

The following temporary service notes are issued to fill the gap between the first production of the TC-125 television receiver and the final Service Notes.

### 1. DESCRIPTIVE SPECIFICATIONS.

**Power Supply** — 117 volts, 60 cycles, 225 watts.

**Kinescope** — 12QP4 kinescope, magnetic deflection, mechanical picture centering, and magnetic focus. (Focus coil permanent magnet with electromagnetic vernier).

### Sweep Circuits.

**Horizontal** — Oscillator and driver tube, sweep amplifier tube, damper tube, H.V. rectifier tube. Sweep frequency is automatically controlled.

**Vertical** — Oscillator and driver tube, sweep amplifier tube. Frequency is manually controlled.

### Radio Frequency and Intermediate Frequency Circuits.

**AM Picture** — Superhetrodyne, tuned RF stage, converter, 4 I.F. stages. 2nd Detector combined with a fast AGC circuit. Video Amplifier, (Sound traps in 1st and 3rd I.F. stages).

**FM Sound** — Inter-carrier system, limiter, ratio detector, triode audio driver, beam power amplifier.

**Number of Tubes** — 23 including kinescope and rectifier.

**Frequency Ranges** — Low Band, 54 mc. thru 88 mc. High band 174 mc. thru 216 mc.

### Intermediate Frequencies.

**Picture Carrier** — 26.4 mc., 3.7 bandwidth at 50% response points.

**Sound Carrier** — 21.9 mc. Beat with picture carrier at 2nd detector to produce 4.5 mc.

### Front Controls — TC-125-H.

**Top** — Dual Control

Center Knob — Vertical Hold.

Outside Knob — Horizontal Hold.

**2nd from Top** — Dual Control

Center Knob — Off-On-Volume.

Outside Knob — Contrast Control.

**3rd from Top** — Dual Control.

Center Knob — Brightness Control.

Outside Knob — Hi-Lo Channel Switch.

**Bottom** — Dual Control.

Center Knob — Tone Control.

Outside Knob — Tuning Control.

### Front Controls — TC-125-L.

**Top Left** — Dual Control.

Center Knob — Off-On-Volume.

Outside Knob — Contrast Control.

**Bottom Left** — Dual Control.

Center Knob — Vertical Hold.

Outside Knob — Horizontal Hold.

**Top Right** — Dual Control.

Center Knob — Brightness Control.

Outside Knob — Hi-Lo Channel Switch.

**Bottom Right** — Dual Control.

Center Knob — Tone Control.

Outside Knob — Tuning Control.

### Rear Controls.

**1st Right** — Focus.

**2nd Right** — Vertical Size.

**3rd Right** — Vertical Linearity.

**1st Left** — Horizontal Linearity.

**2nd Left** — Horizontal Damping.

**3rd Left** — Horizontal Size.

### Speaker Equipment

TC-125-H — 8" speaker — 3.5 ohm impedance.

TC-125-L — 12" speaker — 6.0 ohm impedance.

### Audio Power Rating.

2.0 watts at 400 cps. with 10% distortion.

### Tubes — Types and Function.

1. 6AG5, V-18, Hi Band R.F. Amplifier.
2. 6J6, V-16, Hi Band Oscillator and Converter.
3. 6BH6, V-19, Lo Band R.F. Amplifier.
4. 6J6, V-17, Lo Band Oscillator and Converter.
5. 6BH6, V-12, 1st Video I.F. Amplifier.
6. 6BH6, V-11, 2nd Video I.F. Amplifier.
7. 6BH6, V-10, 3rd Video I.F. Amplifier.
8. 6AH6, V-23, 4th Video I.F. Amplifier.
9. 6AL5, V-9 Video Detector and AGC.
10. 6AC7, V-8, Video Amplifier.
11. 12QP4, V-21, Kinescope.
12. 6AU6, V-13, Ratio Detector Driver.
13. 6T8, V-14, Ratio Detector and Audio Amplifier.
14. 6V6GT/G, V-15, Audio Output.
15. 12AU7, V-7, DC Restorer and Sound Driver.
16. 6AL5, V-6, Horizontal AFC Phase Discriminator.
17. 6SN7GT, V-2, Horizontal Oscillator and Driver.
18. 6BG6G, V-3, Horizontal Sweep Output.
19. 6W4GT, V-4, Horizontal Damper.
20. 1B3GT-8016, V-5, High Voltage Rectifier.
21. 6C4, V-22, Vertical Sweep Oscillator.
22. 12AU7, V-1, Vertical Sweep Output.
23. 5U4G, V-20, Power Rectifier.

### 2. ALIGNMENT PROCEDURE.

#### General.

All precautions for aligning high frequency devices should be observed. Signal generators and oscilloscope leads should be well shielded and as short as possible. If necessary to reduce regeneration, a metal plate should be placed on the bench where the alignment work is done.

#### Video I.F. Alignment.

The video I.F. system consists of a double tuned converter plate transformer followed by four single tuned stages. These four are the 1st, 2nd, 3rd, and 4th I.F. Stages. They are aligned as a "quadruple" unit previous to the adjustment of the double-tuned stage.

#### Alignment of the "Quadruple"

1. Set the contrast control at the maximum contrast position.
2. Apply an external bias of approximately -3V D.C. to the AGC line at the junction of R-119, 330 ohms, R-11, 100,000 ohms, and C-7, 5.0 MF.
3. Connect the oscilloscope to the grid of the video amplifier, pin 4 of V-8 (6AC7). The lead used for this connection should be a low capacity type shielded cable. A 47,000 ohm isolating resistor at the input end of the cable is advisable to minimize disturbances caused by I.F. energy pickup on the cable. Failure to observe this precaution may result in incorrect alignment of the receiver.
4. Connect the output of the sweep generator to the grid of the 1st I.F. amplifier V-12 (6BH6) thru the network shown below.

INPUT

CARD

The 47 ohm recommended generator output low grid to ground back from other

5. Adjust the generator to produce a sine wave on the oscilloscope. The procedure by reference to the tuning marker is shown below.

7. The 21 mc. L-match network out using a variable capacitor. The approximate response between the two should be kept at a minimum.
8. The tuning slug should be adjusted to their approximate position.

- No. 1 — 1st I.F. stage
- No. 2 — 2nd I.F. stage
- No. 3 — 3rd I.F. stage
- No. 4 — 4th I.F. stage

Refer to the alignment chart shown below.

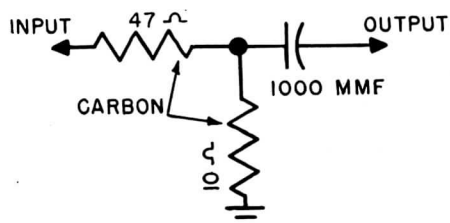
Maintaining the slugs should be approximately 22.7 mc. maximum.

70% RE

9. It is suggested that correct frequency be maintained.

#### Alignment of the

1. The band switch and the external bus.
2. The output filter into the plate of V-17, 6J6, b. This special shield SC No. Separate the



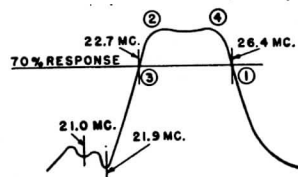
The 47 ohm and 10 ohm resistor network is recommended to give proper termination to the generator output cable and also to provide a low grid to ground impedance to minimize feedback from other receiver circuits.

- Adjust the gain of the scope and the signal input to produce a 2 volt peak to peak output on the oscilloscope screen. This level of output should be maintained throughout the alignment procedure by re-adjusting the bias and/or the input.
- Adjust the 21.9 mc. trap L-2 so that the 21.9 marker is coincident with the valley of the trap as shown below.
- The 21 mc. L-5 trap may then be adjusted (without using a marker) to give the response curve the approximate shape as shown below. The response between the 21.9 mc. and 21 mc. should be kept at a minimum.
- The tuning slugs are identified in accordance with their approximate frequency settings as follows:

- No. 1 — 1st I.F. Plate coil, T-9 hi-hi frequency.
- No. 2 — 2nd I.F. Plate coil, T-10 hi-lo frequency.
- No. 3 — 3rd I.F. Plate coil, T-11 lo-lo frequency.
- No. 4 — 4th I.F. Plate coil, T-12 lo-hi frequency.

Refer to the circled numbers on the response curve shown below for the relative positions.

Maintaining these relative frequency positions, the slugs should be set to produce a curve approximately as shown below with 26.4 mc. and 22.7 mc. markers at the 70% response.

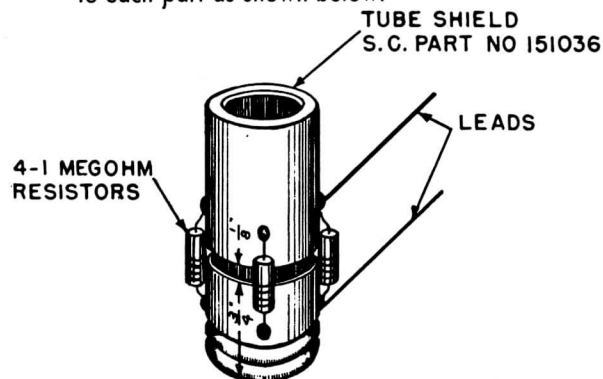


- It is suggested the traps be checked to insure correct frequency setting after finishing Step No. 8.

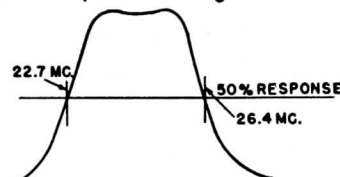
#### Alignment of the Double-Tuned Stage.

- The band switch is turned to the Lo Band position and the external bias is still applied to the AGC bus.
- The output from the sweep generator is coupled into the plate of the Lo Band converter tube V-17, 6J6, by means of the special tube shield. This special shield is constructed by cutting tube shield SC No. 151036 in two,  $\frac{3}{4}$ " from the base. Separate the two pieces by  $\frac{1}{8}$ " and secure by

soldering 4-1 meg. ohm  $\frac{1}{2}$  watt carbon resistors to each part as shown below.

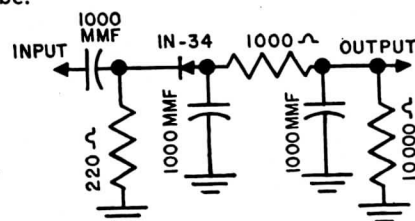


- Adjust the primary L-26 and secondary T-8 of the double-tuned pair until the 26.4 mc. and 22.7 mc. markers are at 50% response as shown below.
- It may be necessary to make slight adjustments on the "Quadruple" in order to achieve the desired response, but caution should be exercised to prevent complete mis-alignment.

