GENERAL ELECTRIC*

AUSTRALIA

Electronics Division

T9V2C Chassis

Service Manual

This T9V2C chassis is currently fitted to the T12P1, T16P1, T16P2, T16P3 Adventurer Model Portable Television.

GENERAL INFORMATION

Operating Voltage

This chassis is designed to operate from a nominal 240 volt 50 cycle A.C. supply. To provide for variations in supply voltage an additional mains tapping rated at 240 volt to 260 volt is wound on the transformer.

Location of Components

The diagrams and parts lists on the following pages show the location of all components as well as the reference lists giving Location, Index, Part Number and Description.

RF Frequencies	– All 13 assigned channels	
Operational Frequencies	– Picture IF carrier	36.0 MHz
	Sound IF carrier	30.5 MHz
	Intercarrier sound	5.5 MHz
Audio Output	– Undistorted	.7 watts
Antenna	– Telescopic External Terminals impedance 300 Ohms balanced	

Tube and Semi Conductor complement

Valve No.	Type	Purpose	Valve No.	Type	Purpose
V1	6HG8	Mixer Oscillator	V7	8LT8	Horiz. Phase Detector Horiz. Oscillator
V2	3GK5	RF Amplifier			
V3	11BQ11	1st & 2nd IF Amplifier	V8	33GY7	Horiz. Output - Horiz. Damper
V4	14BR11	Video Amplifier AGC Keyer Audio IF Amplifier	V9	1BC2	EHT Rectifier
V5	12AE10	Audio Detector - Audio Output	V10	12CDP4) 16CWP4)	Picture Tube
V6	23Z9	Sync Clipper - Vertical Osc. Vertical Output	D101	1N617	Video Detector Diode
			D401	1N5060	Silicon Power Rectifier
			D402	1N5060	Silicon Power Rectifier

ELECTRICAL ADJUSTMENTS

Height & Vertical Linearity

Adjust R206 (500K) vertical size control for height and R209 (2 meg) vertical linearity control for overall linearity and height to obtain correct aspect ratio. Allow about 10% of vertical overscan.

Horizontal Hold

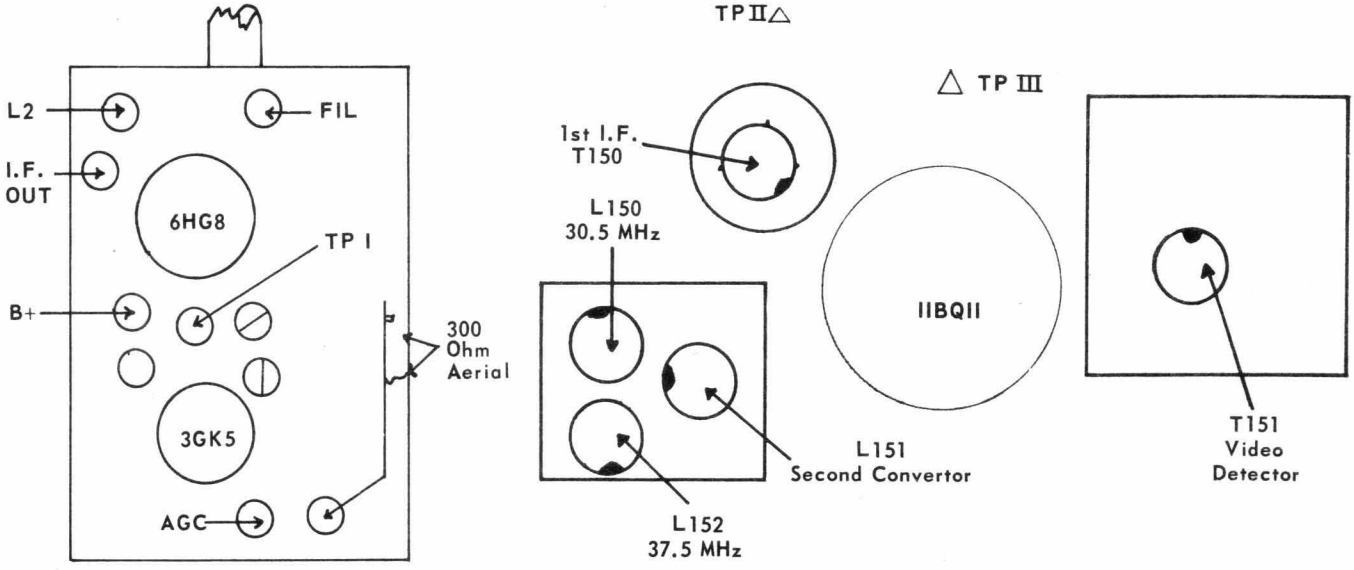
Adjustment of horizontal hold should only be necessary when valves or components have been changed or the customer has mistuned to any maladjustment.

