electrolytic	45A109
C-24	10-10-10 mfd. 450 V.; 150 mfd. 50 V.; electrolytic	45B135
C-25	10 mfd. 25 V., electrolytic	45A121
C-26	470 mmf. 500 V., mica	47X20A471M
C-27	.1 mfd. 200 V., tubular	46AU104J
C-28	56 mmf. 500 V., mica	47X20X560K
C-36,40,43, 46,50	100 mmf 500 V., ceramic	47B20101K5
C-39,48	.25 mfd. 200 V., tubular	46AT254J
C-49	5000 mmf. 450 V., ceramic	47A168
C-52	.05 mfd. 200 V., tubular	46AU503J
C-53	8-8 mfd. 300 V., electrolytic	45B139
	CONDENSERS (Cont.)	
C-56,70,89	.25 mfd. 600 V., tubular	46AX254J
C-58,59	1500 mmf. 500 V., mica	47X30A152K
C-60	.02 mfd. 600 V., tubular	46AY203J
C-61,81, 83,85	.005 mfd. 600 V., tubular	46AZ502J
C-67	1500 mmf. 500 V., mica	47X20A152K
C-68	Trimmer, HORIZONTAL DRIVE adjustment	44A361
C-71	.035 mfd. 600 V., tubular	46AY353J
C-72,90	.1 mfd. 600 V., tubular	46AY104J
C-73	500 mmf. 10,000 V., ceramic	47A178
C-74	40-40 mfd. 450 V., electrolytic	45B137
C-75,76	.01 mfd. 600 V., moulded paper	46BR103L6
C-77	80 mfd. 450 V., electrolytic	45B136
C-78	250 mfd., 10 V.; 1000 mfd. 6V.; electrolytic	45B134
C-79	30 mfd. 250 V.; 30 mfd. 350 V.; 30 mfd., 450 V.; electrolytic	45B154
C-80	.002 mfd. 600 V., tubular	46AZ202J
C-84	330 mmf. 500 V., mica	47X20A331K
C-86	6200 mmf. 500 V., mica	47X35A622J
C-87	390 mmf. 500 V., mica	47X20A391K
C-88	4700 mmf. 500 V., mica	47X35A472K
C-91,93	220 mmf. 500 V., mica	47X20A221K
C-94	47 mmf. 500 V., mica	47X20A470K
	RESISTORS	
R-1,2	150 ohms 1/2 watt, carbon	23X20X151K
R-3,7,9,11, 12,84	1000 ohms 1/2 watt, carbon	23X20X102K
R-4,16,17	10,000 ohms 1/2 watt, carbon	23X20X103K
R-5,41, 49,79	5600 ohms 1/2 watt, carbon	23X20X562K
R-6,58,63, 70,75	1 megohm 1/2 watt, carbon	23X20X105K
R-8,10,39, 44,68,73, 77,78,108	100,000 ohms 1/2 watt, carbon	23X20X104K
R-13	150,000 ohms 1/2 watt, carbon	23X20X154K
R-14	12,000 ohms 1/2 watt, carbon	23X20X123K
R-15,18	33,000 ohms 1/2 watt, carbon	23X20X333K
R-19	1 megohm, VOLUME control	25A785
R-20	330 ohms 1/2 watt, carbon	23X20X331K
R-21	68,000 ohms 1 watt, carbon	23X30X683K
R-22,113	2.2 megohms 1/2 watt, carbon	23X20X225M
R-23,24,54, 82,92	470,000 ohms 1/2 watt, carbon	23X20X474K
R-25	680 ohms 1 watt, carbon	23X30X681K
R-26	1000 ohms 2 watts, carbon	23X40X102K
R-27,28, 110	560 ohms 1/2 watt, carbon	23X20X561K
R-29	180,000 ohms 1/2 watt, carbon	23X20X184K
R-30,76	15,000 ohms 1/2 watt, carbon	23X20X153K
R-31	6800 ohms 2 watts, carbon	23X40X682K
R-37	4700 ohms 1 watt, carbon	23X30X472K
R-38,52,80, 81,97	8200 ohms 1/2 watt, carbon	23X20X822K
R-40,43, 48,53	2200 ohms 1/2 watt, carbon	23X20X222K
R-42,46	68 ohms 1/2 watt, carbon	23X20X680K
R-45	6800 ohms 1/2 watt, carbon	23X20X682K
R-51	120 ohms 1/2 watt, carbon	23X20X121K
R-55	39,000 ohms 1 watt, carbon (Part of coil L24)	
R-56,61, 66	1 megohm 1 watt, carbon (Part of coils L25, 27 and 29)	
R-57	2700 ohms 1/2 watt, carbon	23X20X272K
R-59	2500 ohms, CONTRAST control	25B783
R-60	47,000 ohms 1 watt, carbon (Part of coil L26)	

