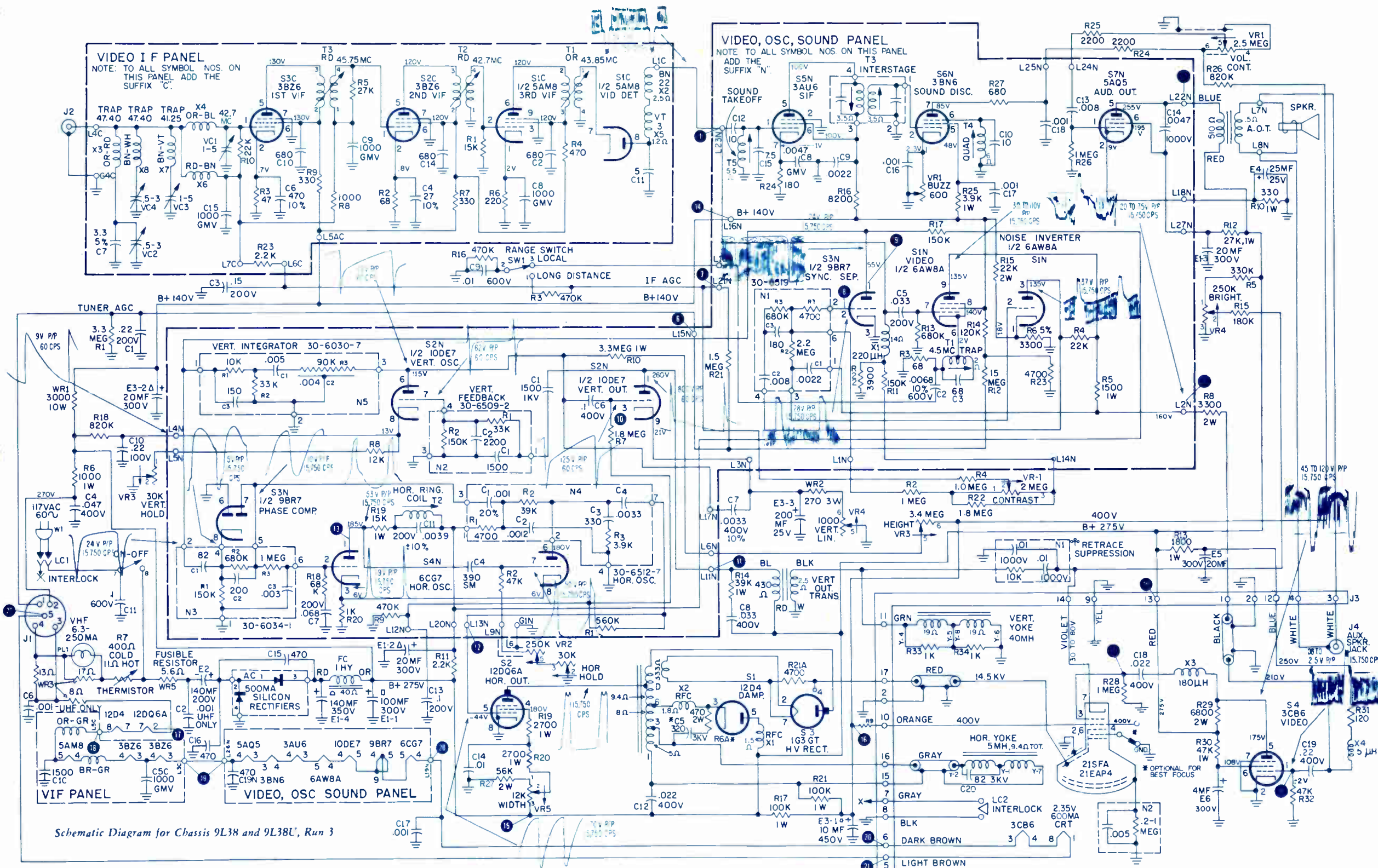


NOTES: All capacitor values greater than 1 are in MMF unless otherwise noted.
All capacitor values less than 1 are in MFD unless otherwise noted.
All resistors are 1/2 watt, 10%, carbon unless otherwise noted.

January • 1959

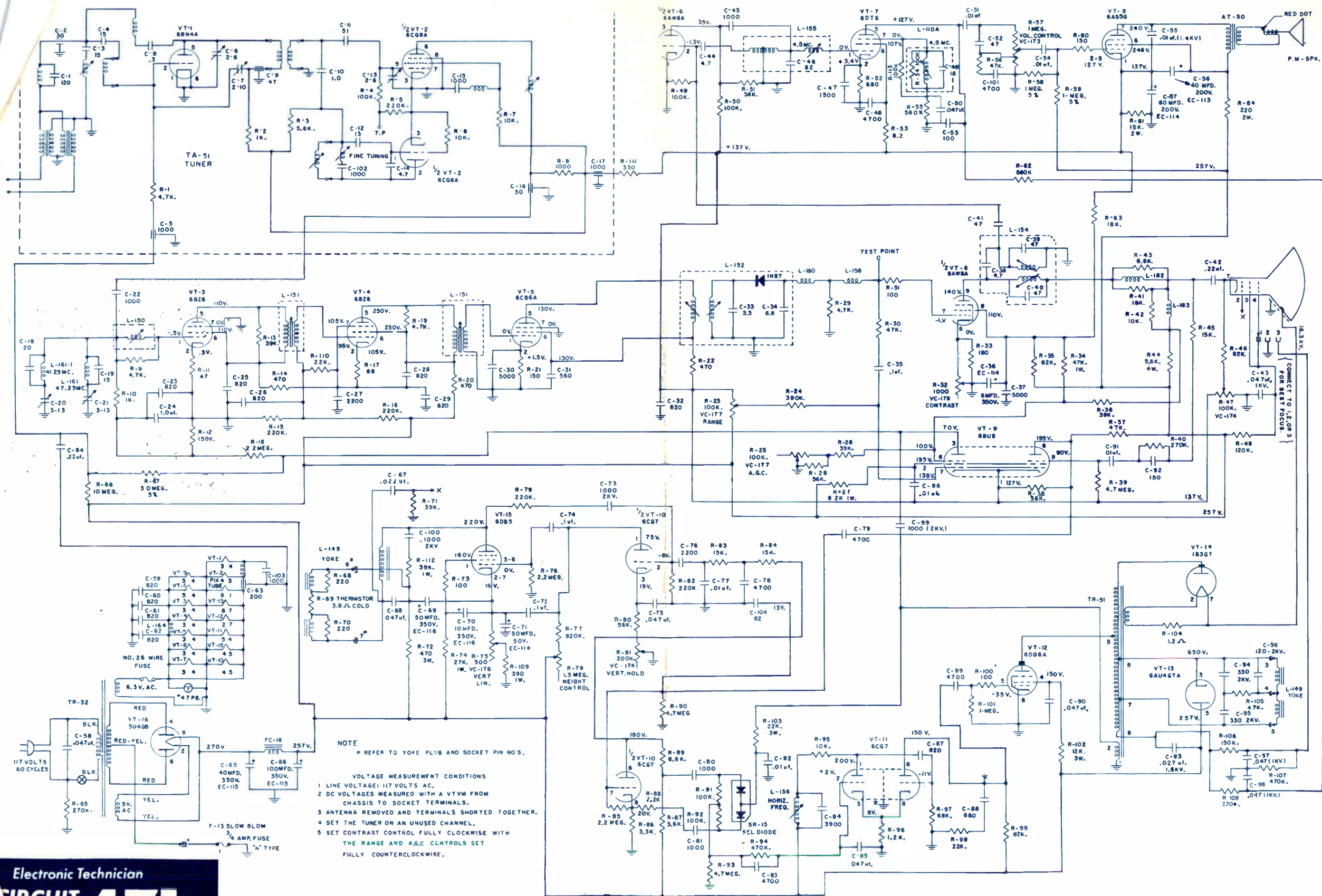
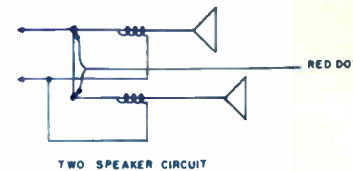


Schematic Diagram for Chassis 9L38 and 9L38U, Run 3

Arrow through control indicates clockwise rotation.
Voltages are DC from point shown to chassis unless otherwise noted.
Voltages were read using a V.T.V.M. Voltages were taken with no signal.

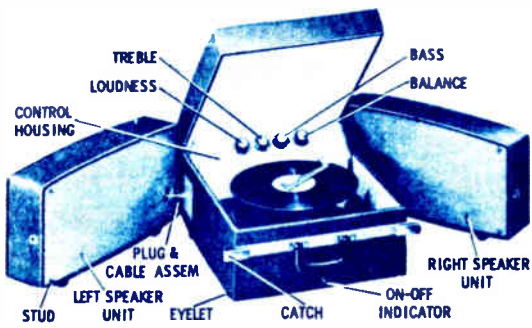
The receiver was adjusted for a good quality picture; i.e., normal contrast, brightness, width, height, vertical lin. and sound, picture in sync, then removed signal.

Coil resistances read with coil in circuit.
• Indicates a coil resistance of less than 1 ohm.
* Run 2 change } More Data on Reverse Side
† Run 3 change }

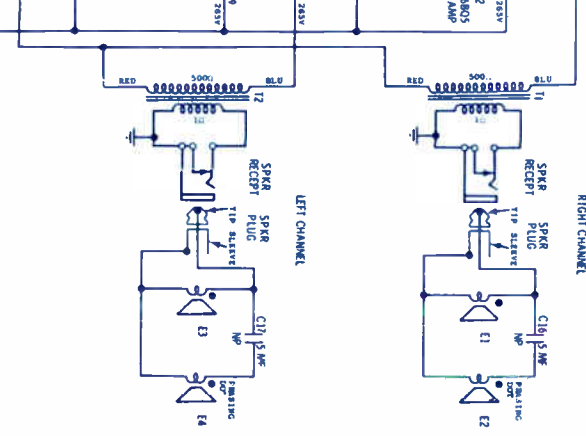
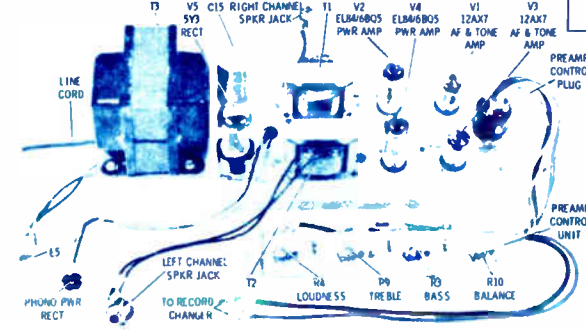
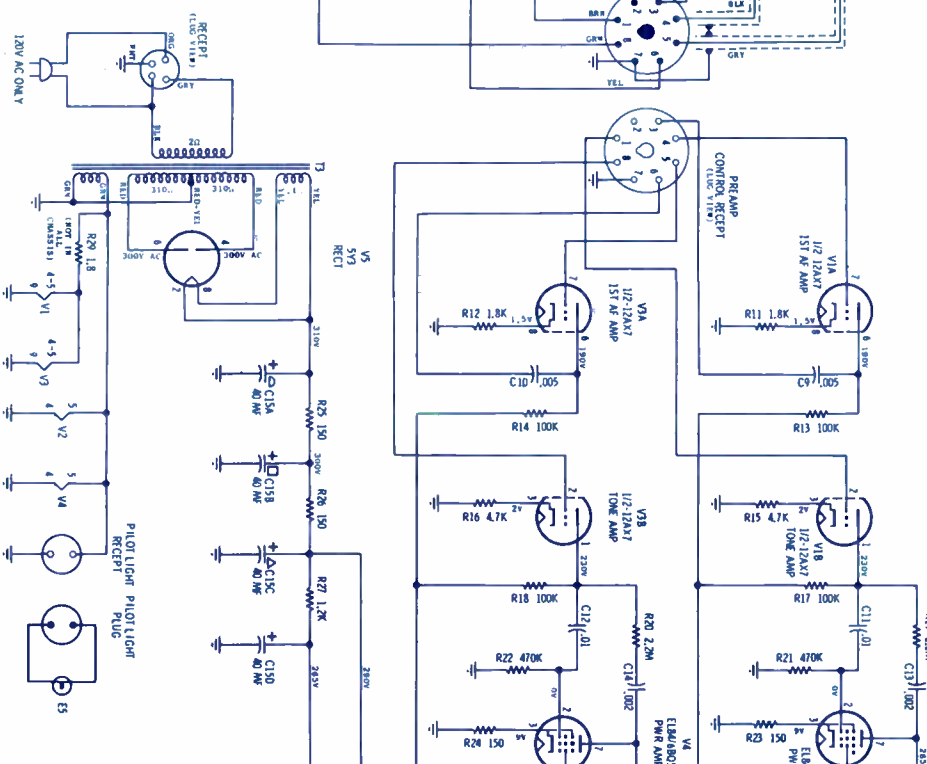
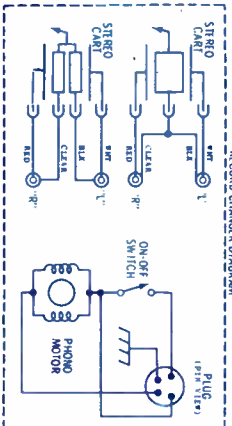
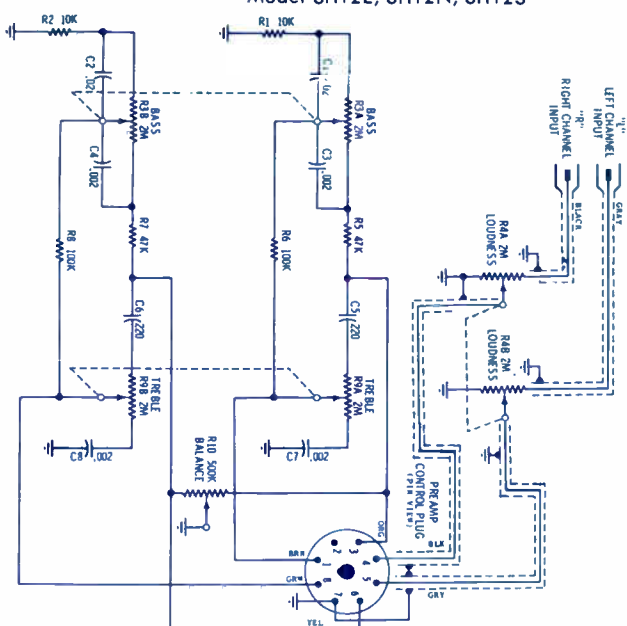


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Model SH12E, SH12N, SH12S

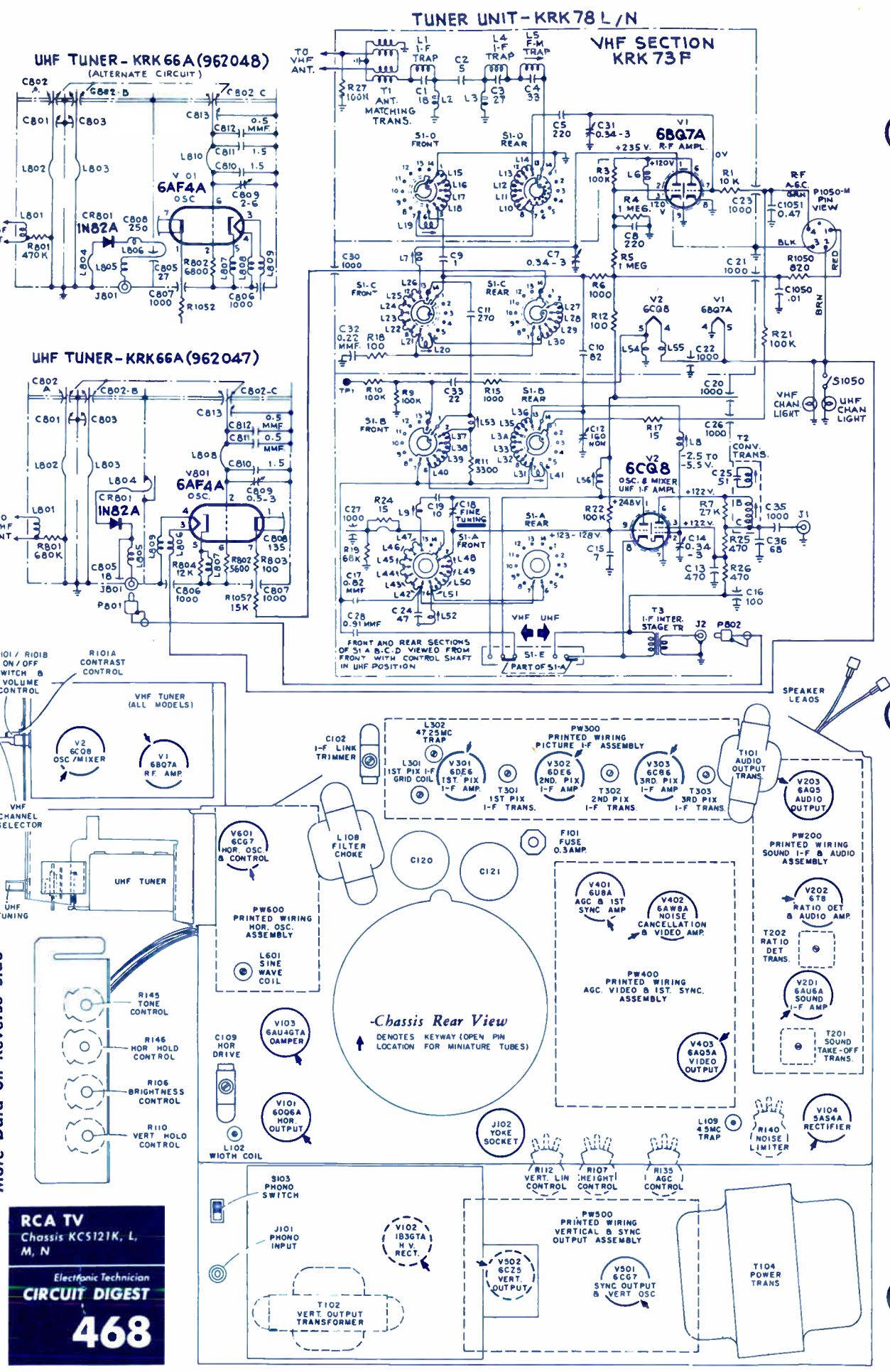


NOTES:
CAPACITORS - Decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM, $\pm 10\%$. No signal in. Preamp connected.

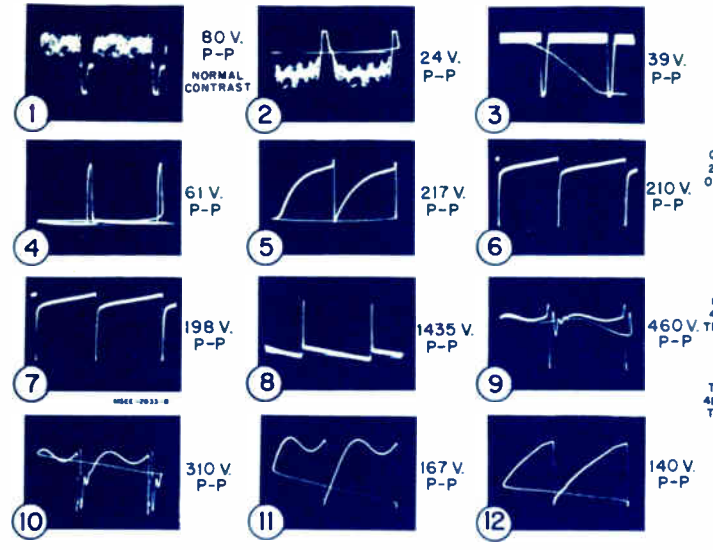


More Data on Reverse Side

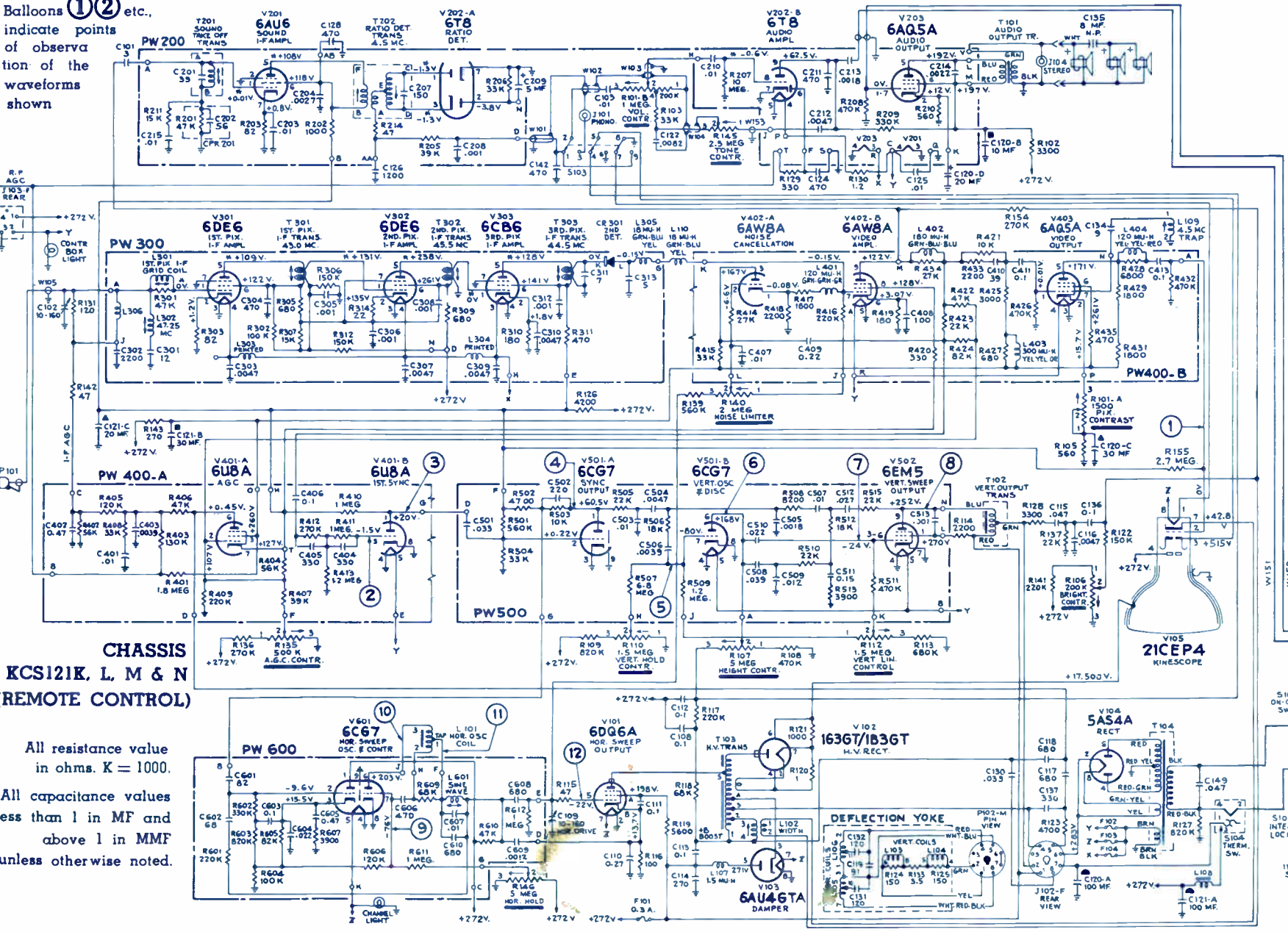
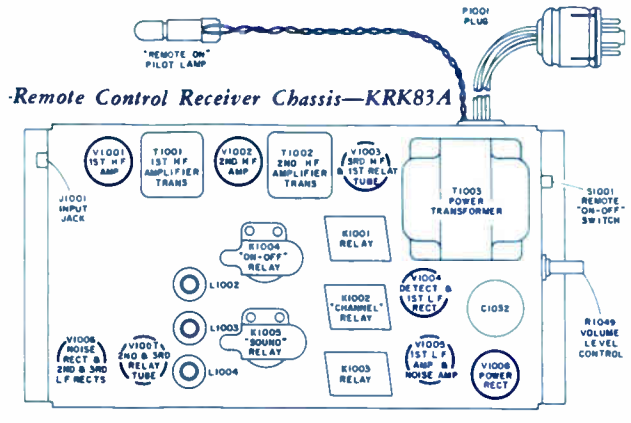
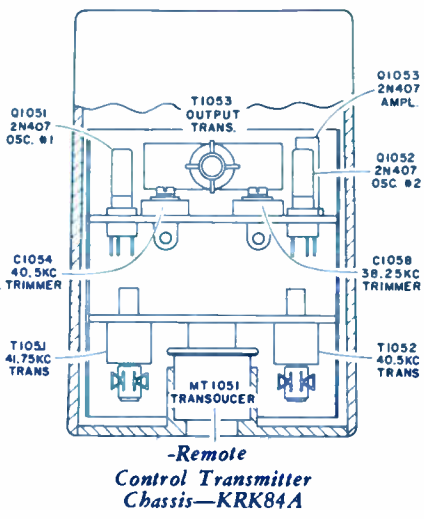
RCA TV
Chassis KCS121K, L, M, N
Electronic Technician
CIRCUIT DIGEST 468



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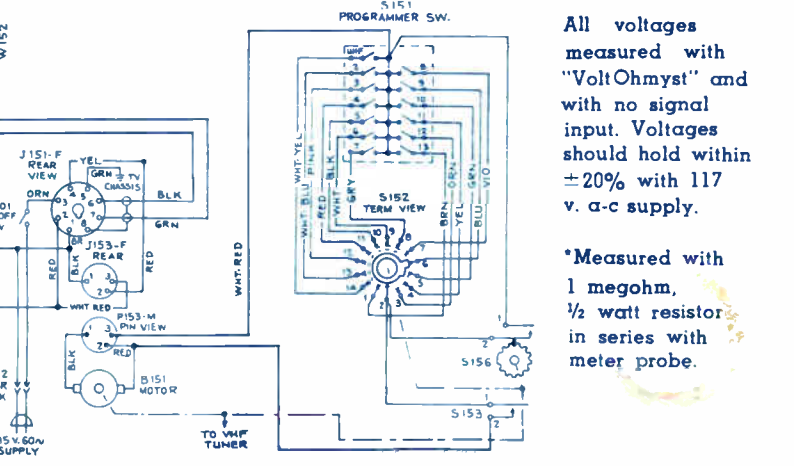
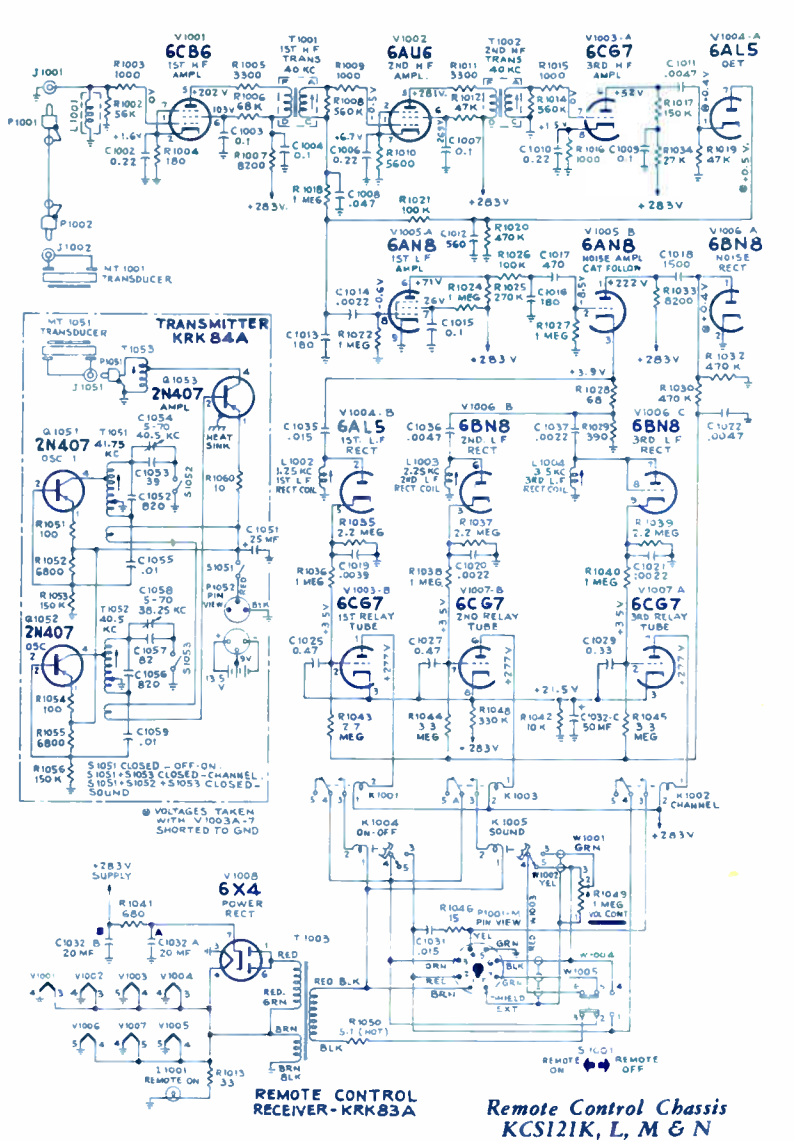


Balloons ① ② etc. indicate points of observation of the waveforms shown



CHASSIS KCS121K, L, M & N (REMOTE CONTROL)

All resistance value in ohms. K = 1000.
All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.



All voltages measured with "Volt Ohmyst" and with no signal input. Voltages should hold within $\pm 20\%$ with 117 v. a-c supply.

*Measured with 1 megohm, 1/2 watt resistor in series with meter probe.