Method 1. An approximate short cut method to adjust the horizontal hold adjustment is to fine tune the picture to show sound bars and set the horizontal control for a floating picture.

Method 2. Warm up the set for 5 to 20 mins and the cabinet back removed.

(a) Tune the receiver to a weak signal and adjust controls.
(b) Short test point VI to ground through a 0.1 μF capacitor.
(c) Turn the horizontal hold control first anti-clockwise then clockwise from a floating picture. The number of blanking bars visible should be at least six in each case.
(d) Set the horizontal hold control for a floating picture. The core should be positioned away from the 8LT8 tube.
(e) Remove the shorting capacitor.

TUNER & COIL LOCATIONS T9V2C



VIDEO IF ALIGNMENT

1. Turn volume and brightness controls to minimum.
2. Turn contrast control to maximum.
3. Set tuner between channels.
4. Connect CRO via 22K resistor (short connection) to test point TPIII
5. Apply - 3.5 volt bias to AGC test point TPII.
6. Apply IF sweep signal via an attenuator to the mixer grid test point TPI on tuner.
7. Apply also to TPI, -2 volt via 1 meg resistor.
8. Adjust CRO for 2.0 volt PP waveform.
9. Short TPII to ground.
10. Tune trap L152 to 37.5 MHz.
11. Tune trap L150 to 30.5 MHz.
12. Remove short from TPII.
13. Tune video detector T151 around 34.0 MHz.
14. Tune 1st IF T150 around 32.0 MHz.
15. Tune L151 second converter for best condition around 35.0 MHz.
16. Tune tuner first converter L2 for 36.0 MHz position. L151 and L2 to be tuned in conjunction with each other for best condition of curve.
17. Recheck trap positions. All coils tune away from printed board curve result to be as per fig. 1.

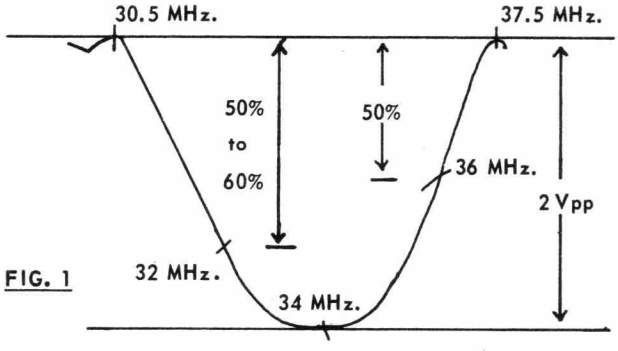


FIG. 1

TRAP ATTENUATION CHECK

With IF sweep, 30.5 MHz and 37.5 MHz short TPII to ground.
Position of curve around traps should be as per Fig. 2.

SOUND ALIGNMENT

5.5 MHz TRAP – SOUND TAKE OFF – L157

1. Tuner to be on a high channel.
2. Brightness normal - control maximum.
3. Apply -15 volt to TPII.
4. Connect CRO in series with 100 PF condenser to P.T.C.
5. Connect AM/FM generator (E.K. Cole) to test point TPIII.
6. Switch generator to AM with maximum gain.
7. Tune L157 for minimum 5.5 MHz carrier superimposed on 1000 C/S sine wave.

QUADRATURE L302 INTERSTAGE L301.

1. Tuner to be on high channel.
2. Brightness normal - contrast maximum.
3. Apply -15 volts to test point TPII.
4. Connect CRO via 22K resistor to TPXII.
5. Connect AM/FM generator to TPIII.
6. Switch generator to FM with maximum gain.
7. Tune interstage L301 core ¾ way out of former.
8. Tune Quadrature L302 for maximum signal using second peak from top.
9. Reduce signal and tune L301 for maximum amplitude.
10. Check sine wave for distortion at 1.5 m volts. Adjust interstage coil if distortion occurs.
11. Recheck quadrature L302 at maximum signal and interstage L301 again.

