



FIELD SERVICE DATA SHEET

21-CT-7835
21-CT-7835U
SERIES

INSTALLATION CHECK LIST

Connect the antenna transmission line to the receiver antenna terminals.

Plug the power cord into the 117V. AC outlet and turn the receiver "ON". The receiver should operate normally. However, a check of the following adjustments should be made.

1. Check the receiver on the strongest channel.

If the receiver is overloading it will be necessary to adjust the AGC control.

Select the channel with the strongest signal and turn the AGC control fully counter-clockwise. Advance the control clockwise until picture bends at top, then counter-clockwise 25° from start of bend.

2. Check for normal operation of horizontal (freq.) control. Should hold sync for three full turns or more of the control.

3. Check centering of picture. Adjustment is made with the centering controls on the rear apron.

4. Check width and horizontal linearity, readjust width switch only, for one inch overscan. Do not adjust tuning control. (Refer to Service Data alignment.)

5. Check height and vertical linearity, reset controls where required for one inch overscan.

6. Check R-F oscillator adjustment on all channels. Re-adjust if necessary, starting at the highest frequency channel, proceeding to the lowest. Remove tuner to adjust.

7. Adjust the FM trap—where FM interference is encountered—for minimum interference in the picture.

8. Adjust focus control for best definition in fine detail areas.

9. Check for reception of color, using transmitted color stripe if available in area where receiver is installed. This will also check antenna for color reception.

10. Check for color shading, or color cast, in large screen areas. Demagnetize receiver if necessary. (See Color Purity Adjustments). Check for color fringing, readjust static D.C. controls if necessary.

Receiver should operate normally. However, if further adjustment is indicated, refer to Complete Set-Up Procedure.

KINESCOPE AND SAFETY GLASS CLEANING.—The safety glass may be removed to allow for cleaning of the safety glass and kinescope faceplate if required.

To do this remove the knobs from the controls under the control cover at the front of the cabinet. Remove the two screws holding the control case and pull the case outward to remove.

Along the top edge of the control case opening are two round hooks. Insert a small screwdriver into one of the hooks and pull the hook downward, at the same time pulling the front trim outward above the hook. Repeat the same procedure for the second hook. The trim will now be loose along the bottom.

Pull the trim outward approximately six inches and slide it downward out of the recesses at the top of the screen and remove.

Four clips holding the safety glass will now be visible at the sides of the glass.

Remove the rear panel of the receiver and reach in and release each clip by pressing the clip together then pushing it out the front through the opening. Be careful that the safety glass does not fall outward when removing the last clip.

The kinescope faceplate and safety glass should only be cleaned with a soft cloth and "Windex" or similar cleaning agent.

COMPLETE SET-UP PROCEDURE

INITIAL ADJUSTMENTS.—Adjust the receiver for a black and white picture.

At this point it is necessary to check the horizontal oscillator and the conventional adjustments of height, vertical linearity, width, focus, and electrical centering. (Refer to Check List.)

PRELIMINARY CONVERGENCE ADJUSTMENT.—The dot signal generator should be connected to the receiver to provide a dot pattern on the kinescope for making convergence adjustments.

Preset the red, green and blue horizontal and vertical amplitude controls to minimum, fully counter-clockwise. Refer to chassis top view for control locations. Preset the red, green and blue vertical tilt controls to mid-range.

Adjust the three D.C. control adjustments and the blue D.C. lateral control to produce a white dot in the center of the screen.

COLOR PURITY ADJUSTMENTS.—Set all the magnets on the field equalizing assembly at their maximum counter-clockwise position. (Located under front trim—See safety glass removal.)

The kinescope and associated components should be subjected to a strong magnetic field at this point using the degaussing coil. Slowly move the coil around the kinescope, the sides and front of the receiver and very slowly withdraw to about six feet before disconnecting the coil.

Set the contrast control fully counter-clockwise and the brightness control fully clockwise.

Set the red screen control to fully clockwise and the green and blue screen controls fully counter-clockwise.

Rotate one or both of the rings of the purifying magnet, by the tabs, or rotate the entire assembly, to achieve minimum color contamination of the red field. The yoke should also be adjusted by moving forward or backward on the kinescope neck.

Advance the green and blue screen controls and then adjust all three screen controls to produce a white screen. Color contamination may be noted around the edges of the screen.

Adjust the individual field equalizing magnets adjacent to the area of contamination to produce the most uniform white field over the entire screen. Recheck the individual screens for purity after field magnet adjustments.

NOTE.—Relocation of the receiver may disrupt the purity adjustments, if the receiver passes through the influence of stray magnetic fields. Purity should be checked at the location in which the instrument is to be operated.

KINESCOPE TEMPERATURE, SCREEN AND BACKGROUND ADJUSTMENTS.—Set the screen controls maximum counter-clockwise and the green and blue background controls 30% from maximum counter-clockwise.

Turn the contrast control to the center of its mechanical range.

Measure the bias on the red gun between the grid and cathode using the "VoltOhmyst". Adjust the brightness control for a reading of -70 volts on the meter.

Leave the brightness control at this setting and adjust the three screen controls for a grey picture (Color temperature of 8200° Kelvin) at a very low light level.

After setting the screen controls do not change the setting of the red screen control during the balance of this procedure.

Advance the contrast control and observe the picture. One color will normally predominate in the high brightness areas of the picture. Depending on the color which is predominant proceed as follows:

1. **Green Predominant In Highlights**—Turn the green background control slightly counter-clockwise making the picture magenta and observing the low light areas adjust the green screen control clockwise to achieve grey in low light areas.



2. **Blue Predominant In Highlights**—Turn the blue background control slightly counter-clockwise making the picture yellow and observing the low light areas adjust the blue screen control clockwise to achieve grey in low light areas.

3. **Blue/Green (Cyan) Predominant In Highlights**—Turn both the blue and green background controls slightly counter-clockwise making the picture red and adjust the blue and green screen controls clockwise to achieve grey in low light areas.

4. **Magenta Predominant In Highlights**—Turn the green background control slightly clockwise making the picture green and observing the low light areas adjust the green screen control counter-clockwise to achieve grey in low light areas.

5. **Yellow Predominant In Highlights**—Turn the blue background control slightly clockwise making the picture blue and observing the low light areas adjust the blue screen control counter-clockwise to achieve grey in low light areas.

6. **Red Predominant In Highlights**—Turn both the blue and green background controls slightly clockwise making the picture cyan and observing the low light areas adjust both the blue and green screen controls counter-clockwise to achieve grey in low light areas.