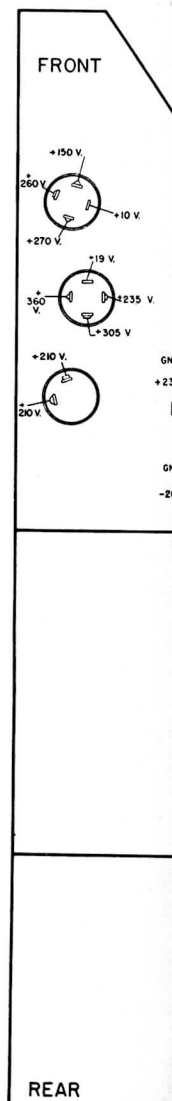
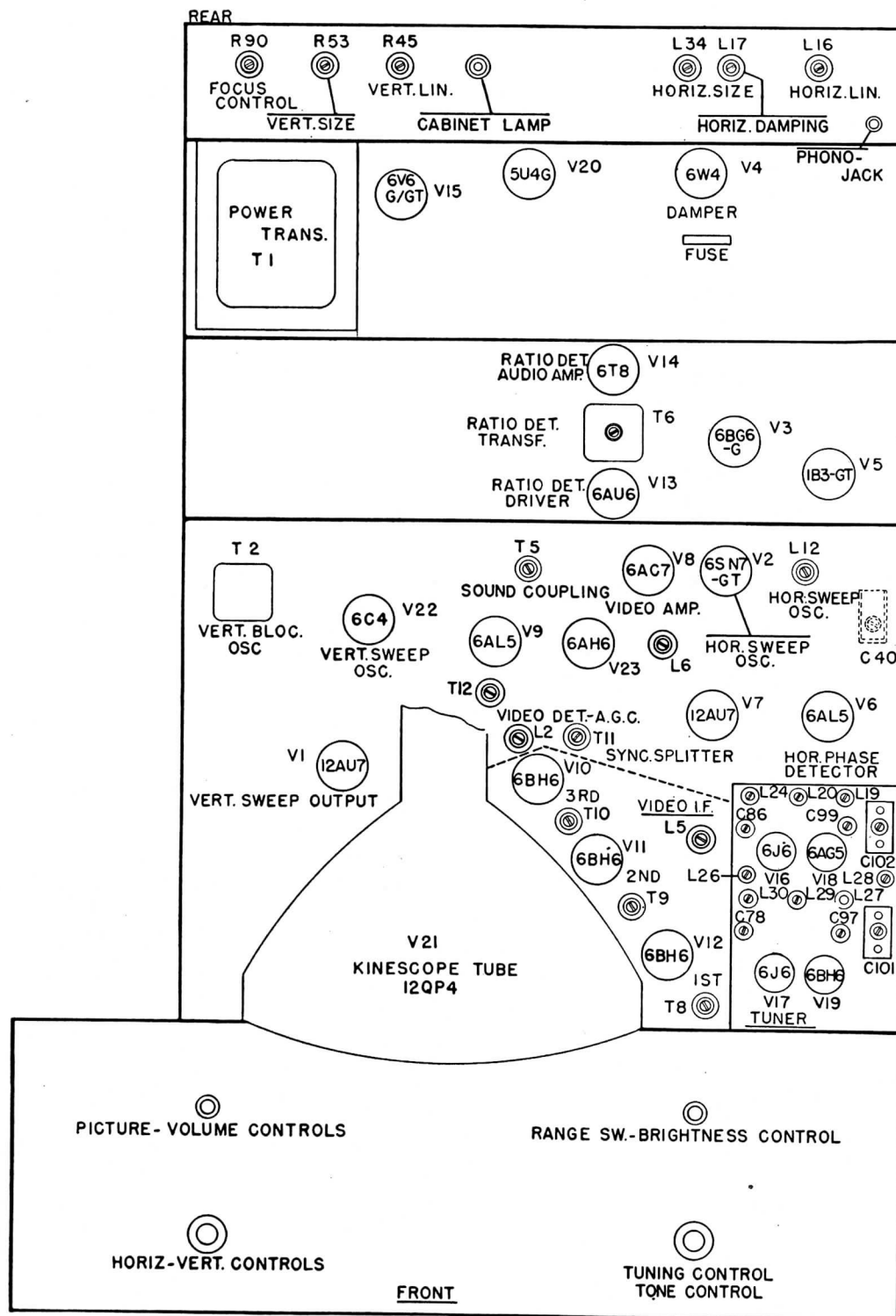


#### Sound I.F. Alignment.

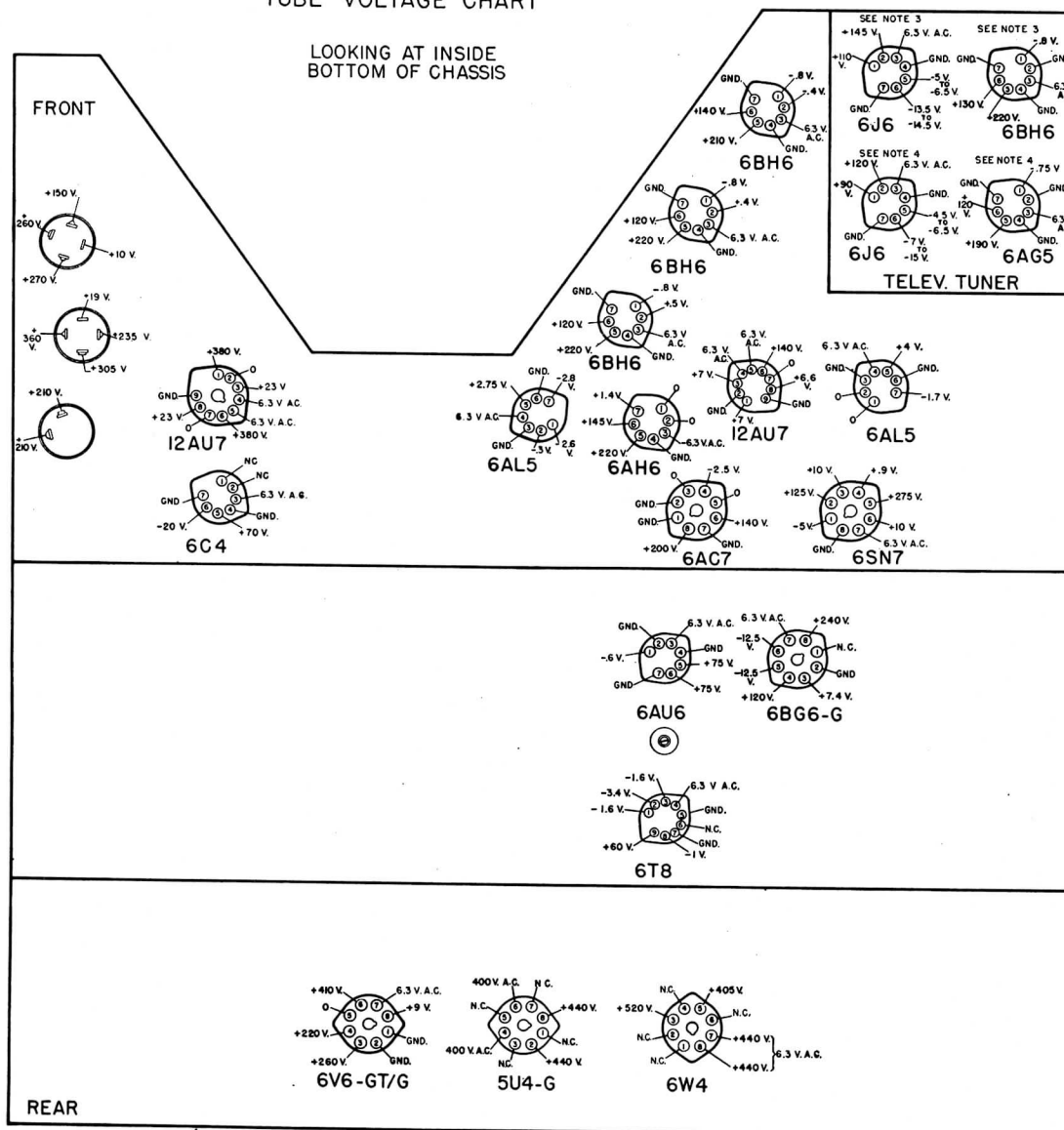
- Apply a modulated 4.5 mc. signal to the grid of the video amplifier, pin 4 of V-8 (6AC7). Connect the input of the oscilloscope thru the crystal detector shown below to the grid of the kinescope tube.



- Adjust the core of T-5 the 4.5 mc. sound take-off coil, and L-6 the 4.5 mc. trap for minimum response.
- Remove the modulation on the 4.5 mc. signal and adjust the primary of the ratio detector transformer T-6 for maximum AGC voltage. This voltage is measured across the 1.0 MF electrolytic capacitor C-56 in the ratio detector diode circuit.
- Adjust the secondary of the ratio detector transformer for zero voltage from the junction of R-79, 22K and R-80, 22K to the junction of C-58, .047 MF and R-78, 18K. This voltage in adjustment should pass thru zero between positive and negative swings on the VTVM.



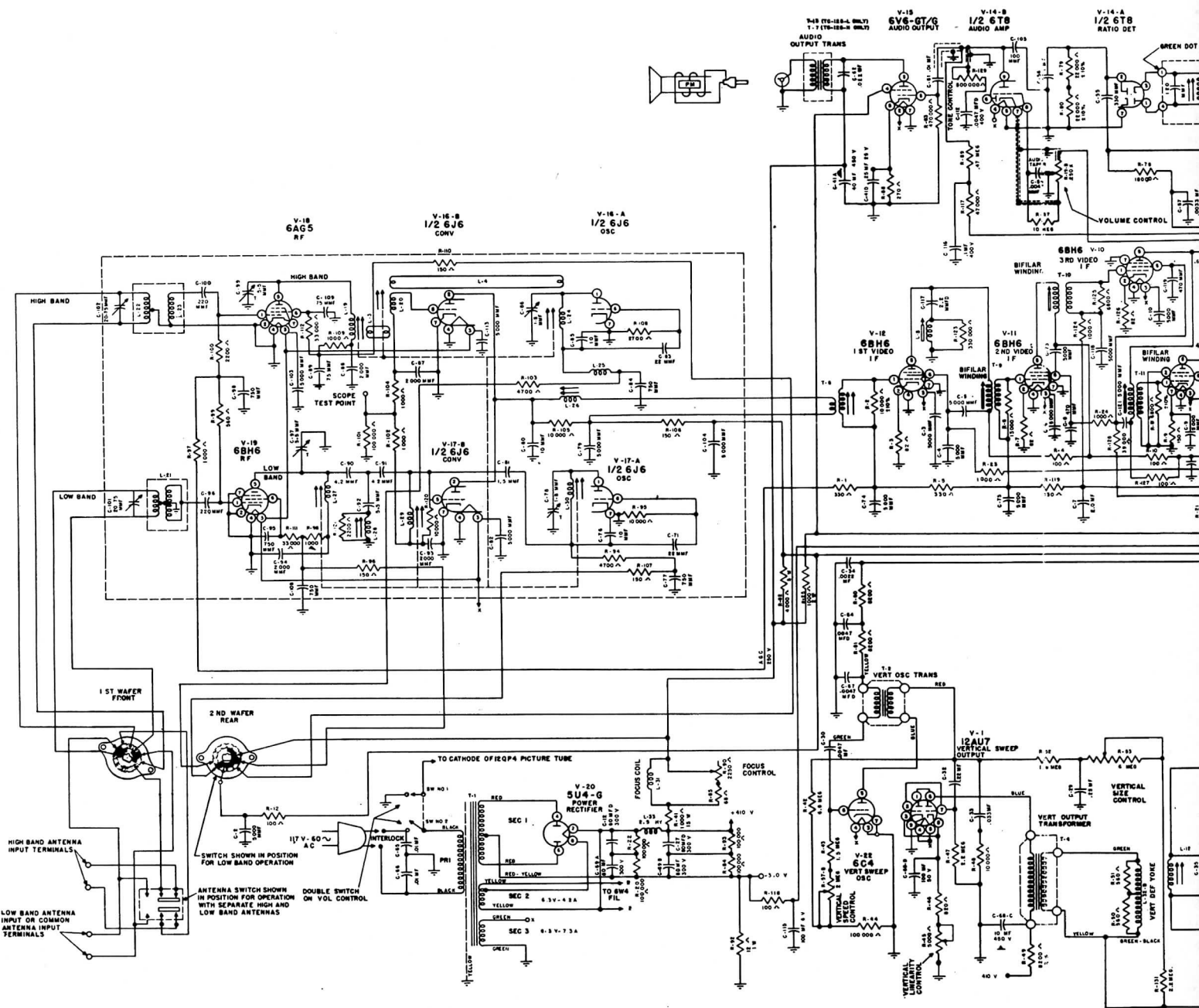
## TUBE VOLTAGE CHART

LOOKING AT INSIDE  
BOTTOM OF CHASSIS

## NOTES:

- 1- MEASUREMENTS ARE MADE AT 117 V. LINE USING 11 MEGOHM VACUUM TUBE VOLTMETER. ALL VOLTAGES ARE D.C. AND ARE POSITIVE WITH RESPECT TO CHASSIS GROUND EXCEPT WHERE NOTED.
- 2- ALL VOLTAGES ARE THE SAME IN ANY POSITION OF THE RANGE SWITCH EXCEPT AS SHOWN IN NOTES 3 AND 4.
- 3- VOLTAGES SHOWN ARE FOR LOW BAND (CHANNELS 2 TO 6).
- 4- VOLTAGES SHOWN ARE FOR HIGH BAND (CHANNELS 7 TO 13)
- 5- CONTRAST CONTROL SET MAXIMUM, ANTENNA DISCONNECTED.

