Admiral COLOR Television

SERVICE MANUAL SUPPLEMENT NO. S592A

For Models Using 29Z1 and 29SZ1 Chassis

includes

SERVICE HINTS,

PRODUCTION CHANGES,

LATEST SCHEMATICS AND REVISED PARTS LIST.

IMPORTANT

Use this supplement with Service Manual No. S592 when servicing any model using these chassis.

This supplement contains necessary service data for the later production chassis. It also includes a revised Parts List which replaces Parts List in Service Manual No. S592.

Also see Important Alignment Correction on page 74.

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CHICAGO 47, ILLINOIS

Form No. S592A

PRELIMINARY SERVICE ADJUSTMENTS

To prevent upsetting Color Purity or Convergence, it is important that all preliminary service adjustments be made or checked before making Color Set-Up adjustments. Complete instructions for making these adjustments is given in Service Manual No. S592.

Instructions for making VHF Channel Adjustment for the 29SZ1 VHF-UHF Chassis are given below. Alternate simplified instructions for making Color Purity, Convergence and Black and White Tracking Adjustments are given on pages 71 and 72. Make all other adjustments as instructed in Service Manual No. S592.

VHF CHANNEL SLUG ADJUSTMENT FOR THE 29SZ1 CHASSIS

(For 29Z1 Chassis, see page 7 in Service Manual No. S592.)

IMPORTANT: VHF Channel Slug adjustment and operation of the Fine Tuning control is more critical for color than for black and white reception.

If a Channel Slug or the Fine Tuning control is misadjusted for a black and white program, the picture and sound may still be acceptable. However, if a Channel Slug or the Fine Tuning control is misadjusted for a color program, the picture may not be reproduced in color or may exhibit incorrect colors. Note: It is important that the customer should be familiarized with the importance of correctly setting the Fine Tuning control.

To adjust VHF Channel Slugs, proceed as follows:

a. Turn the set on and allow 15 minutes to warm up.

b. Set the VHF Channel Selector for channel to be adjusted; set UHF Channel Selector between channels 50 and 80. Set other controls for normal picture and sound.

c. Remove the VHF Channel Selector and UHF Channel Indicator knobs.

d. Set the UHF Channel Selector to the approximate center of its VHF fine tuning range. To do this, rotate the knob two or more full turns in either direction. Then rotate the knob between 1/2 and 3/4 of a turn in the opposite direction. Remove the knob. If the VHF channel slug hole is not exposed, repeat the above procedure.

e. Insert a 1/8" blade, 16" long, flexible non-metallic alignment tool in the hole adjacent to the channel tuning shaft (see illustration). WARNING: Insert tool very carefully, since it may strike the UHF rotor or stator plates and cause tuner misalignment. Be sure to engage the VHF Channel Slug and NOT the UHF oscillator adjustment. For each VHF channel in operation, carefully adjust the channel slug until sound bars appear in picture. Then turn slug in the direction of best picture, until sound bars <u>just</u> disappear.

IMPORTANT: Always turn slug out (counterclockwise) first; then turn in. Only slight rotation of the slug will be required; turning the slug in too far will cause it to fall into the coil.

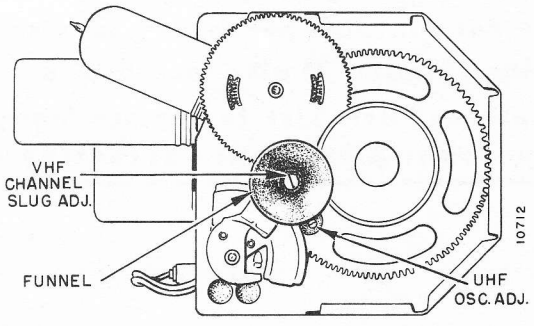


Figure 26. Front View of VHF-UHF Tuner Showing Location of VHF Channel Slug Adjustments.

SIMPLIFIED BLACK AND WHITE TRACKING ADJUSTMENT

Important: Before proceeding, check set-up adjustments shown in figure **27.**

STEP	CONTROL ADJUSTMENTS	ADJUST FOR
1	Contrast.	Minimum.
2	Green and Blue Grids.	
3	Red, Green and Blue Screens.	2/3 of maximum rotation.
4	Brightness.	Maximum; then toward minimum until raster is just extinguished.
5	Green Grid.	
6	Blue Grid.	
7	Picture should now remain black and white throughout usable range of CONTRAST and BRIGHTNESS controls. If picture appears Greenish, perform steps 8 and 10. If picture appears Bluish, perform steps 9 and 11. If picture appears Reddish, perform step 12. If picture is still not Black and White, repeat entire procedure.	
8	Green Screen.	Very slightly toward right.
9	Blue Screen.	
10	Green Grid.	Very slightly toward the left until picture is black and white.
11	Blue Grid.	
12	Red Screen.	

COLOR STRIPE TEST

A test point is provided on the rear apron of the chassis to test for color reception in those areas where color stripes are transmitted during black and white transmission, see Figure 27.

To make color stripe test, proceed as follows:

a. Tune in station transmitting black and white picture with color stripes.

b. Short test point to chassis ground with clip lead or screwdriver (picture will shift toward the left and permit easy viewing of stripe on the right side).

c. If necessary, readjust Fine Tuning control, with Color Intensity control set to near maximum. Stripe should appear in color. If not, receiver is not reproducing color.

d. To check color intensity, vary Color Intensity control from minimum to maximum. At maximum, color of stripe should appear vivid and at minimum, no color at all.

e. To check color fidelity, vary Color Fidelity control throughout its range. At some setting, stripe should appear yellowish-green; if not, receiver will not reproduce correct colors.

f. If color stripe appears to contain colored bars, which repeatedly keep changing color (similar to barber pole), receiver is not in "Color Sync". See Color Sync Alignment in Service Manual No. S592.

SIMPLIFIED COLOR PURITY ADJUSTMENT

Important: Before proceeding, check set-up adjustments shown in figure **27.**

STEP	CONTROL ADJUSTMENTS	ADJUST FOR
1	Contrast.	Minimum.
2	Brightness.	Near maximum.
3	Green and Blue Screens.	Minimum.
4	Green and Blue Grids.	
5	Red Screen.	Bright Red Raster.
6	Rim Magnets.	Best Purity around raster edges.
7	If entire raster appears pure Red, perform steps 23 and 29. If entire raster cannot be made pure, continue with step 8.	
8	Rim Magnets.	Minimum (away from tube).
9	Red, Green and Blue, Horizontal Convergence Amplitude.	Adjustment screw extending 3/8" outward from each coil form.
10	Red, Green and Blue, Horizontal Convergence Tilt.	
11	Red, Green and Blue, Vertical Convergence Amplitude.	Completely counterclockwise.
12	Red, Green and Blue, Vertical Convergence Tilt.	Mid-rotation.
13	Purity Rings.	Colored tabs adjacent.
14	Apply white dot generator signal to receiver.	
15	Contrast.	Maximum.
16	Red, Green and Blue Screens.	Minimum.
17	Green and Blue Grids.	
18	Brightness.	Until raster is just extinguished.
19	Red, Green and Blue Screens.	Small—equal size dots. If necessary, readjust focus.
20	Green and Blue Grids.	
21	Red, Green and Blue DC Convergence.	White dots at center of screen.
22	Blue Lateral Magnet.	
23	Alternately observe field of purity of Red, Green, and Blue fields by turning the appropriate Grid and Screen controls and repeating step 6 for each field if necessary.	
24	If color impurity exists, set raster for red field and continue with step 25.	
25	Loosen screws "B", see figure **27.**	
26	Purity Rings.	Spread tabs apart and rotate entire assembly for purest overall Red field. If necessary, repeat, spreading tabs further apart and rotate entire assembly for best purity obtainable.
27	Deflection Yoke.	Back and forth for purest overall Red field. If necessary, repeat steps 26 and 27.
28	Rim Magnets.	Push in or out, then rotate for best edge purity (a compromise adjustment may be necessary).
29	Repeat step 23. Tighten screws "B" until each individual Red, Green, and Blue rasters appear pure without further adjustment of step 6.	

SIMPLIFIED CONVERGENCE ADJUSTMENT

Important: Before proceeding, check set-up adjustments shown in figure **27.**

STEP	CONTROL ADJUSTMENTS	ADJUST FOR
1	Perform Steps 14 through 20 under Color Purity Adj.	
2	Check dot convergence. If convergence appears to need only touch-up adjustment, disregard steps 3 through 6.	
3	Red, Green and Blue Vertical Tilt.	Mid-rotation.
4	Red, Green and Blue Vertical Amplitude.	Completely counterclockwise.
5	Red, Green and Blue Horizontal Tilt.	Adjustment screw extending 3/8" outward from each coil form end.
6	Red, Green and Blue Horizontal Amplitude.	
7	Red, Green and Blue DC.	White dots at central area of screen.
8	Blue, Lateral Magnet.	
9	Green and Blue Grids.	Equal intensity vertical white line pattern.
10	Red, Green and Blue Screens.	
11	Red and Green Vertical Amplitude.	Vertically straight red and green lines (using blue line as a reference). Repeat steps 11 and 12, until correct results are obtained.
12	Red and Green Vertical Tilt.	
13	Red and Green DC.	Converge red and green vertical lines over blue lines at center area of screen. If necessary, repeat steps 11 and 12.
14	Blue Vertical Tilt. Blue Vertical Amplitude.	Horizontal line pattern. Horizontal blue lines should be equally spaced or coincident with red and green horizontal lines from top to bottom at center of screen. If necessary, repeat step 13.
15	Check vertical line pattern. The red, green, and blue vertical lines at center of screen should be coincident forming a white line. If not, repeat steps 11 through 13; then continue with step 16.	
16	Check horizontal line pattern. The red, green and blue horizontal lines should coincide at center area of screen. If not, repeat step 14; then continue with step 17.	
17	Blue Horizontal Amplitude. Blue Horizontal Tilt.	Fully counterclockwise.
18	Blue Horizontal Amplitude.	Horizontal line pattern. Adjust clockwise (inward), for downward bow of blue horizontal line slightly to right of center of screen.
19	Blue Horizontal Tilt.	Clockwise (inward), for straight as possible blue horizontal center line.
20	Red, Green and Blue DC.	Converge at center of screen.
21	Repeat steps 17 through 20 for red and green horizontal lines. Note: The bow of red and green horizontal lines will be slightly upward, just to the right of the center of the screen.	
22	Switch generator to dot pattern. Observe over-all dot convergence. Touch-up adjustments for obtaining clearly defined white dot at central area of screen.	

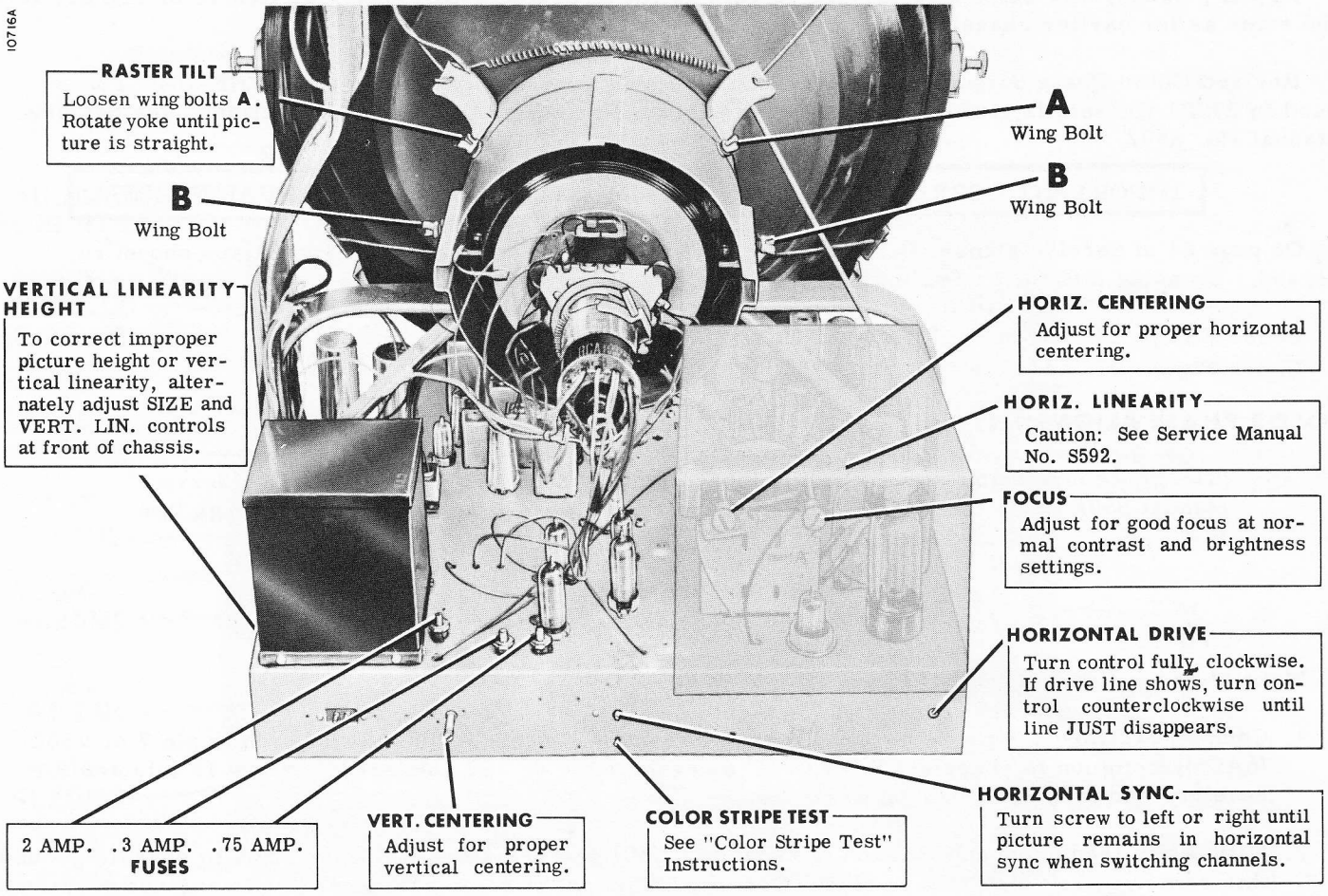


Figure 27. Rear View of Chassis. Adjustment Locations and Instructions Shown.

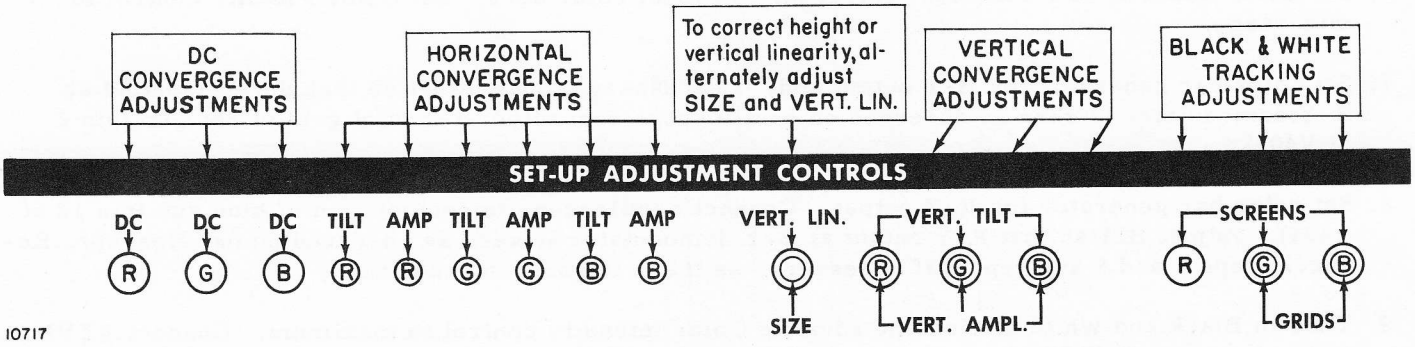


Figure 28. View of Service Adjustments at Front of Chassis. Front Panel Removed.

ALIGNMENT

RF, IF, Sound, and Color Sub-carrier Alignment for 29Z1 and 29SZ1 Chassis, Run 18 or higher, is the same as for earlier chassis.

Revised Color Phase Alignment for sets Run 18 or higher and Alignment for the VHF-UHF Tuner used in 29SZ1 Chassis is given on the following pages. For other Alignment Instructions, see Service Manual No. S592.

IMPORTANT CORRECTION TO ALIGNMENT DATA IN SERVICE MANUAL No. S592.

On page 44 of Service Manual No. S592, the response curves in Figures 23 and 24 are shown reversed. To avoid difficulty when making alignment, add the following notes:

Under Figure 23, add note: "Curve should be Cut #10663".
Under Figure 24, add note: "Curve should be Cut #10402".

COLOR PHASE ALIGNMENT

(The procedure below applies only to chassis stamped Run 18 or higher. See Service Manual S592 for Color Phase Alignment covering Chassis stamped Run 1 through Run 17A.)

Note: This alignment requires the use of a color bar generator, oscilloscope and a vacuum-tube voltmeter.

Make alignment as follows:

1. Connect oscilloscope probe to cathode of picture tube. Connect VTVM high side to pin 7 of V502 (6AL5), common to chassis. Set VTVM to negative 100 or 150 volt scale. Allow 15 minutes for receiver and test equipment to warm up.

2. With a clip lead, connect junction of capacitor C501 and resistors R501 and R504 to chassis ground; this removes the color killer pulse. Connect RF output of color bar generator to antenna terminals.

3. Adjust receiver Fine Tuning control correctly, i.e., for minimum 920 KC beat on screen of picture tube. Adjust B5 (3.58 MC trap), see Figure 29 for minimum sub-carrier amplitude of color bar pattern on oscilloscope. For ease in adjustment, oscilloscope gain should be set at a high level for this step.

4. Adjust B9 (burst amplifier plate coil) for maximum DC VTVM reading; approximately 80 to 100 volts negative.

5. Adjust B10 (3.58 MC oscillator control tube plate coil) so that color is in sync and VTVM reading at pin 1 of V502 (6AL5) is 5 volts negative.

6. Set Color Intensity and Contrast control for low level color bars. Set Color Fidelity control to mid-range.

7. Set color bar generator for B-Y output and, if necessary, touch up B1 so that the B-Y output at R-Y demodulator is zero as observed on oscilloscope connected to control grid of red gun (pin 2 of V404).

8. Set color bar generator for R-Y output. Connect oscilloscope to control grid of blue gun (pin 12 of V404). Adjust B11 so that R-Y output at B-Y demodulator is zero as observed on oscilloscope. Recheck steps 7 and 8 and repeat if necessary, as there is some interaction.

9. Tune in Black and White station and advance Color Intensity control to maximum. Connect VTVM to junction of coil L403 and capacitor C527. Meter should read at least 9 volts negative.

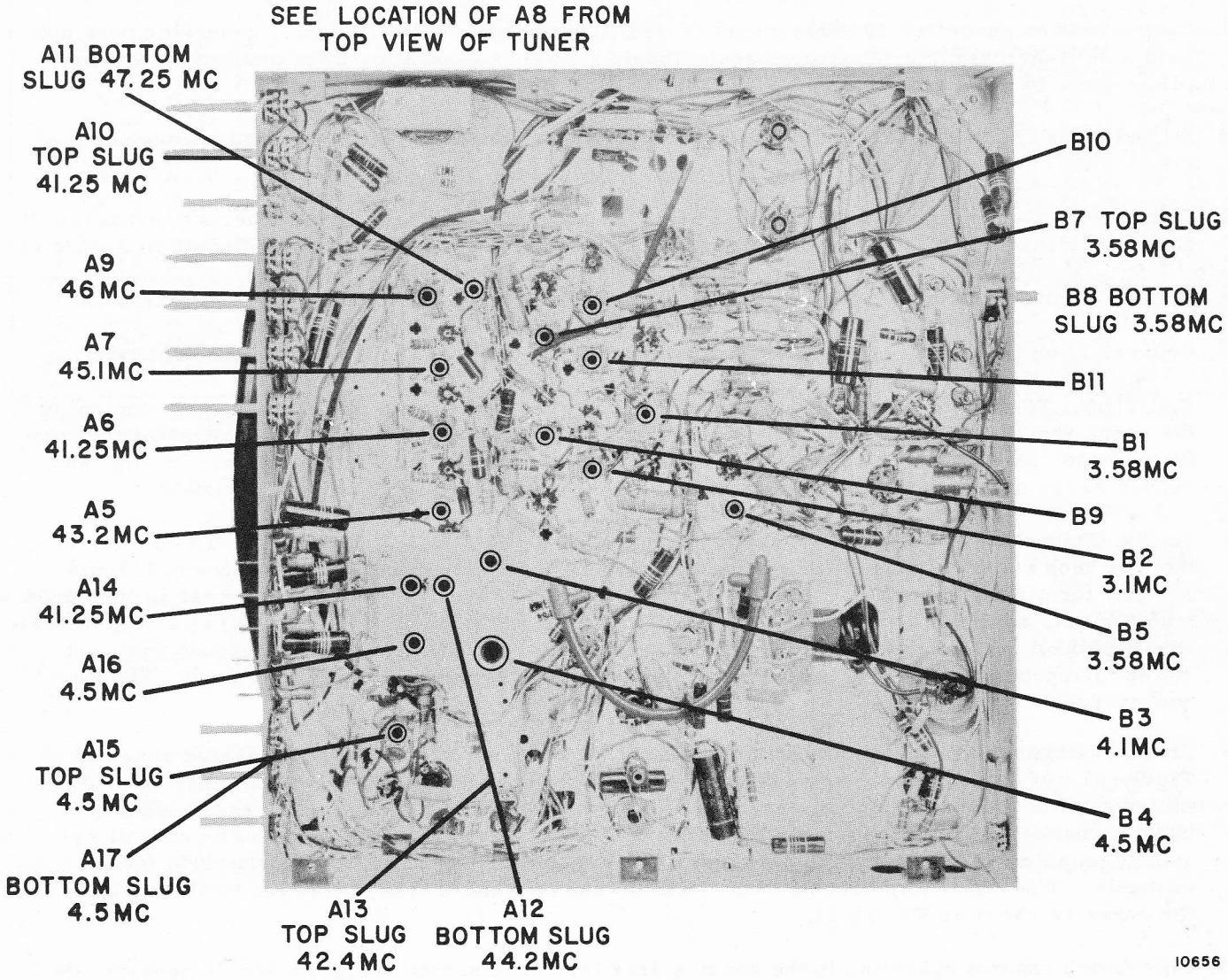


Figure 29. Bottom View of Chassis Showing Alignment Locations.

