RCC TELEVISION RADIO HI-FI SERVICE MANUAL

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SCTV

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CHECK YOUR TUBE INVENTORY

A list of tube types used in TV receivers covered by this supplement appears on page 17.

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Other data for all above same as H10-4X, Supp. #94.

Model

2C211 = H10-7X
2L221 = H10-7X
5C311 = H10-8XU
5C321 = H10-8XU
5C381 = H10-7X
5L331 = H10-8XU
5L391 = H10-7X
5ST311 = H10-7X & 20E5X Radio
19CT27 = H10-7X
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Model

C1911R = M718
C1952R = M718

We reproduce C.G.E. service data that is essential to most service technicians. If further information is required, it may be obtained at a nominal charge from: Canadian General Electric Co., 830 Lansdowne Ave., Toronto, Ont.

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Model

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CTC39XA = CTC39AB.
CTC39XZ, XZR = CTC39AB.

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CCB622W, Z	CTC39XA	22JP22
CCB841W	CTC39XA	25BGP22
CCB841WR	CTC39XB	25BGP22
CCB842W	CTC39XA	25BGP22
CCB843W	CTC39XA	25BGP22
CCB844W	CTC39XA	25BGP22
CCB904W	CTC39XZ	25VAEP22
CCB905W, X	CTC39XZ	25VABP22
CCB905XR	CTC39XZR	25VABP22
CCB906W	CTC39XZ	25VABP22
CCB906WR	CTC39XZR	25VABP22
CCB907L	CTC39XZ	25VABP22
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Note: The version of the KV-1210U that appeared in Supp. #116 was for serial numbers up to 11000.

ZENITH

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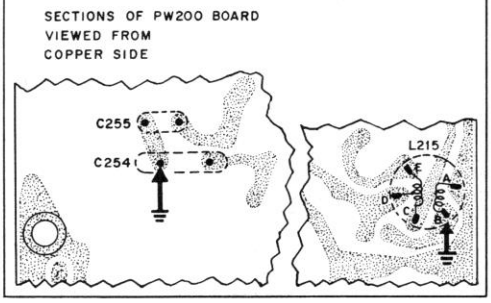
HORIZONTAL DEFLECTION ADJUSTMENTS AND HIGH VOLTAGE CHECK

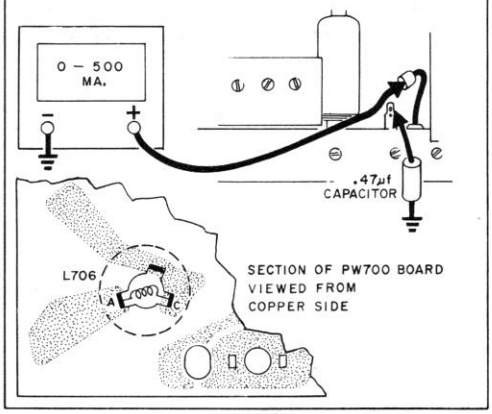
STEP 1
SINE WAVE COIL (L215B)

A. Tune receiver to an active channel and adjust contrast and brightness for normal picture.
B. Disable sync by shorting C254 to ground at junction of C254 and C255.
C. Short the sine wave coil L215B to ground by connecting a shorting jumper between pin 8 of V204 and ground.
D. Adjust the horizontal hold control, R131, so that the horizontal is on frequency (picture sides vertical).
E. Remove short from sine wave coil, (L215B) and adjust L215B so that picture sides are again vertical or drifting slowly horizontally.
F. Remove jumper from C254 to ground.
NOTE: Picture should lose sync at both ends of rotative horizontal hold control. If not remove R102.



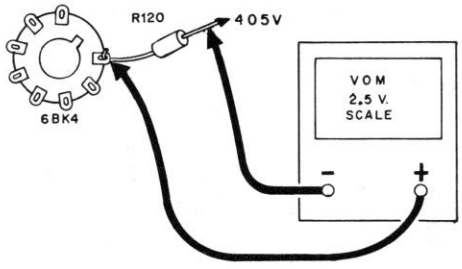
STEP 2
HORIZONTAL EFFICIENCY COIL (L706)

A. Disconnect the cathode jumper from pin 3 of the 6LQ6 horizontal output tube.
B. Connect a 0-500mA meter between pin 3 of the 6LQ6 and ground. Shunt the meter with a .47 UF capacitor.
C. Adjust L706 for minimum cathode current. Then, while monitoring the regulator current as outlined in step 3, advance the core into the coil to increase the cathode current by 1 or 2 mA. Do not exceed 235mA. The core should be on the bottom or board end of coil.



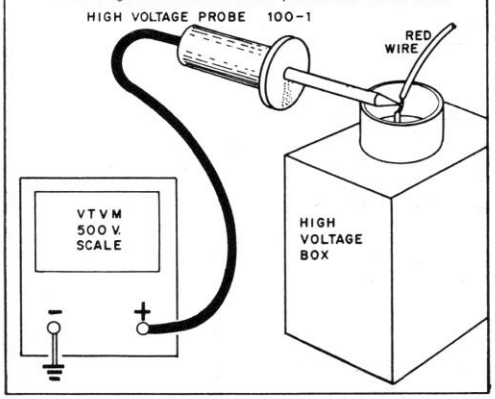
STEP 3
REGULATOR CURRENT

A. Connect a VOM across R120 which is in series with pin 1, the cathode of the 6BK4 regulator tube. Use the 2.5v scale on the meter.
B. When increasing the 6LQ6 cathode current in step 2, the regulator current must also increase as shown by an increase in the voltage drop across R120, if the regulator current decreases, the core was turned the wrong direction from the dip.
C. Turn brightness and contrast controls to minimum (maximum CCW) and observe the regulator current. With black picture, (high voltage set at 25kv) the voltage drop across R120 must be at least 0.96v (960 *ua.* regulator current).



STEP 4
BRIGHTNESS LIMITER ADJUSTMENT AND HIGH VOLTAGE CHECK

A. Connect a VTVM using a high voltage probe to the second anode lead of the picture tube. The VTVM should be set on the 500 volt scale.
B. Set the brightness control fully clockwise. Set the contrast control for mid-range. Note reading on VTVM. Adjust the brightness limiter so that the high voltage dips .5KV to 1KV.
C. Set the brightness control to minimum. Connect a 220K ohm resistor from the grid of the shunt regulator 6BK4B tube (pin 5) to ground. The measured high voltage should be *less than 28KV* with black screen.
NOTE: This check verifies proper action of the shunt regulator "fail-safe" circuit, thus assuring full protection from X-Ray radiation.
D. Remove the resistor from pin 5 of the shunt regulator tube. Return brightness control to normal position and remove VTVM.



R F OVERALL ALIGNMENT CHECK

Set up Test Equipment and connect to receiver under test.
Disable Horizontal and Vertical Sweep Circuits.

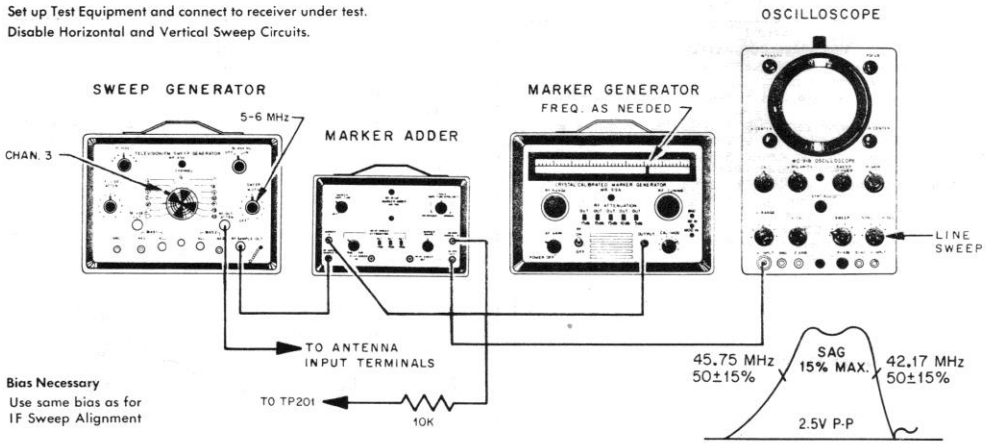


Fig. 1

STEP 1. Connect equipment as shown in illustration—

R F OUT Cable from Sweep Generator to VHF antenna terminals.

DEMOD SIGNAL IN cable from Marker Adder to 2nd Detector Test Point (TP201) through 10K ohm resistor.

Maintain the same bias as for I F Sweep Alignment.

STEP 2. Disable AFT. Set Channel Selector to Channel 3 and adjust the fine tuning to the correct oscillator frequency as follows:

Connect one end of an insulated wire to the R F IN jack of the marker generator. Place the other end in close proximity of the oscillator-mixer circuit.

Set the Marker Generator frequency to the Channel 3 R F Oscillator frequency (107MHz).

Set CAL/MOD switch to External Calibration position.

Adjust the fine tuning until a zero beat is heard in the Marker Generator speaker.

Each channel may be checked accordingly. Refer to the R F Frequency Chart below.

STEP 3. Set the R F Sweep Generator to Channel 3.

Set the Marker Generator to 61.25MHz (Pix Carrier).

Set the CAL/MOD control to 4.5MHz MOD to obtain the sound carrier marker.

The R F overall response (Fig. 1 above) is a check of instrument performance. No attempt should be made to compensate for a channel not in limits by detuning the I F stages.

If Alignment is indicated,each section should be aligned individually in the following sequence:

R F, Picture I F, Sound I F and 4.5MHz trap, AFT, chroma bandpass, and AFPC.

IMPORTANT: The tuned circuits of these receivers can be aligned correctly only if all input signals and bias levels are as specified for that particular circuit. The amplitude as well as the shape of the response curve must be correct.

The peak-to-peak voltage should be read directly from the test point with a calibrated oscilloscope. If the Marker Adder is connected between the test point and oscilloscope, the Marker Adder must be calibrated.

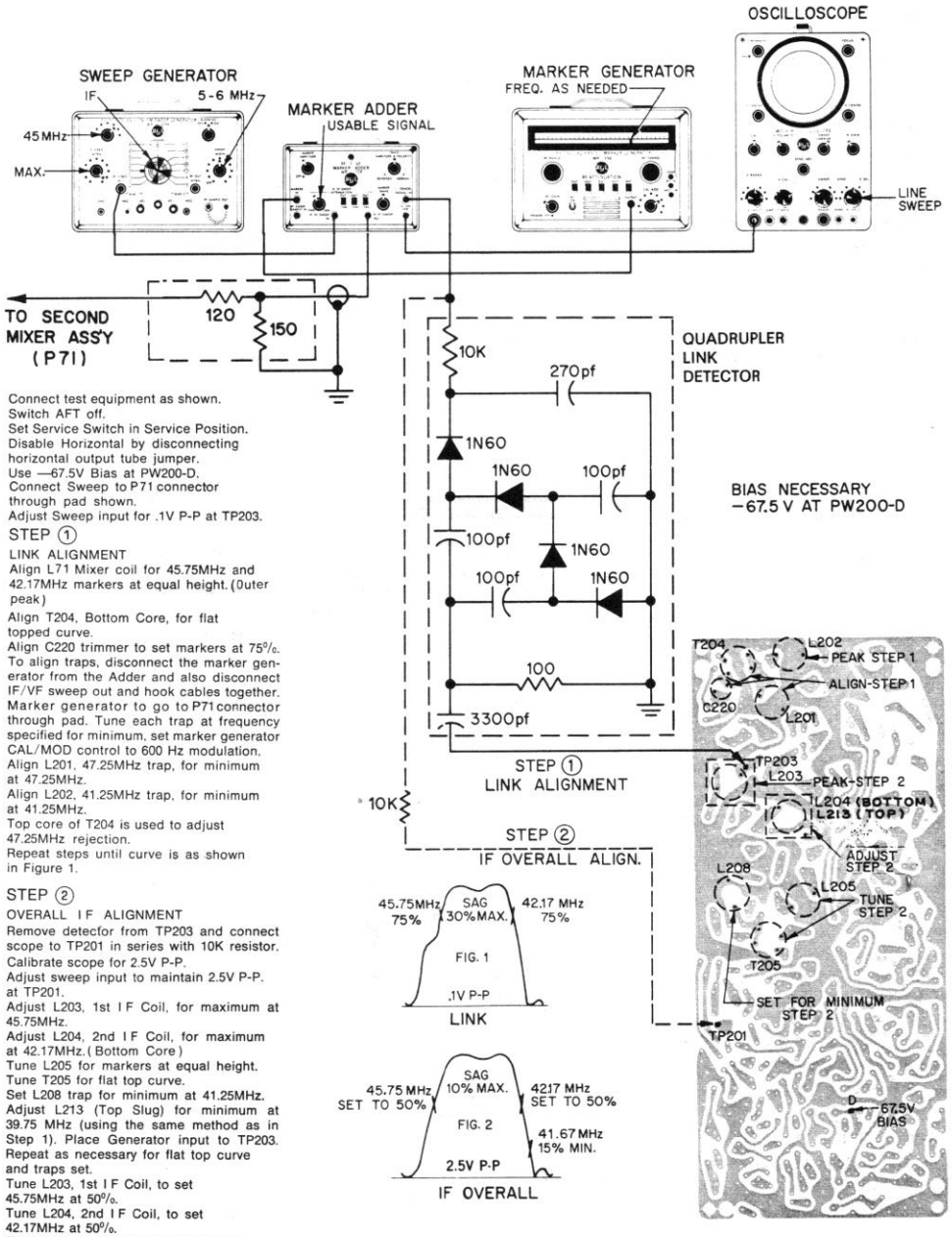
SWEEP CIRCUIT INTERFERENCE

Interference from the sweep circuits of the receiver may appear on the response, making it difficult to observe a clearly defined trace. To prevent such interference, disable the horizontal and vertical circuits.
No equivalent load on the B+ is required.

VHF/UHF TELEVISION FREQUENCY CHART

Channel Number	Picture Carrier Freq. MHz	Sound Carrier Freq. MHz	Receiver R F Osc. Freq. MHz (Zero Beat)	Channel Number	Picture Carrier Freq. MHz	Sound Carrier Freq. MHz	Receiver R F Osc. Freq. MHz (Zero Beat)	Channel Number	Picture Carrier Freq. MHz	Sound Carrier Freq. MHz	Receiver R F Osc. Freq. MHz (Zero Beat)
VHF TELEVISION FREQUENCIES				**UHF TELEVISION FREQUENCIES**				57	729.25	733.75	775
2	55.25	59.75	101	14	471.25	475.75	517	60	747.25	751.75	793
3	61.25	65.75	107	Add 6MHz per Channel for				62	759.25	763.75	805
4	67.25	71.75	113	Channels 14 through 83.				64	771.25	775.75	817
5	77.25	81.75	123	28	555.25	559.75	601	67	789.25	793.75	835
6	83.25	87.75	129	31	573.25	577.75	619	71	813.25	817.75	859
7	175.25	179.75	221	34	591.25	595.75	637	74	831.25	835.75	877
8	181.25	185.75	227	40	627.25	631.75	673	77	849.25	853.75	895
9	187.25	191.75	233	45	657.25	661.75	703	80	867.25	871.75	913
10	193.25	197.75	239	50	687.25	691.75	733	81	873.25	877.75	919
11	199.25	203.75	245	53	705.25	709.75	751	83	885.25	889.75	931
12	205.25	209.75	251								
13	211.25	215.75	257								

CTC 39 I F SWEEP ALIGNMENT



Connect test equipment as shown.
Switch AFT off.
Set Service Switch in Service Position.
Disable Horizontal by disconnecting horizontal output tube jumper.
Use —67.5V Bias at PW200-D.
Connect Sweep to P71 connector through pad shown.
Adjust Sweep input for .1V P-P at TP203.

STEP ①

LINK ALIGNMENT

Align L71 Mixer coil for 45.75MHz and 42.17MHz markers at equal height. (Outer peak)
Align T204, Bottom Core, for flat topped curve.
Align C220 trimmer to set markers at 75%.
To align traps, disconnect the marker generator from the Adder and also disconnect IF/VF sweep out and hook cables together.
Marker generator to go to P71 connector through pad. Tune each trap at frequency specified for minimum, set marker generator CAL/MOD control to 600 Hz modulation.
Align L201, 47.25MHz trap, for minimum at 47.25MHz.
Align L202, 41.25MHz trap, for minimum at 41.25MHz.
Top core of T204 is used to adjust 47.25MHz rejection.
Repeat steps until curve is as shown in Figure 1.