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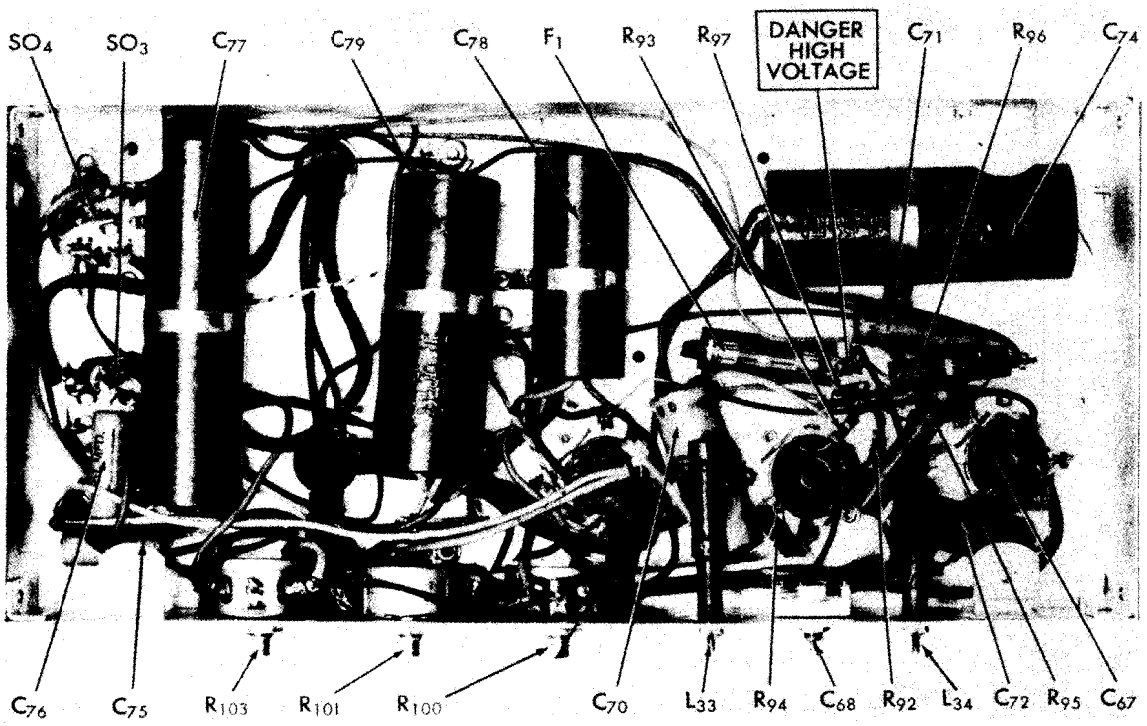

Fig. 16. Bottom view, power supply chassis, component location 92X743

SERVICE PARTS LIST Cont.