VHF ALIGNMENT FOR VHF-UHF TUNER IN 29SZ1 CHASSIS

This alignment requires the use of a VHF sweep generator, VHF marker generator, oscilloscope and a bias supply. Make alignment as instructed below.

IMPORTANT: Before proceeding, check the video IF response curve and, if necessary, make "IF Amplifier and Trap Alignment" as instructed on pages 42 through 44 of Service Manual No. S592.

1. Connect sweep generator 300 ohm output to VHF antenna terminals. If sweep generator does not have a built-in marker generator, loosely couple a marker generator to the antenna terminals. Allow about 15 minutes for receiver and test equipment to warm up.

2. Set the tuner channel selector and sweep generator for channel 2. Set marker to channel 2 sound (59.75 MC).

3. Construct a decoupling network shown in heavy lines in Figure 30 and connect across test point "V", Luminance Detector Load. Connect oscilloscope to instrument test point as indicated in Figure 30.

4. Connect 4 volt bias supply, negative to test point "T", on IF AGC buss, positive to chassis.

5. Connect 3 volt bias supply, negative to test point "U", on RF AGC buss, positive to chassis.

   CAUTION: The output controls of the sweep and marker generators, and vertical gain control of the scope should be adjusted to prevent overloading of the receiver or oscilloscope. If the waveform shape changes when either control is advanced, an overload condition exists. In this case, reduce sweep output or oscilloscope gain or both. Marker pip should be barely visible.

6. Set the Channel Selector to the approximate center of its VHF fine tuning range. To do this, rotate the knob two or more full turns in either direction. Then rotate the knob between 1/2 and 3/4 of a turn in the opposite direction. The sound carrier marker should now appear in the sound trap. If not, adjust (starting from channel 2 through 13) VHF oscillator (channel) coil slug to position the sound carrier marker in the sound trap. Before adjusting each VHF channel slug, set sweep to appropriate channel, and marker to corresponding sound carrier frequency. See Frequency Table.

7. Set tuner channel selector to channel 10. Check for over-all RF-IF Response Curve shown in Figure 31. If curve is not reasonably close, alternately adjust the RF-plate trimmer A1, and mixer grid trimmer, A2 for flat response and correct location of the video marker. The video-carrier marker should appear approximately 6 db (50%) down from the peak of the over-all response curve as shown in Figure 31. The RF tilt should be no greater than 2 db (20%) for all channels. The valley (dip between peaks) should not vary more than 20% of the total amplitude of the curve as shown in Figure 31.

8. Check each channel operating in the service area for curve shown in Figure 31. In general, the adjustment performed in the above steps are sufficient to give satisfactory response curves on all channels. However, if reasonable alignment is not obtained on a particular channel, try replacing the coil for that channel, or repeat step 7 for the channel as a compromise adjustment to favor the particular channel, especially if color programs are telecasted. If a compromise adjustment is made, other channels operating in the service area should be checked to make certain that they have not been appreciably affected.

FREQUENCY TABLE

Channel No.	Freq. Range MC	Picture Carrier MC	Sound Carrier MC	Osc. Freq. MC	Sweep Gen. Center Freq. MC
2	54-60	55.25	59.75	*101	57.5
3	60-66	61.25	65.75	*107	63.5
4	66-72	67.25	71.75	*113	69.5
5	76-82	77.25	81.75	*123	79.5
6	82-88	83.25	87.75	*129	85.5
7	174-180	175.25	179.75	*221	177.5
8	180-186	181.25	185.75	*227	183.5
9	186-192	187.25	191.75	*233	189.5
10	192-198	193.25	197.75	*239	195.5
11	198-204	199.25	203.75	*245	201.5
12	204-210	205.25	209.75	*251	207.5
13	210-216	211.25	215.75	*257	213.5
14	470-476	471.25	475.75	517	473.5
15	476-482	477.25	481.75	523	479.5
16	482-488	483.25	487.75	529	485.5
17	488-494	489.25	493.75	535	491.5
18	494-500	495.25	499.75	541	497.5
19	500-506	501.25	505.75	547	503.5
20	506-512	507.25	511.75	553	509.5
21	512-518	513.25	517.75	559	515.5
22	518-524	519.25	523.75	565	521.5
23	524-530	525.25	529.75	571	527.5
24	530-536	531.25	535.75	577	533.5
25	536-542	537.25	541.75	583	539.5
26	542-548	543.25	547.75	589	545.5
27	548-554	549.25	553.75	595	551.5
28	554-560	555.25	559.75	601	557.5
29	560-566	561.25	565.75	607	563.5
30	566-572	567.25	571.75	613	569.5
31	572-578	573.25	577.75	619	575.5
32	578-584	579.25	583.75	625	581.5
33	584-590	585.25	589.75	631	587.5
34	590-596	591.25	595.75	637	593.5
35	596-602	597.25	601.75	643	599.5
36	602-608	603.25	607.75	649	605.5
37	608-614	609.25	613.75	655	611.5
38	614-620	615.25	619.75	661	617.5
39	620-626	621.25	625.75	667	623.5
40	626-632	627.25	631.75	673	629.5
41	632-638	633.25	637.75	679	635.5
42	638-644	639.25	643.75	685	641.5
43	644-650	645.25	649.75	691	647.5
44	650-656	651.25	655.75	697	653.5
45	656-662	657.25	661.75	703	659.5
46	662-668	663.25	667.75	709	665.5
47	668-674	669.25	673.75	715	671.5
48	674-680	675.25	679.75	721	677.5
49	680-686	681.25	685.75	727	683.5
50	686-692	687.25	691.75	733	689.5
51	692-698	693.25	697.75	739	695.5
52	698-704	699.25	703.75	745	701.5
53	704-710	705.25	709.75	751	707.5
54	710-716	711.25	715.75	757	713.5
55	716-722	717.25	721.75	763	719.5
56	722-728	723.25	727.75	769	725.5
57	728-734	729.25	733.75	775	731.5
58	734-740	735.25	739.75	781	737.5
59	740-746	741.25	745.75	787	743.5
60	746-752	747.25	751.75	793	749.5
61	752-758	753.25	757.75	799	755.5
62	758-764	759.25	763.75	805	761.5
63	764-770	765.25	769.75	811	767.5
64	770-776	771.25	775.75	817	773.5
65	776-782	777.25	781.75	823	779.5
66	782-788	783.25	787.75	829	785.5
67	788-794	789.25	793.75	835	791.5
68	794-800	795.25	799.75	841	797.5
69	800-806	801.25	805.75	847	803.5
70	806-812	807.25	811.75	853	809.5
71	812-818	813.25	817.75	859	815.5
72	818-824	819.25	823.75	865	821.5
73	824-830	825.25	829.75	871	827.5
74	830-836	831.25	835.75	877	833.5
75	836-842	837.25	841.75	883	839.5
76	842-848	843.25	847.75	889	845.5
77	848-854	849.25	853.75	895	851.5
78	854-860	855.25	859.75	901	857.5
79	860-866	861.25	865.75	907	863.5
80	866-872	867.25	871.75	913	869.5
81	872-878	873.25	877.75	919	875.5
82	878-884	879.25	883.75	925	881.5
83	884-890	885.25	889.75	931	887.5

* For oscillator frequencies from channels 2 to 13, frequency indicated is that of VHF oscillator. For oscillator frequencies higher than channel 13, frequency indicated is that of UHF oscillator with VHF oscillator inoperative.

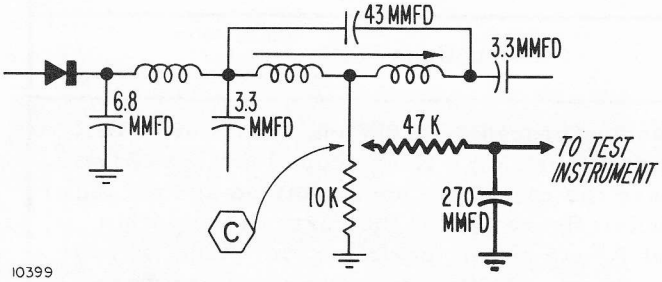


Figure 30. Decoupling Network (heavy line) Shown Across Chrominance Detector Load Resistor.

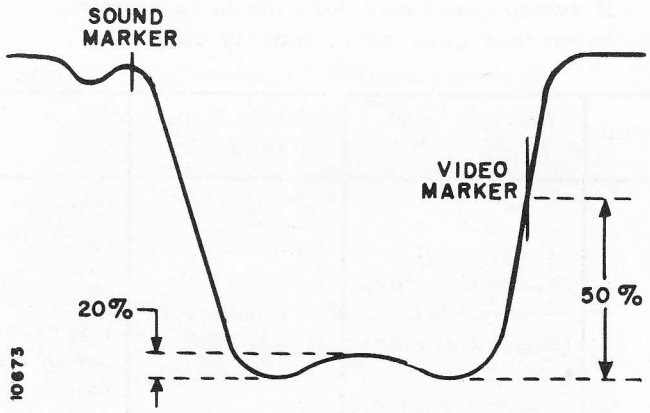


Figure 31. Over-all RF-IF Response Curve.

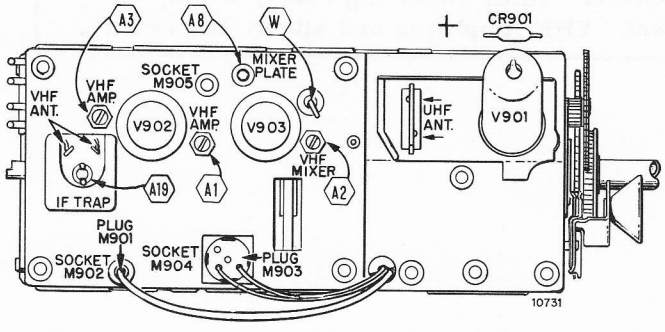


Figure 32. Top of VHF-UHF TUNER, Showing Adjustment Locations.

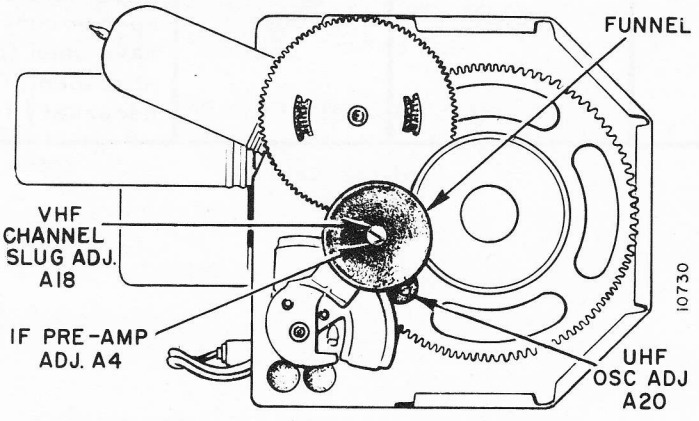


Figure 33. Front View of VHF-UHF Tuner Showing Adjustment Locations.

IF PRE-AMPLIFIER RESPONSE CURVE CHECK AND ALIGNMENT FOR 29SZ1 CHASSIS

Important: This alignment is seldom required. It should be made only if UHF reception is poor and after usual causes of poor reception have been checked. This alignment should be made after completing the preceding alignments.

- Set VHF Channel Selector to UHF position, which is when opening in knob (between channels 2 and 13) is at top.
- Connect negative of 3 volt bias supply to tuner AGC buss (test point "U"), positive to chassis.
- Remove IF input cable (M201) from tuner IF output socket (M905). Insert IF input cable for step 2.
- Remove CR901 (mixer crystal) from holder. Connect sweep generator high side through 100 ohm resistor to negative clip of mixer crystal socket, see figure 32. If sweep generator does not have a built-in marker generator, loosely couple a marker generator to the high side of sweep generator. To avoid distortion of the response curve, keep sweep generator output at a minimum, marker pips just barely visible.
- Connect oscilloscope to test point "W" on VHF section of tuner (figure 32). Keep scope leads away from chassis.
- Connect a wire jumper from test point "T" to chassis.
- Allow about 15 minutes for receiver and test equipment to warm up.
- Use a non-metallic alignment tool, part number 98A30-19.

Step	Marker Gen. Freq. (MC)	Sweep Gen. Frequency	Instructions
1	45.75 MC (Video Carrier) 41.25 MC (Sound Carrier)	Set sweep at 43.5 MC sweep width 12 MC	Connect oscilloscope through a 10,000 ohm resistor to test point "W" on tuner (figure 32). Keep scope leads away from chassis. Compare the response curve obtained against the ideal curve shown in figure 34. If the curve is not within tolerance, adjust A4 to obtain maximum amplitude (at center of curve) consistent with flat top appearance, proper bandwidth and correct marker location; see figure 34.
2	Same as Above	Same as Above	Connect oscilloscope to test point "V" through a decoupling filter. Keep scope leads away from chassis. Increase bias voltage to -6 volts. Check response curve. If curve does not resemble figure 31, repeat step 1, making a compromise adjustment. If curve cannot be made to resemble response curve, figure 31, check to be sure all instructions have been followed. Check tubes V902 and V903 and repeat alignment. Important: After replacing tubes, it may be necessary to check "VHF Amplifier and Mixer Alignment".

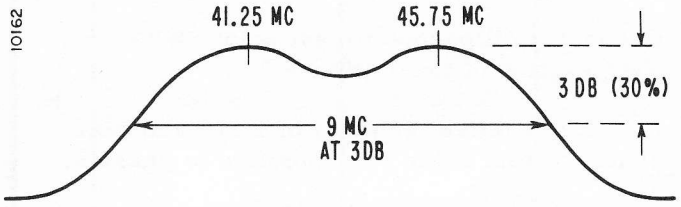


Figure 34. IF Pre-amplifier Response Curve.

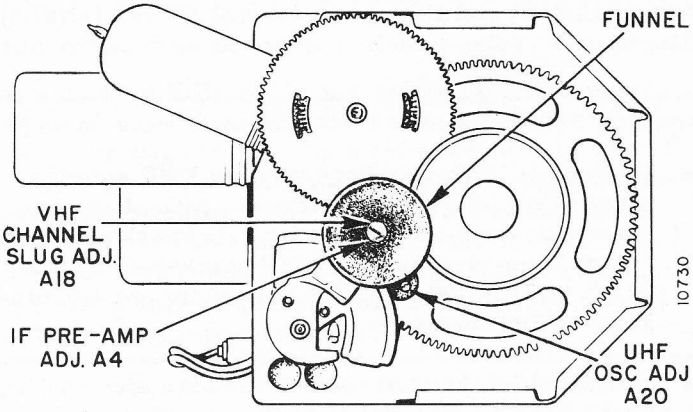


Figure 35. Front View of Tuner Showing Front Adjustments.

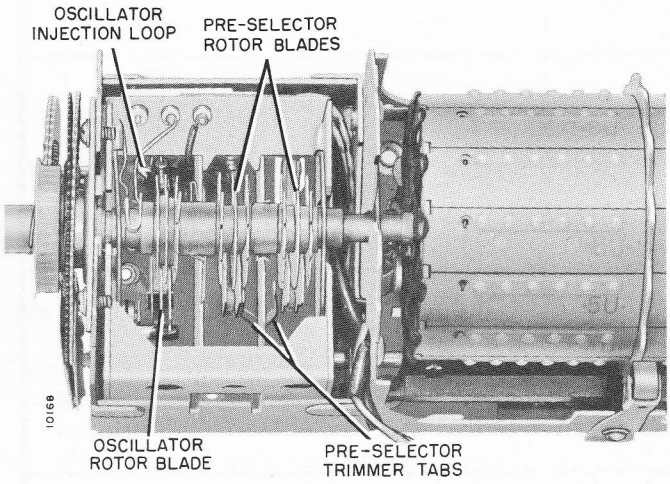


Figure 36. View of VHF-UHF Tuner Showing Adjustment Locations.

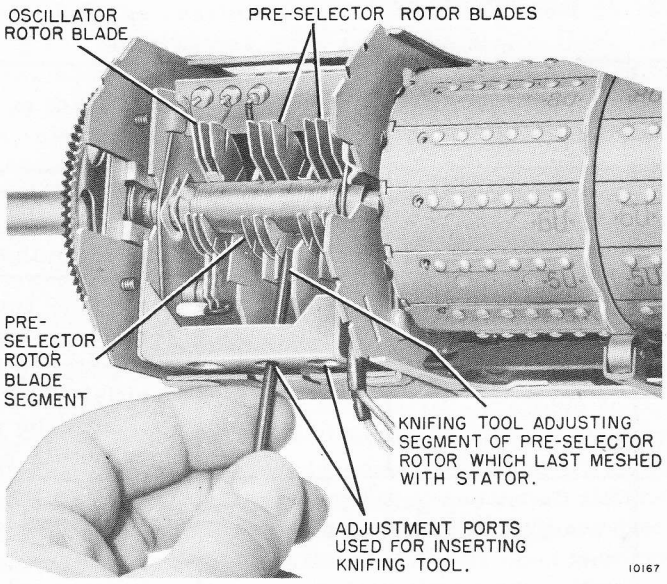


Figure 37. View of VHF-UHF Tuner Showing Method of Aligning (Knifing) Rotor Blades in UHF Section.

UHF ALIGNMENT FOR VHF-UHF TUNER IN 29SZ1 CHASSIS

Alignment of the UHF section of the tuner should seldom be required. The UHF oscillator tube V901 (6AF4A) and the mixer crystal CR901 (1N82A) may generally be replaced without the need for alignment. Tube selection is recommended for best reception and to avoid the need for realignment.

Do not attempt alignment of the UHF section of the tuner unless the required specialized test equipment is available. See test equipment note on page 38 of Service Manual S592.

- Connect UHF Sweep Generator to UHF antenna terminals; set sweep width at 12 MC. If sweep generator does not have a built-in marker generator, loosely couple a UHF Marker Generator to the transmission line between antenna terminals and UHF tuner.
- Connect VHF Marker Generator high side to 6BC8 (V902) insulated tube shield. Connect low side to chassis near the tube shield. Set marker generator frequency to 43.5 MC for all steps below.
- Connect oscilloscope to test point "W" on VHF section of tuner (figure 32).
- Connect negative terminal of 1 1/2 volt bias supply to test point "T", positive to chassis.
- Connect a wire jumper from test point "U" to chassis.
- Allow about 15 minutes for receiver and test equipment to warm up.

To obtain the accuracy required for this alignment, two marker generators should be used. A UHF Marker Generator is coupled to the antenna circuit of the UHF tuner and serves as a calibration check for the UHF Sweep Generator. A VHF Marker Generator is coupled to a special tube shield over V903 and is used to be certain that the proper band of frequencies is being selected by the UHF tuner and UHF IF pre-amplifier.

Step	UHF Sweep Gen. Center Frequency	UHF Marker Gen. Frequency	Instructions
1	887 MC	887.5 MC	Tune UHF tuner to channel 83, or until response curve is observed on oscilloscope. Adjust A20 (figure 35) until marker is located in the center of the response curve. *See note 1 on page 81.
2	473 MC	473.5 MC	Tune UHF tuner to channel 14, or until response curve is observed on oscilloscope. Note the location of marker. If it is not centered on the response curve, knife the segment of the oscillator rotor blade adjacent to the stator as shown in figure 37, until the marker becomes centered on the response curve. *See note 2 on page 81.
3	Set the sweep generator to sweep the channel to be checked. Set the marker generator to the mid-frequency of the channel to be checked. (The channel's mid-frequency is determined by adding 2.25 MC to the picture carrier frequency. See Frequency Table, page 77.		Check response curve for each channel operating in the service area. Marker location should be as shown in figure 33. In general, the adjustments performed in steps 1 and 2 are sufficient to provide satisfactory curves and correct marker location for all channels. However, if reasonable alignment is not obtained on a particular channel, see instructions given in steps 4 and 5 on page 81.

UHF ALIGNMENT-Cont'd.

Step	UHF Sweep Gen. Center Frequency	UHF Marker Gen. Frequency	Instructions
4	887 MC	887.5 MC	Tune UHF tuner to channel 83. Carefully adjust both UHF preselector trimmer tabs (figure 37), by moving them back and forth, in order to obtain maximum amplitude and proper shape of response curve at test point "W". Adjustment of the trimmer tabs is made from the bottom of the UHF section of the tuner by means of a tool with a thin knife blade. Use care when moving the tabs, since only slight movement of the tabs should be required to obtain the proper response curve.
5	Successively sweep channels 83 to 14, inserting the appropriate mid-channel frequency marker (determined as in - structed in step 3). See frequency table on page 77.		Track both UHF preselector sections to each other and to the oscillator section from channel 83 to channel 14, by bending or knifing the preselector rotor blade segments (figure 37), to obtain the desired response curve, see figure 38. To avoid affecting the tracking above the point of knifing, always knife the plates while tuning lower in frequency. Check which sections requires knifing by bringing a finger close to either of the lines. If added capacity introduced by the finger improves the RF response, more capacity must be added between the rotor and stator by bending the rotor plates closer to the stator. Conversely, if added capacity makes the response worse, capacity must be reduced by bending the rotor plates away from the stator line. Generally, one preselector section or the other must be adjusted to remove tilt from the RF response curve. When correcting for a tilted condition, always adjust the preselector section that removes the tilt and at the same time improves the position of the marker. In some cases, it will be necessary to adjust both preselector sections to remove tilt and obtain correct marker location. Plates should always be adjusted evenly on both sides of the same preselector section and only on that portion which last meshed with the stator. Use caution when knifing the preselector blades so as not to disturb the position of the stator line.