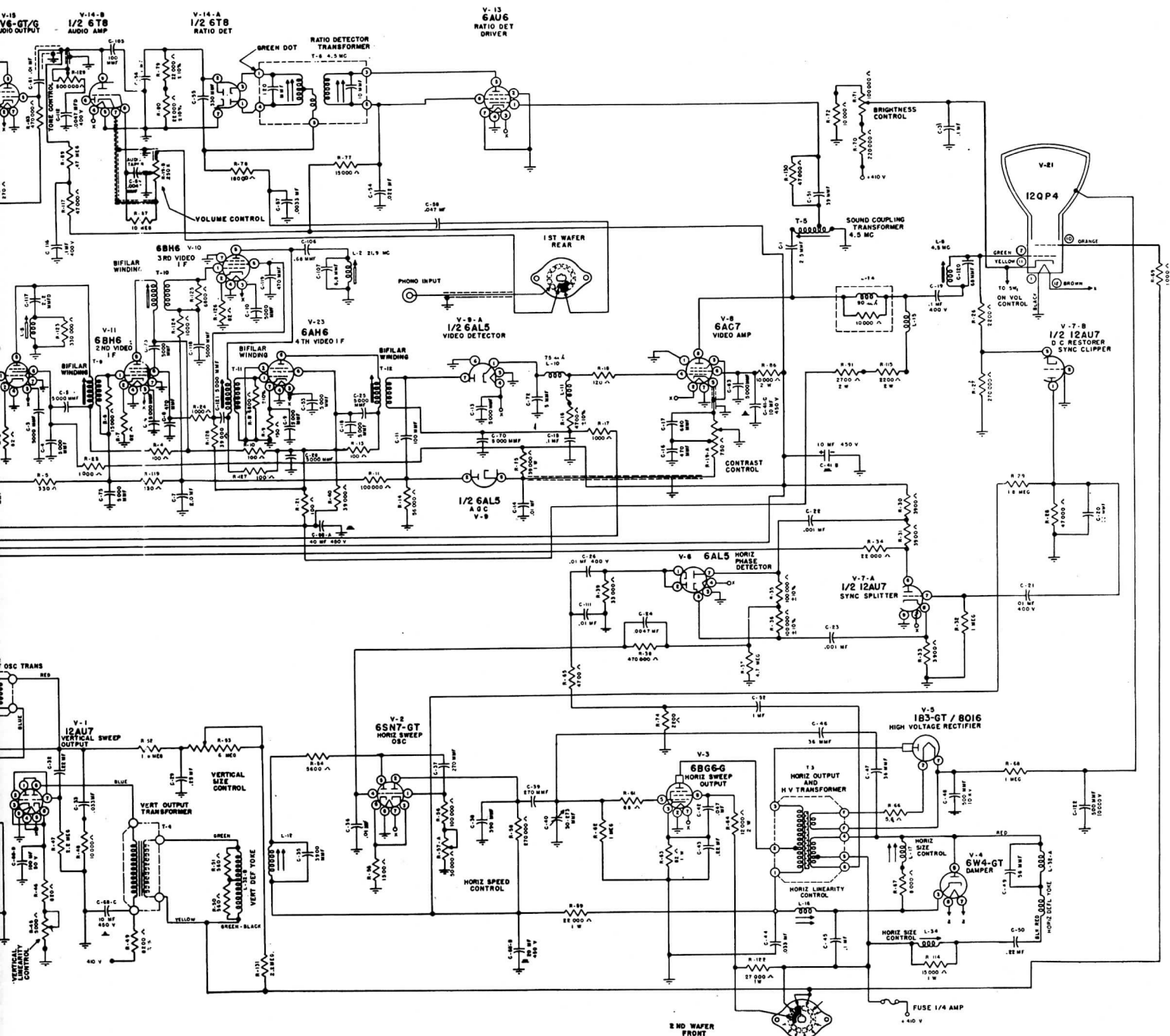




CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-1	110484	2.5 MMF	Ceramic	500
C-2	110586	5000 MMF	Ceramic	450
C-3	110586	5000 MMF	Ceramic	450
C-4	110586	5000 MMF	Ceramic	450
C-5	110586	5000 MMF	Ceramic	450
C-6	110586	5000 MMF	Ceramic	450
C-7	110675	2.0 MF	Paper	50
C-8	110464	470 MMF	Ceramic	350
C-9	110586	5000 MMF	Ceramic	450
C-10	110586	5000 MMF	Ceramic	450
C-11	110460	100 MMF	Ceramic	500
C-12	111067	80 MFD	Elect.	300
C-13	110586	5000 MMF	Ceramic	450

CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-14	110672	.01 MF	Ceramic	450
C-15	110661	.1 MF	Molded	200
C-16	110464	470 MMF	Ceramic	350
C-17	110465	680 MMF	Ceramic	350
C-18	110586	5000 MMF	Ceramic	450
C-19	110546	.1 MF	Molded	400
C-20	110653	22 MMF	Ceramic	500
C-21	110540	.01 MF	Molded	400
C-22	110534	.001 MF	Molded	400
C-23	110534	.001 MF	Molded	400
C-24	110538	.0047 MF	Molded	400
C-25	110586	5000 MMF	Ceramic	450
C-26	110540	.01 MF	Molded	400

CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-27	111067	80 MFD	Elect.	300
C-28	110586	5000 MMF	Ceramic	450
C-29	110464	470 MMF	Ceramic	350
C-30	110586	5000 MMF	Ceramic	450
C-31	110586	5000 MMF	Ceramic	450
C-32	110586	5000 MMF	Ceramic	450
C-33	110586	5000 MMF	Ceramic	450
C-34	110586	5000 MMF	Ceramic	450
C-35	110267	100 MMF	Ceramic	500
C-36	110586	5000 MMF	Ceramic	450
C-37	110267	100 MMF	Ceramic	500
C-38	110267	100 MMF	Ceramic	500
C-39	110267	100 MMF	Ceramic	500



VOLTAGE	CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE	CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
450	C-27	111067	80 MFD	Elect.	300	C-40	110037		Mica Trimmer	
200	C-28	110586	5000 MMF	Ceramic	450	C-41	111065	40-10-10-25	Elect.	450-25
350	C-29	110428	.25 MF	Paper	600	C-42	110544	.047 MF	Molded	400
350	C-30	110538	.0047 MF	Molded	400	C-43	110548	.22 MF	Molded	400
450	C-31	110546	.1 MF	Molded	400	C-44	110558	.033 MF	Molded	600
400	C-32	110548	.22 MF	Molded	400	C-45	110561	.1 MF	Molded	600-
500	C-33	110558	.033 MF	Molded	600	C-46	110664	36 MMF	Ceramic	1000
400	C-34	110536	.0022 MF	Molded	400	C-47	110664	36 MMF	Ceramic	1000
400	C-35	110272	3900 MMF	Mica	500	C-48	110658	500 MMF	Molded	10000
400	C-36	110540	.01 MF	Molded	400	C-49	110666	56 MMF	Ceramic	1000
400	C-37	110208	270 MMF	Mica	500	C-50	110548	.22 MF	Molded	400
450	C-38	110216	390 MMF	Mica	500	C-51	110665	39 MMF	Ceramic	400
400	C-39	110208	270 MMF	Mica	500	C-52	110546	.1 MF	Molded	400

CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-53	110586	5000 MMF	Ceramic	450
C-54	110542	.022 MF	Molded	400
C-55	110454	330 MMF	Ceramic	350
C-56	111063	1 MF	Elect.	50
C-57	110537	.0033 MF	Molded	400
C-58	110660	.047 MF	Molded	200
C-59	110538	.0047 MF	Molded	400
C-61	110540	.01 MF	Molded	400
C-62	110557	.022 MF	Molded	600
C-63	110586	5000 MMF	Ceramic	450
C-64	110538	.0047 MF	Molded	400
C-65	110568	.01 MF	Molded	1000
C-66	110568	.01 MF	Molded	1000
C-67	110538	.0047 MF	Molded	400
C-68	111068	40-20-10-100	Elect.	450-50
C-69	111064	80-80	Elect.	300-300
C-70	110586	5000 MMF	Ceramic	450
C-71	110653	22 MMF	Ceramic	500
C-72	110598	5 MMF	Ceramic	350
C-73	110586	5000 MMF	Ceramic	450
C-74	110586	5000 MMF	Ceramic	450
C-75	110586	5000 MMF	Ceramic	450
C-76	110656	10 MMF	Ceramic	400
C-77	110654	750 MMF	Ceramic	350
C-78	110034	1-8 MMF	Trimmer	
C-79	110586	5000 MMF	Ceramic	450
C-80	110656	10 MMF	Ceramic	400
C-81	110438	1.5 MMF	Ceramic	500
C-82	110586	5000 MMF	Ceramic	450
C-83	110653	22 MMF	Ceramic	500
C-84	110654	750 MMF	Ceramic	350
C-85	110656	10 MMF	Ceramic	400
C-86	110034	1-8 MMF	Trimmer	
C-87	110652	2000 MMF	Ceramic	350
C-88	110652	2000 MMF	Ceramic	350
C-89	110483	75 MMF	Ceramic	400
C-90	110673	4.2 MMF	Ceramic	350
C-91	110673	4.2 MMF	Ceramic	350
C-92	110655	5.5 MMF	Ceramic	400
C-93	110652	2000 MMF	Ceramic	350
C-94	110652	2000 MMF	Ceramic	350
C-95	110654	750 MMF	Ceramic	350
C-96	110462	220 MMF	Ceramic	350
C-97	110035	.5-5 MMF	Trimmer	
C-98	110654	750 MMF	Ceramic	350
C-99	110035	.5-5 MMF	Trimmer	
C-100	110462	220 MMF	Ceramic	350
C-101	27081	20-75 MMF	Trimmer	
C-102	27081	20-75 MMF	Trimmer	
C-103	110586	5000 MMF	Ceramic	450
C-104	110586	5000 MMF	Ceramic	450
C-105	110451	100 MMF	Ceramic	500
C-106	110437	.68 MMF	Ceramic	500
C-107	110671	6.8 MMF	Ceramic	500
C-108	110654	750 MMF	Ceramic	350
C-109	110483	75 MMF	Ceramic	400
C-111	110540	.01 MF	Molded	400
C-112	110538	.0047 MF	Molded	400
C-113	110586	5000 MMF	Ceramic	450
C-115	111070	100 MF	Elect.	6
C-116	110546	.1 MF	Molded	400

CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-117	110439	2.2 MMF	Ceramic	500
C-118	110586	5000 MMF	Ceramic	450
C-119	110464	470 MMF	Ceramic	350
C-120	110459	68 MMF	Ceramic	450
C-121	110586	5000 MMF	Ceramic	450
C-122	110658	500 MMF	Molded	10000
CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.
R-1	149098	330 ohms	1/2	20%
R-2	28170	10000 ohms	1/2	10%
R-3	28145	82 ohms	1/2	10%
R-4	149095	100 ohms	1/2	20%
R-5	149098	330 ohms	1/2	20%
R-6	149108	15000 ohms	1/2	20%
R-7	28145	82 ohms	1/2	10%
R-8	28168	6800 ohms	1/2	10%
R-9	149096	150 ohms	1/2	20%
R-10	149095	100 ohms	1/2	20%
R-11	149113	.1 Meg ohms	1/2	20%
R-12	149095	100 ohms	1/2	20%
R-13	149095	100 ohms	1/2	20%
R-14	28178	56000 ohms	1/2	10%
R-15	149189	39000 ohms	1 W	10%
R-16	28166	4700 ohms	1/2	10%
R-17	149101	1000 ohms	1/2	20%
R-18	28147	120 ohms	1/2	10%
R-19	145085	750 ohms 250K		POT
R-20	149113	.1 Meg	1/2	20%
R-21	149095	100 ohms	1/2	20%
R-22	149113	.1 Meg	1/2	20%
R-23	149101	1000 ohms	1/2	20%
R-24	149101	1000 ohms	1/2	20%
R-25	149044	1000 ohms	2 W	10%
R-26	149103	2200 ohms	1/2	20%
R-27	28184	.27 Meg	1/2	10%
R-28	149111	47000 ohms	1/2	20%
R-29	28194	1.8 Meg	1/2	10%
R-30	28165	3900 ohms	1/2	10%
R-31	28165	3900 ohms	1/2	10%
R-32	149119	1 Meg	1/2	20%
R-33	28165	3900 ohms	1/2	10%
R-34	149109	22000 ohms	1/2	20%
R-35	28006	.1 Meg.	1/2	10%
R-36	28006	.1 Meg	1/2	10%
R-37	149123	4.7 Meg	1/2	20%
R-38	149117	.47 Meg	1/2	20%
R-39	149110	33000 ohms	1/2	20%
R-40	28176	39000 ohms	1/2	20%
R-41	149332	1000 ohms	15 W	WW
R-42	149124	6.8 Meg	1/2	20%
R-43	149120	1.5 Meg	1/2	20%
R-44	149113	.1 Meg	1/2	20%
R-45	145079	5000 ohms		POT
R-46	28157	820 ohms	1/2	10%
R-47	149121	2.2 Meg	1/2	20%
R-48	149107	10000 ohms	1/2	20%
R-49	149054	8200 ohms	2 W	10%
R-50	28155	560 ohms	1/2	10%
R-51	28155	560 ohms	1/2	10%
R-52	28194	1.8 Meg	1/2	10%
R-53	145100	6 Meg		POT