Ref. No.	Description	Hallicrafter's Part No.
	RESISTORS (Cont.)	
R-62	3300 ohms 1 watt, carbon	23X30X332K
R-64	680 ohms 1/2 watt, carbon	23X20X681K
R-65	5600 ohms 1 watt, carbon (Part of coil L-28)	
R-67,95,124	2200 ohms 2 watts, carbon	23X40X222K
R-69	56,000 ohms 1/2 watt, carbon	23X20X563K
R-71,72,74	3900 ohms 1/2 watt, carbon	23X20X392K
R-83	6800 ohms 1 watt, carbon	23X30X682K
R-85	68,000 ohms 1/2 watt, carbon	23X20X683K
R-86	50,000/1 megohms, HORIZONTAL/VERTICAL control (Dual)	25B786
R-87	270,000 ohms 1/2 watt, carbon	23X20X274K
R-88	4700 ohms 1/2 watt, carbon	23X20X472K
R-89	47,000 ohms 1/2 watt, carbon	23X20X473K
R-93	47 ohms 1/2 watt, carbon	23X20X470K
R-94	82 ohms 1 watt, carbon	23X30X820K
R-96	3300 ohms 2 watts, carbon	23X40X332K
R-98	3.3 ohms 1/2 watt, carbon	23X20X033K
R-99	470,000 ohms 1 watt, carbon	23X30X474K
R-100	20 ohms 2 watts, HORIZONTAL CENTERING control	25B707
R-101	20 ohms 2 watts, VERTICAL CENTERING control	25B706
R-103	500 ohms 4 watts, FOCUS control	25B709
R-104	1300 ohms 20 watts, WW	24BH132E
R-105	1100 ohms 20 watts, WW	24BH112D
R-106	500 ohms 10 watts, WW	24BG501E
R-107	6.8 megohms 1/2 watt, carbon	23X20X685M
R-109,117	1.2 megohm 1/2 watt, carbon	23X20X125M
R-111	5000 ohms, VERTICAL LINEARITY control	25B769
R-112	3300 ohms 1/2 watt, carbon	23X20X332K
R-114	1.5 megohms 1/2 watt, carbon	23X20X155M
R-115	2.5 megohms, HEIGHT control	25B768
R-118	4.7 megohms 1/2 watt, carbon	23X20X475K
R-119	50,000 ohms, BRIGHTNESS control	25B784
R-120	33 ohms 1/2 watt, carbon	23X20X330M
R-121	4.7 ohms 1 watt, carbon	23X30X047K
R-123	22,000 ohms 1 watt, carbon	23X30X223K
R-125	3700 ohms 5 watts, WW	24BF372E

TUBES AND RECTIFIER COMPLEMENT

V-1,2,3	Type 6J6: RF amp.; mixer, and osc.	90X6J6
V-4,5,6,7, 9,15,17	Type 6AU6: 1st, 2nd, 3rd, 4th IF amp; 1st video amp; audio IF amp; and audio amp.	90X6AU6
V-8,12,16	Type 6AL5: video det.; FM det.; and sync. disc.	90X6AL5
+V-10	Type 6AQ5: 2nd video amp.	90X6AQ5
*V-11	Type 12AU7: sync. separator; DC restorer & sync. phase inverter	90X12AU7
V-13,14	Type 6SN7GT: horizontal osc.; and vertical osc. & amp.	90X6SN7GT
V-18	Type 6K6GT: audio output	90X6K6GT
V-19	Type 15AP4: kinescope	90X15AP4
V-20	Type 6BG6G: horizontal amp.	90X6BG6G
V-21	Type 1B3GT: high voltage rectifier	90X1B3GT
V-22	Type 5V4G: reaction scanning	90X5V4G
V-23	Type 5U4G: low voltage rectifier	90X5U4G

\+ Some sets will use a type 6V6GT -- 90X6V6GT
* Some sets will use a type 6SN7GT - 90X6SN7GT

MISCELLANEOUS ELECTRICAL PARTS

	Tuning unit assembly complete	1C740
LS-1	Speaker assembly (Includes plug PL-1)	85C082

ELECTRICAL PARTS (Cont.)

PL-1	Plug, speaker (Part of speaker assembly)	
PL-2	Plug, 15AP4 anode	10A345-1
PL-3	Line cord and plug PL-4	87B1668
PL-5	Plug, 6 prong (Power)	10A298
PL-6	Plug, 9 prong (Power)	10A299
	Shell, plug (Used on PL-5 and PL-6)	10A304
PL-7	Plug, 2 prong (Focus coil)	10A301
PL-8	Plug, 4 prong (Deflection yoke)	10A302
	Shell, plug (Used on PL-7 and PL-8)	10A305
	Socket, kinescope	6B322
SO-1	Socket, 5 pin (Speaker)	10A319
SO-5	Socket, 2 pin (Focus coil)	10A295
SO-6	Socket, 4 pin (Deflection Yoke)	10A296
	Shell, socket (Used on SO-1, SO-5 and SO-6)	10A294
F-1	Fuse, 1/4 amp. type 3AG	39A334

