RCC TELEVISION Service Manual

PUBLISHED BY RADIO COLLEGE OF CANADA, TORONTO

1957 Supplement No. 24

INDEX

ADMIRAL

Model:

C23A11X to 13X Use chassis 17Z3DX.
C23A25X to 27X " "
C323A5X to 7X Use chassis 18Z4ESX.
C323A15X to 17X " "
T23A1X to 3X Use chassis 17Z3DX.
T23A5X to 7X " "
T101X to T104X Use chassis 14YP3B.
T105ALX " "
T106ALX " "
T323A1X to 3X Use chassis 18Z4ESX.

CANADIAN GENERAL ELECTRIC

Model:

C7T25 Uses chassis M526.
C7T26 " "
C21C38 " "
C21C39 " "

ELECTROHOME

FLEETWOOD

HALLICRAFTERS

Model:

517-107, -108 See 520C5 or E5.
521-112 to -116 See 520C5 or E5.
617-33 to -35 See 627A6.
621R40 See 627A6.
617-57, -58 See 520-15.
621-59 to -62 See 520-15.

RCA-VICTOR

Model:

17T190A (Warren) Uses chassis CT1712.
21TC174 (Bartlett) Uses chassis CT2123.
21TC244 (Salisbury) Uses chassis CT2121.
21TC247 (Davis) Uses chassis CT2122.
21TC248 (Leighton) Uses chassis CT2121.
24TC173 (Morrow) Uses chassis CT2407.
24TC253 (Vernon) Uses chassis CT4208.

SIMPSONS-SEARS

SPARTON

Model:

17E1 See 21E4.
21E1 to 21E3 See 21E4.
24E1 See 21E4.

VIKING

WESTINGHOUSE

Model:

2V1K (the V.P.) Uses chassis T-1051.
2V1T See T-105.
2V2K Uses Chassis T-1051.
2V2T Uses chassis T-1051.
2V3K Uses chassis T-1095.
2V3T Uses chassis T-1094.
2V4K Uses chassis T-1094.
2V4KR Uses chassis T-1090.
2V4T Uses chassis T-1094.
2V5K Uses chassis T-1095.
2V6T Uses chassis T-1096.
2V8K Uses chassis T-1090.
2V9T Uses chassis T-1090.
2V10T Uses chassis T-1090.
2V11K (Marquez) Uses chassis T-1202.
2V12T (Acapulco) Uses chassis T-1202.
2V14T (San Marco) Uses chassis T-1202.
2V15K (Saville) Uses chassis T-1202.
2V16K (Panama) Uses chassis T-1202.
4V5T Uses chassis T-1097.
4V6K Uses chassis T-1098.

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LOCAL-DISTANT SWITCH

The antenna circuit of this receiver is equipped with a Local-Distant switch. In the "Local" position, the Local-Distant switch and associated components function as an attenuator for reducing the level of exceptionally strong signals, thus preventing picture over load.

In the "Distant" position, the antenna is coupled directly to the tuner for maximum signal input.

The Local-Distant switch should always be set to the "Distant" position. It should be set to the "Local" position if the picture is unstable, has interference or has excessive contrast.

DISTORTED SOUND OR BUZZ

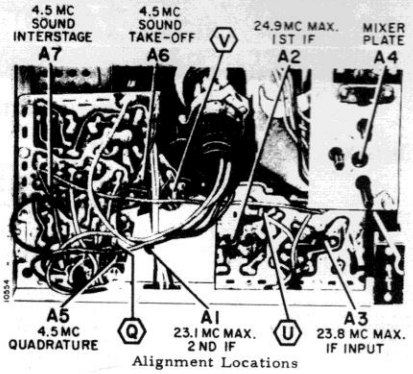
If the sound is distorted or has buzz, touch-up adjustment of 4.5 mc intercarrier sound IF amplifier is required. Instructions for making "4.5 MC Sound IF Alignment Using A Television Signal" are given below.

4.5 MC SOUND IF ALIGNMENT USING A TELEVISION SIGNAL

The 4.5 MC Sound IF Amplifier can be aligned using a strong transmitted television signal. See figure at right for location of alignment adjustments. Make alignment as follows:

1. Remove cabinet back. Turn set on and allow 15 minutes for warm up.
2. Select the strongest TV station received. Adjust set for normal operation. Set Local-Distant switch in "Distant" position.
3. Using a non-metallic alignment tool (for hexagonal core IF slugs, Admiral part number 98A30-12), very slowly turn slug "A5" several turns clockwise until a buzz is heard in the sound. Then turn it counterclockwise until the loudest and clearest sound is obtained. NOTE: There may be two points (approximately 1/2 turn apart) at which the sound is loudest. The slug should be set at the center range of the second point of loudest sound noted as the slug is turned in a counterclockwise rotation.
4. Reduce the signal to the antenna terminals until there is a considerable amount of hiss in the sound. For best results, it is recommended that a step attenuator be connected between the antenna and the antenna terminals. The signal can also be reduced by disconnecting the antenna and placing it in close proximity of the antenna terminals or tuner antenna lead-in.
5. Carefully adjust slug "A6" for loudest and clearest sound with minimum hiss level. If hiss disappears during alignment, reduce signal to maintain hiss level.
6. Carefully adjust slug "A7" for loudest and clearest sound with minimum hiss level. If hiss disappears during alignment, reduce signal to maintain hiss level.
7. If the above steps are correctly made, no further adjustment should be required. However, if sound remains distorted at normal volume level when receiver is tuned for best sound, repeat entire procedure.

CAUTION: Do not readjust slug "A5" without retouching adjustment of slugs "A6" and "A7".



Alignment Locations

B PLUS DISTRIBUTION

The B plus power supply of this receiver consists of two 300 milliampere selenium rectifiers operated in a voltage doubler circuit. Efficient filtering with excellent voltage regulation is obtained through use of a pi type filter network consisting of two 100 mf. electrolytic capacitors and an iron core filter choke for 60 cycle models or, one 250 MFD, two 100 MFD condensers and an iron core filter choke for 25 cycle models.

The B plus voltage supply (after filtering) provides approximately 255 volts. The B plus distribution diagram, see figure below, shows the various stages operated from the 255 volt B plus circuit.

The cathode of the damper tube V405 (12AX4GTA) supplies 420 volts B plus boost voltage to the horizontal output stage V403, vertical oscillator V401A, vertical output V401B and to the 1st anode of the picture tube.

The sound output tube V203 (12CU5), in addition to its regular function, also operates as a voltage dropping tube, supplying 130 volts B plus to the various tubes operated from this voltage source. The cathode of the sound output tube is operated at approximately 130 volts with respect to chassis ground.

The 1st IF tube V301 (3CB6), in addition to its regular function, also operates as a voltage dropping tube for supplying approximately 135 B plus to the plate and screen of the VHF amplifier tube V101 (3BC5). The B plus voltage at V101 will vary widely depending on signal strength and AGC voltage.