Vary the brightness control through its range and observe all areas of the picture. No color should be predominant in either high or low brightness areas at any setting of the brightness control. At the point of extinction of the three guns, observation with a microscope should show the three guns cutting off at the same time when the low light tracking is correct.

STATIC CONVERGENCE ADJUSTMENTS

Recheck the dot pattern for white dots in the center of the screen. If necessary, readjust the four magnet adjustments to again produce this condition. The center dots should be converged, with mis-convergence at the sides and at the top and bottom of the screen.

DYNAMIC CONVERGENCE ADJUSTMENTS

VERTICAL CONVERGENCE.—Vertical dynamic convergence should be performed before horizontal convergence.

Turn the dot/bar generator back on and set for vertical bars.

Referring to the vertical bar at the center of the screen, turn the red vertical amplitude control fully clockwise and adjust the red vertical tilt control for maximum displacement of the red bar at the center of the screen.

Turn the green vertical amplitude control fully clockwise and adjust the green vertical tilt control for maximum displacement of the green bar at the center of the screen. The direction of center displacement should be opposite to red.

Adjust the red and green vertical amplitude and tilt controls to produce straight vertical red and green bars parallel to the blue bar. Converge the three bars using the red and green D.C. controls to form a single white vertical bar at the center of the screen. Slight adjustment of the red and green amplitude and tilt controls will probably be required to achieve this condition. Refocus if necessary.

Turn the generator to horizontal bars and using the blue D.C. control displace the blue bar slightly from the other bars. Adjust the blue vertical amplitude and tilt controls for equal displacement of the blue bars along the vertical center line. The pattern along the vertical center line should show the blue bars equally displaced from the other bars along the vertical center line of the screen.

HORIZONTAL CONVERGENCE.—The procedure for horizontal convergence is approximately the same as that used for vertical convergence. The horizontal row of bars nearest the center, however, is used for reference.

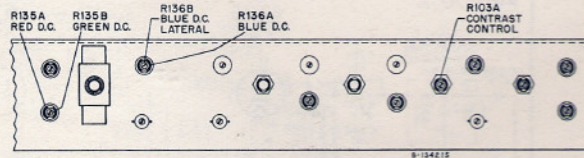
Turn the blue horizontal amplitude control clockwise until a bow in the blue bar appears in the center of the screen. Alternately adjust the blue horizontal phasing and amplitude controls to produce a straight horizontal blue bar across the center of the screen.

Shunt the red grid of the kinescope at the chassis rear apron through a 100,000 ohm resistor to ground. Alternately adjust the green horizontal amplitude and tilt controls to produce a green bar parallel to the blue bar over its entire length at the center of the screen.

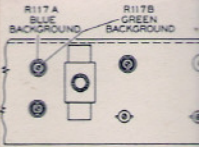
Remove the shunt from the red grid and shunt the green grid to ground. Alternately adjust the red horizontal amplitude and tilt controls to produce a red bar parallel to the blue bar over its entire length at the center of the screen. Remove the shunt on the green grid.

Using the blue D.C. control move the blue bar close to the red and green bars and, if necessary, touch up the above adjustments slightly until all three bars are equally displaced along the entire center line of the screen.

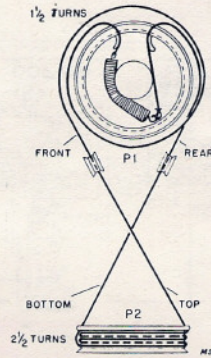
Turn the generator to a dot pattern and using the red, green and blue D.C. controls converge the dot pattern. The dot pattern should now show maximum convergence over the entire area of the screen.