MECHANICAL PARTS

CHASSIS PARTS

SO-2	Socket, a-c power	10A286
SO-3	Socket, 6 pin (Power)	6A312
SO-4	Socket, 9 pin (Power)	6A313
	Socket, octal (Tube)	6B296
	Socket, miniature (Tube)	6A308
	Socket, miniature, 9 pin (Tube V-11)	6A311
	Socket, octal (Tube V-21)	6A177
	Receptacle, fuse	6A287
	Bracket, VERT. LINEARITY and HEIGHT control mtg.	67A866
	Plate, bakelite (Tube V-21 mtg.)	8B823
	Insulator, stand-off, ceramic	8A882
	Shield, tube (V-18)	69A094

CABINET PARTS

Escutcheon, kinescope	7D113
Glass, safety	22D251
Knob, VERTICAL and FINE TUNING	15B147-2
Knob, HORIZONTAL	15B146
Knob, VOLUME, BRIGHTNESS, and CONTRAST	15B148-2
Knob, CHANNEL SELECTOR	15B151-4
Mounting board	78E424
Bracket, rear picture tube support	67D965
Channel, focus coil mtg. (Riveted to part 67D965)	67B972
Bracket, rear support mtg. (Riveted to part 67D965)	67A973
Rear tube support (Deflection yoke housing)	67B845
Bracket, focus coil mtg.	67B971
Bracket, focus coil support	67B970
Cradle, kinescope mounting	67D983
Bracket, cradle mounting	67B982
Clamp, kinescope mounting	76B466
Channel, rubber (Cradle)	16A146
Strap, rubber (Clamp)	16C147
Dust seal, rubber	16C144-1
Shield, kinescope (Rear cover)	69B271-1
Insert, rubber (Focus coil)	16A134

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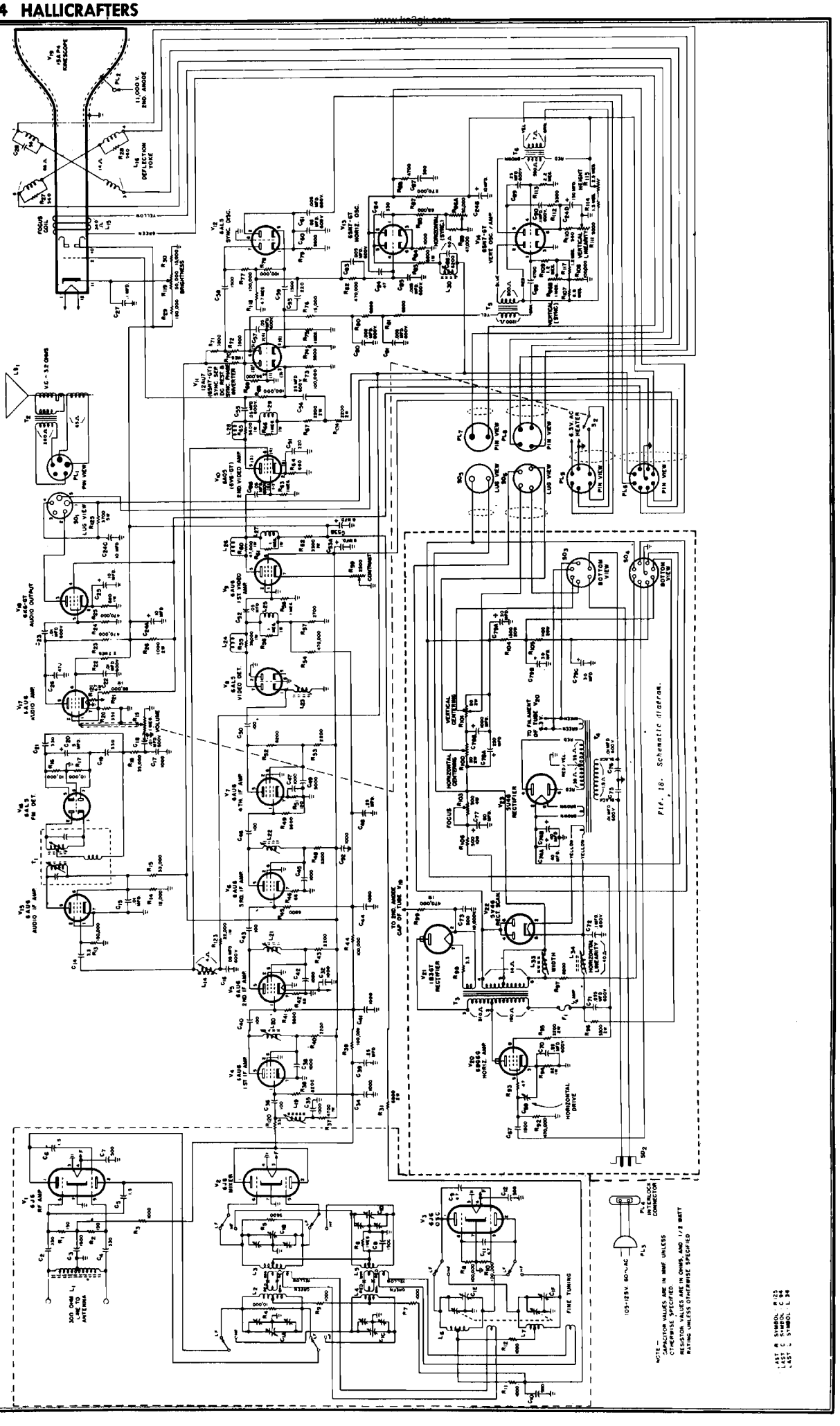
MODEL 515