Note also that the Volume control R207 is connected as a plate load in the sound detector circuit V202 (3DT6).

SERVICE HINTS

IMPROVING PICTURE FOCUS

A jumper strip (part number 18A1-34) is used on the base of the picture tube for obtaining a choice of two focus connections. The jumper strip can be connected from pin 6 to 2, or from pin 6 to 10.

Generally, best focus is obtained when the jumper strip is connected from pin 6 to pin 2. However, if good focus is not obtained, the jumper strip can be connected from pin 6 to pin 10. It should be left in the position which provides the best focus.

NOTE: Picture tube focus is also affected by ion trap adjustment. The ion trap should always be adjusted for best focus consistent with maximum brightness.

PICTURE TURNS NEGATIVE OR HAS SILVERY APPEARANCE AT HIGH CONTRAST LEVELS

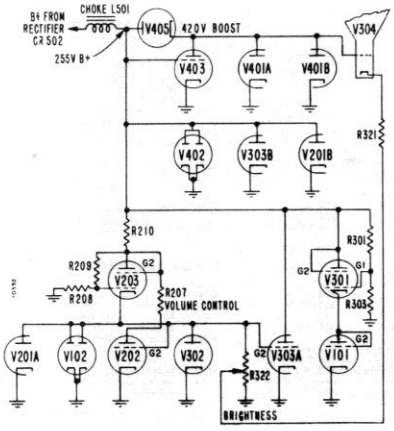
If the picture has a tendency to turn negative or has a silvery appearance at high contrast levels, trouble may be due to any of the following.

a. Receiver is operated in a very strong signal area with the "Local-Distant" switch set in the Distant position. Check picture with "Local-Distant" switch set in the Local position.

b. Defective video amplifier tube V303 (6BA8A). Tube may be gassy, thus causing it to draw negative (reverse) grid current. This effect may be apparent after the receiver is operated a short period of time at high contrast level. After replacing tube, check resistors mentioned in the paragraph below.

c. Video amplifier grid resistor R313 (1.3 megohms, 1/2 watt) and plate resistor R318 (6,800 ohms, 2 watts) may have changed value. Check resistors, replace if incorrect value.

d. Picture tube may be at fault due to low emission or gassy condition. IMPORTANT: Before deciding that the picture tube is at fault, be sure to make all checks given in the paragraphs above.



B Plus Distribution Diagram

SERVICING TUBES

IMPORTANT: To prevent possibility of electric shock, do not remove or install tubes unless the set is disconnected from the power line.

Tubes in this receiver, with exception of VHF tuner, can be serviced by simply removing the cabinet back and tilting the printed circuit board. To tilt printed circuit board, remove screws mounting it to the chassis. A tube puller may be used for removing the high voltage rectifier tube (1X2B) located in the high voltage compartment.

The picture tube is accessible for replacement by removing the cabinet front, cabinet back and tilting the printed circuit board. To replace tubes in the VHF tuner, remove chassis from cabinet

LOCATING A BURNED OUT TUBE

The heaters of tubes(except V404 high voltage rectifier) are connected in a series circuit. If tubes do not light, check the interlock line cord to see that it is making good contact. Check to see that all tubes are firmly seated in sockets.

A total of 13 tubes are used in the heater circuit. The tube location diagram on the schematic page contains a simplified circuit diagram of tube heater connections. Through the use of this diagram and instructions given below, an "open" burned out tube in the heater circuit can be quickly located without the need for substituting or testing of all tubes.

A simplified procedure is given in the figure below for quickly locating an open heater tube. Checks are made with an ohmmeter from the tube socket pin to chassis ground with a tube removed. IMPORTANT: The picture tube mounting brackets, rear control bracket and tuner shaft are insulated from the chassis. The heater circuit (including series dropping resistor R502) has a total resistance, when cold, of approximately 75 ohms. If the ohmmeter reads approximately 75 ohms or less, the heater circuit is continuous; if the ohmmeter indicates a very high resistance (above 10,000 ohms), the heater circuit is open.

NOTE: Tube socket pins are counted in a counterclockwise direction when viewed from the tube side of the socket.

Occasionally a tube heater will measure good when cold, but will "open" upon application of power. In this case, measuring continuity of the heater circuit with power applied may be necessary. An AC voltmeter or an electrician's neon test lamp can be used to circuit trace (check voltage) the heater circuit with AC power applied. However, be sure to observe the "High Voltage Warning".

SCHEMATIC NOTES

Numbers and letters inside hexagons indicate alignment points.

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

NOTE: K = x 1000, MEG = x 1,000,000, MF = microfarad.

INSTALLATION ADJUSTMENTS

To insure best performance, it is important to make all checks and adjustments shown in the figures below. Note: Removal of cabinet back is required only for adjustment of ion trap, picture tilt and centering.

IMPORTANT CAUTION: Limited space is available when adjusting picture centering tabs and ion trap. Picture centering tabs may be adjusted using a non-metallic rod.

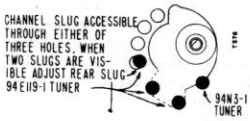
CHANNEL ADJUSTMENT

Channel adjustment of each station should be checked upon installation and at every service call. With proper adjustment, best picture is obtained at approximately center rotation of **Fine Tuning** control.

IMPORTANT: Always make adjustment on lowest channel first, then work up, in order of channel number to the highest channel. (For example, if channels 2, 9, 7 and 5 are received, adjust in this order: 2, 5, 7, 9.)

Before proceeding with adjustment, see illustration for location of channel slugs, then adjust as follows:

a. Turn the set on and allow 15 minutes to warm up.
b. Set **Channel Selector** for lowest channel to be adjusted. Set other controls for normal picture and sound.
c. Set **Fine Tuning** control at center of its range by rotating it approximately halfway between its stops.
d. Remove **Channel Selector** and **Fine Tuning** knobs and the gold escutcheon under the knobs.
e. Using a 1/8" blade non-metallic tool (Part No. 98A 30-19), carefully adjust the channel slug for best picture. (Note that sound is not loudest at this point.) Repeat procedure for remaining stations, adjusting them in order of their channel number (from lowest channel to highest channel).



View of VHF Tuner. Knobs and Escutcheon removed.

REMOVING CABINET BACK & FRONT

The cabinet back and front are removable. Remove mounting screws; then pull away from set. In sets with carrying handle, mounting screws must be removed from handle.

To remove chassis from cabinet shell, remove back, front and screws at bottom. Remove chassis through front.

FUSIBLE RESISTOR

A pig-tail type fusible resistor (Part No. 61A22) is used as a B+ and initial surge fuse. It is located below the tuner.