LIST OF LEADS & COMPONENTS WITH CRITICAL DRESS

General: Normal wiring rules to be observed are:
(a) No insulated lead should come within ¼" of any point or surface with an operating temperature in excess of 80°C.
(b) Regardless of operating temperature, no insulated lead should come within ¼" of a glass resistor.
(c) No lead should be pinched or nicked.
(d) No lead not connected to the AC terminals should be dressed within ¼" of AC terminals.

CRITICAL LEADS

(a) The red lead from A42 to C1 must be dressed behind the Vert. Lin. Pot. under the horizontal oscillator coil, between the HV shield and the electro and over the white H.
(b) The white HV lead must be dressed against the printed board in the area enclosed by the HV shield.
(c) The CRT anode lead must be dressed through the hold provided in the HV rectifier sleeve.
(d) The power supply resistor, R402, R403 must not touch the terminal board to which they are mounted and the leads must be formed to bring the resistors upward and to the side of the terminal away from the mounting lug.
(e) C262 must be formed over the flat against the board in the direction of the nearest edge of the board.
(f) The white yoke lead should be over the red boost lead and under the pink B+ lead which goes from the electrolytic around the quadrature coil can and over to pin 10 of the 12AE10.
(g) The red boost lead should be dressed close to the board.
(h) The yellow yoke lead and the green CRT lead should be dressed behind the vertical transformer.
(i) The 33GY7 filament leads must be down on the board or blocked by C406 so that the lead does not lie against the hot tube.
(j) Speaker leads must be dressed away from the 12AE10 and the plastic sleeve which contains the HV rectifier.
(k) Orange B+ lead to tuner to be around front of 6HG8 valve.

Insta view means immediate warm up of picture and sound.

The secret is that under average viewer conditions there is no waiting time for the components to warm up. The controls can be set immediately and the viewer can sit and relax.

Benefit:
1. Immediate on of picture and sound.
2. Temperature and operating conditions are always present keeping out moisture and condensation the cause of many failures also controls the power surge at switch off and on under normal conditions.
3. Under the insta view condition 50 volt AC 260 MA is applied across the valve heaters and this is negligible to the overall benefit has been proven over many years on other electrical equipment.
4. If the customer does not want to use the insta view switch the receiver can be used as a conventional TV set by the on-off switch provided on the volume control.

NOTE - COMPONENTS SHOWN CONNECTED THUS - - - -
ARE ON OPPOSITE SIDE OF BOARD.