STEP ②

OVERALL I F ALIGNMENT

Remove detector from TP203 and connect scope to TP201 in series with 10K resistor.
Calibrate scope for 2.5V P-P.
Adjust sweep input to maintain 2.5V P-P. at TP201.
Adjust L203, 1st I F Coil, for maximum at 45.75MHz.
Adjust L204, 2nd I F Coil, for maximum at 42.17MHz. (Bottom Core)
Tune L205 for markers at equal height.
Tune T205 for flat top curve.
Set L208 trap for minimum at 41.25MHz.
Adjust L213 (Top Slug) for minimum at 39.75 MHz (using the same method as in Step 1). Place Generator input to TP203.
Repeat as necessary for flat top curve and traps set.
Tune L203, 1st I F Coil, to set 45.75MHz at 50%.
Tune L204, 2nd I F Coil, to set 42.17MHz at 50%.
Tune T205 for flat topped curve as in Figure 2.

CTC39 SOUND I F 4.5 MHz TRAP ALIGNMENT

STEP 1: 4.5MHz TRAP ALIGNMENT

Apply—67.5 volts to PW200-D. Set Service Switch to SERVICE position.

Disconnect horizontal output tube cathode jumper. Disable AFT.

Connect signal generator through .001 UF to PW200-TP2. Set generator to 4.5MHz/600Hz modulation.

Connect Oscilloscope through video detector shown (8B105 Probe) to V701-6.

Adjust core of L212 for minimum 600Hz output on scope (choose the null obtained with the core located nearest mounting end of coil form).

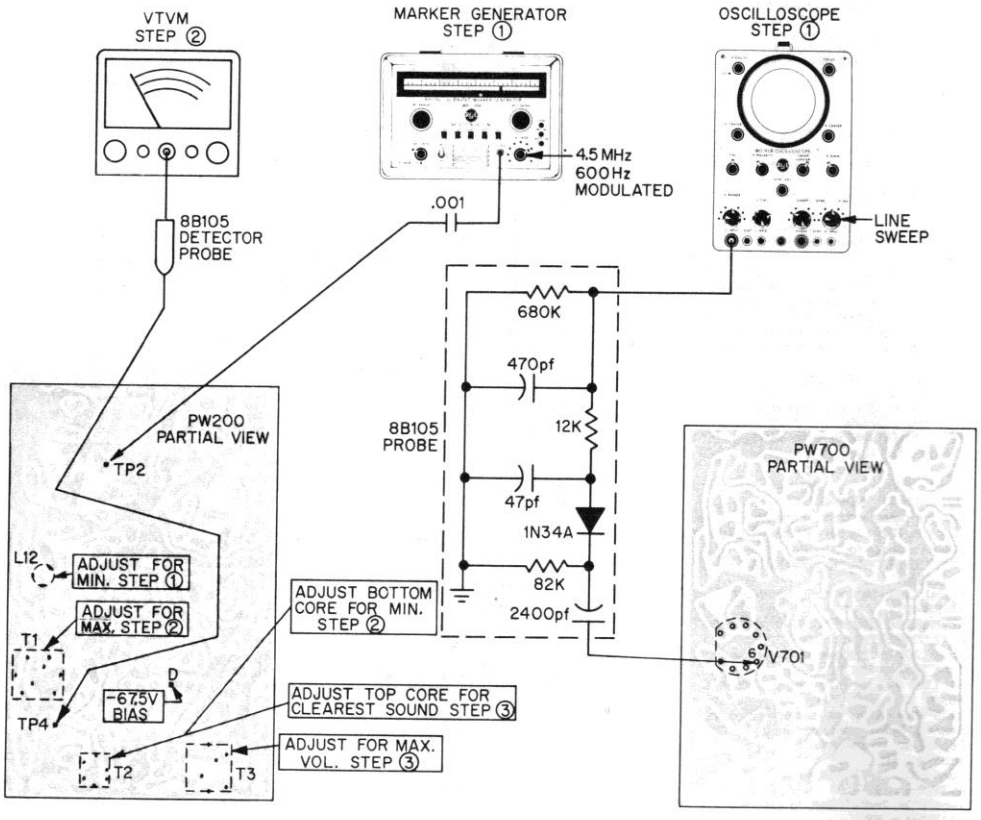
STEP 2: Disconnect Marker Generator.

Move detector probe, 8B105, to PW200-TP4 and connect output of probe to VTVM. Set service switch to NORMAL position and tune in strong local channel.

Disconnect bias at PW200-D. Attenuate signal with fine tuning (or remove antenna) to maintain 0.2 volts output from detector. Adjust T201 for maximum D.C. (choose the peak obtained with the core located nearest top of coil form).

Adjust bottom core of T202 for minimum D.C. (choose the null obtained with the core located nearest mounting end of coil form).

STEP 3: Remove all test equipment. Reduce signal level with fine tuning until hiss is heard in sound. Adjust quadrature coil, T203, for maximum volume. Adjust top core of T202 for clearest sound.

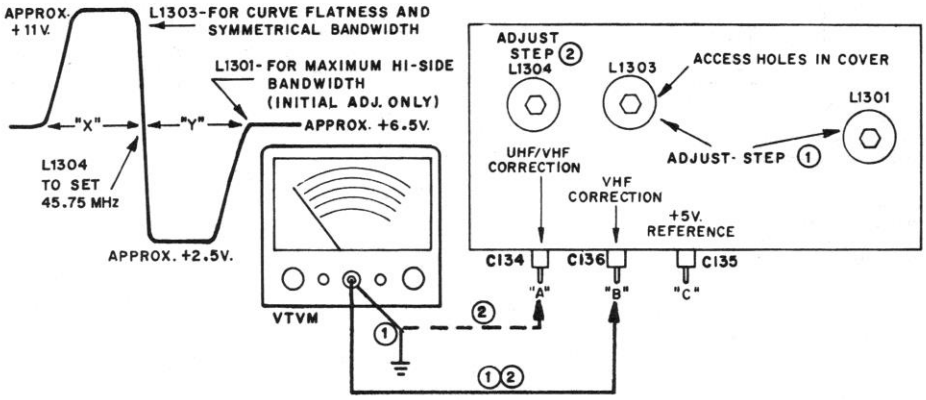


CTC39X AFT ALIGNMENT

If circuit is completely misaligned, connect equipment as for IF Sweep Alignment and adjust input for Specified PP Voltage at 2nd Detector T.P.

Bias IF the same as in the IF Alignment.

Disconnect lead at "A" and connect Scope using Direct Probe.



L1303 is adjusted for maximum output (top and bottom curve flatness) and symmetrical width (X approximately = Y) when L1304 is adjusted for a 45.75 MHz crossover point. Then L1301 is adjusted for maximum bandwidth on the high frequency side starting with the core initially set toward the top of the coil form. The curve at "B" should be the same as the curve at "A"—but INVERTED.

Remove the sweep and apply a 46.1 MHz CW signal in its place.

Set the input signal strength so that the reading at "B" falls between 7.5 and 9.0 V. as measured with a VTVM.

STEP 1

Alternate between L1301 and L1303 and adjust for a maximum output peak, using additional input attenuation to keep the peak between 7.5 and 9.0 V, as the proper core settings are reached. (Watching a dip on "A" gives exactly the same alignment as watching the peak on "B".)

Remove the 46.1 MHz CW signal and apply a 45.75 MHz CW signal of sufficient strength to give a pix detector test point voltage of 1.25 V., which is ½ the PP value of the normal I F sweep alignment waveform which occurs at this point (TP201).

STEP 2

Adjust L1304 for zero difference (±.5V) between "A" and "B". This adjustment is somewhat critical but extremely important.

Over a 10.5 to 12.2V. B+ voltage range, the "A" and "B" D.C. outputs (no input signal) are between approximately +6.2 and +7.2 V.D.C.

AFT check

With the AFT completely connected but disabled and after the discriminator secondary (L1304) adjustment has been touched up, bias the IF as for normal IF alignment and feed a channel 2 RF CW signal into the tuner input. Set tuner to channel 2. Then fine tune the receiver for zero difference between C134 and C136. This should yield a 45.75 MHz beat when the IF is sampled with a crystal calibrator (this is only a check).

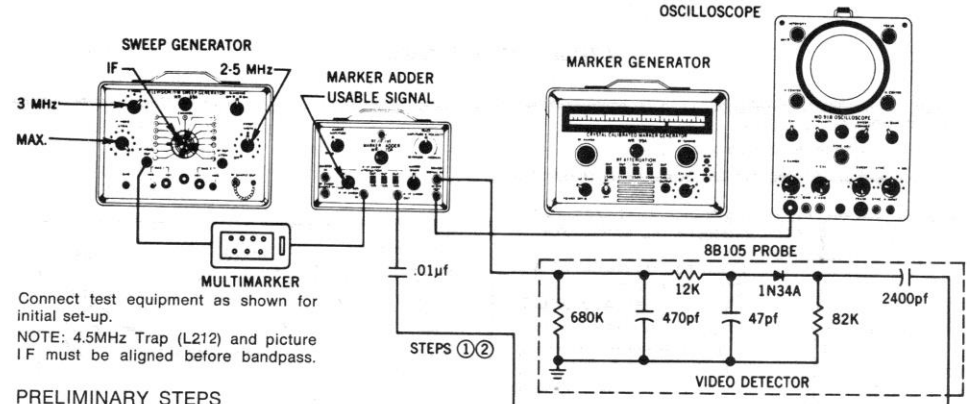
Adjust the applied signal strength for an output of +1.25 V. D.C. at TP201. Fine tune the receiver 750 kHz high (IF frequency) so that pix carrier is placed at 46.50 MHz. Turn the AFT on. The system should pull the pix carrier back very closely (less than 50 kHz high) to 45.75 MHz with the correction voltage on C134 being no less than +3.5 V. Turn the AFT off.

Fine tune the receiver 1.0 MHz low (IF frequency) in order to yield at 44.75 MHz pix IF frequency. Turn the AFT on and the system should return the pix carrier back very closely (less than 50 kHz low) to 45.75 MHz with the correction voltage on C134 being no more than 9.5 V. Turn AFT off.

Fine tune 2.25 MHz low in order to yield a 43.50 MHz pix IF frequency. Turn AFT on and the system should not return the pix carrier back to 45.75 MHz.

It can be verified that the AFT has pulled the mis-fine-tuned carrier back to near 45.75 MHz (IF frequency) by noting if the pix detector voltage at TP201 has returned very closely back to its initial 45.75 MHz output of +1.25 V. D.C.

CTC 39 CHROMA BANDPASS ALIGNMENT



Connect test equipment as shown for initial set-up.

NOTE: 4.5MHz Trap (L212) and picture I F must be aligned before bandpass.

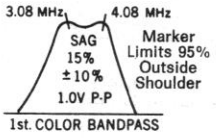
PRELIMINARY STEPS

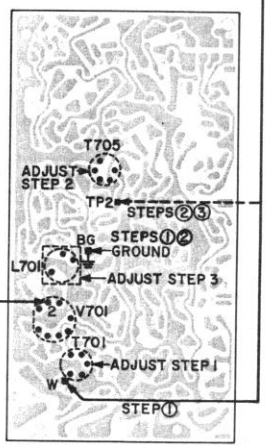
Ground PW700-BG
—20V to V202-9
—67V to PW200-D

STEP ①

Video Sweep to first Bandpass Grid (V701-2) and scope at PW700-W with Video detector probe.

Adjust T701 primary and secondary for response having equal amplitude peaks and equal markers at 3.08MHz and 4.08MHz. When near alignment, adjust bottom core (primary) for equal amplitude peaks and top core (secondary) for marker position.



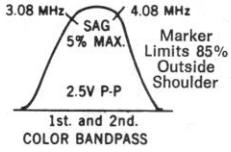


STEP ②

Move detector and scope to TP2.

Leave sweep at V701-2. Attenuate sweep for 2.5V P-P on scope.

Adjust T705 for response shown, core on bottom peak and markers equal.



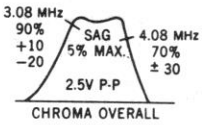
STEP ③

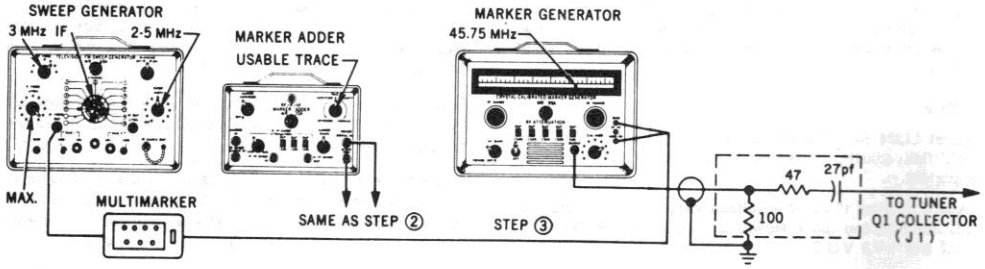
Leave scope and detector on TP2.
Remove ground at PW700-BG and apply −2.5V Bias.

Set contrast and brightness controls maximum CW.
Connect test equipment as shown below and attenuate signal to produce +2V DC on VTVM at TP201.

Adjust peaker coil L701 for a symmetrical waveform about the 3.58MHz Marker.

There should be no peak between the 3.58MHz and 4.08MHz Marker.





CTC 39 AFPC ALIGNMENT

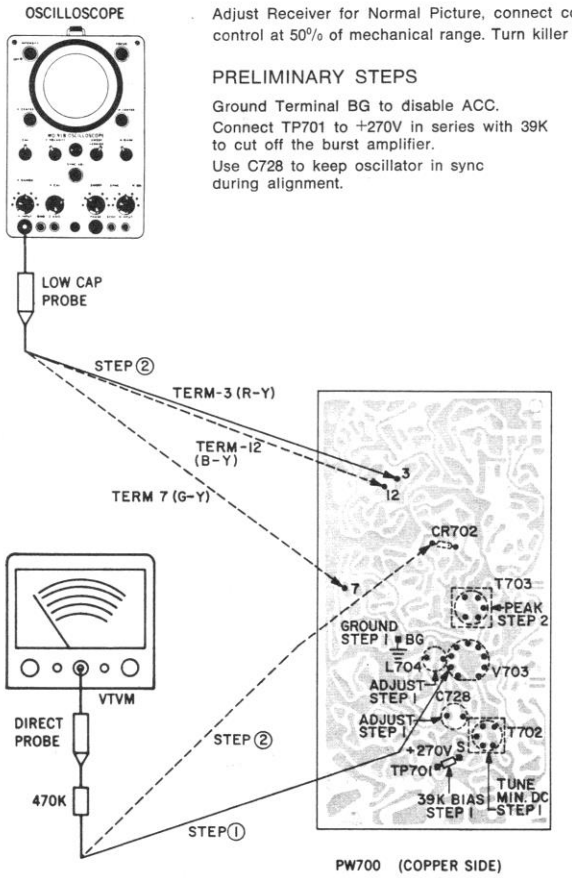
Adjust Receiver for Normal Picture, connect color bar Generator to antenna terminals. Center tint control at 50% of mechanical range. Turn killer control full CCW. AFT off. ATC off. (CCW pos.)

PRELIMINARY STEPS

Ground Terminal BG to disable ACC.

Connect TP701 to +270V in series with 39K to cut off the burst amplifier.

Use C728 to keep oscillator in sync during alignment.



PW700 (COPPER SIDE)

STEP ①

Connect VTVM in series with 470K to V703-2.

Adjust C728 for zero beat.

Tune T702 for minimum DC voltage.

Core on top peak.

Readjust C728 for zero beat.

Adjust L704 for exactly −3.5V DC.

Use peak with core at mounting end of coil.

Readjust C728 for zero beat.

Remove short at BG and bias at TP701.

STEP ②

Set brightness control CCW.

Move VTVM to CR702 anode.

Peak T703 for maximum DC and symmetrical drop off at both extremes of the tint control.

Use peak with core at mounting end of coil.

Voltages should be equal when tint control is either fully CW or fully CCW.

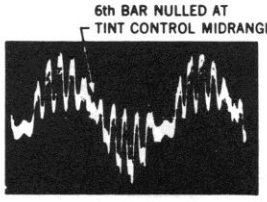
Remove VTVM and readjust for zero beat if necessary.

Connect oscilloscope to PW700-3 (R-Y output) and check for centering of the tint control.