Figure 38. Over-all UHF and IF Preamplifier Response Curve. (Viewed from Test Point "W")

*NOTE 1: If UHF tuner is far out of alignment, the response curve may be too low in amplitude to be readily observed, or it may be very distorted in shape. In this case, it will be necessary to roughly align the preselector before completing final oscillator adjustment. This is done by knifing the preselector rotor blade segments (figure 37) adjacent to the stator at dial setting for the affected channel.

*NOTE 2: If the dial calibration reads within 3 channels of the frequency to which the UHF Sweep Generator is tuned, the oscillator rotor blades do not require adjustment. If the dial calibration is more than 3 channels off in frequency, carefully knife the segmented portion of the oscillator rotor blade that last meshed with the stator until the dial calibration accuracy is within $\pm$ 3 channels.

SERVICE HINTS

LOSS OF COLOR DUE TO MISADJUSTMENT OF THE HORIZONTAL LOCK COIL

If the horizontal sync (lock coil) is misadjusted (set at the extreme edge of its pull-in range) loss of color will result.

Incorrect adjustment of the horizontal sync (lock coil at rear of chassis), will cause the gating pulse at the burst amplifier to be out of time coincidence with the burst signal.

IMPORTANT: Before deciding that misadjustment of the horizontal sync (lock coil) is the cause of trouble, check if the program is actually transmitted in color, check adjustment of Fine Tuning control and adjustment of the Color Intensity control.

FUSE REPLACEMENT

B+ Fuses

Three type "C" fuses are used for protecting the B+ circuitry of this receiver. These fuses are of the "twist-on" type and are accessible from the top rear of the chassis. See Figure 27 for location of B+ fuses.

NOTE: The over-all B+ is protected by a 2 ampere fuse F701 (part number 84A 13-4). B+ to the vertical and horizontal deflection circuits is protected by a 3/4 ampere fuse F601 (part number 84A13-9). The cathode circuit of horizontal output tube V605 (6CB5A) is protected by a 3/10 ampere fuse F604 (part number 84A13-6).

Heater (Filament) Fuses

Each of the two branches of the 6.3 volt AC heater supply is protected from overload by a one inch length of #27 gauge copper wire.

The two heater fuse wires connect from the hot side of the 6.3 volt AC heater supply to adjacent lugs of the terminal strip located at the underside of the chassis, just below the power transformer. For information on heaters of tubes connected in fused heater circuits, see schematics.

IMPORTANT: Replace heater fuse wire only with a one inch length of #27 gauge copper wire. Wrap ends of wire securely around connecting lugs before soldering.

NOTE: Ordinary #27 gauge bare copper wire (obtainable locally) can be used for fusing purposes.

Servicing VHF Tuners 94D131-1 and 94D131-2

*This new tuner incorporates latest improvements in mechanical and electrical design of turret type VHF tuners. For simplicity of circuitry, servicing convenience and purposes of automation, the circuit wiring is contained on a printed wiring assembly. All components are visible and accessible for servicing convenience.

A newly developed triode (6BN4) is used in a neutrode (neutralized) circuit as the VHF amplifier V101. A new pentode-triode (6CG8) is used as the VHF mixer and oscillator V102.

The antenna input circuit contains a ferrite core balun (matching transformer) which matches the 300 balanced antenna input to the 75 ohm unbalanced input of the RF input circuit. Two traps (parallel and series resonant) are contained in the antenna input circuit for obtaining optimum IF rejection over the range from 41 to 46 MC.

A "book type" Fine Tuning control is used. Physically, the fine-tuning circuit includes a stator area (printed on the printed wiring board) and a hinged tip-dipped phosphor-bronze plate which combine to form the book type variable inductor-capacitor. The Fine Tuning control provides a fine tuning range from 2 to 4.5 MC for all channels in the VHF range. Increased sensitivity, better over-all performance with improved picture quality result from the many circuit advances contained in this new tuner.

*For information on differences between Tuners 94D131-1 and 94D131-2, see Information under Run Change 17.

SERVICING VHF TUNERS 94D131-1 AND 94D131-2 -Cont'd.

The simplified circuitry and mechanical construction of this tuner make it relatively trouble free and easy to service. Tuner voltages (B plus, AGC and heater) may be measured from terminals on top side of tuner. The tuner circuitry is contained on a printed circuit wiring assembly. All components are accessible without need of turret removal. See exploded view of tuner, Figure 39.

Trouble shooting of printed circuit wiring is similar to that of conventional wiring. Complete instructions on the service and repair of printed circuit wiring is given in Service Manual No. S559, available from the Admiral Distributor.

IMPORTANT: Location and lead dress of most components at the underside of the tuner are generally critical. Parts location, lead lengths of components and ground connections should be as originally made. When replacing components, it is important that they be replaced with parts of identical electrical characteristics and physical size. Refer to parts list for temperature coefficients, tolerances and other essential description.

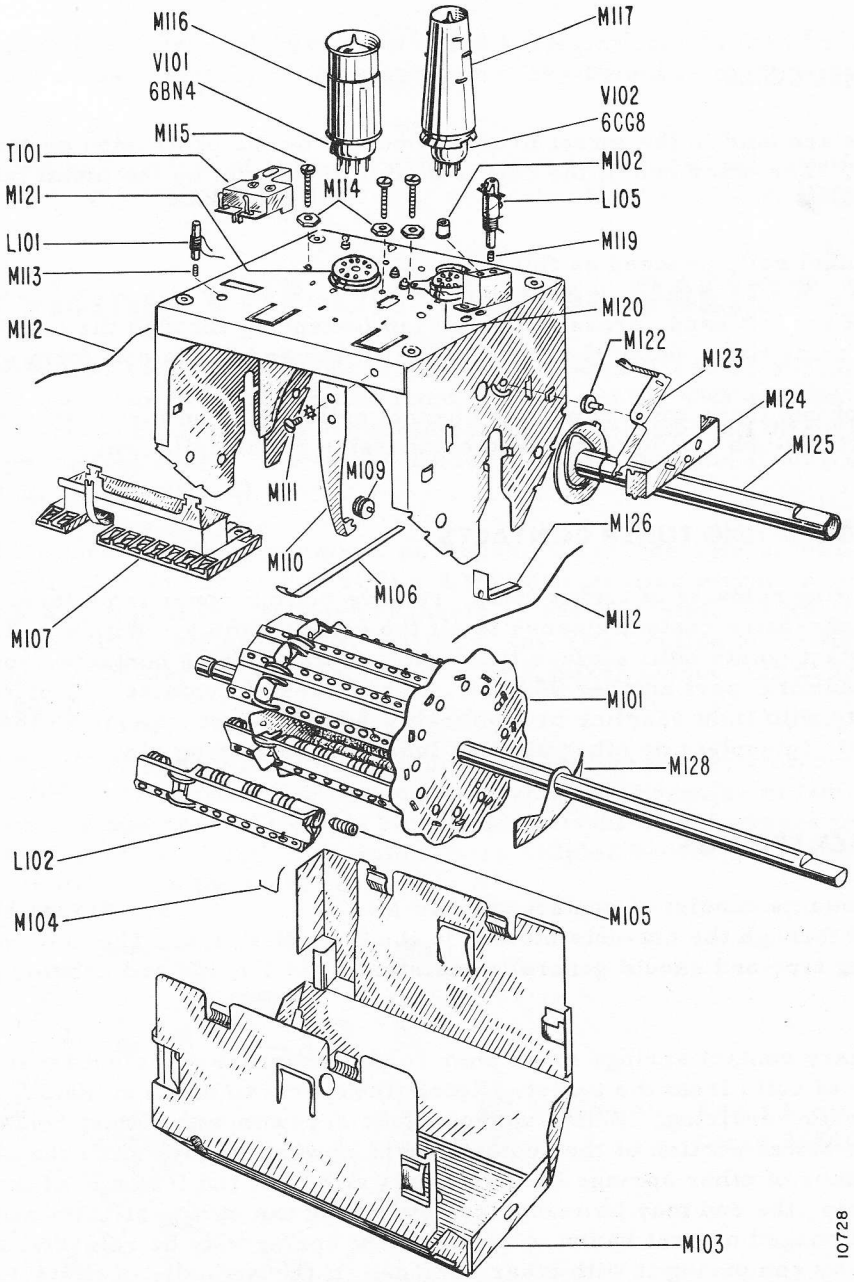


Figure 39. Exploded View of VHF Tuners 94D131-1 and 94D131-2.

Servicing VHF Tuners 94D131-1 and 94D131-2 - Cont'd.

REPLACEMENT OF PUSH-IN DISC TYPE CERAMIC CAPACITORS

Many of the capacitors used in the printed wiring circuit of this tuner are of push-in (leadless) ceramic disc type.

These capacitors are inserted between sections of printed circuit wiring and soldered, using low melting point solder.

When replacing a push-in type ceramic disc capacitor, care must be exercised to prevent damage to capacitor or the printed circuit wiring.

To remove a disc capacitor, use a low wattage soldering iron with a forked soldering tip (split tip). Apply the fork tip to sides of capacitor so as to melt solder at both sides simultaneously. When solder melts, immediately remove capacitor.

Replace disc capacitor in the same manner, using low melting point solder. Avoid application of excessive heat to capacitor or printed circuit wiring.

REMOVING CHANNEL COILS

The channel coils are held in the turret drum at one end by the protrusion on the coil form extending into the detent plate. The other end of the coil is held in the turret by the metal tab extending through the coil form.

To remove a channel coil, proceed as follows:

With the thumb of the left hand, press the metal tab (extending through the coil form) toward the rear of the tuner; at the same time, using the forefinger, lift the end of the coil form up and out of the drum.

CAUTION: Do not use force when removing channel coils from the turret as coils may be damaged. Use care so as not to disturb coil windings at the underside of the coil form.

CLEANING AND LUBRICATING TUNER CONTACTS

For cleaning rotating contacts of turret drum, remove bottom cover from tuner. Using a small stiff brush, apply a non-corrosive contact cleaner to all the contact points. With a soft canvas cloth, remove cleaner and buff contact points until surface is bright. After cleaning contacts, apply a thin film of switch contact oil, Admiral part number 98A64-1, to surfaces of contacts. Lubricate bearing surfaces of other moving parts with light vaseline or preferably Admiral part number 98A64-2 lubricant.
CAUTION: Do not use lubriplate or other similar lubricant containing zinc or cadmium.

ADJUSTING CONTACT SPRINGS

The stationary contacts consist of contact springs M107, see Figure 39. The contact springs are inserted through the cut-outs molded in the contact strips. The stationary contacts (springs) are of the self-wiping type and should generally maintain their tension and provide good contact without further attention.

Should the stationary contact springs make poor contact due to insufficient tension, or dirty surface, remove several sets of coils from the turret. Rotate the turret to position making the bottom of the contact strip accessible for servicing. With a narrow blade screwdriver, adjust contact spring tension by carefully bending the bowed portion of the contact spring upward slightly until the shape of the spring conforms with the shape of other springs on the contact strip. If the free end of the contact spring slips out of the contact strip, the end may be reinserted by bowing the spring slightly and pressing inward. If a contact spring is damaged or bent badly, a replacement spring may be reinserted. Restore the spring to its original shape by comparing it with other springs. If the majority of contact springs are bent out of shape or damaged, tuner replacement is recommended.

REPLACEMENT OF CERAMIC FEED-THROUGH CAPACITORS

The B+, heater and AGC leads of this tuner are connected through ceramic feed-through capacitors. When soldering leads to the tuner, care should be exercised to prevent damage to the ceramic feed-through capacitors.

Replacement of ceramic feed-through capacitors may be required if silver coated surface is peeled, if ceramic is cracked, or if center conductor has loosened.

To replace a ceramic feed-through capacitor, proceed as follows:

1. Apply the tip of a hot soldering iron to the top center conductor on feed-through. When the solder melts at bottom end (center conductor at printed circuit wiring), quickly grasp top end of center conductor with long-nose plier and work it completely out of the surrounding ceramic insulation.

2. Remove remainder of feed-through by applying tip of hot soldering iron to metal surface surrounding it at top side of chassis. When solder melts, quickly remove shell and excess solder. CAUTION: Do not allow solder or metal to fall in chassis.

3. To install replacement feed-through, apply tip of hot soldering iron to metal surface. After surface is hot enough to melt solder, quickly push replacement feed-through into chassis with end through hole in printed circuit board.

4. Resolder bottom center terminal of feed-through to printed circuit wiring; using a low wattage pencil point soldering iron. CAUTION: Application of excessive heat may cause damage to printed wiring.

Servicing VHF-UHF Tuner 94E107-1

This tuner is a combination VHF-UHF tuner covering VHF channels 2 to 13 and UHF channels 14 to 83. The UHF portion of the tuner is located at the front section and the VHF portion at the rear. The VHF and UHF Channel Selector controls have separate shafts. The VHF and UHF Fine Tuning controls are combined on a single control shaft. The UHF Channel Selector and Fine Tuning controls are gear driven for vernier tuning; see Figure 40.

The VHF section of the tuner consists mainly of an improved cascode VHF amplifier, V902 (6BC8) and an improved VHF oscillator-mixer, V903 (6U8). A thirteen position turret drum is used. The channel coils in the UHF detent position (between channels 13 and 2) contain a UHF IF snap-in coil. When the VHF Channel Selector is set at the UHF position, the VHF section of the tuner operates as a low-noise 41 MC IF pre-amplifier coupled between the UHF mixer output circuit and the 41 MC IF amplifier in the main chassis.

The UHF section of the tuner consists mainly of a highly selective preselector circuit, UHF oscillator V901 (6AF4A) and a UHF mixer circuit using a newly developed low-noise crystal V901 (1N82A). The UHF section of the tuner operates in a single conversion circuit with the tubes in the VHF section of the tuner operating as low-noise 41 MC IF preamplifiers coupled between the output of the mixer circuit and the 41 MC IF amplifiers in the main chassis.

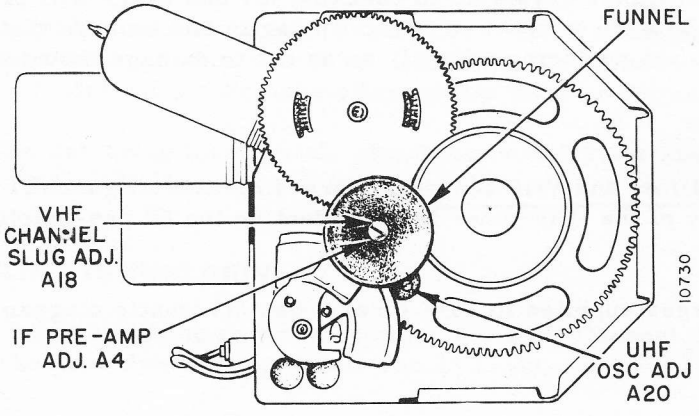


Figure 40. Front View of VHF-UHF Tuner 94E107-1.

SERVICING VHF SECTION OF TUNER 94E107-1

The servicing of the VHF section of this tuner is similar to that of other Admiral turret type tuners. See information given under heading of "Servicing VHF Tuners 94D131-1 and 94D131-2".

SERVICING UHF SECTION OF TUNER 94E107-1

The simplified circuitry and mechanical construction of UHF section of the tuner make it relatively trouble free and easy to service. Very little difficulty should be encountered in the servicing of the UHF section of the tuner other than replacement of a defective tube, defective mixer crystal or other components which are accessible without disturbing tuner alignment. For important service information, see paragraph on "UHF Trouble Shooting Hints".

Before suspecting trouble in the UHF section of the tuner, make sure that the VHF portion of the receiver is operating properly by tuning in a VHF station. If a station is not available, VHF test equipment can be used to check the VHF portion of the receiver in the same manner as checking for a defective VHF booster. If VHF operation is satisfactory, and it is known that a UHF signal of considerable strength exists, it can be assumed that the UHF antenna or the UHF section of the tuner or the IF pre-amplifier coils L904 and L905 in the VHF section of the tuner are at fault. Also see "Recommended Checks for Determining Cause of Poor UHF Reception". Note: It is easy to be deceived in areas where a strong VHF signal exists. Whenever possible, check VHF receiver sensitivity before replacing a UHF tuner. See "Fringe Area Television Reception" booklet, Form Number S346 for instructions on checking sensitivity, expected sensitivity figures, and recommended equipment.

CAUTION: When servicing, use care so as not to disturb or bend capacitor blades as alignment will be affected. When replacing components, it is important that they be replaced with duplicates of the same electrical characteristics and physical size. Refer to Parts List for description and characteristics of components.

UHF TROUBLE SHOOTING HINTS

Recommended Checks For Determining Cause of Poor UHF Reception

Check the antenna and transmission line. Check to see that the UHF tuner antenna leads are not placed too close to the television chassis or are shorting at the antenna terminal strip or at the chassis.

Check UHF oscillator tube V901 (6AF4A) by substitution. When making tube replacement, try several tubes to find one which will cause the least frequency shift. Be sure that the tube and the tube shield are pressed down (seated) firmly.

In some instances, replacement of oscillator tube V901 may effect tuner calibration. If this occurs, touch-up of the UHF oscillator trimmer (at both ends of the tuning range) is recommended as instructed under "UHF Calibration (Oscillator Adjustment) Using A Television Signal".

Check UHF mixer crystal CR901. Try several mixer crystals, in checking for one which will produce the best picture with a minimum of snow. Be sure to observe crystal polarity and be sure that the crystal is seated firmly. CAUTION: Use care when replacing crystal, so as not to damage mounting clips.

Check alignment of IF pre-amplifier, IF amplifier and VHF tuner. IF pre-amplifier alignment should especially be checked since the sensitivity of the UHF tuner is dependent on the IF pre-amplifier response.

Check UHF tuner voltages. Measure all voltages supplied to UHF tuner. See schematic diagram, Figure 45, for correct voltages.

Check operation of UHF Oscillator V901. If the tuner remains inoperative after making all the preceding checks, determine whether the UHF oscillator is operating by measuring the injection current. Set UHF Channel Selector to approximate center of its range. Disconnect UHF IF output plug M902 from UHF IF input socket M903. Connect a DC milliammeter (0-10 MA range), negative to the center conductor of M902, positive to chassis. If the UHF oscillator is functioning, the reading obtained will be approximately 0.5 to 3.0 MA. If no reading is obtained, the oscillator tube is not functioning. Follow normal trouble shooting procedures until oscillation is obtained.

After oscillation is obtained, check injection current while tuning through the UHF tuner's entire range. The current reading should remain within the range of 0.5 to 3.0 MA. Injection current may be raised or lowered by bending the oscillator injection loop (Figure 36) toward or away from the oscillator line until the proper amount of injection current is within limits.

UHF CALIBRATION (Oscillator Adjustment) USING A TELEVISION SIGNAL

Calibration on UHF channels should be within 18 MC or ±3 channels. If UHF calibration is not within limits (as indicated by the markings on the UHF Channel Selector knob), correction can be as follows:

1. If calibration has been affected by replacement of the UHF Oscillator tube V901 (6AF4A), try selection of a tube which will cause a minimum of frequency shift. If calibration is still not within limits, proceed with the following steps.
2. Set the UHF Channel Selector knob to the channel at which calibration is to be made.
3. Carefully adjust UHF Oscillator Trimmer (A20) to tune channel for best picture. (Note that this may not be the point at which the sound is loudest.)
4. Recheck calibration on other UHF channels. If necessary, make a compromise adjustment whereby all UHF channels are within calibration limits.

NOTE: It is sometimes perferable to sacrifice calibration accuracy for improved performance. If one or more UHF channels are in operation and reception is poor on only one channel, a compromise adjustment can be made to favor the weaker channel. This is done by rocking the Fine Tuning control back and forth while adjusting the UHF Oscillator Trimmer (A20) to see if the picture can be improved on the weaker channel. After adjusting, check other UHF channels to see if performance has been greatly affected.

REPLACING MIXER CRYSTAL CR901

The mixer crystal CR901 (1N82A), is located at the side of the UHF section of the tuner, just opposite the UHF oscillator tube V901 (6AF4A). To remove the mixer crystal, carefully grasp the metal end of the crystal using long nose pliers. Use care so as not to damage crystal or crystal holder.

When removing the crystal, check the polarity markings on the crystal to see that they coincide with the crystal polarity as shown in Figure 32.

SERVICING TUNING DRIVE

An all gear tuning drive is used for the UHF Channel Selector and Fine Tuning controls; see Figure 40. The gear drive of this tuner should require very little attention. The gears are self aligning. Rough

tuning or loose play may be caused by bent or worn gears. The individual gears are replaceable. The exploded diagram, Figure 42, shows the sequence for disassembling or assembling the individual drive gears.