STATIC CONVERGENCE CONTROLS

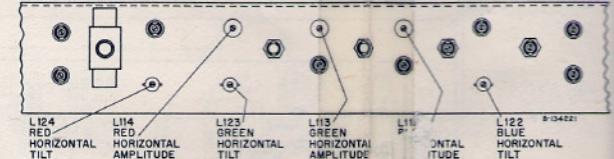


SCREEN ADJUSTMENTS

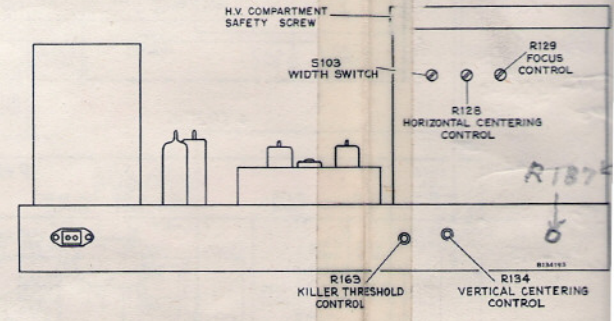


TO REPLACE DIAL CORD - TURN FINE TUNING SHAFT WITH PULLEY P1 FULLY CLOCKWISE & ASSEMBLE CORD AS SHOWN ABOVE

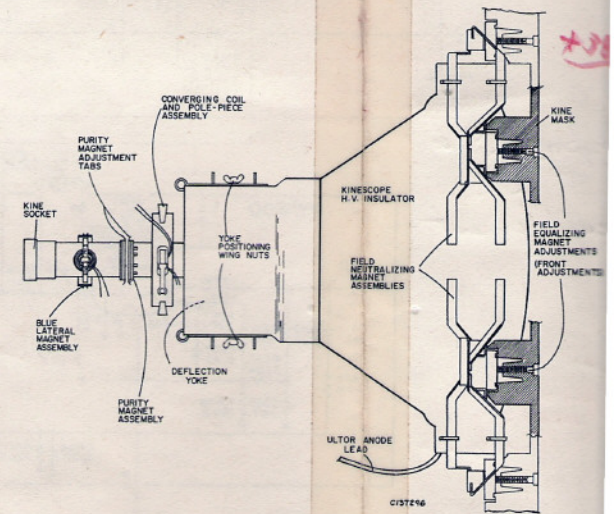
TUNER DIAL CORD



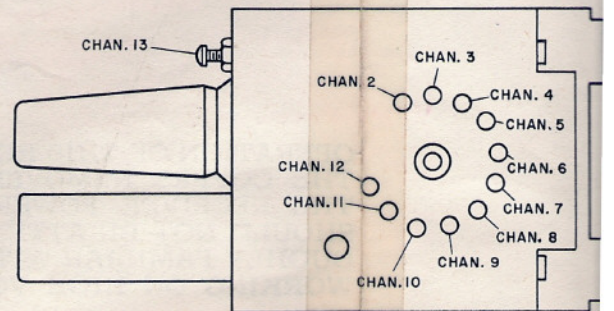
HORIZONTAL DYNAMIC CONTROLS



REAR CHASSIS ADJUSTMENTS



KINESCOPE ADJUSTMENTS AND COMPONENTS

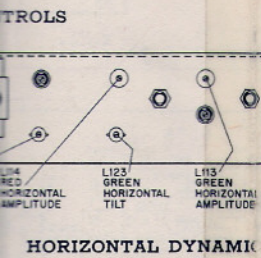
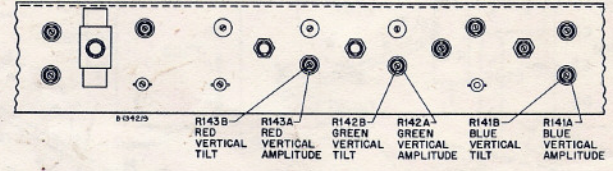
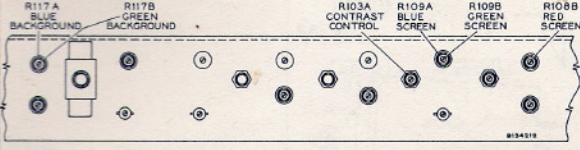
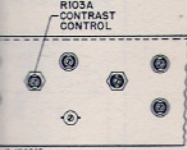


VHF R-F OSCILLATOR ADJUSTMENT



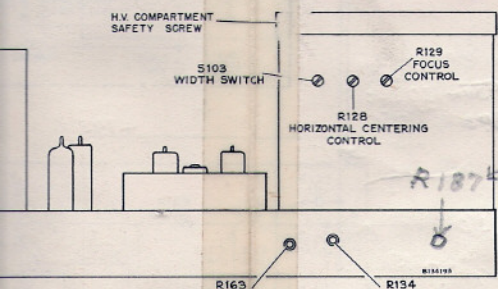
FIELD SERVICE DATA SHEET

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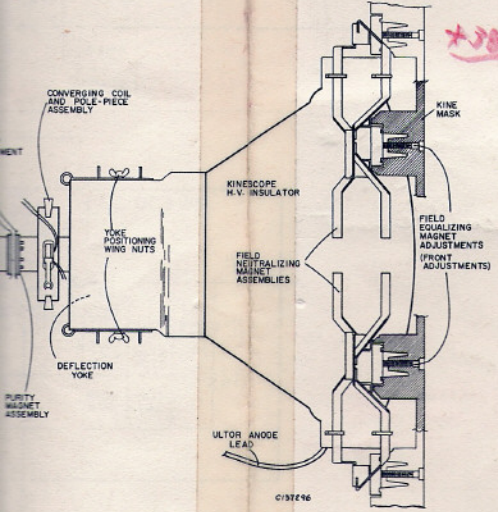
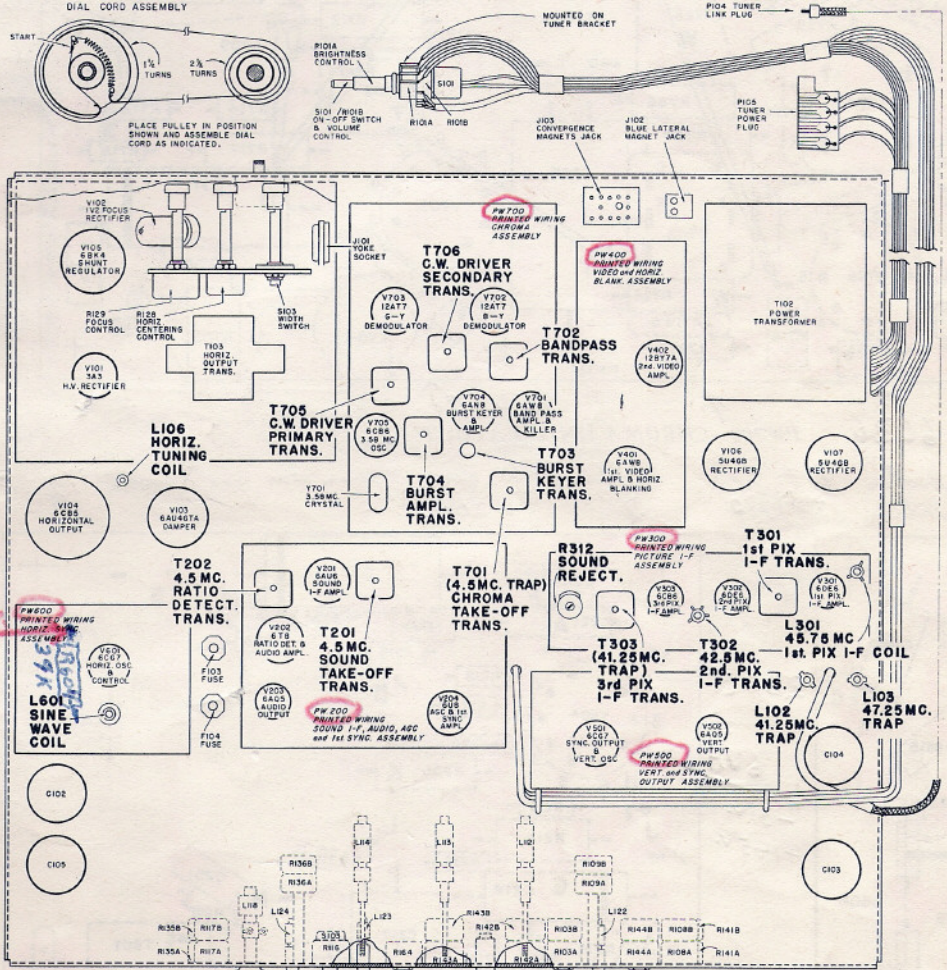


SCREEN AND BACKGROUND CONTROLS

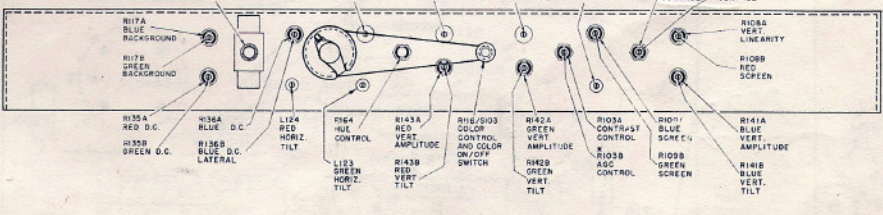
VERTICAL DYNAMIC CONTROLS



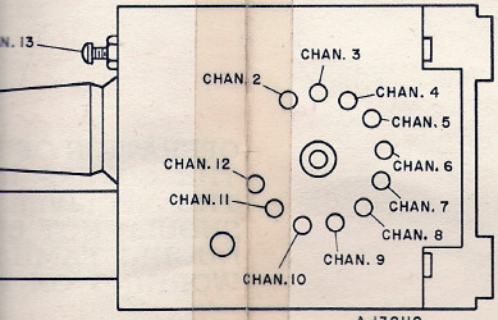
REAR CHASSIS ADJUSTMENTS



KINESCOPE ADJUSTMENTS AND COMPONENTS



CHASSIS TOP VIEW



VHF R-F OSCILLATOR ADJUSTMENT

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE CO., INC.
CAMDEN 8, N. J.

