

MODELS 10VK9, 10VT3;
Ch. TS-9D1, TS-9E

SUPPLEMENT TO TELEVISION SERVICE MANUAL #54P780232-A
DESCRIPTION OF CHASSIS

Chassis TS-9D1. Same as Chassis TS-9D, except 3rd video IF tube, V-5 (6BA6), replaced with a 6AC5 tube for greater IF gain. The plate voltages on the video amplifier and pulse amplifier tubes are increased to improve horizontal holding at high contrast levels. This chassis has 23 tubes plus a 10" picture tube.

Chassis TS-9E. Same as Chassis TS-9D1, except that a new RF tuner with variable antenna trimmers and new antenna coils is used, to improve overall sensitivity.

ANTENNA CONNECTIONS
OPERATING CONTROLS
SERVICE ADJUSTMENT CONTROLS

Same as for Chassis TS-9D.
ALIGNMENT

The alignment procedure for Chassis TS-9D1 is the same as for Chassis TS-9D. Since the TS-9E tuner contains a new antenna coil and additional trimmers, its complete alignment is as follows:

1. Refer to Figure 1 for the coil and trimmer locations and for the alignment frequencies of each channel.
2. Connect the AM signal generator output cable to the antenna terminals of the receiver. Match the generator to the 300 ohm input impedance of the receiver by using a 100 ohm resistor in series with the output terminal of the generator cable and a 150 ohm resistor in series with the ground terminal. This arrangement is for a 50 ohm generator. If the generator impedance is 30 ohms, use a 120 ohm resistor on the output terminal and 150 ohms in series with the ground terminal.
3. Set the contrast control for -5 volts bias. (Measured from arm of contrast control to chassis).
4. Connect the electronic voltmeter across the volume control.
5. Turn the channel selector to the channel to be aligned.
6. Set the fine tuning capacitor C-13 to the half-capacity position.

7. Set the signal generator at the sound carrier frequency of the channel (See Figure 1) and adjust the signal generator output until a voltage reading is obtained on the electronic voltmeter, connected as in Step 4.

8. Locate the oscillator tuning adjustment belonging to the channel being aligned. See Figure 1. With a non-metallic screwdriver, adjust the oscillator frequency until the reading on the meter is zero. The meter reading will change rapidly from one polarity, through zero, to the opposite polarity as the oscillator frequency is adjusted to produce the correct sound IF of 21.7 Mc.

9. Proceed as above for each channel; and, if the fine frequency trimmer is left in the same position for each channel when the oscillator adjustments are made, very little retuning of the fine tuning control will be required in changing from one television station to the next.

10. With the oscillator correctly set, the next step is the alignment of the RF and antenna sections. The RF coils and the antenna trimmers are tuned at a frequency 1 Mc higher than the center frequency of the channel under test; that is, 4 Mc above the lower channel limit, or 2 Mc below the upper limit. See Fig-

ure 1 for coil and trimmer locations and alignment frequencies.

11. Connect the electronic voltmeter directly across the video detector load resistor R-48.
12. Set the signal generator to 86 Mc, the RF alignment frequency for Channel 6 and adjust the output for a reading on the voltmeter.

13. There are two coils for each RF channel. Using a non-metallic screwdriver, detune one core considerably in a counterclockwise direction. Then tune the other for maximum output on the meter at 86 Mc. Now, return the first coil for maximum output, and the RF amplifier is aligned. Do not return the other coil again for maximum, as this will not give a proper bandpass characteristic. Always keep the generator output low enough to prevent saturation.