FUSE DELETED FROM CIRCUIT IN LATER PRODUCTION.
LEAD MOVED FROM ▲24 TO ▲24A

CAPACITORS T9V2C

Location	Index	Part No.	Type	Capacitance	% Tolerance	VDCW
C9	C150					
C9	C151	B18034	C/C	47PF	5%	500
B9	C152	B18067	C/C	2.4PF	5%	500
C4	C153	B14001	C/P	.1MFD	20%	200
B7	C154	B18035	C/C	2200PF	20%	500
C5	C155	B14001	C/P	.1MFD	20%	200
C8	C156	B18005	C/C	1000PF	20%	500
D7	C157	B18106	C/C	4700PF	20%	500
D3	C159	B18126	C/C	800PF	20%	500
G7	C160	B18005	C/C	1000PF	20%	500
I8	C161	B18119	C/C	6.8PF	5%	500
H7	C162	B18009	C/C	5.6PF	± .25PF	500
H7	C163	B18009	C/C	5.6PF	± .25PF	500
G6	C164	B18005	C/C	1000PF	20%	500
G3	C165	B18018	C/C	10PF	10%	500
E2	C167	B14001	C/P	.1MFD	20%	200
C2	C168	B18125	C/C	5000PF	10%	500
A11	C169	B18031	C/C	270PF	20%	500
N8	C170	B18126	C/C	800PF	20%	500
H6	C172	B18126	C/C	800PF	20%	500
	C173					
	C174					
	C202	B18126	C/C	800PF	20%	500
B13	C203	B18124	C/C	120PF	10%	500
C13	C204	B18114	C/C	3900PF	10%	500
E12	C205	B18114	C/C	3900PF	10%	500
E13	C206	B14099	C/M	.018MFD	10%	200
F11	C207	B14019	C/P	.1MFD	20%	200
B11	C208	B14100	C/M	.027MFD	10%	200
E13	C209	B18127	C/C	470PF	20%	500
L11	C251	B18115	C/C	150PF	10%	500
N9	C252	B14095	C/P	.047MFD	20%	50
J10	C253	B18114	C/C	3900PF	10%	500
J14	C254	B18118	C/C	390PF	10%	500
K13	C255	B14097	C/P	.0027MFD	10%	125
J10	C256	B14096	C/P	.0068MFD	10%	125
N12	C257	B18126	C/C	800PF	20%	500
M13	C258	B18125	C/C	5000PF	10%	500
O3	C261	B14102	C/P	.039MFD	10%	1KV
Q11	C262	B18116	C/C	330PF	10%	3KV
O11	C263	B18117	C/C	1500PF	10%	500
G4	C301	B18034	C/C	47PF	5%	500
H5	C302	B18005	C/C	1000PF	20%	500
H4	C303	B18089	C/C	2.2PF	± .1PF	500
H5	C304	B18053	C/C	68PF	10%	500
J5	C305	B18121	C/C	1800PF	10%	500
M5	C306	B18125	C/C	5000PF	10%	500
N4	C307	B18113	C/C	2700PF	20%	500
N5	C308	B18068	C/C	18PF	10%	500
O6	C309	B14095	C/P	.047MFD	20%	50
I3	C310 A	B18125	C/C	5000PF	10%	5000
L9	C402 B C D	B16063	Multiple Ducon EPQ404T			
B14	C403	B18126	C/C	800PF	20%	500
K2	C404					
J4	C405	B18126	C/C	800PF	20%	500
P14	C406	B14098	C/M	.047MFD	20%	200
D6	C407	B18126	C/C	800PF	20%	500
F10	C408	B18126	C/C	800PF	20%	500
D10	C409	B18126	C/C	800PF	20%	500
	C411	B18065		1000PF		2KV*
	C412	B18065		1000PF		2KV*

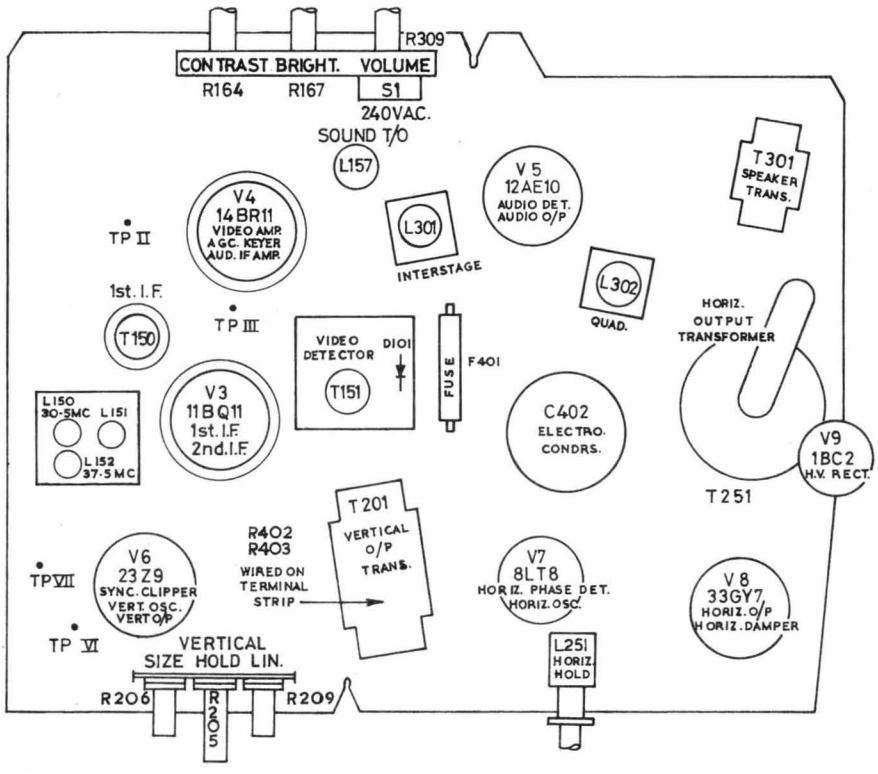
* Deleted in later production.