HIGH VOLTAGE WARNING

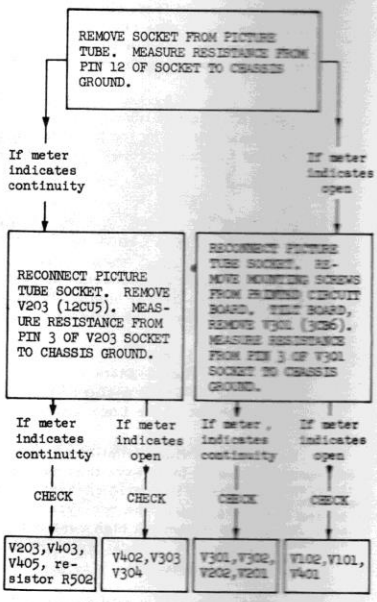
High voltage is present at some points in this receiver. Operation of the set without the cabinet or with cabinet back removed involves shock hazard. Exercise necessary high voltage precautions.

The chassis of this receiver is connected directly to one side of the 117 volt, 60 cycle power line. Depending upon the position of the line cord plug in the wall outlet, the total AC line voltage may exist between the chassis and any grounded object. When installing or servicing, do not touch the chassis unless adequate safety precautions are taken. Never touch the chassis and a ground (radiators, pipes, etc.) at the same time.

Do not ground chassis or connect test equipment directly to it unless an isolation transformer is used. If an isolation transformer is not available, a neon lamp can be used to determine if the chassis is "hot".

VOLTAGES AND WAVEFORMS

- Isolation transformer used. Line Voltage: 117 volts AC.
- Set Channel Selector on an unused channel. Contrast control fully clockwise: all other controls counterclockwise. Do not disturb Horizontal Lock adjustment.
- Antenna disconnected and terminals shorted together.
- DC voltages measured with VTVM between tube socket terminals and chassis, unless otherwise indicated.
- Voltages marked (*) will vary widely with control settings.
- Waveforms taken with transmitted signal input to television chassis.
- For waveform measurement, all controls set for normal picture.
- Peak-to-peak voltages may vary slightly from those shown.



PARTS LIST

Only special parts are listed below.

RESISTORS

Sym.	Description	Part No.
R207	330,000 ohms, Volume control (R207 includes switch S501)	75C 1-77
R315	1,000 ohms, Contrast control	75C 13-76
R322	100,000 ohms, Brightness control	75C 20-43
R405	20,000 ohms, Vertical Hold control	75C 13-77
R409	2.5 megohms, Height control	75C 20-41
R411	3,000 ohms, Vert. Lin. control	75C 20-42
*R416	2,700 ohms, ½ watt	Part of M401
*R417	56,000 ohms, ½ watt	Part of M401
R502	54 ohms, 20 watts, 5%	61B 3-24
R503	10 ohms, 5 watts, fusible resistor	61A 22

CAPACITORS

C206	18 mmf, 5%, 500 volts, cer. disc, NPO temp. coeff.	65C 44-27
C212	40 mf, 200 volts, electrolytic	67A 25-2
C213	Electrolytic	See C504B
C301	68 mmf, 5%, 500 volts, cer. NPO temp. coeff.	65D 10-97
C306	39 mmf, 5%, 500 volts, cer. disc, NPO temp. coeff.	65C 44-25
C307	5 mmf, 10%, 500 volts, cer. NPO temp. coeff.	65D 10-108
C308	6.8 mmf, 10%, 500 volts, cer.	65C 28-068
C312	100 mmf, 500 volts, cer. disc, NPO temp. coeff.	65C 44-13
C314	150 mmf, 10%, cer. N750 temp. coeff.	65C 44-9
C408	Electrolytic	See C504C
C409	10 mf, 475 volts, electrolytic	67A 4-22
*C410	.01 mf, 600 volts, ceramic	Part of M401
*C411	.01 mf, 600 volts, ceramic	Part of M401
C423	325 mmf, 2 KV, cer. N1500 temp. coeff.	65D 10-115
C424	250 mmf, 3 KV, cer. N1500 temp. coeff.	65D 10-114
C425	.068 mf, 1 KV, paper	64A 2-34
C502	100 mf, 150 volts, electrolytic	67D 15-183
C503	100 mf, 300 volts, electrolytic	67D 15-134
C504A	100 mf, 300 volts	
C504B	60 mf, 150 volts, electrolytic	67D 15-135
C504C	20 mf, 50 volts	