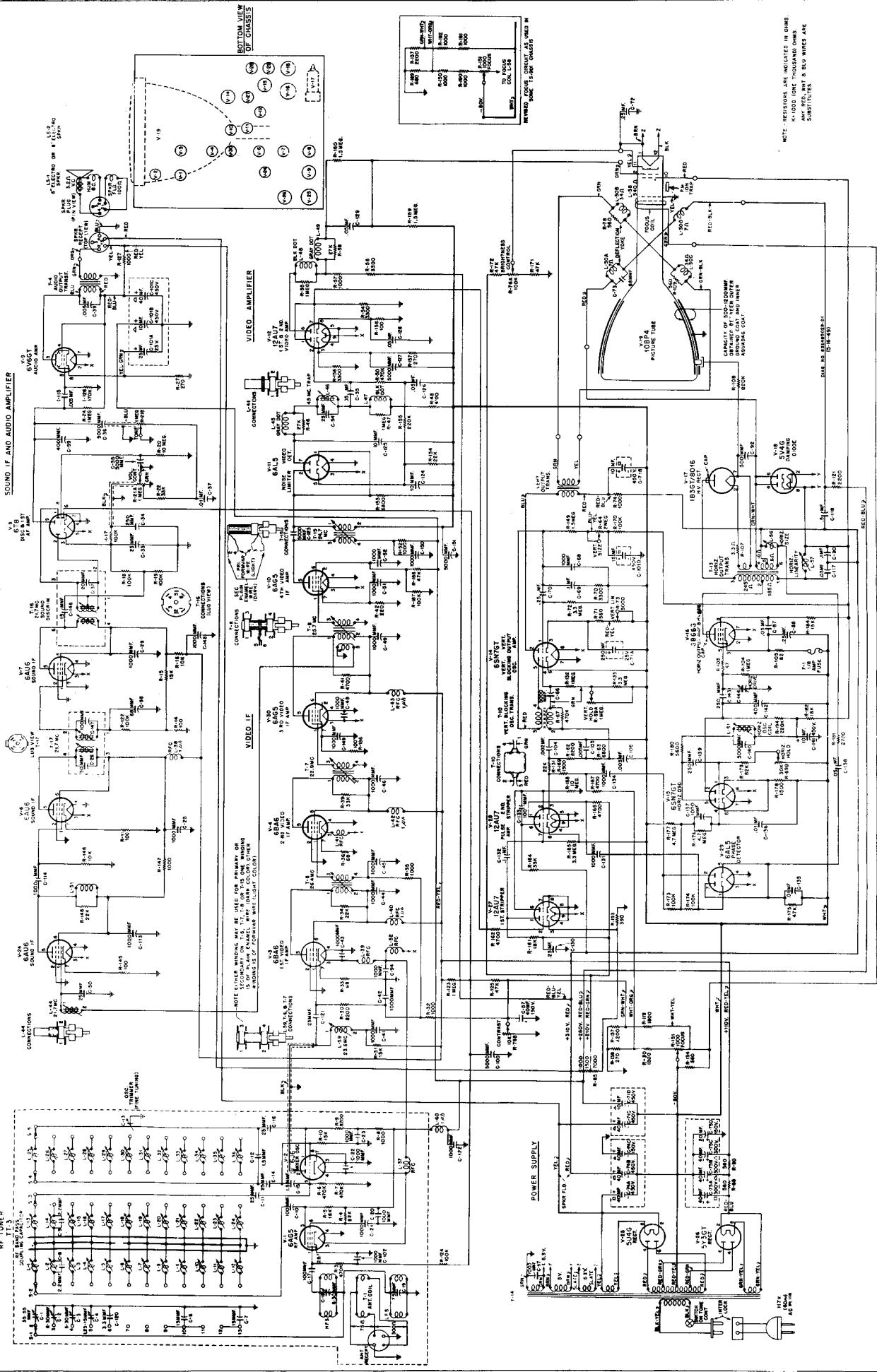
14. Peak the low frequency antenna coil (iron core) at 86 Mc.
15. Repeat steps 12 and 13 on Channels 2 to 5, peaking the antenna trimmers to the same frequencies as the RF coils.
16. Tune the Channel 13 RF coils and antenna coil (brass core) at 21.7 Mc.
17. Repeat step 16 on Channels 7 to 12, peaking the antenna trimmers at the same time.