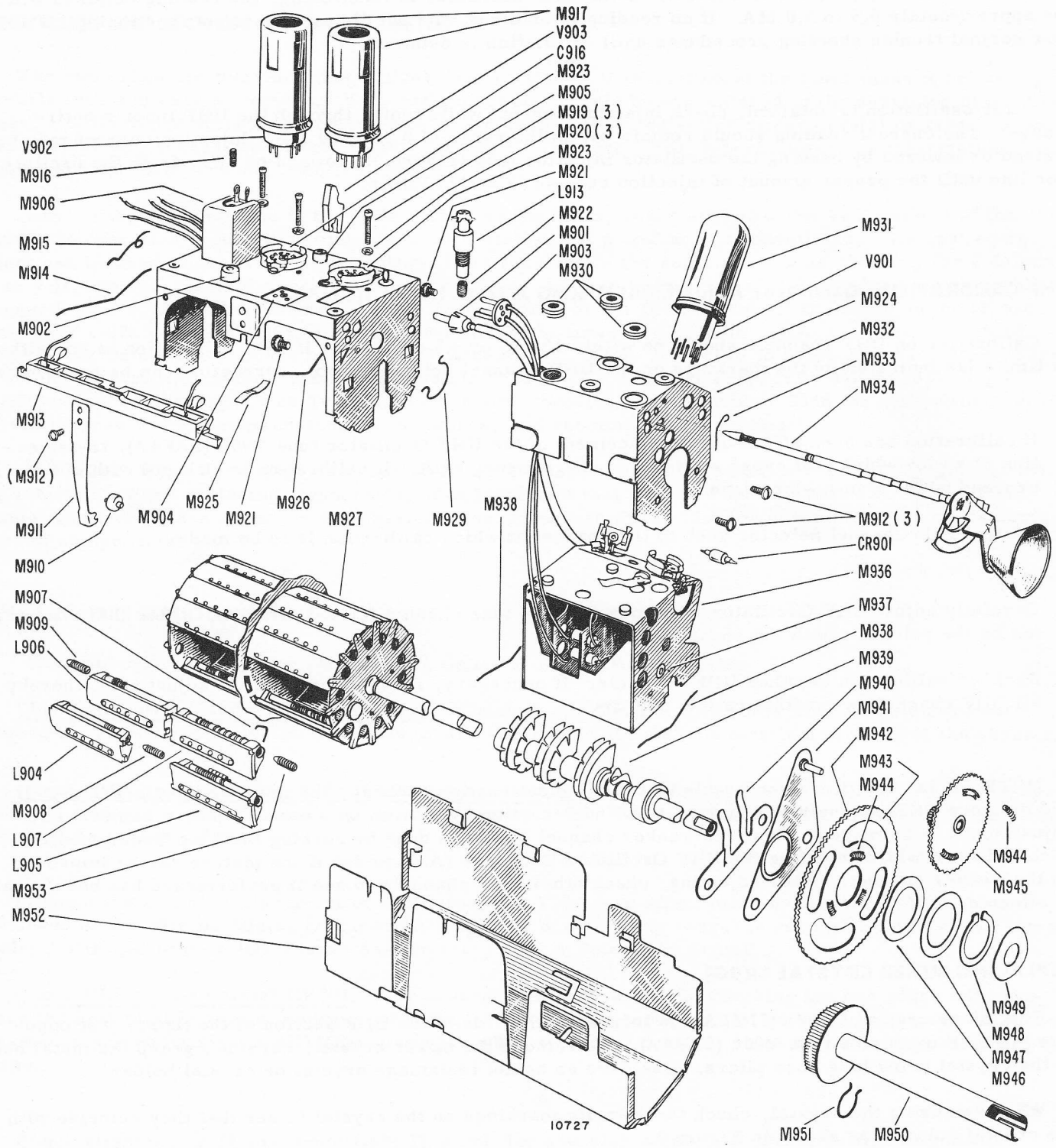


Figure 42. Exploded View of VHF-UHF Tuner 94E107-1.

Servicing VHF-UHF Tuner 94E107-1 - Cont'd.

REMOVING BOTTOM SHIELD

The bottom shield of the tuner is held in place by the cut-out tabs which grip the sides and bottom of the tuner. When removing or assembling the bottom shield to the tuner, exercise care to prevent damage to the coils or leads at the sides of the tuner.

To remove the bottom shield, fit the blade of a screwdriver into the cut-outs at the bottom of the tuner shield. Twist the screwdriver blade, forcing the cover shield up and away from the tuner. Do this to each of the bottom tabs at the sides of the cover shield. After disengaging the shield, carefully slip it off and away from the tuner.

To replace the cover shield, carefully slide the cover over the tuner and guide the cut-outs in the shield over the end brackets. At the bottom sides of the cover shield, carefully guide the tabs so that the cover shield fits firmly over the tuner.

REPLACING FINE TUNING ROTOR BLADE

The Fine Tuning control is a variable dielectric type capacitor. The normal tuning range of the Fine Tuning control for high channels is plus or minus 3 MC, for low channels plus or minus 1.5 MC.

To replace the fine tuning rotor blade, M918, rotate the fine tuning shaft fully clockwise so that rotor M918 extends out of the tuner. Using combination pliers, firmly grasp the end of the fine tuning rotor and pull it upward and out of the tuner.

To install a replacement rotor, place the rotor over the fine tuning shaft so that the flat on the fine tuning rotor is aligned with the flat on the fine tuning shaft; then firmly press the fine tuning rotor down over the fine tuning shaft until it is locked in place.

ADJUSTING CONTACT SPRINGS

Should the stationary contact springs make poor contact due to insufficient tension, remove several sets of channel coils from the turret. Rotate the turret to position making the bottom of the contact strip accessible for observation. With a narrow blade screwdriver, adjust the contact spring tension by carefully bending the exposed portion of the contact spring upward slightly until the shape of the spring conforms with the shape of other springs on the contact strip. If contact springs are bent badly, tuner replacement is recommended.

REMOVING COILS FROM TURRET ASSEMBLY

To remove VHF channel coils L906 and L907 or IF Pre-amplifier coils L904 and L906, insert a screwdriver blade between the coil retainer spring and the turret end plate. Twist the blade away from the turret and lift the end of the coil upward.

PRODUCTION CHANGES

Production changes are coded with a Run number, as given in the headings below. Run number stamped on chassis indicates that this chassis has the change(s) incorporated which are explained under that particular run heading below, as well as all changes (lower run numbers) made prior to that time. Pilot production, 29Z1 chassis were stamped RUN 1. Regular production 29Z1 chassis were stamped RUN 13; regular production 29SZ1 chassis were stamped RUN 14.

RUN 14 IN ALL CHASSIS

Appearance of white or color streaks (flashes) in black and white pictures, particularly in noisy areas (due to "opening" of color killer V401B) was prevented by adding capacitor C526 (.0047 mf) across resistor R528 (22,000 ohms).

RUN 15 IN ALL CHASSIS

Shading of color, characterized by a uniform increase of color intensity progressing from left to right side of the picture was prevented by adding a .0047 mf capacitor from plate (pin 3) of pulse shaper V501A to chassis ground. Resistor R506 was changed from 4,700 ohms to 8,200 ohms.

RUN 16 IN ALL CHASSIS

Sudden or erratic changes in contrast, when adjusting the Fine Tuning control was prevented by adding resistor R233 (47,000 ohms, 1 watt) from screen grid (pin 6) of luminance amplifier V205 to chassis ground.

RUN 16A IN 29Z1 CHASSIS WITH VHF TUNER 94D131-1

The following changes were made to the chroma circuitry for improved uniformity of color (red field). Resistor R520 was changed from 10 megohms to 6.8 megohms. Resistor R519 was changed from 12 megohms to 3.3 megohms. Resistor R506 was changed from 8,200 ohms to 4,700 ohms. NOTE: In some Run 15 chassis, R506 originally was 4,700 ohms. Resistor R534 was changed from 47,000 ohms, 1 watt to 68,000 ohms, 2 watts. Resistor R509 (1,000 ohms) was added between high side of Color Intensity control R505 and cathode (pin 1) of V501A. Capacitor C405 was changed from .02 mf to .15 mf. A .0047 mf capacitor was added from plate (pin 3) of V501A to chassis ground. NOTE: This capacitor was originally contained in Run 15 chassis.

IMPORTANT: After making the "A" changes, it is recommended that sub-carrier section be realigned, setting the 3.58 MC control tube grid (pin 9, V503A) for −5 instead of −6 volts.

RUN 17 IN 29Z1 CHASSIS

The following circuit changes were made in accordance with the television industries practice of complying with FCC regulations on reduction of interference radiation.

VHF tuner 94D131-1 is replaced with VHF tuner 94D131-2. Principle differences between tuners are as follows:

Mixer plate coil L105 (at underside of tuner 94D131-1) is at topside of tuner 94D131-2. Resistor R111 (15,000 ohms) was added across L105 in tuner 94D131-2.

In chassis using tuner 94D131-2, capacitor C202 is 10 mmf; capacitor C237 (24 mmf) is added.

In the IF input circuit of the chassis, capacitor C202 is changed from 8.2 mmf to 10 mmf. Capacitor C237 (24 mmf) is added.

RUN 17A IN 29Z1 CHASSIS WITH VHF TUNER 94D131-2

The circuit change is identical to the Run 16A change with exception that Run 17A chassis use VHF tuner 94D131-2.

RUN 18 IN ALL CHASSIS

For improved over-all color performance, a major number of circuit changes were made to the chroma circuitry. The functions of tubes in the chroma stages remain the same with exception of V501A ($\frac{1}{2}$6BH8) which now functions as a pulse clamper to prevent the ACC (Automatic Chroma Control) buss from going positive on weak color signals. See "Description of Circuit Changes in Chroma Section", given below.

NOTE: Since these circuit changes are numerous and complex, new schematics are included in this manual, applying only to sets stamped Run 18 or higher. The addition of Run 18 changes is not recommended for field service. When servicing chassis stamped Run 18 or higher, refer to schematics, figures 44 and 45.

DESCRIPTION OF CIRCUIT CHANGES IN CHROMA SECTION OF CHASSIS STAMPED RUN 18

The principal circuit changes in Run 18 and Run 19 chassis are in the Chroma amplifiers, Color

DESCRIPTION OF CIRCUIT CHANGES IN CHROMA SECTION OF CHASSIS STAMPED RUN 18-Cont'd.

Killer, ACC circuitry and the use of V501A ($\frac{1}{2}$6BH8) as a diode Pulse Clamper rather than as a triode Pulse Shaper.

The gain of the first Chroma amplifier V401A ($\frac{1}{2}$6AW8) is controlled manually by the positive pulse from the Color Intensity control R505 feeding through resistor R502 (18 K) and capacitor C527 (.01 mf) to the control grid of first Chroma amplifier V401A ($\frac{1}{2}$6AW8). Automatic Chroma (Gain) Control (ACC) of the first Chroma amplifier V401A, is accomplished by use of the negative voltage at the Color Phase Discriminator V502 (6AL5), which is developed during color transmission.

This negative voltage, developed by "burst", will change as the level of "burst" varies, becoming more negative as the "burst" level increases. Resistors R537 (2.2 megohms) and R538 (220 K) provide a voltage divider for the negative voltage. Resistors R509 (8.2 megohms) and R538 (220 K) provide a voltage divider for a positive delay voltage. The AGC buss is prevented from going positive by the diode pulse clamper V501A ($\frac{1}{2}$6BH8).

RUN 19 IN ALL CHASSIS

To eliminate possibility of color shading (from left to right side of picture) due to incomplete bypassing at junction of R407, R408 and R409; C405 was changed from .02 mf to .15 mf.

RUN 20 IN ALL CHASSIS

To prevent possibility of video ringing (due to tolerance variation of components), resistor R237 (8,200 ohms, $\frac{1}{2}$ watt), was added from junction of L221 and T206 to tap on T206.

RUN 20A IN 29Z1 CHASSIS

Chassis stamped Run 20A use VHF tuner 94D131-1.

In tuner 94D131-1, the mixer plate L105 is at underside of the tuner.

In chassis using tuner 94D131-1, capacitor C202 is 8.2 mmf and capacitor C237 (24 mmf) is omitted.

PARTS LIST

(Supersedes Parts List in Service Manual S592)

Electrical components have symbols in 100 series, 200 series, etc., according to location on schematic. Order parts by part number and description from Admiral distributor.

RESISTORS

Sym.	Description	Part No.
R101	1,000 ohms, ½ watt	60B 8-102
R102	2,200 ohms, ½ watt	60B 8-222
R103	3,900 ohms, ½ watt	60B 8-392
R104	220,000 ohms, ½ watt	60B 8-224
R105	10,000 ohms, ½ watt	60B 8-103
R106	6,800 ohms, ½ watt	60B 8-682
R107	1,000 ohms, ½ watt	60B 8-102
R108	51 ohms, ½ watt, 5%	60B 7-510
R109	4,700 ohms, ½ watt	60B 8-472
R110	10,000 ohms, ½ watt	60B 8-103
R111	15,000 ohms, ½ watt	60B 8-153
R201	22,000 ohms, ½ watt, 5%	60B 7-223
R202	10 ohms, ½ watt, 5%	60B 7-100
R203	10,000 ohms, ½ watt	60B 8-103
R204	56 ohms, ½ watt, 5%	60B 7-560
R205	1,000 ohms, ½ watt	60B 8-102
R206	39,000 ohms, ½ watt, 5%	60B 7-393
R207	4,700 ohms, 2 watts	60B 20-472
R208	1,000 ohms, ½ watt	60B 8-102
R209	56 ohms, ½ watt, 5%	60B 7-560
R210	10 ohms, ½ watt, 5%	60B 7-100
R211	4,700 ohms, 2 watts	60B 20-472
R212	15 ohms, ½ watt, 5%	60B 7-150
R213	1,000 ohms, ½ watt	60B 8-102
R214	82,000 ohms, ½ watt	60B 8-820
R215	62 ohms, ½ watt, 5%	60B 7-620
R216	68,000 ohms, ½ watt, 5%	60B 7-683
R217	3,900 ohms, ½ watt, 5%	60B 7-392
R218	4,700 ohms, 2 watt	60B 20-472
R219	470 ohms, ½ watt	60B 8-471
R220	4,700 ohms, ½ watt, in chassis stamped Run 1 through Run 12	60B 8-472
	2,700 ohms, ½ watt, in chassis stamped Run 13 through Run 17	60B 8-272
	470 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-471
R221	27,000 ohms, ½ watt, 5%	60B 7-273
R222	47,000 ohms, ½ watt	60B 8-473
R223	4,300 ohms, ½ watt, 5%	60B 7-432
R225	500 ohms, Contrast control	75C 13-74
R226	22,000 ohms, 1 watt	60B 14-223
R227	47,000 ohms, ½ watt	60B 8-473
R229	6,800 ohms, ½ watt	60B 8-682
R230	47 ohms, ½ watt	60B 8-470
R231	2,200 ohms, 2 watts (R231 was ½ watt in some early sets)	60B 20-222
R232	5,000 ohms, 5 watts	61A 17-9
R233	47,000 ohms, 1 watt	60B 14-473
R234	10,000 ohms, 2 watts	60B 20-103
R235	10,000 ohms, 2 watts	60B 20-103
R301	120 ohms, ½ watt	60B 8-121
R302	10,000 ohms, 2 watts (R302 was 27,000 ohms, 2 watts in some sets)	60B 20-103

RESISTORS-Cont'd

Sym.	Description	Part No.
R303	390 ohms, ½ watt	60B 8-391
*R304	47,000 ohms, ½ watt	Part of M301
*R305	10,000 ohms, ½ watt	Part of M301
*R306	10,000 ohms, ½ watt	Part of M301
R307	22,000 ohms, ½ watt	60B 8-223
R308A	1 megohm, Volume control	75B 11-31
R308B	500,000 ohms, Brightness control (R308 includes switch S701)	75B 11-31
R309	470 ohms, ½ watt	60B 8-471
R310	2.2 megohms, ½ watt	60B 8-225
R311	3,900 ohms, 2 watts	60B 20-392
R312	2,700 ohms, 2 watts	60B 20-272
R313	100,000 ohms, 1 watt (R313 was ½ watt in some early sets)	60B 14-104
R314	500,000 ohms, Tone control	75D 13-73.
R316	220,000 ohms, ½ watt	60B 8-224
R317	390,000 ohms, ½ watt	60B 8-394
R318	10,000 ohms, 1 watt	Part of L302
R319	2,500 ohms, 10 watts	61B 20-8
R331	330 ohms, 1 watt	60B 14-331
R401	10,000 ohms, ½ watt, 5%	60B 7-103
R402	10,000 ohms, ½ watt, 5%	60B 7-103
R403	120 ohms, ½ watt	60B 8-121
R404	2,500 ohms, 7 watts	61B 20-6
R405	470,000 ohms, ½ watt	60B 8-474
R406	27,000 ohms, 2 watts	60B 20-273
R407	1,000 ohms, ½ watt, in chassis stamped Run 1 through Run 17A	60B 8-102
	4,700 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-472
R408	10,000 ohms, 1 watt, in chassis stamped Run 1 through Run 17A	60B 14-103
	7,000 ohms, 10 watts, in chassis stamped Run 18 or higher	61A 7-48
R409	1,200 ohms, 2 watts, in chassis stamped Run 1 through Run 17A	60B 20-122
	680 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-681
R410	1,500 ohms, 2 watts, in chassis stamped Run 1 through Run 17A	60B 20-152
	2,700 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-272
R411	470,000 ohms, ½ watt, in chassis stamped Run 1 through Run 17A	60B 8-474
	470 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-471
R412	15,000 ohms, 2 watts	60B 20-153
R413	10,000 ohms, 2 watts, 5%	60B 19-103
R414	470 ohms, 1 watt	60B 14-471

*Part of couplate M301, order part number 63C6-15.

RESISTORS-Cont'd

Sym.	Description	Part No.
R415	2,700 ohms, ½ watt, in chassis stamped Run 1 through Run 17A	60B 8-272
	6,800 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-682
R416	2,700 ohms, ½ watt, in chassis stamped Run 1 through Run 17A	60B 8-272
	6,800 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-682
R417	680 ohms, 1 watt	60B 14-681
R418	18,000 ohms, 2 watts	60B 20-183
R419	18,000 ohms, 2 watts	60B 20-183
R420	100,000 ohms, ½ watt	60B 8-104
R421	2,700 ohms, ½ watt	60B 8-272
R422	100,000 ohms, ½ watt	60B 8-104
R423	2,700 ohms, ½ watt	60B 8-272
R424	3,300 ohms, 2 watts	60B 20-332
R425	100,000 ohms, ½ watt	60B 8-104
R426	2,700 ohms, ½ watt	60B 8-272
R427	100,000 ohms, ½ watt	60B 8-104
R428A	1 megohm, Blue Screen control	
R428B	500,000 ohms, Blue Grid control	75B 17-19
R429	560,000 ohms, ½ watt	60B 8-564
R430A	1 megohm, Green Screen control	
R430B	500,000 ohms, Green Grid control	75B 17-19
R431	1 megohm, Red Screen control	75D 20-50
R432	220,000 ohms, ½ watt	60B 8-224
R433	100,000 ohms, ½ watt	60B 8-104
R434	100,000 ohms, ½ watt	60B 8-104
R435	500,000 ohms, Green Grid control	See R430B
R436	82,000 ohms, ½ watt	60B 8-823
R437	56,000 ohms, ½ watt	60B 8-563
R438	500,000 ohms, Brightness control	See R308B
R439	82,000 ohms, ½ watt	60B 8-823
R440	180,000 ohms, ½ watt	60B 8-184
R441	500,000 ohms, Blue Grid control	See R428B
R442	100,000 ohms, ½ watt	60B 8-104
R443	68,000 ohms, ½ watt, 5%	60B 7-683
R444	22,000 ohms, 2 watts	60B 20-223
R445	330,000 ohms, ½ watt	60B 8-334
R446	39,000 ohms, 2 watts	60B 20-393
R447	10,000 ohms, ½ watt	60B 8-103
R448	10 ohms, ½ watt	60B 8-100
R501	330 ohms, ½ watt	60B 8-331
R502	33,000 ohms, 2 watts, in chassis stamped Run 1 through Run 17A	60B 20-333
	18,000 ohms, 1 watt, in chassis stamped Run 18 or higher	60B 14-183
R503	18,000 ohms, 2 watts, in chassis stamped Run 1 through Run 17A	60B 20-183
	47,000 ohms, 2 watts, in chassis stamped Run 18 or higher	60B 20-473
R504	12,000 ohms, ½ watt	60B 8-123
R505	2,000 ohms, Color Intensity control	75D 13-70
R506	4,700 ohms, ½ watt, in chassis stamped Run 1, Run 14 and Run 16A	60B 8-472
	8,200 ohms, ½ watt, in some chassis stamped Run 15	60B 8-822
	1,000 ohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-102

RESISTORS-Cont'd

Sym.	Description	Part No.
R507	100,000 ohms, ½ watt	60B 8-104
R508	470,000 ohms, ½ watt	60B 8-474
R509	1,000 ohms, ½ watt, in chassis stamped Run 1 through Run 15	60B 8-102
	2,200 ohms, ½ watt, in chassis stamped Run 16A through Run 17A	60B 8-222
	8.2 megohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-825
R510	6,800 ohms, ½ watt	60B 8-682
R511	4,700 ohms, 1 watt	60B 14-472
R512	82 ohms, ½ watt	60B 8-820
R513	680,000 ohms, ½ watt	60B 8-684
R514	1,000 ohms, ½ watt	60B 8-102
R515	470 ohms, ½ watt	60B 8-471
R516	27,000 ohms, ½ watt, 5%	60B 7-273
R517	1,000 ohms, ½ watt	60B 8-102
R518	470,000 ohms, ½ watt	60B 8-474
R519	12 megohms, ½ watt, in chassis stamped Run 1 through Run 16	60B 8-126
	3.3 megohms, ½ watt, in chassis stamped Run 16A or higher	60B 8-335
R520	10 megohms, ½ watt, in chassis stamped Run 1 through Run 16	60B 8-106
	6.8 megohms, ½ watt, in chassis stamped Run 16A or higher	60B 8-685
R521	1 megohm, ½ watt, 5%	60B 7-105
R522	1 megohm, ½ watt, 5%	60B 7-105
R523	3,300 ohms, 2 watts	60B 20-332
R524	33,000 ohms, ½ watt	60B 8-333
R525	220,000 ohms, ½ watt (R525 was 6,800 ohms in some sets)	60B 8-224
R526	1 megohm, ½ watt	60B 8-105
R527	2,200 ohms, ½ watt	60B 8-222
R528	22,000 ohms, ½ watt	60B 8-223
R529	150,000 ohms, ½ watt	60B 8-154
R530	390,000 ohms, ½ watt (R530 was 560,000 ohms in chassis stamped Run 1)	60B 8-394
R531	100,000 ohms, ½ watt	60B 8-104
R532	100 ohms, ½ watt	60B 8-101
R533	100 ohms, ½ watt	60B 8-101
R534	47,000 ohms, 1 watt, in chassis stamped Run 1 through Run 16	60B 14-473
	68,000 ohms, 2 watts, in chassis stamped Run 16A or higher	60B 20-683
R535	1,000 ohms, ½ watt	60B 8-102
R536	6,800 ohms, ½ watt	60B 8-682
R537	2.2 megohms, ½ watt	60B 8-225
R538	220,000 ohms, ½ watt	60B 8-224
R601	47,000 ohms, ½ watt	60B 8-473
R602	3.9 megohms, ½ watt, 5%, in chassis stamped Run 1 through Run 17A	60B 7-395
	1.8 megohms, ½ watt, 5%, in chassis stamped Run 18 or higher	60B 7-185
R603	15 megohms, ½ watt	60B 8-156
R604	1.5 megohms, ½ watt, 5%	60B 7-155
R605	56,000 ohms, ½ watt	60B 8-563
R606	15,000 ohms, ½ watt	60B 8-153
†R607	270,000 ohms, ½ watt	Part of M605
R608	220,000 ohms, ½ watt	60B 8-224
R610	2.2 megohms, ½ watt	60B 8-225

†Part of couplate M605, order part number 63C6-8.