C/C = Ceramic
C/P = Paper or Polyester
C/M = Mylar

RESISTORS T9V2C

Location	Index	Part No.	Type	Resistance	% Tolerance	Current
B10	R150	B20048	R/C	100 ohms	10%	½W
B4	R151	B20525	R/C	4.7 meg	10%	½W
B8	R152	B20006	R/C	10K	10%	½W
C6	R153	B20065	R/C	6.8K	10%	½W
B3	R154	B20039	R/C	560K	10%	½W
B7	R155	B20061	R/C	330K	10%	½W
D9	R156	B20075		33 ohms	10%	½W
B6	R157	B20004	R/C	220 ohms	10%	½W
C3	R158	B20061	R/C	330K	10%	½W
E7	R159	B20083	R/C	56 ohms	10%	½W
F7	R160	B20004	R/C	220 ohms	10%	½W
D6	R161	B20052		4.7K	10%	½W
G6	R162	B20018	R/C	1.5K	10%	½W
E2	R163	B25008	R/W	4.7K	5%	5W
E1	R164	B23091		25K	Pot. Carbon, Triple front.	
F2	R166	B20071	R/C	150K	10%	½W
G3	R165			12K		
G1	R167	B23091		200K	Pot. Carbon, Triple front.	
	R168			4.7K		
G2	R169	B20028	R/C	22K	10%	½W
A12	R170	B20523	R/C	10 meg	10%	½W
A11	R171	B20036	R/C	470K	10%	½W
D3	R172	B20019	R/C	100K	10%	½W
G3	R174	B20004	R/C	470 ohms	10%	½W
A14	R201	B20028	R/C	22K	10%	½W
B13	R204	B20025	R/C	270K	10%	½W
E14	R205	B23092		1.2 meg	Pot. Carbon, Triple rear.	
D14	R206	B23092		500K	Pot. Carbon, Triple rear.	
F12	R207	B20030	R/C	68K	10%	½W
F14	R208	B20047	R/C	1 meg	10%	½W
F14	R209	B23092		2 meg	Pot. Carbon, Triple rear.	
G13	R210	B20178	R/C	18K	10%	1W
D14	R211	B20047	R/C	1 meg	10%	½W
E11	R212	B20154	R/C	10K	10%	1W
B12	R213	B20048	R/C	100 ohms	10%	½W
F13	R214	B20047	R/C	1 meg	10%	½W
G13	R215	B20064	R/C	220K	10%	½W
E12	R216	B20019	R/C	100K	10%	½W
M10	R251	B20047	R/C	1 meg	10%	½W
M11	R252	B20047	R/C	1 meg	10%	½W
K10	R253	B20028	R/C	22K	10%	½W
K9	R254	B20522	R/C	5.6 meg	10%	½W
K11	R255	B20064	R/C	220K	10%	½W
K13	R256	B20026	R/C	2.2K	10%	½W
M13	R257	B20005	R/C	33K	10%	½W
M13	R258	B20014	R/C	15K	10%	½W
M14	R259	B20047	R/C	1 meg	10%	½W
M10	R260	B20028	R/C	22K	10%	½W
P14	R264	B20211	R/C	560 ohms	10%	2W
G5	R301	B20529	R/C	75K	5%	½W
H5	R303	B20045	R/C	47K	10%	½W
K5	R304	B20090	R/C	680 ohms	10%	½W
M4	R305	B20027	R/C	18K	10%	½W
N6	R306	B20036	R/C	470K	10%	½W
N4	R307	B20036	R/C	470K	10%	½W
I1	R309	B23091		1.5 meg	Pot. Carbon, Triple front.	
O5	R308			56K		
	R313			47 ohms	Across speaker	
	R402	B25021	R/W	100 ohms	5% in Power Pack	5W
B14	R404	B20045	R/C	47K	10%	½W
M2	R310			100		
	R270			1.6 ohms	@ Picture Tube	

R/C = Carbon Resistor
R/W = Wire Resistor



T9V2C — SC RRINTED BOARD

VALVE & ADJUSTMENT LOCATIONS
VIEWED FROM COMPONENT SIDE

CONNECTIONS FOR SC BOARD

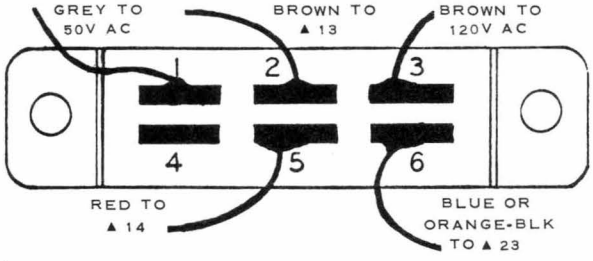
TRIANGLE (▲–O) NUMBERS

INDICATE LEAD CONNECTIONS FROM BOARD.