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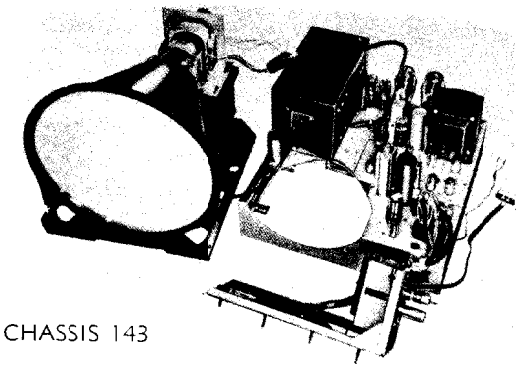
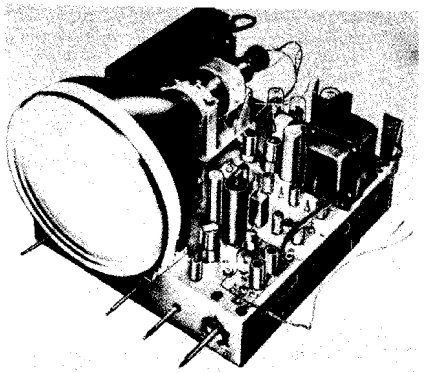
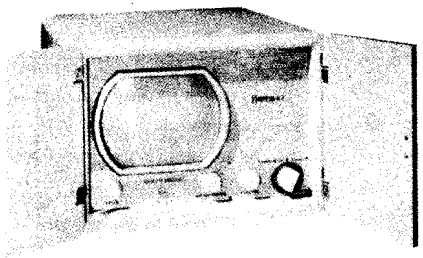