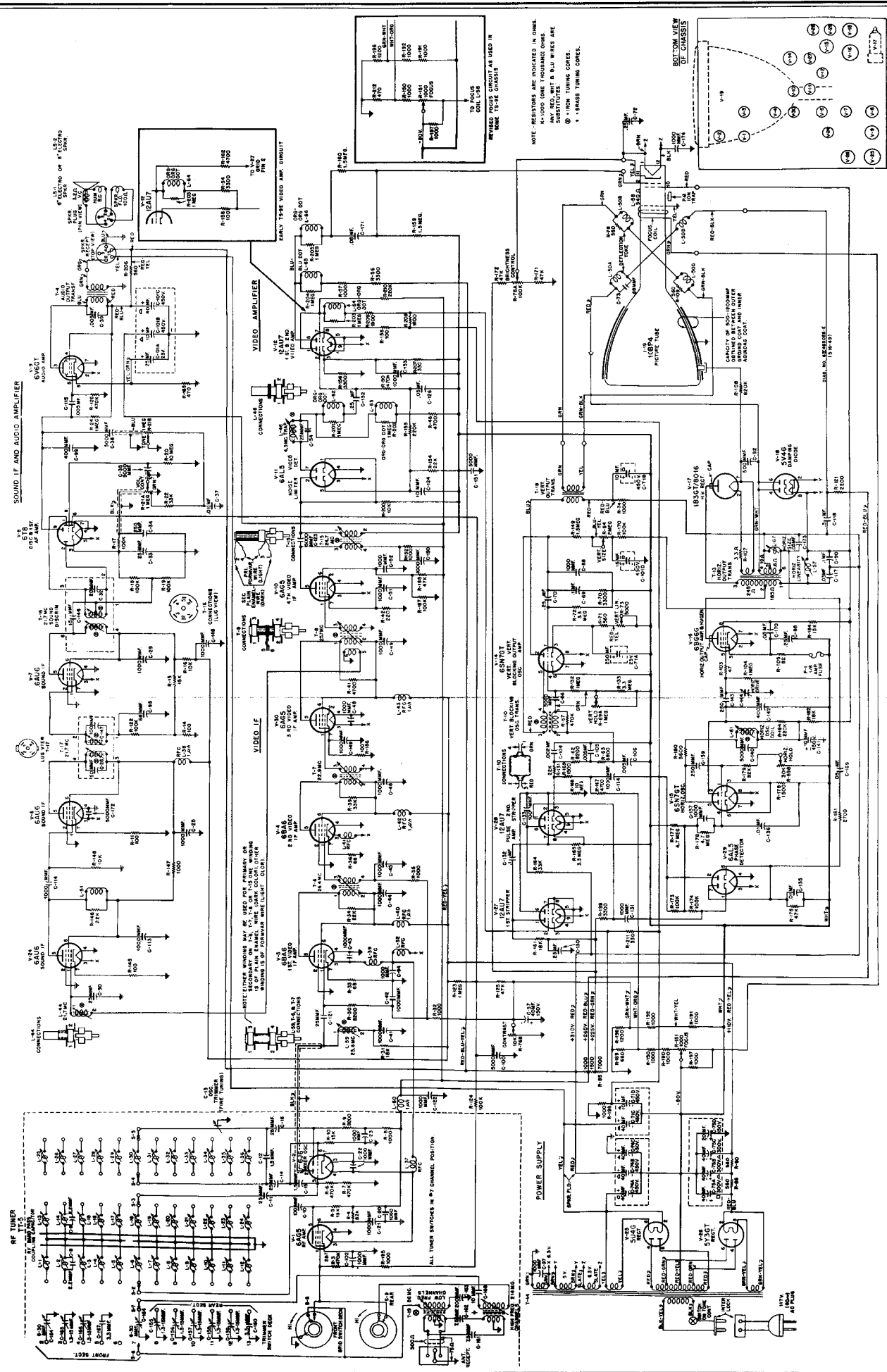
Because of changes in the tuner and the video and sound IF systems, the sensitivity readings for the TS-9D1 and TS-9E chassis are different from the TS-9D. New readings are listed below.