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CIRCUIT DIGEST

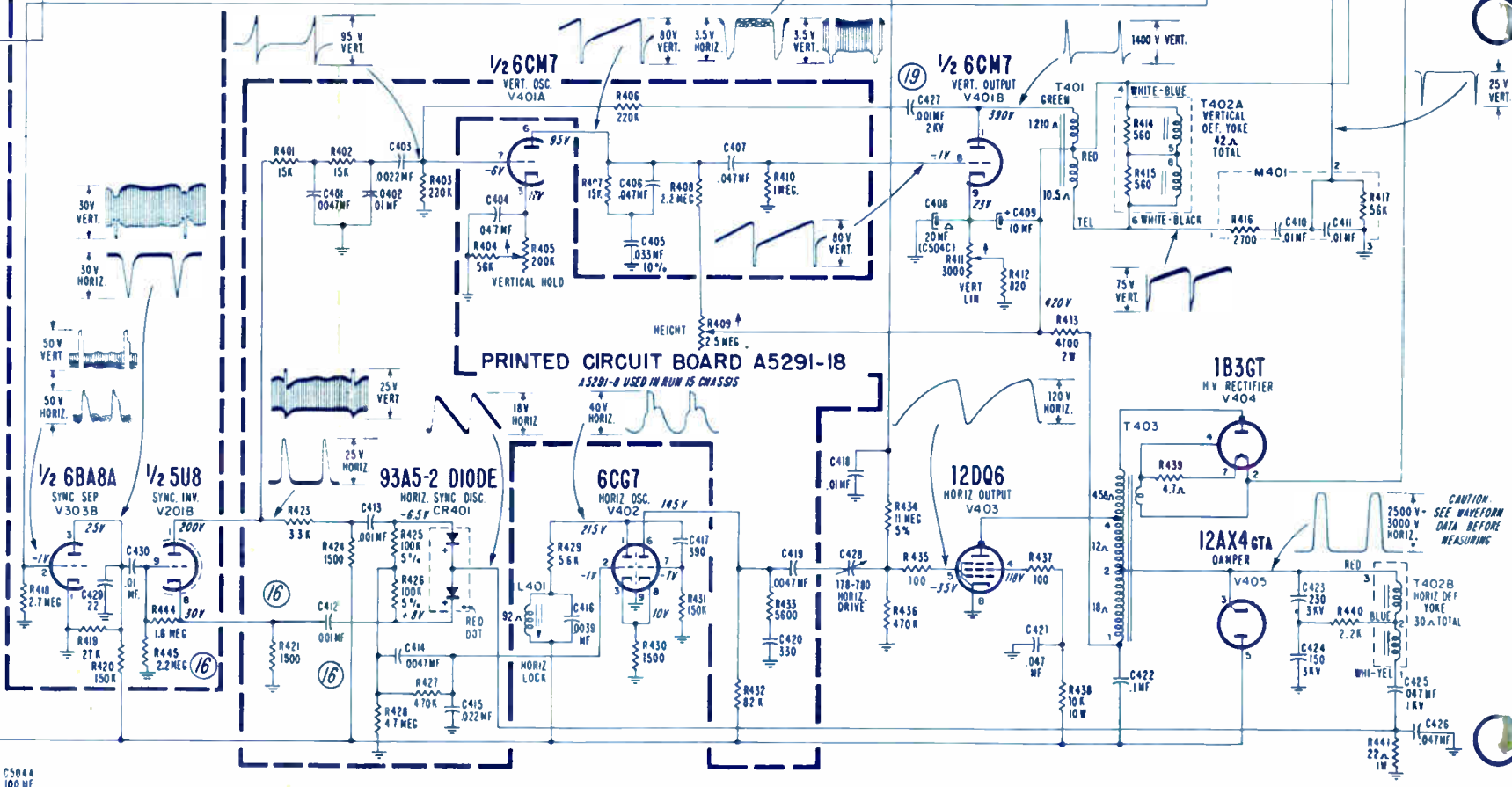
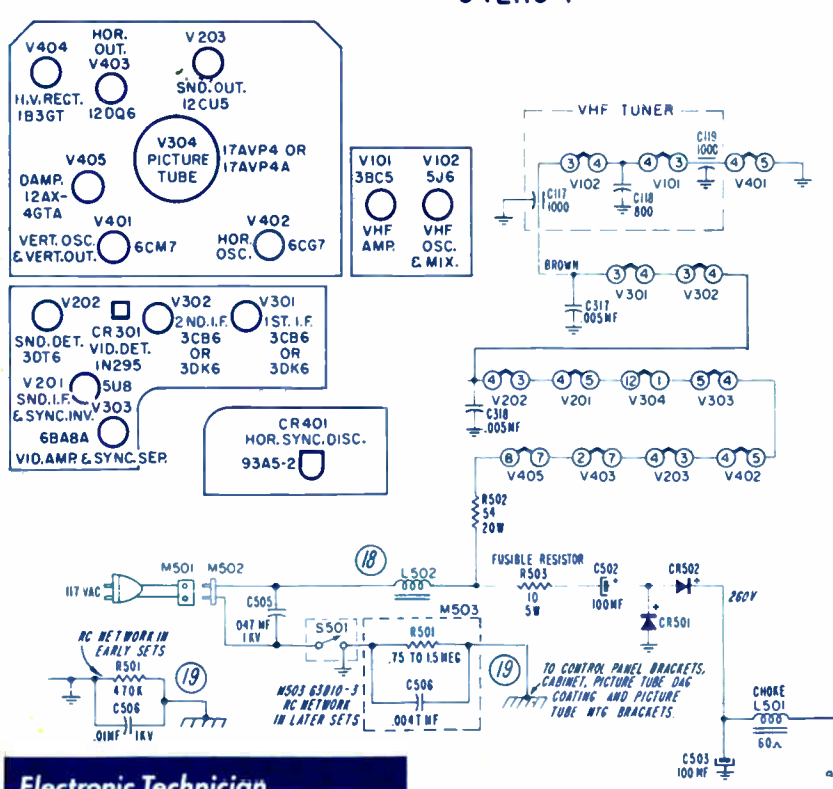
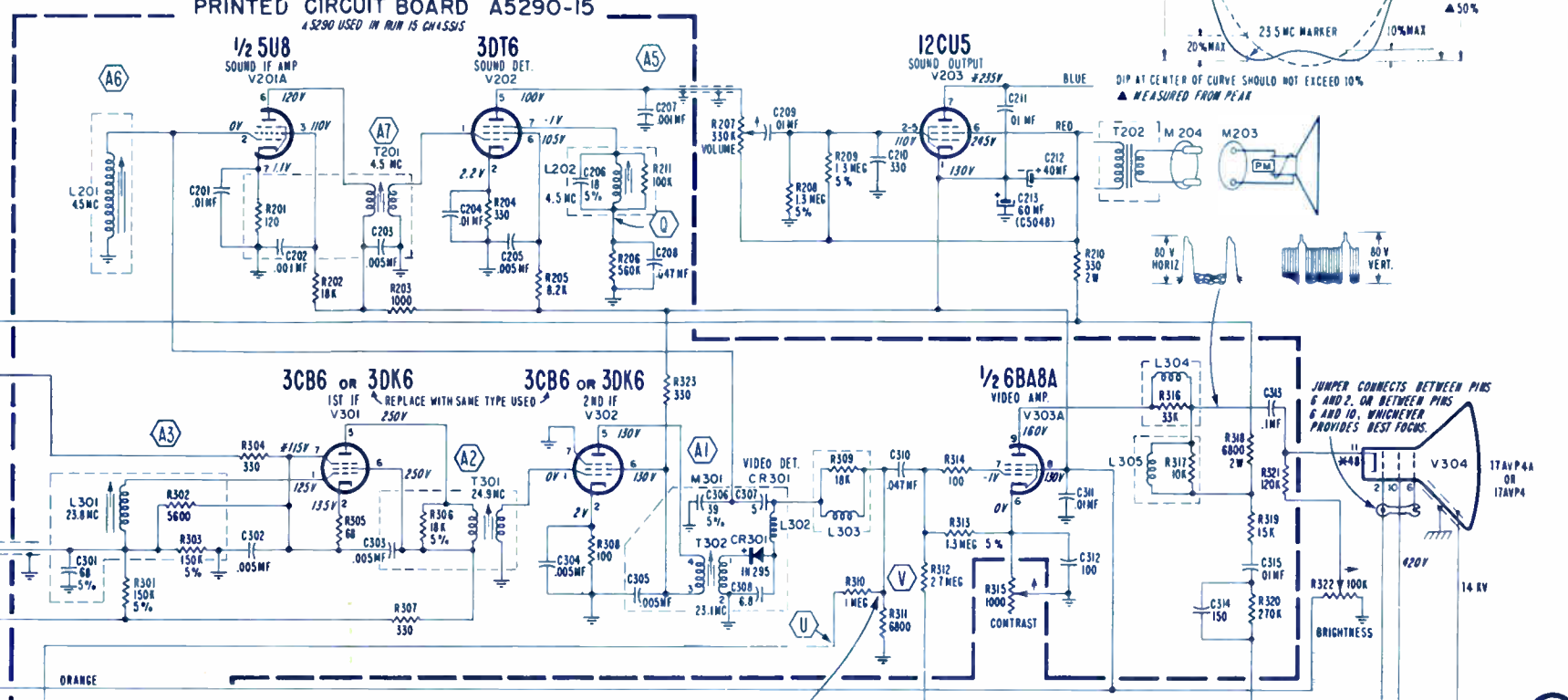
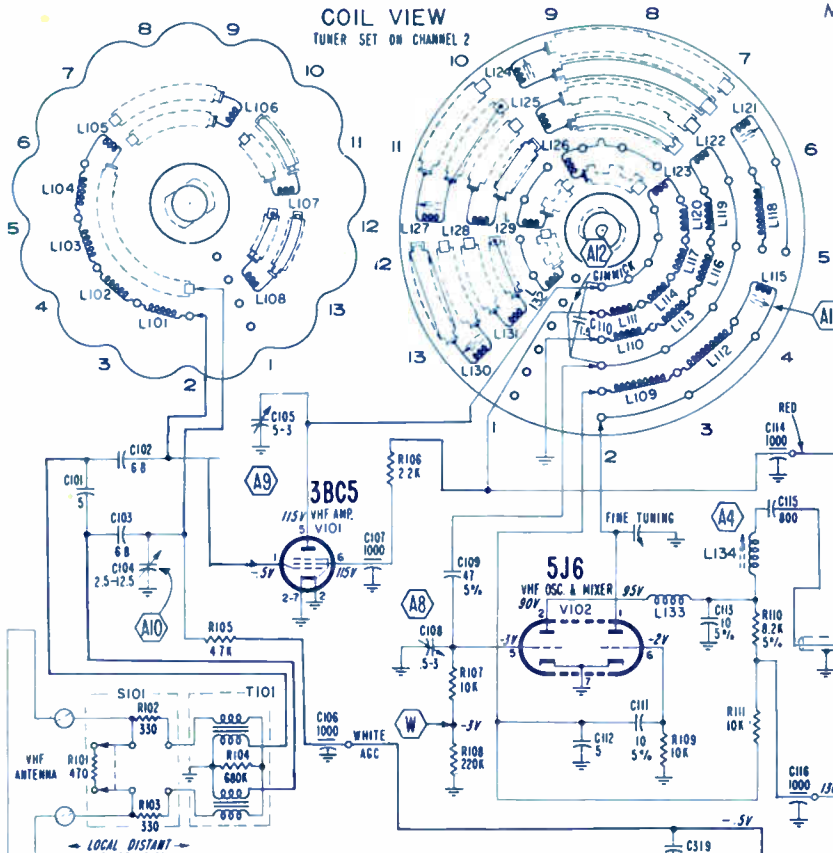
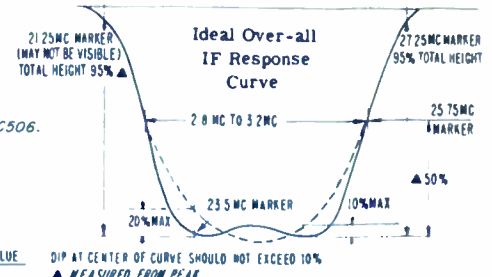
ADMIRAL Chassis 14YP3D

Model T170, T171, T172AL, T173AL, T1710

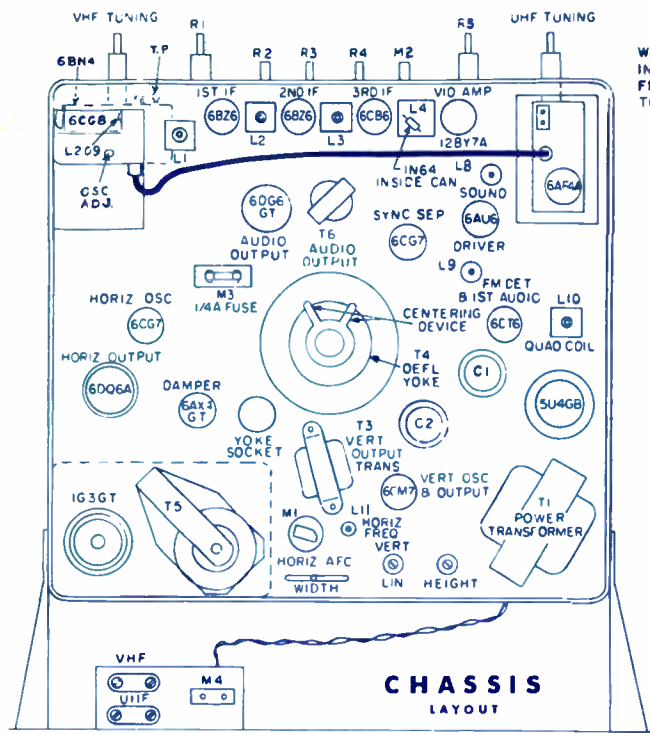
PRINTED CIRCUIT BOARD A5290-15

A5290 USED IN RUN 15 CHASSIS

- RUN CHANGES**
- (16) For improved sync, C429, C430, R444, and R445 were added, R419 changed from 47K to 27K, R420 changed from 330K to 150K, R421 changed from 3300 to 1500, R423 changed from 6.8K to 3.3K, R424 changed from 3300 to 1500, R422 was removed. Printed circuit boards A5290 and A5291-B used in Run 15 sets.
 - (17) No changes made.
 - (18) To conform with FCC regulations for reduction of horizontal sweep frequency radiation, C501 was omitted, C505 and L502 were added.
 - (19) Coupler M503 used for RC network R501 & C506. C427 rating changed from 1.6 to 2kV for improved safety factor.



Model 1-MV/U121L; 1-MV/U160L



ELECTRONIC TECHNICIAN 473

CIRCUIT DIGEST

SYLVANIA

TV Chassis 1-543-1-2

VOLTAGE MEASUREMENT CONDITIONS UNLESS OTHERWISE SPECIFIED:

1. Voltage measured to chassis using Sylvania Polymeter (VTVM).
2. AC power source 117V, 60 cycle line.
3. Voltage readings in brackets taken with no signal input; channel selector set to free channel. Antenna disconnected. Antenna terminals shorted together and grounded to chassis.
4. Voltage readings not in brackets taken with a strong signal input; tuner set to strong local station developing approximately -20V. on IF ABC bus (junction of R-203 & R-205).
5. Contrast control set to maximum. Brightness control set to minimum.
6. Voltage values shown are average readings. Variations may be observed due to normal production tolerances.

SPECIAL VOLTAGE MEASUREMENT CONDITIONS:

- Picture tube anode voltage measured with VTVM high voltage probe at line voltage of 117V. under conditions of normal signal. No brightness and correct scan size.

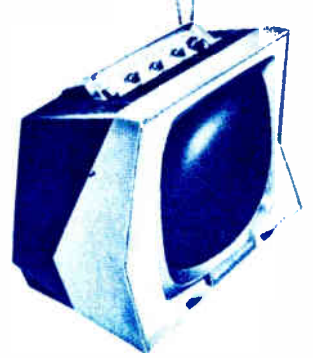
- High peak voltage of short duration may damage meter used for this measurement.

WAVEFORM MEASUREMENT CONDITIONS:

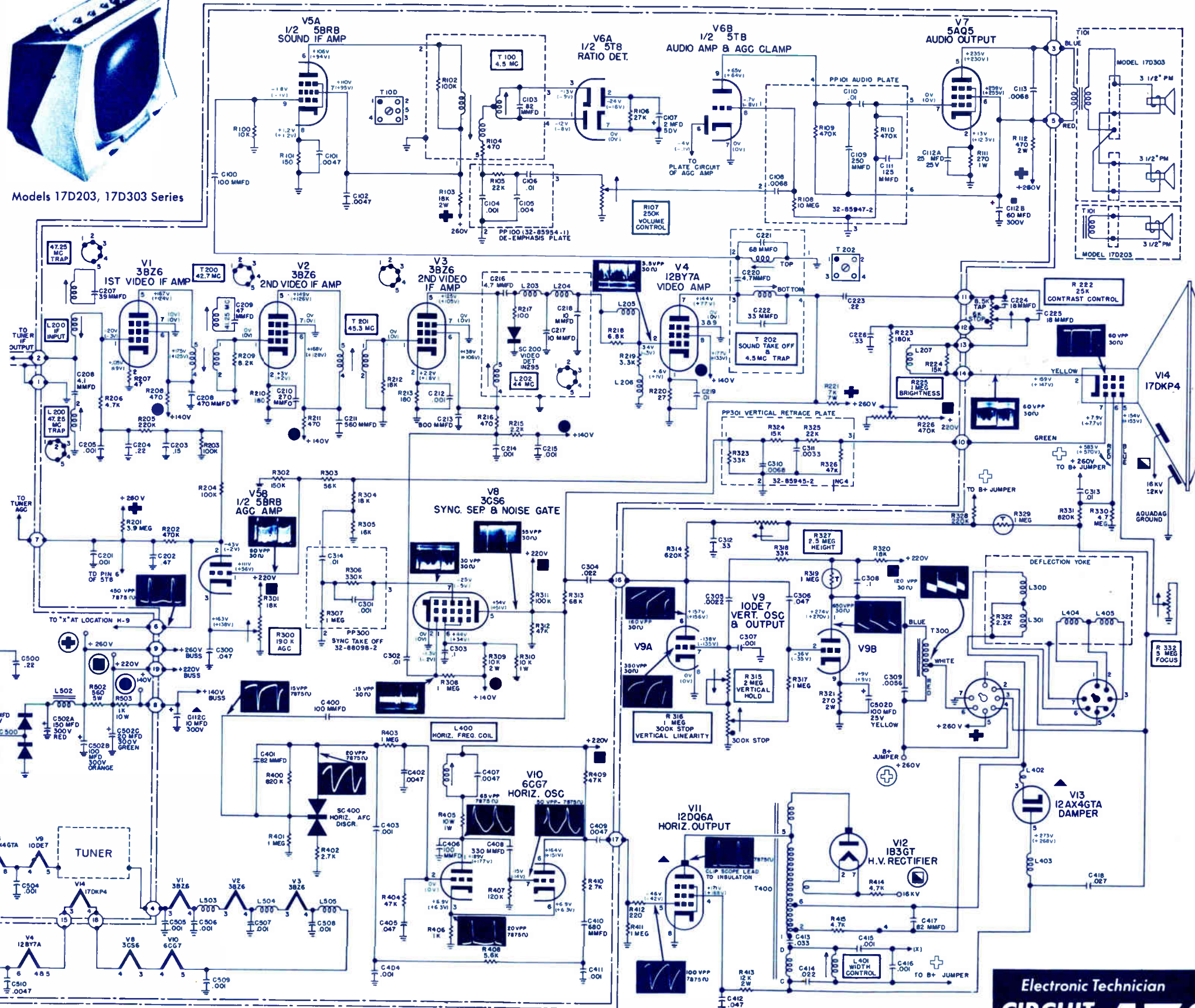
1. Channel selector set to strong channel.
2. Contrast control set for signal of 60V. PP at yellow lead of picture tube.
3. Waveforms measured with respect to chassis using Sylvania type 505 oscilloscope. (Other type oscilloscopes may alter waveform shapes or amplitudes).
4. The terms "30V" or "7875V" refer to scope sweep frequency used.

GENERAL SCHEMATIC NOTES

1. Voltage sources are indicated by encircled symbols; corresponding symbols without circles indicate voltage tie points. Actual output of +140V. supply may vary from 130V. to +180V. depending on incoming signal strength.
2. Average resistances of coils and transformers are shown and are measured with component connected in circuit.
3. Encircled numbers on edge of printed circuit indicate tie points corresponding with those shown on parts layout of top board.
4. All capacitors are rated in microfarads unless otherwise specified.
5. Coil and transformer terminal views are shown as seen from bottom.
6. Arrows on controls indicate direction of clockwise rotation.



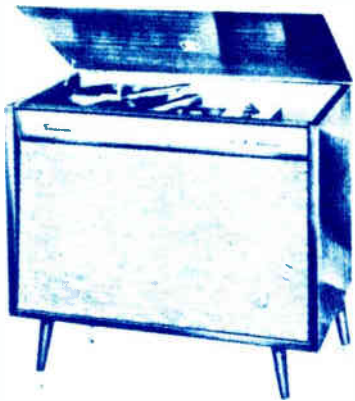
Models 17D203, 17D303 Series



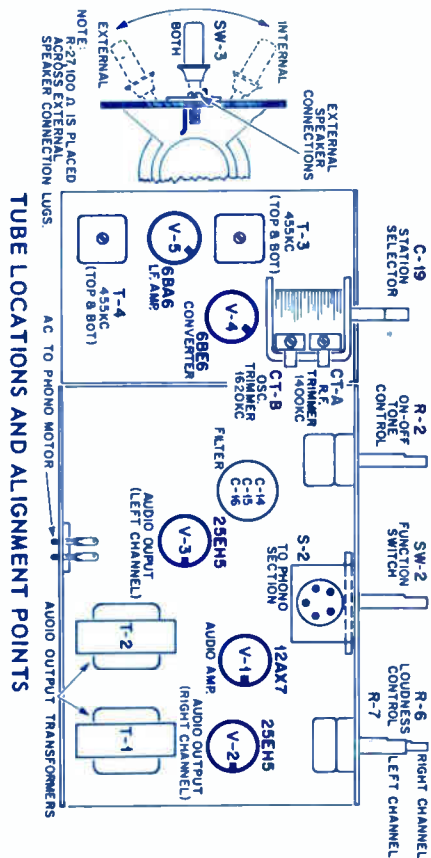
Special Full-Width SPRING BINDER Holds 24 Groups of ELCTRONIC TECHNICIAN'S CIRCUIT DIGESTS Available @ \$2.95

February • 1959

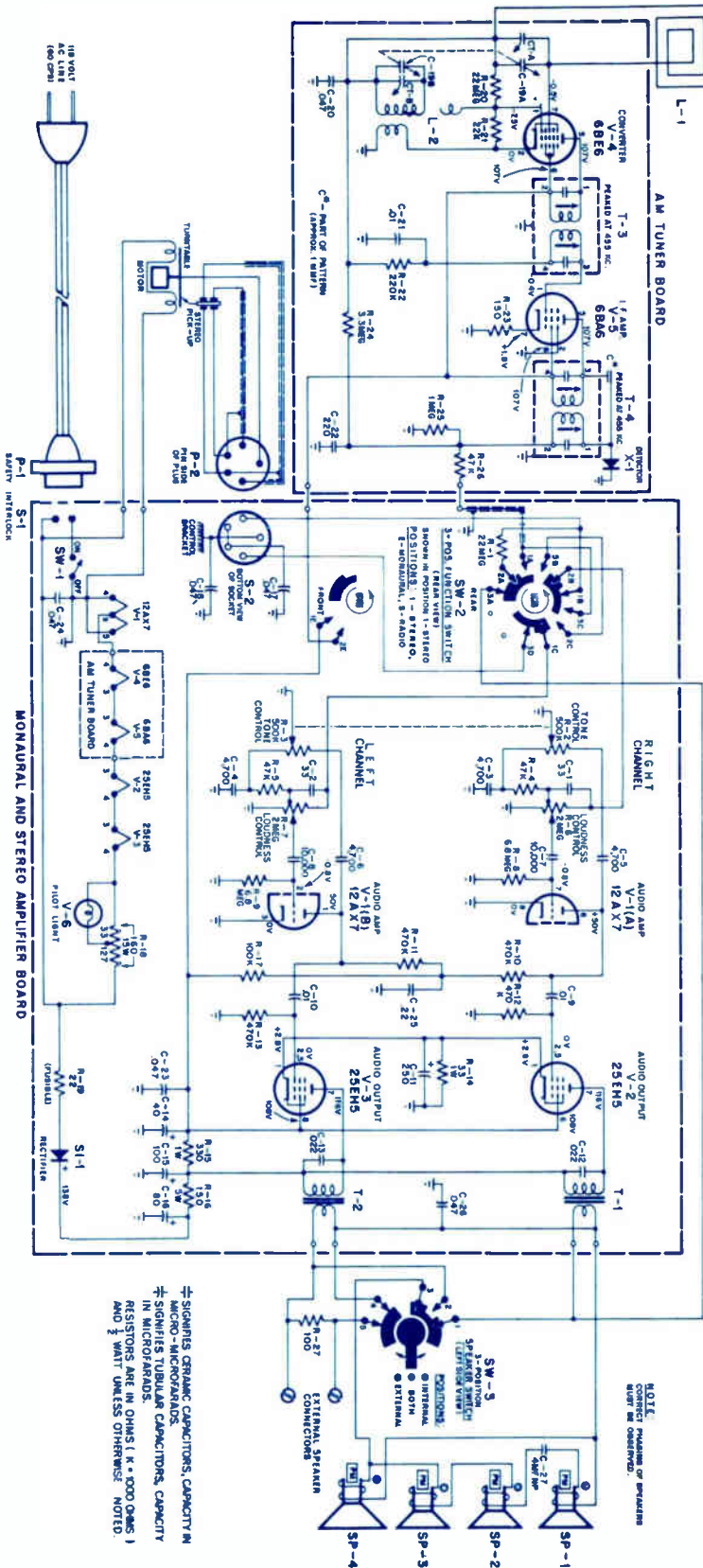
EMERSON
Hi-Fi Chassis 120455B



MODEL 896B



TUBE LOCATIONS AND ALIGNMENT POINTS



± SIGNIFIES CERAMIC CAPACITORS, CAPACITY IN MICRO-MICROFARADS.
≠ SIGNIFIES TUBULAR CAPACITORS, CAPACITY IN MICROFARADS.
RESISTORS ARE IN OHMS (K = 1000 OHMS) AND ½ WATT UNLESS OTHERWISE NOTED.

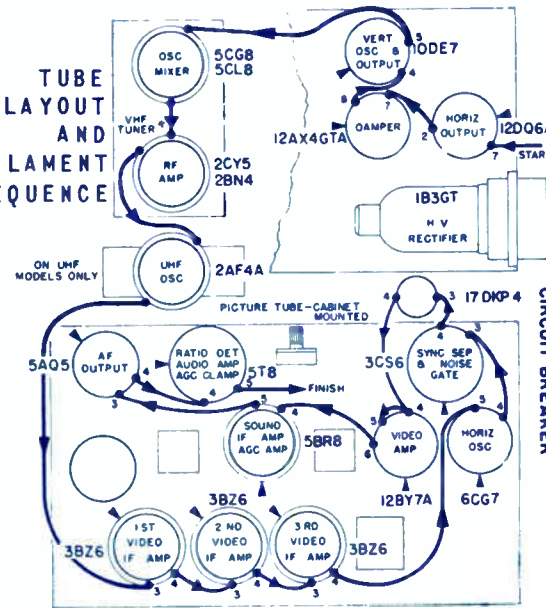
NOTE: POSITION OF SPEAKERS MUST BE OBSERVED.

SYLVANIA TV Chassis 1-543-1-2

Electronic Technician
CIRCUIT DIGEST
473

CHASSIS NO. 120455 B

TUBE LAYOUT AND FILAMENT SEQUENCE



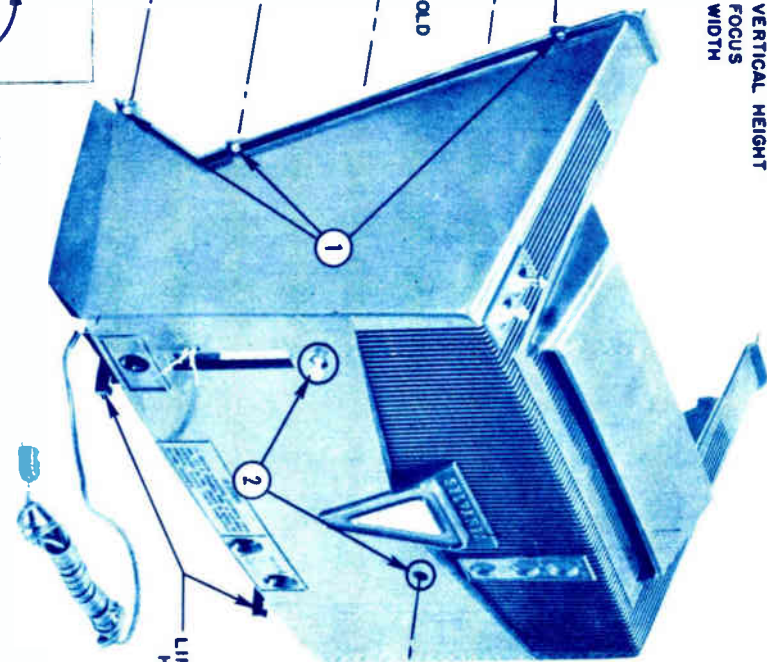
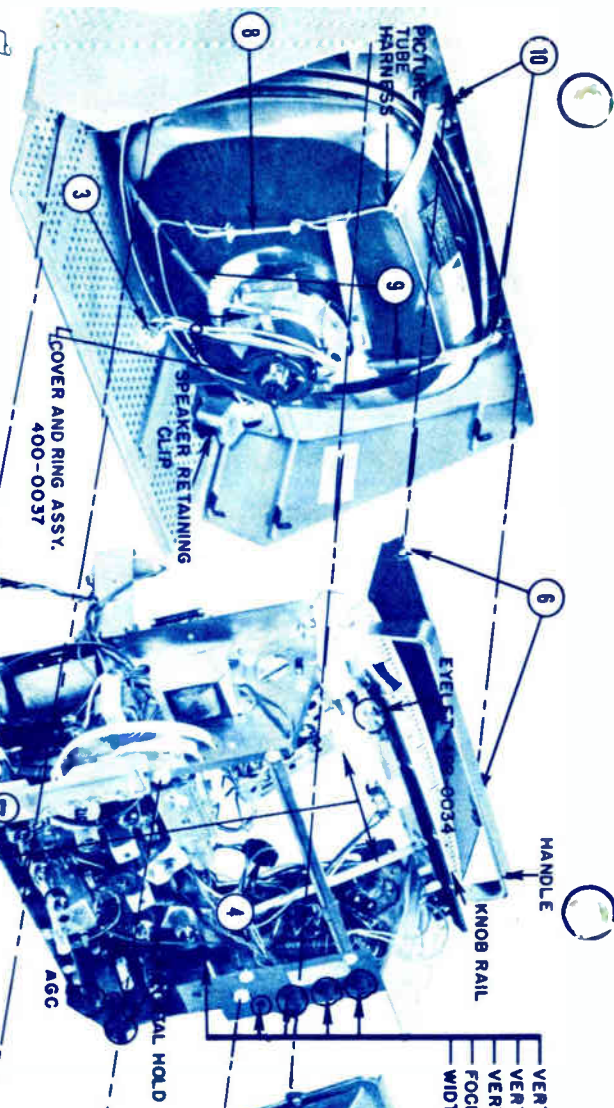
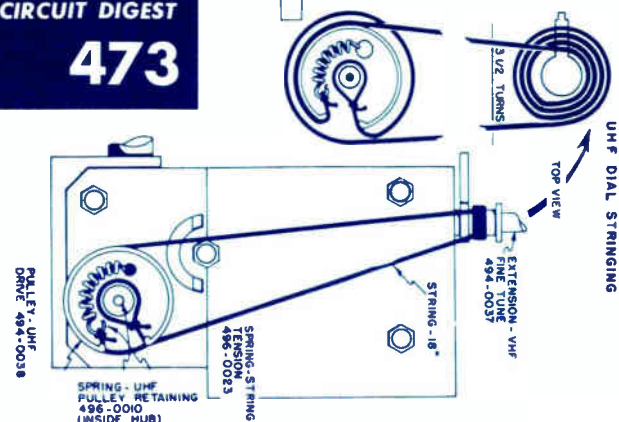
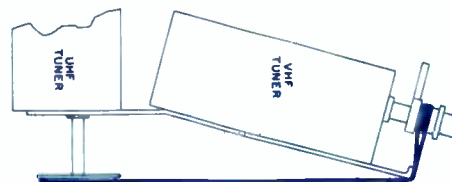
CHASSIS REMOVAL

CAUTION: WHEN SERVICING CHASSIS OUT OF CABINET, DO NOT OPERATE RECEIVER WITH SPEAKER LEADS DISCONNECTED.