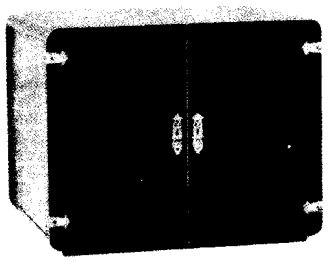
CHASSIS 143



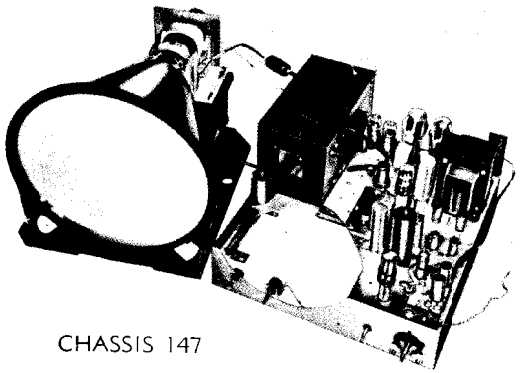
CHASSIS 140, 142 ,146



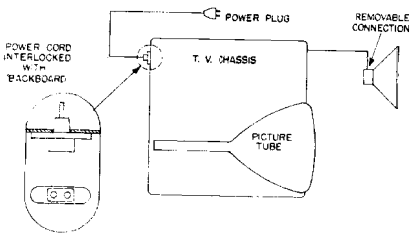
MODEL 610—DOORS OPEN



MODEL 612—DOORS CLOSED



CHASSIS 147



BLOCK DIAGRAM

MAJOR COMPONENTS

	Model 610	Model 612
TV Chassis	140	142
Speaker	6″ PM, Part #9062 Voice coil, 3.2 ohms at 400 cps	6″ PM, Part #9062
Cabinet	Part #7532	Part #7533
Escutcheon Frame	Part #2250	Part #2277
Filter Plate Glass	Part #733	Part #734
Picture Tube	10BP4, 10FP4	12KP4, 12LP4, 12QP4

Installation and service information on chassis 140 and 142 is given

ELECTRICAL AND MECHANICAL DATA

Range ..... TV Channels 2 to 13

Intermediate Frequencies ..... Video 26.1 Mc
Sound 21.6 Mc

Power Source

Chasis 140, 142 & 146—117 VAC, 60 cycles, 225 Watts
Chassis 143 & 147 —117 VAC, 60 cycles, 250 Watts

Output Impedance (Audio) ..... 3.2 ohms at 400 cycles

Audio Power Output (Maximum) ..... 3.5 Watts

Video Bandpass ..... 4.0 Mc

Picture Tube Diameter

Chassis 140 —10″
Chassis 142 & 146—12″
Chassis 143 & 147—15″ or 16″

Chassis 140, 142, 143, 146 and 147 are all electrically and mechanically similar except for slight variations as follows:

Chassis 140 is a 24 tube receiver which supplies a second anode voltage for a 10″ picture tube and contains integral mounting provisions for a 10″ kinescope tube.

Chassis 142 is a 24 tube receiver which supplies a second anode voltage for a 12″ picture tube and contains integral mounting provisions for a 12″ kinescope tube. Electrically, Chassis 142 is identical to Chassis 140, except where a 12QP4 tube is used, in which case, changes are made to provide additional focusing current. (See Schematic Diagram.)

Chassis 143 is a 26 tube receiver which supplies a second anode voltage of approximately 12,000 volts and provides plug and cable connections for a separately mounted 15″ or 16″ tube, and for separately mounted tuning controls. The audio output transformer is designed for operation with a 12″ speaker.

Chassis 146 is a 24 tube receiver identical to Chassis 142 with the exception that the audio output transformer is designed to operate with a 12″ speaker.

Chassis 147 is a 26 tube receiver identical to Chassis 143, except that the tuning controls are integrally mounted on the chassis.

These chassis are all designed for use with a high gain Head end, such as RF-4 and *will not* operate with RF-1, RF-2 or RF-3.

TUBE COMPLEMENT

(Less Tuning Unit)

2	6AU6	Sound IF	V101, V102
1	6AL5	Ratio Detector	V103
1	6AV6	1st Audio	V104
1	6K6	Audio Output	V105
2	6AG5	Video IF	V106, V107
2	6AU6	Video IF	V108, V109
1	6AL5	Video Detector	V110
1	6AC7	Video Amplifier	V111
1	6SN7	D.C. Restorer, Sync Sep.	V112
1	6SN7	Sync Separator and Clipper	V113
1	6SN7	Vertical Osc. and Output	V114
1	6C4	A.F.C. Phase Splitter	V115
1	6AL5	A.F.C. Phase Comparator	V116
1	5U4G	Low Voltage Rectifier	V117
1	6SN7	Horizontal Oscillator	V118
1	6BG6	Horizontal Output	V119
1	1B3GT	High Voltage Rectifier	V120
1	6W4GT	Damping Diode	V121

Summary of Tube Complement

6AU6	4	6SN7GT	4	
6AL5	3	6C4	1	
6AV6	1	6BG6	1	
6K6	1	1B3GT	1	2*
6AG5	2	6W4GT	1	
6AC7	1	5U4G	1	2*

* Chassis 143 or 147

TUNING UNIT

1	6AG5	RF Amplifier
1	6J6	Osc. and Mixer

PICTURE TUBES

The following kinescope tubes may be used interchangeably in the respective chassis which employ 10, 12, or 16 inch tubes. Slight circuit variations for specific tubes are noted in the text.

10BP4
10FP4
12KP4
12LP4
12QP4
15AP4
16AP4

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