RESISTORS-Cont'd

Sym.	Description	Part No.
R611	3.3 megohms, ½ watt	60B 8-335
R612	22,000 ohms, 2 watts, in chassis stamped Run 1	60B 20-223
	27,000 ohms, 2 watts, in chassis stamped Run 13 through Run 17A	60B 20-273
	15,000 ohms, 2 watts, in chassis stamped Run 18 or higher	60B 20-153
R613	56,000 ohms, ½ watt	60B 8-563
R614	270,000 ohms, ½ watt, in chassis stamped Run 1	60B 8-274
	330,000 ohms, ½ watt, in chassis stamped Run 13 or higher	60B 8-334
R615	2,700 ohms, ½ watt	60B 8-272
R616	4,700 ohms, ½ watt, in chassis stamped Run 1	60B 8-472
	10,000 ohms, ½ watt, in chassis stamped Run 13 or higher	60B 8-103
R617	2.2 megohms, ½ watt	60B 8-225
R618	4.7 megohms, ½ watt	60B 8-475
R619	2,200 ohms, ½ watt	60B 8-222
R620	100,000 ohms, ½ watt, 5%	60B 7-104
R621	100,000 ohms, ½ watt, 5%	60B 7-104
R622	4.7 megohms, ½ watt	60B 8-475
R623	470,000 ohms, ½ watt	60B 8-474
R624	2,200 ohms, ½ watt	60B 8-222
R625	5,600 ohms, ½ watt	60B 8-562
R626	2,500 ohms, 7 watts	61B 20-6
R628	120,000 ohms, ½ watt	60B 8-124
R629	6.8 megohms, ½ watt, in chassis stamped Run 1 through Run 17	60B 8-685
	4.7 megohms, ½ watt, in chassis stamped Run 18 or higher	60B 8-475
R630	1 megohm, ½ watt	60B 8-105
R631A	2.5 megohms, Vert. Linearity control	75C 35-3
R631B	5 megohms, Height control	
R632	2.5 megohms, Vertical Hold control	75D 13-80
R633	39,000 ohms, ½ watt	60B 8-393
R634	15,000 ohms, ½ watt	60B 8-153
R635	18,000 ohms, ½ watt	60B 8-183
R636	22,000 ohms, 1 watt	60B 14-223
R637	2.2 megohms, ½ watt	60B 8-225
R638	100 ohms, ½ watt	60B 8-101
R639	470,000 ohms, ½ watt	60B 8-474
R640	5 megohms, Height control	See R631B
R641	3.9 megohms, ½ watt	60B 8-395
R642	100,000 ohms, ½ watt	60B 8-104
R643	2.7 megohms, 1 watt	60B 14-275
R644	270,000 ohms, ½ watt	60B 8-274
R645	150,000 ohms, ½ watt	60B 8-154
R646	50,000 ohms, Horiz. Drive control	75D 20-34
R647	10,000 ohms, ½ watt, 5%	60B 7-103
R648	2,000 ohms, ½ watt, 5%	60B 7-202
R649	150,000 ohms, ½ watt, 5%	60B 7-154
R650	25,000 ohms, Horiz. Hold control	75D 13-72
R651	8,200 ohms, ½ watt, 5%	60B 7-822
R652	1,200 ohms, ½ watt, 5%	60B 7-122
R653	1,200 ohms, ½ watt, 5%	60B 7-122
R654	120 ohms, ½ watt	60B 8-121
R655	1 megohm, ½ watt	60B 8-105
R656	56 ohms, ½ watt	60B 8-560

RESISTORS-Cont'd

Sym.	Description	Part No.
R657	12,000 ohms, 10 watts (R657 was 10,000 ohms in some early sets)	61B 20-12
R658	4,700 ohms, 1 watt	60B 14-472
R659	200,000 ohms, Focus control	75C 33-1
R660	100 ohms, Horiz. Centering control	75C 33-2
R670	1.5 ohms, ½ watt, in chassis stamped Run 1	60B 28-60
	3.3 ohms, ½ watt, in chassis stamped Run 13 or higher	60B 28-10
R671	10 megohms, 2 watts	60B 20-106
R672	1 megohm, 2 watts	60B 20-105
R673	1 megohm, 2 watts	60B 20-105
R674	10 megohms, 2 watts	60B 20-106
R675	10 megohms, 2 watts	60B 20-106
R676	10,000 ohms, ½ watt	60B 8-103
R677	1.8 megohms, 1 watt, 5%	60B 13-185
R680	1.8 megohms, 1 watt, 5%	60B 13-185
R681	100 megohms, 1 watt	60B 15-107
R682	40 ohms, Vert. Centering control	75D 20-49
R683	22 ohms, 2 watts, in chassis stamped Run 1	60B 20-220
	33 ohms, 2 watts, in chassis stamped Run 13 or higher	60B 20-330
R684	22 ohms, 2 watts, in chassis stamped Run 1	60B 20-220
	33 ohms, 2 watts, in chassis stamped Run 13 or higher	60B 20-330
R685	22 ohms, 2 watts	60B 20-220
R686	68 ohms, ½ watt	60B 8-680
R687	100 ohms, Red DC control	75C 35-4
R688	100 ohms, Green DC control	75C 35-4
R689	100 ohms, Blue DC control	75C 35-4
R690A	100 ohms, Red Vert. Tilt control	75C 35-2
R690B	100 ohms, Red Vert. Amp. control	
R691A	100 ohms, Green Vert. Tilt control	75C 35-2
R691B	100 ohms, Green Vert. Amp. control	
R692A	100 ohms, Blue Vert. Tilt control	75C 35-2
R692B	100 ohms, Blue Vert. Amp. control	
R693	100 ohms, Red Vert. Amp. control	See R690B
R694	100 ohms, Green Vert. Amp. control	See R691B
R695	100 ohms, Blue Vert. Amp. control	See R692B
R696	2,200 ohms, 2 watts	60B 20-222
R697	47 ohms, ½ watt	60B 8-470
R698	8.2 ohms, 1 watt	60B 28-62
R699	12 megohms, ½ watt	60B 8-126
R701	470,000 ohms, ½ watt	60B 8-474
R702	100,000 ohms, ½ watt	60B 8-104
R703	430 ohms, 20 watts	61A 1-42
R704	800 ohms, 10 watts	61B 20-7
R705	6,800 ohms, 2 watts	60B 20-682
R706	5,600 ohms, 2 watts	60B 20-562
R901	100 ohms, ½ watt	60B 8-101
R902	10,000 ohms, ½ watt	60B 8-103
R903	1,000 ohms, ½ watt	60B 8-102
R904	22,000 ohms, ½ watt	60B 8-223
R905	47,000 ohms, ½ watt	60B 8-473
R906	820,000 ohms, ½ watt	60B 8-824
R907	470,000 ohms, ½ watt	60B 8-474

RESISTORS-Cont-d

Sym.	Description	Part No.
R908	1,500 ohms, 1 watt	60B 14-152
R909	6,800 ohms, ½ watt	60B 8-682
R910	5,600 ohms, ½ watt	60B 8-562
R911	6,800 ohms, ½ watt	60B 8-682
R913	100,000 ohms, ½ watt	60B 8-104
R914	100,000 ohms, ½ watt	60B 8-104
R915	100,000 ohms, ½ watt	60B 8-104
R916	27,000 ohms, ½ watt	60B 8-273
R917	3,300 ohms, 1 watt	60B 14-332
R918	10,000 ohms, ½ watt	60B 8-103
R919	22 ohms, ½ watt	60B 8-220
R920	33 ohms, ½ watt	60B 8-330
R921	100 ohms, ½ watt	60B 8-101

CAPACITORS

C101	120 mmf, 10%, 500 volts, ceramic	94D 131-79
C102	30 mmf, 5%, 500 volts, ceramic feed-through	94D 131-80
C103	28 mmf, 10%, 500 volts, ceramic	94D 131-81
C104	1,000 mmf, 500 volts, ceramic feed-through	94D 131-82
C105	1 to 4.5 mmf, ceramic trimmer	94D 131-83
C106	5 mmf, 500 volts, ceramic	94D 131-84
C107	1,000 mmf, 500 volts, ceramic	94D 131-85
C108	1 to 4.5 mmf, ceramic trimmer	94D 131-83
C109	1,000 mmf, 500 volts, ceramic feed-through	94D 131-82
C110	1 to 4.5 mmf, ceramic trimmer	94D 131-83
C111	47 mmf, 10%, 500 volts, ceramic	94D 131-87
C112	1,000 mmf, 500 volts, ceramic feed-through	94D 131-82
C113	30 mmf, 20%, 500 volts, ceramic feed-through	94D 131-88
C114	1,000 mmf, 500 volts, ceramic, N750 temp. coeff	94D 131-89
C115	1,000 mmf, 500 volts, ceramic feed-through	94D 131-90
C116	3 mmf, 10%, 500 volts, ceramic, NPO temp. coeff	94D 131-91
C117	6.8 mmf, 10%, 500 volts, ceramic, N330 temp. coeff	94D 131-92
C118	2 mmf, 5%, 500 volts, ceramic, N550 temp. coeff	94D 131-93
C119	Fine Tuning Rotor (book type)	94D 110-94
C120	15 mmf, 5%, 500 volts, ceramic	94D 131-94
C121	12 mmf, 10%, 500 volts, ceramic	94D 131-95
C122	1,000 mmf, 500 volts, ceramic feed-through	94D 131-82
C123	1,000 mmf, 500 volts, ceramic feed-through	94D 131-82
C202	8.2 mmf, 5%, 500 volts, ceramic (chassis using 94D131-1 Tuner only)	65D 6-123
C202	10 mmf, 5%, 500 volts, ceramic, NPO temp. coeff. (chassis using 94D131-2 Tuner only)	65D 6-115
C203	91 mmf, 5%, 500 volts, ceramic NPO temp. coeff	65D 10-96
C204	68 mmf, 5%, 500 volts, ceramic NPO temp. coeff	65D 10-97
C205	1,500 mmf, 500 volts, ceramic disc	65D 10-100
C206	820 mmf, 500 volts, ceramic disc	65D 10-91

CAPACITORS-Cont'd

Sym.	Description	Part No.
C207	820 mmf, 500 volts, ceramic disc	65D 10-91
C208	820 mmf, 500 volts, ceramic disc	65D 10-91
C209	.005 mf, 450 volts, ceramic disc	65D 10-5
C210	820 mmf, 500 volts, ceramic disc	65D 10-91
C211	.005 mf, 450 volts, ceramic disc	65D 10-5
C212	820 mmf, 500 volts, ceramic disc	65D 10-91
C213	820 mmf, 500 volts, ceramic disc	65D 10-91
C214	820 mmf, 500 volts, ceramic disc	65D 10-91
C215	100 mmf, 10%, 500 volts, ceramic, N750 temp. coeff	65D 6-19
C216	6.8 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 10-102
C217	4.7 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 10-101
C218	6.8 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 10-102
C219	82 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 10-98
C220	6.8 mmf, 10%, 500 volts, ceramic	65D 6-82
C221	150 mmf, 5%, 500 volts, mica	65B 20-151
C222	.01 mf, 450 volts, ceramic disc	65D 10-3
C223	.0015 mf, 600 volts, paper	64B 8-18
C224	Electrolytic	See C703C
C225	4 mf, 150 volts, Electrolytic	67A 4-2
C226	.005 mf, 450 volts, ceramic disc	65D 10-5
C231	820 mmf, 500 volts, ceramic disc	65D 10-91
C232	820 mmf, 500 volts, ceramic disc	65D 10-91
C233	820 mmf, 500 volts, ceramic disc	65D 10-91
C234	820 mmf, 500 volts, ceramic disc	65D 10-91
C235	.02 mf, 500 volts, ceramic disc	65D 10-28
C236	1.0 mf, 100 volts, paper	64A 10-3
C237	24 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 6-112
C301	3.3 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 6-89
C302	12 mmf, 10%, 500 volts, ceramic, NPO temp. coeff	65D 10-94
C303	.005 mf, 450 volts, ceramic disc	65D 10-5
C304	.0022 mf, 500 volts, ceramic disc	65D 10-89
C305	.0022 mf, 500 volts, ceramic disc	65D 10-89
C306	180 mmf, 5%, 500 volts, ceramic, N030 temp. coeff	65D 10-52
C307	4 mf, 50 volts, electrolytic	67A 4-9
*C308	390 mmf, 500 volts, ceramic	Part of M301
*C309	.0022 mf, 500 volts, ceramic	Part of M301
*C310	.005 mf, 500 volts, ceramic	Part of M301
C311	.02 mf, 500 volts, ceramic disc	65D 10-28
C312	.02 mf, 500 volts, ceramic disc	65D 10-28
C313	47 mmf, 500 volts, ceramic disc	65D 10-80
C314	.033 mf, 400 volts, paper	64B 8-29
C315	.047 mf, 400 volts, paper	64B 8-28
C316	.0047 mf, 600 volts, paper	64B 8-15
C317	.005 mf, 450 volts, ceramic disc	65D 10-5
C318	.005 mf, 450 volts, ceramic disc	65D 10-5
C320A	20 mf, 450 volts	
C320B	50 mf, 350 volts	
C320C	5 mf, 450 volts	electrolytic 67D 15-138
C320D	20 mf, 25 volts	
C331	4 mf, 10 volts, paper	64B 13-1
C401	43 mmf, 5%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-95

*Part of couplate M301, order part number 6306-15.

CAPACITORS-Cont'd

Sym.	Description	Part No.
C402	3.3 mmf, 500 volts, ceramic, NPO temp. coeff., in chassis stamped Run 1	65D 6-89
	6.8 mmf, 10%, 500 volts, ceramic, in chassis stamped Run 13 or higher	65D 6-82
C403	100 mmf, 500 volts, ceramic disc, in chassis stamped Run 1	65D 10-84
	180 mmf, 20%, 500 volts, ceramic disc, in chassis stamped Run 13 or higher	65D 10-132
C404	4 mf, 150 volts, electrolytic	67A 4-2
C405	.02 mf, 500 volts, ceramic disc, in chassis stamped Run 1 through Run 15	65D 10-28
	.15 mf, 400 volts, paper, in chassis stamped Run 16A or higher	64B 8-25
C406	.005 mf, 450 volts, ceramic disc	65D 10-5
C407	1,200 mmf, 10%, ceramic disc, in chassis stamped Run 1 through Run 15	65D 10-128
	390 mmf, 10%, 500 volts, mica, in chassis stamped Run 16 or higher.	65B 21-391
C408	.01 mf, 450 volts, ceramic disc	65D 10-3
C409	.005 mf, 450 volts, ceramic disc	65D 10-5
C410	1 mf, 100 volts, paper	64A 10-3
C411	2,400 mmf, 5%, 500 volts, mica	65B 20-242
C412	.01 mf, 450 volts, ceramic disc	65D 10-3
C414	18 mmf, 500 volts, ceramic	65D 10-104
C415	.02 mf, 500 volts, ceramic disc	65D 10-28
C416	47 mmf, 5%, 500 volts, ceramic, NPO temp. coeff	65D 6-84
C417	18 mmf, 500 volts, ceramic	65D 10-104
C418	.02 mf, 500 volts, ceramic disc	65D 10-28
C419	47 mmf, 5%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-92
C420	27 mmf, 10%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-93
C422	.01 mf, 450 volts, ceramic disc	65D 10-3
C423	.01 mf, 450 volts, ceramic disc	65D 10-3
C424	.01 mf, 450 volts, ceramic disc	65D 10-3
C425	.1 mf, 600 volts, molded paper	64B 8-7
C426	22 mmf, 2%, 500 volts, ceramic, NPO temp. coeff., in chassis stamped Run 1 through Run 17A	65D 6-30
	10 mmf, 10%, 500 volts, ceramic disc, NPO temp. coeff., in chassis stamped Run 18 or higher	65D 10-87
C427	22 mmf, 2%, 500 volts, ceramic, NPO temp. coeff	65D 6-30
C428	.01 mf, 1,000 volts, paper	64B 2-13
C429	.01 mf, 1,000 volts, paper	64B 2-13
C430	.01 mf, 1,000 volts, paper	64B 2-13
C431	470 mmf, 500 volts, ceramic disc	65D 10-70
C432	100 mmf, 500 volts, ceramic disc	65D 10-84
C443	250 mmf, 500 volts, ceramic	65D 6-5
C501	.1 mf, 600 volts, molded paper	64B 8-7
C502	.001 mf, 600 volts, molded paper, in chassis stamped Run 1	64B 8-19
	470 mmf, 500 volts, ceramic disc, in chassis stamped Run 13	65D 10-70

CAPACITORS-Cont'd

Sym.	Description	Part No.
C503	.01 mf, 450 volts, ceramic disc, in chassis stamped Run 1	65D 10-3
	.001 mf, 400 volts, 10%, paper, in chassis stamped Run 13	64A 2-24
C504	.1 mf, 600 volts, molded paper	64B 8-7
C505	.0047mf, 600 volts, molded paper	64B 8-15
C506	.005 mf, 450 volts, ceramic disc	65D 10-5
C507	.02 mf, 500 volts, ceramic disc	65D 10-28
C508	.1 mf, 200 volts,molded paper	64B 8-39
C509	.02 mf, 500 volts, ceramic disc	65D 10-28
C510	3.5 to 28 mmf, Color Fidelity	66B 40-5
C511	.0022 mf, 500 volts, ceramic disc	65D 10-89
C512	.005 mf, 450 volts, ceramic disc	65D 10-5
C513	.0022 mf, 500 volts, ceramic disc	65D 10-89
C514	2 mmf, 10%, 500 volts, ceramic, NPO temp. coeff	65D 6-58
C515	.01 mf, 450 volts, ceramic disc, in chassis stamped Run 1 through Run 15	65D 10-3
	.022 mf, 400 volts, molded paper, in chassis stamped Run 16 or higher.	64B8-30
C516	27 mmf, 10%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-93
C517	.02 mf, 500 volts, ceramic disc	65D 10-28
C518	220 mmf, 500 volts, ceramic disc	65D 10-83
C519	.0022 mf, 500 volts, ceramic disc	65D 10-89
C520	.22 mf, 400 volts, molded paper	64B 8-24
C521	.047 mf, 400 volts, paper	64B 8-28
C522	12 mmf, 10%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-94
C523	.02 mf, 500 volts, ceramic disc	65D 10-28
C524	220 mmf, 10%, 500 volts, mica	65B 21-221
C525	82 mmf, 5%, 500 volts, ceramic disc, NPO temp. coeff	65D 10-98
C526	.0047 mf, 600 volts, molded paper	64B 8-15
C527	.01 mf, 500 volts, ceramic	65D 10-41
C528	.68 mmf, 10%, 500 volts, composition	65B 28-0068
C601	1 mf, 100 volts, paper	64A 10-3
C602	.005 mf, 450 volts, ceramic disc	65D 10-5
C603	.001 mf, 10%, 1,600 volts, paper	64B 2-28
†C604	150 mmf	Part of M605
†C605	.01 mf	Part of M605
C606	.22 mf, 600 volts, molded paper	64B 8-5
C607	.005 mf, 450 volts, ceramic disc	65D 10-5
C608	.001 mf, 400 volts, 10%, paper	64B 2-24
C609	.001 mf, 400 volts, 10%, paper	64B 2-24
C610	.005 mf, 450 volts, ceramic disc	65D 10-5
C611	.047 mf, 200 volts, molded paper	64B 8-41
C612	.0047 mf, 600 volts, molded paper	64B 8-15
C613	.001 mf, 600 volts, molded paper	64B 8-19
C614	.001 mf, 600 volts, molded paper	64B 8-19
C616	Electrolytic	See C320B
C617	.01 mf, 600 volts, molded paper, in chassis stamped Run 1	64B 8-13
	.0047 mf, 600 volts, molded paper, in chassis stamped Run 13 or higher.	64B 8-15
C618	.0047 mf, 600 volts, molded paper	64B 8-15
C619	.0015 mf, 600 volts, molded paper	64B 8-18
C620	.12 mf, 10%, 600 volts, paper	64B 22-43
C621	.033 mf, 10%, 600 volts, paper	64B 22-10
C622	.33 mf, 10%, 200 volts, paper	64B 22-36
C623	.056 mf, 10%, 400 volts, paper	64B 22-44

†Part of couplate M605, order part number 63C6-8.