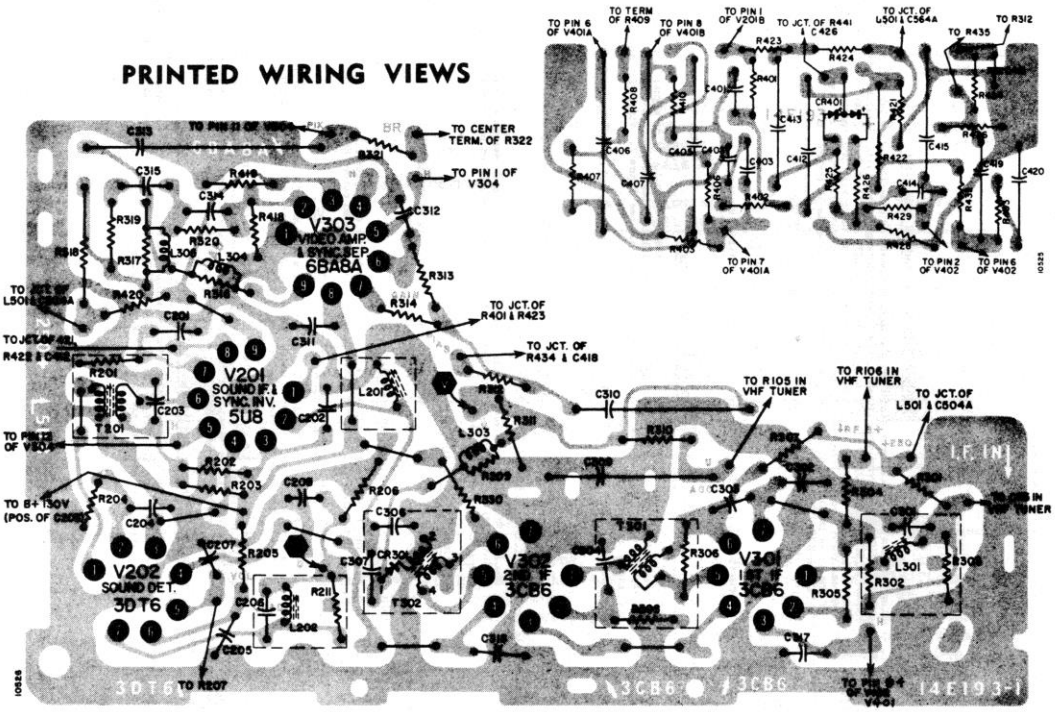
COILS AND TRANSFORMERS

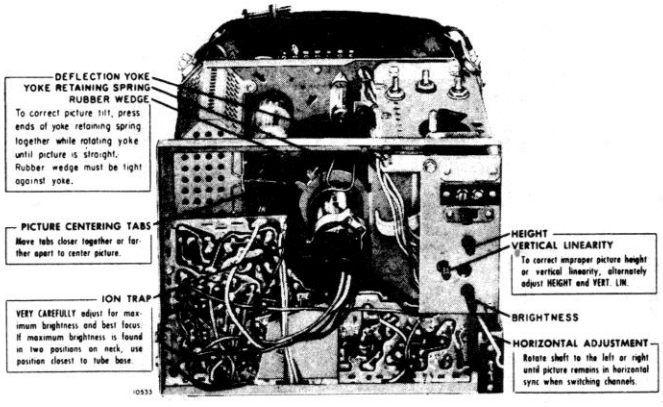
L201	Sound Take-off Coil	72C 132-20
L202	Quadrature Coil	72C 132-18
L301	IF Input Coil	72C 132-17
L302	Resonant Choke Coil	73A 24-8
L303	Video Peaking Coil	73B 5-32
L304	Video Peaking Coil	73B 5-22
L305	Video Peaking Coil	73B 5-21
L401	Horizontal Lock Coil	94C 17-7
L501	Filter Choke	74B 18-19
T201	Sound IF Transformer	72C 132-19
T202	Audio Output Transformer	79D 33-13
T301	1st IF Transformer	72C 132-8
T302	2nd IF Transformer (includes CR301, C308 and L302)	72C 176-3
T401	Vert., Output Transformer	79B 71-1
T402	Deflection Yoke (less cap and Centering Device)	94D 117-1
T403	Horiz. Output Transformer	79B 70-1

MISCELLANEOUS CHASSIS PARTS

CR301	Video Detector, 1N295	Part of T302
CR401	Diode, Dual Selenium	93A 5-2
CR501	Rectifier, Selenium	93A 4-2
CR502	Rectifier, Selenium	93A 4-2
M201	Speaker, PM (3½")	78B 120
M401	Couplate Vertical Blanking (includes R416, R417, C410 and C411)	63C 6-12
M502	Interlock Plug	88A 36
S101	Switch, Local-Distant	77B 59-3
	Centering Device	94A 116-1
	Ion Trap	94A15-5
	Jumper Strip (for picture tube socket)	18A 134

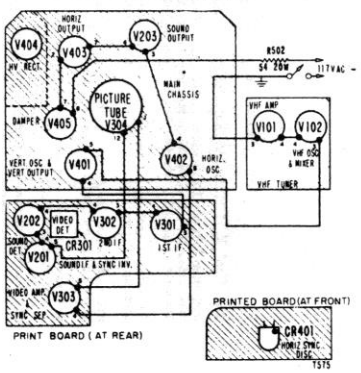
PRINTED WIRING VIEWS





Rear View of Chassis Showing Adjustment Locations.

TUBE LOCATIONS



ADDITIONAL SERVICE HINTS

1. No Picture or Sound on High VHF Channels . . . . Local Oscillator Quits

With some 5J6 oscillator-mixer tubes, the local oscillator of a very few of the first production 10" portable television receivers will cease to operate on some high channels; especially channel 9. This is particularly true if the line voltage is low.

Checking the voltage at test point W on the tuner will confirm whether or not the oscillator is working. About a negative 3 volts indicates oscillation.

While replacing the 5J6 may correct the trouble, a minor change has been made in the tuner to insure that all good 5J6 tubes will oscillate. The changes made were:

a. Ungrounded end of capacitor C112 moved from junction of C111 and R109 to junction of C111 and R111.

b. Lead to fine tuning capacitor stator re-routed to shorten and to dress lead away from tuner chassis.

Tuners with these changes are marked MOD 3.

94E119-1 TUNER

2. Slipping Tuner Shaft . . . Channel Selector Knob Doesn't Index Correctly

There is a nylon insert just ahead of the front turret section which serves to insulate the flatted channel selector shaft from the turret shaft. In a very few of the first production 10" portable television receivers slippage can occur at this point.

If it does, replace the tuner, or make a field repair by drilling a small hole through the front hub of the turret and through the shaft. Then insert a fiber pin; not a meta pin. Don't forget to re-index the channel selector correctly before drilling the hole.

3. Drive Lines in the Picture

The 14YP3B chassis has no Horizontal Drive control. Although the factory checks for freedom from drive lines, a particularly "hot" 6Q07 horizontal oscillator tube may produce enough horizontal drive to cause a drive line in the picture. Drive lines that occur off-channel with no signal are accepted as normal, providing they disappear when a picture is received.

If drive lines do exist in the picture, swap 6Q07 horizontal oscillator tubes, and if necessary, the 12DQ6 horizontal output and 12AX4 damper tubes. Of course, the tube causing a drive line is not faulty and may cause no drive line if used in another recei

14YP3B

ALIGNMENT INFORMATION

The IF alignment procedure is different than for previous chassis; a sweep generator and oscilloscope must be used to correctly align the video IF amplifier. The response curve after the completion of the spot frequency alignment in no way resembles the correct curve. Look at figure 3.

Before making any alignment adjustments, be sure to read the Important Alignment Hints

OVER-ALL VHF AND IF RESPONSE CURVE CHECK

Connect bias supply and sweep generator, and adjust receiver as described under VHF AMPLIFIER AND MIXER ALIGNMENT. Connect oscilloscope to test point V through a decoupling filter as described under 21 MC IF AMPLIFIER ALIGNMENT AND RESPONSE CURVE CHECK. Set Local-Distant switch to Local position. Adjust generator output so that observed response curve will have peak-to-peak amplitude between 1 and 2 volts. Compare the response curve obtained with the curve illustrated by figure 7. If the curve is not within tolerance, touch-up the IF adjustments as instructed in figure 7. It should never be necessary to turn any adjustment more than one turn in either direction. If the response is still not within tolerance, repeat entire alignment procedure.

4.5 MC SOUND IF ALIGNMENT

Alignment of 4.5 MC Sound IF should be made, using a television station signal.

VHF OSCILLATOR ADJUSTMENT

Adjust VHF oscillator using a television signal as described in ST582-1. If no signal is available, observe OVER-ALL VHF AND IF RESPONSE CURVE and adjust oscillator slug to position video carrier marker 50 per cent down from the peak of the overall response curve. See figure 7. Start with channel 13, and adjust channels 11, 9, 6, and 4, in turn.

Alignment for 94N3-1 Tuner same as previous Admiral "Pentode" Tuner.

IMPORTANT ALIGNMENT HINTS
for

14YP3B Television Receiver Chassis

1. Use of Local-Distant switch in Alignment

The Local-Distant switch should be in the Local position for the IF Response Curve check and the Over-All VHF and IF Response Curve Check. It should be in the Distant position during VHF Amplifier and Mixer Alignment and for 4.5 MC Sound IF Alignment.