RADIO CORPORATION OF AMERICA
RCA VICTOR TELEVISION DIVISION

21-CT-7835
21-CT-7835U
SERIES



FIELD SERVICE DATA SHEET

REPLACEMENT PARTS (Partial Listing)

SYMBOL NO.	STOCK NO.	DESCRIPTION
CHASSIS ASSEMBLIES CTCSB, CTCSC, CTCSD & CTCSE		
C107	102316	Capacitor—Fixed, ceramic, 5.6 mmf., ±1.0 mmf., 500 v. DC
C108	100924	Capacitor—Fixed, ceramic, 22 mmf., ±5%, 500 v. DC
C110	102173	Capacitor—Fixed, ceramic, 2200 mmf., ±10%, 500 v. DC
C111	102790	Capacitor—Fixed, ceramic, 56 mmf., +100-0%, 5 KV
C113	75248	Capacitor—Fixed, mica, 220 mmf., ±5%, 1000 v. DC
C117, C118	102791	Capacitor—Fixed, ceramic, 360 mmf., ±10%, 2 KV N-2200
C127	78622	Capacitor—Fixed, ceramic, 470 mmf., ±20%, 500 v. DC
C131	55326	Capacitor—Fixed, ceramic, 10 mmf., ±0.5 mmf., 500 v. DC
C132A, B	75877	Capacitor—Fixed, ceramic, .01/.01 mf., +100-0%, 500 v.
F101	102792	Fuse—Main heater
F102	102182	Fuse—2 amp., 250 v., glass cartridge
F103	102165	Fuse—.750 amp., 250 v., glass cartridge
F104	102164	Fuse—.300 amp., 250 v., glass cartridge
R101A, B	102156	Control—"On-Off" volume, brightness control. Includes S101
R103A, B	102151	Control—Contrast, AGC control
R108A, B	102144	Control—Vertical linearity, red screen control
R109A, B	102143	Control—Blue screen, green screen control
R113	102314	Resistor—Fixed, wire wound, 3900 ohms, ±10%, 7 w.
R115	102789	Resistor—Fixed, wire wound, 2700 ohms, ±5%, 7 w.
R116	102159	Control—Color saturation control
R117A, B	102145	Control—Blue background, green background control
R128	102149	Control—Horizontal centering control
R129	102150	Control—Focus control
R132	79182	Resistor—Fixed, wire wound, 10,000 ohms, ±10%, 10 w.
R134	102148	Control—Vertical centering control
R135A, B	102140	Control—DC red, DC green control
R136A, B	102141	Control—DC blue, DC blue lateral control
R137	102169	Resistor—Fixed, wire wound, 1500 ohms, ±10%, 10 w.
R138	102170	Resistor—Fixed, wire wound, 1600 ohms, ±10%, 10 w.
R141A, B	102142	Control—Red, green, blue vertical amplitude and tilt control
R142A, B		
R143A, B		
R144A, B	102146	Control—Vertical hold, vertical height control
R148	102789	Same as R115
R150	102171	Resistor—Fixed, wire wound, 6800 ohms, ±10%, 7 w.
R162	102171	Same as R150
R163	102152	Control—Killer threshold control
R162	102157	Control—Hue control
T103	102132	Transformer—Horizontal output and high voltage transformer
T104	102133	Transformer—Vertical output transformer
	102394	Board—4 contact terminal board to connect chassis to tuner
	100407	Knob—Horizontal centering or focus or width switch knob
	79533	Knob—Horizontal frequency coil knob
PW200—Printed Sound Circuit Assembly		
C102	102207	Capacitor—Fixed, ceramic, 56 mmf., ±10%, 500 v. DC
C204, C205	73960	Capacitor—Fixed, ceramic, .01 mf., +100-0%, 500 v. DC
C206	102233	Capacitor—Fixed, ceramic, 3300 mmf., ±10%, 500 v. DC
C208	102232	Capacitor—Fixed, ceramic, 1200 mmf., ±10%, 500 v. DC
C209	102173	Capacitor—Fixed, ceramic, 2200 mmf., ±10%, 500 v.
C214	102234	Capacitor—Fixed, ceramic, .001 mf., ±10%, 500 v. DC
C215	73960	Same as C204
C220	102207	Same as C201
C221	39640	Capacitor—Fixed, mica, 330 mmf., ±10%, 500 v. DC
C223	102229	Capacitor—Fixed, ceramic, 330 mmf., ±10%, 500 v. DC
C224, C225	73960	Same as C204
PW300—Printed Picture I-F Circuit Assembly		
C301 to C303 Incl. C304	78623	Capacitor—Fixed, ceramic, 1000 mmf., ±20%, 500 v. DC
C305, C306 C308	102237	Capacitor—Fixed, ceramic, 680 mmf., ±10%, 500 v. DC N-2200
	78623	Same as C301
	102237	Same as C304