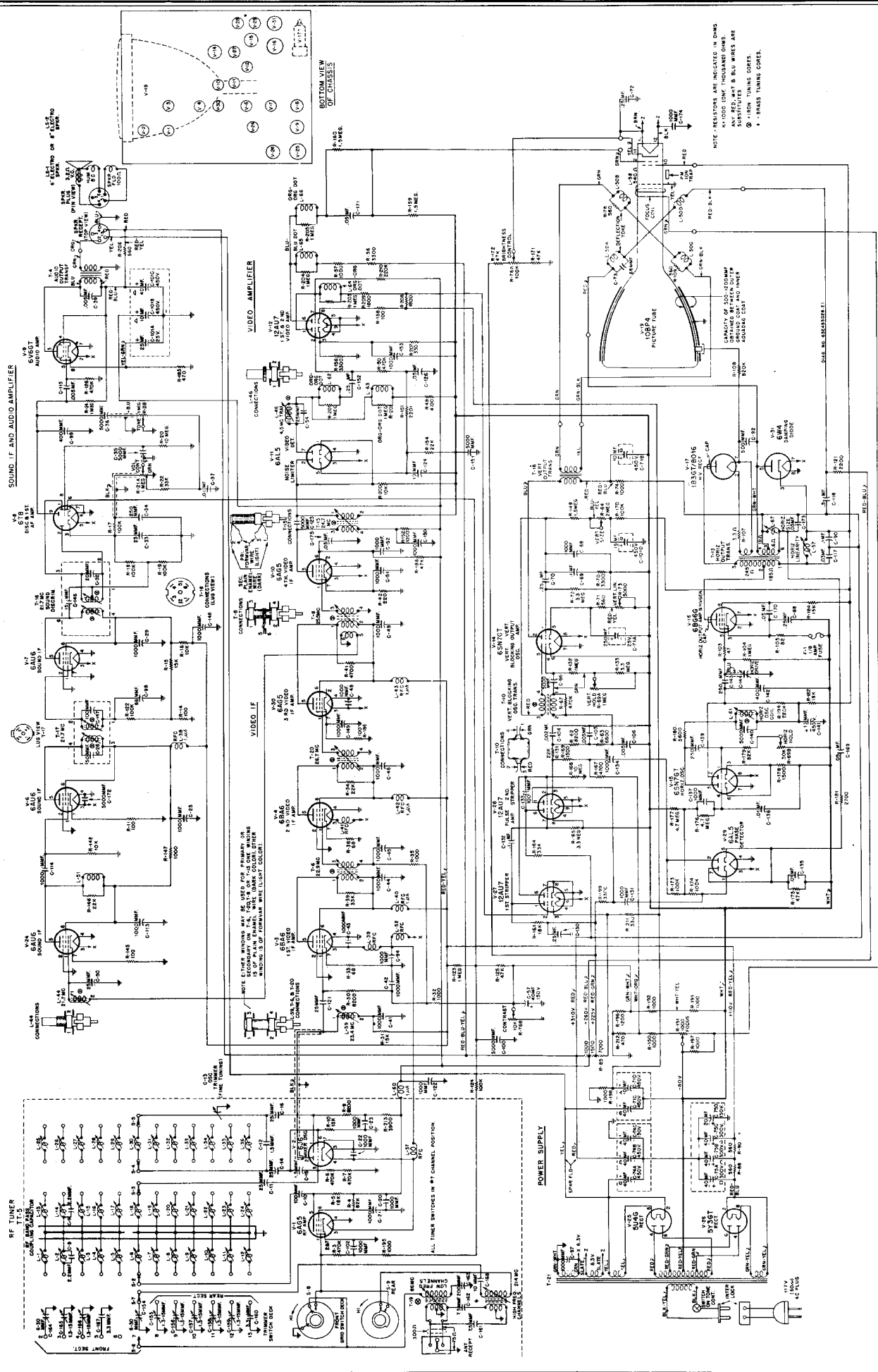
Chassis	Mixer Bias	Contrast Bias	Sig. Conn. to Gen.	Gen. Freq.	Video IF		Voltmeter Conn. to Reading	Voltage Sens.
					Grid of 6J6 Mixer	Sound IF		
TS-9D1 & TS-9E	-3V	0	Grid of 6J6 Mixer	24.5Mc	Across R-48	1V inc.	200	
TS-9D1 & TS-9E	-3V	0	Grid of 6J6 Mixer	21.7 Mc	Term #1 of T-17	1V	200	
Overall Video								
TS-9D1	-	0	Ant term	Center of chan	Across R-48	1V inc	50	150
TS-9E	-	0	Ant term	Center of chan	Across R-48	1V inc	40	75
Overall Sound								
TS-9D1	-	0	Ant term	Center of chan	Term #1 of T-17	1V	50	150
TS-9E	-	0	Ant term	Center of chan	Term #1 of T-17	1V	40	75

NOTE: For additional data: See Ch. TS-9D, TV3 page 3-1 through 3-17.

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REPLACEMENT PARTS LIST

When replacement parts are ordered, the manufacturer's name and part number should be indicated. If a part number is not given, the part number of the original part should be indicated. If a part number is not given, the part number of the original part should be indicated.