1. Disconnect AC power cord and antenna connections; remove rear interlock cover by removing three screws (1) on each side and two screws (2) on rear of interlock cover.
2. Disconnect yoke plug, (3) Picture tube socket, (4) high voltage lead and speaker leads (5).
3. Remove two screws (6) securing knob rail to cabinet front.
4. Lift clip (7) and remove chassis by sliding straight back.

PICTURE TUBE AND SAFETY GLASS REMOVAL

1. Remove chassis from cabinet as outlined under "Chassis Removal".
2. Loosen picture tube strap tightening bolt (8).
3. Lay cabinet face down on a surface that will not mar or scratch finish. Support upper corners to relieve any weight exerted on safety glass.
4. Remove two yoke mounting springs (9).
5. Remove two screws (10) and hang yoke and picture tube harness over cabinet bottom.



More Data on Reverse Side

ELECTRONIC TECHNICIAN 475

CIRCUIT DIGEST

RCA
TV Chassis KCS124C,
D, E, F, H, K, & L

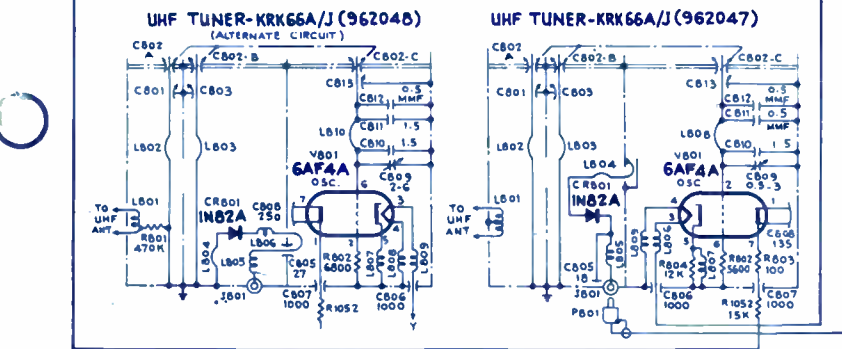
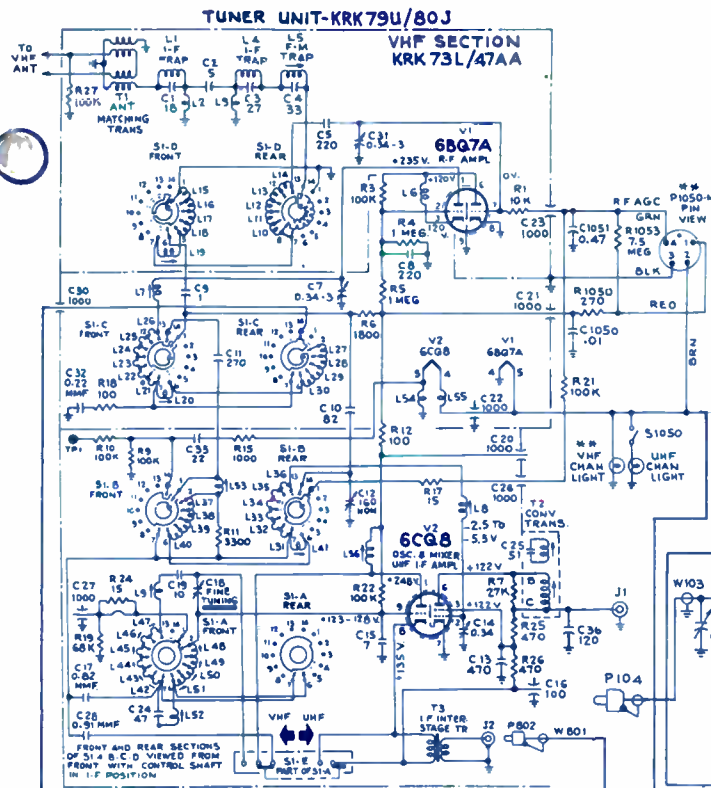
February • 1959

All resistance value in ohms. K — 1000.

All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

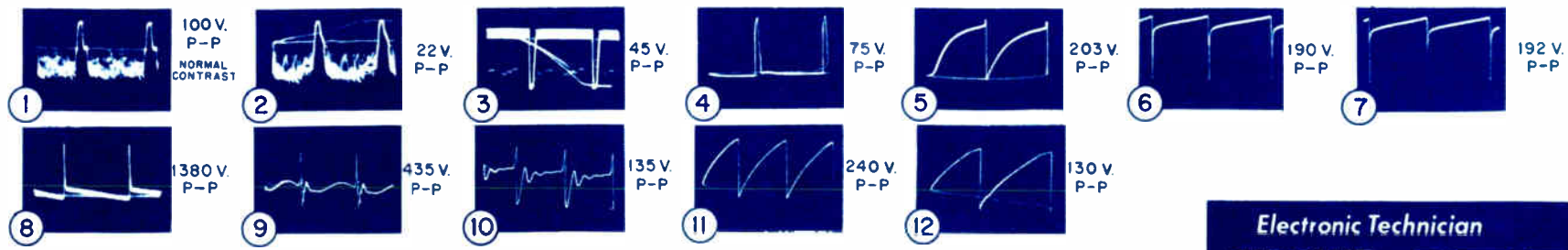
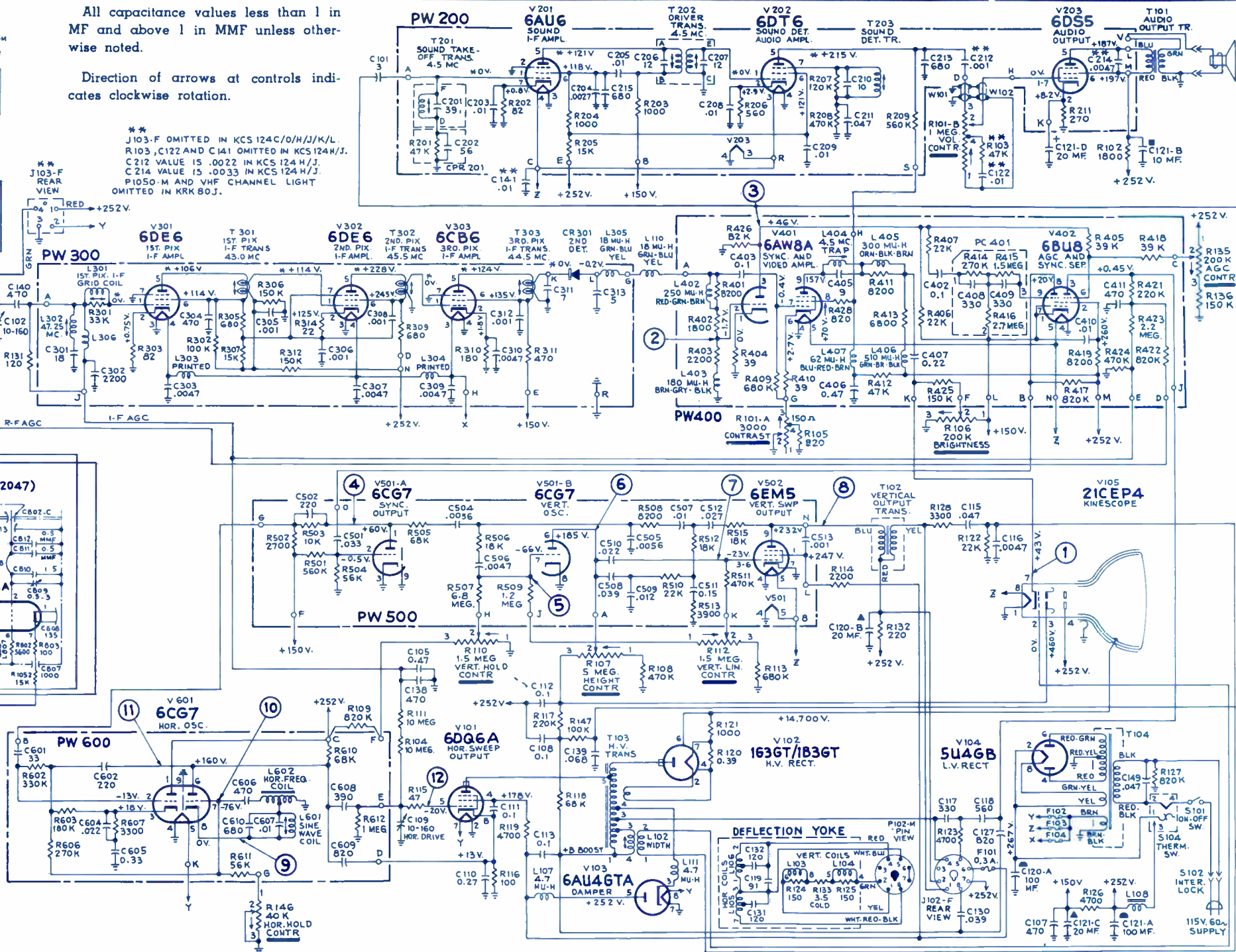
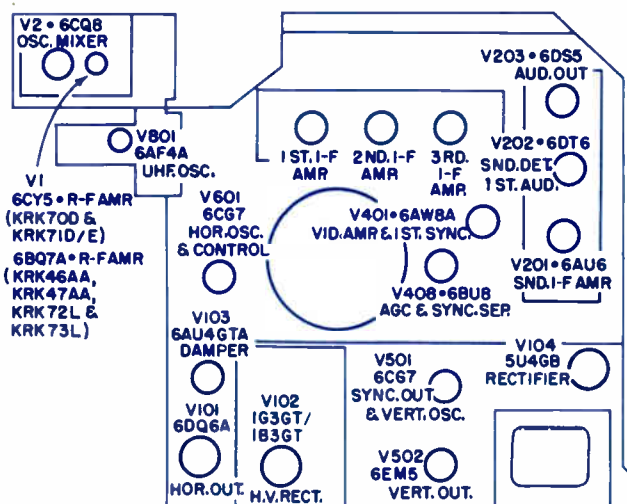
Direction of arrows at controls indicates clockwise rotation.

** J103-F OMITTED IN KCS 124C/D/H/J/K/L.
R103, C122 AND C141 OMITTED IN KCS 124H/J.
C212 VALUE IS .0022 IN KCS 124H/J.
C214 VALUE IS .0033 IN KCS 124H/J.
P1050-M AND VHF CHANNEL LIGHT OMITTED IN KRK 80J.



All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within $\pm 20\%$ with 117 v. a-c supply.

*Measured with 1 megohm $\frac{1}{2}$ watt resistor in series with meter probe.



Balloons ① ② etc., shown on schematic above, indicate points of observation of the waveforms shown at the right.

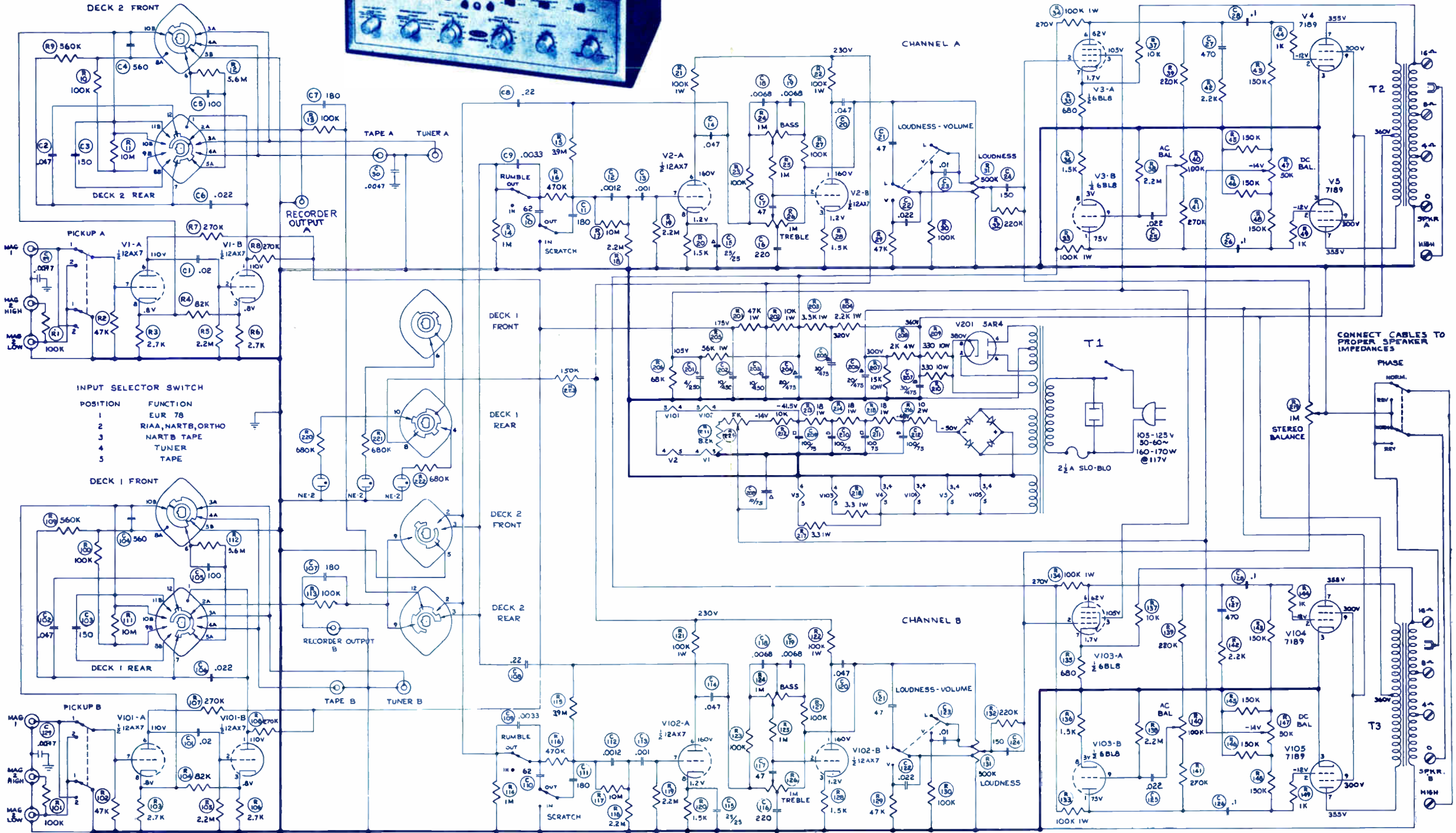
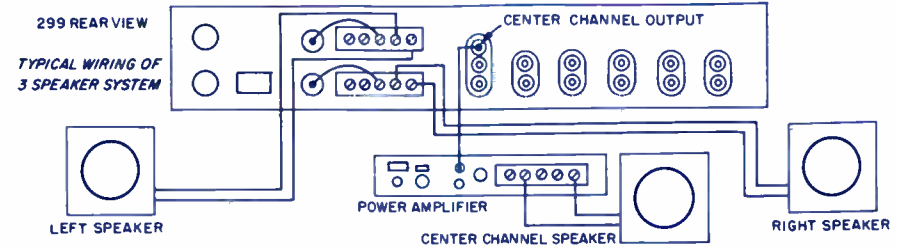
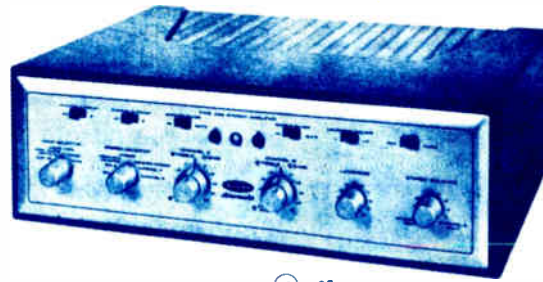
Models 21-T-9122, 25, 27, & U;
21-T-9265, 66, 67, 75, 76,
77, & U;
21-T-9345, 47, & U

ELECTRONIC TECHNICIAN 476

CIRCUIT DIGEST

SCOTT
Type 299
40-watt Stereo
Amplifier

February - 1959



INPUT SELECTOR SWITCH

POSITION	FUNCTION
1	EUR 78
2	RIIA, NARTB, ORTHO
3	NARTB TAPE
4	TUNER TAPE
5	TAPE

STEREO SELECTOR SWITCH

POSITION	FUNCTION
1	BALANCE A
2	BALANCE B
3	MONAURAL RECORDS
4	STEREO
5	REVERSE STEREO
6	CHANNEL A
7	CHANNEL B

THE FOLLOWING CONTROLS IN CHANNEL "A" ARE MECHANICALLY GANGED WITH IDENTICAL CONTROLS IN CHANNEL "B".

1. INPUT SELECTOR
2. SCRATCH FILTER
3. RUMBLE FILTER
4. LOUDNESS-VOLUME
5. LOUDNESS

TYPE 299 STEREO AMPLIFIER

1. VOLTAGES MEASURED WITH V.T.V.M.
2. NO INPUT SIGNAL & 117 V LINE
3. SWITCHES SHOWN IN MAX. C.C.W POSITION

Electronic Technician
CIRCUIT DIGEST 476

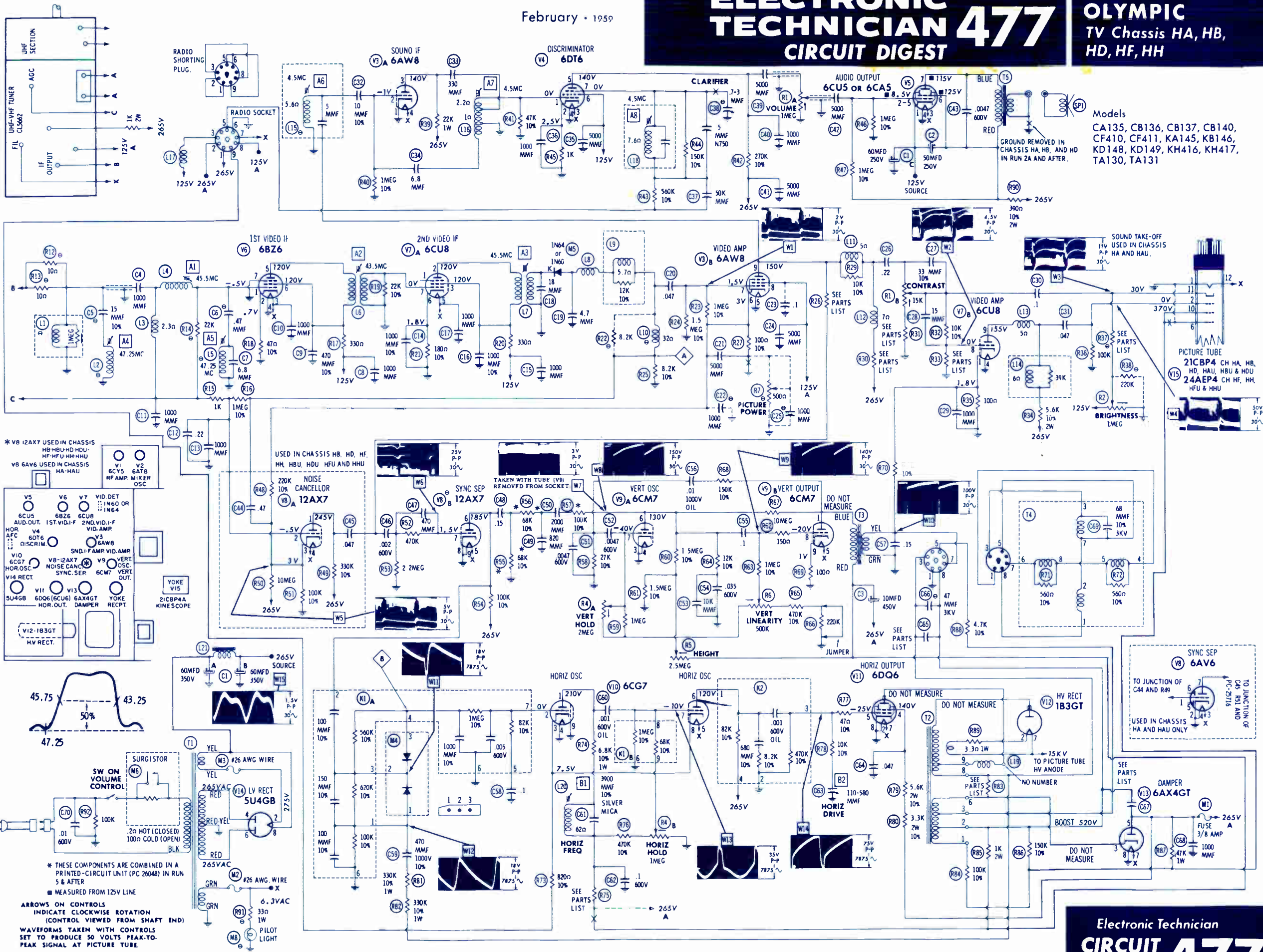
ELECTRONIC TECHNICIAN 477

CIRCUIT DIGEST

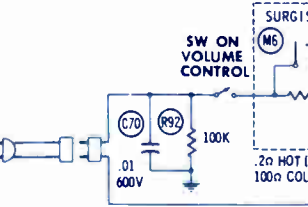
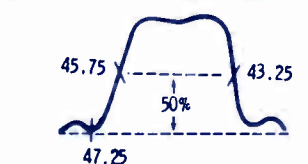
OLYMPIC

TV Chassis HA, HB, HD, HF, HH

Models
CA135, CB136, CB137, CB140, CF410, CF411, KA145, KB146, KD148, KD149, KH416, KH417, TA130, TA131



- * V8 12AX7 USED IN CHASSIS HB, HD, HDU, HF, HFU, HH, HHU
- V8 6AV6 USED IN CHASSIS HA, HAU
- V1 6CY5 RF AMP
- V2 6AT6 MIXER OSC
- V3 6AW8 SND. I-F AMP VID. AMP
- V4 60T6 DISCRIM.
- V5 6CU5 AUD. OUT.
- V6 6BZ6 1ST. VID. I-F VID. AMP
- V7 6CU8 2ND. VID. I-F VID. AMP
- V9 6CM7 VERT. OSC.
- V10 6CG7 HOR. OSC.
- V11 6DQ6 HOR. OUT. DAMPER
- V12 1B3GT HV RECT.

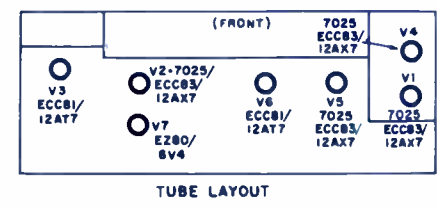
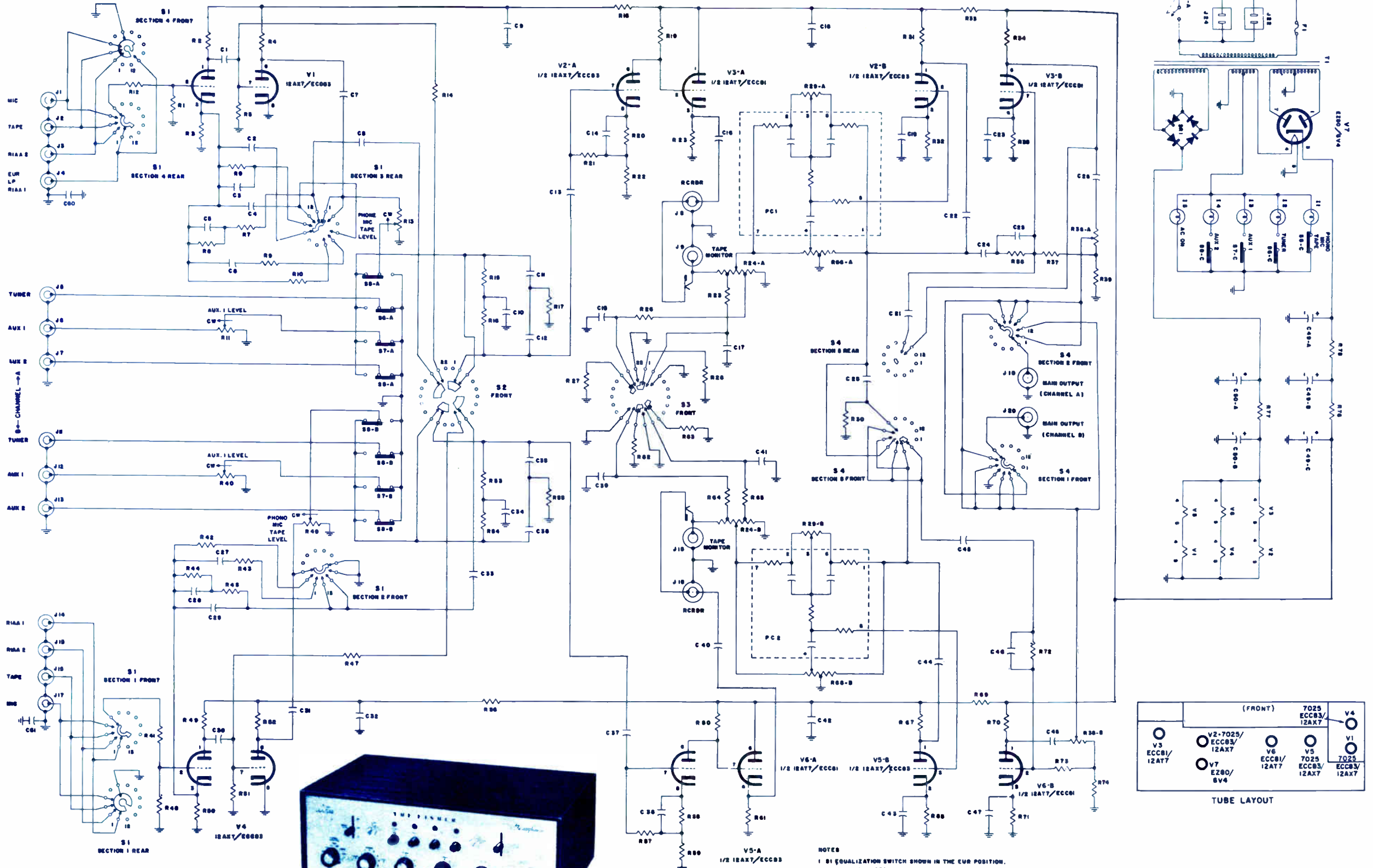


* THESE COMPONENTS ARE COMBINED IN A PRINTED-CIRCUIT UNIT (PC 26048) IN RUN 5 & AFTER

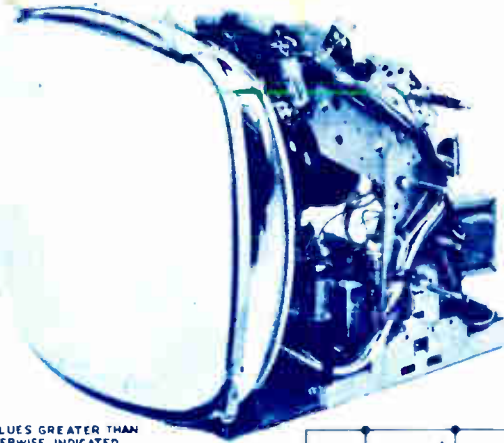
MEASURED FROM 125V LINE

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.



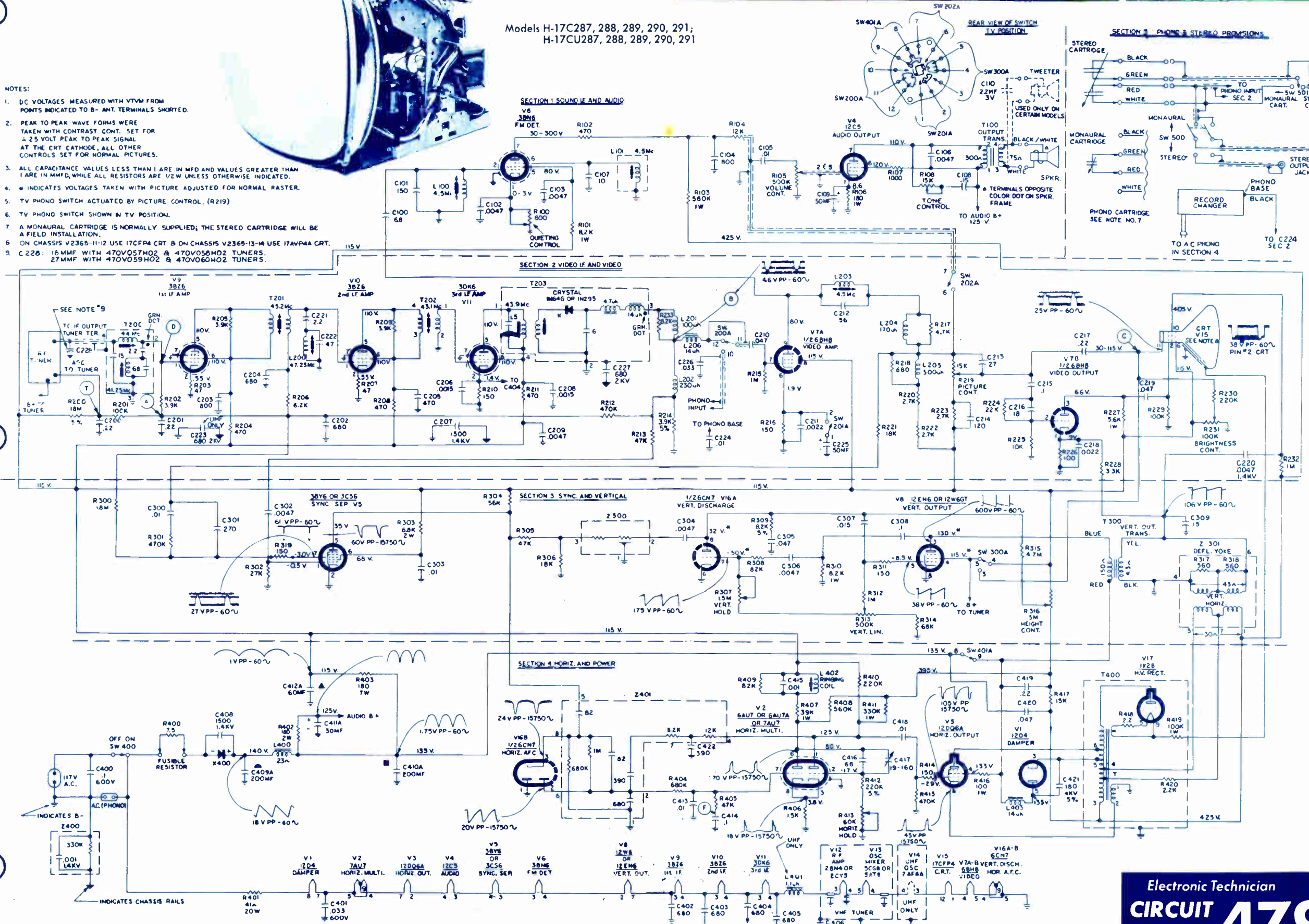
- NOTES
- 1 S1 EQUALIZATION SWITCH SHOWN IN THE EUR POSITION.
 - 2 S2 RUMBLE FILTER SWITCH SHOWN IN THE 20 CYCLES POSITION.
 - 3 S3 LOUDNESS CONTOUR SWITCH SHOWN IN THE OFF POSITION.
 - 4 S4 OUTPUT SELECTOR SWITCH SHOWN IN THE REVERSE POSITION.
 - 5 S5 TO S6 INPUT SELECTOR SWITCH (PUSH BUTTON) SHOWN IN THE PHONO-RE-TAPE POS.
 - 6 S6 AC POWER SWITCH SHOWN IN THE OFF POSITION.