CAPACITORS-Cont'd

Sym.	Description	Part No.
C624	.0027 mf, 10%, 1,600 volts, paper...	64B 2-37
C625	.1 mf, 600 volts, molded paper.....	64B 8-7
C626	.0039 mf, 10%, 500 volts, mica.....	65B 21-392
C627	22 mmf, 10%, 500 volts, mica.....	65B 21-220
C628	220 mmf, 5%, 500 volts, mica.....	65B 20-221
C629	470 mmf, 5%, 500 volts, mica.....	65B 20-471
C630	.01 mf, 600 volts, molded paper.....	64B 8-13
C631	.1 mf, 200 volts, molded paper.....	64B 8-39
C632	82 mmf, 5%, 500 volts, ceramic disc, NPO temp. coeff.....	65D 10-98
C633	Electrolytic.....	See C320C
C634	.1 mf, 600 volts, molded paper.....	64B 8-7
C635	.22 mf, 600 volts, molded paper.....	64B 8-5
C636	250 mmf, 5%, 3 KV, ceramic disc, N1500 temp. coeff.....	65D 10-114
C637	250 mmf, 5%, 3 KV, ceramic disc, N1500 temp. coeff.....	65D 10-114
C638	.47 mf, 200 volts, 10%, molded paper	64B 22-35
C639	.47 mf, 200 volts, 10%, molded paper	64B 22-35
C640	.1 mf, 600 volts, molded paper.....	64B 8-7
C641	.15 mf, 400 volts, molded paper.....	64B 8-25
C642	56 mmf, 5,000 volts, ceramic disc, N1500 temp. coeff.....	65D 10-126
C643	.047 mf, 600 volts, molded paper....	64B 8-9
C644	.0033 mf, 600 volts, molded paper...	64C 25-17
C645	.39 mf, 200 volts, 10%, molded paper	64B 22-42
C646	.39 mf, 200 volts, 10%, molded paper	64B 22-42
C647	.47 mf, 200 volts, 10%, molded paper	64B 22-35
C648	.47 mf, 200 volts, 10%, molded paper	64B 22-35
C701	.047 mf, 600 volts, molded paper....	64B 8-9
C702	.047 mf, 600 volts, molded paper....	64B 8-9
C703A C703B C703C	80 mf, 450 volts 10 mf, 350 volts 10 mf, 450 volts	electrolytic..... 67D 15-137
C704A C704B	100 mf, 450 volts 50 mf, 450 volts	electrolytic..... 67D 15-136
C707	.047 mf, 600 volts, molded paper....	64B 2-36
C901	68 mmf, 3%, 500 volts, ceramic.....	Part of M906
C902	68 mmf, 3%, 500 volts, ceramic.....	Part of M906
C903	1,500 mmf, 500 volts, min, ceramic..	94E 75-118
C904	30 mmf, 500 volts, ceramic feed-thru	94E 75-119
C905	200 mmf, 500 volts, ceramic.....	94E 75-120
C906	3.6 mmf, 10%, 500 volts, ceramic....	94E 107-51
C907	1,000 mmf, 500 volts, min, ceramic feed-through.....	94D 64-121
C908	1,000 mmf, 500 volts, min, ceramic feed-through.....	94D 64-121
C909	.5 to 3 mmf, ceramic trimmer.....	98A 45-23
C910	3 mmf, 10%, 500 volts, ceramic.....	94D 64-86
C911	1,500 mmf, 500 volts, min, ceramic..	94E 75-118
C912	1,000 mmf, 500 volts, min, ceramic feed-through.....	94E 107-66
C913	.5 to 3 mmf, ceramic trimmer.....	98A 45-23
C914	47 mmf, 10%, 500 volts, ceramic.....	94D 64-88
C915	47 mmf, 10%, 500 volts, ceramic feed-through.....	94E 75-121
C916	Rotor, Fine Tuning.....	94D 64-112
C917	500 mmf, 10%, 500 volts, ceramic....	94E 75-118
C918	1,000 mmf, 500 volts, min, ceramic feed-through.....	94E 107-66
C919	1,000 mmf, 500 volts, min, ceramic feed-through.....	94E 107-66

CAPACITORS-Cont'd

Sym.	Description	Part No.
C920	.5 to 3 mmf, ceramic trimmer.....	98A 45-23
C921	10 mmf, 10%, 500 volts, ceramic, N750 temp. coeff.....	94D 64-91
C922	5 mmf, 5%, 500 volts, ceramic, N900 temp. coeff.....	94D 64-100
C923	1,500 mmf, 500 volts, min, ceramic..	94E 75-118
C924	1,000 mmf, 500 volts, min, ceramic feed-through.....	94E 107-66
C925	5 mmf, 5%, 500 volts, ceramic.....	Part of M906
C926	1,000 mmf, 500 volts, min, ceramic feed-through.....	94D 64-121
C933	.01 mf, 450 volts, ceramic disc.....	65D 10-3

COILS

L101	Trap Coil (Series tuned).....	94D 131-51
	Tuning Core (for L101).....	94D 131-77
L102	Channel Coil (Stamped 2N4A, 3N4A, 4N4A, etc.)	
	for Channel #2..... 94D 131-52	For VHF Tuners 94D131-1 and 94D131-2
	for Channel #3..... 94D 131-53	
	for Channel #4..... 94D 131-54	
	for Channel #5..... 94D 131-55	
	for Channel #6..... 94D 131-56	
	for Channel #7..... 94D 131-57	
	for Channel #8..... 94D 131-58	
	for Channel #9..... 94D 131-59	
	for Channel #10..... 94D 131-60	
	for Channel #11..... 94D 131-61	
	for Channel #12..... 94D 131-62	
	for Channel #13..... 94D 131-63	
L103	Trap Coil (Parallel tuned).....	94D 131-64
L104	Screen Coil.....	94D 131-65
L105	Mixer Plate Coil.....	94D 131-66
	Tuning Core (for L105).....	94D 131-78
L106	RF Choke Coil.....	94D 131-67
L201	41.25 MC Trap Coil.....	72B 164-1
L202	47.25 MC Trap Coil.....	72B 164-1
L203	Choke Coil.....	73B 24-3
L204	Choke Coil.....	73B 24-3
L205	41.25 MC Trap Coil	
	for chassis stamped Run 1 through Run 17A.....	72B 166-1
	for chassis stamped Run 18 or higher.....	72B 166-2
L206	Peaking Coil.....	73B 5-27
L207	43.5 MC Choke Coil	
	for chassis stamped Run 1 through Run 17A.....	73B 24-1
	for chassis stamped Run 18 or higher.....	73B 24-7
L207	43.5 MC Choke.....	73B 24-1
L208	Peaking Coil.....	73B 25-5
L209	Delay Line.....	72B 168-1
L210	Peaking Coil.....	73B 5-31
L211	3.58MC Trap Coil	
	for chassis stamped Run 1 through Run 17A.....	72D 165-5
	for chassis stamped Run 18 or higher.....	72D 165-6

COILS -Cont'd

Sym.	Description	Part No.
L212	Peaking Coil	73B 5-28
L213	Peaking Coil	73B 5-27
L217, L218, L219	Choke, Filament	73A 2-5
L220	Peaking Coil	73A 2-11
L221	Peaking Coil	73B 25-4
L301	Sound Takeoff Coil	72B 157-1
L302	Peaking Coil	73B 25-7
L401	4.5 MC Sound Trap Coil	
	for chassis stamped Run 1 through Run 17A	72D 165-2
	for chassis stamped Run 18 or higher	72D 165-8
L402	1st Chroma Coil	
	for chassis stamped Run 1 through Run 17A	72D 165-7
	for chassis stamped Run 18 or higher	72D 165-10
L403	Choke (6 MC)	73B 24-6
L405	Output Chroma Coil	72B 163-1
L406	Phase Shift Coil	72B 158-1
L407, L408, L409	Choke 3.6 MC Resonant	73B 24-5
L501	Burst Amp. Plate Coil	72B 181-1
L502	Reactance Tube Plate Coil	72B 156-1
L503	Peaking Coil	73B 5-28
L601	Horizontal Oscillator Coil	94C 17-12
L602	Choke Coil	73B 33-1
L603	Choke Coil	73B 33-1
L604	Horizontal Red Amp	94B 133-2
L605	Horizontal Red Tilt	94B 133-1
L606	Horizontal Green Amp	94B 133-2
L607	Horizontal Green Tilt	94B 133-1
L608	Horizontal Blue Amp	94B 133-2
L609	Horizontal Blue Tilt	94B 133-1
L610	Horizontal Tuning Coil	94B 114-3
L701	Power Supply Filter Choke	74B 18-20
L901	Trap Coil	Part of M906
L902	VHF Antenna Balancing Coil	Part of M906
L903	Trap Coil	Part of M906
L904	IF Pre-amp. Input Coil (1-7/8" long, stamped •1U•)	94E 75-51
L905	IF Pre-amp. Output Coil (2-1/8" long, stamped •1U•)	94E 75-64

COILS-Cont'd

Sym.	Description	Part No.
L906	Antenna Coil (5 contact, stamped •2U•C, •3U•C, etc.)	For 94E 107-1 VHF-UHF Tuner Only
	for channel # 2	94E 107-52
	for channel # 3	94E 107-53
	for channel # 4	94E 107-54
	for channel # 5	94E 107-55
	for channel # 6	94E 107-56
	for channel # 7	94E 107-57
	for channel # 8	94E 107-58
	for channel # 9	94E 107-59
	for channel #10	94E 107-60
	for channel #11	94E 107-61
	for channel #12	94E 107-62
	for channel #13	94E 107-63
L907	Mixer - Osc. Coil (6 contact, stamped •2U•, •3U•, etc.)	
	for channel # 2	94E 75-72
	for channel # 3	94E 75-73
	for channel # 4	94E 75-74
	for channel # 5	94E 75-75
	for channel # 6	94E 75-76
	for channel # 7	94E 75-77
	for channel # 8	94E 75-78
	for channel # 9	94E 75-79
	for channel #10	94E 75-80
	for channel #11	94E 75-81
	for channel #12	94E 75-82
	for channel #13	94E 75-83
L908	UHF Coupling Coil	94E 75-114
L909	UHF Coupling Coil	94E 75-115
L910	UHF Heater Choke Coil	94E 75-116
L911	UHF Osc. Cathode Choke Coil	94E 75-117
L912	VHF High Channel Peaking Coil	94D 64-104
L913	VHF Mixer Plate Coil	94D 64-103
L915	IF Trap Coil	Part of M906

TRANSFORMERS

T101	Antenna Input Assembly	94D 131-68
T201	IF Input Transformer	72D 161-1
T202	1st IF Transformer	72D 111-40
T203	2nd IF Transformer	72B 154-1
T204	3rd IF Transformer	72D 111-39
T205	IF Output Transformer	72B 159
T206	Luminance Compensation Transformer	72B 167-1
T301	Ratio Detector Transformer	72C 68-2
T302	Audio Output Transformer in sets with 2 speakers	79B 66-7
T303	Audio Output Transformer in sets with 4 speakers	79B 66-9
T401	2nd Chroma Transformer	72B 155-1
T502	Sub-Carrier Oscillator	72B 178-1
T601A, T601B	Yoke Assembly	94D 132-1

MISCELLANEOUS TRANSFORMERS-Cont'd

Sym.	Description	Part No.
T602	Horizontal Output Transformer	79D 69-2
T603	Vertical Output Transformer	79C 72-1
T701	Power Transformer	
	for chassis stamped Run 1 through Run 17A	80C 53-1
	for chassis stamped Run 18 or higher	80C 57-1

TUNERS

	VHF Tuner (used in sets Run 1 through Run 16A)	94D 131-1
	VHF Tuner (used in later sets Run 17 or higher)	94D 131-2
	VHF-UHF Tuner	94D 107-1

MISCELLANEOUS CHASSIS PARTS

CR201	Crystal, Luminance Detector	93A 8
CR202	Crystal, Sound & Chroma Detector	93A 8
CR501	Crystal, 3.58 MC Oscillator (Wired In)	93B 3-3
CR501	Crystal, 3.58 MC Oscillator (Plug In)	93B 3-4
CR601	Diode, Dual Selenium	93A 5-2
F601	Fuse, 3/4 Amp, 250V (type C)	84A 13-9
F604	Fuse, 3/10 Amp, 250V (type C)	84A 13-6
F701	Fuse, 2 Amps, 250V (type C)	84A 13-14
J601	Plug, Yoke	88A 9-4
J602	Socket, Convergence Yoke	88A 20-2
J603	Cable, High Voltage Anode	88B 34-10
M201	Plug, IF Input Cable	88A 2-5
M301	Sound Couplate	63C 6-15
M302	Socket, Speaker	87A 4-4
M303	Plug, Speaker	88B 3-7
M304, M305, M306, M307, M308, M309	Speaker Assembly	See Cabinet Parts
M601	Deflection Yoke Assembly	94D 132-1
M602	High Voltage Interlock Switch	76A 35
M604	Convergence Yoke Assembly	94D 134-1
M605	Sync Couplate	63C 6-8
M701	Line Cord & Plug Assembly	89A 22-1
M702	Socket, AC Power	88A 36
M704	Pilot Light	See Cabinet Parts
P601	Plug, Yoke	88A 9-4
P604	Plug, Pole Piece Assembly	88A 20-1
S701	Switch, AC	Part of R308

MISCELLANEOUS CHASSIS PARTS-Cont'd

Sym.	Description	Part No.
	Clip, Contact (Insulating Cone)	18B 178
	Connector, Plate Cap (6BK4)	88C 16-65
	Dag Spring	19A 121
	Holder, 3/10 Amp Fuse	84A 12-2
	Holder, 3/4 Amp Fuse	84A 12-4
	Holder, 2 Amp Fuse	84A 12-6
	Insulating Cone, Painted (picture tube)	33C 219
	Insulating Cylinder, H.V. (3A3 tube)	33B 215
	Insulating Ring (picture tube)	33B 155-1
	Insulator, Rim Magnet	33A 176
	Insulating Knob (focus and centering controls)	33A 196
	Magnet, Blue Lateral	94A 136
	Magnet, Purity	94A 104
	Magnet Assembly, Rim	94B 135
	Pole Piece Exciter Spring	18B 170
	Pole Piece Holder	18A 169
	Pole Piece Retainer Spring	33B 216
	Rubber Channel (Yoke Bracket)	12A 9-16
	Shield, Tube	
	for 7 pin miniature	87C 7-19
	for 9 pin miniature	87C 7-20
	for 9 pin (long)	87C 7-25
	Socket, Tube	
	7 pin miniature	87A 39-1
	9 pin miniature	87A 25-1
	7 pin, shield base	87B 23-4
	7 pin, shield base (V302, 6AL5)	87A 14-7
	9 pin, shield base	87B 23-2
	9 pin, for V607 (Mica)	33B 142
	7 pin, for V603 (Mica)	87A 39-3
	Octal, for V606 (Mica)	87B 30-7
	Octal, for V605, 609, 303, 701 & 702	87A 5-1
	Octal, for V608 (with shield)	87B 61-3
	Picture Tube	87A 53-3

MISCELLANEOUS PARTS FOR VHF TUNERS

94D131-1 AND 94D131-2

(See Figure 39 for Tuner Parts Illustration.)

M101	Turret Assembly, less coils	94D 131-72
M102	Receptacle, IF Output	94D 110-90
M103	Shield, Bottom	94D 131-74
M104	Spring, Slug Retainer	98A 45-52
M105	Slug, Alloy (for L102 Oscillator Adjustment)	98A 45-88
M106	Spring, Detent Grounding	94D 131-76
M107	Stator Bracket Assembly	94D 131-96
M109	Roller, Detent	94D 110-86
M110	Spring, Detent	94D 131-75
M111	Screw, Detent Retainer (6-32 x 1/4")	265-250-C2-2
M112	Spring, Turret Shaft (Front and Rear Support)	94D 131-70
M113	Core, Powdered Iron (for L101 Adjustment)	94D 131-77
M114	Nut, Trimmer Screw Locking	98A 45-31
M115	Screw, Trimmer (4-36 x 3/4")	94D 131-69

MISCELLANEOUS PARTS FOR VHF TUNERS 94D131-1 AND 94D131-2 Cont'd

Sym.	Description	Part No.
M116	Shield, Tube, 9 pin min. Collapsible	94D 131-50
M117	Shield, Tube, 7 pin min. Wrap-Around	94D 110-89
M119	Core, Powdered Iron (for L105 Adjustment)	94D 131-78
M120	Socket, Tube (7 pin miniature)	94D 92-93
M121	Socket, Tube (9 pin miniature)	94D 110-91
M122	Rivet, M123 Retainer	94D 110-95
M123	Rotor Arm, Fine Tuning	94D 110-96
M124	Bracket, Fine Tuning Rotor Retainer	94D 110-92
M125	Shaft, Fine Tuning Assembly	94D 131-71
M126	Fine Tuning Rotor "Book Type"	94D 110-94
M128	Spring, Wiper	94D 131-73

MISCELLANEOUS PARTS FOR VHF-UHF TUNER 94E107-1

(See Figure 42 for Tuner Parts Illustration.)

Sym.	Description	Part No.
M901	UHF Output Cable and Plug	94D 66-61
M902	Socket, IF Pre-amplifier Input	94E 75-85
M903	Plug, UHF Power (3 pin)	94E 75-65
M904	Socket, UHF Power (3 contact)	94E 75-66
M905	Socket, IF Output	94E 75-85
M906	Antenna Filter (includes L901, L902 L903, L915, C901, C902, C925)	94D 64-84
M907	Spring, Slug Retaining (Osc. Coil)	98A 45-52
M908	Slug, UHF IF Pre-amplifier Coil L904	94E 75-67
M909	Slug, VHF Antenna Coil Tuning	94D 75-68
M910	Roller, Detent (3/8" dia., 3/32" dia. bearing)	98A 45-82
M911	Spring, Detent (2-5/16" long)	98A 45-81
M912	Screw	94E 75-69
M913	Block, Spring Retainer (rocker)	94E 75-70
M914	Spring, Drum Retainer (rear)	94E 75-71
M915	Spring, IF Rocker (rear)	94E 75-84
M916	Slug, Tuning (for L915)	94D 64-99
M917	Shield, Tube (for V902 and V903)	94D 64-92

MISCELLANEOUS PARTS FOR VHF-UHF TUNER 94E107-1 -Cont'd

Sym.	Description	Part No.
M918	Rotor Blade (Fine Tuning)	94D 64-112
M919	Screw, Trimmer (4-36 x 5/8")	98A 45-33
M920	Nut, Locking (for trimmer)	98A 45-31
M921	Screw and Lock Washer	94E 75-86
M922	Slug, Tuning (for L913)	94D 64-109
M923	Socket, 9 pin miniature	94C 37-96
M924	Socket, 7 pin miniature	94C 37-95
M925	Spring, Detent Plate Grounding	94D 64-94
M926	Spring, Drum Retainer (front)	94E 75-87
M927	Drum, Turret (less coils)	94E 75-136
M928	Switch, AGC	94E 75-89
M929	Spring, Fine Tuning Retaining	94E 75-90
M930	Grommet, Rubber	94E 75-91
M931	Shield, Tube (for V901)	94E 75-92
M932	Housing, UHF Tuner	94E 75-93
M933	Spring, Fine Tuning Grounding	94E 75-94
M934	Fine Tuning Sector and Shaft	94E 75-95
M936	Chassis, UHF Tuner	Not Supplied
M937	Screw, UHF Oscillator Adjustment	Not Supplied
M938	Spring	94E 75-97
M939	Shaft and Rotor Assembly, UHF Tuning (includes M941, M942, M943, M944, M946, M947 and M948)	94E 107-64
M940	Spring, Rotor Shaft Wiper	94E 75-111
M941	Plate, Idler Support	94E 75-99
M942	Gear Assembly, UHF Tuning (includes M943 and M944)	94E 75-139
M943	Gear, UHF Tuning (Front)	Part of M942
M944	Spring, Gear Tension	94E 75-102
M945	Gear, Idler	94E 75-103
M946	Spring, Washer Clutch	94E 75-104
M947	Washer, Clutch	94E 75-105
M948	Ring, Retaining	94E 75-106
M949	Washer	94E 75-107
M950	Shaft, Fine Tuning (with gear)	94E 107-65
M951	Spring, Fine Tuning Shaft Retaining	94E 75-109
M952	Shield, Cover	94E 75-110
M953	Slug, VHF Oscillator Coil Tuning	98A 45-88