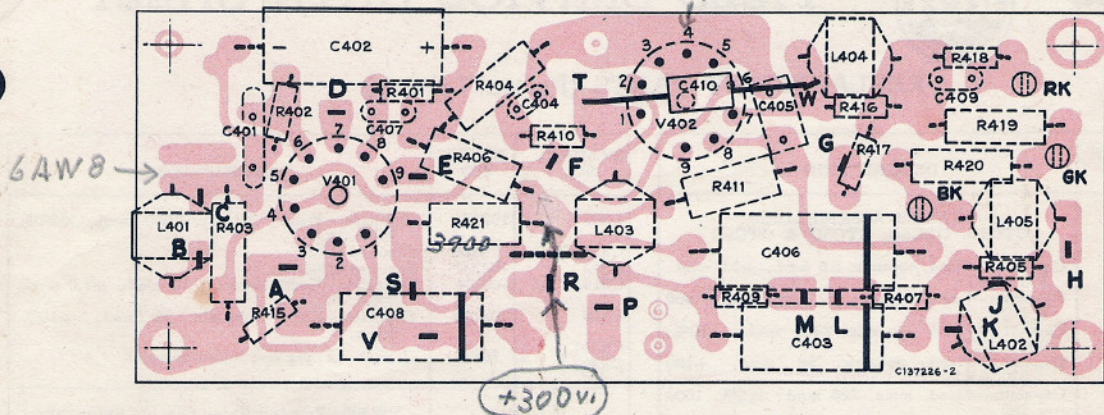
SYMBOL NO.	STOCK NO.	DESCRIPTION
C309	102234	Capacitor—Fixed, ceramic, 1000 mmf., ±20%, 500 v. DC
C310, C311	78623	Same as C301
C312	102237	Same as C304
C314, C315	102205	Capacitor—Fixed, ceramic, 10 mmf., ±1.0 mmf., 500 v. DC
C316	102793	Capacitor—Fixed, ceramic, 22 mmf., ±10%, 500 v.
CR301, CR302	76675	Crystal—I.F. pix and sound detector
PW400—Printed Video Circuit Assembly		
C401	102233	Capacitor—Fixed, ceramic, 3300 mmf., ±10%, 500 v. DC
C404	102229	Capacitor—Fixed, ceramic, 330 mmf., ±10%, 500 v. DC
C405	102208	Capacitor—Fixed, ceramic, 100 mmf., ±20%, 500 v. DC
C407	102231	Capacitor—Fixed, ceramic, 680 mmf., ±20%, 500 v. DC
C409	102231	Same as C407
C410	102794	Capacitor—Fixed, ceramic, 22 mmf., ±10%, 500 v.
PW500—Printed Vertical Circuit Assembly		
C502	78623	Capacitor—Fixed, ceramic, 1000 mmf., ±20%, 500 v. DC
C503	102228	Capacitor—Fixed, ceramic, 220 mmf., ±20%, 500 v. DC
PW600—Printed Horizontal Circuit Assembly		
C604	39652	Capacitor—Fixed, mica, 1000 mmf., ±5%, 500 v.
C606	76579	Capacitor—Fixed, mica, 270 mmf., ±10%, 1000 v. DC
C610	102203	Capacitor—Fixed, ceramic, 82 mmf., ±10%, 500 v. DC
C611	76474	Capacitor—Fixed, mica, 82 mmf., ±10%, 1000 v.
PW700—Printed Chroma Circuit Assembly		
C732	102204	Capacitor—Fixed, ceramic, 3.5 mmf., ±.50 mmf., 500 v. DC
C734	102228	Capacitor—Fixed, ceramic, 220 mmf., ±10%, 500 v. DC
MISCELLANEOUS		
	102295	Coil—Pole piece magnet assembly—coils (3), cores (3) and connector
	101124-B	Knob—Brightness—gold rim—for all Models
	102274	Knob—Color contrast, horizontal hold, hue & tone control knobs—dark maroon—for all Models
	102497	Knob—Fine tuning—gold—for all Models
	101138-B	Knob—"On-Off" volume—wine—for mahogany grain instruments for Models 21CT7835 & U, 21CT7855 & U, 21CT7865 & U
	100621-B	Knob—"On-Off" volume—taupe—for walnut and oak grain instruments for Models 21CT7837 & U, 21CT7857 & U, 21CT7866 & U, 21CT7867 & U
	102653	Knob—UHF tuning—dark wine—for mahogany grain instruments for Models 21CT7835U, 21CT7855U, 21CT7865U
	102578	Knob—UHF tuning—taupe—for walnut and oak grain instruments for Models 21CT7837U, 21CT7857U, 21CT7866U, 21CT7867U
	102502	Knob—VHF channel selector—wine—for mahogany grain instruments for Models 21CT7835, 21CT7855, 21CT7865
	102503	Knob—VHF channel selector—taupe—for walnut grain and oak grain instruments for Models 21CT7837, 21CT7857, 21CT7866, 21CT7867
	102500	Knob—VHF/UHF channel selector—dark wine—for mahogany grain instruments for Models 21CT7835U, 21CT7855U, 21CT7865U
	102501	Knob—VHF/UHF channel selector—taupe—for walnut grain and oak grain instruments for Models 21CT7837U, 21CT7857U, 21CT7866U, 21CT7867U
	11891	Lamp—Pilot lamp (Mazda #44)
	102298	Magnet—Blue beam positioning magnet assembly
	102495	Magnet—Color equalizer magnet assembly (6 req'd)
	79604	Magnet—Purity magnet ring assembly
	102285	Yoke—Deflection yoke assembly and plug. Includes C123, L108, L109, L110, L111, R139, R140, T101

1974
not this

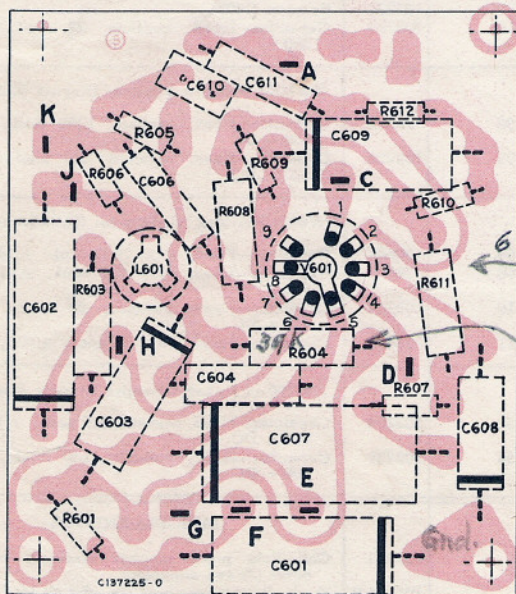
Bottom Views
PRINTED WIRING ASSEMBLIES

21-CT-7835 to 21-CT-7867 Incl.
 21-CT-7835U to 21-CT-7867U Incl.