CIRCUIT SYMBOL	PART NO.
R-54	149
R-55	149
R-56	149
R-57	145
R-58	28
R-59	149
R-60	28
R-61	149
R-62	149
R-63	149
R-64	149
R-65	149
R-66	149
R-67	149
R-68	149
R-69	149
R-70	149
R-71	145
R-72	149
R-74	149
R-77	149
R-78	28
R-79	27
R-80	27
R-81	28
R-82	149
R-83	149
R-84	149
R-85	149
R-86	149
R-87	149
R-88	149
R-89	149
R-90	145
R-91	149
R-92	149
R-93	149
R-94	149
R-95	149
R-96	149
R-97	149
R-98	149
R-99	28
R-100	149
R-101	149
R-102	149
R-103	149
R-104	149
R-105	149
R-106	149
R-107	149
R-108	28
R-109	149
R-110	149
R-111	149
R-112	149
R-114	149
R-115	149
R-117	149
R-118	149

VOLTAGE		CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.	CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.
500		R-54	149184	5600 ohms	1 W	10%	R-119	149098	330 ohms	1/2	20%
450		R-55	149102	1500 ohms	1/2 W	20%	R-120	149107	10000 ohms	1/2	20%
350		R-56	149113	.1 Meg	1/2	20%	R-121	149103	2200 ohms	1/2	20%
450		R-57	145101	50 K-2 Meg		POT	R-122	34578	27000 ohms	1 W	10%
450		R-58	28184	.27 Meg	1/2	10%	R-123	149116	330000 ohms	1/2	20%
10000		R-59	149146	22000 ohms	1 W	20%	R-124	149101	1000 ohms	1/2	20%
		R-60	28169	8200 ohms	1/2	10%	R-125	28168	6800 ohms	1/2	10%
1/2	20%	R-61	149094	68 ohms	1/2	20%	R-126	28145	82 ohms	1/2	10%
1/2	10%	R-62	149119	1 Meg	1/2	20%	R-127	149095	100 ohms	1/2	20%
1/2	10%	R-63	149166	82 ohms	1 W	10%	R-128	28176	39000 ohms	1/2	10%
1/2	20%	R-64	149055	12000 ohms	2 W	10%	R-129	145088	500000 ohms	1/4	POT
1/2	20%	R-65	149105	4700 ohms	1/2	20%	R-130	149111	47000 ohms	1/2	20%
1/2	20%	R-66	149271	5.6 ohms	1/2	20%	R-131	28195	2.2 Meg	1/5	10%
1/2	10%	R-67	149331	8000 ohms	10 W	WW					
1/2	10%	R-68	149119	1 Meg	1/2	20%	CIRCUIT SYMBOL	S-C PART NO.			
1/2	20%	R-69	149101	1000 ohms	1/2	20%			TYPE		
1/2	20%	R-70	149115	.22 Meg	1/2	20%	L-2	114668	COIL ASM (21.9 MC TRAP)		
1/2	20%	R-71	145084	.1 Meg		POT	L-3	20608	LINK (#24 POLYETHYLENE COND.)		
1/2	20%	R-72	149107	10000 ohms	1/2	20%	L-4	20608	LINK (#24 POLYETHYLENE COND.)		
1/2	20%	R-74	149103	2200 ohms	1/2	20%	L-5	114384	COIL ASM (21.6 MC TRAP)		
1/2	10%	R-77	149108	15000 ohms	1/2	20%	L-6	114383	COIL 4.5 MC TRAP		
1 W	10%	R-78	28173	18000 ohms	1/2	10%	L-10	114669	COIL ASM (PEAKING COIL)		
1/2	10%	R-79	27407	22000 ohms	1/2	10%	L-11	114356	COIL ASM (PEAKING COIL)		
1/2	20%	R-80	27407	22000 ohms	1/2	10%	L-12	114069	HORIZ. SWEEP OSC		
1/2	10%	R-81	28169	8200 ohms	1/2	10%	L-14	114670	COIL ASM (PEAKING COIL)		
	POT	R-82	149330	4000 ohms	5 W	WW	L-15	114641	COIL ASM (PEAKING COIL)		
1/2	20%	R-83	149117	.47 Meg	1/2	20%	L-16	114071	LINEARITY COIL		
1/2	20%	R-84	149113	.1 Meg	1/2	20%	L-17	114075	BOOSTER COIL		
1/2	20%	R-85	149069	68 ohms	2 W	20%	L-19	114066	COIL ASM (HI-BAND R F PRI)		
1/2	20%	R-86	149082	10000 ohms	2 W	20%	L-20	114066	COIL ASM (HI-BAND R F SEC)		
1/2	20%	R-87	149125	10 Meg	1/2	20%	L-21	114057	COIL ASM (LO-BAND ANT)		
2 W	10%	R-88	149170	270 ohms	1 W	10%	L-22	114647	COIL (HI-BAND ANT PRI)		
1/2	20%	R-89	149117	.47 Meg	1/2	20%	L-23	114646	COIL (HI-BAND ANT SEC)		
1/2	10%	R-90	145087	2250 ohms		POT	L-24	114066	COIL ASM (HI-BAND OSC)		
1/2	20%	R-91	149356	2700 ohms	2 W	10%	L-25	114060	COIL ASM (R F C)		
1/2	10%	R-92	149157	12 ohms	1 W	10%	L-26	114061	COIL ASM (VIDEO IF CONV PRI)		
1/2	10%	R-93	149113	.1 Meg	1/2	20%	L-27	114065	COIL ASM (LO-BAND R F PRI)		
1/2	10%	R-94	149105	4700 ohms	1/2	20%	L-28	114642	COIL ASM (LO-BAND R F TRIM)		
1/2	20%	R-95	149107	10000 ohms	1/2	20%	L-29	114065	COIL ASM (LO-BAND R F SEC)		
1/2	10%	R-96	149096	150 ohms	1/2	20%	L-30	114065	COIL ASM (LO-BAND OSC)		
1/2	20%	R-97	149101	1000 ohms	1/2	20%	L-31	114661	COIL ASM (FOCUS COIL)		
1/2	10%	R-98	149101	1000 ohms	1/2	20%	L-32	114659	HORIZ & VERT DEF YOKE		
1/2	10%	R-99	28155	560 ohms	1/2	10%	L-33	161020	FILTER CHOKE		
1/2	20%	R-100	149103	2200 ohms	1/2	20%	L-34	114074	COIL ASM (HOR SIZE CONT)		
1/2	20%	R-101	149113	.1 Meg	1/2	20%					
1/2	20%	R-102	149101	1000 ohms	1/2	20%	T-1	161420	TRANS POWER		
1/2	20%	R-103	149105	4700 ohms	1/2	20%	T-2	114658	TRANS VERT BL OSC		
15 W	WW	R-104	149101	1000 ohms	1/2	20%	T-3	161016	TRANS HORIZ DEFLECT		
1/2	20%	R-105	149107	10000 ohms	1/2	20%	T-4	161242	TRANS VERTICAL DEFL		
1/2	20%	R-106	149096	150 ohms	1/2	20%	T-5	114374	TRANS SOUND COUPLING		
1/2	20%	R-107	149096	150 ohms	1/2	20%	T-6	114375	TRANS RATIO DETECTOR		
	POT	R-108	28163	2700 ohms	1/2	10%	T-7	161249	TRANS AUDIO OUTPUT (TC-125-H)		
1/2	10%	R-109	149101	1000 ohms	1/2	20%	T-8	114377	COIL ASM (VID IF CONV SEC)		
1/2	20%	R-110	149096	150 ohms	1/2	20%	T-9	114376	IF TRANS (1st VIDEO)		
1/2	20%	R-111	149110	33000 ohms	1/2	20%	T-10	114376	IF TRANS (2nd VIDEO)		
2 W	10%	R-112	149110	33000 ohms	1/2	20%	T-11	114382	IF TRANS (3rd VIDEO)		
1/2	10%	R-114	149145	15000 ohms	1 W	20%	T-12	114376	IF TRANS (4th VIDEO)		
1/2	10%	R-115	149355	2200 ohms	2 W	10%	T-13	161238	TRANS AUDIO OUTPUT (TC-125-L)		
1/2	10%	R-117	149111	47000 ohms	1/2	20%					
	POT	R-118	149095	100 ohms	1/2	20%					

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Part No.  
15E1266  
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15L3541  
70H26215  
70H2615  
70E1232  
92A230  
65L3566  
82B708  
82E1522

VI-31-9

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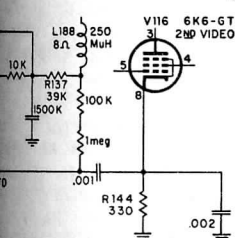
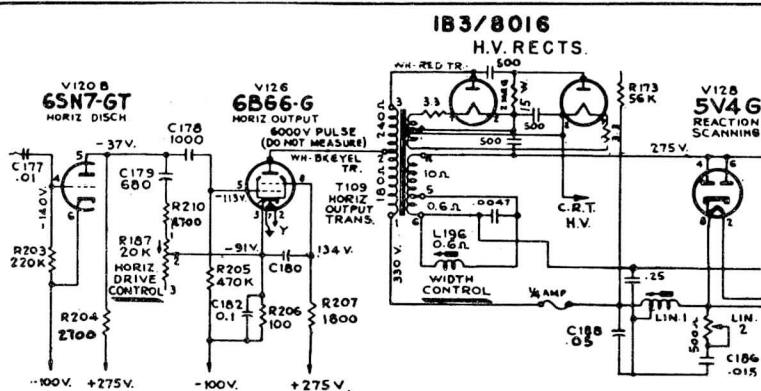


Fig. 1. A 6SN7-GT and the accompanying network have been added to the Starrett Ambassador.





## 1. DESCRIPTIVE SPECIFICATIONS.

**Power Supply** — 117 volts, 60 cycle, 210 watts.

**Kinescope** — 12QP4, 12LP4, or 12KP4, kinescope, magnetic, deflection, mechanical picture centering, and magnetic focus. (Focus coil permanent magnet with electromagnetic vernier.)

### Sweep Circuits.

**Horizontal** — Oscillator and driver tube, sweep amplifier tube, damper tube, and H.V. rectifier tube. Sweep frequency is automatically controlled.

**Vertical** — Oscillator, driver, and sweep amplifier tubes. Frequency is manually controlled.

### Radio Frequency and Intermediate Frequency Circuits.

**AM Picture** — Superhetrodyne, tuned RF stage, converter and 4 I.F. stages. 2nd Detector and Video Amplifier. (Sound traps in 1st and 3rd I.F. stages.) Keyed A.G.C. operating from video detector.

**FM Sound** — Intercarrier system, limiter, ratio detector, triode audio driver, and beam power amplifier.

**Number of Tubes** — 24 including kinescope and rectifiers.

**Frequency Ranges** — Low Band, 54 mc. thru 88 mc. High band 147 mc. thru 216 mc.

### Intermediate Frequencies.

**Picture Carrier** — 26.4 mc., 3.7 bandwidth at 50% response points.

**Sound Carrier** — 21.9 mc. Beat with picture carrier at 2nd detector to produce 4.5 mc.

### Front Controls.

**Top** — Dual Control

Center Knob — Vertical Hold.

Outside Knob — Horizontal Hold.

**2nd from Top** — Dual Control

Center Knob — Off-On-Volume.

Outside Knob — Picture Control.

**3rd from Top** — Dual Control.

Center Knob — Brightness Control.

Outside Knob — Hi-Lo Channel Switch.

**Bottom** — Dual Control.

Center Knob — Opera Glass.

Outside Knob — Tuning Control.

### Rear Controls.

1 — Horizontal Linearity.

2 — Horizontal Damping.

3 — Horizontal Size.

4 — Vertical Size Small.

5 — Vertical Linearity Small.

6 — Tone Switch.

7 — Vertical Linearity Large.

8 — Vertical Size Large.

9 — Focus.

### Speaker Equipment

12" Permanent Magnet — 3.2 ohm impedance.

### Audio Power Rating.

2.0 watts at 400 cycles with 10% distortion.

### Tubes — Types and Function.

V-1	12AU7	Vertical Sweep Output.
V-2	6SN7-GT	Horizontal Sweep Oscillator.
V-3	6BG6-G	Horizontal Sweep Output.
V-4	6W4-GT	Damper.
V-5	1B3-GT 8016	High Voltage Rectifier.
V-6	6AL5	Horizontal Phase Detector.
V-7	12AU7	Sync Splitter and DC Restorer.