2. Caution - B Plus on Tuner

The B Plus for the tuner is connected to exposed terminals on the top (tube side) of the tuner chassis. Use caution during tuner alignment to avoid shock.

3. Remove Picture Tube to Make Tuner Alignment Easier

With the picture tube in place, the alignment adjustments on the tuner are difficult to make. Most often, time will be saved if the picture tube is removed before attempting tuner alignment.

4. Keep Generator Output Low to Avoid Distortion of Response Curves

While the alignment instructions in previous service data have stated that the output of the sweep and marker generators must be kept at a minimum to avoid overloading the amplifier and distortion of the response curve, no specific limits were stated.

In general, varying the signal generator output should not affect the shape of the response curve; only the amplitude. It's advisable to calibrate the oscilloscope so the amplitude of the observed response curve will be known. In the 14YP3B chassis, the amplitude of the response curve at test point V should be no more than 1 volt peak-to-peak; and at test point W, .1 volt peak-to-peak.

5. Use Ruled Screen Over Oscilloscope Face

It is very difficult to accurately judge the exact location of the different markers unless a ruled screen is used over the face of the oscilloscope CRT. It has been found that correct marker location tolerances cannot be maintained by visual judgement alone.

21 MC IF AMPLIFIER ALIGNMENT AND IF RESPONSE CURVE CHECK

a. Connect negative of 2.5 volt bias supply to test point U; positive to chassis.

b. Disconnect antenna and set Local-Distance switch to Local position.

c. Set Channel Selector to channels 6 or 5.

d. Set Contrast control fully counter-clockwise.

e. Connect generator high side to insulated shield for 6J6 (V102); connect low side to chassis near tube shield. See figure 1.

f. Connect VTVM high side to test point V through a decoupling filter; common to chassis. See figure 2. Use lowest DC scale on VTVM.

g. Allow about 15 minutes for receiver and test equipment to warm up.

Step	Signal Generator Frequency	Instructions	Adjust
1	23.1 MC	While adjusting, keep reducing generator output to prevent VTVM reading from exceeding 2 volts.	A1 for maximum
2	24.9 MC		A2 for maximum
3	- - - -	Detune A4 in tuner by turning towards tuner chassis as far as possible. Turn clockwise from bottom; . . counterclockwise from top (tube side).	A4 as instructed
4	23.8 MC		A3 for maximum
5	Balance of IF alignment is completed while observing response curve.		

Receiver Controls and Bias Supply	Sweep Generator	Marker Generator	Oscilloscope	Instructions
As before.	Connect high side to 6J6 (V102) insulated tube shield; low side to chassis. Adjust for 23 MC center frequency and about 7 MC sweep width.	If an external marker generator is used, loosely couple high side to sweep generator lead on tube shield; low side to chassis.	Connect high side to test point V through decoupling filter.	Response curve should resemble figure 3. Adjust A4 for correct bandpass consistent with correct marker location. See figure 4 for marker frequencies and location.

NOTE: If difficulty is encountered in obtaining correct response curve using procedure described above, detune A1, adjust A4 to 23.1 MC, and then readjust A1 for correct response curve.

Figure 1.

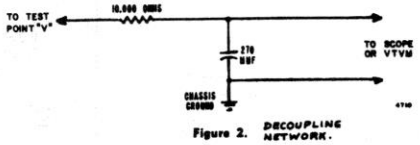


Figure 2. DECOUPLING NETWORK.

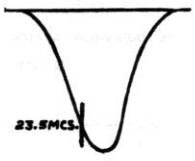


Figure 3.

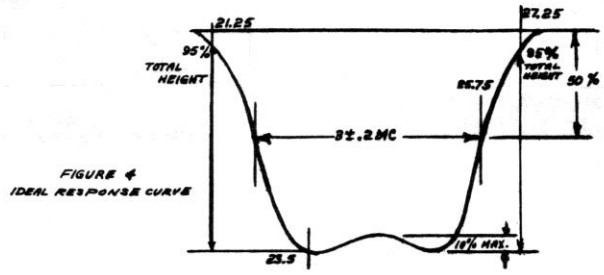


FIGURE 4
IDEAL RESPONSE CURVE

94E119-1 TUNER
VHF AMPLIFIER AND MIXER ALIGNMENT

a. Connect negative of 2.5 volt bias supply to test point U; positive to chassis.

b. Disconnect antenna and set Local-Distant switch to Distant position.

c. Set Channel Selector to channel 11, or other unassigned high channel.

d. Connect sweep generator 300 ohm output to antenna terminals. If sweep generator does not have a built-in marker generator, loosely couple a marker generator to the antenna terminals.

e. Connect high side of oscilloscope to test point W; low side to chassis.

f. Allow about 15 minutes for receiver and test equipment to warm up.

Step	Marker Gen. Frequency	Sweep Gen. Frequency	Instructions
1	199.25 MC Video Carrier 203.75 MC Sound Carrier	Sweeping CH 11 201.5 MC Center Frequency 10 MC Sweep Width	Set Channel Selector to Channel 11. Adjust A8 and A9 as required to obtain equal peak amplitudes and symmetry consistent with proper bandwidth and marker location. See figure 5. Adjust generator output to keep peak-to-peak amplitude of response curve observed at test point W, .1 volt pp or less.
2	83.25 MC Video Carrier 87.74 MC Sound Carrier	Sweeping CH 11 85.5 MC Center Frequency 10 MC Sweep Width	Set Channel Selector to channel 6. Adjust A10 as required to obtain response curve having maximum amplitude and flat top appearance consistent with proper bandwidth and correct marker location. After completing adjustment, recheck adjustment of step 1.
3	Set the sweep generator to sweep the channel to be checked. Set the marker generator for the corresponding video carrier frequency and sound carrier frequency.		Check each channel operating in the service area for response curve shown in figure 5. In general, the adjustment performed in steps 1 and 2 are sufficient to give satisfactory response curves on all channels. However, if reasonable alignment is not obtained on a particular channel, repeat step 1 for a high channel as a compromise adjustment to favor that particular channel; repeat step 2 to favor a weak low channel.

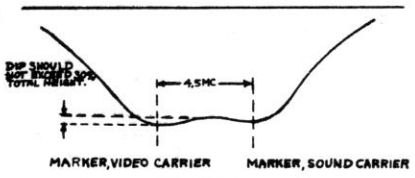
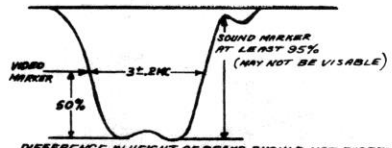


FIGURE 5



DIFFERENCE IN HEIGHT OF PEAKS SHOULD NOT EXCEED 10%
DIP AT CENTER SHOULD NOT EXCEED 30%
A8 MAY BE USED TO ADJUST FOR TILT ON PEAKS.
A10 MAY BE USED TO SHIFT THE RESPONSE CURVE LEFT OR RIGHT.

FIGURE 7.