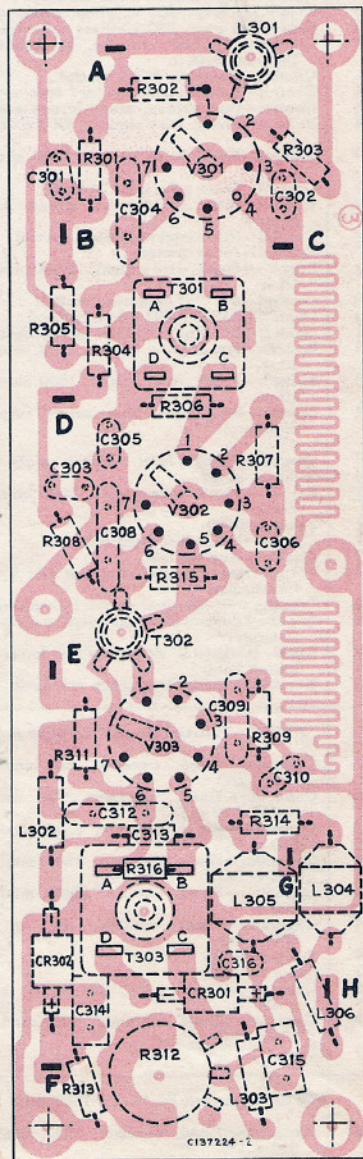
12BY7A



PW400-VIDEO & HOR. BLANKING UNIT LAYOUT



PW600-HORIZONTAL OSCILLATOR UNIT LAYOUT



PW300-PICTURE I-F UNIT LAYOUT

The assemblies represented above are viewed from the printed wiring side of the boards and are oriented as they will usually be viewed when the chassis is in position for servicing.

The components are shown by dotted lines to indicate they are on the reverse side of the board. This will enable circuit tracing without referring to both sides of the board.

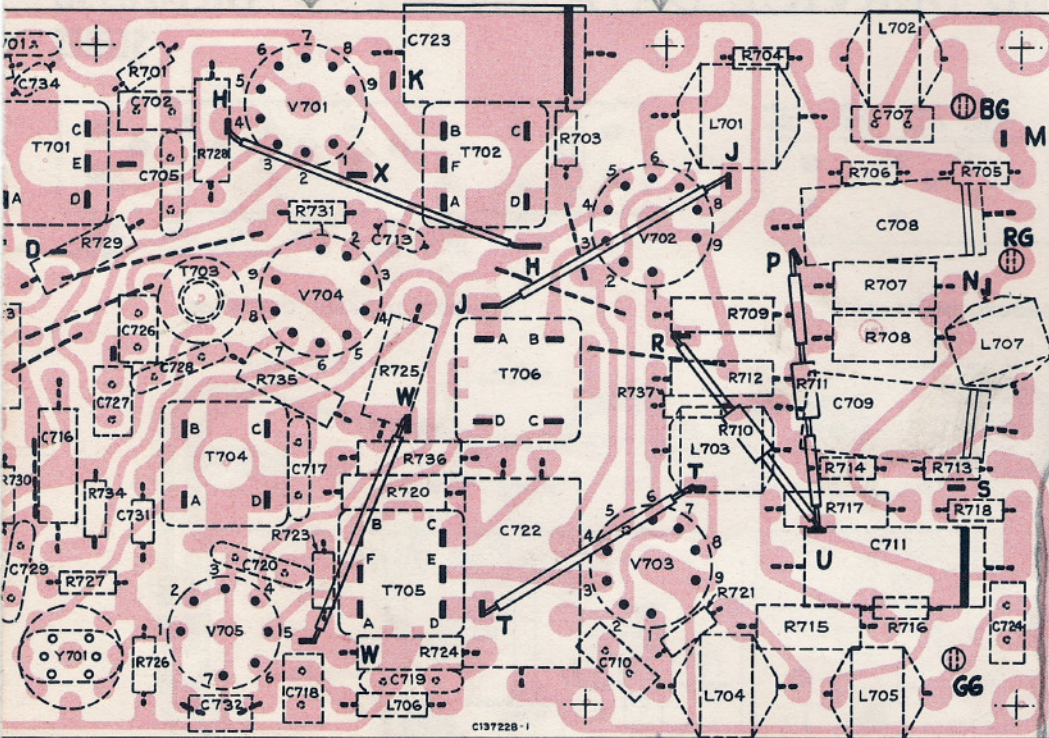
Component replacement, when necessary, should be made following the techniques outlined in PRINTED CIRCUIT BOARD SERVICE DATA, 1955 No. T13, dated 11/15/55.

PW500-U

with tube out, pin # 130V, 6 370, 5 370, 2 0 trouble w

Nov 1976
pin #2
no contact to C309 wire lead

6AW8 12AT7

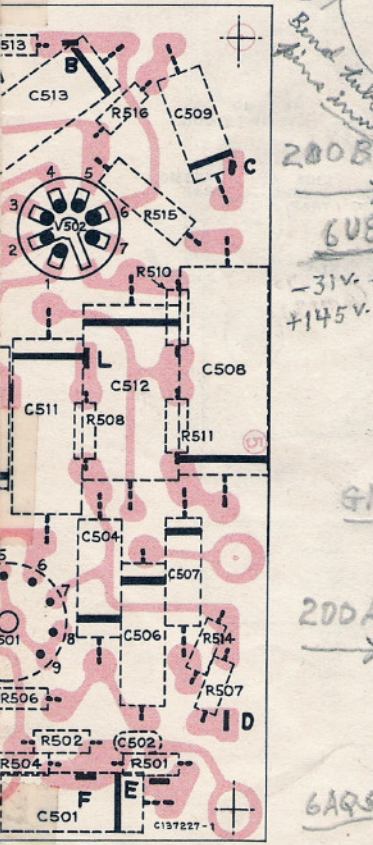
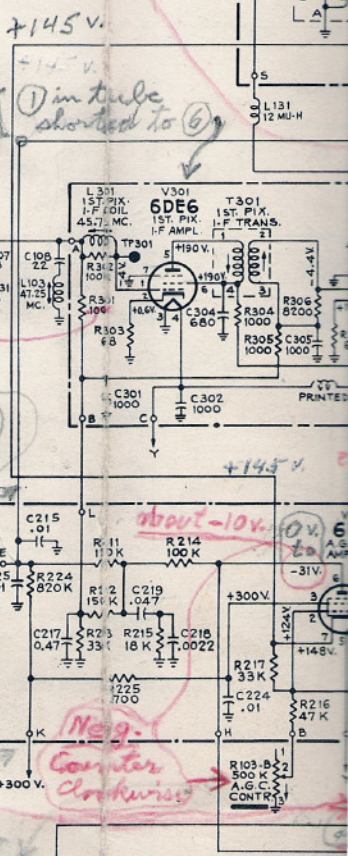


6CB6 PW700-CHROMA UNIT LAYOUT
(socket holes 9 & 5 are a little loose)
12AT7 Replaced socket for V204 (~1966)
The tube pin dress was critical (1970)