V-8	6AC7	Video Amplifier.
V-9	6AL5	Video Detector and Limiter.
V-10	6BH6	3rd Video I.F. Amplifier.
V-11	6BH6	2nd Video I.F. Amplifier.
V-12	6BH6	1st Video I.F. Amplifier.
V-13	6AU6	Ratio Detector Driver.
V-14	6T8	Ratio Detector and Audio Amplifier.
V-15	6V6-GT G	Audio Output.
V-16	6J6	Hi-Band Converter and Oscillator.
V-17	6J6	Lo-Band Converter and Oscillator.
V-18	6BC5	Hi-Band R.F. Amplifier.
V-19	6BH6	Lo-Band R.F. Amplifier.
V-20	5U4-G	Power Rectifier.
V-21	{ 12KP4 12LP4 12QP4 }	Kinescope.
V-22	12AU7	Vertical Sweep Oscillator and Sync Clipper.
V-23	6AH6	4th I.F.-Video I.F. Amplifier.
V-24	6AU6	A.G.C.

## GENERAL ASSEMBLY PARTS LIST

Description	TC-125-LA-4 S-C Part No.	TC-125-L5-2 S-C Part No.	TC-125-LM-3 S-C Part No.
Cabinet Assembly.....	108155	108160	108154
Speaker.....	155154	155154	155154
Escutcheon—Tube Ring.....	125049	125048	125048
Mask Assembly.....	174016	174014	174014
Lens.....	138028	138028	138028
Back Panel Assembly.....	101131	101133	101131
Knob — Tuning.....	134132	134115	134115
Knob — 7-13, 2-6 (Range).....	134131	134117	134117
Knob — Brightness.....	134130	134120	134120
Knob — Opera Glass.....	134134	134134	134134
Knob — Picture (Contrast).....	134129	134118	134118
Knob — Volume.....	134128	134121	134121
Knob — Horizontal.....	134127	134116	134116
Knob — Vertical.....	134126	134119	134119
Name Plate—			
Stromberg-Carlson.....	121054	121049	121049
Tel Antenna—Loop Support.....	103018	103018	103018
Tel Antenna—Loop Assembly.....	139037	139037	139037

## 2. ALIGNMENT PROCEDURE.

### General.

All precautions for aligning high frequency devices should be observed. Signal generators and oscilloscope leads should be well shielded and as short as possible. If necessary to reduce regeneration, a metal plate should be placed on the bench where the alignment work is done.

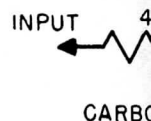
### Video I.F. Alignment.

The video I.F. system consists of a double tuned converter plate transformer followed by four single tuned stages. These four are the 1st, 2nd, 3rd, and 4th I.F. Stages. They are aligned as a "quadruple" unit previous to the adjustment of the double-tuned stage.

### Alignment of the "Quadruple".

1. Set the contrast control at the maximum contrast position.

2. Apply an ex D.C. to the A 100 ohms, R-
3. Connect the c amplifier, pin for this conn shielded cabl at the input e mize disturba on the cable. may result in
4. Connect the the grid of the the network sh



- The 47 ohm recommended generator output low grid to ground back from other
5. Adjust the gain to produce a 2 oscilloscope scale be maintained procedure by re-a
  6. Adjust the 21. marker is coinc shown below.
  7. The 21 mc. L-5 out using a ma the approximate response between be kept at a mi
  8. The tuning slugs their approximate

No. 1 — 1st I.F.  
No. 2 — 2nd I.F.  
No. 3 — 3rd I.F.  
No. 4 — 4th I.F.

Refer to the circle shown below for

Maintaining the the slugs should proximately as 22.7 mc. marker



and Limiter.  
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Oscillator  
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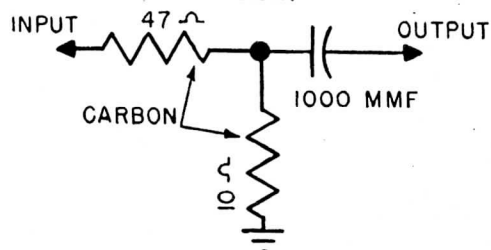
TC-125-LM-3  
 S-C Part No.  
 108154  
 155154  
 125048  
 174014  
 138028  
 101131  
 134115  
 134117  
 134120  
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num contrast

- Apply an external bias of approximately 3V D.C. to the AGC line at the junction of R-119, 100 ohms, R-73, 27,000 ohms, and C-7, 10 MF.
- Connect the oscilloscope to the grid of the video amplifier, pin 4 of V-8 (6AC7). The lead used for this connection should be a low capacity type shielded cable. A 47,000 ohm isolating resistor at the input end of the cable is advisable to minimize disturbances caused by I.F. energy pickup on the cable. Failure to observe this precaution may result in incorrect alignment of the receiver.
- Connect the output of the sweep generator to the grid of the 1st I.F. amplifier V-12 (6BH6) thru the network shown below.



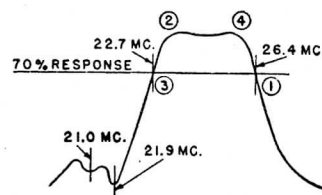
The 47 ohm and 10 ohm resistor network is recommended to give proper termination to the generator output cable and also to provide a low grid to ground impedance to minimize feedback from other receiver circuits.

- Adjust the gain of the scope and the signal input to produce a 2 volt peak to peak output on the oscilloscope screen. This level of output should be maintained throughout the alignment procedure by re-adjusting the bias and/or the input.
- Adjust the 21.9 mc. trap L-2 so that the 21.9 marker is coincident with the valley of the trap as shown below.
- The 21 mc. L-5 trap may then be adjusted (without using a marker) to give the response curve the approximate shape as shown below. The response between the 21.9 mc. and 21 mc. should be kept at a minimum.
- The tuning slugs are identified in accordance with their approximate frequency settings as follows:

- No. 1 — 1st I.F. Plate coil, T-9 hi-hi frequency.
- No. 2 — 2nd I.F. Plate coil, T-10 hi-lo frequency.
- No. 3 — 3rd I.F. Plate coil, T-11 lo-lo frequency.
- No. 4 — 4th I.F. Plate coil, T-12 lo-hi frequency.

Refer to the circled numbers on the response curve shown below for the relative positions.

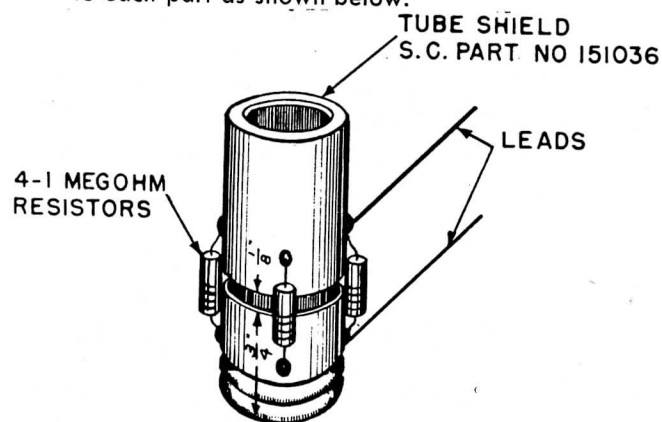
Maintaining these relative frequency positions, the slugs should be set to produce a curve approximately as shown below with 26.4 mc. and 22.7 mc. markers at the 70% response.



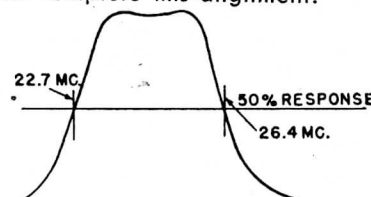
- It is suggested the traps be checked to insure correct frequency setting after finishing Step No. 8.

#### Alignment of the Double-Tuned Stage.

- The band switch is turned to the Lo Band position and the external bias is still applied to the AGC bus.
- The output from the sweep generator is coupled into the plate of the Lo Band converter tube V-17, 6J6, by means of the special tube shield. This special shield is constructed by cutting tube shield SC No. 151036 in two,  $\frac{3}{4}$ " from the base. Separate the two pieces by  $\frac{1}{8}$ " and secure by soldering 4-1 meg. ohm  $\frac{1}{2}$  watt carbon resistors to each part as shown below.



- Adjust the primary L-26 and secondary T-8 of the double-tuned pair until the 26.4 mc. and 22.7 mc. markers are at 50% response as shown below.
- It may be necessary to make slight adjustments on the "Quadruple" in order to achieve the desired response, but caution should be exercised to prevent complete mis-alignment.



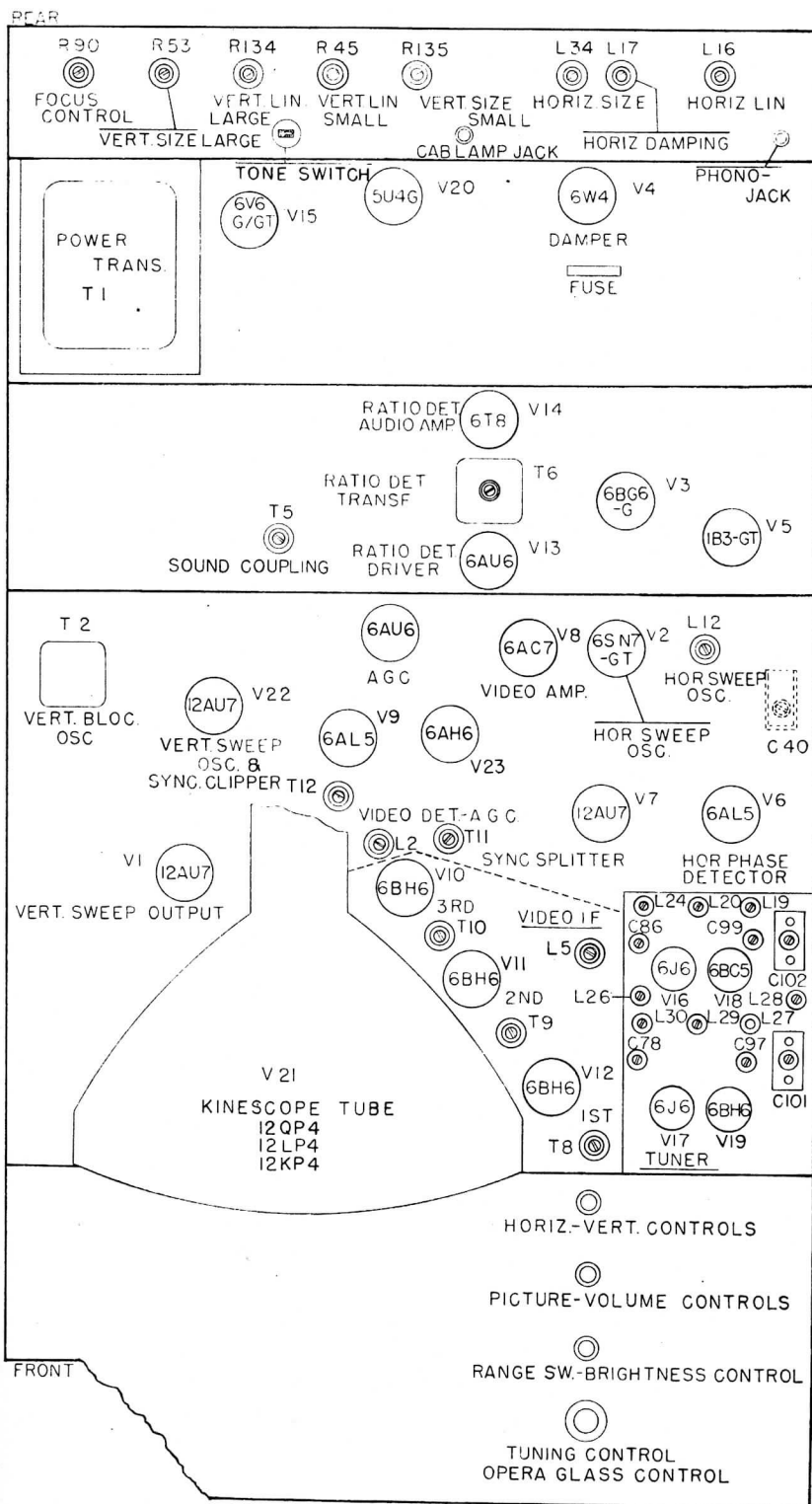
#### Sound I.F. Alignment.