CABINET PARTS LIST

Description	C322C2 CS322C2 MAHOGANY	C322C3 CS322C3 BLOND	C322C16 CS322C16 MAHOGANY	C322C17 CS322C17 BLOND	C322C26 CS322C26 MAHOGANY	C322C27 CS322C27 BLOND	LC322C36 LCS322C36 MAHOGANY	LC322C37 LCS322C37 BLOND	LC322C39 LCS322C39 SIERRA
Back, Cabinet (less bell and cord)	43D263-3	43D263-3	43D263-3	43D263-3	43D263-3	43D263-3	43D263-3	43D263-3	43D263-3
Back, Speaker Compartment							43D261-4	43D261-4	43D261-4
Bell, Cabinet Back	32B214-7	32B214-7	32B214-7	32B214-7	32B214-7	32B214-7	32B214-7	32B214-7	32B214-7
Bolt, Chassis Mourting ($\frac{1}{4}$-20 x $1\frac{1}{4}$")	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71	1A67-44-71
Bracket, Control Mtg. & Tuner Bearing	15B1347	15B1347	15B1347	15B1347	15B1347	15B1347	15B1347-2	15B1347-2	15B1347-2
Bracket, Tuner Support	15A1378	15A1378	15A1378	15A1378	15A1378	15A1378	15A1510	15A1510	15A1510
Bracket, Volume Control Bearing	15A1397	15A1397	15A1397	15A1397	15A1397	15A1397	15A1397	15A1397	15A1397
Bracket, Tuner Shaft Support (VHF only) Fiber	32A201-4	32A201-4	32A201-4	32A201-4	32A201-4	32A201-4	32A201-4	32A201-4	32A201-4
Bracket, Tuner Shaft Support (UHF-VHF) Fiber	32A201-5	32A201-5	32A201-5	32A201-5	32A201-5	32A201-5	32A201-5	32A201-5	32A201-5
Bracket, Hi-Fi Control Mounting							15B1511	15B1511	15B1511
Cabinet	35E384-3	35E384-4	35E384-1	35E384-2	35E386-1	35E386-2	35E388-1	35E388-2	35E388-3
Clip, Glass and Mask Retainer	18A171-2	18A171-2	18A171-2	18A171-2	18A171-2	18A171-2	18A171-2	18A171-2	18A171-2
Escutcheon, Preference Controls	23B258	23B258	23B258	23B258	23B258	23B258	23B258	23B258	23B258
Escutcheon, Bass Control	———	———	———	———	———	———	23A279-2	23A279-2	23A279-2
Escutcheon, Treble Control	———	———	———	———	———	———	23A279-1	23A279-1	23A279-1
Grille Screen (Speaker)	36B55-21	36B55-22	36B55-21	36B55-22					
Grille Cloth (bottom)	36C3-322	36C3-323	36C3-324	36C3-325	36C3-316	36C3-317	36C3-328	36C3-329	36C3-328
Grille Cloth (side)							36C3-326	36C3-327	36C3-326
Interlock Switch	76A35	76A35	76A35	76A35	76A35	76A35	76A35	76A35	76A35
Knob, Spin Tuning (UHF-VHF)	A5332	A5332	A5332	A5332	A5332	A5332	A5332	A5332	A5332
Knob, Vernier (VHF only)	33D165-138	33D165-138	33D165-138	33D165-138	33D165-138	33D165-138	33D165-138	33D165-138	33D165-138
Knob, Contrast	33D165-139	33D165-139	33D165-139	33D165-139	33D165-139	33D165-139	33D165-139	33D165-139	33D165-139
Knob, Channel Selector (VHF only)	33D199-16	33D199-1	33D199-22	33D199-10	33D199-22	33D199-10	33D199-22	33D199-10	33D199-10
Knob, Volume and Switch	33D199-17	33D199-2	33D199-23	33D199-11	33D199-23	33D199-11	33D199-23	33D199-11	33D199-11
Knob, Channel Selector (UHF-VHF)	33D199-18	33D199-3	33D199-24	33D199-12	33D199-24	33D199-12	33D199-24	33D199-12	33D199-12
Knob, Channel Indicator (UHF only)	33D199-9	33D199-9	33D199-9	33D199-9	33D199-9	33D199-9	33D199-9	33D199-9	33D199-9
Knob, Treble and Bass							33C81-19	33C81-19	33C81-19
Leg, Cabinet	35E384-52	35E384-53	35E384-52	35E384-53	35E386-52	35E386-53			
Line Cord	89A22-1	89A22-1	89A22-1	89A22-1	89A22-1	89A22-1	89A22-1	89A22-1	89A22-1
Mask, Picture Window	23E237-7	23E237-8	23E237-5	23E237-6	23E237-3	23E237-4	23E237-5	23E237-6	23E237-6
Monogram (Royal 600)	———	———	26C61	26C61	26C61	26C61	26C61	26C61	26C61
Monogram (Admiral)	26C62	26C62	26C62	26C62	———	———	26C62	26C62	26C62
Pilot Lamp	———	———	81A1-12	81A1-12	81A1-12	81A1-12	81A1-12	81A1-12	81A1-12
Shield (Pilot Lamp)	———	———	82A24-2	82A24-2	82A24-2	82A24-2	82A24-2	82A24-2	82A24-2
Speaker, w/o Transf.(6" x 9" oval)	———	———	———	———	78C107-4	78C107-4	———	———	———
Speaker, with Transf.(6" x 9" oval)	———	———	———	———	78C107-5	78C107-5	———	———	———
Speaker, (8" round)	78D119-4	78D119-4	———	———	———	———	———	———	———
Speaker, w/o Transf. (8" round)	———	———	78D118-6	78D118-6	———	———	78D127-2	78D127-2	78D127-2
Speaker, with Transf. (8" round)	———	———	78D118-5	78D118-5	———	———	78D127-1	78D127-1	78D127-1
Speaker, with Leads ($3\frac{1}{2}$")	———	———	———	———	———	———	78B91-4	78B91-4	78B91-4
Speaker, with Lugs ($3\frac{1}{2}$")	———	———	———	———	———	———	78B91-5	78B91-5	78B91-5
Trim Strip (Gold)	———	———	———	———	23C238-3	23C238-3	———	———	———
Trim Strip, Glass Retainer	———	———	———	———	———	———	23B236-6	23B236-6	23B236-6
TV Operating Instructions	41C20-142	41C20-142	41C20-142	41C20-142	41C20-142	41C20-142	41C20-167	41C20-167	41C20-167
Window, Safety Glass	21C86-2	21C86-2	21C86-2	21C86-2	21C86-2	21C86-2	21C86-2	21C86-2	21C86-2

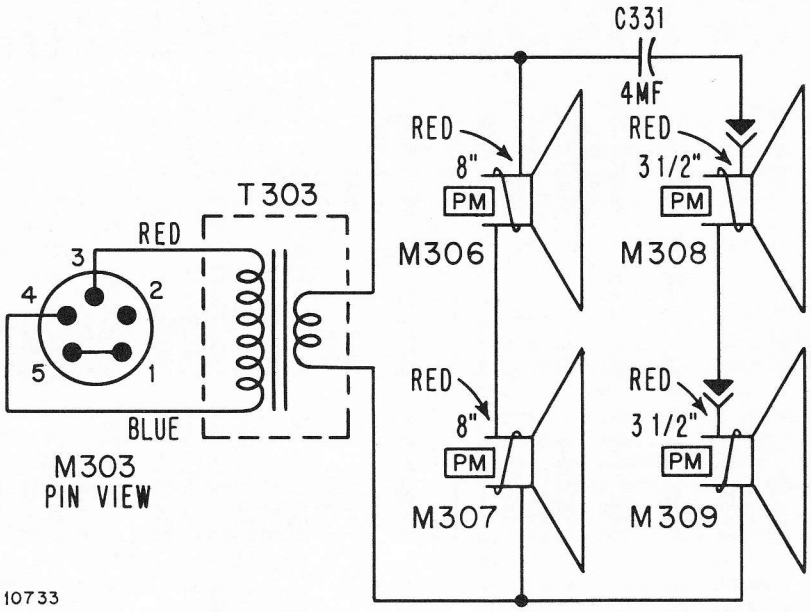


Figure 43. Speaker Circuit Used In Models LC322C36, LSC322C36, LC322C37, LSC322C37, LC322C39 and LSC322C39.

SCHEMATIC NOTES

Ⓐ1, Ⓐ2,.....Ⓨ, Ⓩ, etc. indicate alignment points and alignment connections.

Fixed resistor values shown in ohms ±10% tolerance, ½ watt; capacitor values shown in micromicrofarads ±20% tolerance unless otherwise specified.

NOTE: K=R × 1,000, MEG=R × 1,000,000, MF=microfarad.

CONDITIONS FOR MEASURING VOLTAGES

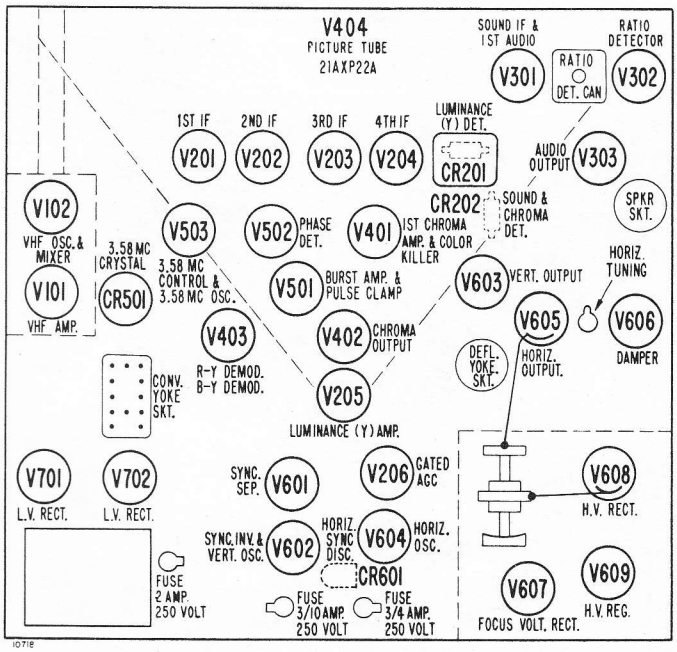
Warning: Pulsed high voltages are present at the caps of V605, V607, V608, V609, and at pin 3 of V606. **Do not** attempt to measure voltages at these points without suitable equipment. A VTVM with a 30,000 volt high voltage probe should be used when measuring picture tube high voltage (to ultor ring).

- Set the **Channel Selector** on an unused channel. **Contrast** and **Color Intensity** controls fully clockwise. **Brightness** and **Volume** controls at minimum. All other controls at normal settings.
- Antenna disconnected and terminals shorted together.
- Line voltage: 117 volts AC.
- DC voltages measured with a VTVM between tube socket terminals and chassis, unless otherwise indicated.
- Voltages at V101 and V102 measured from the top of the tuner with tubes in socket. Use of an adapter is recommended.
- Voltages at picture tube are shown with **Screen** and **Grid** controls set at minimum and maximum.

CONDITIONS FOR OBSERVING WAVEFORMS

Warning: Pulsed high voltages are present at the caps of V605, V607, V608, V609, and at pin 3 of V606. **Do not** attempt to observe waveforms at these points unless suitable test equipment is used.

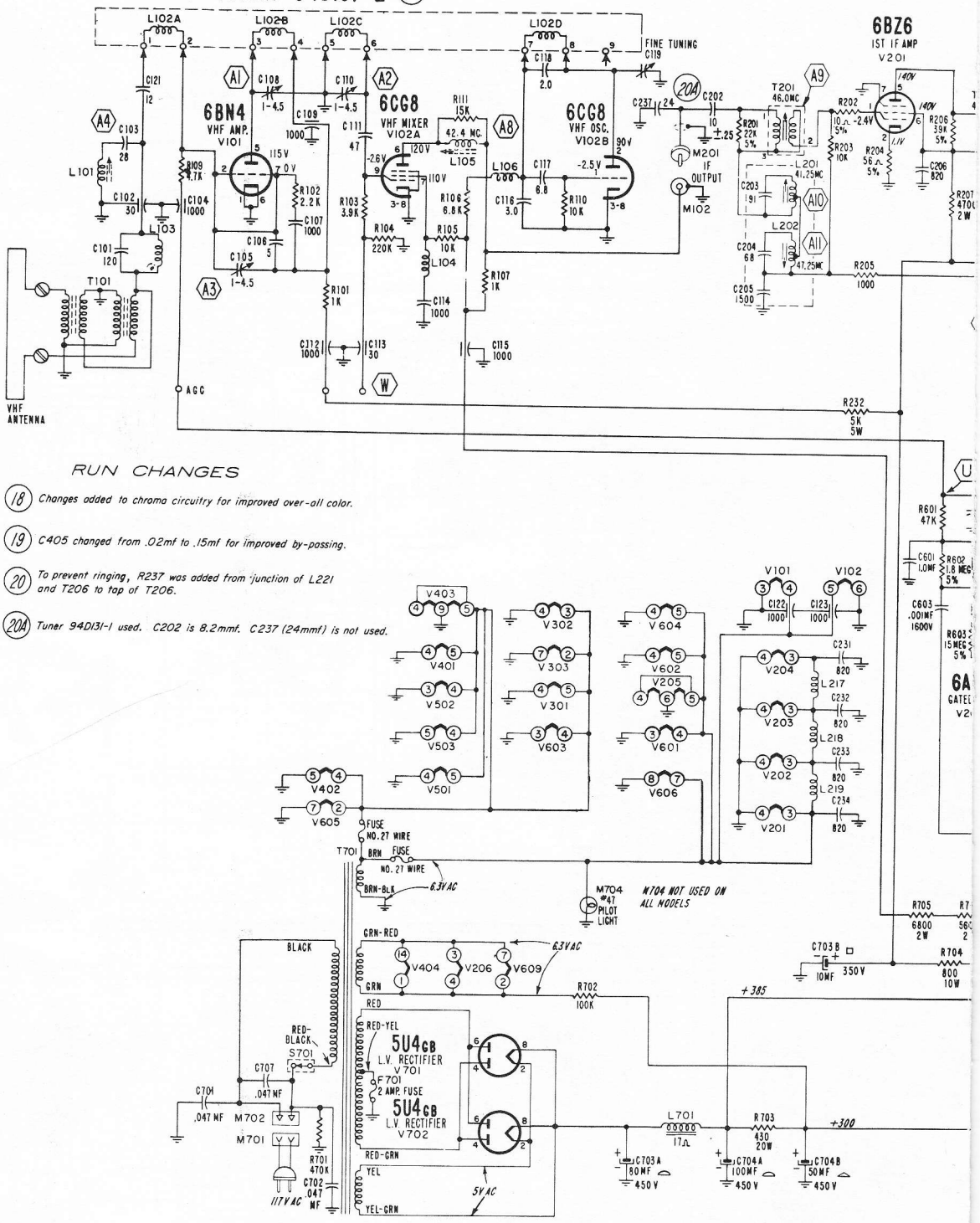
- Waveforms should resemble those shown on the schematic.
- Waveforms are taken with a transmitted black and white signal input to the television chassis.
- Set all controls for normal picture.
- Oscilloscope sweep is set at 30 cycles for vertical waveforms and at 7,875 cycles for horizontal waveforms, to permit 2 complete cycles to be observed.
- Peak-to-peak voltages will vary from those shown on the schematic, depending on the test equipment employed and chassis parts tolerances.
- Chroma waveforms shown are the result of injecting a signal from a typical color bar generator.



TUBE LOCATIONS

V101-6BN4	V401-6AW8	V605-6CB5A
V102-6CG8	V402-6CL6	V606-6AU4GTA
V201-6BZ6	V403-12BH7	V607-1V2
V202-6BZ6	V404-21AXP22A	V608-3A3
V203-6BZ6	V501-6BH8	V609-6BK4
V204-6CB6	V502-6AL5	V701-5U4GB
V205-12BY7	V503-6U8	V702-5U4GB
V206-6AU6	V601-6CS6	CR201-93A8
V301-6U8	V602-6CG7	CR202-93A8
V302-6AL5	V603-6AQ5	CR501-93B3-4
V303-6V6GT	V604-6CG7	CR601-93A5-2

VHF TUNER 94D131-2 (20A)



RUN CHANGES

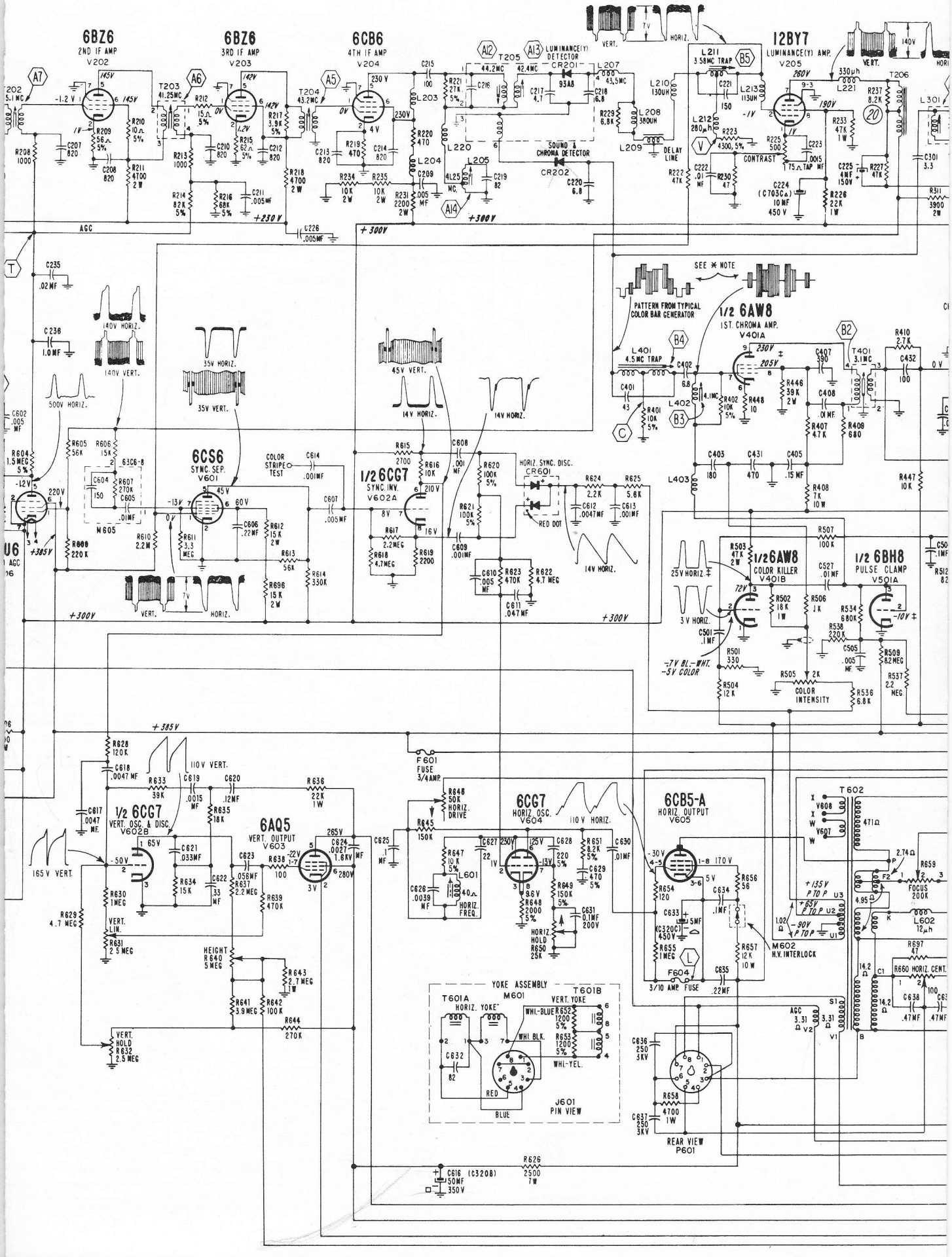
(18) Changes added to chroma circuitry for improved over-all color.

(19) C405 changed from .02mf to .15mf for improved by-passing.

(20) To prevent ringing, R237 was added from junction of L221 and T206 to tap of T206.

(20A) Tuner 94D131-1 used. C202 is 8.2mmf. C237 (24mmf) is not used.