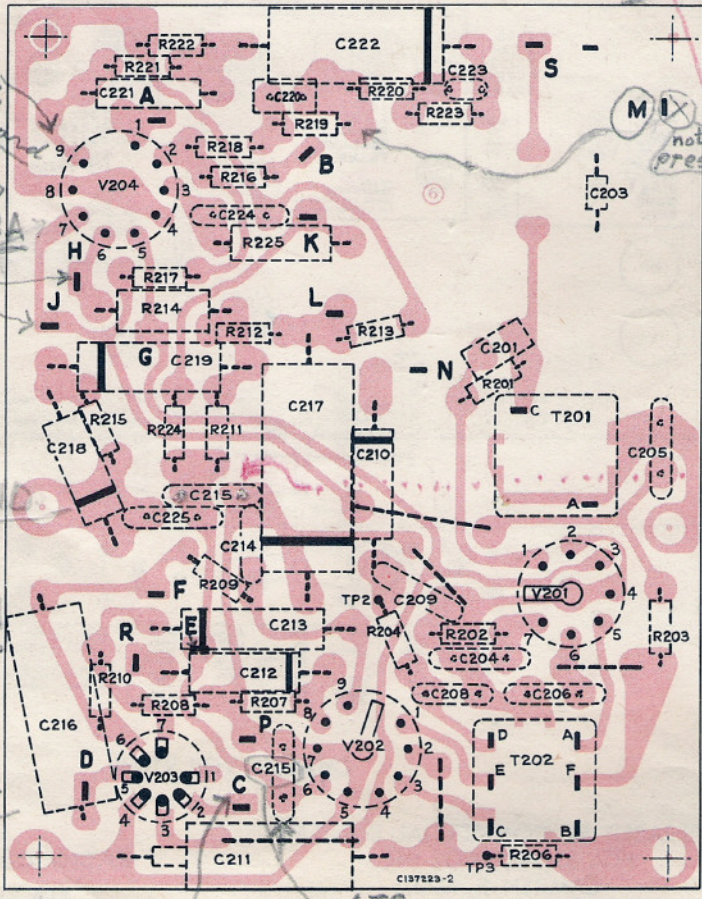
(~1970) the first trouble
Tuner Ag 25.
W 102

changed
→ 68Ω

- Bias Clamp
① + 95 to 150 Ω
② + 290 V.
③ ~ 0 to -40 V.
④ + 150 V.
⑤ P105-2
⑥ E ~ 0 to -3.5 V.



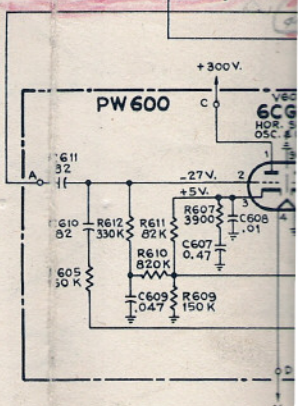
VERTICAL & SYNC UNIT LAYOUT
A wire loop on base on top of chassis A & B
+145V.



PW200-SOUND I-F & AUDIO UNIT LAYOUT
6AU6
6A95
C215 is not here but as shown above

surface 25V
39 in supplement

follow red dots to arrows



The one conn place to me
See PW 600 Day
(and chassis top)

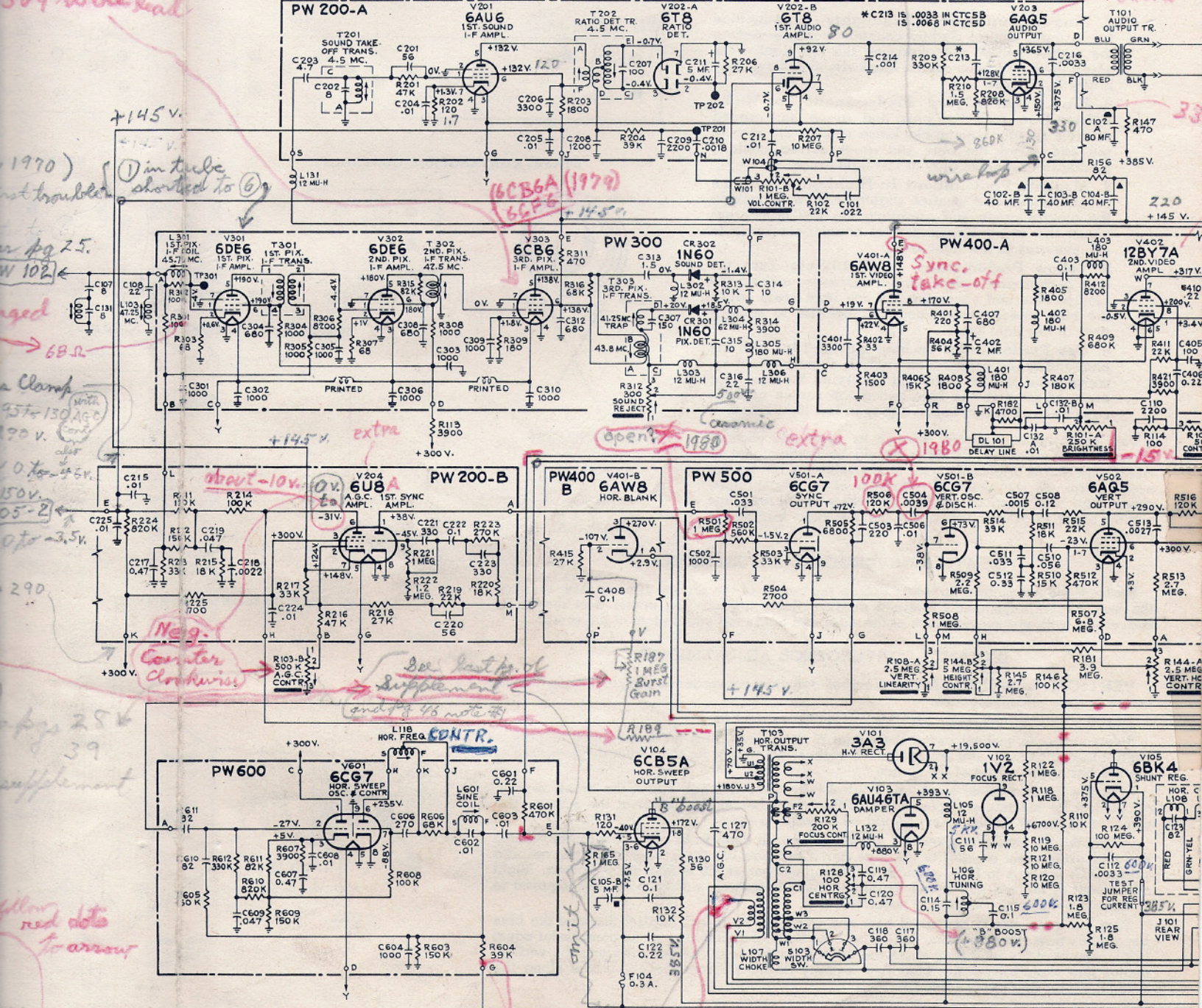
OPERATION OF THE COVERS OF THE RECEIVER SHOULD NOT BE THOROUGHLY FAMILIAR WORKING ON 1