Models H-17C287, 288, 289, 290, 291;
H-17CU287, 288, 289, 290, 291

NOTES:

- DC VOLTAGES MEASURED WITH VTVM FROM POINTS INDICATED TO B- ANT. TERMINALS SHORTED.
- PEAK TO PEAK WAVE FORMS WERE TAKEN WITH CONTRAST CONT. SET FOR A 2.5 VOLT PEAK TO PEAK SIGNAL AT THE CRT CATHODE. ALL OTHER CONTROLS SET FOR NORMAL PICTURES.
- ALL CAPACITANCE VALUES LESS THAN 1 ARE IN MFD AND VALUES GREATER THAN 1 ARE IN MMFD, WHILE ALL RESISTORS ARE 1/2 W UNLESS OTHERWISE INDICATED.
- * INDICATES VOLTAGES TAKEN WITH PICTURE ADJUSTED FOR NORMAL RASTER.
- TV PHONO SWITCH ACTUATED BY PICTURE CONTROL. (R219)
- TV PHONO SWITCH SHOWN IN TV POSITION.
- A MONAURAL CARTRIDGE IS NORMALLY SUPPLIED; THE STEREO CARTRIDGE WILL BE A FIELD INSTALLATION.
- ON CHASSIS V2365-11-12 USE 17CFM CRT B ON CHASSIS V2365-13-14 USE 17AVPM4 CRT.
- C 228: 15 MMF WITH 470V057H02 A 470V058H02 TUNERS. 27 MMF WITH 470V059H02 B 470V060H02 TUNERS.



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CIRCUIT DIGESTS

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RCA	TV Chassis KCS124C, D, E, F, H, K, & L Models 21-T-9122, 25, 27, & U; 21-T-9265, 66, 67, 75, 76, 77, & U; 21-T-9345, 47, & U	475	475
SCOTT	Hi-Fi 40-watt Stereo Amplifier Type 299	476	476
SYLVANIA	TV Chassis 1-543-1-2 Models 17D203, 17D303 Series	473	473
WESTINGHOUSE	TV Chassis V2365-11, V2365-12 Models H-17CU287, 288, 289, 290, 291; H-17CV287, 288, 289, 290, 291	479	479

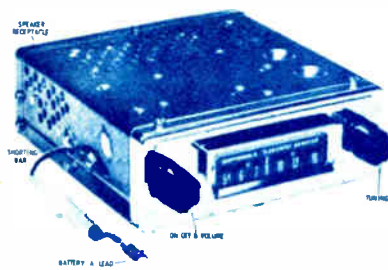
78

ELECTRONIC TECHNICIAN 480

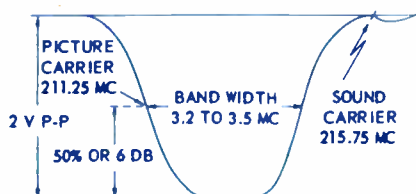
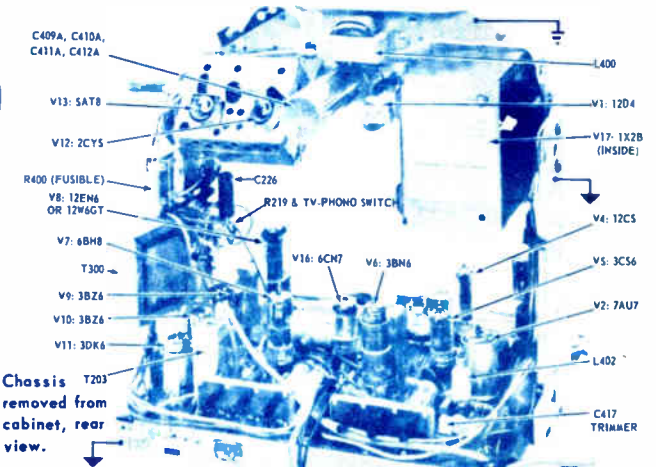
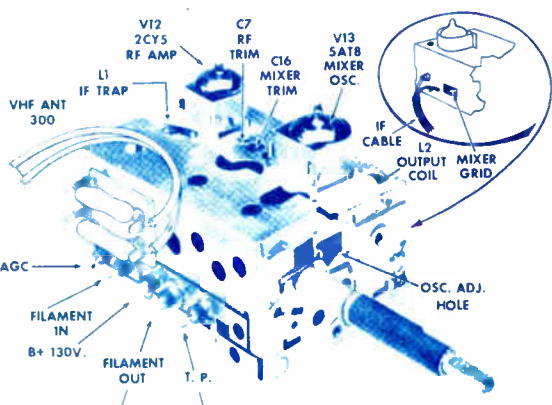
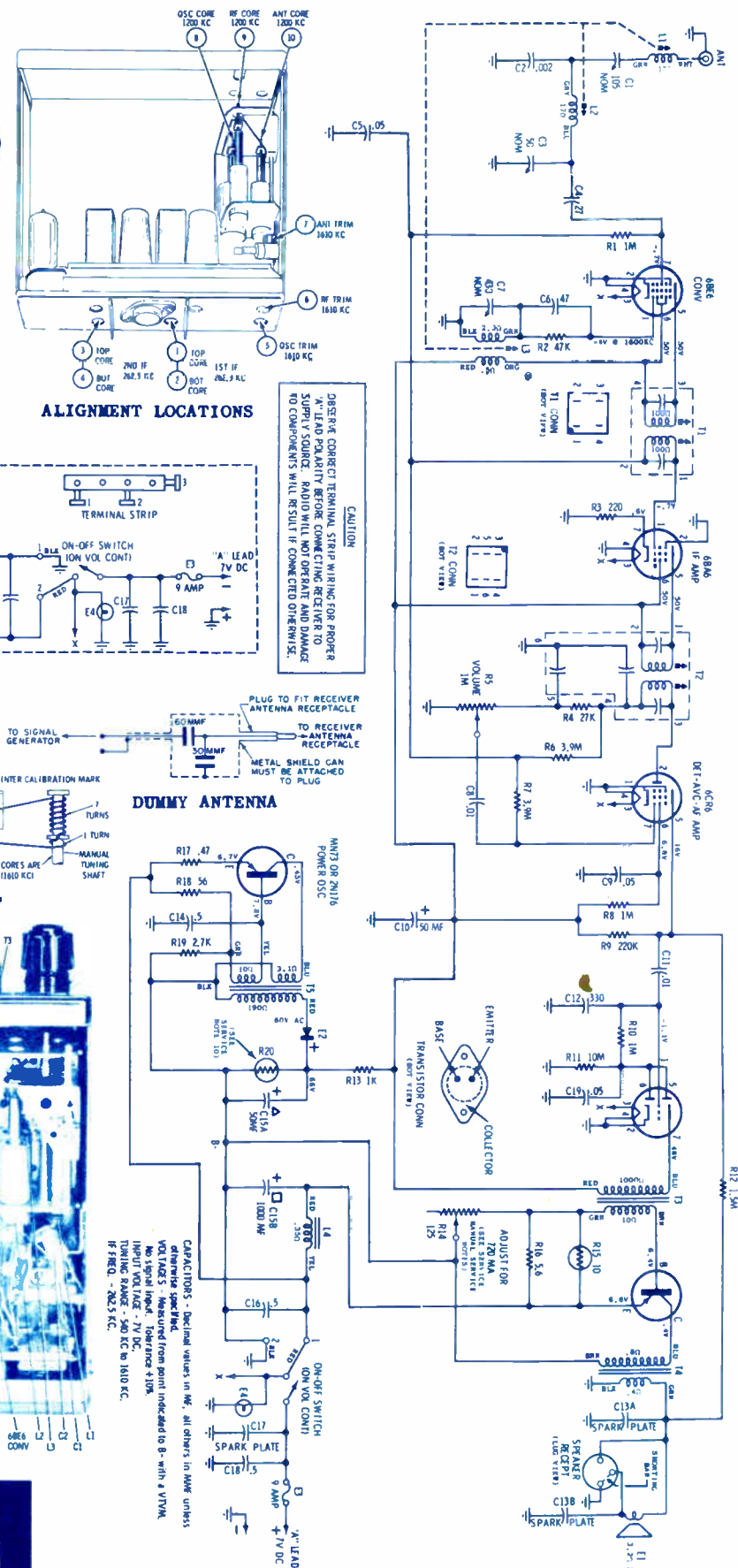
CIRCUIT DIGEST

MOTOROLA

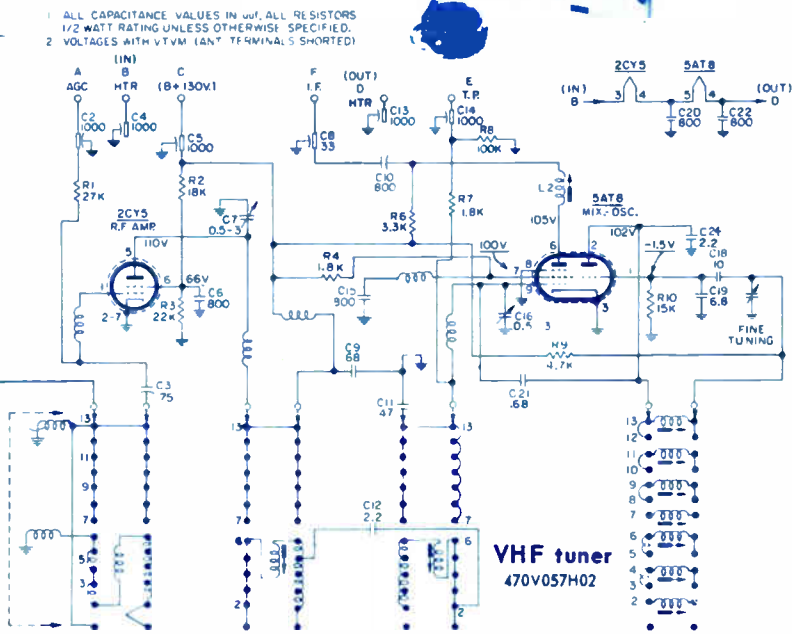
Transistor Auto Radio Model 406



OPERATES FROM -
6 volt storage battery



More Data
on Reverse Side



WESTINGHOUSE
TV Chassis
V2365-11, V2365-12

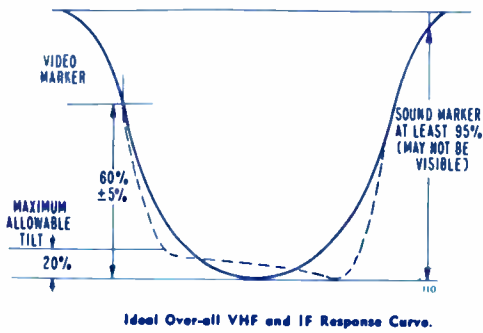
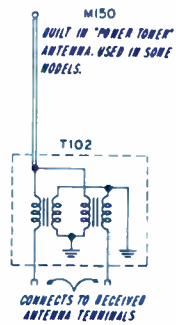
Electronic Technician
CIRCUIT DIGEST

479

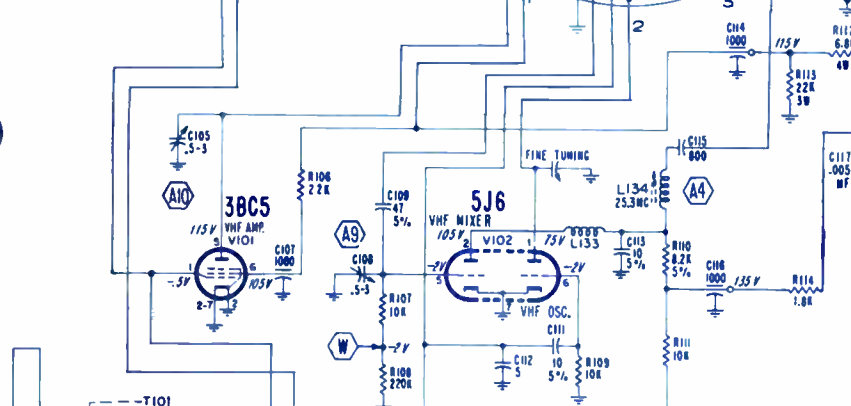
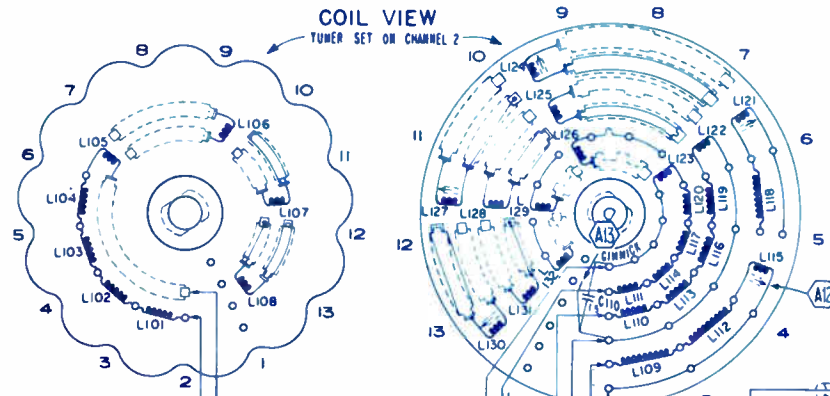
Electronic Technician
CIRCUIT DIGEST

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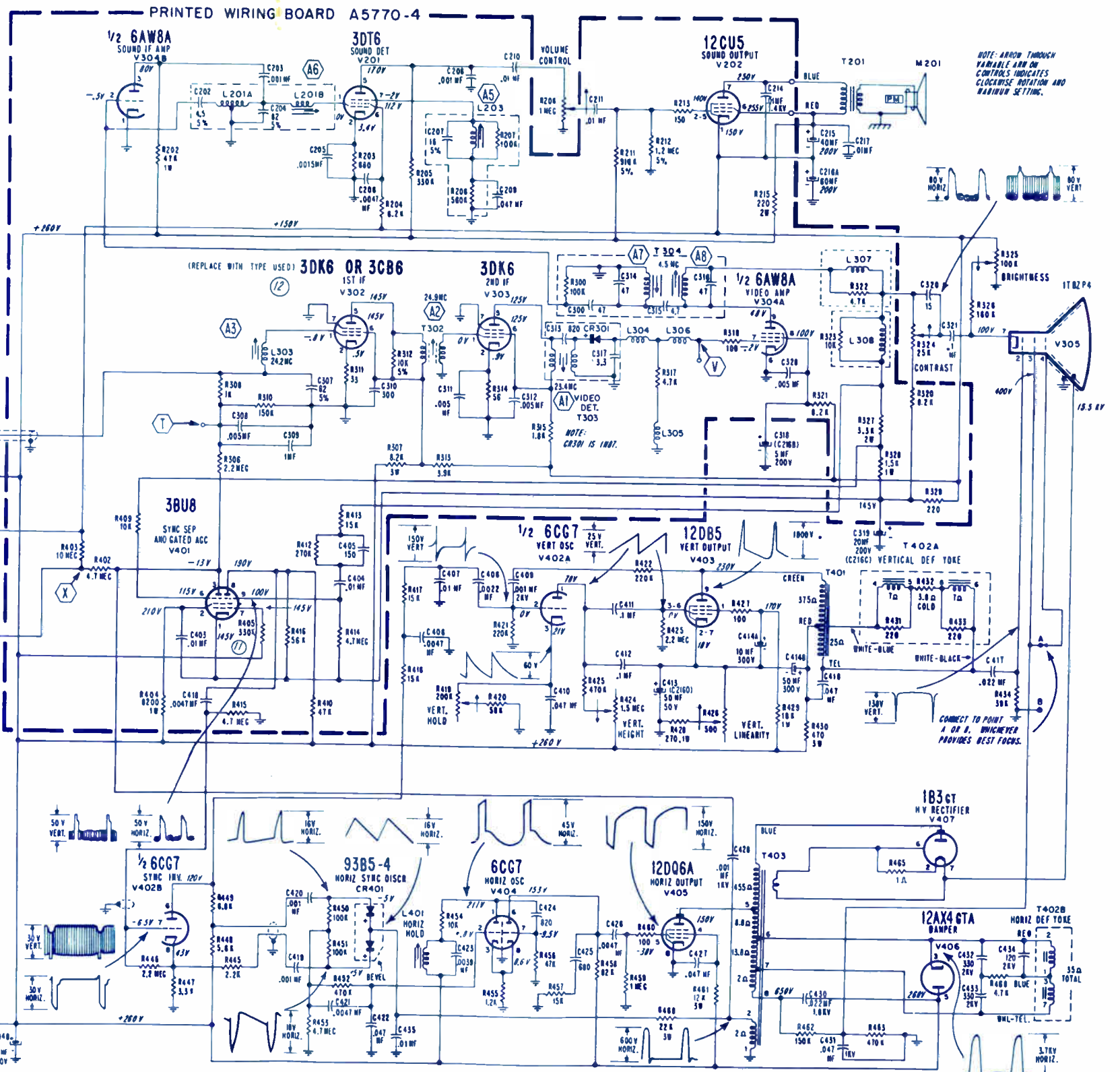
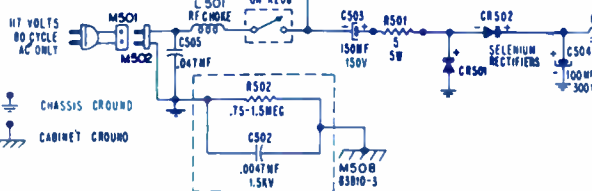


VHF TUNER 94E119-6



RUN CHANGES

- 10 Start of production 15C1.
- 11 To improve uniformity of operation under all signal conditions and for simplicity of circuitry, R403 was 2.2 meg ohms, R408 and C402 were removed.
- 12 Alternate tube type (3CB6) used for V302.

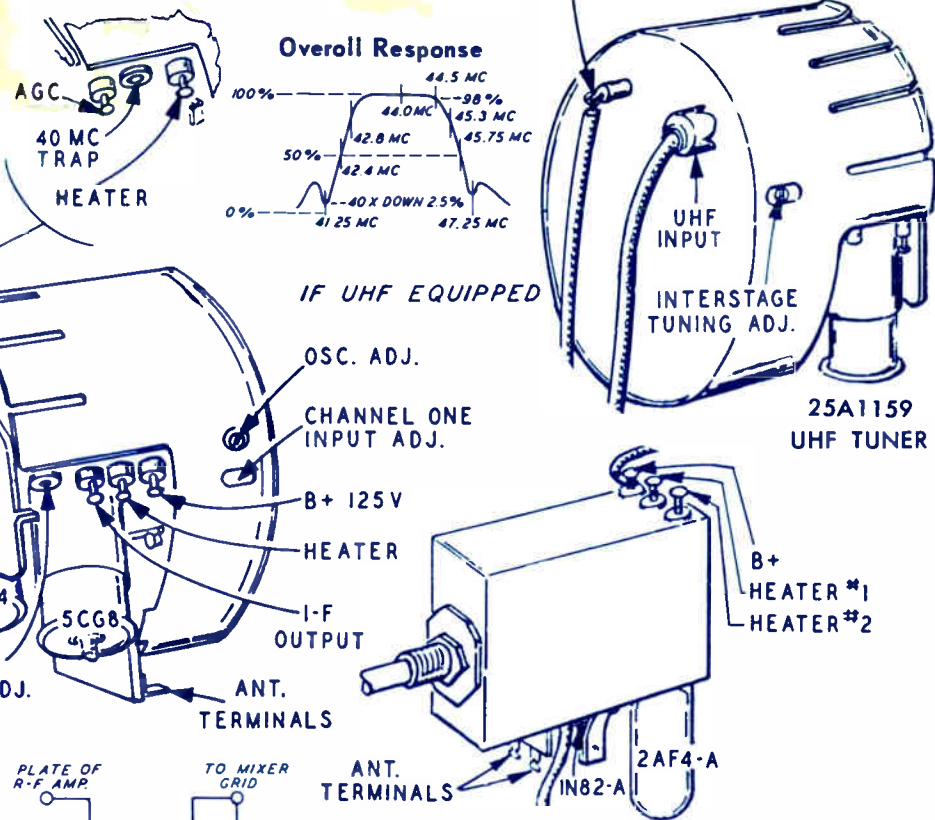


15C1 Television Chassis Stamped Run 10 through Run 12.

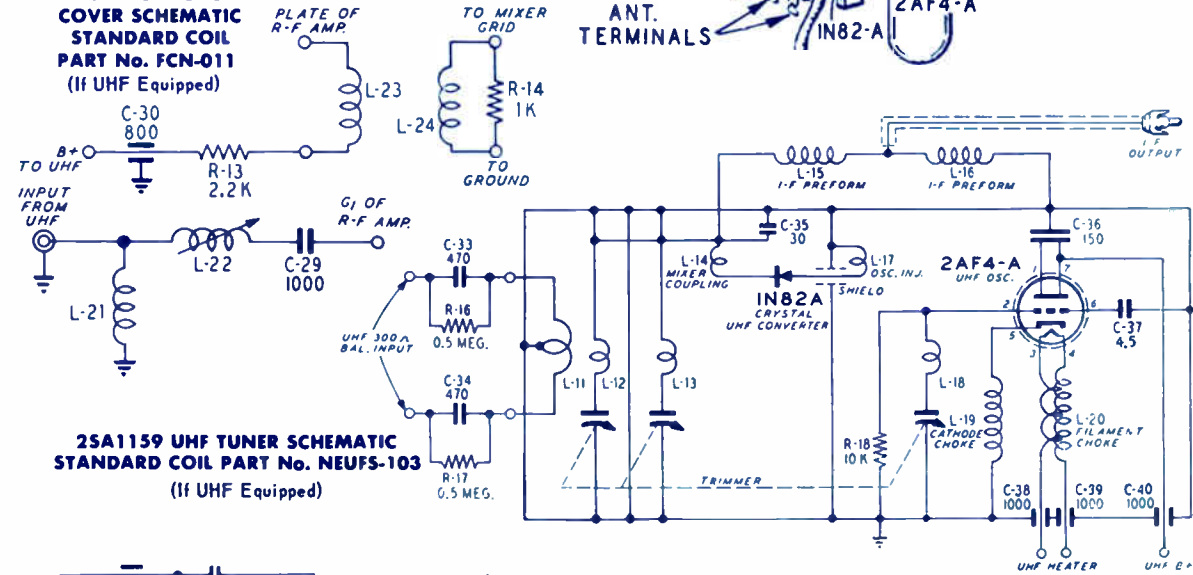
More Data on Opposite Page

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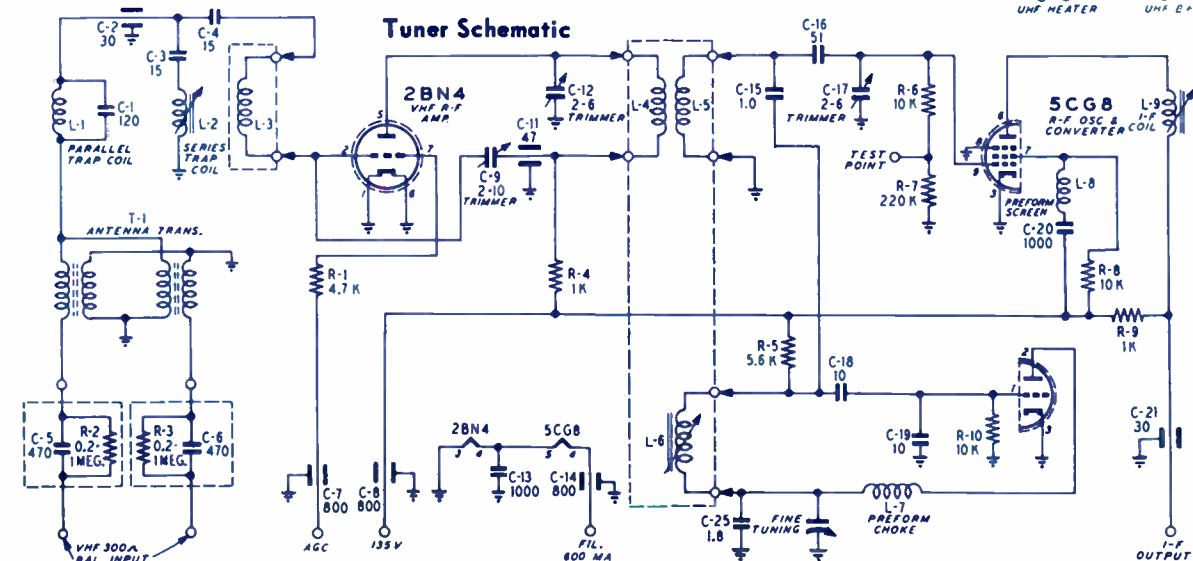
More Data on Opposite Page



25A1164 TUNER COVER SCHEMATIC STANDARD COIL PART No. FCN-011 (If UHF Equipped)



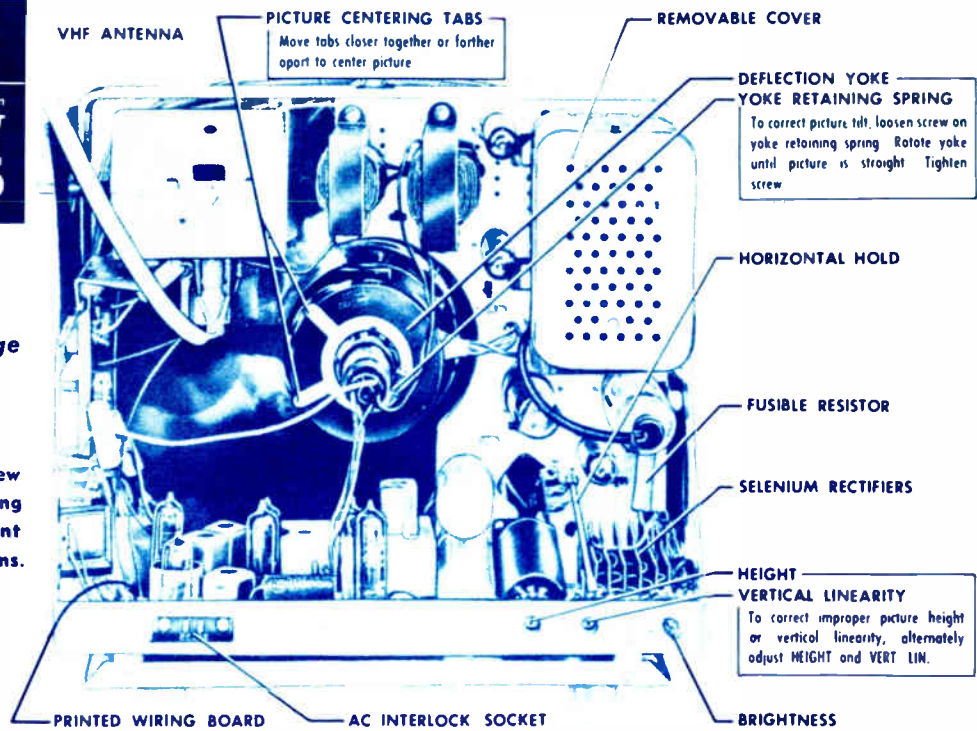
25A1159 UHF TUNER SCHEMATIC STANDARD COIL PART No. NEUFS-103 (If UHF Equipped)



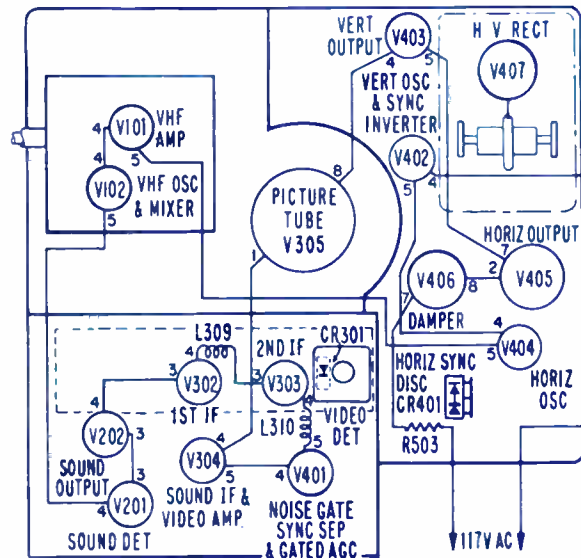
More Data on Reverse Side

More Data on
Opposite Page

Rear View
of Chassis Showing
Adjustment
Locations.