- ▲ 1. ORANGE LEAD TO TUNER B+ SUPPLY
- ▲ 2. WHITE LEAD TO TUNER AGC
- ▲ 3. SHIELDED LEAD (CO-AX) TO TUNER I.F. OUTPUT
- ▲ 4. SHIELD GROUND
- ▲ 5. BLACK LEAD TO TUNER GROUND
- ▲ 6. BROWN LEAD TO PIN 4 OF PICTURE TUBE SOCKET
- ▲ 7. BROWN LEAD TO TUNER FILAMENT SUPPLY
- ▲ 8. YELLOW LEAD TO PIN 2 OF PICTURE TUBE SOCKET
- ▲ 9. GREEN LEAD TO PIN 6 OF PICTURE TUBE SOCKET
- ▲ 10. YELLOW LEAD TO YOKE TERMINAL 2
- ▲ 11. BLACK LEAD TO PIN 7 OF PICTURE TUBE SOCKET
- ▲ 12. RED LEAD TO R402 AND R403
- ▲ 13. BROWN LEAD TO INSTA-VIEW SWITCH (COMMON)
- ▲ 14. RED LEAD TO INSTA-VIEW SWITCH (COMMON B+)
- ▲ 15. ORANGE LEAD TO YOKE TERMINAL 4
- ▲ 16. ORANGE LEAD TO R402
- ▲ 17. BROWN LEAD TO PIN 3 OF PICTURE TUBE SOCKET
- ▲ 18. PINK LEAD TO R403
- ▲ 19. RED LEAD TO YOKE TERMINAL 1
- ▲ 20. BLACK LEAD TO SPEAKER
- ▲ 21. GREEN LEAD TO SPEAKER
- ▲ 22. WHITE LEAD TO YOKE TERMINAL 5
- ▲ 23. BLUE LEAD TO INSTA-VIEW SWITCH
- ▲ 24. RED LEAD TO DC SUPPLY (TERM STRIP) POWER XFORMER
- ▲ 24A. RED LEAD AS ▲24 MOVED WHEN FUSE DELETED

ROMAN (● VII) NUMBERS
INDICATE TEST POINTS

REAR VIEW T9V2C INSTA-VIEW SWITCH



NOTE: Refer to the component location diagram in the Chassis section of this service manual for ▲ Number locations on the main circuit board.

INSTA-VIEW SWITCH:

1. Remove power transformer and mounting bracket.
2. Remove the tuner and control bracket assembly from the cabinet front.
3. The Insta-View switch is mounted in a plastic bracket on the front side of the tuner bracket.
4. Slide the Insta-View switch forward out of the mounting bracket. Check for solder and pigtail shorts between terminals before reassembling the switch to the mounting bracket.

COILS – TRANSFORMERS – TUNER

Location	Index	Part No.	Description
C7	T150	B00080	Coil 1st I.F.
G8	T151	B00077	Coil Video I.F.
H11	T201	B04035	Transformer Vertical Output
Q3	T301	B04034	Transformer Audio Output
		B04036	Transformer H.V. complete with "C" cores
		M79309	Transformer H.V. complete with cores & Tube Assy.
B9	L150	B00043	Coil 30.5 MHz trap
C9	L151	B00034	Coil 2nd Converter
B10	L152	B00076	Coil 37.5 MHz trap
F6	L155	B01003	Choke 35 MHz
C2	L158	B00028	Coil Compensating 400 MH
G2	L159	B00015	Coil Compensating 140 MH
I7	L160	B01004	Choke 60/65 MHz trap
			Coil Sound take off +5.5 MHz trap
M14	L251	B00069	Coil Horizontal Oscillator & Core
			Choke 55 µF
I4	L301	B00078	Coil interstage
N6	L302	B00051	Coil quadrature
		B74025	Tuner 13 channel T12P1 M79310
		B74025	Tuner 13 channel T16P1/2/3 M79321
		M79316	Printed Board assy.
		B30040	Printed Board (bare)
		B08011	Yoke Assembly
	T401	B03022	Transformer (Mains) M79319