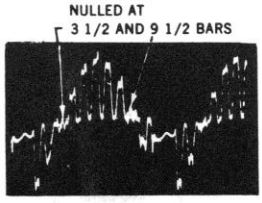
Also check with scope PW700-12 (B-Y output), PW700-7 (G-Y output) for proper matrixing.

With R-Y as 100% reference, G-Y should be 30% ±6 % and B-Y should be 120% ±20%. Check that B-Y phase nulls at 3½ and 9½ bars ±½ bar. Set ATC switch on (CW position). B-Y bar cancellation should increase approximately ½ bar (4th and 10th bar cancellation).

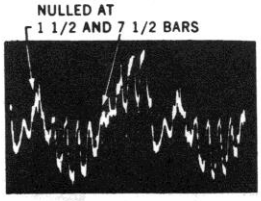
Set killer to just kill on blank noisy channel with color control fully CW and Tint control fully CCW. Check setting on a channel with color.



PW700-3 R-Y

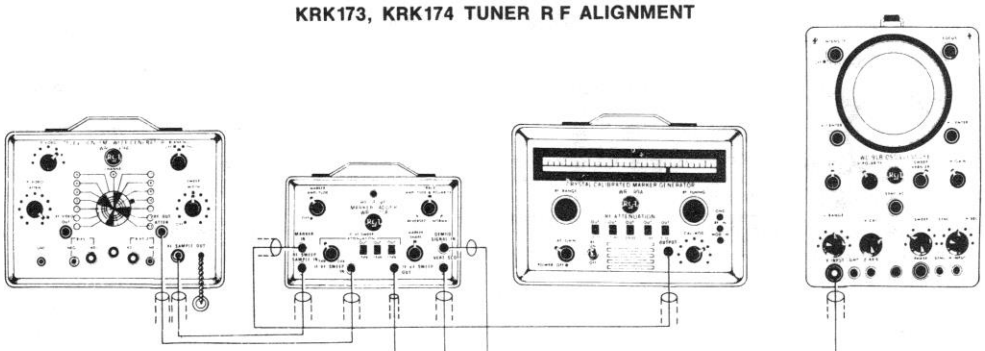


PW700-12 B-Y

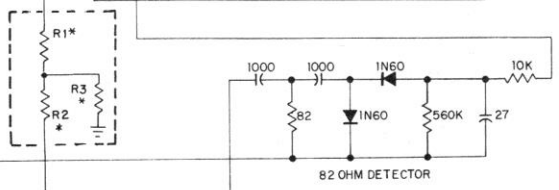


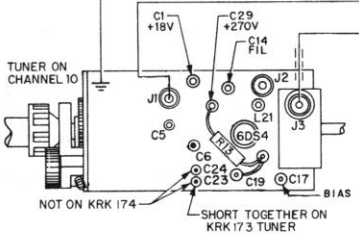
PW700-7 G-Y

KRK173, KRK174 TUNER R F ALIGNMENT



* RESISTOR VALUE			
GENERATOR IMPEDANCE	R1	R2	R3
50 Ω	10	47	56
75 Ω	27	27	100
100 Ω	56	10	120





INITIAL CONNECTION:

Scope to J1 via 82 ohm detector.

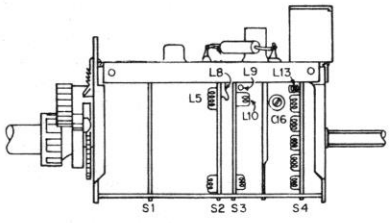
Variable bias to C17.

Channel 10 sweep to J3 via T pad.

Calibrate Scope for .3V P-P.

Tuner on Channel 10.

Markers at (see frequency chart page 9).



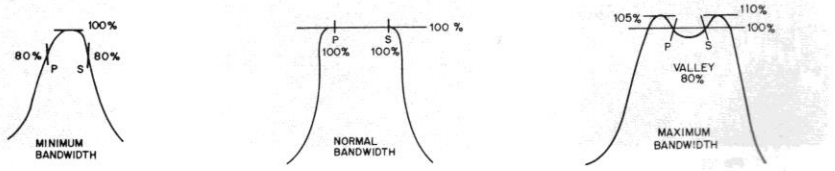
STEP 1

Adjust L5, L10 and L13 for centering on Channel 10 pix and sound markers at equal height and 80% to 100% on curve. Adjust L9 for best coupling with L8 centered between switches; readjust L5 and L10 for flat top curve (see response curves below).

STEP 2

Bias tuner to cut-off, —22 volts to C17.

Adjust C16 for minimum response between markers.



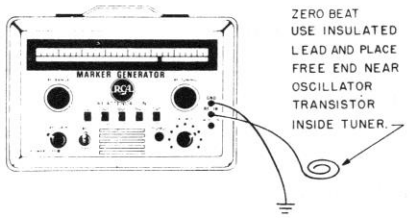
UHF and VHF I F Response Curves

KRK173, KRK174 TUNER R F ALIGNMENT

STEP 3 OSCILLATOR ADJUSTMENT

—2 Volts at C17, zero bias between C23 and C24 (KRK 173).

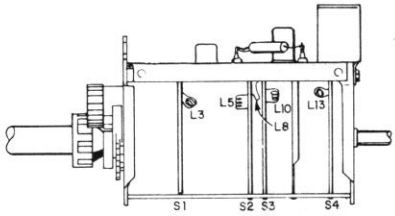
Tuner and sweep on Channel 13. Turn fine tuning maximum clockwise. Using zero beat method, adjust L3 to set local oscillator at (261.5 MHz) 4.5 MHz above nominal frequency (257 MHz). Return fine tuning to nominal frequency (257 MHz) on Channel 13.



STEP 4

Tuner and Sweep on Channel 10.

Adjust L5, L10 and L13 for centering on Channel 10. Adjust L8 if necessary for correct coupling. Rotate tuner Channels 13 thru 7. Retouch L5, L8, L10 and L13 for best compromise on tracking and coupling on high channels.



STEP 5

Tuner and Sweep on Channel 6.

Adjust L20 for maximum output, L7 and L12 for proper response curve.

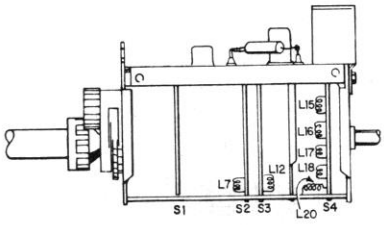
Rotate tuner and sweep Channels 5 thru 2 in descending order and adjust coils L18 thru L15 for flat topped curve on each channel.

STEP 6

Tuner in UHF Position.

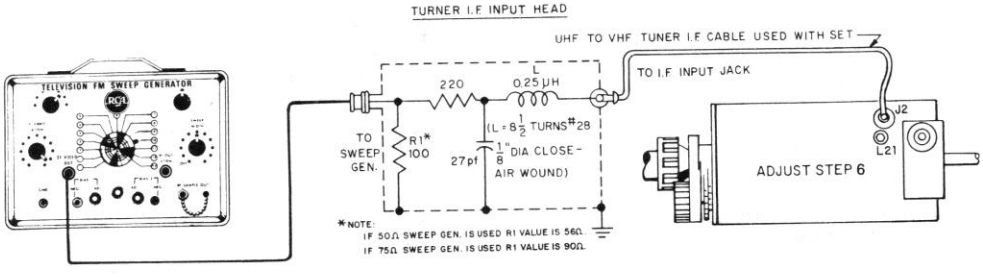
Apply I F sweep to J2 via I F input head.

Adjust L21 for flat topped curve.



STEP 7 A F T CHECK

Apply ±8 volts between C23 and C24,oscillator frequency must be shifted ±1 MHz or more.



KRK132, KRK138 TUNER R F ALIGNMENT

GENERAL INFORMATION

Remove tuner and detent assembly. Apply 5 volts to C18 A F T (KRK 132).

AFT CHECK (KRK 132).

Apply 1-10 volts to C18 . Marker should move a minimum of 3 MHz. Replace CR2 if not within limits.

TEST EQUIPMENT CONNECTIONS:

OSCILLOSCOPE.....Connect, through preamplifier, to output of UHF Alignment fixture. (Figure 2) Calibrate scope .2V P-P.

UHF SWEEP GENERATOR.....Connect to antenna terminals using 300 ohm pad supplied with generator. Set for maximum sweep width.

VHF SIGNAL GENERATOR.....Connect to R F (anode side) of crystal CR1 when aligning the oscillator, and to I F input on UHF alignment fixture during R F sweep alignment. (The former to be used only when the UHF generator does not have internal markers.)

MISCELLANEOUS.....(a) At any alignment point the best alignment (i.e., the lowest noise figure and the highest gain) will occur when the RF response curve is as narrow as possible. (b) Leave the oscillator inner shield in place during alignment.

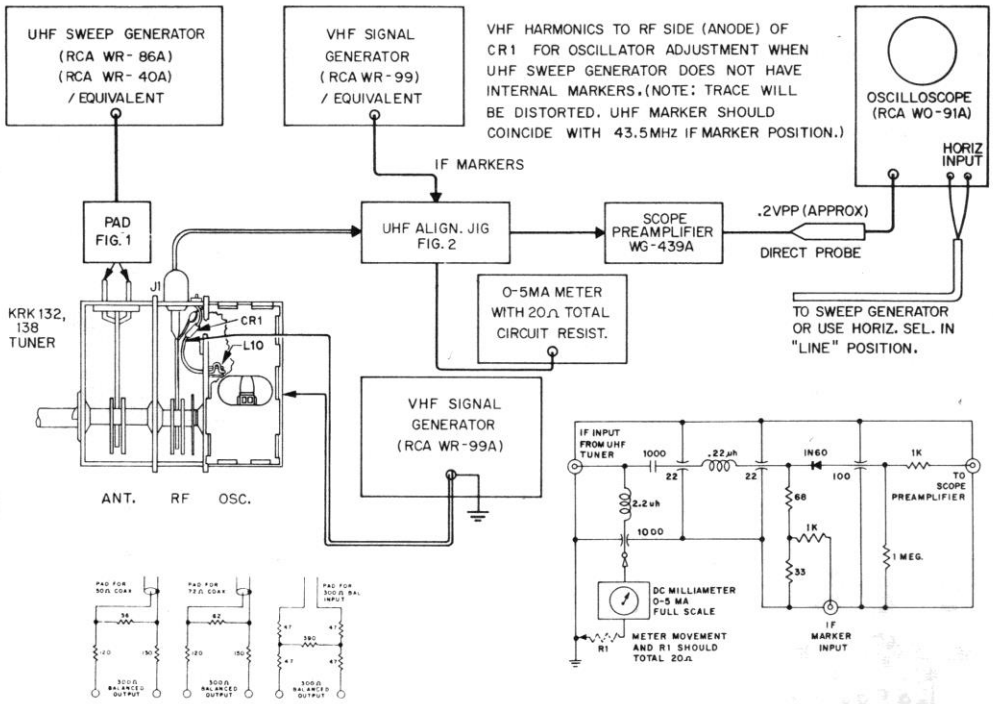


Figure 1 — Sweep Attenuator Pads. (Part of Sweep Gen. Cable)

Figure 2 —UHF Alignment Fixture Schematic

KRK132, KRK138 TUNER R F ALIGNMENT

OSCILLATOR INJECTION CURRENT ADJUSTMENT

Tune entire range and observe crystal injection level on UHF alignment fixture milliameter. The oscillator injection current should be between 0.75 and 2.5 mA, and is adjusted by orienting the injection loop L10, in the oscillator compartment, toward the transistor to increase injection, or away from the transistor to decrease injection. If satisfactory results cannot be obtained, change CR1. These injection limits can best be realized with R F alignment and oscillator frequency approximately correct.

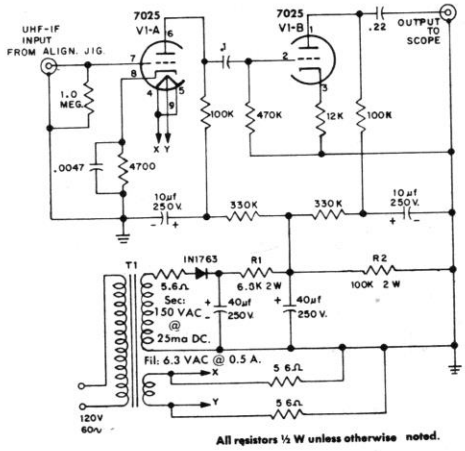
OSCILLATOR ADJUSTMENT

Sweep and marker at 887 MHz, tuning capacitor on Channel 83. Adjust oscillator rotor segment 1 to set 887 MHz marker to coincide with 43.5 MHz I F marker.

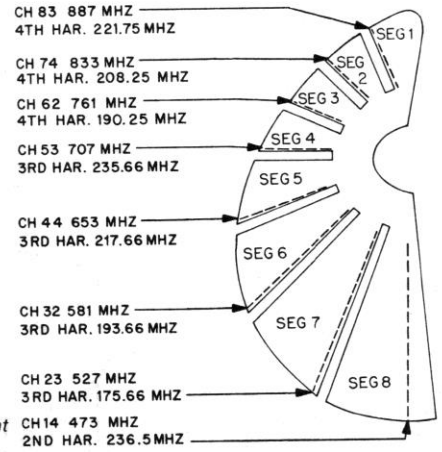
Rotate tuning capacitor to 833 MHz on Channel 74, adjust oscillator segment 2, 761 MHz on Channel 62, adjust oscillator segment 3, 707 MHz on Channel 53, adjust oscillator segment 4, 653 MHz on Channel 44, adjust oscillator segment 5, 581 MHz on Channel 32, adjust oscillator segment 6, 527 MHz on Channel 23, adjust oscillator segment 7, 473 MHz on Channel 14, adjust oscillator segment 8 to set marker to coincide with 43.5 MHz I F marker.

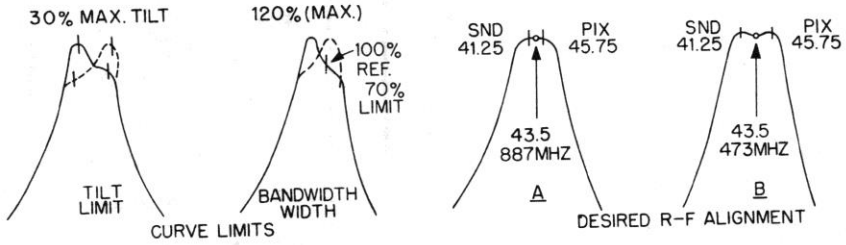
ANTENNA AND R F ADJUSTMENT

Remove UHF marker. Sweep and tuning capacitor to Channel 83, adjust segment 1, 833 MHz on Channel 74, adjust segment 2, 761 MHz on Channel 62, adjust segment 3, 707 MHz on Channel 53, adjust segment 4, 653 MHz on Channel 44, adjust segment 5, 581 MHz on Channel 32, adjust segment 6, 527 MHz on Channel 23, adjust segment 7, 473 MHz on Channel 14, adjust segment 8 (on R F and antenna rotor C2 and C4) to place sound marker (41.25 MHz) and pix marker (45.75 MHz) at peak of response curve.