- Apply a modulated 4.5 mc. signal to the grid of the video amplifier, pin 4 of V-8 (6AC7). Connect the input of the oscilloscope thru the crystal detector shown below to the grid of the kinescope tube.

MODEL TC-125,  
 Series "O"



CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-1	110484	2.5 MMF	Ceramic	500
C-2	110586	5000 MMF	Ceramic	450
C-3	110586	5000 MMF	Ceramic	450
C-4	110586	5000 MMF	Ceramic	450
C-5	110586	5000 MMF	Ceramic	450
C-6	110586	5000 MMF	Ceramic	450
C-7	111084	10 MF	Elect.	25
C-8	110464	470 MMF	Ceramic	350
C-9	110586	5000 MMF	Ceramic	450
C-10	110586	5000 MMF	Ceramic	450
C-11	110540	.01 MF	Molded	400
C-12	111067	80 MFD	Elect.	300
C-13	110586	5000 MMF	Ceramic	450
C-14	110660	.047 MF	Molded	200
C-16	110548	.22 MF	Molded	400
C-17	110263	470 MMF	Mica	500
C-18	110586	5000 MMF	Ceramic	450
C-19	110546	.1 MF	Molded	400
C-21	110540	.01 MF	Molded	400
C-22	110534	.001 MF	Molded	400
C-23	110534	.001 MF	Molded	400
C-24	110538	.0047 MF	Molded	400
C-25	110586	5000 MMF	Ceramic	450
C-27	111067	80 MFD	Elect.	300
C-28	110586	5000 MMF	Ceramic	450
C-29	110679	.25 MF	Paper	600
C-30	110538	.0047 MF	Molded	400
C-31	110546	.1 MF	Molded	400
C-32	110548	.22 MF	Molded	400
C-33	110558	.033 MF	Molded	600
C-34	110536	.0022 MF	Molded	400
C-35	110272	3900 MMF	Mica	500
C-36	110767	.15 MF	Molded	200
C-37	110208	270 MMF	Mica	500
C-38	110216	390 MMF	Mica	500
C-39	110208	270 MMF	Mica	500
C-40	110037	30-273 MMF	Mica Trimmer	
C-41	111065	40-10-10-25	Elect.	450-25
C-42	110544	.047 MF	Molded	400
C-43	111030	5 MFD	Elect.	50
C-44	110558	.033 MF	Molded	600
C-45	110561	.1 MF	Molded	600
C-46	110664	36 MMF	Ceramic	1000
C-47	110664	36 MMF	Ceramic	1000
C-48	110658	500 MMF	Molded	10000
C-49	110666	56 MMF	Ceramic	1000
C-50	110548	.22 MF	Molded	400
C-51	110665	39 MMF	Ceramic	400



CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE	CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE	CIRCUIT SYMBOL	S-C PART NO.	CAPACITY	TYPE	VOLTAGE
C-53	110586	5000 MMF	Ceramic	450	C-107	110499	20 MMF	Ceramic	500	R-37	149			
C-54	110561	0.1 MF	Molded	600	C-108	110654	750 MMF	Ceramic	350	R-38	149			
C-55	110454	330 MMF	Ceramic	350	C-109	110483	75 MMF	Ceramic	400	R-39	28			
C-56	111030	5 MF	Elect.	50	C-112	110538	.0047 MF	Molded	400	R-40	149			
C-57	110537	.0033 MF	Molded	400	C-113	110586	5000 MMF	Ceramic	450	R-41	149			
C-58	110660	.047 MF	Molded	200	C-115	111082	500 MMF	Elect.	12	R-42	149			
C-59	110538	.0047 MF	Molded	400	C-116	110546	.1 MF	Molded	400	R-43	149			
C-61	110540	.01 MF	Molded	400	C-117	110439	2.2 MMF	Ceramic	500	R-44	149			
C-62	110557	.022 MF	Molded	600	C-118	110586	5000 MMF	Ceramic	450	R-45	145			
C-63	110586	5000 MMF	Ceramic	450	C-119	110464	470 MMF	Ceramic	350	R-46	28			
C-64	110538	.0047 MF	Molded	400	C-121	110586	5000 MMF	Ceramic	450	R-47	149			
C-65	110568	.01 MF	Molded	1000	C-122	110658	500 MMF	Molded	10000	R-48	149			
C-66	110568	.01 MF	Molded	1000	C-123	110678	.056 MF	Molded	400	R-49	149			
C-67	110538	.0047 MF	Molded	400	C-124	110681	1500 MMF	Ceramic	500	R-50	28			
C-68	111068	40-20-10-100	Elect.	450-50						R-51	28			
C-69	111064	80-80	Elect.	300-300						R-52	28			
C-70	110586	5000 MMF	Ceramic	450						R-53	145			
C-71	110653	22 MMF	Ceramic	500						R-54	149			
C-72	110598	5 MMF	Ceramic	350						R-55	149			
C-73	110586	5000 MMF	Ceramic	450						R-56	149			
C-74	110586	5000 MMF	Ceramic	450						R-57	145			
C-75	110586	5000 MMF	Ceramic	450						R-58	28			
C-76	110656	10 MMF	Ceramic	400						R-59	149			
C-77	110654	750 MMF	Ceramic	350						R-60	28			
C-78	110034	1-8 MMF	Trimmer							R-61	149			
C-79	110586	5000 MMF	Ceramic	450						R-62	149			
C-80	110656	10 MMF	Ceramic	400						R-63	149			
C-81	110438	1.5 MMF	Ceramic	500						R-64	149			
C-82	110586	5000 MMF	Ceramic	450						R-65	149			
C-83	110653	22 MMF	Ceramic	500						R-66	149			
C-84	110654	750 MMF	Ceramic	350						R-67	149			
C-85	110656	10 MMF	Ceramic	400						R-68	149			
C-86	110034	1-8 MMF	Trimmer							R-69	149			
C-87	110652	2000 MMF	Ceramic	350						R-70	149			
C-88	110652	2000 MMF	Ceramic	350						R-71	145			
C-89	110483	75 MMF	Ceramic	400						R-72	149			
C-90	110667	4.5 MMF	Ceramic	350						R-73	28			
C-91	110667	4.5 MMF	Ceramic	350						R-74	149			
C-92	110655	5.5 MMF	Ceramic	400						R-77	149			
C-93	110652	2000 MMF	Ceramic	350						R-78	28			
C-94	110652	2000 MMF	Ceramic	350						R-79	27			
C-95	110654	750 MMF	Ceramic	350						R-80	27			
C-96	110462	220 MMF	Ceramic	350						R-81	28			
C-97	110035	.5-5 MMF	Trimmer							R-82	149			
C-98	110654	750 MMF	Ceramic	350						R-83	149			
C-99	110035	.5-5 MMF	Trimmer							R-84	149			
C-100	110462	220 MMF	Ceramic	350						R-85	149			
C-101	27081	20-75 MMF	Trimmer							R-86	149			
C-102	27081	20-75 MMF	Trimmer							R-87	149			
C-103	110586	5000 MMF	Ceramic	450						R-88	149			
C-104	110586	5000 MMF	Ceramic	450						R-89	149			
C-105	110451	100 MMF	Ceramic	500						R-90	1450			
C-106	110438	1.5 MMF	Ceramic	500						R-91	1493			
										R-92	1491			
										R-93	1491			

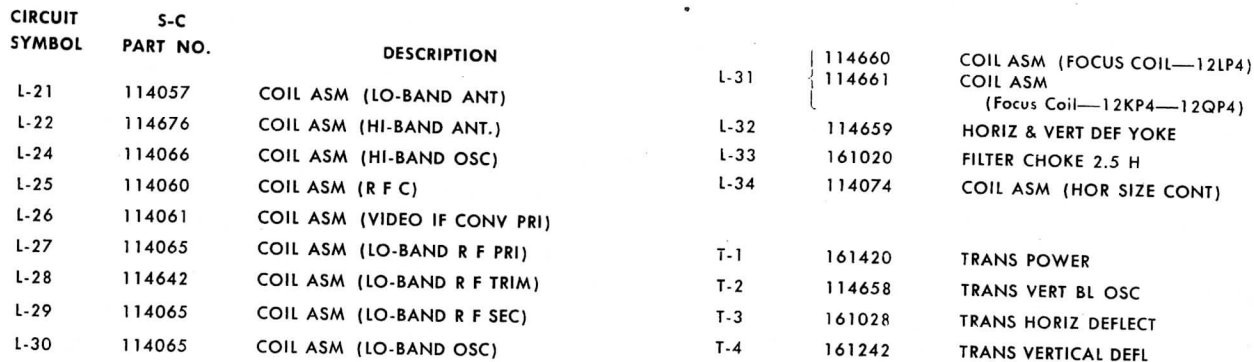
CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.
R-1	149098	330 ohms	1/2	20 %
R-2	28170	10000 ohms	1/2	10 %
R-3	28145	82 ohms	1/2	10 %
R-4	149095	100 ohms	1/2	20 %
R-5	149098	330 ohms	1/2	20 %
R-6	28168	6800 ohms	1/2	10 %
R-7	28145	82 ohms	1/2	10 %
R-8	28168	6800 ohms	1/2	10 %
R-9	149096	150 ohms	1/2	20 %
R-10	149095	100 ohms	1/2	20 %
R-11	149027	22 ohms	2 W	10 %
R-12	149095	100 ohms	1/2	20 %
R-13	37200	8200 ohms	1 W	10 %
R-14	149119	1 Megohm	1/2	20 %
R-15	149111	47000 ohms	1/2	20 %
R-16	28166	4700 ohms	1/2	10 %
R-17	149113	0.1 Meg.	1/2	20 %
R-18	28147	120 ohms	1/2	10 %
R-19	145077	750 ohm 250K		POT
R-20	149113	.1 Meg	1/2	20 %
R-21	149095	100 ohms	1/2	20 %
R-22	149113	.1 Meg	1/2	20 %
R-23	149101	1000 ohms	1/2	20 %
R-24	149101	1000 ohms	1/2	20 %
R-25	149044	1000 ohms	2 W	10 %
R-26	149103	2200 ohms	1/2	20 %
R-27	149117	470000 ohms	1/2	20 %
R-28	149110	33000 ohms	1/2	20 %
R-29	149116	330000 ohms	1/2	20 %
R-30	28155	560 ohms	1/2	10 %
R-31	28165	3900 ohms	1/2	10 %
R-32	149119	1 Meg	1/2	20 %
R-33	28164	3300 ohms	1/2	10 %
R-34	149109	22000 ohms	1/2	20 %
R-35	28006	.1 Meg	1/2	10 %
R-36	28006	.1 Meg	1/2	10 %