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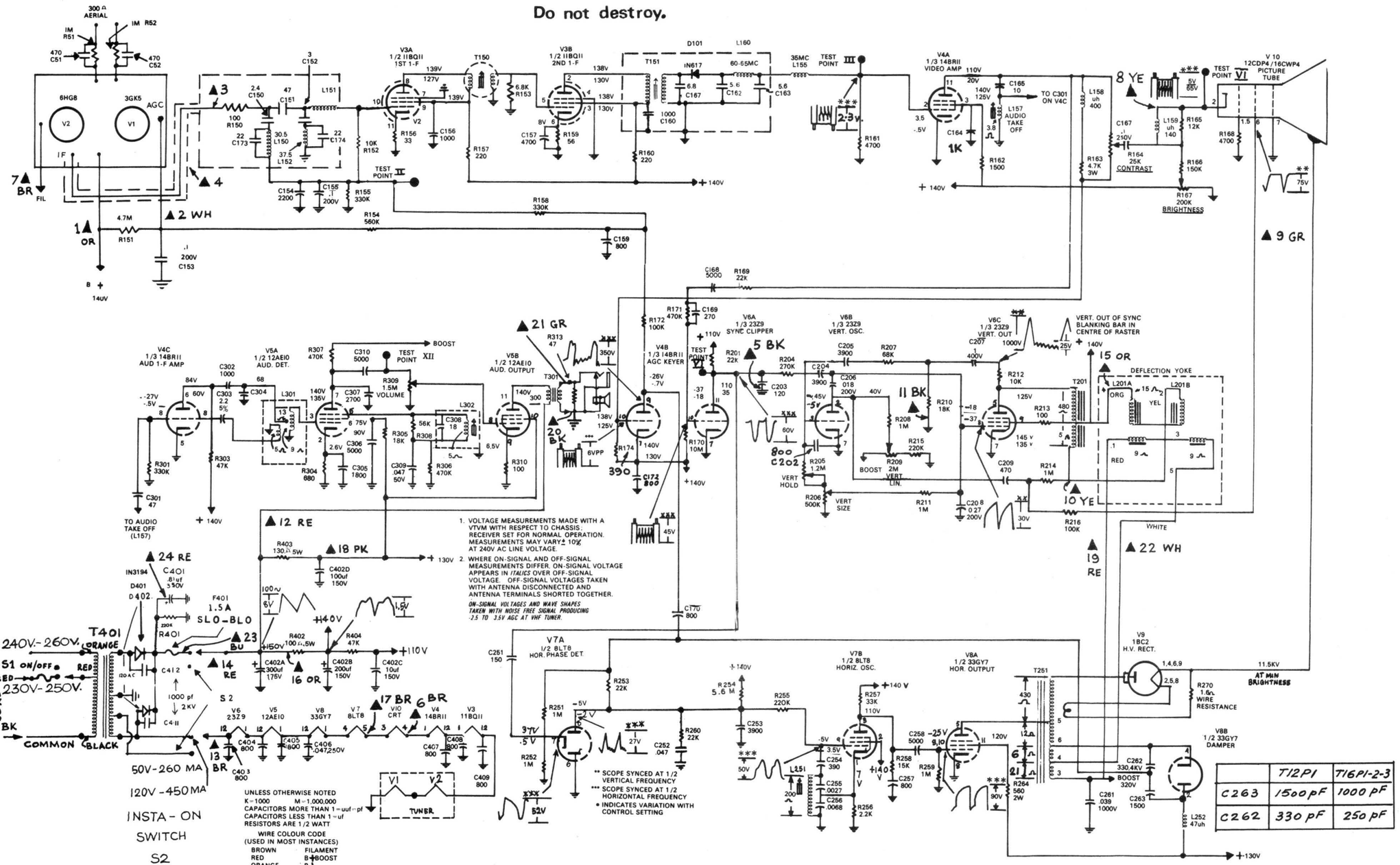
This Circuit Diagram may be a great time-saver for the Technician and a cost-saver for you should your Receiver require service.

Do not destroy.



	T12P1	T16P1-2-3
C263	1500pF	1000 pF
C262	330 pF	250 pF

T9V2C MAIN CHASSIS SCHEMATIC DIAGRAM

GENERAL ELECTRIC

C401, R401 DELETED WHEN G.E. IN5060 DIODE USED
F401, C412, C411 DELETED IN LATER PRODUCTION

▲ INDICATES WIRE CONNECTIONS FROM PRINTED BOARD
ROMAN NUMBERS (VI) INDICATE TEST POINTS