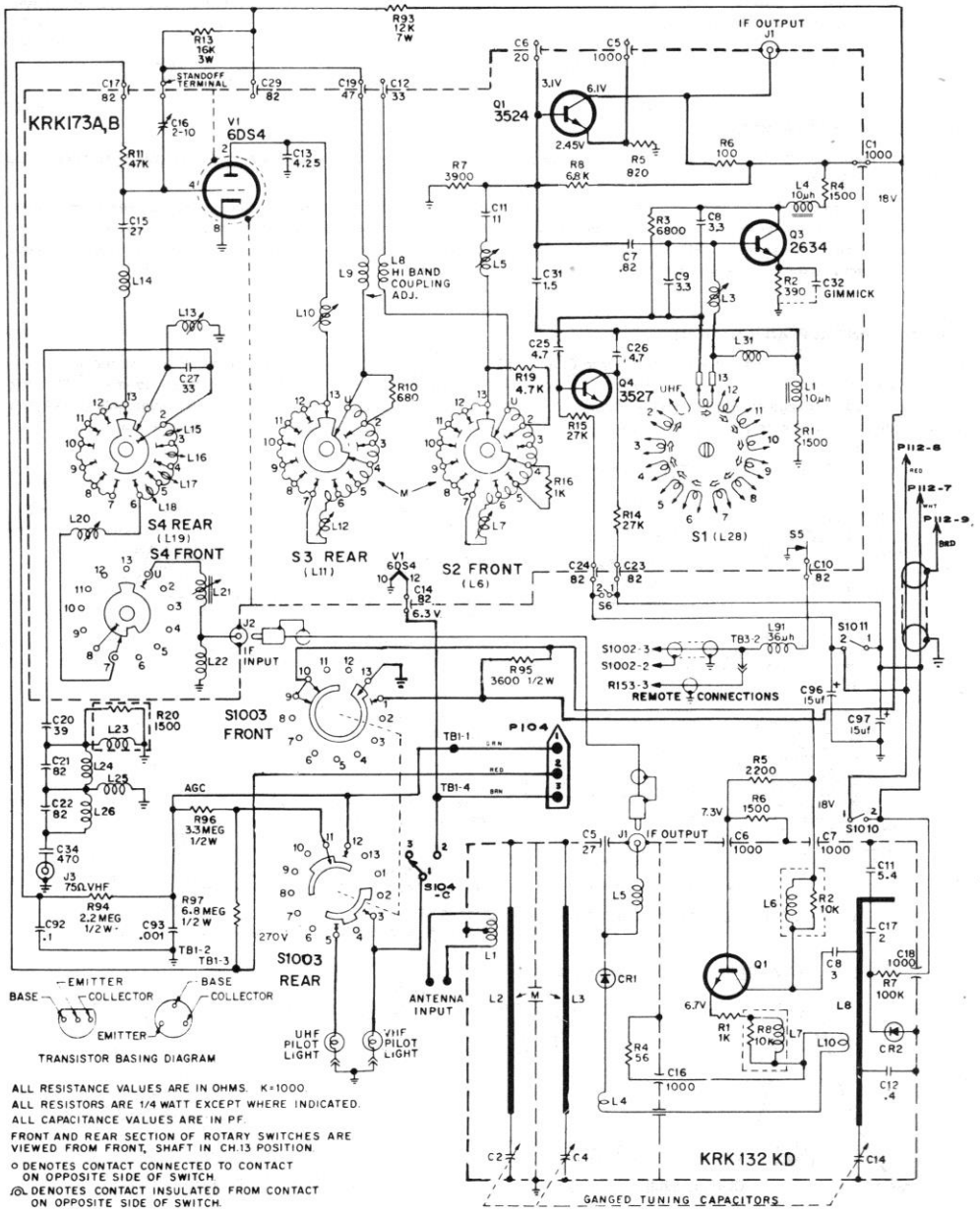


Oscilloscope Preamplifier for UHF Alignment



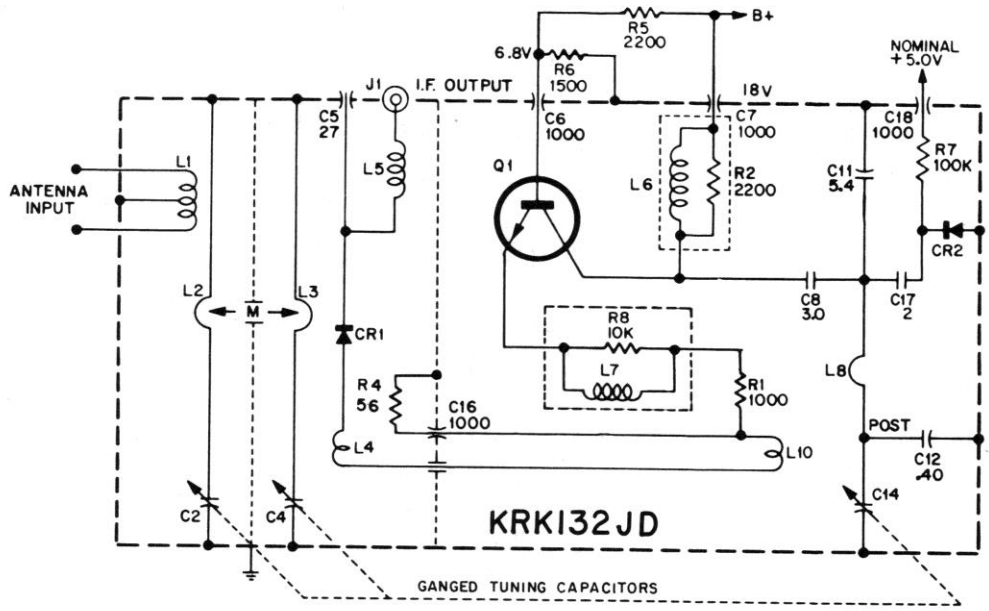


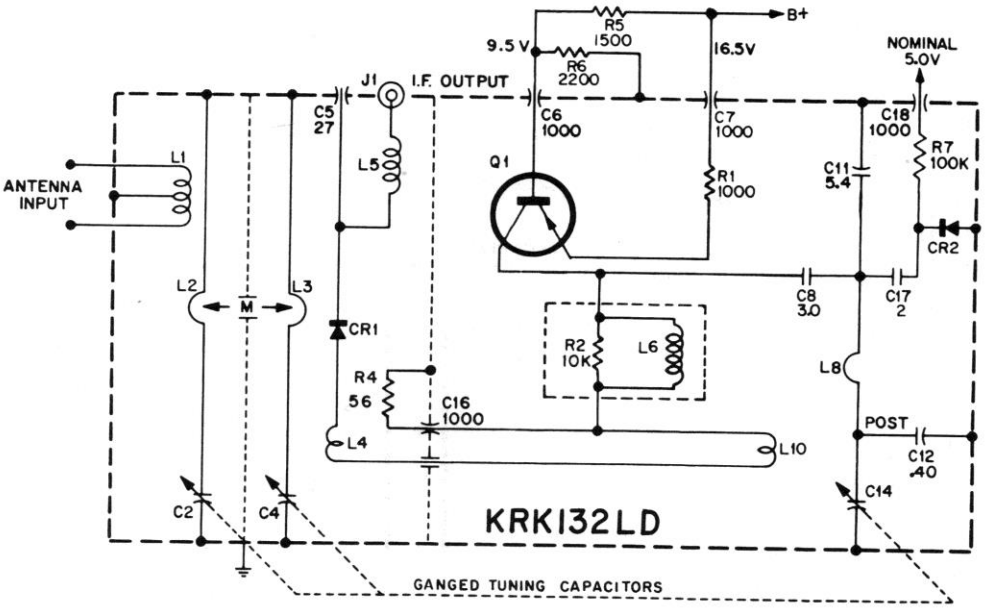
KRK 173/132 VHF/UHF TUNER SCHEMATIC DIAGRAM



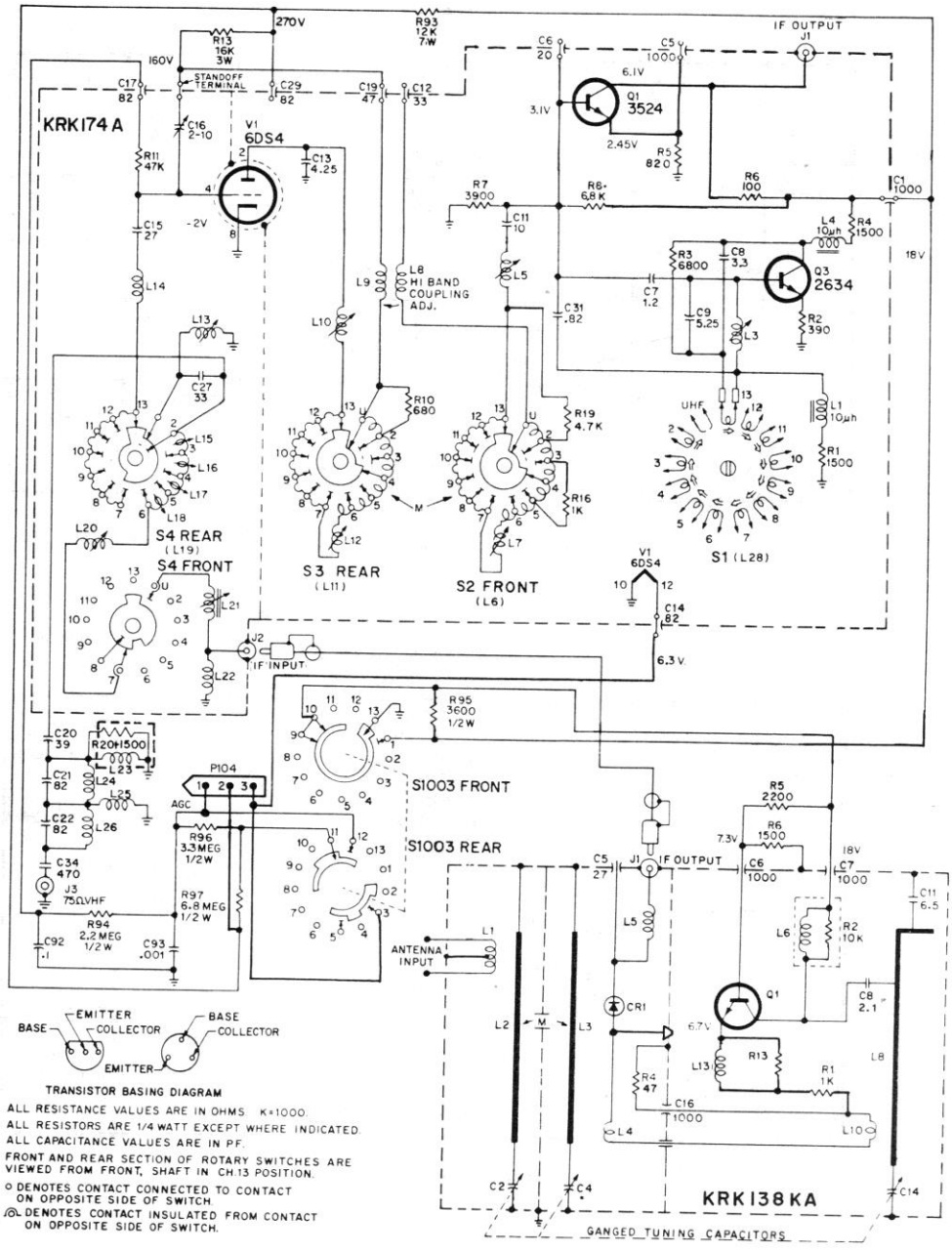
ALL RESISTANCE VALUES ARE IN OHMS. K=1000.
ALL RESISTORS ARE 1/4 WATT EXCEPT WHERE INDICATED.
ALL CAPACITANCE VALUES ARE IN PF.
FRONT AND REAR SECTION OF ROTARY SWITCHES ARE VIEWED FROM FRONT, SHAFT IN CH.13 POSITION.
o DENOTES CONTACT CONNECTED TO CONTACT ON OPPOSITE SIDE OF SWITCH.
⌀ DENOTES CONTACT INSULATED FROM CONTACT ON OPPOSITE SIDE OF SWITCH.

KRK 132 ALTERNATE UHF TUNER SCHEMATICS





KRK 174A/138KA VHF/UHF TUNER SCHEMATIC DIAGRAM



TRANSISTOR BASING DIAGRAM

ALL RESISTANCE VALUES ARE IN OHMS. K=1000.

ALL RESISTORS ARE 1/4 WATT EXCEPT WHERE INDICATED.

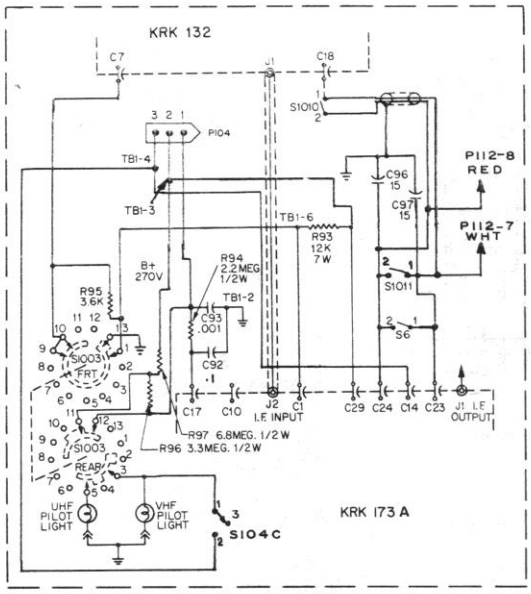
ALL CAPACITANCE VALUES ARE IN PF.

FRONT AND REAR SECTION OF ROTARY SWITCHES ARE VIEWED FROM FRONT, SHAFT IN CH.13 POSITION.

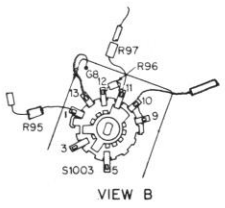
o DENOTES CONTACT CONNECTED TO CONTACT ON OPPOSITE SIDE OF SWITCH.

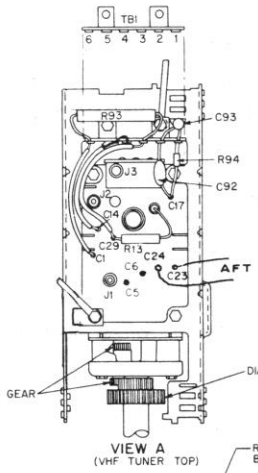
⌀ DENOTES CONTACT INSULATED FROM CONTACT ON OPPOSITE SIDE OF SWITCH.

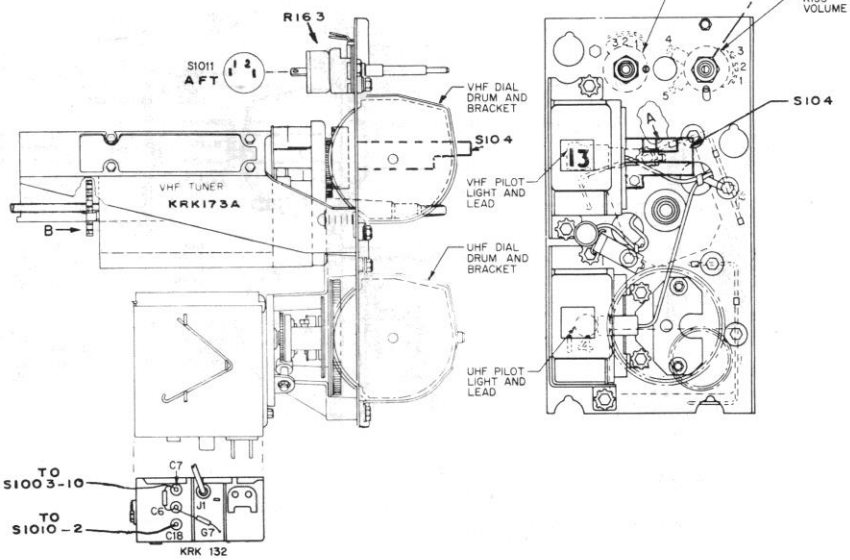
TMA 402 AC, XZ LAYOUT AND EXTERNAL WIRING