VOLTAGE	CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.	CIRCUIT SYMBOL	S-C PART NO.	RESISTANCE	WATT	TOL.
500	R-37	149123	4.7 Meg	1/2	20%					
350	R-38	149117	.47 Meg	1/2	20%	R-94	149105	4700 ohms	1/2	20%
400	R-39	28146	100 ohms	1/2	10%	R-95	149107	10000 ohms	1/2	20%
400	R-40	149095	100 ohms	1/2	20%	R-96	149096	150 ohms	1/2	20%
450	R-41	149332	1000 ohms	15 W	WW	R-97	149101	1000 ohms	1/2	20%
	R-42	149124	6.8 Meg	1/2	20%	R-98	149101	1000 ohms	1/2	20%
12	R-43	149120	1.5 Meg	1/2	20%	R-99	28155	560 ohms	1/2	10%
400	R-44	149113	.1 Meg	1/2	20%	R-100	149103	2200 ohms	1/2	20%
500	R-45	145079	5000 ohms		POT	R-101	149113	.1 Meg	1/2	20%
450	R-46	28157	820 ohms	1/2	10%	R-102	149101	1000 ohms	1/2	20%
350	R-47	149121	2.2 Meg	1/2	20%	R-103	149105	4700 ohms	1/2	20%
450	R-48	149107	10000 ohms	1/2	20%	R-104	149101	1000 ohms	1/2	20%
10000	R-49	149054	8200 ohms	2 W	20%	R-105	149107	10000 ohms	1/2	20%
400	R-50	28155	560 ohms	1/2	10%	R-106	149096	150 ohms	1/2	20%
500	R-51	28155	560 ohms	1/2	10%	R-107	149096	150 ohms	1/2	20%
	R-52	28194	1.8 Meg	1/2	10%	R-108	28163	2700 ohms	1/2	10%
	R-53	145100	6 Meg		POT	R-109	149101	1000 ohms	1/2	20%
	R-54	149184	5600 ohms	1 W	10%	R-110	149096	150 ohms	1/2	20%
	R-55	149102	1500 ohms	1/2	20%	R-111	149110	33000 ohms	1/2	20%
	R-56	149113	.1 Meg	1/2	20%	R-112	149110	33000 ohms	1/2	20%
	R-57	145101	50K2 Meg		POT	R-114	149145	15000 ohms	1 W	20%
	R-58	28184	.27 Meg	1/2	10%	R-115	149355	2200 ohms	2 W	10%
	R-59	149084	22000 ohms	2 W	20%	R-117	149111	47000 ohms	1/2	20%
	R-60	28169	8200 ohms	1/2	10%	R-118	149095	100 ohms	1/2	20%
	R-61	149094	68 ohms	1/2	20%	R-119	149095	100 ohms	1/2	20%
	R-62	149119	1 Meg	1/2	20%	R-120	149107	10000 ohms	1/2	20%
	R-63	149166	82 ohms	1 W	10%	R-121	149103	2200 ohms	1/2	20%
	R-64	149055	12000 ohms	2 W	10%	R-122	34578	27000 ohms	1 W	10%
	R-65	149111	47000 ohms	1/2	20%	R-123	149116	330000 ohms	1/2	20%
	R-66	149271	5.6 ohms	1/2	10%	R-124	149095	100 ohms	1/2	20%
	R-67	149331	8000 ohms	10 W	WW	R-125	28168	6800 ohms	1/2	10%
	R-68	149202	680000 ohms	1 W	10%	R-126	28145	82 ohms	1/2	10%
	R-69	149101	1000 ohms	1/2	20%	R-127	149095	100 ohms	1/2	20%
	R-70	149115	.22 Meg	1/2	20%	R-128	28176	39000 ohms	1/2	10%
	R-71	145084	.1 Meg		POT	R-130	149111	47000 ohms	1/2	20%
	R-72	149107	10000 ohms	1/2	20%	R-131	149120	1.5 Meg.	1/2	20%
	R-73	28174	27000 ohms	1/2	10%	R-132	149117	.47 Meg.	1/2	20%
	R-74	149103	2200 ohms	1/2	20%	R-134	145079	5000 ohms		POT
	R-77	149111	47000 ohms	1/2	20%	R-135	145082	100 ohms		POT
	R-78	28173	18000 ohms	1/2	10%					
	R-79	27407	22000 ohms	1/2	10%					
	R-80	27407	22000 ohms	1/2	10%					
	R-81	28169	8200 ohms	1/2	10%					
	R-82	149330	4000 ohms	5 W	WW					
	R-83	149117	.47 Meg	1/2	20%					
	R-84	149113	.1 Meg	1/2	20%					
	R-85	149069	68 ohms	2 W	20%					
	R-86	149082	10000 ohms	2 W	20%					
	R-87	149125	10 Meg	1/2	20%					
	R-88	149170	270 ohms	1 W	10%					
	R-89	149117	.47 Meg	1/2	20%					
	R-90	145087	2250 ohms	4 W	POT					
	R-91	149356	2700 ohms	2 W	10%					
	R-92	149157	12 ohms	1 W	10%					
	R-93	149113	.1 Meg	1/2	20%					

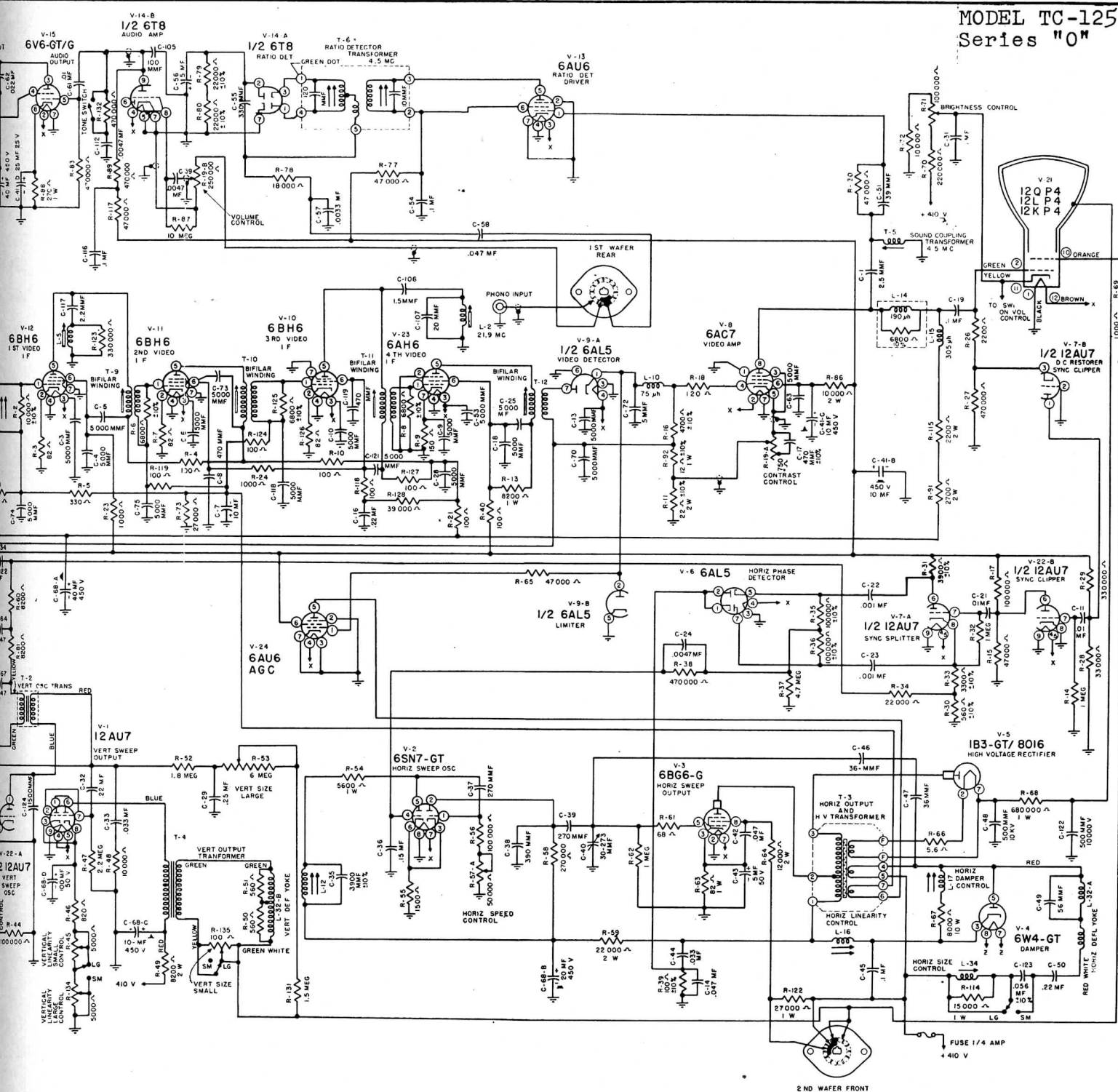
  

CIRCUIT SYMBOL	S-C PART NO.	DESCRIPTION
L-2	114394	COIL ASM (21.9 MC TRAP)
L-3	20608	LINK (No. 24 POLYETHYLENE)
L-4	20608	LINK (No. 24 POLYETHYLENE)
L-5	114384	COIL ASM (TRAP)
L-10	114669	COIL ASM (PEAKING COIL)
L-12	114069	HORIZ. SWEEP OSC
L-14	114656	COIL ASM (PEAKING COIL)
L-15	114655	COIL ASM (PEAKING COIL)
L-16	114071	LINEARITY COIL
L-17	114075	BOOSTER COIL
L-19	114066	COIL ASM (HI-BAND R F PRI)
L-20	114066	COIL ASM (HI-BAND R F SEC)

MODEL TC-125,  
Series "0"





MODEL TC-125,  
Series "O"

COIL ASM (FOCUS COIL—12LP4)  
COIL ASM  
(Focus Coil—12KP4—12QP4)  
HORIZ & VERT DEF YOKE  
FILTER CHOKE 2.5 H  
COIL ASM (HOR SIZE CONT)

TRANS POWER  
TRANS VERT BL OSC  
TRANS HORIZ DEFLECT  
TRANS VERTICAL DEFL

T-5 114395  
T-6 114375  
T-7 161249  
T-8 114377  
T-9 114376  
T-10 114376  
T-11 114382  
T-12 114376  
T-13 114635  
T-14 114645

TRANS SOUND COUPLING  
TRANS RATIO DETECTOR  
TRANS AUDIO OUTPUT  
COIL ASM (VID IF CONV SEC)  
IF TRANS (1st VIDEO)  
IF TRANS (2nd VIDEO)  
IF TRANS (3rd VIDEO)  
IF TRANS (4th VIDEO)  
ION TRAP—12LP4  
ION TRAP—12QP5

coil assemblies the channel sequence  
changed at will.

Vernier tuning—Vernier oscillator tun-  
provided by an auxiliary capacitor  
d across the plate portion of the tank  
Average coverage on the low range  
5 megacycles; on the high range,  $\pm 1.6$   
cycles.

#### Approximate Gain Readings

Input	Output
7,000 $\mu$ v	100,000 $\mu$ v
7,000 $\mu$ v	100,000 $\mu$ v
5,500 $\mu$ v	100,000 $\mu$ v
4,400 $\mu$ v	100,000 $\mu$ v
3,500 $\mu$ v	100,000 $\mu$ v

measured on Measurements Corpora-  
TVM #62 at point C to ground on  
Point C loaded to ground with a  
-ohm resistor only no i-f tube in cir-  
Points A, A<sub>1</sub> and C shown on schematic.

I-F Rejection Ratio	Image Rejection Ratio	Signal/Noise Ratio
1000:1	2000:1	8.1
2000:1	550:1	11.7
4000:1	590:1	14.2
5000:1	240:1	14.6
5000:1	240:1	14.6

#### Input Balance Ratio

Input balance ratios measured:

Ratio	Channel	Ratio
43.5	8	8.37
8.42	9	11.1
9.76	10	14.8
6.9	11	24
13.2	12	21
1.9	13	22.3

#### Oscillator Radiation

tion as measured at the antenna termi-  
with a tuned r-f voltmeter.

Push-Pull	Push-Pull
57,500	17,000
28,000	12,000
18,000	16,000
16,500	16,000
75,000	45,000
16,000	11,000
20,000	22,500
30,000	22,000
42,000	45,000
45,000	40,000
100,000	43,000
100,000	25,000

selectivity of the r-f response shall be  
d in terms of the attenuation at a band-  
of 4.5 Mc and of the bandwidth at an  
ation of 6 db. With a sweep generator  
ected to the antenna terminals and an  
oscope connected to terminal G (see  
atic), the sound and picture carriers  
ld to within 3-db attenuation from the  
of the r-f curve. Maximum bandwidth  
down is 11 Mc.

#### Antenna Impedance Match

Channel	Standing Wave Ratio
2	2.3:1
6	1.8:1
7	2.5:1
13	2.5:1

#### Intermediate Frequencies

01 and TV-103 Tuners

Models are aligned to give frequencies of  
Mc and 25.75 Mc for the sound and pic-  
carriers at the i-f output of the tuner.  
Sound i-f assemblies have the following  
stems:

Sound trap: 21.0 Mc to 22.0 Mc  
Plate circuit: 19.5 Mc to 27.5 Mc.

Adjustment of the brass-oscillator tuning  
slugs over plus and minus one turn from the  
aligned position provide a range of 4 Mc on  
all channels so that the tuner may be used to  
produce intermediate frequencies of 21.0 Mc  
to 22.0 Mc for the sound carrier and 25.5 Mc  
to 26.5 Mc for the picture carrier.

TV-100 and TV-102 tuners are single  
peaked at approximately 23 Mc. Tuning range  
is from approximately 18.0 Mc to 27.0 Mc.

TV-104 and TV-111 are double peaked with  
peaks tuned to approximately 22 and 25.5 Mc.

#### Oscillator Characteristics

Stability—After one minute from starting  
the long time warm-up drift is approximately  
150 kc on channel 13 and 50 kc on channel 6.

Switch resetability—Maximum detuning of  
oscillator circuit when switched is approxi-  
mately 100 kc on channel 13. Minimum B+  
voltage, 120 volts, without loss of gain of  
tuner. Reduction of B+ to 90 v results in ap-  
proximately 2:1 loss of gain. Change of oscil-  
lator frequency from 150 volts to 90 volts  
results in slightly detectable change in sound  
Torque

Torque is held to a maximum of 90 inch-  
ounces.