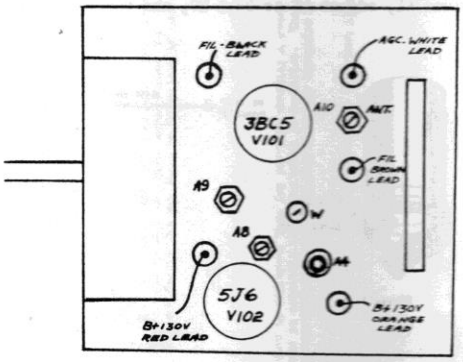


FIGURE 6.
ADMIRAL 94E119-1 TUNER

Chassis Removal

The portable chassis can be removed from the cabinet as follows:

1. Remove cabinet back and front
2. Remove all control knobs and the two rear cabinet feet.
3. Remove the screws securing the chassis to the cabinet top (1) and Bottom (3).
4. Carefully slide the chassis out the rear of the cabinet.

Servicing Tubes

Tubes can be serviced by simply removing the cabinet back and tilting back the large printed wiring board after removing the screws holding it to the chassis. It is unnecessary to unsolder any leads and the receiver can be operated for test purposes with the printed wiring board tilted back. A tube puller is handy for removing the 1X2B high voltage rectifier tube.

The picture tube may be removed or replaced without chassis removal if desired by removing the cabinet front and back. It is suggested that the large printed wiring board be tilted back when removing or replacing the picture tube to allow easier removal and replacement of components mounted on the picture tube neck.

Schematic & Production Changes

R711, C720, L708 added to 94N3-1 Tuner see sketch below.

R404 was 56K is now 68K
R431 was 150K is now 180K

C428 (47 mmfd. mica) added from pin 1 of V402 (6CG7) to B+ see sketch below.

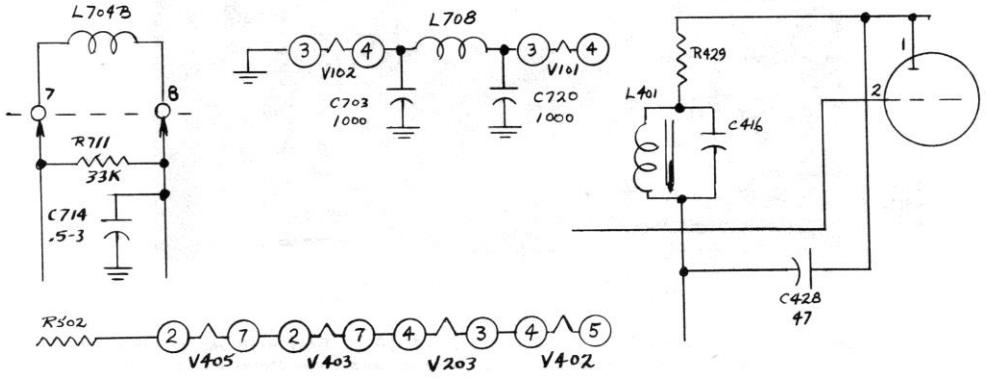
Two V402 listed in error one changed to V203 see sketch below.

C501 was .01 is now .047

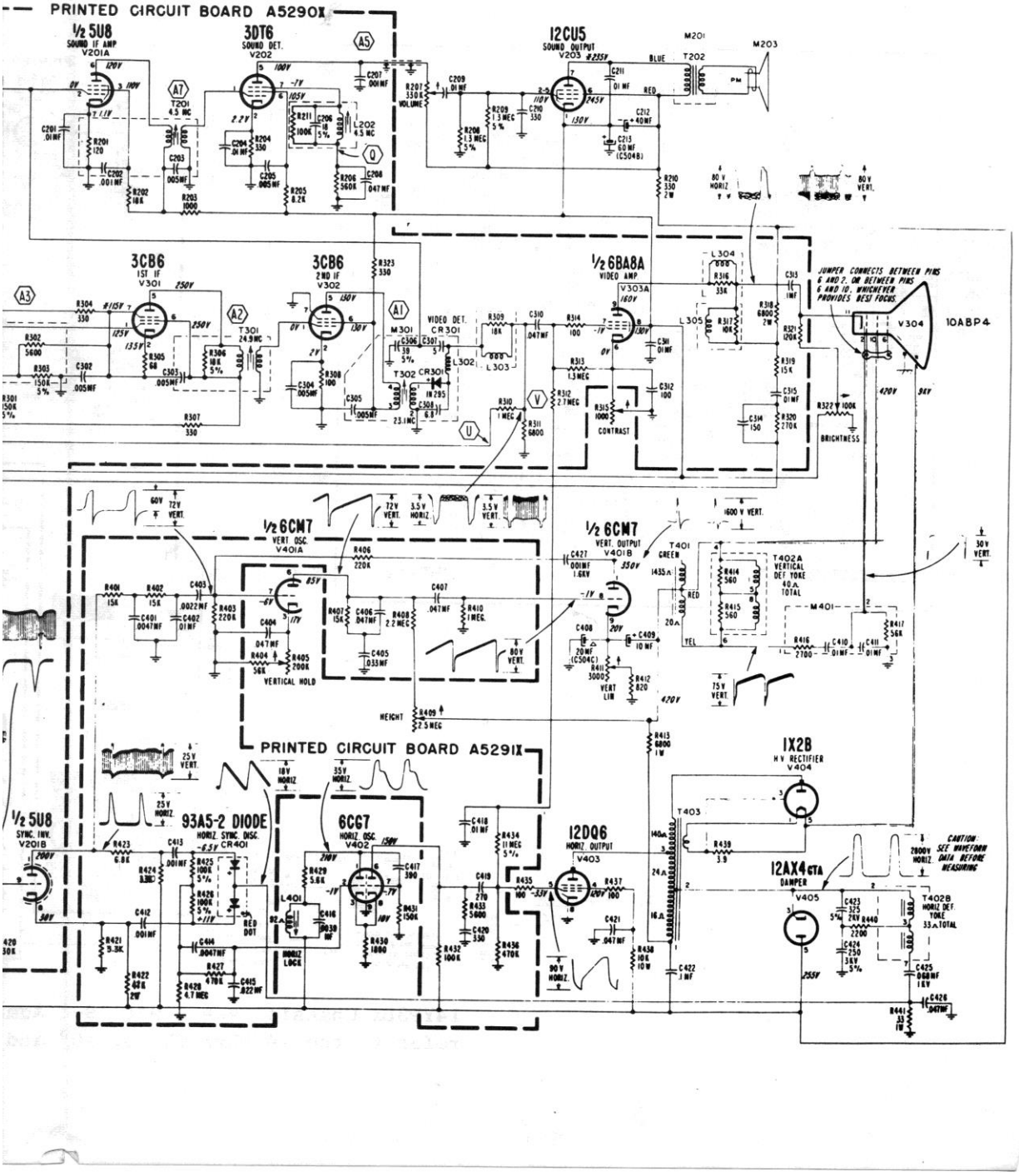
R204 & R313 should be 5%.