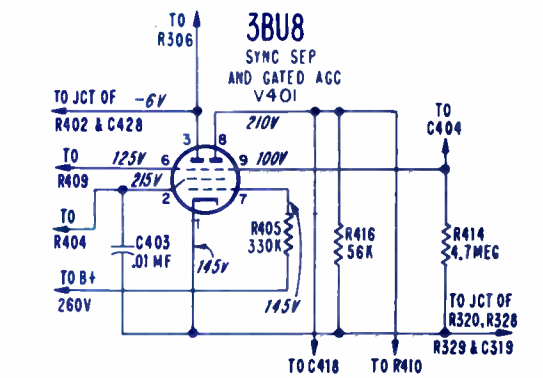


TUBE LOCATIONS AND HEATER CIRCUIT CONNECTIONS

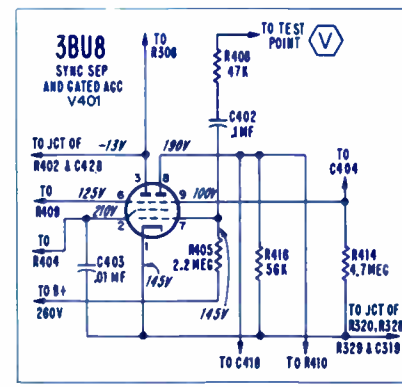


TUBE COMPLEMENT

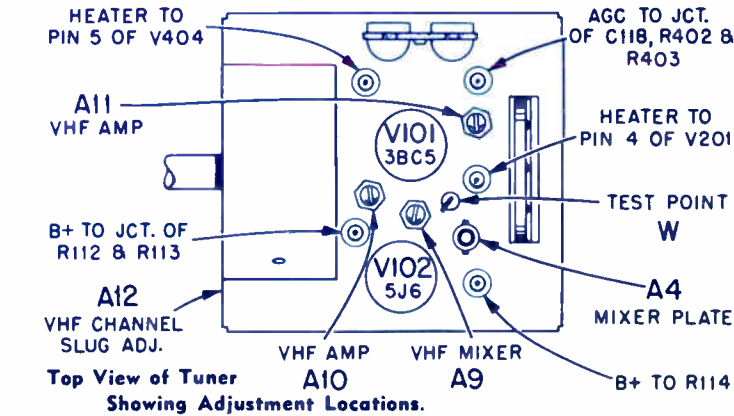
V101-3BC5	V305-17BZP4	V406-12AX4GTA
V102-5J6	CR301-1N87	V407-183GT
V201-3DT6	(Crystal Diode)	
V202-12CU5	V401-38U8	CR401-93B5-4
V302-3DK6 or 3CB6	V402-6CG7	(Dual Selenium Diode)
V303-3DK6	V403-12DB5	CR501-93A4-4
V304-6AW8A	V404-6CG7	CR502-93A4-4
	V405-12DQ6A	(Selenium Rectifiers)



Partial Schematic of V401 Stage Showing Run 11 and 12 Connections in Chassis 15C1.



Partial Schematic of V401 Circuitry Showing Run 10 Connection.



Top View of Tuner Showing Adjustment Locations.

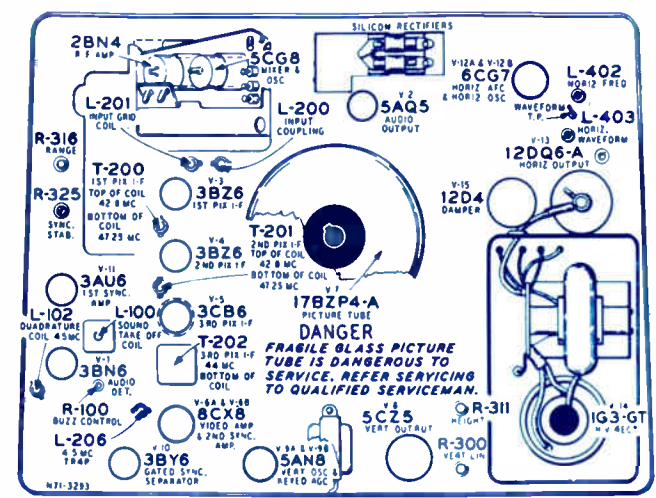
More Data on Opposite Page

ELECTRONIC TECHNICIAN 484

CIRCUIT DIGEST

TRUETONE
TV Model
2DC3840B, 2DC3841B

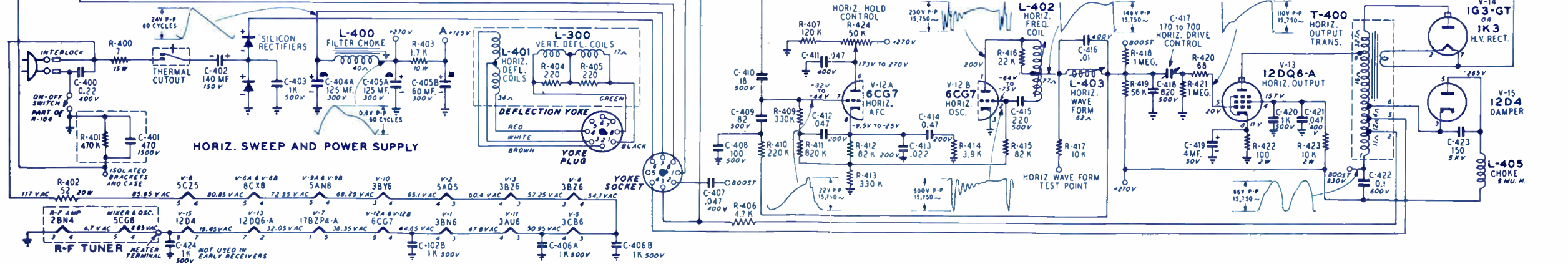
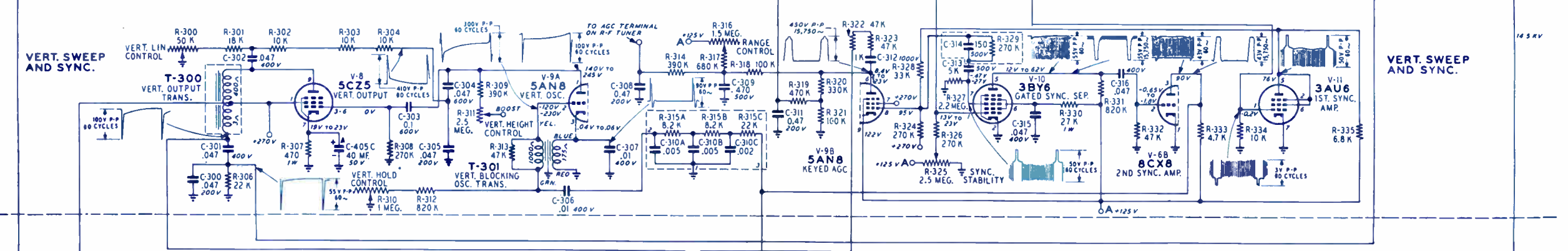
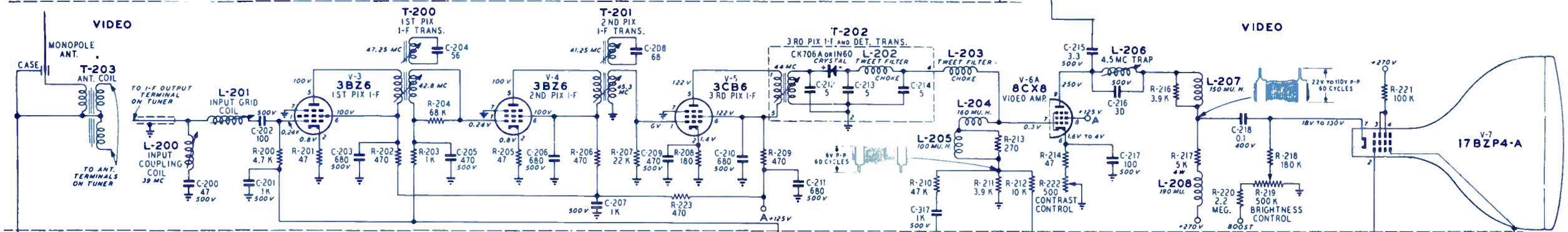
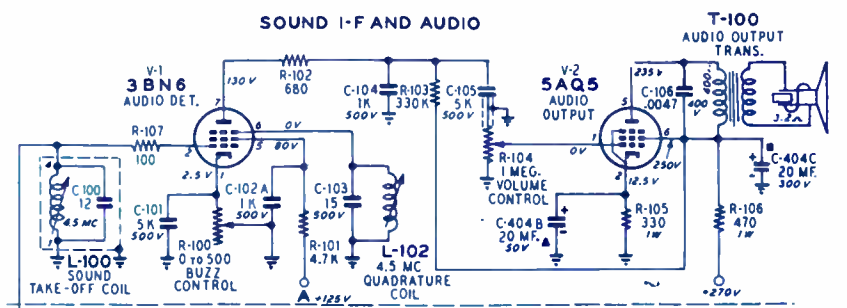
March • 1959



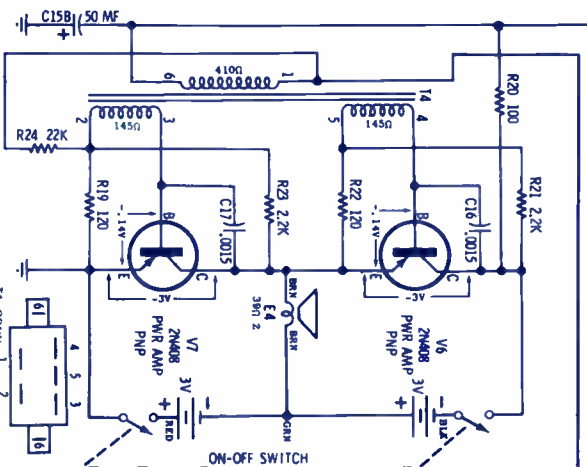
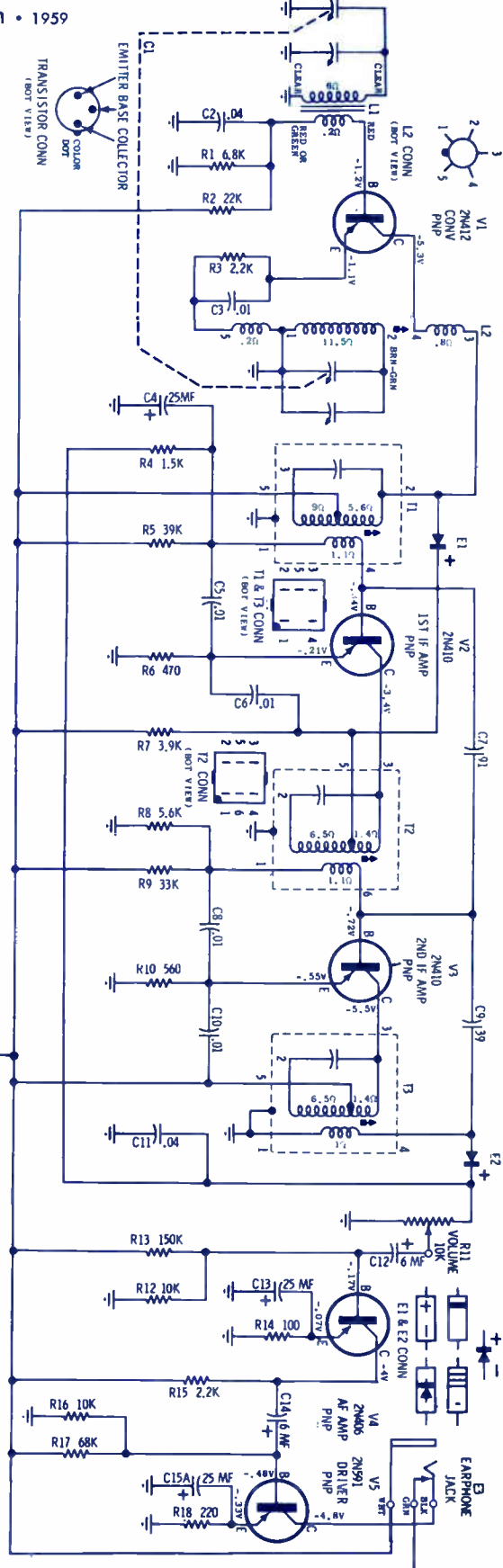
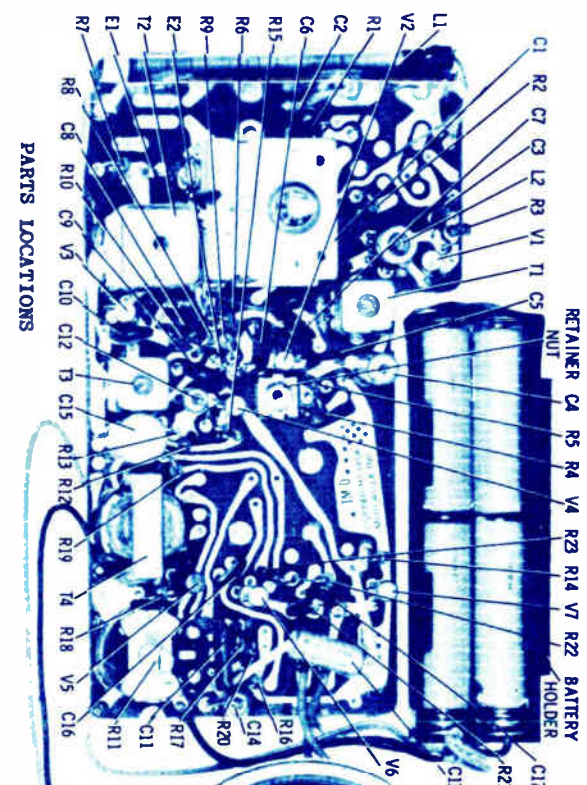
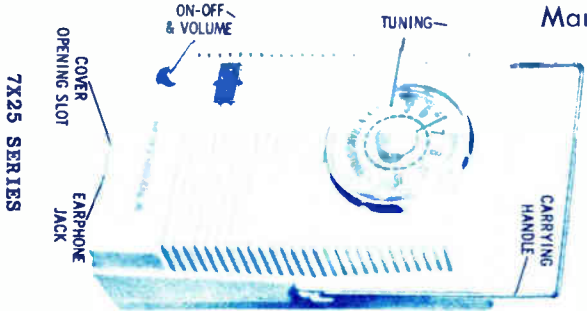
Chassis Tube Layout & Trimmer



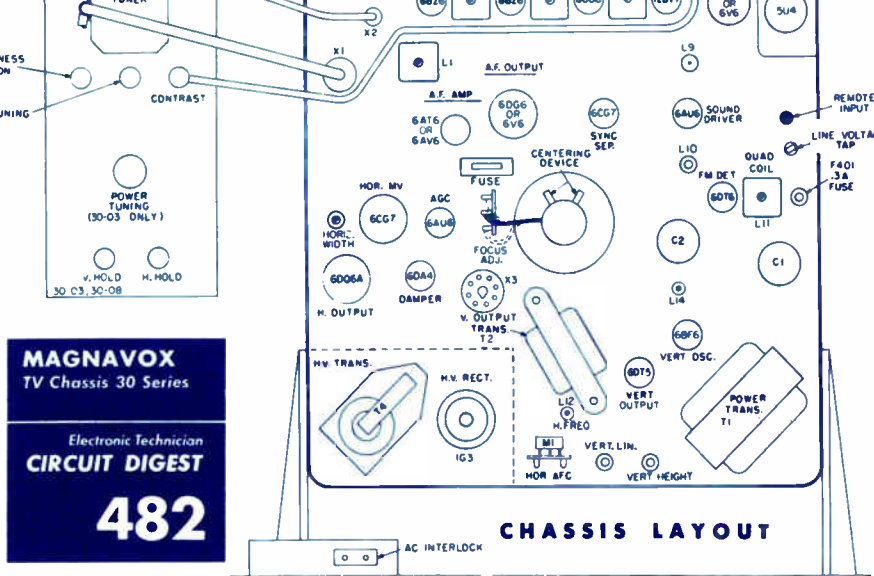
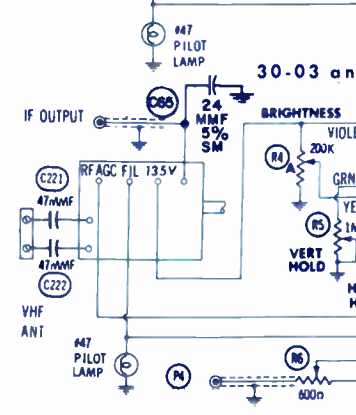
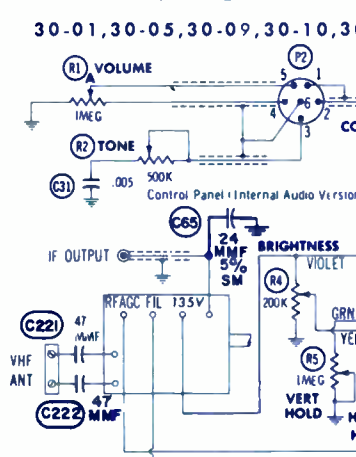
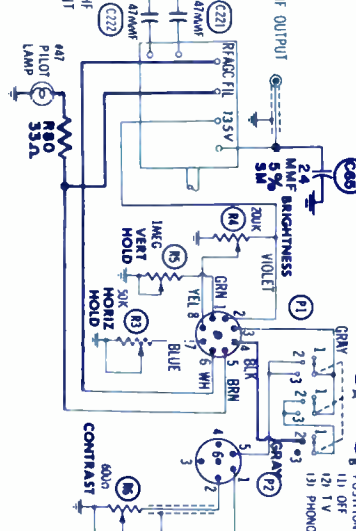
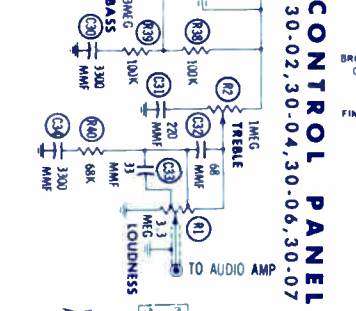
All resistance values in OHMS and 1/2 watt unless otherwise specified.
All capacitance values less than 1.0 in MF. and above 1.0 in MMF. unless otherwise noted.
Coil resistance values less than 1.0 OHM are not shown.



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CIRCUIT DIGEST 483

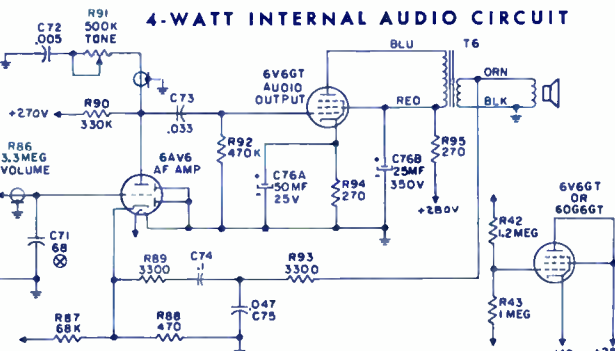
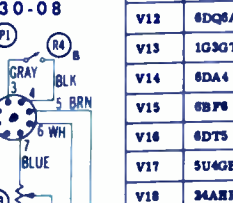
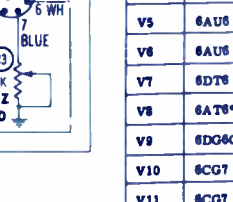
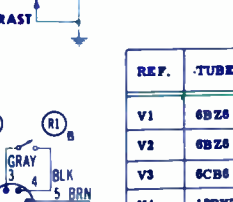
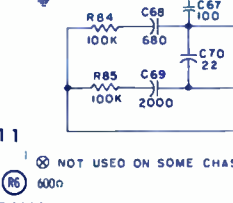


MAGNAVOX TV Chassis 30 Series

Electronic Technician
CIRCUIT DIGEST 482

More Data on Reverse Side

30-01, 30-05, 30-09, 30-10, 30-11



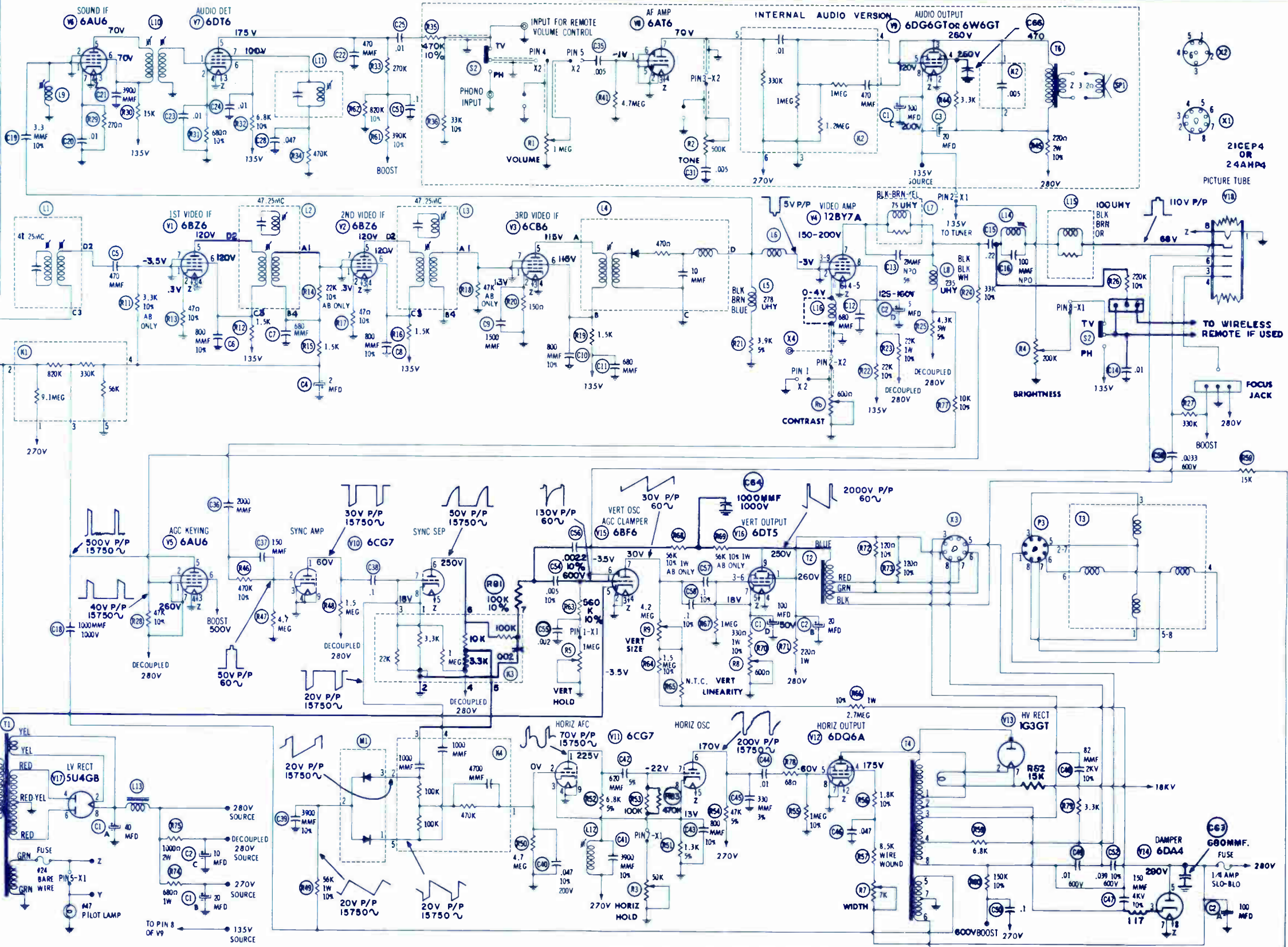
RESISTANCE MEASUREMENTS

REF.	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	6B28	58K	47	.1	0	90K	90K	0	-----	-----
V2	6B28	57K	47	.1	0	90K	90K	0	-----	-----
V3	6CB6	.1	150	.1	0	90K	90K	0	-----	-----
V4	12BY7	#135	3900	0	.1	.1	0	90K	90K	0
V5	6AU6	90K	90K	.1	0	340K	1.1meg	90K	-----	-----
V6	6AU6	1.2	0	.1	0	90K	90K	270	-----	-----
V7	6DT8	3.5	680	.1	0	1.2meg	90K	470K	-----	-----
V8	6AT8*	4.7meg	0	0	.1	0	0	400K	-----	-----
V9	6DQ6T*	90K	0	90K	90K	800K	TP	.1	90K	-----
V10	6CG7	3.5meg	4.7meg	0	0	.1	90K	20K	3300	0
V11	6CG7	90K	4.7meg	1300	0	.1	90K	125K	.1	0
V12	6DQ6A	TP	.1	TP	#150K	1 meg	NC	#125K	0	Top.csp #15
V13	103GT	INF	INF	INF	INF	INF	INF	INF	INF	Top.csp #450
V14	6DA4	TP	NC	1 meg	NC	90K	TP	0	.1	-----
V15	6B78	#1meg	0	0	.1	10K	1meg	#4meg	-----	-----
V16	6DT5	90K	NC	NC	0	.1	1 meg	#450	NC	90K
V17	5U4GB	NC	90K	NC	14	NC	16	NC	90K	-----
V18	2A4EP4	0	12K	1.5meg	1.2meg	NC	NC	#300K	.1	-----
V201	6BN4	0	1.1meg	0	.1	90K	0	1.1meg	-----	-----
V202	6CC8	3900	90K	0	0	.1	90K	90K	0	200K

*Measurement depends on application
 **Measured from pin 3 of V14
 #Varies with control setting.
 NC - No Connection
 TP - Tie Point
 Resistance Tolerance - 20%

CHASSIS DIFFERENCES

Chassis	Audio Circuit	Picture Tube	Controls
30-01	6DG6GT AF Output	21CEP4	Top Tuning
30-02	External Amplifier	24AHP4	Front Tuning
30-03	Radio & Amplifier	24AHP4	Front Tuning
30-04	External Amplifier	21CEP4	Top Tuning
30-05	6DG6GT AF Output	21CEP4	Top Tuning
30-06	External Amplifier	24AHP4	Front Tuning
30-07	External Amplifier	24AHP4	Front Tuning
30-08	Radio & Amplifier	24AHP4	Front Tuning
30-09	6DG6GT AF Output	24AHP4	Front Tuning
30-10	6DG6GT AF Output	24AHP4	Front Tuning
30-11	6DG6GT AF Output	21CEP4	Top Tuning



CHASSIS SHOWN WITH INTERNAL AUDIO CONTROL PANEL

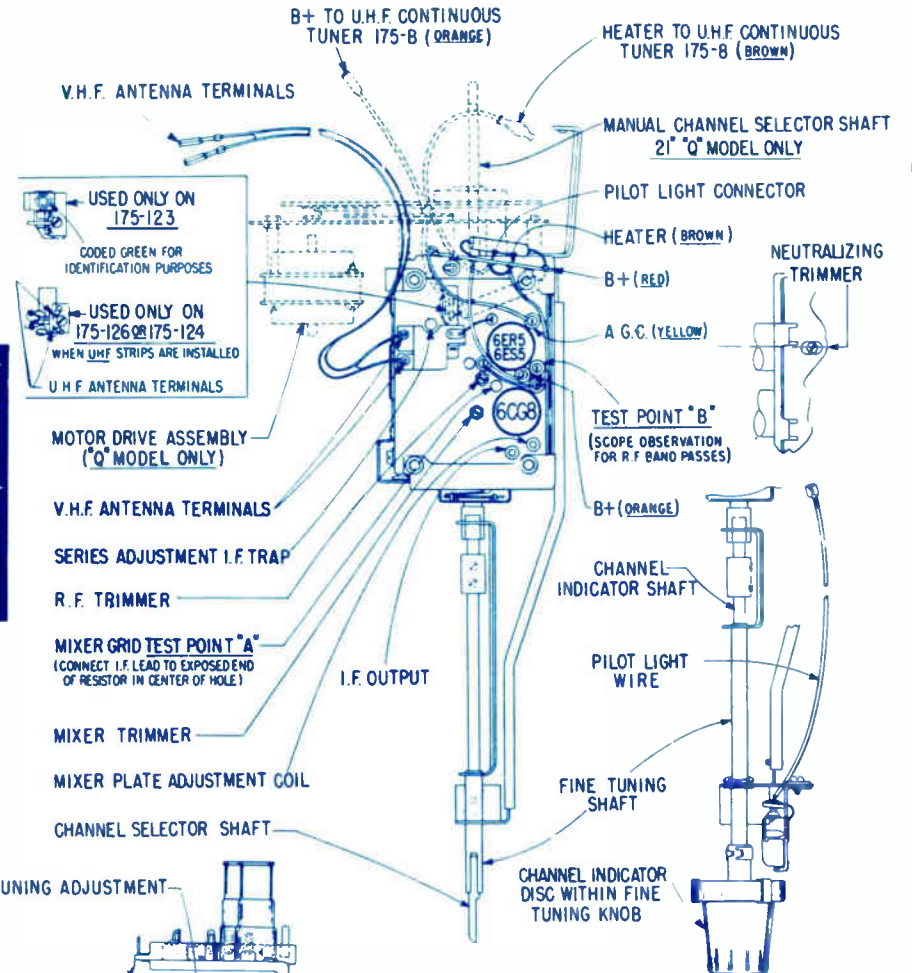
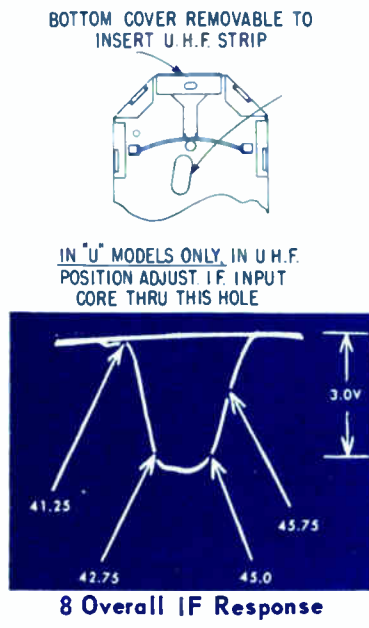
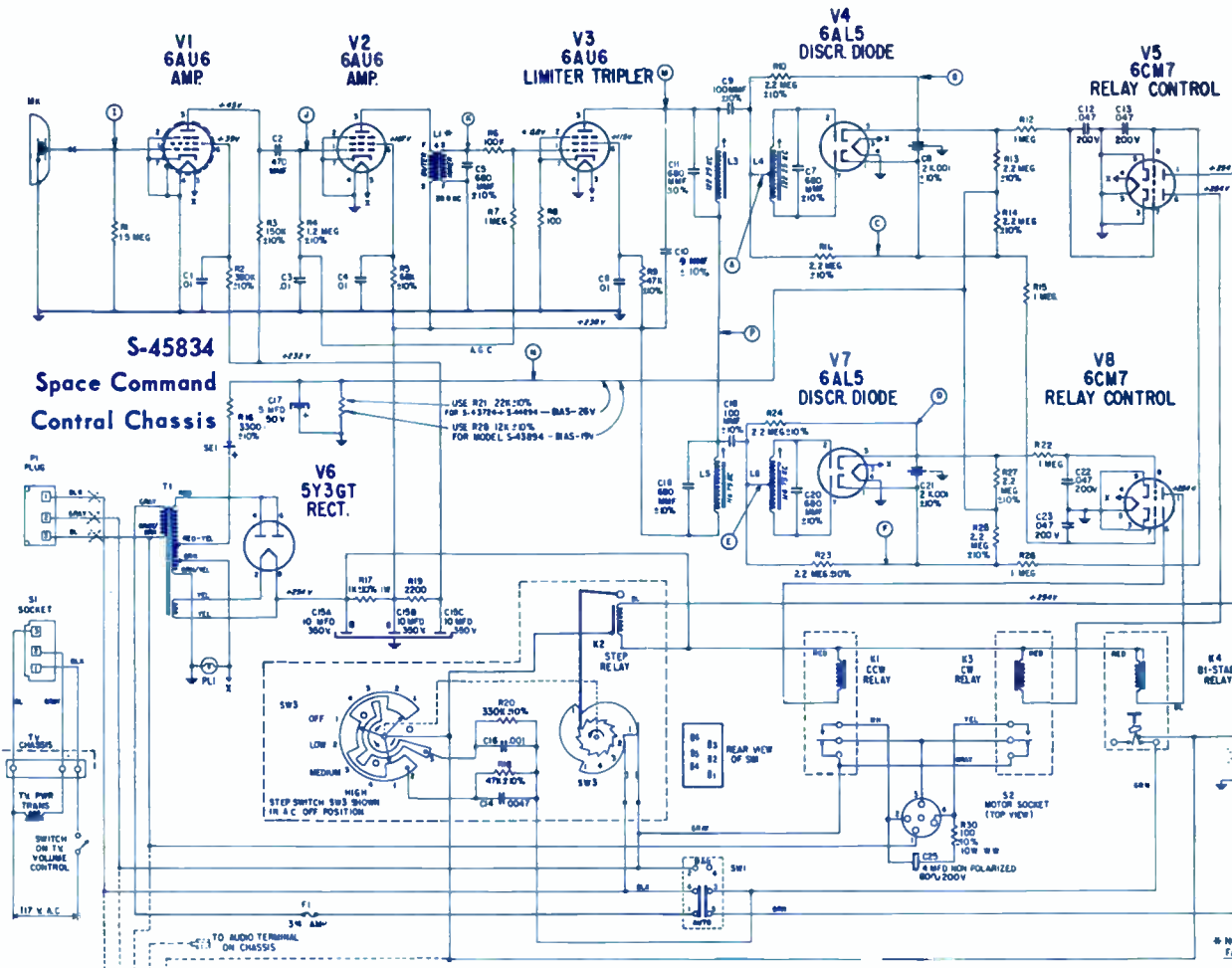
Resistors 1/2W 20% Unless Noted. Paper Tubulars Cap. 40V Unless Noted. Electrolytics 50V Unless Noted.