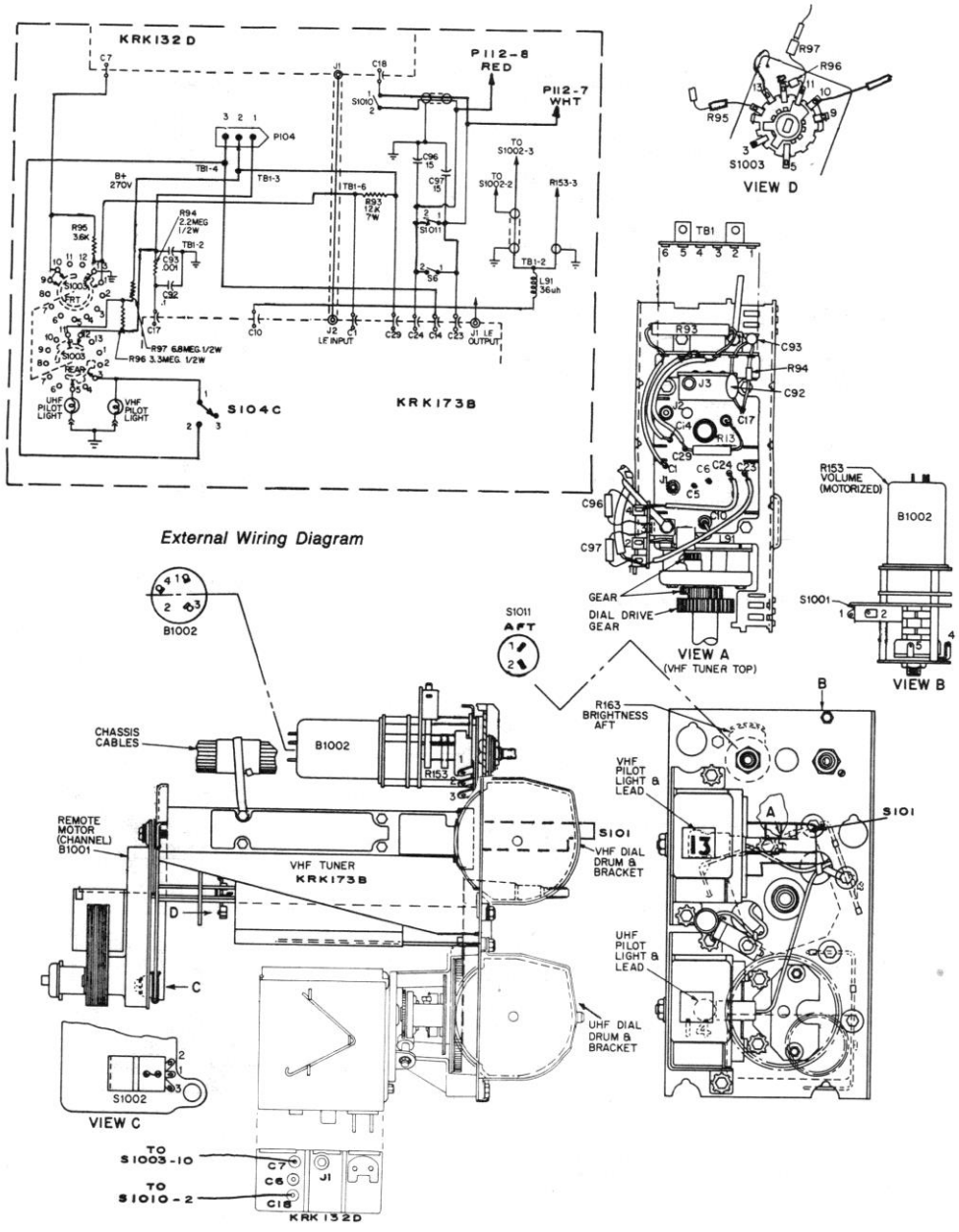
External Wiring Diagram



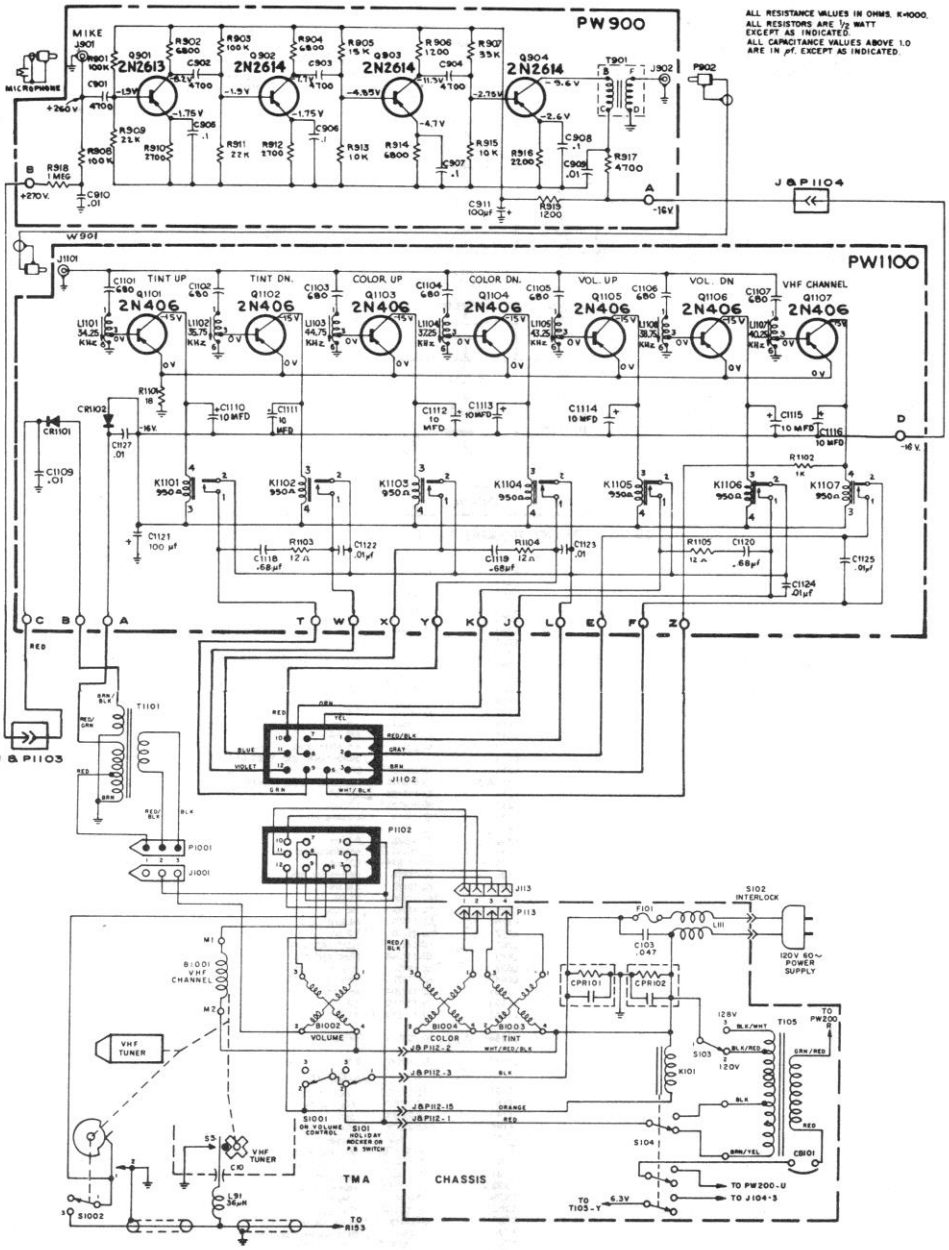




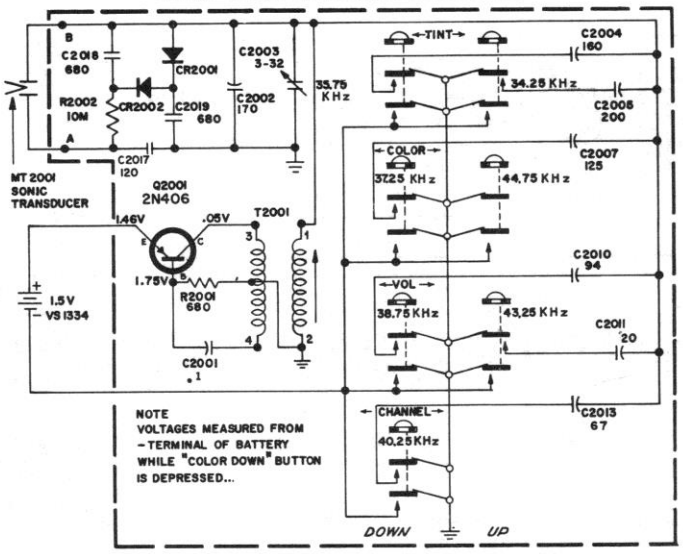
TMA 402 AD, XZR LAYOUT AND EXTERNAL WIRING



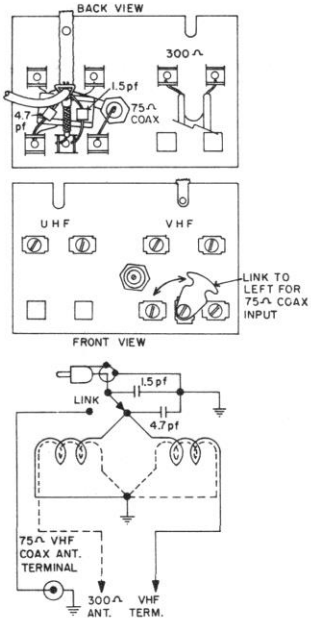
CTP11H REMOTE AMPLIFIER SCHEMATIC DIAGRAM



CRK9C REMOTE TRANSMITTER SCHEMATIC



CRK9C CIRCUIT BOARD ASSEMBLY



Antenna Block Assembly

COILS

L105	62-15182	RF choke, 5.6 *uh.*
L107	62-17775	top and bottom pin phase
L109	*62-124807	filter choke
L111	62-20570	choke, AC line filter
L201	62-20226	47.25 MHz. trap
L202	62-18947	41.25 MHz. trap
L203	62-21159	second pix IF
L204	*62-22067	third pix IF, input (includes L213)
L205	62-20229	third pix IF, output
L206	62-20230	12 *uh.*
L207	62-116507	3.9 *uh.*
L208	62-20231	41.25 MHz. trap
L209	62-109171	5.6 *uh.*
L210	62-109248	1.8 *uh.*
L211	62-100131	120 *uh.*
L212	62-20232	4.5 MHz. trap
L213		39.75 MHz. trap (part of L204)
L214	62-20439	270 *uh.*
L215A,B	62-116506	horizontal frequency/sine wave
L216	62-115438	220 *uh.*
L217	62-109248	1.8 *uh.*
L701	62-20233	chroma take off
L702	62-17737	620 *uh.*
L703	*62-22070	6.8 *uh.*
L704	62-19031	oscillator screen
L705	62-17737	620 *uh.*
L706	62-19378	horizontal efficiency
L707	62-15182	5.6 *uh.*
L708	62-17739	27 *uh.*
L709	62-19515	120 *uh.*
L710	62-19035	mutual coupling
L712	*62-22069	8.2 *uh.*
L801	62-21313	right red/green vertical lines
L802	62-114598	right red/green horizontal lines
L803	62-18050	blue horizontal shape
L804	62-17478	right blue horizontal lines
L1301	62-122204	46.1 MHz. trap (CTC39XA,XB,XZ,XZR)
L1302	62-122205	3.3 *uh.* (CTC39XA,XB,XZ,XZR)
L1303	62-122213	AFTC discriminator primary, 46.1 MHz. (CTC39XA,XB,XZ,XZR)
L1304	62-122203	AFTC discriminator secondary, 45.75 MHz. (CTC39XA,XB,XZ,XZR)
L1305	62-109171	5.6 *uh.* (CTC39XA,XB,XZ,XZR)

TRANSFORMERS

T101	62-113999	coil, focus adjustment
T102	*62-22253	high voltage
T103	62-21153	audio output
T104	*62-22174	vertical output
T105	62-19902	power
T107	62-121560	top and bottom pin cushion
T108	62-17867	side pin cushion
T201	62-20265	sound take off
T202	62-118738	sound driver
T203	62-20266	quadrature
T204	62-127244	first pix IF
T205	62-20268	third pix IF, output
T701	62-20269	first chroma bandpass
T702	62-20270	burst amplifier
T703	62-18876	3.58 MHz. oscillator
T705	62-20271	second chroma bandpass

CTP11 REMOTE RECEIVER ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

GENERAL

The illustration below indicates adjustment points 1 through 7 and the corresponding frequency and function to be adjusted. Depress the appropriate transmitter function button as shown below and hold depressed while peaking each coil (L1101 to L1107).

SIGNAL SOURCE

A CRK 9 transmitter checked for accuracy by the beat frequency method, or checked with a CTP 11 receiver known to be 'correctly adjusted', may be used as a signal standard.

TRANSMITTER

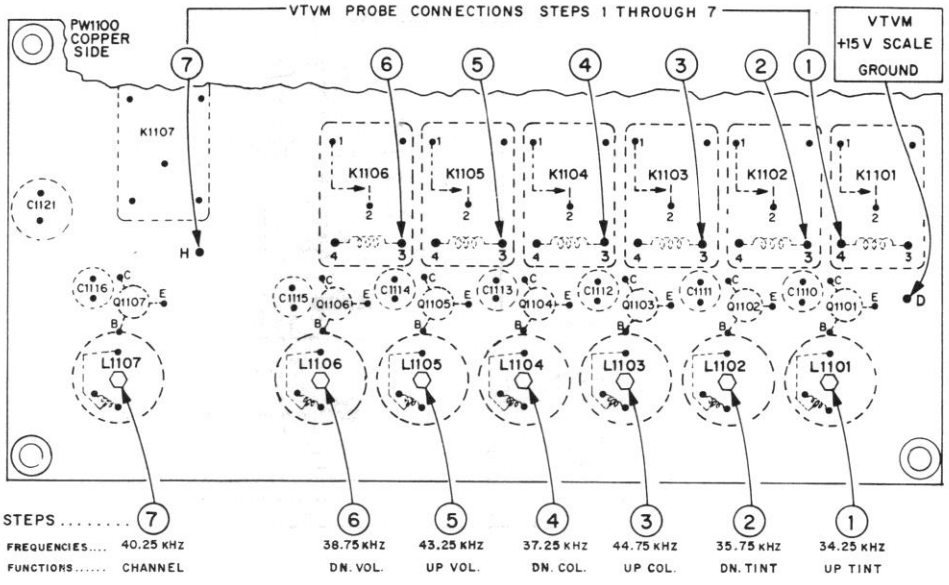
The transmitter distance selected, should provide a maximum VTVM reading of approximately +7 volts peak. Or, a strip of tape may be placed over all or part of the transmitter transducer and adjusted to provide the correct attenuation.

VACUUM TUBE VOLTMETER

Adjust the VTVM on the +15 volts DC scale, and connect the ground lead to terminal D (noted below). Then progressively connect the meter probe across each relay coil during the alignment procedure.

ALIGNMENT PROCEDURE

	STEP	TRANSMITTER OUTPUT FREQUENCY	TRANSMITTER FUNCTION BUTTON	VTVM CONNECTION	ADJUST FOR MAXIMUM
1	Adjust up tint	34.25kHz	Depress and hold Tint up	D to K1101-4	L1101
2	Adjust down tint	35.75kHz	Depress and hold Tint down	D to K1102-3	L1102
3	Adjust up color	44.75kHz	Depress and hold Color up	D to K1103-3	L1103
4	Adjust down color	37.25kHz	Depress and hold Color down	D to K1104-3	L1104
5	Adjust up volume	43.25kHz	Depress and hold Volume up	D to K1105-3	L1105
6	Adjust down volume	38.75kHz	Depress and hold Volume down	D to K1106-3	L1106
7	Adjust Channel Selector	40.25kHz	Depress and hold Channel	D to H	L1107



CRK 9 TRANSMITTER ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

GENERAL

When depressing function buttons, depress fully and hold depressed as adjustment is made.

SIGNAL SOURCE

A separate CRK 9 transmitter, checked for accuracy and proper operation, is recommended as a signal standard to be used in aligning the transmitter. (Transmitters used as standard should be checked frequently against a crystal standard or several receivers known to be operating properly.)

TRANSMITTER STANDARD

Remove the complete back cover from the transmitter. Loosely couple the transmitter to the Horizontal Input of the oscilloscope. To do this, place the probe of the oscilloscope approximately one inch in front of the transducer opening at the end of the transmitter. Ground the oscilloscope to the negative terminal of the battery.

TRANSMITTER BEING ALIGNED

Remove the complete cover from the transmitter. Loosely couple the transmitter to the Vertical Input of the oscilloscope. Place the probe of the oscilloscope approximately one inch in front of the transducer opening at the end of the transmitter. Keep the transmitter being aligned about two feet from the transmitter standard. Ground the oscilloscope to the negative terminal of the battery.

OSCILLOSCOPE

Connect as shown below.

ELECTRICAL SPECIFICATIONS

Transmitter shall be tuned at only one frequency (44.750kHz). None of the other function frequencies are adjustable.

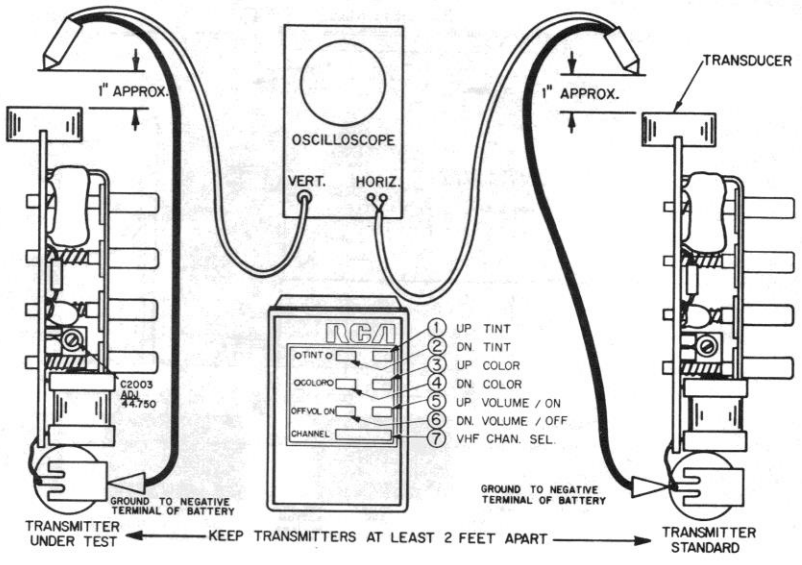
ALIGNMENT

Press the "Color Up" button and adjust C2003 for 44.750kHz ±20Hz. All other function frequencies shall be within ±150Hz of that listed in table below.