14" Portable known as 14YP3CX Chassis, schematic same as enclosed except picture tube is 14RP4 this should be added to schematic.

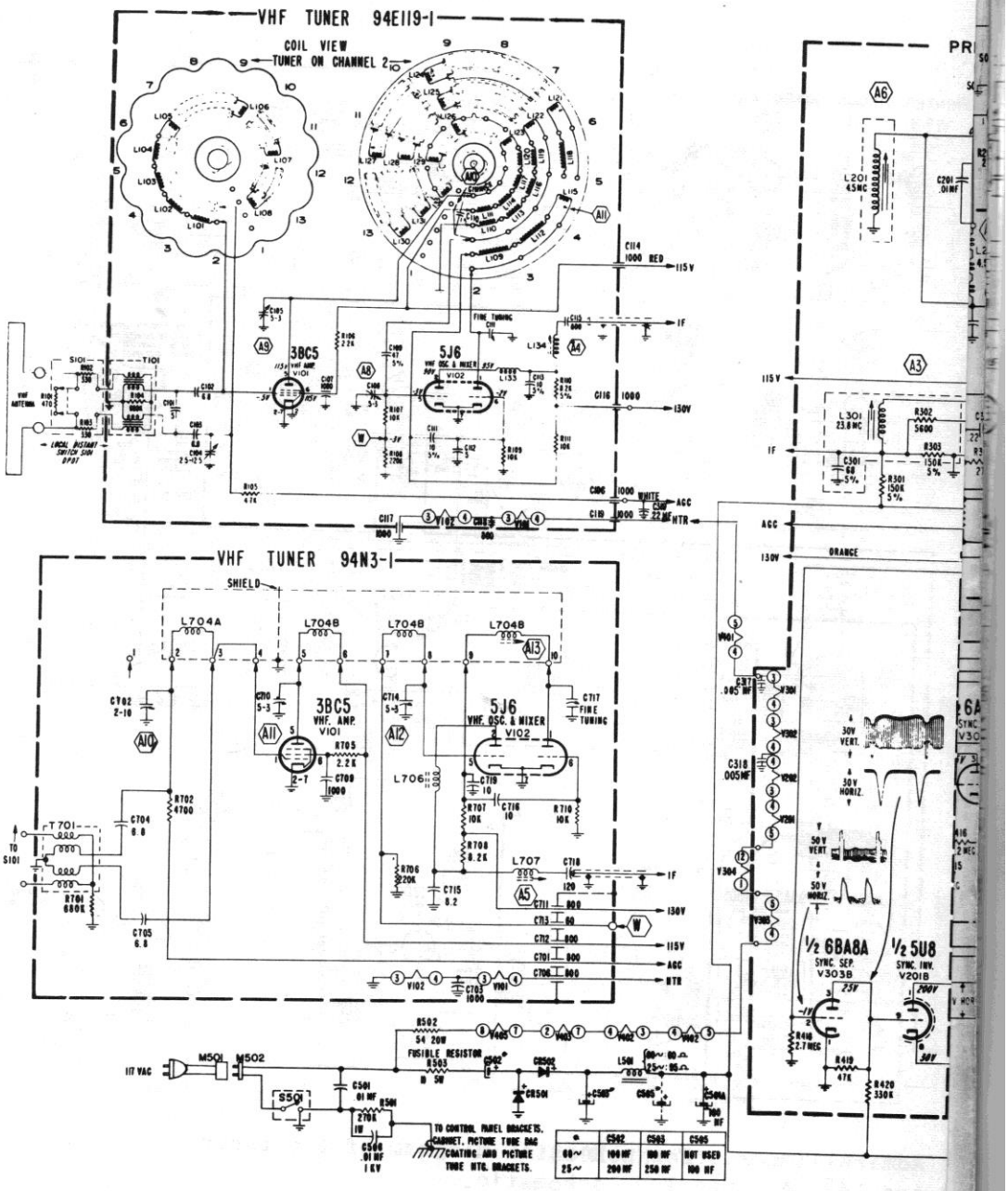
Adjustment Location A5 of the 94N3-1 Tuner should read A4.