L16 & R83 ARE NOT USED ON SOME CHASSIS. VOLTAGES AND WAVEFORMS TAKEN WITH AVERAGE SIGNAL, CONTRAST CONTROL SET TO MAXIMUM, AND BALANCE OF CONTROLS SET FOR NORMAL OPERATION.

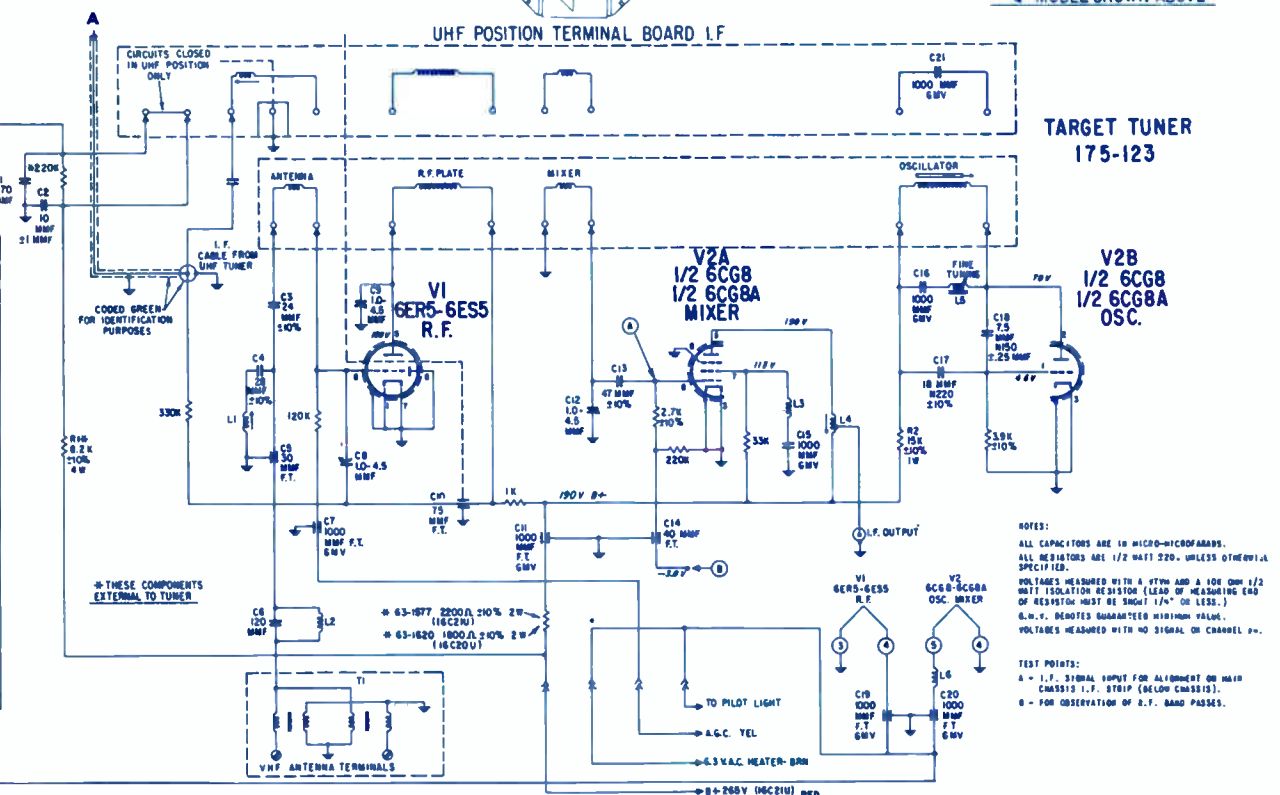
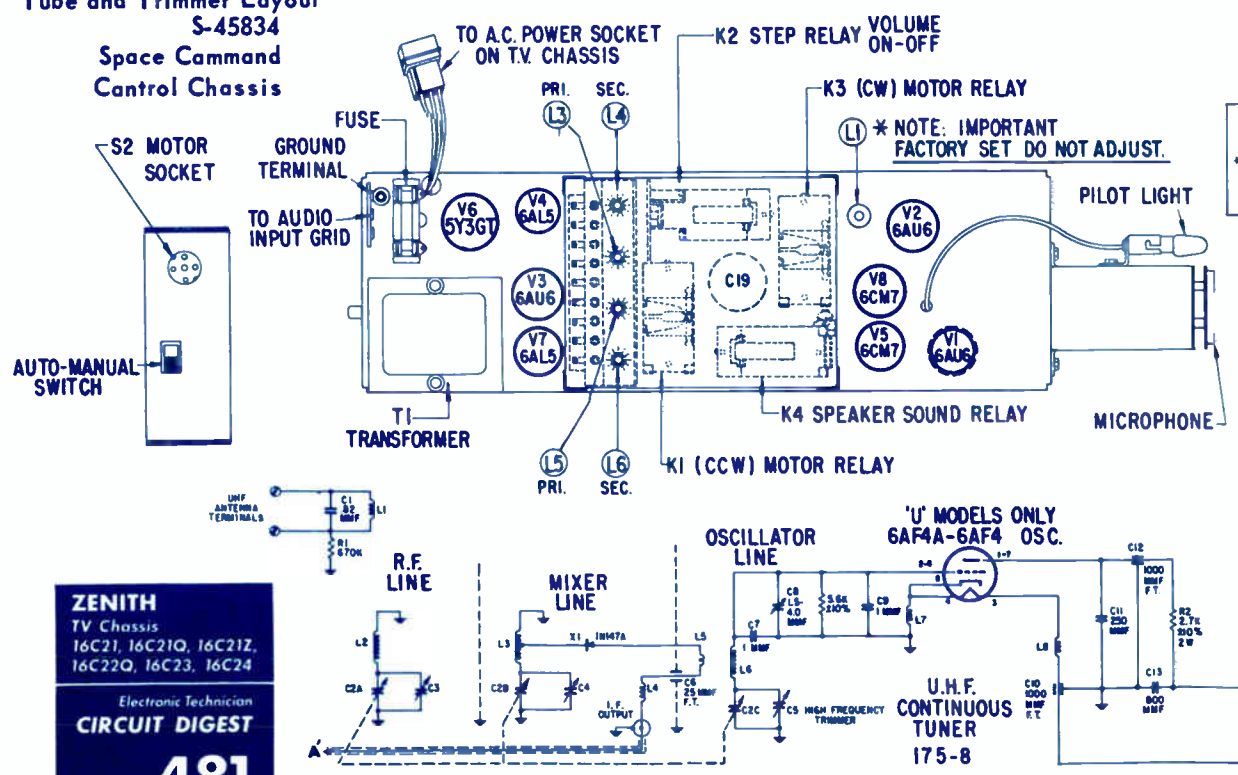
Line Tap Plug Shown in 117V Position. Reverse Plug for 127V Position

THIS PLUG IS NORMALLY IN 117V POSITION. WHEN REMOTE CONTROL UNIT IS USED, THIS PLUG IS INSERTED IN REMOTE RECEPTACLE.

USED ON 10-WATT AMP VERSION ONLY



**Tube and Trimmer Layout
S-45834
Space Command
Control Chassis**



ZENITH
TV Chassis
16C21, 16C21Q, 16C21Z,
16C22Q, 16C23, 16C24
Electronic Technician
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More Data on Reverse Side

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ELECTRONIC TECHNICIAN 481

CIRCUIT DIGEST

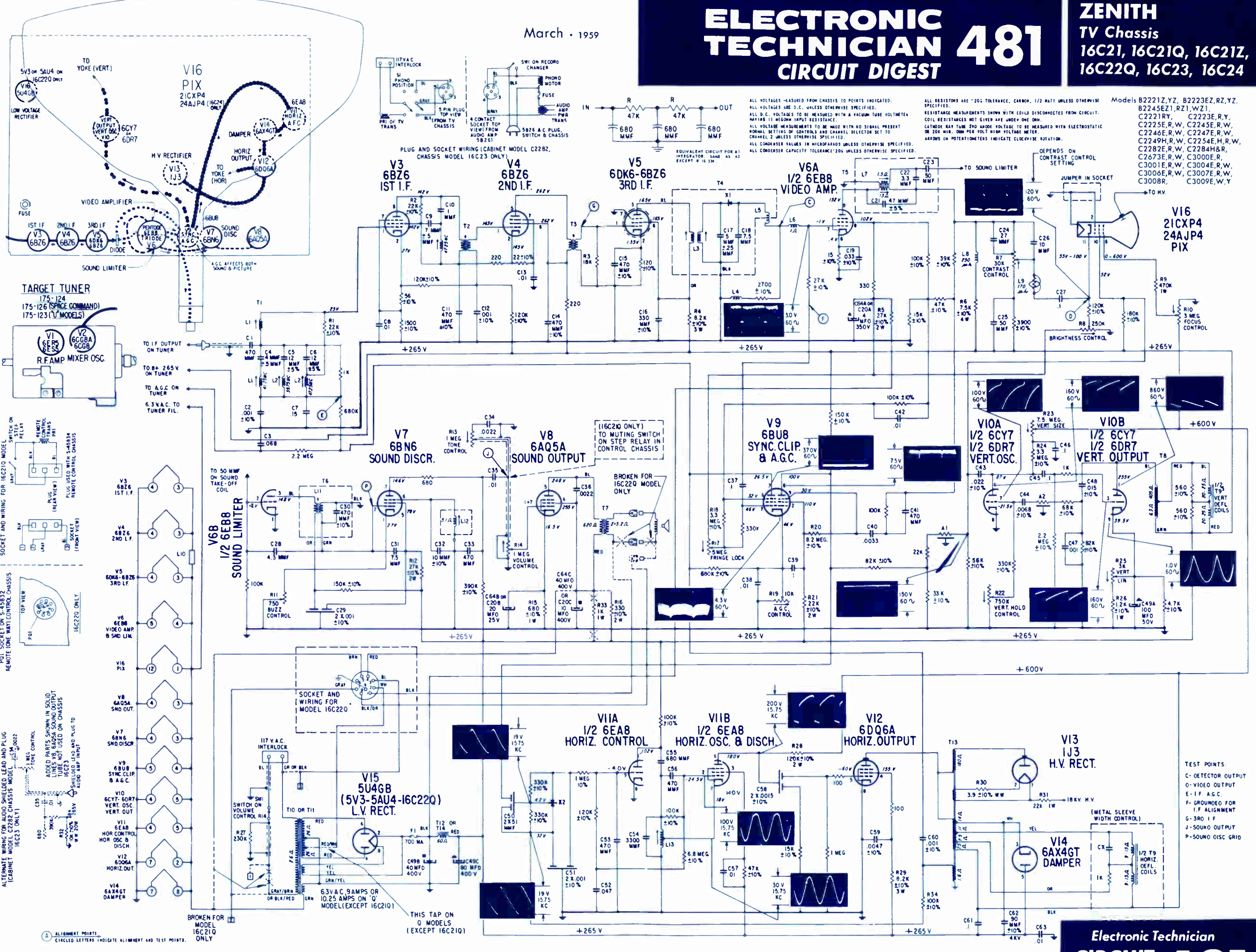
ZENITH TV Chassis

16C21, 16C21Q, 16C21Z, 16C22Q, 16C23, 16C24

Models B2221Z, YZ, B2223EZ, RZ, YZ, B2245E1, RZ1, WZ1, C2221RY, C2223E, R, Y, Z, C2225E, R, W, C2245E, R, W, C2246E, R, W, C2247E, R, W, C2249H, R, W, C2254E, H, R, W, C2282E, R, W, C2284H, R, W, C2287E, R, W, C3000E, R, W, C3001E, R, W, C3004E, R, W, C3006E, R, W, C3007E, R, W, C3008R, C3009E, W, Y

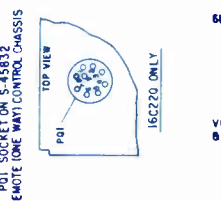
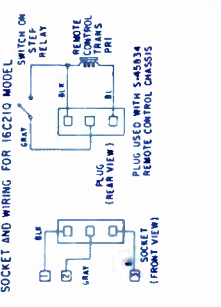
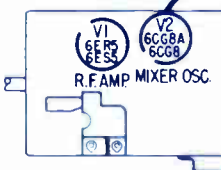
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL D.C. VOLTAGES TO BE MEASURED WITH A VACUUM TUBE VOLTMETER HAVING 11 MEGOHM INPUT RESISTANCE.
ALL VOLTAGE MEASUREMENTS TO BE MADE WITH NO SIGNAL PRESENT NORMAL SETTINGS OF CONTROLS AND CHANNEL SELECTION SET TO CHANNEL 2 UNLESS OTHERWISE SPECIFIED.
ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER CAPACITY TOLERANCE: 20% UNLESS OTHERWISE SPECIFIED.

ALL RESISTORS ARE 1/2% TOLERANCE, CARBON, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
RESISTANCE MEASUREMENTS SHOWN WITH COILS DISCONNECTED FROM CIRCUIT.
COIL RESISTANCES NOT GIVEN ARE UNDER ONE OHM.
CATHODE RAY TUBE 2ND ANODE VOLTAGE TO BE MEASURED WITH ELECTROSTATIC OR 100 OHM, OHM PER 100 V RAMP VOLTAGE METER.
ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION.



Special Full-Width Spring Binder Holds 24 Groups of Electronic Technician's Circuit Digests Available @ \$2.95

TARGET TUNER
175-124
175-126 (SPACE COMMAND)
175-123 (V MODELS)



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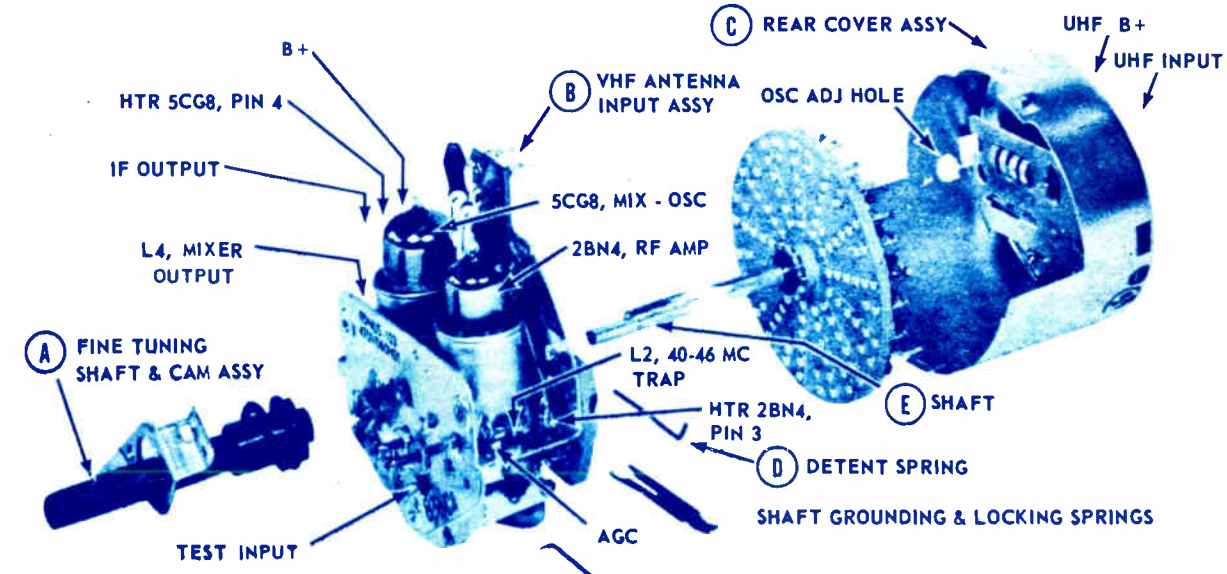
CIRCUIT DIGESTS

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In This Issue (No. 80)

Manufacturer	Model	Circuit Digest No.
BLONDER-TONGUE	AM-FM Tuner Model T-88	494
DELCO	Auto Radio Pontiac 988978	490
GENERAL ELECTRIC	Transistor Radio Models P-805, P-806	489
HOFFMAN	TV Chassis 344, 344A Model Series 1327, 1331, 3561, 3571	487
MAGNAVOX	TV Chassis 23 Series	493

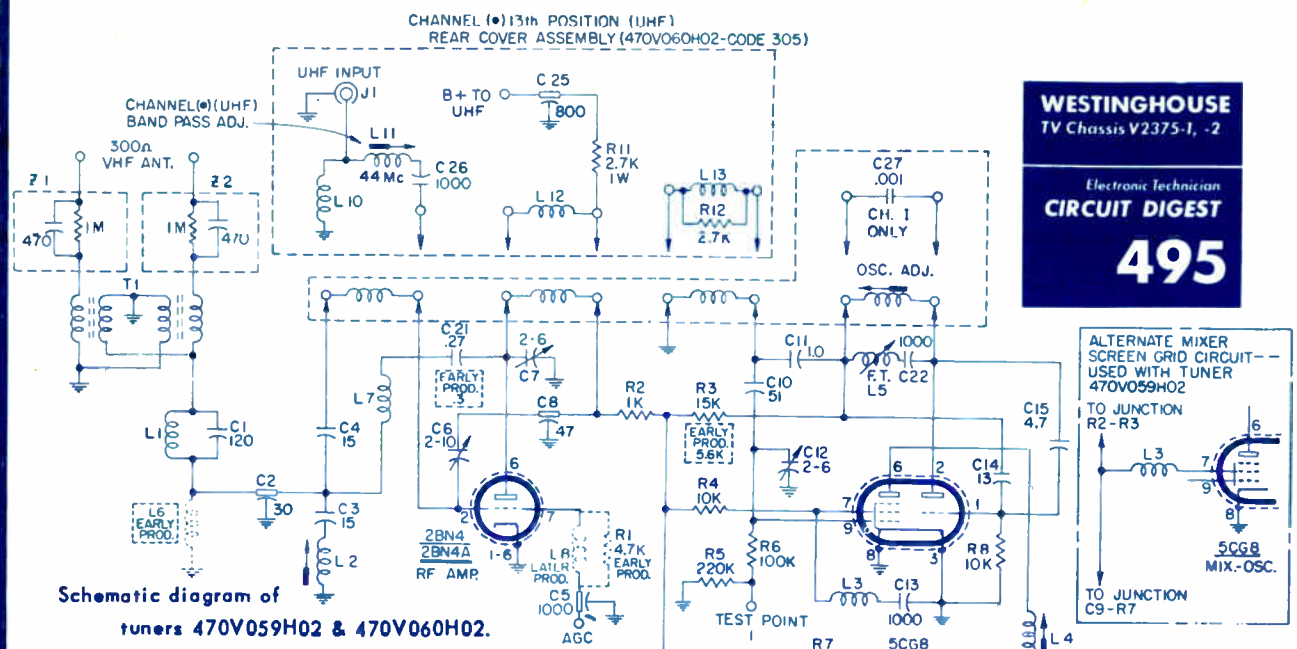
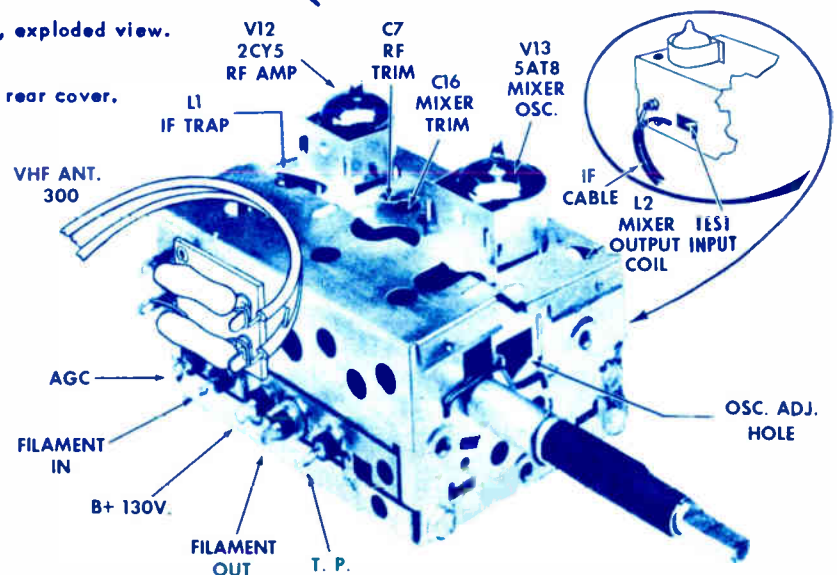
PHILCO	Transistor Radio T-75 Code 124	491
RCA, Canada	TV Chassis CT2138 Models 21T351, 21TC290, 292	492
SONY, Japan	Transistor Radio TR63	488
WESTINGHOUSE	TV Chassis V2375-1, -2 Models H21K272, 273, 274, 275, 276 H21KU272, 273, 274, 275, 276	495



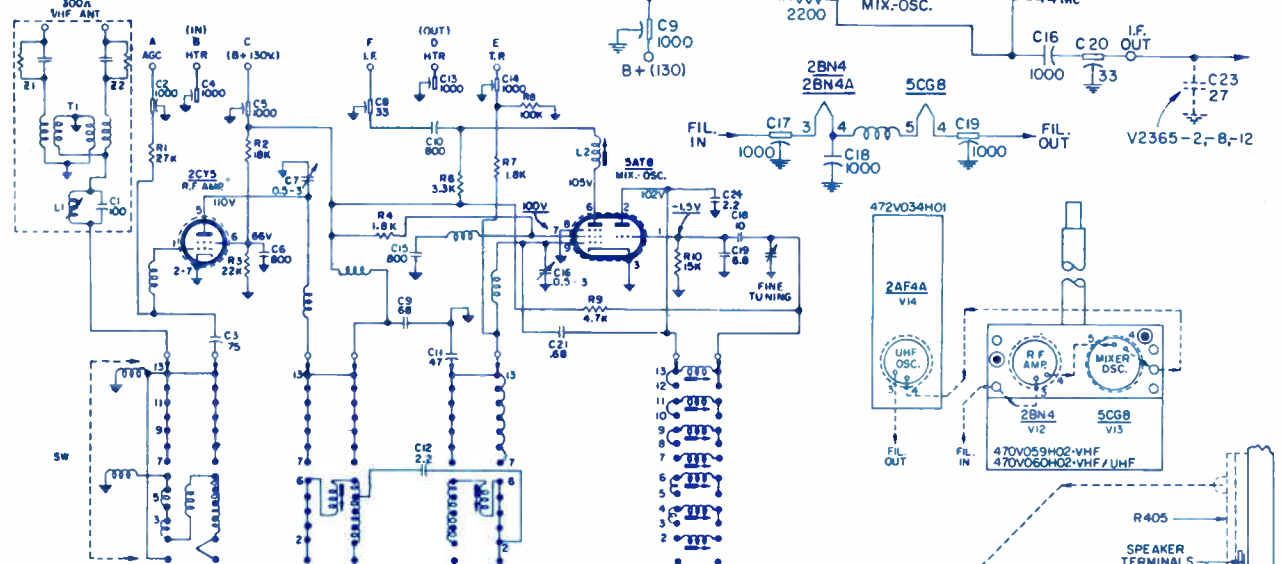
470V060H02 tuner, exploded view.
470V059H02 same except for rear cover.

More Data on Reverse Side

VHF tuner 470V057H02 (Mark VI).

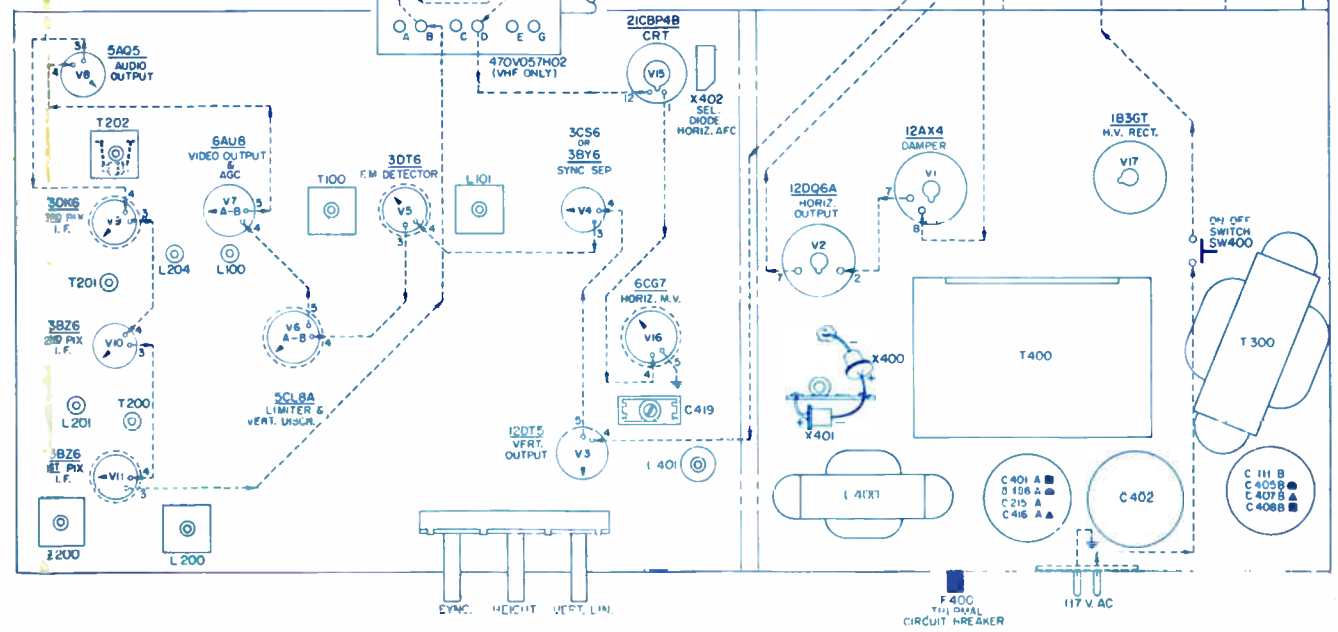


Schematic diagram of tuners 470V059H02 & 470V060H02.



Schematic diagram; VHF tuner 470V057H02.

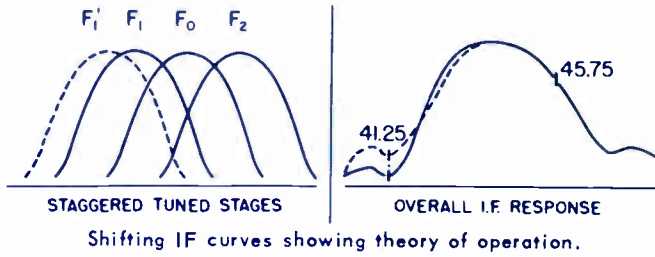
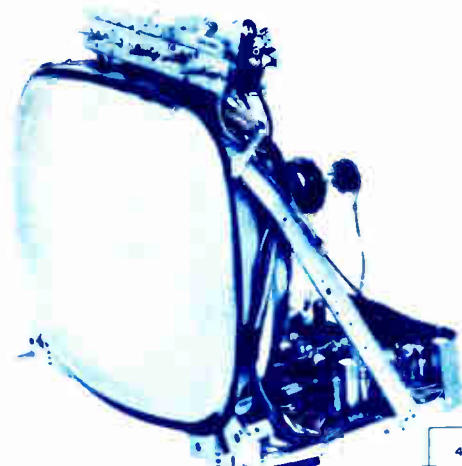
Top view of chassis showing tube locations, heater string, and adjustments.