Nov. 1976
pin #2
no contact to 309 wire lead

V 203 (1970)
 with tube out, in
 pin 7 130V → 350 spark → 20
 pin 6 370 370 → 250 after spark
 pin 5 370 " and dropping further
 pin 2 0 trouble was for gnd. to R208 and to V204

Nov. 1972 sound bad, and R208 = 5 meg. replaced → 820K
grid bias = -10V
Bright should be = -2.2V (150-120)
115 extra

CIRCUIT SCHEMATIC DIAGRAM CTC5B
 (Refer to Complete Service Data for Parts List)



The one convenient place to measure this (See PW 600 layout) (and chassis top view)

Replaced with Res part (but now 1000V. DC)

9-12-68

HIGH VOLTAGE WARNING

OPERATION OF THIS RECEIVER OUTSIDE THE CABINET OR WITH THE COVERS REMOVED, INVOLVES A SHOCK HAZARD FROM THE RECEIVER POWER SUPPLIES. WORK ON THE RECEIVER SHOULD NOT BE ATTEMPTED BY ANYONE WHO IS NOT THOROUGHLY FAMILIAR WITH THE PRECAUTIONS NECESSARY WHEN WORKING ON HIGH VOLTAGE EQUIPMENT. DO NOT OPERATE THE RECEIVER WITH COVER OPENED. BEFORE TURNING GROUND LEADS ON AND THE FRONT COVER MAKING CONTACT

U6
shown above
3-5-68

1979 Mine. Pin 9 corroded (focus)

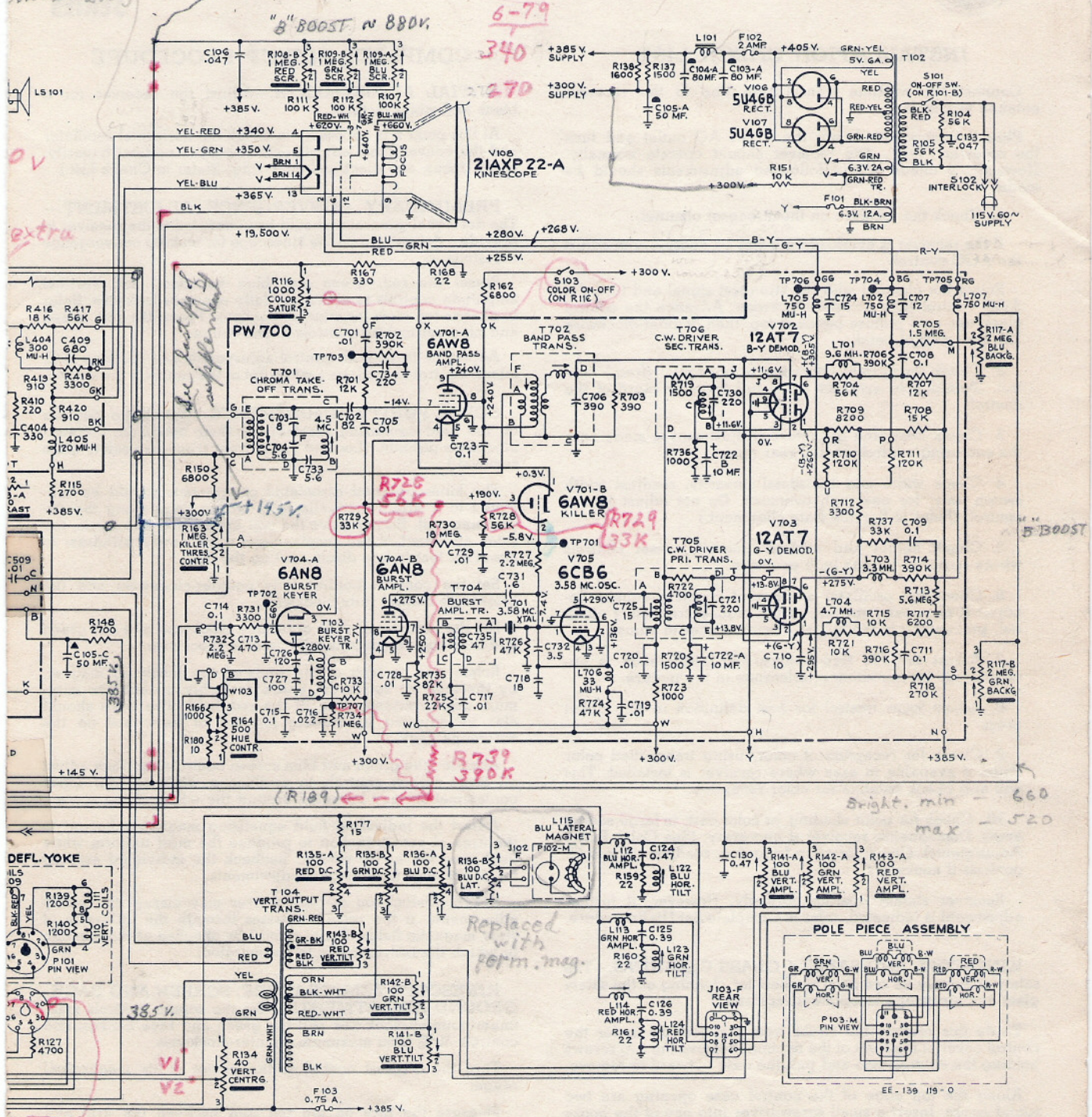
CTC5C, CTC5D OR CTC5E

or Tuner Schematic)

min - 385 max - 270

Yel. Wire brought out at back of chassis between Killer & V-Cent.

21-CT-7835 to 21-CT-7867 Incl. 21-CT-7835U to 21-CT-7867U Incl.



WITH THE HIGH VOLTAGE COMPARTMENT

THE RECEIVER ON, INSURE THAT THE THE KINESCOPE MOUNTING BRACKETS CONTROL CASE, ARE SECURELY FASTENED AND BEFORE TURNING THE RECEIVER ON.

All voltages measured with "Volt-Ohmyst" and 1000 microvolt black and white signal. Voltages should hold within ±20% with 117 v. a-c supply.