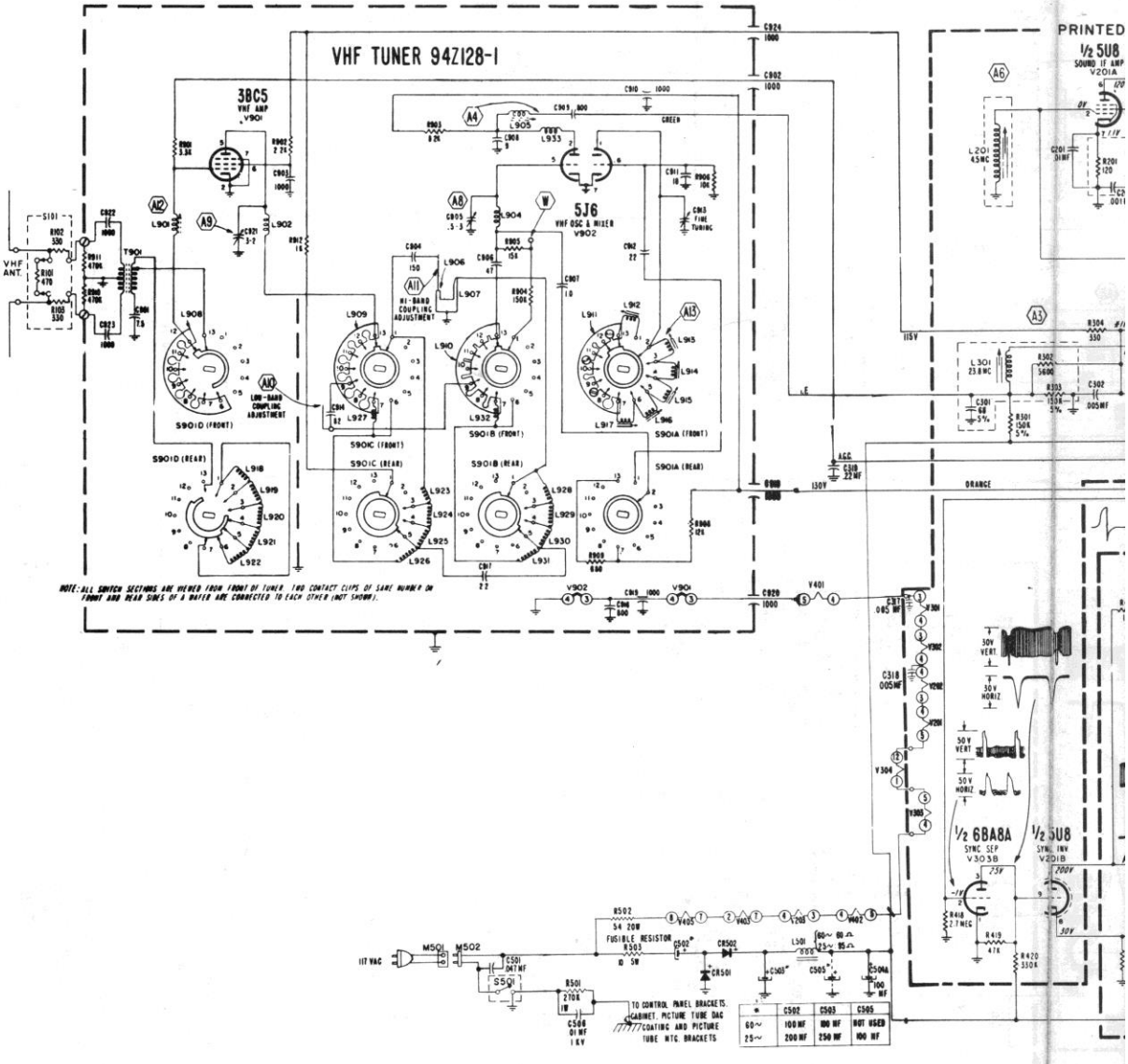


14YP3B, CX

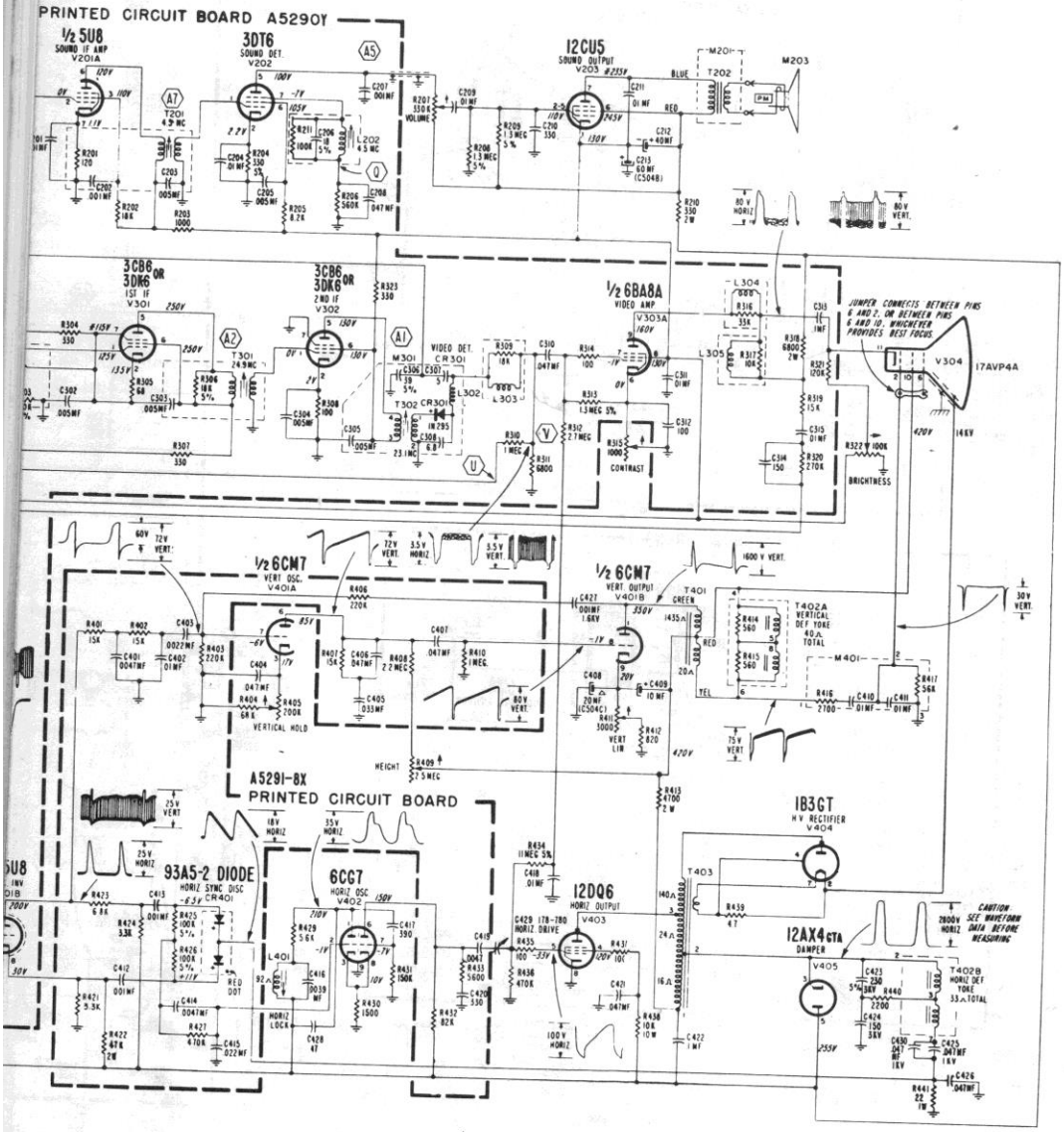

PRINTED CIRCUIT BOARD A5290X
½ 5U8
SOUND IF AMP
V201A
3DT6
SOUND DET.
V202
12CU5
SOUND OUTPUT
V203
T201
4.5 MC
T202
M201
M203
PM
BLUE
RED
3CB6
1ST IF
V301
3CB6
2ND IF
V302
½ 6BA8A
VIDEO AMP
V303A
T301
24.9 MC
T302
CR301
VIDEO DET.
L302
L303
L304
L305
JUMPER CONNECTS BETWEEN PINS 6 AND 7, OR BETWEEN PINS 6 AND 10, WHICHEVER PROVIDES BEST FOCUS.
V304
10ABP4
CONTRAST
BRIGHTNESS
½ 6CM7
VERT. OSC.
V401A
½ 6CM7
VERT. OUTPUT
V401B
T401
T402A
VERTICAL DEF. YOKE
40Ω TOTAL
M401
VERTICAL HOLD
HEIGHT
VERT LIN
PRINTED CIRCUIT BOARD A5291X
1X2B
HV RECTIFIER
V404
½ 5U8
SYNC. INV.
V201B
93A5-2 DIODE
HORIZ. SYNC. DISC.
CR401
6CG7
HORIZ. OSC.
V402
12DQ6
HORIZ. OUTPUT
V403
T403
12AX4GTA
DAMPER
V405
T402B
HORIZ DEF. YOKE
33Ω TOTAL
HORIZ LOCK
CAUTION: SEE WAVEFORM DATA BEFORE MEASURING

ADMIRAL
14YP3B, CX





14YP3DX Chassis uses a 94E119-1 Admi
refer to the 14YP3BX-CX for 10" and



Admiral Tuner. For schematic diagram of the tuner, and 14" portable T.V. schematic.