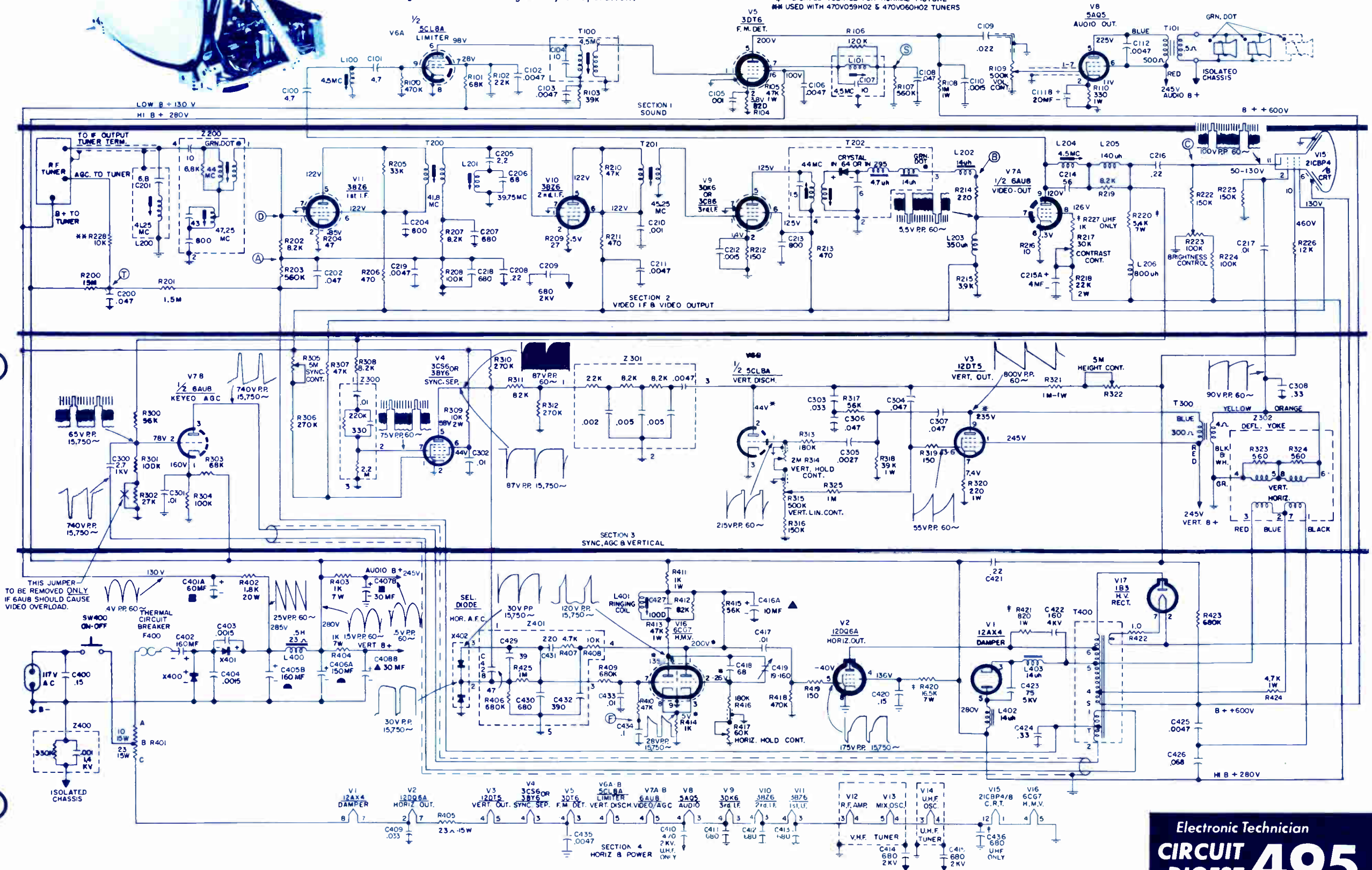
WESTINGHOUSE
TV Chassis V2375-1, -2
Electronic Technician
CIRCUIT DIGEST
495

Models H21K272, 273,
274, 275, 276
H21KU272, 273,
274, 275, 276

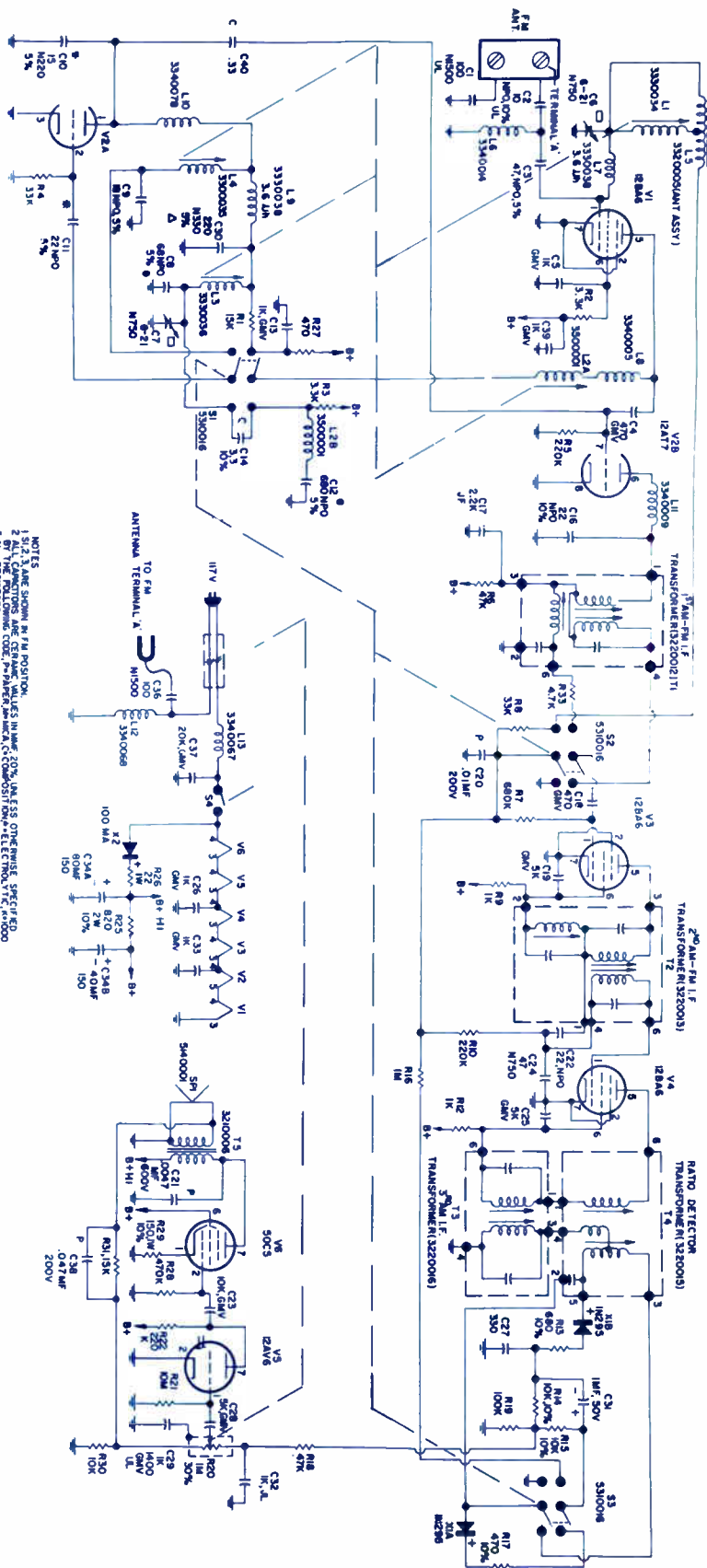
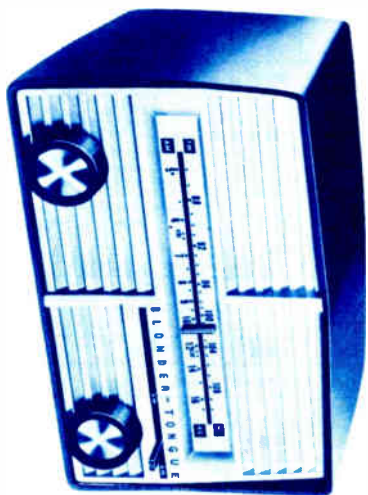
April, 1959



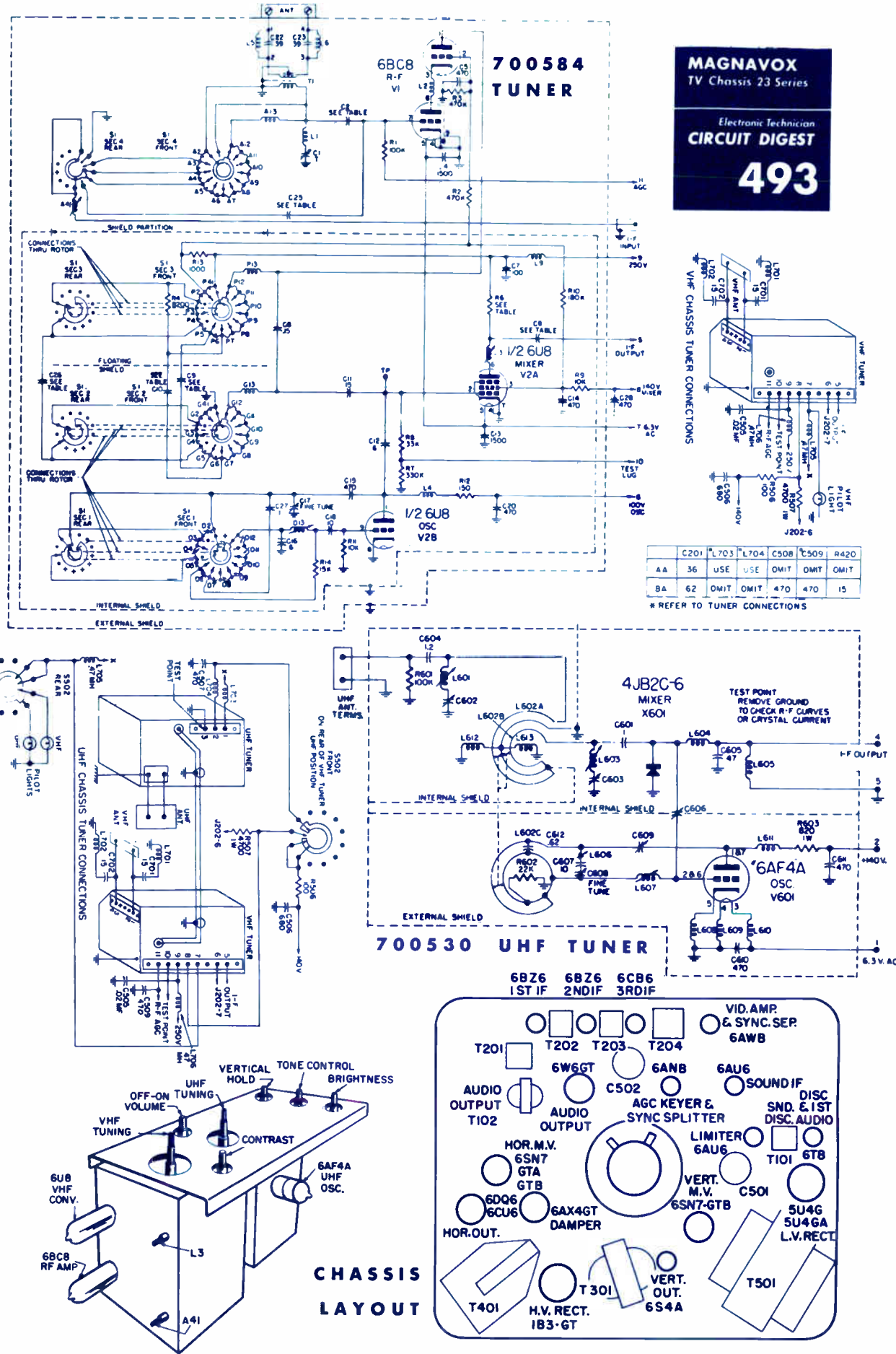
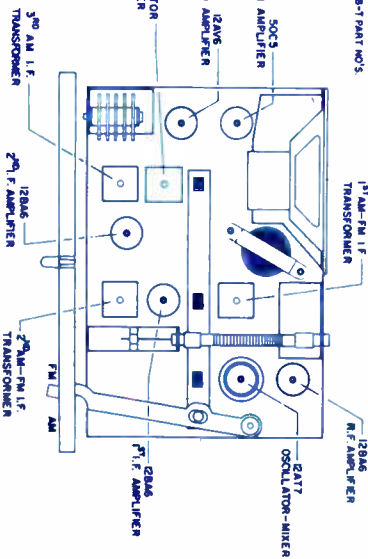
D.C. VOLTAGES MEASURED FROM B-, NO APPLIED SIGNAL, USING V.T.V.M.
ALL PEAK TO PEAK WAVE FORMS TAKEN WITH CONTROLS ADJUSTED
FOR 100VP-P AT TEST POINT C.
* INDICATES VOLTAGE FOR NORMAL PICTURE
** USED WITH 470V059H02 & 470V060H02 TUNERS



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NOTES:
1. S1, 2, 3 ARE SHOWN IN FM POSITION.
2. V1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



MAGNAVOX
TV Chassis 23 Series
Electronic Technician
CIRCUIT DIGEST
493

More Data on Reverse Side

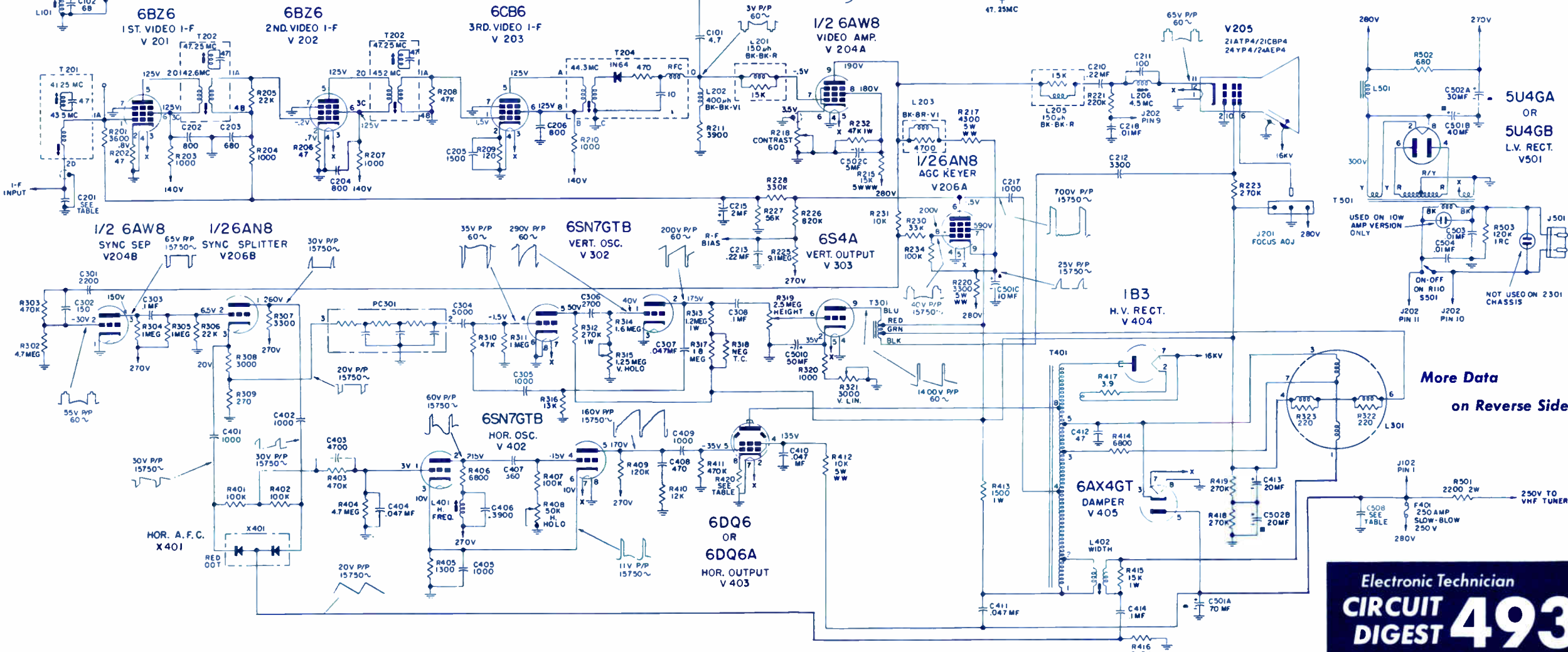
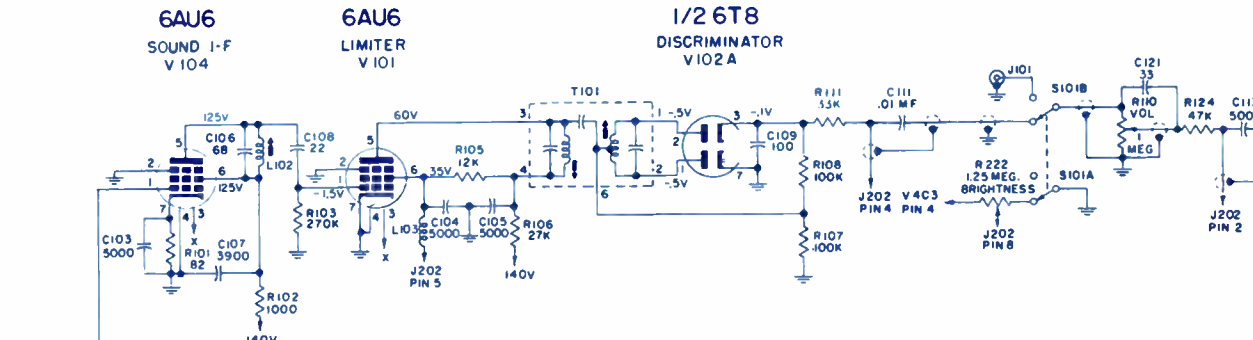
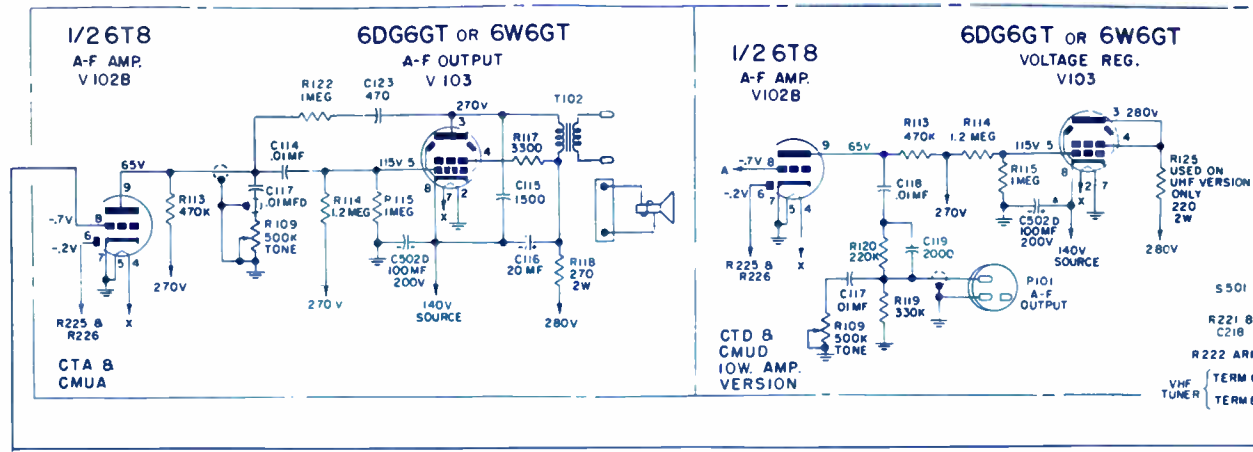
April • 1959

RESISTANCE MEASUREMENTS

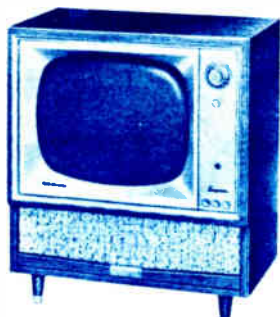
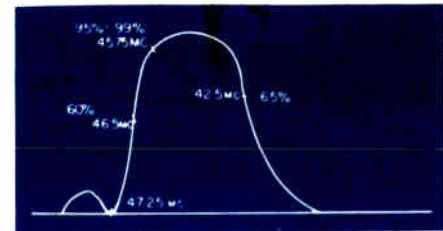
REF.	TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	6BC8	#2200	250K	INF	0	.1	INF	1.1 meg	0	0
V2	6U8	*4800	360K	*10K	0	.1	#5500	0	0	10K
V101	6AU6	.4	0	.1	0	*1000	*1000	82	-----	-----
V102	6T8	100K	100K	200K	.1	0	1 meg	0	4.7 meg	#470K
V103	6DG6	NC	.1	#220	#220	530K	NC	0	**25K	-----
V104	6AU6	270K	0	.1	0	*27K	*39K	0	-----	-----
V201	6BZ6	56K	47	.1	0	*1000	*1000	0	-----	-----
V202	6BZ6	57K	47	.1	0	*1000	*1000	0	-----	-----
V203	6CB6	.1	120	.1	0	*1000	*1000	0	-----	-----
V204	6AW8	0	4.7 meg	#1 meg	0	.1	*170	3900	#13K	#7500
V205	21ATP4	0	0	Pin 6 **1500	Pin 10 **270K	Pin 11 430K	Pin 12 .1	-----	-----	-----
V306	6AN8	#4000	22K	3300	0	.1	350K	**1500	#38K	#3300
V302	6SN7	*2 meg	**1.7 meg	0	1 meg	**270K	0	.1	0	-----
V303	6S4	NC	#2500	#950K	0	.1	#950K	NC	NC	**2700
V402	6SN7	450K	#6900	1300	*115K	#130K	1300	0	.1	-----
V403	6DQ6	NC	0	NC	#10K	470K	TP	.1	0	Top Cap **50
V404	1B3	INF	INF	INF	INF	INF	INF	INF	INF	Top Cap **480
V405	6AX4	TP	NC	**30K	NC	**0	NC	0	.1	-----
V501	5U4	NC	**20K	NC	22	TP	24	NC	**30K	-----
V601	6AF4	*920	22K	0	.1	L.1	22K	*920	-----	-----

* Measured from 140V source
 ** Measured from Pin 3 of V17
 e Varies with Control Setting
 ** Varies with condition of electrolytic.

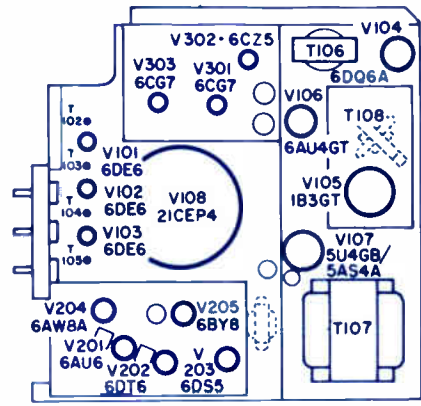
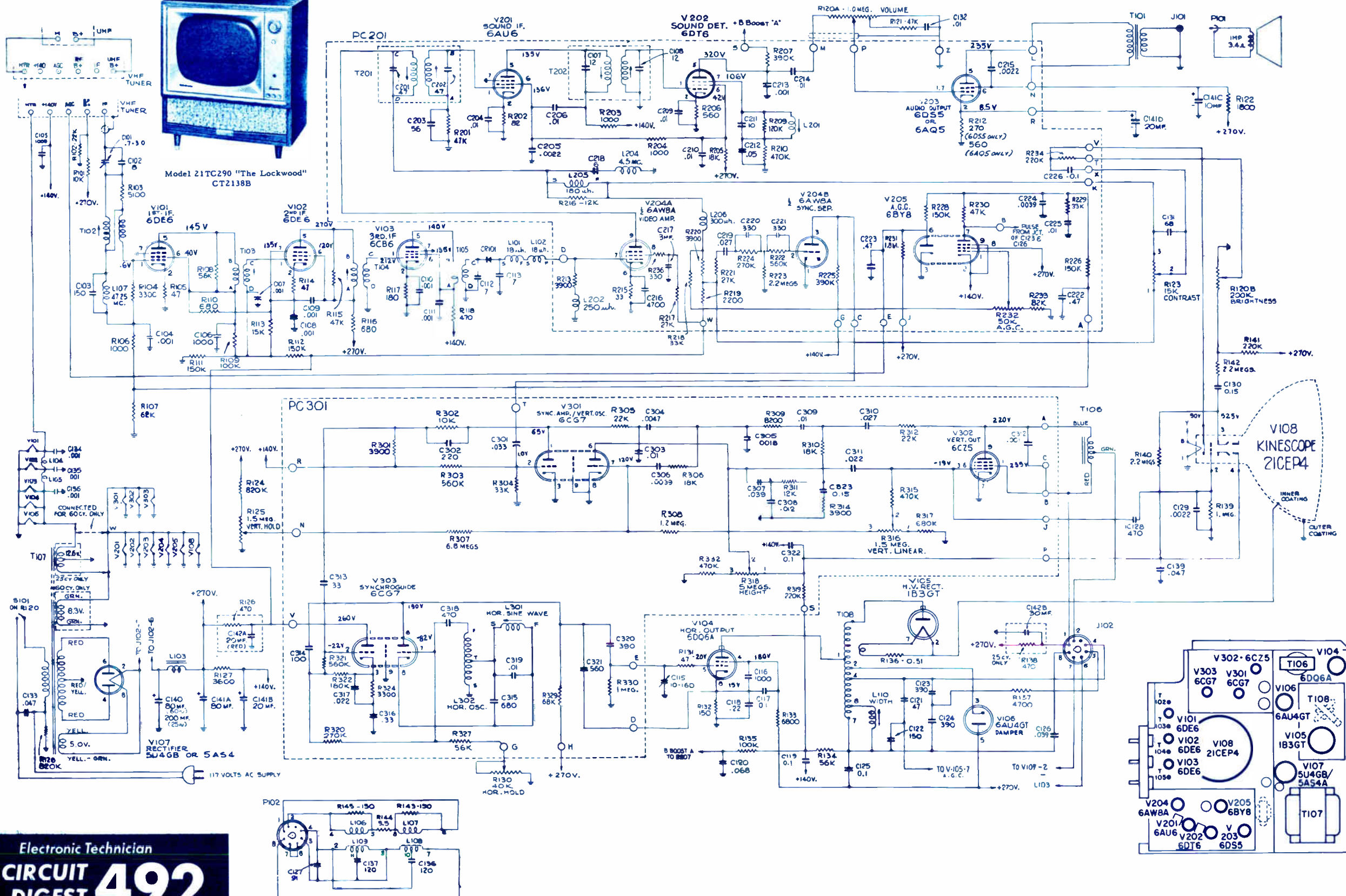
Measured from 280V source.
 NC - No Connection
 TP - Tie Point

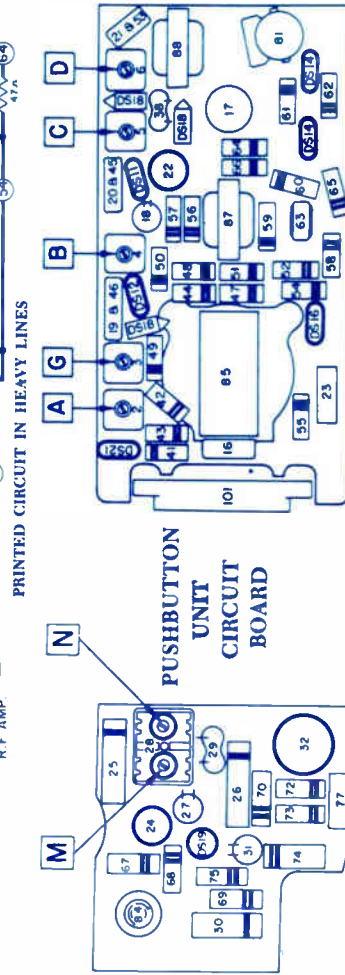
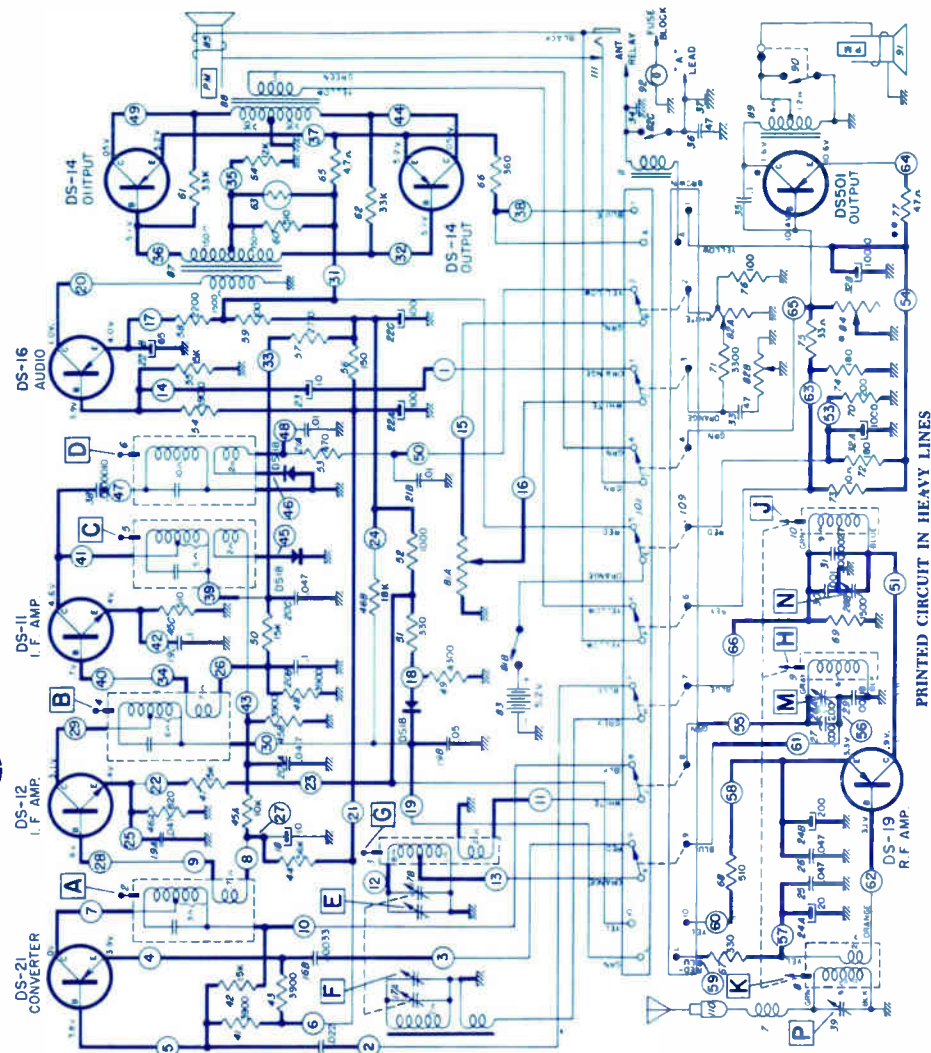


More Data on Reverse Side



Model 21TC290 "The Lockwood"
CT2138B



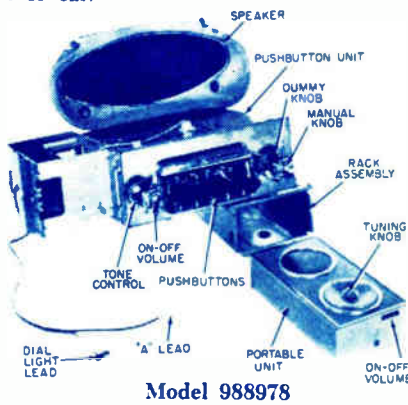
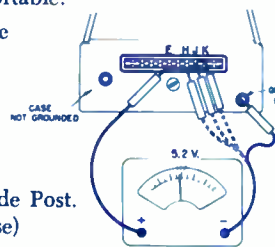


TROUBLESHOOTING

- Isolate trouble to portable section or car unit by pulling portable section out of car.
 - If it fails to operate as a portable, trouble is in portable unit.
 - If it operates as a portable but not in the car, trouble is in car unit or car antenna.
 - If it operates in car but not as a portable, check batteries, portable antenna and interconnecting socket (illus. 101).
- Short cut procedure for checking dead portable.
 - Check the battery voltage with portable turned on. If less than 5 volts, replace.