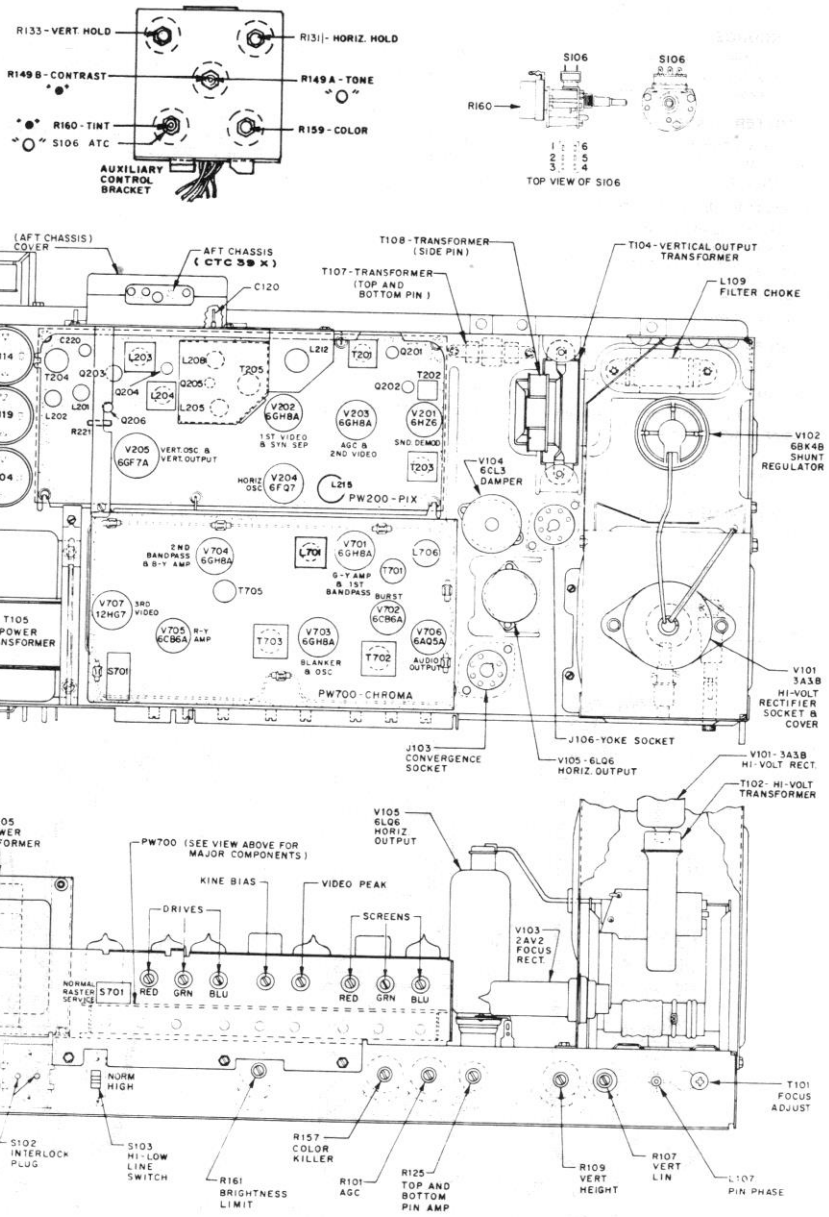
NOTE: Oscillator pre-set and sealed at factory.

Fundamental Frequencies

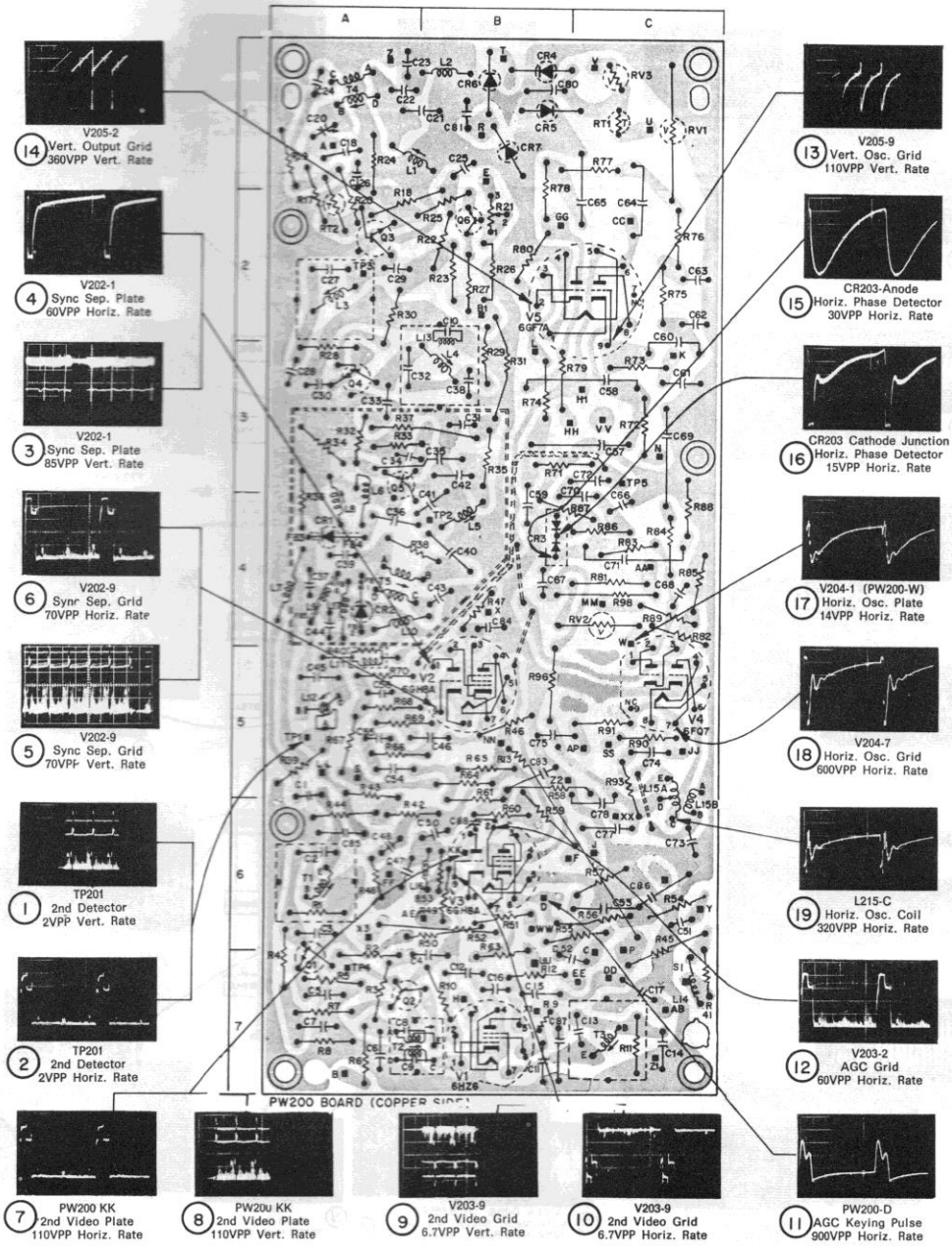
FUNCTION	UP	DOWN
Tint	34.250	35.750
Color	44.750	37.250
Volume	43.250	38.750
Channel	40.250	



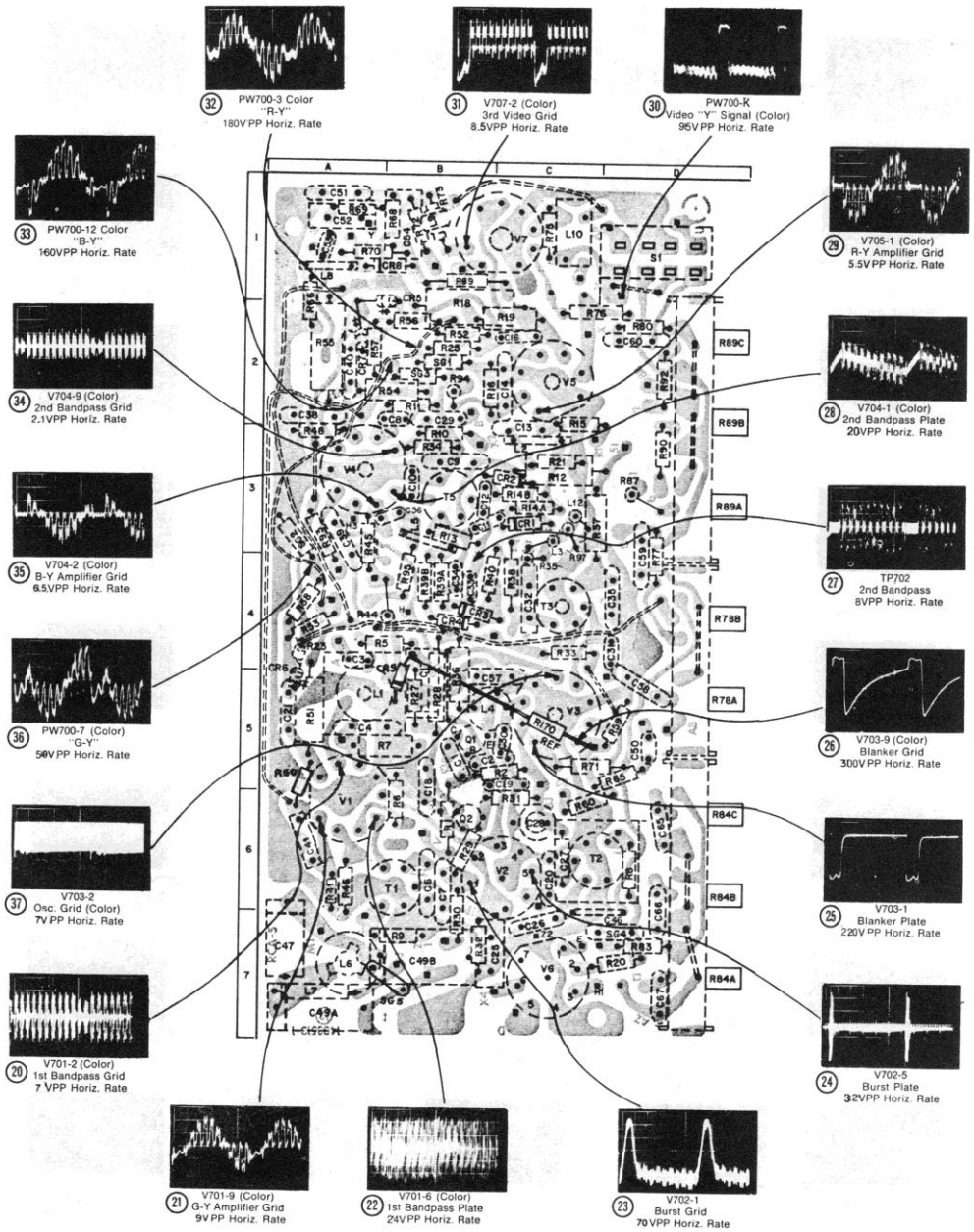
CHASSIS LAYOUT



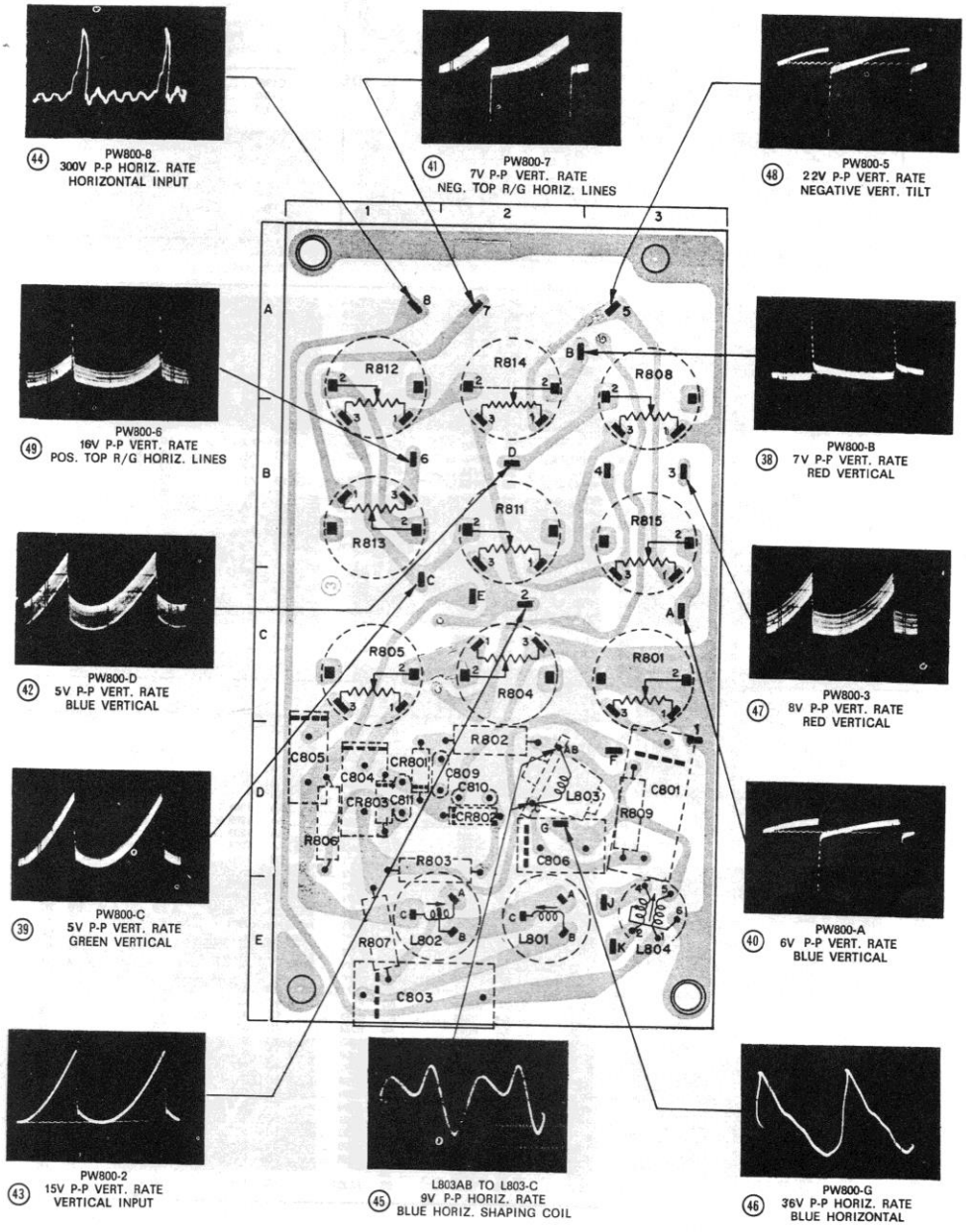
PW200 CIRCUIT BOARD ASSEMBLY



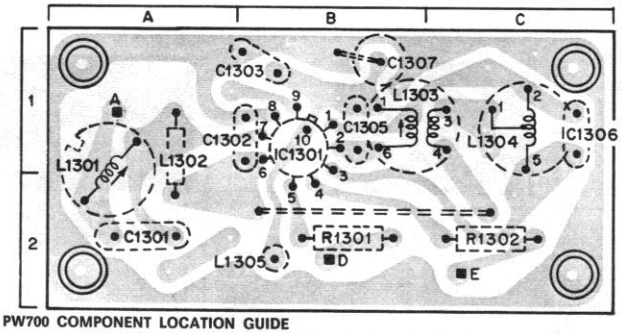
PW700 CIRCUIT BOARD ASSEMBLY



PW800 CONVERGENCE BOARD CIRCUIT ASSEMBLY



PW1300 AFT CIRCUIT BOARD ASSEMBLY



PW1300 COMPONENT LOCATION GUIDE

C1301	2A	L1303	1B
C1302	1B	L1304	1C
C1303	1B	L1305	2B
C1305	1B	R1301	2B
C1306	1C	R1302	2C
C1307	1B		
IC1301	1B	A	1A
		D	2B
L1301	1A	E	2C
L1302	1A		