Figure 44. Schematic for 29Z1 Color Te
Stamped Run 1 Through Run 17A and fo



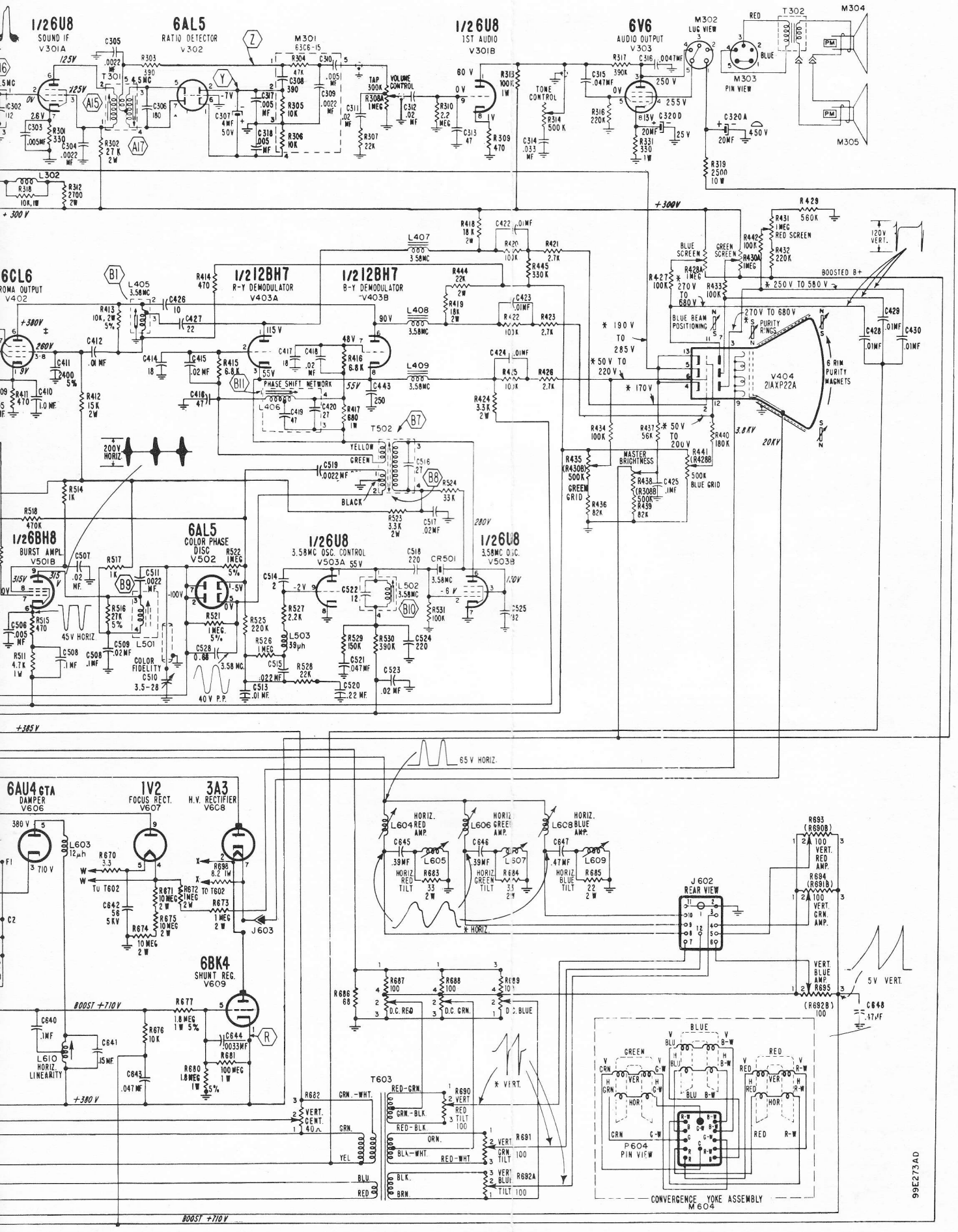
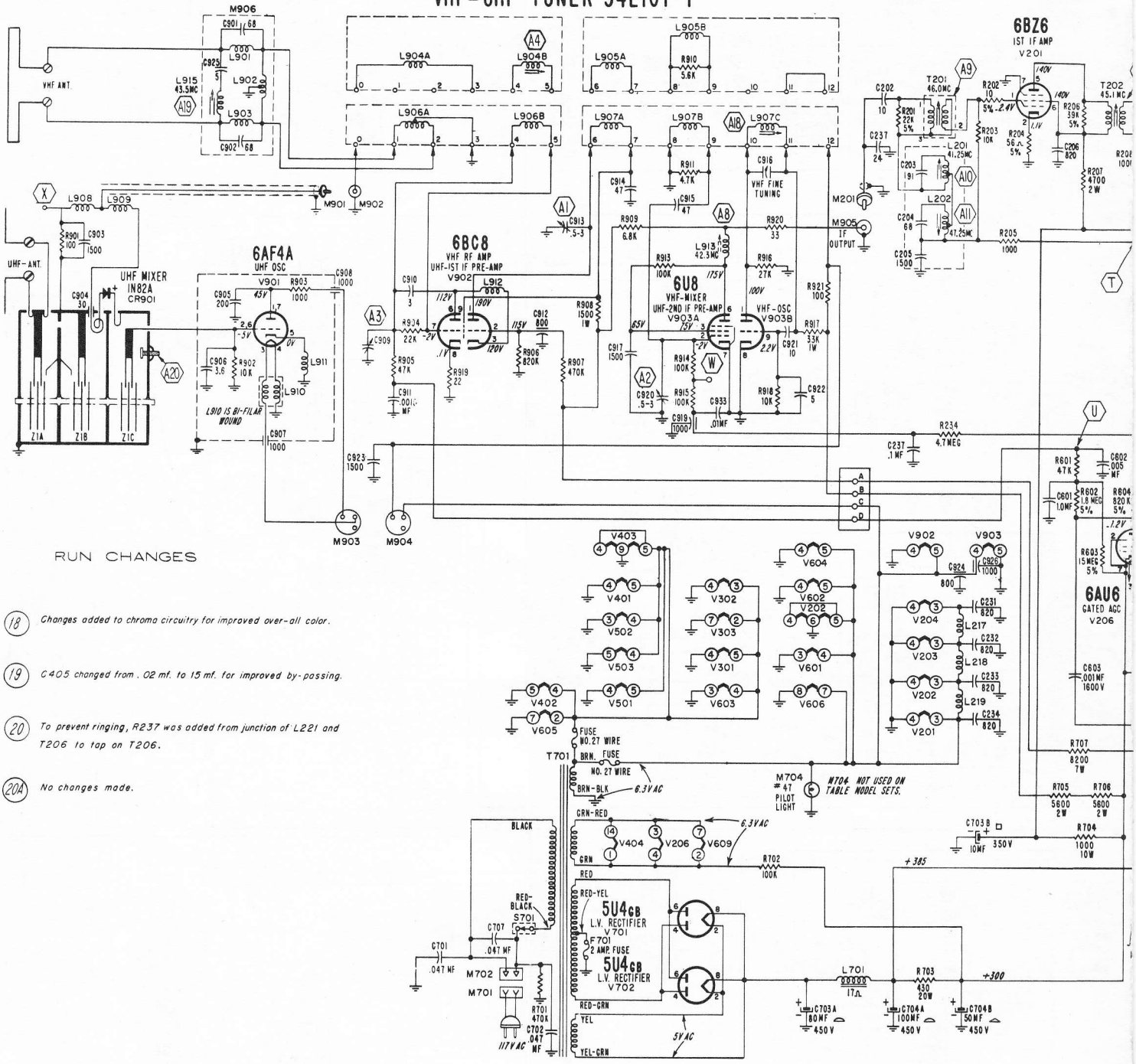
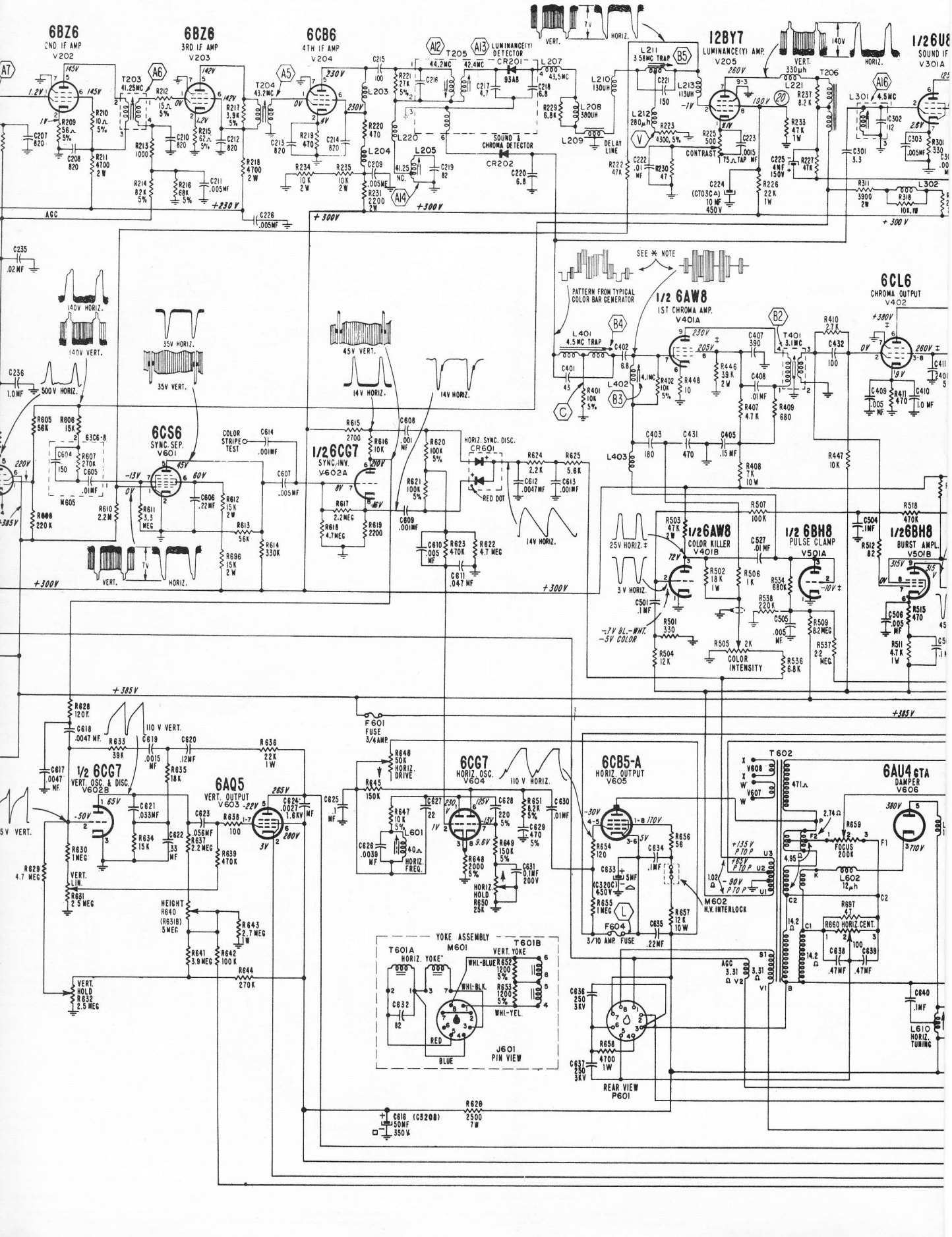

1/2 6U8
SOUND IF
V301A
6AL5
RATIO DETECTOR
V302
1/2 6U8
1ST AUDIO
V301B
6V6
AUDIO OUTPUT
V303
M302
LUG VIEW
M303
PIN VIEW
M304
M305
T302
T301
M301
6306-15
L302
L405
3.58MC
L407
3.58MC
L408
3.58MC
L409
3.58MC
L406
6CL6
V402
1/2 12BH7
R-Y DEMODULATOR
V403A
1/2 12BH7
B-Y DEMODULATOR
V403B
PHASE SHIFT NETWORK
T502
V404
21AXP22A
6 RIM PURITY MAGNETS
PURITY RINGS
BLUE BEAM POSITIONING
BLUE SCREEN
GREEN SCREEN
RED SCREEN
BOOSTED B+
250 V TO 580 V
270 V TO 680 V
190 V TO 285 V
50 V TO 220 V
170 V
MASTER BRIGHTNESS
BLUE GRID
GREEN GRID
3.8KV
20KV
120V VERT.
200V HORIZ.
1/2 6BH8
BURST AMPL.
V501B
6AL5
COLOR PHASE DISC
V502
1/2 6U8
3.58MC OSC. CONTROL
V503A
1/2 6U8
3.58MC OSC.
V503B
CR501
L501
L502
3.58MC
L503
39μh
45V HORIZ.
40V P.P.
COLOR FIDELITY
C510
3.5-28
3.58 MC.
6AU4 GTA
DAMPER
V606
1V2
FOCUS RECT.
V607
3A3
H.V. RECTIFIER
V608
6BK4
SHUNT REG.
V609
L603
12μh
L610
HORIZ. LINEARITY
BOOST +710V
+380V
+385V
+300V
65 V HORIZ.
HORIZ. RED AMP.
HORIZ. GREEN AMP.
HORIZ. BLUE AMP.
L604
L605
L606
L607
L608
L609
HORIZ. RED TILT
HORIZ. GREEN TILT
HORIZ. BLUE TILT
J602
REAR VIEW
J603
TO T602
VERT. RED AMP.
VERT. GRN. AMP.
VERT. BLUE AMP.
5V VERT.
D.C. RED
D.C. GRN.
D.C. BLUE
T603
VERT. CENT.
VERT. TILT
VERT. GRN. TILT
VERT. BLUE TILT
* VERT.
* HORIZ.
P604
PIN VIEW
CONVERGENCE YOKE ASSEMBLY
M604
99E273AD

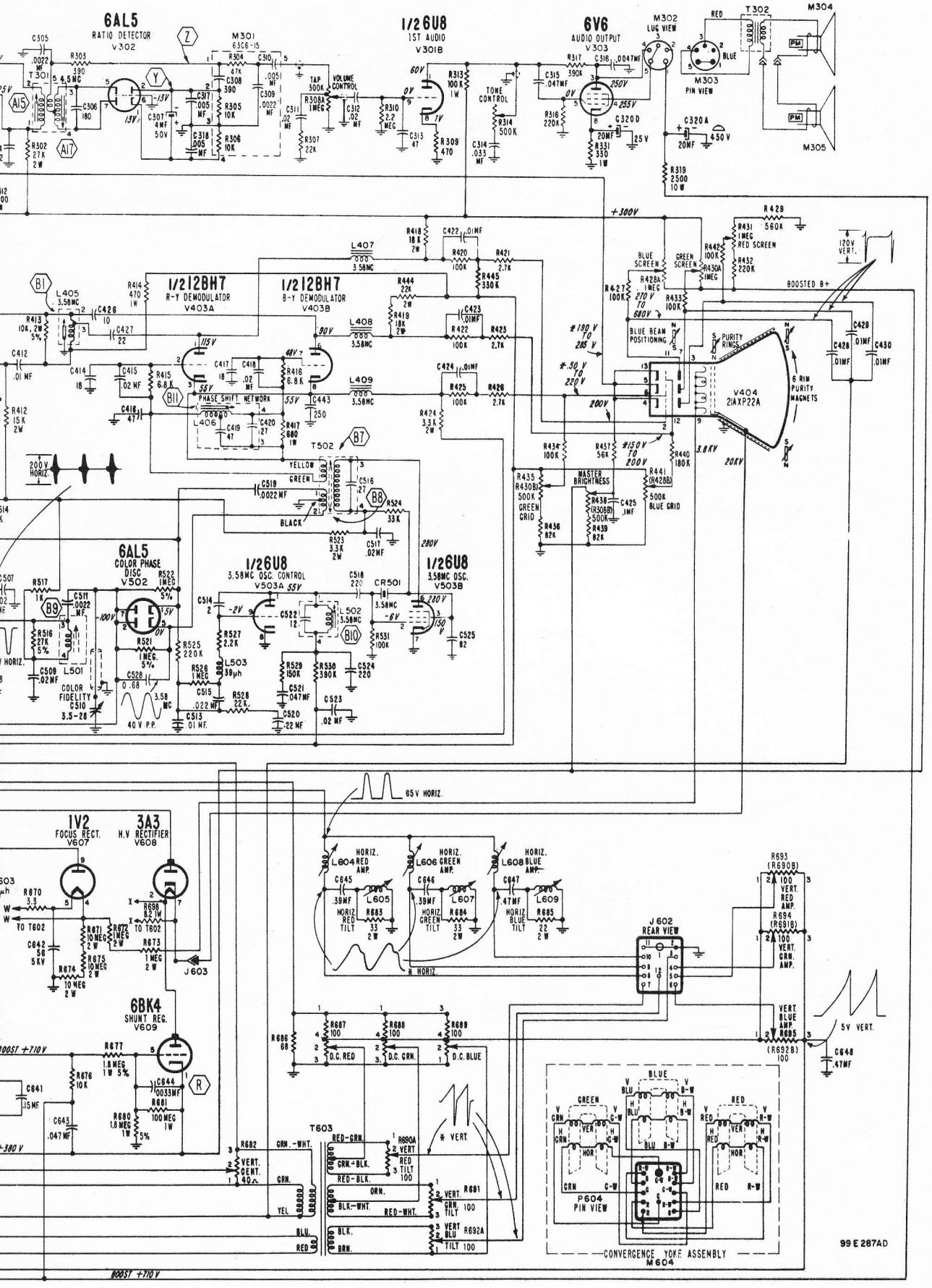
Figure 45. Schematic for 29SZ1 Color Television Chassis Stamped Run 18 20A. For Chassis Stamped Run 1 Through Run 17A See Schematic in Service M



Through Run

anual No. S592.




6AL5
RATIO DETECTOR
V302
1/2 6U8
1ST AUDIO
V301B
6V6
AUDIO OUTPUT
V303
M302
LUG VIEW
M303
PIN VIEW
T302
M304
M305
1/2 12BH7
R-Y DEMODULATOR
V403A
1/2 12BH7
B-Y DEMODULATOR
V403B
+300V
BOOSTED B+
120V VERT.
BLUE SCREEN
GREEN SCREEN
RED SCREEN
BLUE BEAM POSITIONING
PURITY RINGS
6 RIM PURITY MAGNETS
V404
21AXP22A
PHASE SHIFT NETWORK
T502
200V HORIZ.
6AL5
COLOR PHASE DISC
V502
COLOR FIDELITY
1/2 6U8
3.58MC OSC. CONTROL
V503A
1/2 6U8
3.58MC OSC.
V503B
MASTER BRIGHTNESS
65V HORIZ.
1V2
FOCUS RECT.
V607
3A3
H.V RECTIFIER
V608
6BK4
SHUNT REG.
V609
HORIZ. RED AMP.
HORIZ. GREEN AMP.
HORIZ. BLUE AMP.
J602
REAR VIEW
J603
T603
VERT. RED AMP.
VERT. GRN. AMP.
VERT. BLUE AMP.
5V VERT.
D.C. RED
D.C. GRN.
D.C. BLUE
* HORIZ.
* VERT.
P604
PIN VIEW
CONVERGENCE YOKE ASSEMBLY
M604
99 E 287AD
BOOST +710V

SCHEMATIC NOTES

(A1), (A2),.....(Y), (Z), etc. indicate alignment points and alignment connections.

Fixed resistor values shown in ohms ±10% tolerance, ½ watt; capacitor values shown in micromicrofarads ±20% tolerance unless otherwise specified.

NOTE: K=R × 1,000, MEG=R × 1,000,000, MF=microfarad.

CONDITIONS FOR MEASURING VOLTAGES

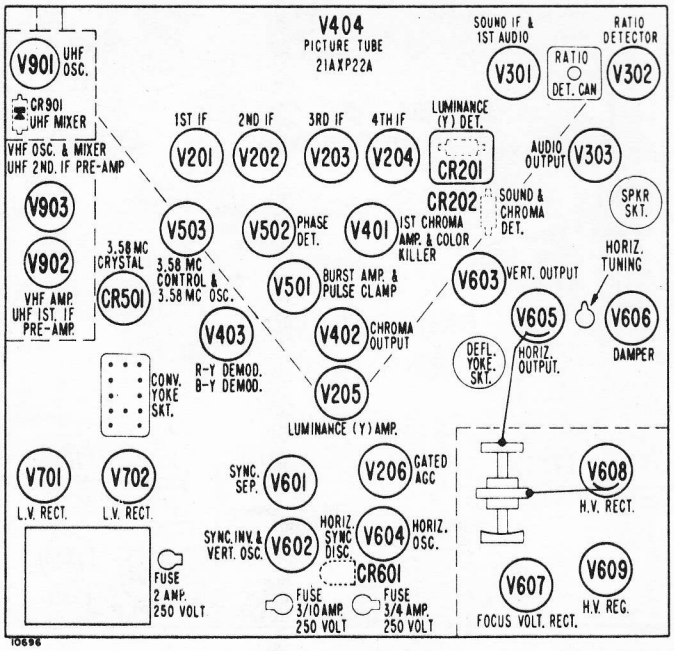
Warning: Pulsed high voltages are present at the caps of V605, V607, V608, V609, and at pin 3 of V606. **Do not** attempt to measure voltages at these points without suitable equipment. A VTVM with a 30,000 volt high voltage probe should be used when measuring picture tube high voltage (to ultor ring).

- Set the **Channel Selector** on an unused channel. **Contrast** and **Color Intensity** controls fully clockwise. **Brightness** and **Volume** controls at minimum. All other controls at normal settings.
- Antenna disconnected and terminals shorted together.
- Line voltage: 117 volts AC.
- DC voltages measured with a VTVM between tube socket terminals and chassis, unless otherwise indicated.
- Voltages at V901, V902 and V903 measured from the top of tuner with tubes in socket. Use of an adapter is recommended.
- Voltages at picture tube are shown with **Screen** and **Grid** controls set at minimum and maximum.

CONDITIONS FOR OBSERVING WAVEFORMS

Warning: Pulsed high voltages are present at the caps of V605, V607, V608, V609, and at pin 3 of V606. **Do not** attempt to observe waveforms at these points unless suitable test equipment is used.

- Waveforms should resemble those shown on the schematic.
- Waveforms are taken with a transmitted black and white signal input to the television chassis.
- Set all controls for normal picture.
- Oscilloscope sweep is set at 30 cycles for vertical waveforms and at 7,875 cycles for horizontal waveforms, to permit 2 complete cycles to be observed.
- Peak-to-peak voltages will vary from those shown on the schematic, depending on the test equipment employed and chassis parts tolerances.
- Chroma waveforms shown are the result of injecting a signal from a typical color bar generator.



TUBE LOCATIONS

CR-901-1N82A	V303-6V6GT	V605-6CB5A
V901-6AF4A	V401-6AW8	V606-6AU4GTA
V902-6BC8	V402-6CL6	V607-1V2
V903-6U8	V403-12BH7	V608-3A3
V201-6BZ6	V404-21AXP22A	V609-6BK4
V202-6BZ6	V501-6BH8	V701-5U4GB
V203-6BZ6	V502-6AL5	V702-5U4GB
V204-6CB6	V503-6U8	CR201-93A8
V205-12BY7	V601-6CS6	CR202-93A8
V206-6AU6	V602-6CG7	CR501-93B3-4
V301-6U8	V603-6AQ5	CR601-93A5-2
V302-6AL5	V604-6CG7	

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