Part No.	Description	Quantity	Part No.	Description	Quantity
1-1	5T50	1	1-1	5T50	1
1-2	6X4	1	1-2	6X4	1
1-3	6X5	1	1-3	6X5	1
1-4	6X6	1	1-4	6X6	1
1-5	6X7	1	1-5	6X7	1
1-6	6X8	1	1-6	6X8	1
1-7	6X9	1	1-7	6X9	1
1-8	6X10	1	1-8	6X10	1
1-9	6X11	1	1-9	6X11	1
1-10	6X12	1	1-10	6X12	1
1-11	6X13	1	1-11	6X13	1
1-12	6X14	1	1-12	6X14	1
1-13	6X15	1	1-13	6X15	1
1-14	6X16	1	1-14	6X16	1
1-15	6X17	1	1-15	6X17	1
1-16	6X18	1	1-16	6X18	1
1-17	6X19	1	1-17	6X19	1
1-18	6X20	1	1-18	6X20	1
1-19	6X21	1	1-19	6X21	1
1-20	6X22	1	1-20	6X22	1
1-21	6X23	1	1-21	6X23	1
1-22	6X24	1	1-22	6X24	1
1-23	6X25	1	1-23	6X25	1
1-24	6X26	1	1-24	6X26	1
1-25	6X27	1	1-25	6X27	1
1-26	6X28	1	1-26	6X28	1
1-27	6X29	1	1-27	6X29	1
1-28	6X30	1	1-28	6X30	1
1-29	6X31	1	1-29	6X31	1
1-30	6X32	1	1-30	6X32	1
1-31	6X33	1	1-31	6X33	1
1-32	6X34	1	1-32	6X34	1
1-33	6X35	1	1-33	6X35	1
1-34	6X36	1	1-34	6X36	1
1-35	6X37	1	1-35	6X37	1
1-36	6X38	1	1-36	6X38	1
1-37	6X39	1	1-37	6X39	1
1-38	6X40	1	1-38	6X40	1
1-39	6X41	1	1-39	6X41	1
1-40	6X42	1	1-40	6X42	1
1-41	6X43	1	1-41	6X43	1
1-42	6X44	1	1-42	6X44	1
1-43	6X45	1	1-43	6X45	1
1-44	6X46	1	1-44	6X46	1
1-45	6X47	1	1-45	6X47	1
1-46	6X48	1	1-46	6X48	1
1-47	6X49	1	1-47	6X49	1
1-48	6X50	1	1-48	6X50	1
1-49	6X51	1	1-49	6X51	1
1-50	6X52	1	1-50	6X52	1
1-51	6X53	1	1-51	6X53	1
1-52	6X54	1	1-52	6X54	1
1-53	6X55	1	1-53	6X55	1
1-54	6X56	1	1-54	6X56	1
1-55	6X57	1	1-55	6X57	1
1-56	6X58	1	1-56	6X58	1
1-57	6X59	1	1-57	6X59	1
1-58	6X60	1	1-58	6X60	1
1-59	6X61	1	1-59	6X61	1
1-60	6X62	1	1-60	6X62	1
1-61	6X63	1	1-61	6X63	1
1-62	6X64	1	1-62	6X64	1
1-63	6X65	1	1-63	6X65	1
1-64	6X66	1	1-64	6X66	1
1-65	6X67	1	1-65	6X67	1
1-66	6X68	1	1-66	6X68	1
1-67	6X69	1	1-67	6X69	1
1-68	6X70	1	1-68	6X70	1
1-69	6X71	1	1-69	6X71	1
1-70	6X72	1	1-70	6X72	1
1-71	6X73	1	1-71	6X73	1
1-72	6X74	1	1-72	6X74	1
1-73	6X75	1	1-73	6X75	1
1-74	6X76	1	1-74	6X76	1
1-75	6X77	1	1-75	6X77	1
1-76	6X78	1	1-76	6X78	1
1-77	6X79	1	1-77	6X79	1
1-78	6X80	1	1-78	6X80	1
1-79	6X81	1	1-79	6X81	1
1-80	6X82	1	1-80	6X82	1
1-81	6X83	1	1-81	6X83	1
1-82	6X84	1	1-82	6X84	1
1-83	6X85	1	1-83	6X85	1
1-84	6X86	1	1-84	6X86	1
1-85	6X87	1	1-85	6X87	1
1-86	6X88	1	1-86	6X88	1
1-87	6X89	1	1-87	6X89	1
1-88	6X90	1	1-88	6X90	1
1-89	6X91	1	1-89	6X91	1
1-90	6X92	1	1-90	6X92	1
1-91	6X93	1	1-91	6X93	1
1-92	6X94	1	1-92	6X94	1
1-93	6X95	1	1-93	6X95	1
1-94	6X96	1	1-94	6X96	1
1-95	6X97	1	1-95	6X97	1
1-96	6X98	1	1-96	6X98	1
1-97	6X99	1	1-97	6X99	1
1-98	6X100	1	1-98	6X100	1
1-99	6X101	1	1-99	6X101	1
1-100	6X102	1	1-100	6X102	1

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