PW700 COMPONENT LOCATION GUIDE

C701	5B	C735	4D	CR707	2A	R712	3C	R746	6A	R784A	7D	V704	3A	J	7B
C702	5C	C736	3B	CR708	1B	R713	3B	R748	3A	R784B	6D	V705	2C	K	1D
C703	4A	C738	2A	CR709	4B	R714A	3C	R750	5A	R784C	6D	V706	7C	KB	3B
C704	5A	C739	3A			R714B	3C	R751	5A	R787	3D	V707	1C	L	6D
C706	6B	C740	2A	L701	5A	R715	2C	R752	2B	R789A	3D			LB	5C
C707	6B	C741	6A	L702	3C	R716	2C	R753	4A	R789B	2D	A	4A	M	4C
C708	2B	C746	7D	L703	3C	R718	1B	R754	2B	R789C	2D	AA	7D	M1	7A
C709	3B	C747	7A	L704	5C	R719	2C	R755	2A	R790	3D	AB	5D	N	5D
C710	3B	C749A	7A	L705	3B	R720	7D	R756	2B	R792	2D	AD	7B	P	5C
C711	3C	C749B	7B	L706	7A	R721	3C	R757	2A	R793	3A	AE	1A	Q	3D
C712	3B	C750	5D	L707	7A	R723	4A	R758	4A	R794	2B	AF	1B	R1	3C
C713	2C	C751	1A	L708	1A	R725	2B	R759	5D	R795	4B	AJ	1C	R2	5C
C714	2C	C752	1A	L709	1B	R727	5B	R760	6C	R797	3C	AL	4A	S	6C
C716	2C	C753	1A	L710	1C	R728	5B	R765	5D			AP	1D	S1	3D
C717	5B	C754	1B	L712	3C	R729	6B	R766	1A	S701	1D	AZ	7D	T	7B
C718	5B	C757	5C			R730	6B	R767	1B	SG701	2B	B	2B	U	1B
C719	5C	C758	5D	Q701	5B	R731	6C	R768	1B	SG702	3A	BA	1B	V	6B
C720	6C	C759	4D	Q702	6B	R732	7B	R769	1A	SG703	2B	BB	2D	W	6B
C721	5A	C760	2D			R733	4C	R770	1A	SG704	7D	BG	4B	X	2C
C725	7C	C765	6D	R170	5C	R734	3B	R771	5C	SG705	7B	BH	6B	X2	3B
C726	7C	C766	6D	R701	6B	R735	4C	R772	1B			BJ	5C	X3	3A
C727	6C	C767	7D	R702	5C	R736	5B	R773	1B	T701	6B	BK	5D	X4	7C
C728	6C			R705	4B	R737	3C	R775	1C	T702	6D	BL	1A	Y	1A
C729	2B	CR701	3C	R706	6B	R738	4C	R776	2D	T703	4C	C	5A	Z	4D
C730	5C	CR702	3C	R707	5B	R739A	4B	R777	4D	T705	3B	D	7C	Z1	6B
C731	4D	CR703	4B	R708	6D	R739B	4B	R778A	5D			E	7C	Z2	7C
C732	4C	CR704	4B	R709	7B	R740	4C	R778B	4D	V701	6A	F	4D	TP1	7C
C733	4B	CR705	1B	R710	3B	R744	4B	R780	2D	V702	6C	H	4B	TP2	4B
C734	4B	CR706	4A	R711	2B	R745	3A	R783	7D	V703	5C	H1	7C		

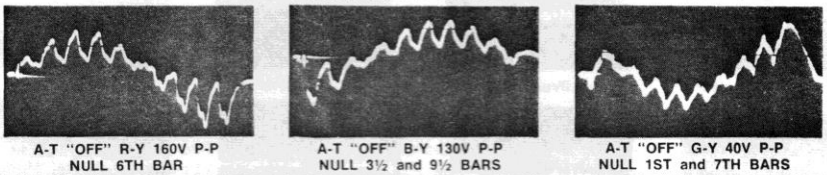
PW200 COMPONENT LOCATION GUIDE

C201	6A	C238	3B	C277	6C	L211	5A	R224	1A	R260	6B	RT202	2A	H1	3C
C202	6A	C239	4A	C278	6C	L212	5A	R225	2B	R261	6B			J	6C
C203	6A	C240	4B	C280	1B	L213	2B	R226	2B	R263	7B	RV201	1C	JJ	5C
C204	7B	C241	4B	C281	1B	L214	7A	R227	2B	R264	5B	RV202	4C	K	3C
C205	7A	C242	3B	C283	5B	L215A	5C	R228	3A	R265	5B	RV203	1C	KK	6B
C206	7A	C243	4B	C284	4B	L215B	6C	R229	3B	R266	5A			L	3B
C207	7A	C244	4A	C285	6A	L216	6B	R230	2A	R267	5A	T201	6A	LL	5A
C208	7A	C245	5A	C286	6C	L217	4A	R231	3B	R268	5A	T202	7A	MM	4C
C209	7A	C246	5B	C287	7B			R232	3A	R269	5A	T203	7C	N	3C
C210	2B	C248	6A	C288	6B	Q201	7A	R233	3A	R270	5A	T204	1A	NN	5B
C211	7B	C250	6B			Q202	7A	R234	3A	R271	3B	T205	4A	P	6C
C212	7B	C251	6C	CR201	4A	Q203	2A	R235	3B	R272	3C			R	1B
C213	7C	C252	7C	CR202	4A	Q204	3A	R236	4A	R273	3C	V201	7B	S	5A
C214	7C	C253	6C	CR203	4B	Q205	3A	R237	3B	R274	3B	V202	5B	SS	5C
C215	7B	C254	5A	CR204	1B	Q206	2B	R238	4A	R275	2C	V203	6B	S1	7C
C216	7B	C255	5A	CR205	1B			R239	5A	R276	2C	V204	5C	T	1B
C217	7C	C256	5A	CR206	1B	R201	6A	R240	5A	R277	1C	V205	2C	TP1	5A
C218	1A	C257	3C	CR207	1B	R202	7A	R241	7C	R278	2B			TP2	4B
C220	1A	C258	3C			R203	7A	R242	6A	R279	3B	A	1A	TP3	2A
C221	1B	C259	4B	FB201	4A	R204	7A	R243	5A	R280	2B	AA	4C	TP4	7A
C222	1A	C260	3C	FB202	4A	R205	7A	R244	6A	R281	4C	AB	7C	TP5	3C
C223	1A	C261	3C	FB203	4A	R206	7A	R245	6C	R282	4C	AE	6B	U	1C
C224	1A	C262	2C	FB204	4A	R207	7A	R246	5B	R283	4C	AP	5C	UU	7B
C225	1B	C263	2C	FB205	4A	R208	7A	R247	4B	R284	4C	B	7A	V	1C
C226	1A	C264	2C	FB206	4A	R209	7B	R248	6A	R285	4C	B1	2B	VV	3C
C227	2A	C265	2C			R210	7B	R249	6B	R286	4C	C	6C	W	4C
C228	3A	C266	4C	L201	1A	R211	7C	R250	6B	R287	4C	CC	2C	WW	6B
C229	2A	C267	4B	L202	1B	R212	7B	R251	6B	R288	4C	D	6B	X	4B
C230	3A	C268	4C	L203	2A	R213	6B	R252	6B	R289	4C	DD	7C	X1	7B
C231	3B	C269	3C	L204	3B	R217	2A	R253	6B	R290	5C	E	1B	X3	6A
C232	3A	C270	4C	L205	4B	R218	2A	R254	6C	R291	5C	EE	7C	XX	6C
C233	3A	C271	4C	L206	4A	R219	1A	R255	6C	R293	5C	F	6C	Y	6C
C234	3A	C272	3C	L207	4A	R220	2A	R256	6C	R296	5B	FF	6A	Z	1A
C235	3B	C273	6C	L208	4A	R221	2B	R257	6C	R298	4C	GG	2B	Z1	7C
C236	4A	C274	5C	L209	4A	R222	2B	R258	5B			H	7B	Z2	5B
C237	4A	C275	5B	L210	4A	R223	2B	R259	6B	RT201	1C	HH	3C		

PICTURE TUBE GRID WAVEFORMS

The series of 18 waveforms below illustrate the demodulator gain and phase-angle changes resulting from the ACCU-TINT circuits. These were taken with a color bar pattern furnished by a WR-64B color-bar generator. Conditions of nominal phase, +30°, and −30° are represented with the color circuits operating first with A-T "OFF" and second with A-T "ON".