#### Stromberg-Carlson TC10, TC125 Series

The series capacitors C90 and C91 in the  
low-band coupling network have been  
changed from 4.2  $\mu$ f to 4.5  $\mu$ f (part no.  
110668).

Capacitor C43 in the horizontal-sweep out-  
put stage has been changed from 0.22  $\mu$ f,  
400 volts, to 5  $\mu$ f, 50 volts (part no. 111030).

Resistor R59 has been changed from  
22,000 ohms, 1/2 watt in TC10 and from  
22,000 ohms, 1 watt in TC125, to 22,000  
ohms, 2 watts. The required dissipation of  
about 1 watt was too great for the half-watt  
value.

A bent metal shield has been added to  
cover the underside of the first audio-ampli-  
fier tube socket to prevent extraneous audio  
pickup. This shield is designated part num-  
ber 151104, and mounts with a PK screw  
which is already in use at that point.

Light vertical fold lines in the picture can  
usually be corrected by slight readjustment  
of the horizontal-size-control trimmer capaci-  
tor. This capacitor is located in the grid  
circuit of the 6BG6 horizontal sweep output  
tubes and bears the symbol of C40. The ad-  
justment is accessible from the underside of  
the chassis.

To obtain a greater range of contrast, the  
750-ohm potentiometer (part no. 145085) has  
been changed to a 3,000-ohm potentiometer  
(part no. 145105) in the R19A position. The  
3,000-ohm potentiometer will be substituted  
on all replacement orders in a package as-  
sembly, number 81539, which also includes a  
47- $\mu$ f capacitor (part no. 110597) and in-  
structions for making the change.

#### Stromberg-Carlson TC10 Series

The R68, 1-megohm, 1/2-watt resistor, in  
series with the high voltage, has been  
changed to a 680,000-ohm, 1-watt value  
(part no. 149202). If flashing horizontal  
streaks or lines are observed in a TC10H  
picture when the brightness control is ad-  
vanced, the receiver may have a defective

1-megohm resistor in the R68 position which  
should be changed to the 680,000-ohm value,  
even though the resistor outwardly appears  
to be good. This resistor will be found on  
the 1B3 socket terminal in the high-voltage  
case.

A 150,000-ohm, 1/2-watt resistor (part no.  
27640) has been substituted for the 39,000-  
ohm, 1-watt resistor in the R15 position.

The first i-f screen resistor R23 has been  
changed from 33,000 ohms, 1/2 watt, to  
56,000 ohms, 1/2 watt (part no. 28178).

Resistor R66 in the 1B3 filament circuit  
has been changed from 3.3 ohms to 5.6 ohms  
(part no. 149271).

Resistor R43 may be a 1.8-megohm or a  
1.5-megohm resistor, if the R57 potentiom-  
eter in the vertical sweep oscillator is part  
number 145086 or 145102, respectively.

#### Stromberg-Carlson TC and TS Series

Following are the part numbers of the  
movable iron cores and the respective coils  
used in the tuning assembly on TS and TC  
receivers:

Low-band oscillator	Core no. 118039 with coil no. 114065
Hi-band oscillator	Core no. 118030 with coil no. 114066
Low-band converter	Core no. 118029 with coil no. 114065
Hi-band converter	Core no. 118035 with coil no. 114066
Low-band r.f.	Core no. 118029 with coil no. 114065
Hi-band r.f.	Core no. 118035 with coil no. 114066

Note: The glass coil forms are color coded (red, blue,  
and yellow) to indicate the range of diameter size.

In model TC receivers, to assure maxi-  
mum sensitivity of the high-band section of  
the television tuner in TC receivers, a 6BC5  
tube (part no. 110675) is being used, in place  
of the 6AG5 tube in the r-f amplifier posi-  
tion. The circuit remains unchanged.

#### Stromberg-Carlson TC125 Series

The following modifications have been  
made to improve the apparent resolution of  
these instruments:

1. Resistor R14 changed from 56,000  
ohms to 680,000 ohms (part no. 149118).
2. Resistor R73, 22,000 ohms (part no.  
27407) has been added across the secondary  
of the video detector transformer.
3. Capacitor C36 has been changed from  
0.01  $\mu$ f to 0.047  $\mu$ f (part no. 110544).

A 0.0022- $\mu$ f capacitor (part no. 110536)  
has been shunted across C30, the 0.0047- $\mu$ f  
capacitor, when the R57B potentiometer in  
the vertical oscillator is part no. 145078.  
When a 2-megohm potentiometer (part no.  
145101) is used, this shunt capacitor is not  
used.

The 80- $\mu$ f capacitors (part no. 111067) in  
the B-plus power supply, and the 2- $\mu$ f ca-  
pacitor (part no. 110675) in C7 position in  
the agc line are now being supported in posi-  
tion by a center mounting strap. Other heavy  
tubular-type capacitors are being dressed in  
such a manner as to prevent transit break-  
age of the capacitor leads.

To obtain sufficient vertical size under  
low-line voltage conditions, the value of R52  
(vertical-oscillator charging resistor) may  
be changed from 1.8 megohms and 2.2 meg-  
ohms to 1.5 megohms. This applies to TC125  
receivers not having the opera glass feature.

## Stromberg-Carlson TC125

To improve the signal-to-noise level at the ratio-detector stage for clearer audio reproduction, capacitor C56 has been increased from 1  $\mu$ f to 5  $\mu$ f, 50 volts (part no. 111030).

Kinescope tubes using the grey-filter face plate (dark-faced) will be used in the subject receivers. These new tube types are identified by the following code numbers: 12 $\frac{1}{2}$ -inch tubes are denoted as 12LP4A (part no. 162075) or 12QP4A (part no. 162080), and the 19-inch tubes as 19AP4A (part no. 162083).

Cases of horizontal instability or jitter in the picture have been encountered where L4, horizontal-oscillator coil (part no. 114069), has developed short-circuited turns. This condition lowers the Q of the coil, in turn lowering the stability of the horizontal oscillator. This situation is best remedied by replacement of the coil.

In the L31 position, focus-coil assembly, part number 114660, is used when a 12LP4 kinescope tube is employed. Focus-coil assembly, part number 114661, is used when a 12KP4 or 12QP4 tube is employed.

## Stromberg-Carlson TC125H, TC125L, TC125LM-2, TC125LSM

These models are similar to Model TC125. The following list should be added to the Parts List:

Part Numbers by Models				Part Description
TC125H	TC125L	TC125LM-2	TC125LSM	
108144	108134	108152	108153	Cabinet assembly, mahogany
108145	108135	—	—	Cabinet assembly, avodire
155101	155129	155154	155129	Speaker Escutcheon, tube ring
125044*	125044*	125047†	125047†	Mask assembly
174007	174007	174012	174012	Lens
138028	138028	138028	138028	Back panel
101120	101120	101127	101129	Knob "Tuning"
134098*	134098*	134115†	134115†	Knob "Brightness"
134103*	134103*	134120†	134120†	Knob "Tone"
134106*	134106*	134122†	134122†	Knob "Picture" contrast
134101*	134101*	134118†	134118†	Knob "Volume"
134104*	134104*	134121†	134121†	Knob "7-13, 2-6" range
134100*	134100*	134117†	134117†	Knob "Horizontal"
134099*	134099*	134116†	134123†	Knob "Vertical"
134102*	134102*	134119†	134119†	Knob "Telatenna loop support"
—	—	103018	103018	Knob "Telatenna loop assembly"
—	—	139037	139037	

\*Indicates metallic gold finish  
†Indicates metallic brown finish.

## Stromberg-Carlson TC125H, TC125L

These models are similar to Model TC125 which appears on pages 4-5 through 4-8 of *Rider's TV Manual Volume 4*. The differences are given on page 4-5 of the same volume.

## Stromberg-Carlson TS125 Series

The 5.6-ohm resistor R395 has been removed, and the 5.6-ohm resistor R396 has been changed to a 15-ohm, 1-watt value (part no. 149158), to reduce picture background noise.

Microphonics in the TS125H and TS125L models have been encountered when the audio feeds back to the r-f oscillators. It can be eliminated in the following manner:

1. Check that the tuner mounting screws do not clamp the tuner too rigidly to the main chassis.

2. Try substituting 6J6 r-f oscillator tubes. The Sylvania 6J6/TV tubes (part no. 162085) are especially good in these two oscillator positions.

3. To dampen possible movement within the oscillator trimmers, a rubber band or a spring (part no. 29628) may be stretched across the two trimmer shafts that project through the top side of the tuner chassis.

## Stromberg-Carlson TS125, TS16 Series

When tolerances accumulate, the 1.5-megohm resistor R403, in the grid circuit of the vertical blocking oscillator, is sometimes too large in value to permit full control range adjustment. In these cases a 10-megohm resistor may be shunted across R403.

The 1,800-ohm, 1-watt resistor, R412, in the cathode of the vertical output tube has been changed to 3,300 ohms, 1 watt (part no. 149181).

Vertical dark lines at the left side of the picture area, caused by Barkhausen oscillations, can usually be eliminated by adjustment of the horizontal drive control. If the lines persist, changing 6BG6 tubes in the horizontal output stage should be tried. Often the lines are present on the raster, but disappear when the picture is present, so be sure to check under picture conditions.

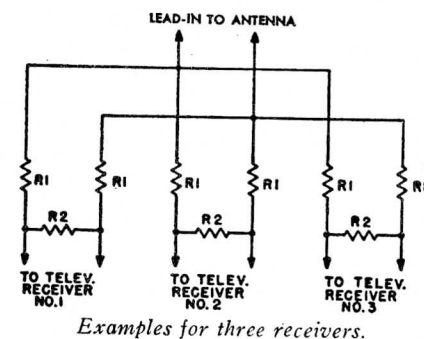
## Stromberg-Carlson TV-12 Series

In case noise appears as a growl in the r-f tuner as the tuning shaft is rotated, making it difficult to tune in the desired station, especially in the high-frequency channels, the tuner is in need of cleaning and re-lubrication which is done as follows:

1. Remove the cover from the ganged coils in a clean, dust-free location.
2. With a soft small brush and some carbon tetrachloride, clean all the turns of the coils, the end rings, and the coil tracks.
3. Re-lubricate with a small amount of Lubriplate 105, covering all the surfaces just cleaned.
4. Replace the dust cover.

## Stromberg-Carlson TV-12 Series

To connect more than one television receiver to one antenna without the use of switches, resistor pads will be necessary to match the impedance of the lead-in to the impedance of the receiver.

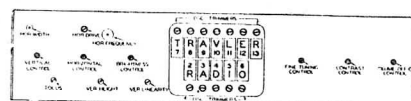


The table shown below is a chart of the resistors to use with each specified number of receivers. The figures are based on a 75-ohm impedance which is the input impedance of the TV-12 and also the characteristic impedance of the coaxial lead-in (RG-59U or equivalent). Use noninductive carbon resistors and place the pads at the junction point and not at the receiver terminals, as shown in the accompanying figure.

Number of Receivers	R1	R2
2	56	100
3	100	100
4	120	82
5	150	82
6	180	82
7	240	82
8	270	82

## Travler 10T, 12T

Resistor R8, 10,000 ohms, has been removed from the plate circuit of VT2. Capacitor C103, 10  $\mu$ f, and L16B have been added from the plate of the picture tube to grid 1 of the same tube. Resistor R102, 22,000 ohms, has been inserted from grid 1 to the plate of VT11. C102, 0.05  $\mu$ f has been inserted from grid 1 to the junction of R73 and the vertical output transformer. The accompanying diagram shows the placement of the front panel controls.



Front panel controls for Travler 10T and 12T.

## Westinghouse H-223, Ch. V-2150-01, V-2150-02, V-2150-04

Chassis V-2150-01, V-2150-02 and V-2150-04 are used in model H-223. The differences in these chassis are in the r-f tuner assembly.

The V-2150-01 chassis uses a tuner assembly marked V-6771-2. The V-2150-02 chassis uses a tuner marked V-6850. This tuner is electrically the same as the V-6771-2 tuner, but one wafer of the channel selector is mounted on the outside of the tuner housing.

The V-2150-04 chassis uses a tuner marked V-6238. This is the same tuner that is used in Model H-251. The high-frequency oscillator alignment procedure given for Model H-223 applies to the V-2150-01 chassis only. For high-frequency oscillator alignment information on the other two chassis refer to the data on Model H-251.

In early chassis, the resistance values of the V 6464 horizontal hold R403 and vertical hold R404 controls are 250,000 ohms for both sections. With these 250,000-ohm controls, the resistors that are connected in series with each