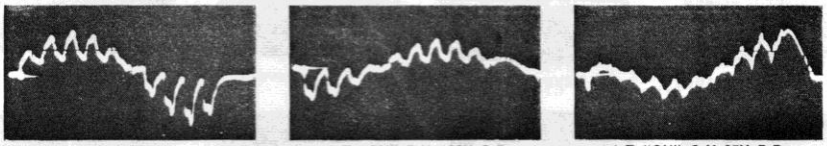
NOMINAL PHASE



A-T "OFF" R-Y 160V P-P
NULL 6TH BAR

A-T "OFF" B-Y 130V P-P
NULL 3½ and 9½ BARS

A-T "OFF" G-Y 40V P-P
NULL 1ST and 7TH BARS

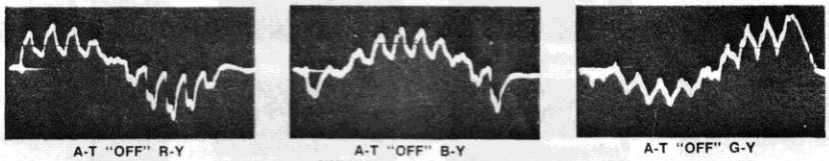


A-T "ON" R-Y 140 P-P
NULL 6TH BAR

A-T "ON" B-Y 100V P-P
NULL 4TH and 10TH BARS

A-T "ON" G-Y 35V P-P
NULL 1ST and 7TH BARS

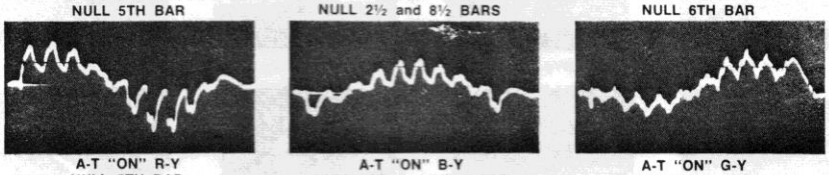
+30 PHASE—PURPLE FLESH TONES



A-T "OFF" R-Y
NULL 5TH BAR

A-T "OFF" B-Y
NULL 2½ and 8½ BARS

A-T "OFF" G-Y
NULL 6TH BAR



A-T "ON" R-Y
NULL 5TH BAR

A-T "ON" B-Y
NULL 3RD and 9TH BARS

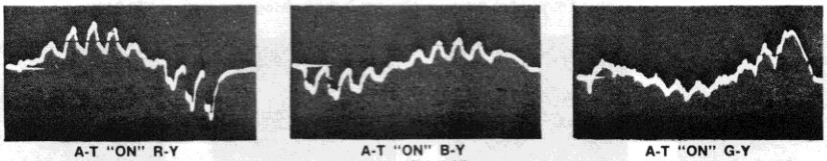
A-T "ON" G-Y
NULL 6TH BAR

−30 PHASE—GREEN FLESH TONES

A-T "OFF" R-Y
NULL 7TH BAR

A-T "OFF" B-Y
NULL 4½ BARS

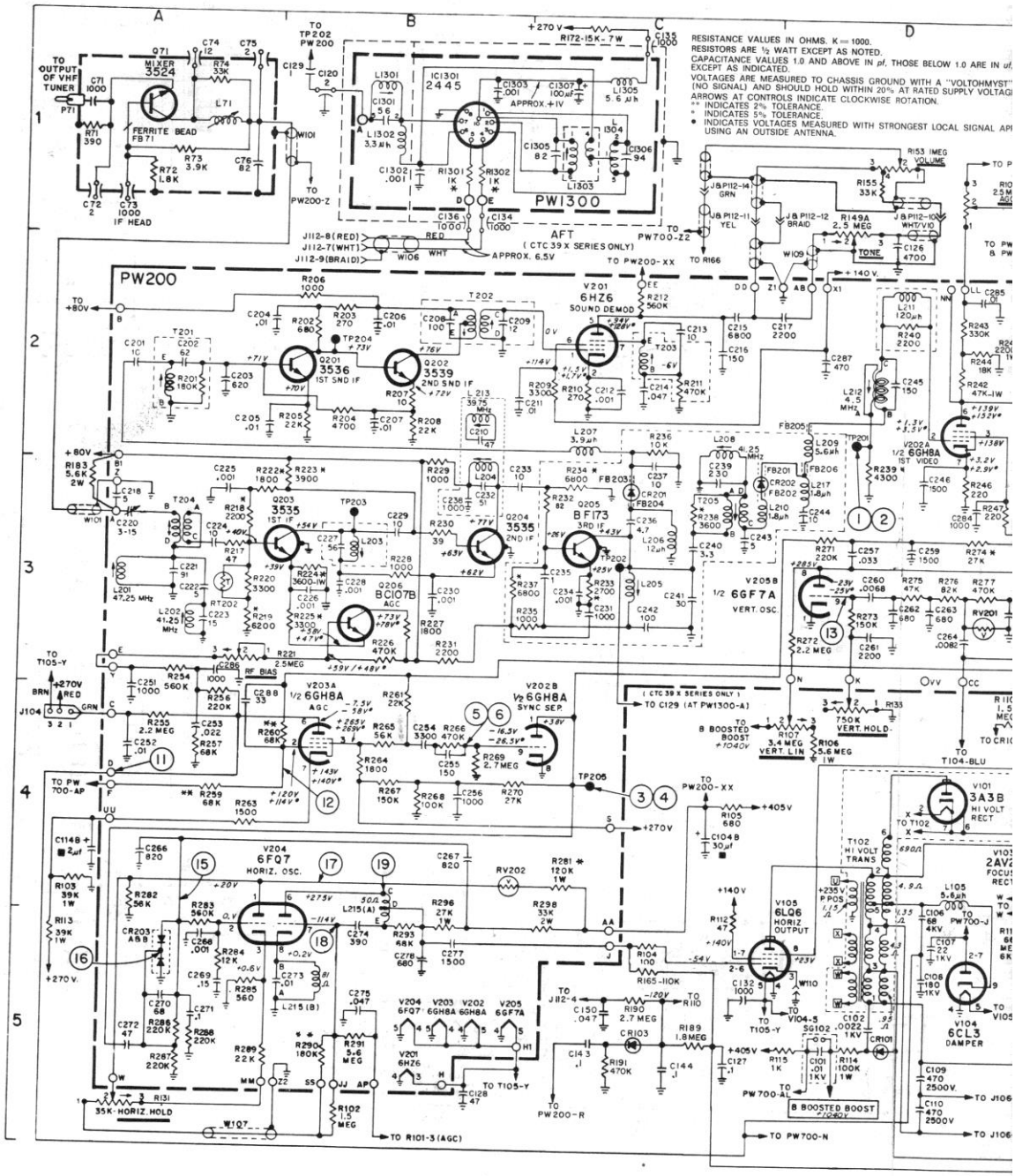
A-T "OFF" G-Y
NULL 2ND and 8TH BARS

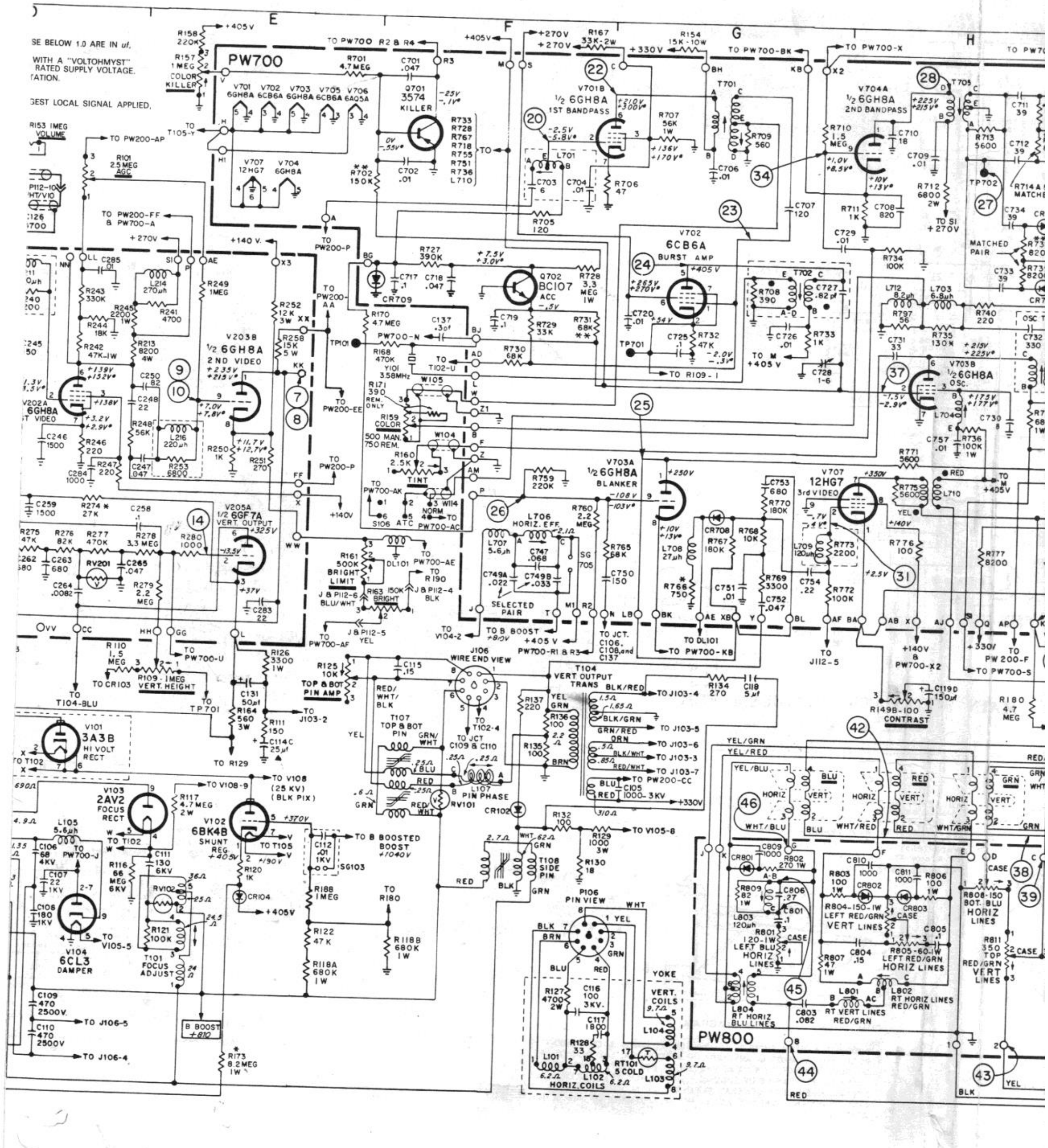


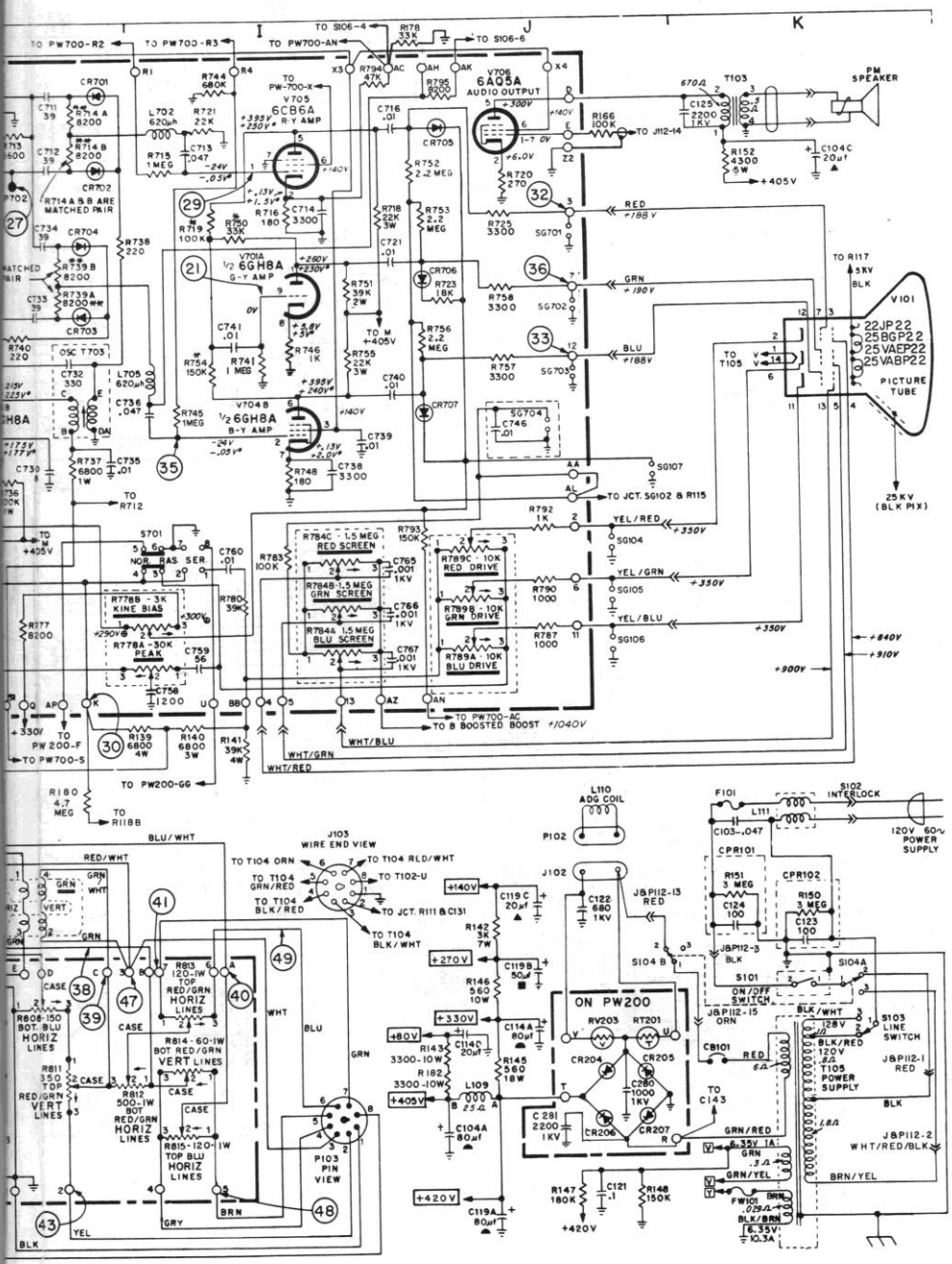
A-T "ON" R-Y
NULL 7TH BAR

A-T "ON" B-Y
NULL 5TH BAR

A-T "ON" G-Y
NULL 2ND and 8TH BARS


RESISTANCE VALUES IN OHMS. K = 1000.
RESISTORS ARE ½ WATT EXCEPT AS NOTED.
CAPACITANCE VALUES 1.0 AND ABOVE IN μf, THOSE BELOW 1.0 ARE IN μμf, EXCEPT AS INDICATED.
VOLTAGES ARE MEASURED TO CHASSIS GROUND WITH A "VOLTOHMYST" (NO SIGNAL) AND SHOULD HOLD WITHIN 20% AT RATED SUPPLY VOLTAGE.
ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION.
** INDICATES 2% TOLERANCE.
* INDICATES 5% TOLERANCE.
• INDICATES VOLTAGES MEASURED WITH STRONGEST LOCAL SIGNAL AVAILABLE USING AN OUTSIDE ANTENNA.
PW200
PW1300
AFT
(CTC 39 X SERIES ONLY)
APPROX. 6.5V
APPROX. +1V
+270 V
+140 V
+80V
+405V
+270V
TO PW200-XX
TO PW700-Z2
TO PW700-AP
TO PW700-AL
TO PW700-N
TO PW200-R
TO PW200-Z
TO PW200 TP202
TO OUTPUT OF VHF TUNER
TO R166
TO R101-3 (AGC)
TO T105-Y
TO C129 (AT PW1300-A)
TO R110
TO T104-BLU
TO V104-5
TO J106
TO J112-4
B BOOSTED BOOST
B BOOSTED BOOST +1040V
Q71 MIXER 3524
FERRITE BEAD FB71
IF HEAD
Q201 3536 1ST SND IF
Q202 3539 2ND SND IF
Q203 3535 1ST IF
Q204 3535 2ND IF
Q205 BF173 3RD IF
Q206 BC107B AGC
V201 6HZ6 SOUND DEMOD
V202A 1/2 6GH8A 1ST VIDEO
V202B 1/2 6GH8A SYNC SEP.
V203A 1/2 6GH8A AGC
V204 6FQ7 HORIZ. OSC.
V205B 1/2 6GF7A VERT. OSC.
V101 3A3B HI VOLT RECT
V105 6LQ6 HORIZ OUTPUT
V104 6CL3 Ddamper
T102 HI VOLT TRANS
RF BIAS
35K-HORIZ. HOLD
750K VERT. HOLD
3.4 MEG VERT. LIN
2.5 MEG TONE
VOLUME
TP201
TP202
TP203
TP204
TP205
TP206


SE BELOW 1.0 ARE IN uf.
WITH A "VOLTOHMYST" RATED SUPPLY VOLTAGE. TATION.
GEST LOCAL SIGNAL APPLIED.
PW700
V701 6GH8A
V702 6CB6A
V703 6GH8A
V705 6CB6A
V706 6AQ5A
V707 12HG7
V704 6GH8A
Q701 3574 KILLER
R157 1 MEG COLOR KILLER
R101 2.5 MEG AGC
R153 1MEG VOLUME
V701B 1/2 6GH8A 1ST BANDPASS
V704A 1/2 6GH8A 2ND BANDPASS
V702 6CB6A BURST AMP
Q702 BC107 ACC
V203B 1/2 6GH8A 2ND VIDEO
V202A 6GH8A VIDEO
V205A 1/2 6GF7A VERT. OUTPUT
V703A 1/2 6GH8A BLANKER
V707 12HG7 3rd VIDEO
V703B 1/2 6GH8A OSC.
L706 HORIZ. EFF.
R159 COLOR
R160 2.5K TINT
R161 500K BRIGHT LIMIT
R163 150K BRIGHT
R109 - 1MEG VERT. HEIGHT
R125 10K TOP & BOT PIN AMP
R149B-100 CONTRAST
MATCHED PAIR
SELECTED PAIR
J106 WIRE END VIEW
T104 VERT OUTPUT TRANS
T107 TOP & BOT PIN
L107 PIN PHASE
T108 SIDE PIN
V101 3A3B HI VOLT RECT
V103 2AV2 FOCUS RECT
V102 6BK4B SHUNT REG
V104 6CL3 DAMPER
T101 FOCUS ADJUST
B BOOST +810
TO B BOOSTED BOOST +1040V
TO V108 (25 KV) (BLK PIX)
P106 PIN VIEW
YOKE
VERT. COILS
HORIZ. COILS
RT101 5 COLD
PW800
R804-150-1W LEFT RED/GRN VERT LINES
R801 120-1W LEFT BLU HORIZ LINES
R805-60-1W LEFT RED/GRN HORIZ LINES
L804 RT HORIZ BLU LINES
L801 RT VERT LINES RED/GRN
L802 RT HORIZ LINES RED/GRN
R808-150 BOT. BLU HORIZ LINES
R811 350 TOP RED/GRN VERT LINES
HORIZ
VERT
BLU
RED
GRN


TO PW700-R2
TO PW700-R3
TO PW700-AN
TO S106-4
TO S106-6
R178 33K
R794 47K
R795 8200
V706 6AQ5A AUDIO OUTPUT
PM SPEAKER
T103
R166 100K
TO J112-14
R152 4300 5W
+405V
C104C 20µf
R744 680K
R721 22K
TO PW-700-X
V705 6CB6A R-Y AMP
R715 1MEG
C713 .047
L702 620µh
C716 .01
R752 2.2 MEG
R753 2.2 MEG
R718 22K 3W
C721 .01
R719 100K
R750 33K
R716 180
C714 3300
V701A 1/2 6GH8A G-Y AMP
R751 39K 2W
R723 18K
R758 3300
R757 3300
R756 2.2 MEG
R755 22K 3W
C740 .01
C741 .01
R754 150K
R741 1 MEG
R746 1K
V704B 1/2 6GH8A B-Y AMP
R745 1MEG
C739 .01
R748 180
C738 3300
R737 6800 1W
C735 .01
C736 .047
L705 620µh
C732 330
OSC T703
R738 220
R739B 8200
R739A 8200
R740 220
C733 39
C734 39
C711 39
C712 39
R714A 8200
R714B 8200
CR701
CR702
CR703
CR704
CR705
CR706
CR707
R714 A & B ARE MATCHED PAIR
SG701
SG702
SG703
SG704
C746 .01
SG107
TO JCT. SG102 & R115
R792 1K
SG104
SG105
SG106
YEL/RED +350V
YEL/GRN +350V
YEL/BLU +350V
+840V
+910V
+900V
RED +198V
GRN +190V
BLU +188V
TO R117
5KV
BLK
V101
22JP22
25BGP22
25VAEP22
25VABP22
PICTURE TUBE
25 KV (BLK PIX)
TO T105
S701
NOR RAS SER
C760 .01
R783 100K
R784C - 1.5 MEG RED SCREEN
R784B - 1.5 MEG GRN SCREEN
R784A - 1.5 MEG BLU SCREEN
C765 .001 1KV
C766 .001 1KV
C767 .001 1KV
R793 150K
R789C - 10K RED DRIVE
R789B - 10K GRN DRIVE
R789A - 10K BLU DRIVE
R790 1000
R787 1000
R777 8200
R778B 3K KINE BIAS
R778A - 30K PEAK
C759 56
C758 1200
R780 39K
TO PW700-AC
TO B BOOSTED BOOST +1040V
WHT/BLU
WHT/GRN
WHT/RED
R139 6800 4W
R140 6800 3W
R141 39K 4W
TO PW200-GG
TO PW 200-F
TO PW700-S
+330V
R180 4.7 MEG
TO R118B
TO R712
TO M +405V
L110 ADG COIL
P102
J102
J103 WIRE END VIEW
TO T104 ORN
TO T104 GRN/RED
TO T104 BLK/RED
TO T104 RED/WHT
TO T102-U
TO JCT. R111 & C131
TO T104 BLK/WHT
BLU/WHT
RED/WHT
GRN/WHT
GRN
WHT
BLU
GRY
BRN
YEL
BLK
CASE
R808-150 BOT. BLU HORIZ LINES
R811 350 TOP RED/GRN VERT LINES
R812 500-1W BOT RED/GRN HORIZ LINES
R813 120-1W TOP RED/GRN HORIZ LINES
R814 - 60-1W BOT RED/GRN VERT LINES
R815-120-1W TOP BLU HORIZ LINES
P103 PIN VIEW
+140V
+270V
+330V
+80V
+405V
+420V
C119C 20µf
C119B 50µf
C114A 80µf
C114C 20µf
C104A 80µf
C119A 80µf
R142 3K 7W
R146 560 10W
R143 3300-10W
R182 3300-10W
R145 560 18W
L109
C122 680 1KV
J8P112-13 RED
S104 B
ON PW200
RV203
RT201
CR204
CR205
CR206
CR207
C280 1000 1KV
C 281 2200 1KV
TO C143
R147 180K
C121 .1
R148 150K
+420V
F101
L111
C103-.047
CPR101
CPR102
R151 3 MEG
C124 100
R150 3 MEG
C123 100
J8P112-3 BLK
S104A
S101
ON/OFF SWITCH
J8P112-15 ORN
CB101
RED
6A
S102 INTERLOCK
120V 60~ POWER SUPPLY
S103 LINE SWITCH
BLK/RED 120V
T105 POWER SUPPLY
J8P112-1 RED
BLK
1.8A
J8P112-2 WHT/RED/BLK
6.35V 1A GRN
.3A
GRN/YEL
BRN/YEL
GRN/RED
FW101
.029A
BRN
BLK/BRN
6.35V 10.3A