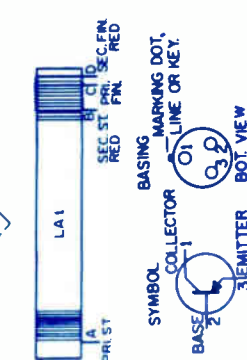
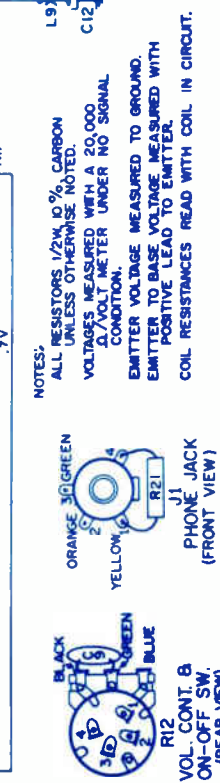
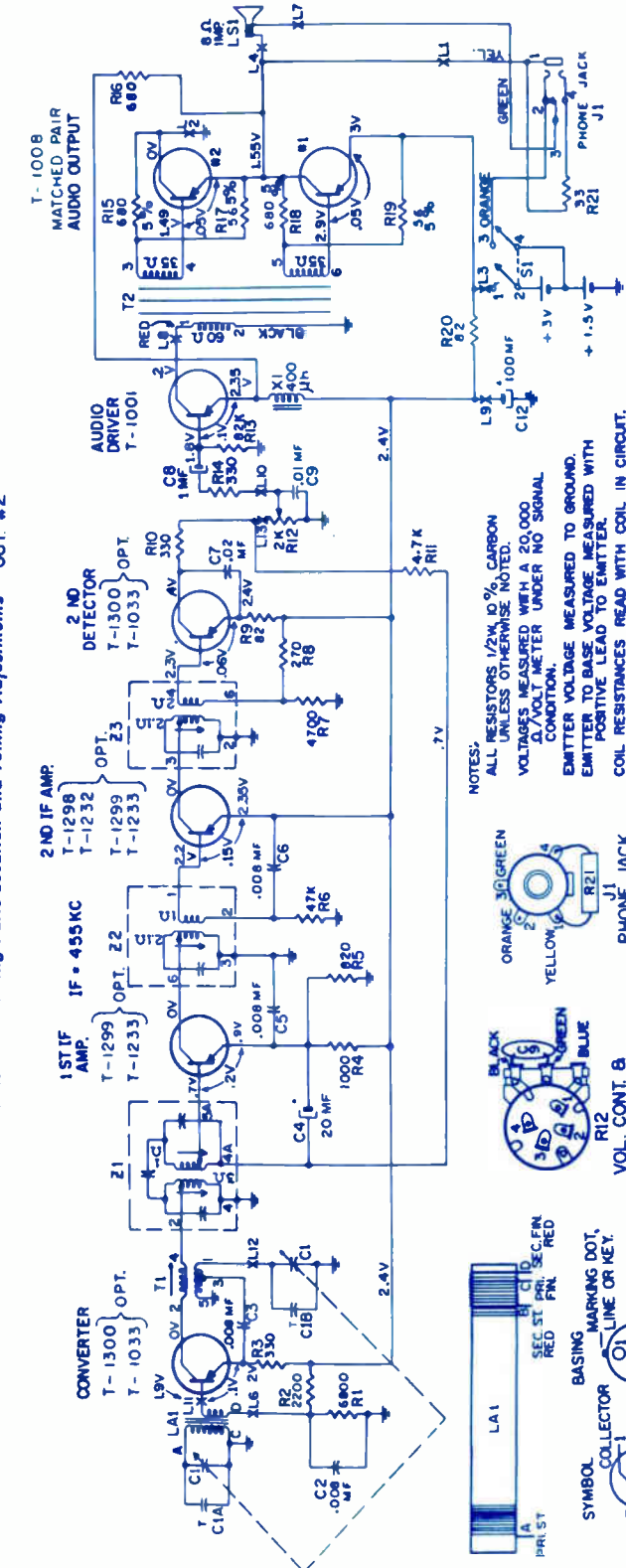
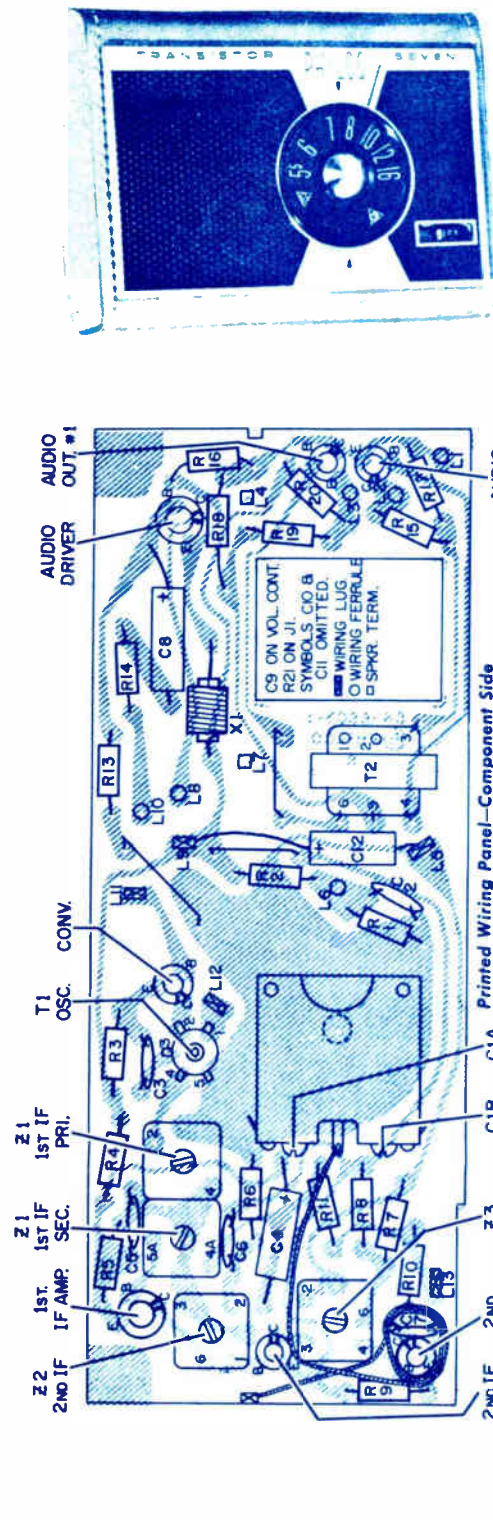
BATTERY CHECK

Positive Meter Lead on Contact E; Negative Lead to H, J, K, or Guide Post. (Do not use case)



- Turn volume maximum and short pins B and E on interconnecting socket (illus. 101) together. If oscillation is heard, audio stages are working; if not, trouble is in audio stages.
- Use click test to isolate stage (see Chart B.) Caution: Be sure to use 10 k or 12 k resistor between the click points and ground, or circuit components will be damaged.

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ELECTRONIC TECHNICIAN 488

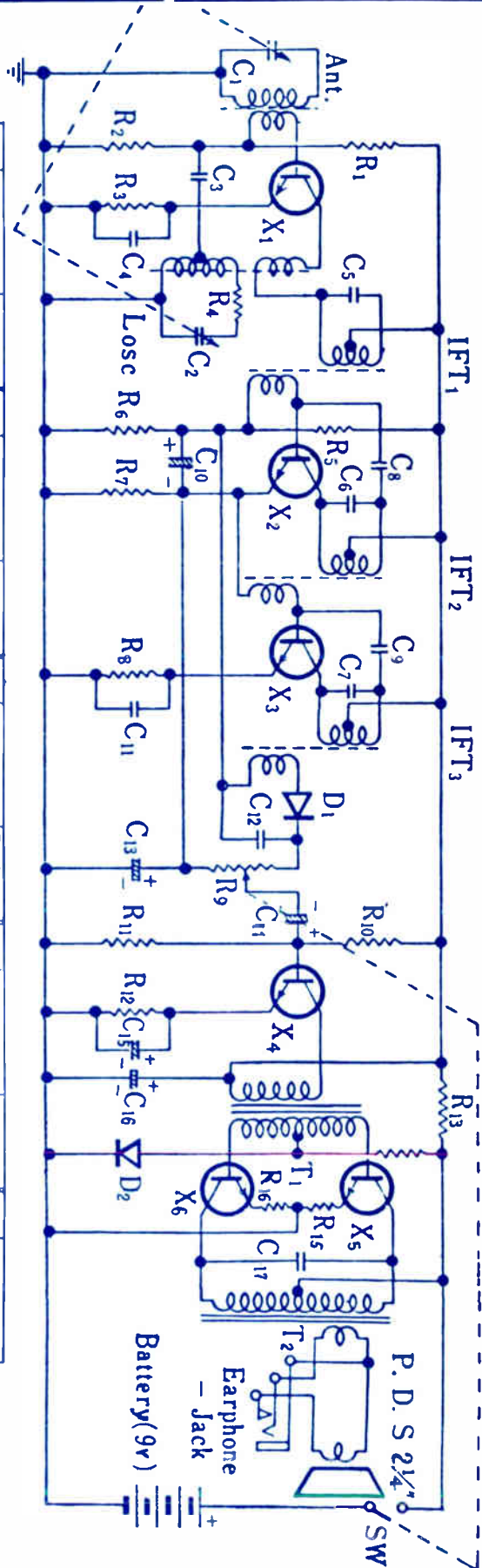
CIRCUIT DIGEST

SONY, Japan
Transistor Radio TR63

April • 1959

R ₁	56kΩ	20% 1/4W	R ₁₂	1.5kΩ	20% 1/4W	C ₄	0.02μF	Disk Ceramic	C ₁₅	30μF 6V	Electrolic	X ₁	Conv.
R ₂	10kΩ	"	R ₁₃	220Ω	"	C ₅	200pF	Mica	C ₁₆	12μF 15V	Electrolic	X ₂	IF ₁
R ₃	1.5kΩ	"	R ₁₄	42kΩ	"	C ₆	200pF	Silvered Mica	C ₁₇	0.04μF	Disk Ceramic	X ₃	IF ₂
R ₄	10Ω	"	R ₁₅	42Ω	10% 1/4W	C ₇	200pF	Silvered Mica				X ₄	Driver
R ₅	56kΩ	"	R ₁₆	42Ω	"	C ₈	2pF	Silvered Mica				X ₅	Power Amp.
R ₆	27kΩ	"			"	C ₉	2pF	Mica				X ₆	
R ₇	3.3kΩ	"			"	C ₁₀	3μF 6V	Electrolic				T ₁	Input Trans.
R ₈	1.5kΩ	"			"	C ₁₁	0.02μF	Disk Ceramic				T ₂	Output Trans.
R ₉	5kΩ	V.R.			"	C ₁₂	0.01μF	"				D ₁	Detector
R ₁₀	27kΩ	20% 1/4W			"	C ₁₃	30μF 6V	Electrolic				D ₂	Varistor
R ₁₁	7.5kΩ	"			"	C ₁₄	3μF 6V	"					

U.S. EQUIVALENT TRANSISTORS TO SONY TRANSISTORS	SONY CONVERTER 2T512	U.S.A. TEXAS 2N172 DE 2N167A	IF 2T522	U.S.A. TEXAS 2N145, 2N147 DE 2N146 (MOST SUITABLE)	SONY DET. 1T22	U.S.A. 1N34A	OUTPUT (PAIR)	SONY 2T55	SYLVANIA 2N228
---	----------------------	------------------------------	----------	--	----------------	--------------	---------------	-----------	----------------

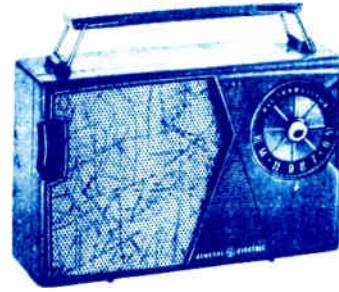


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CIRCUIT DIGEST

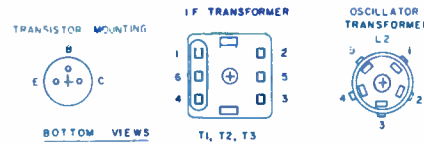
GENERAL ELECTRIC
Transistor Radio
Models P805, P806

April • 1959



TRANSISTOR CHART				
TR1	TR2	TR3	TR4	TR5
2N169	2N135	2N169	2N192	2N241A
2N212 (1297)		2N293	2N324	2N270
		2N314		2N321

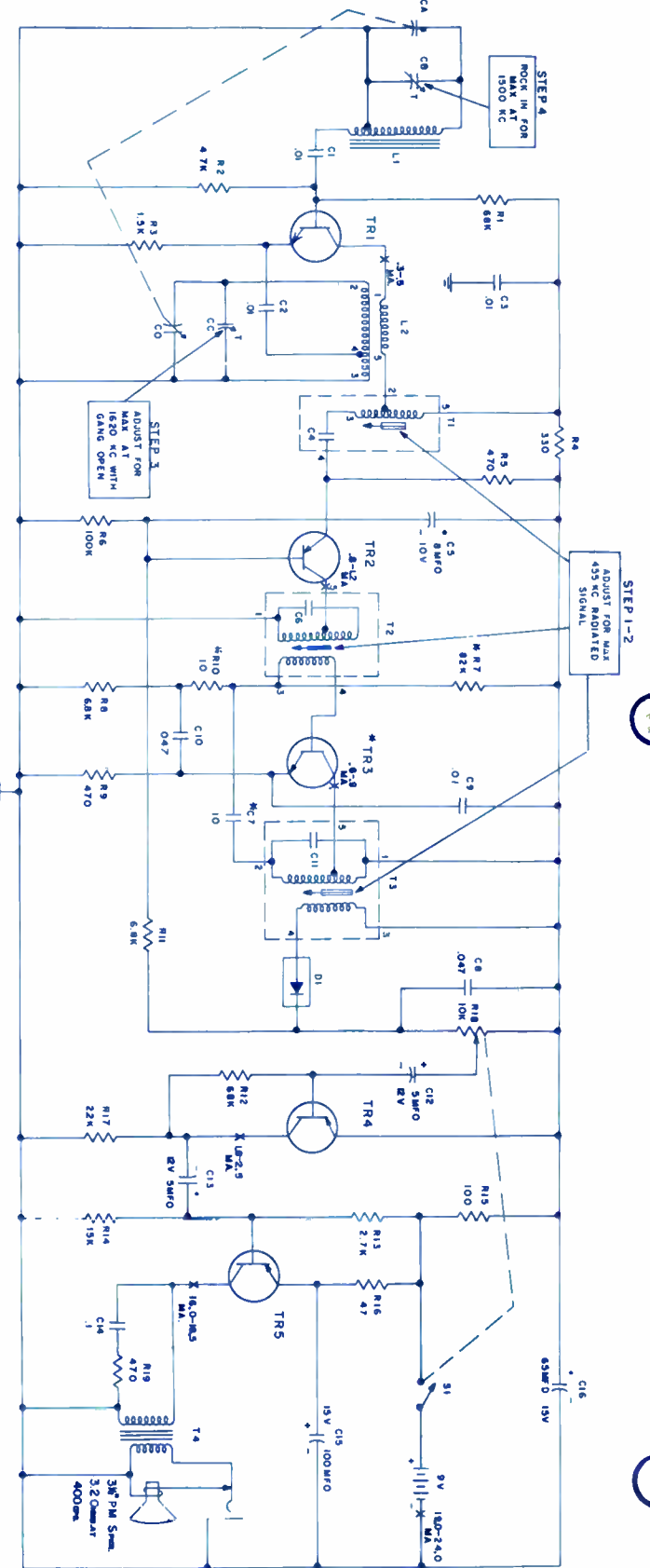
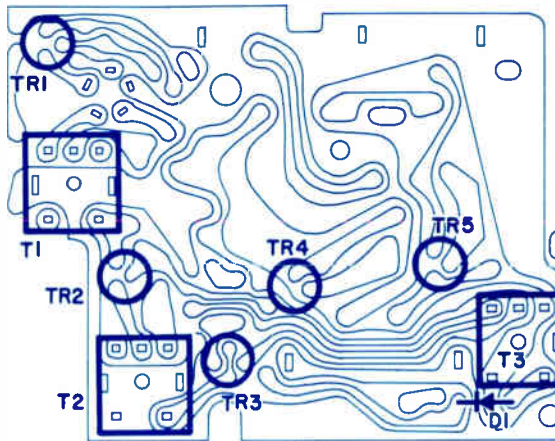
When a 2N169 is used in position (TR1) resistor R1 should be 82K
When a 2N212 (1297) is used in position (TR1) resistor R1 should be 33K



ALIGNMENT
SET VOLUME CONTROL AT MAXIMUM. CONNECT OUTPUT METER OR SCOPE ACROSS VOICE COIL. INDUCTIVELY COUPLE SIGNAL GENERATOR TO RECEIVER.
STEP 1-B.2 - SET SIG. GEN. AT 455 KC. WITH RECEIVER TUNING GANG OPEN.
STEP 3 - SET SIG. GEN. AT 1620 KC. WITH RECEIVER TUNING GANG OPEN.
STEP 4 - SET SIG. GEN. AT 1500 KC. TUNE RECEIVER TO 1500 KC.

WHEN TR3 IS 2N169 R7=47K C7 IS DELETED R10 IS REPLACED BY A JUMPER. MEASURE COLLECTOR CURRENTS WITH A MILLIAMMETER INSERTED IN SERIES WITH THE CIRCUITS MARKED "X" AND ALSO BATTERY CURRENT AT POINT MARKED "X" IN BATTERY CIRCUIT.

UNLESS OTHERWISE NOTED - CAPACITORS MORE THAN 1 μMF CAPACITORS LESS THAN 1 μMF RESISTORS ARE 1/2 WATT K=1000



ELECTRONIC TECHNICIAN 487

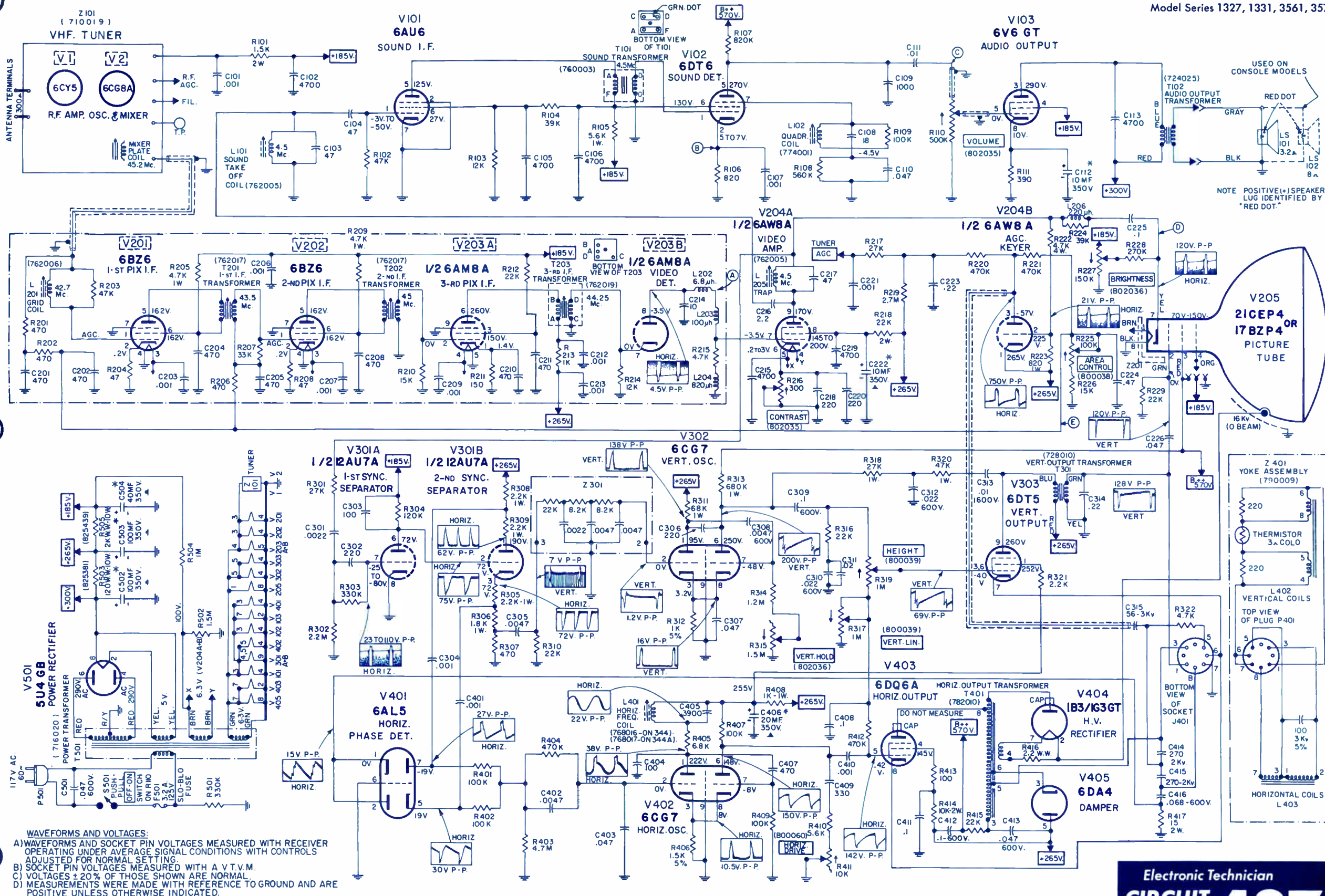
CIRCUIT DIGEST

HOFFMAN
TV Chassis 344, 344A

Model Series 1327, 1331, 3561, 3571

April - 1959

- NOTES:
1. ALL CAPACITIES SHOWN AS DECIMAL FRACTIONS ARE MICROFARADS AND SHOWN AS WHOLE NUMBERS ARE MICROMICROFARADS UNLESS OTHERWISE NOTED.
 2. ALL RESISTANCES ARE GIVEN IN OHMS: K=1,000; M=1,000,000.
 3. ARROWS ON POTENTIOMETERS INDICATE C.W. ROTATION.
 4. ENCIRCLED LETTERS ARE REFERRED TO IN ALIGNMENT INFORMATION.
 5. UNLESS OTHERWISE NOTED, ALL RESISTORS ARE 1/2 WATT AND 10%.
 6. --- INDICATES ASSEMBLY; - - - - - INDICATES SHIELD.
 7. NUMERALS SHOWN IN PARENTHESIS (XXXXXX) INDICATE HOFFMAN PART NO.
 8. ELECTROLYTIC CAPACITORS MARKED * ARE IN CONTAINER PART NO. 85704, AND MARKED † ARE IN CONTAINER PART NO. 856704.



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 - MEASUREMENTS WERE MADE WITH REFERENCE TO GROUND AND ARE POSITIVE UNLESS OTHERWISE INDICATED.

Electronic Technician
CIRCUIT DIGEST 487

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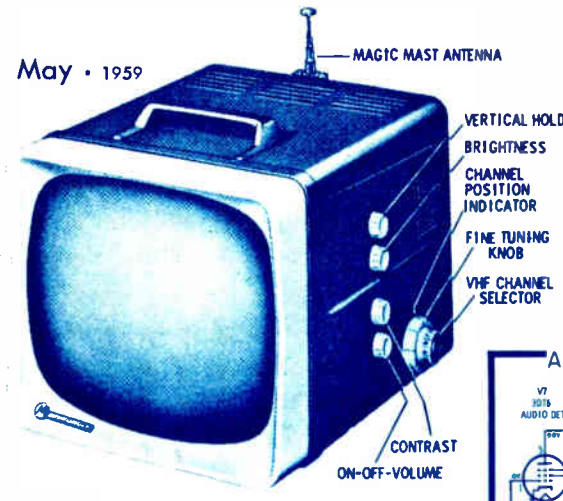
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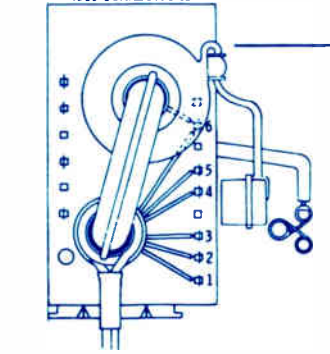
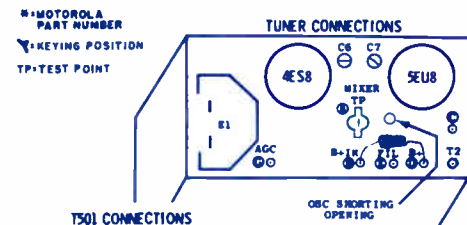
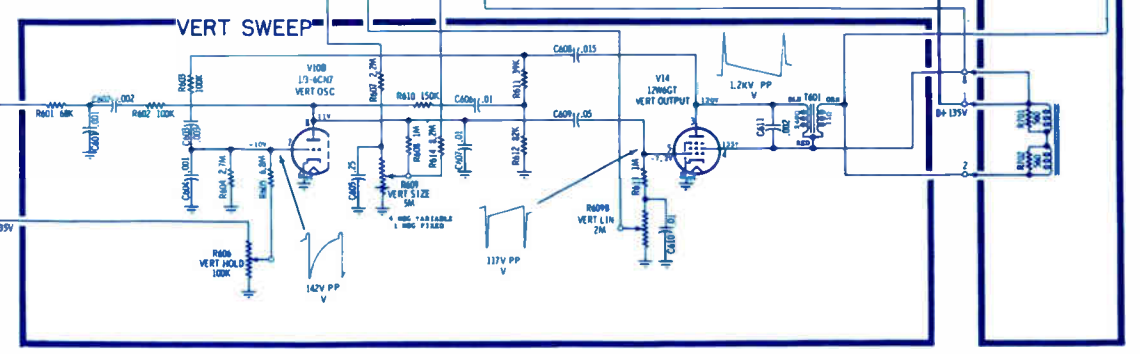
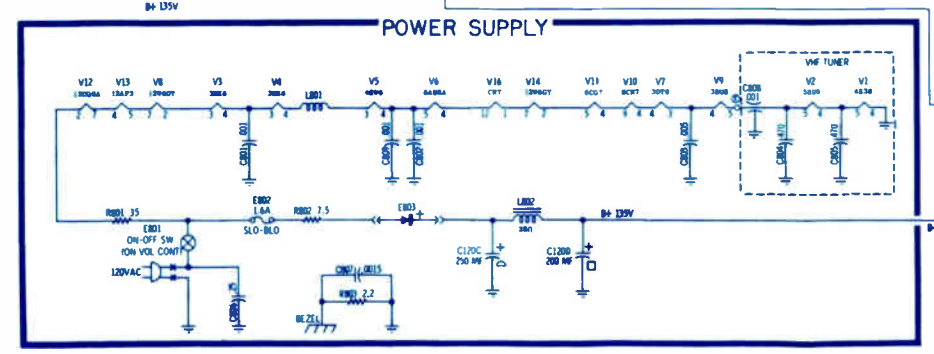
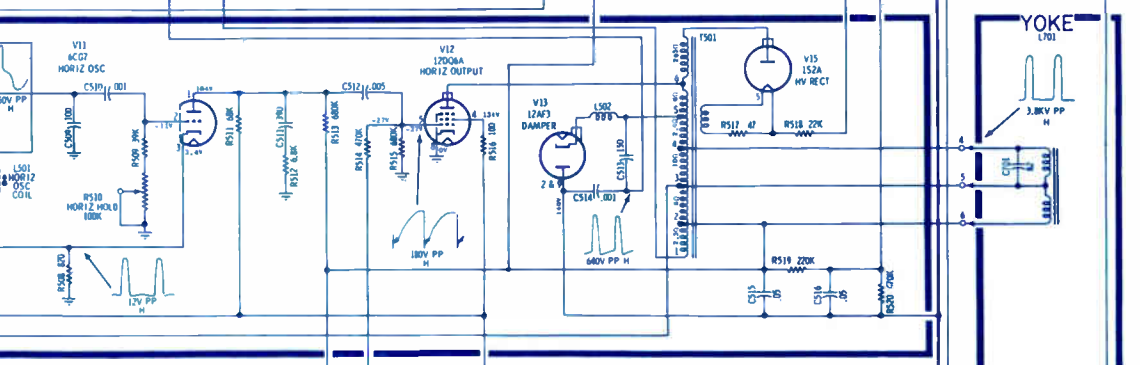
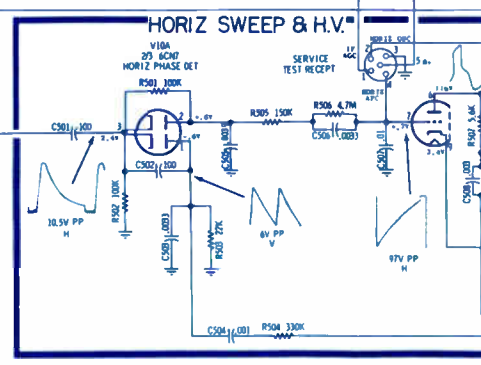
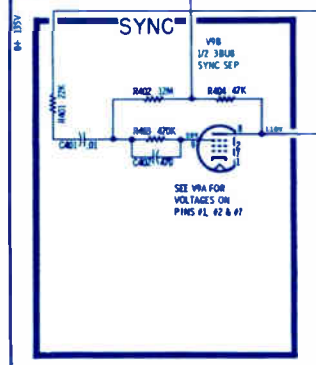
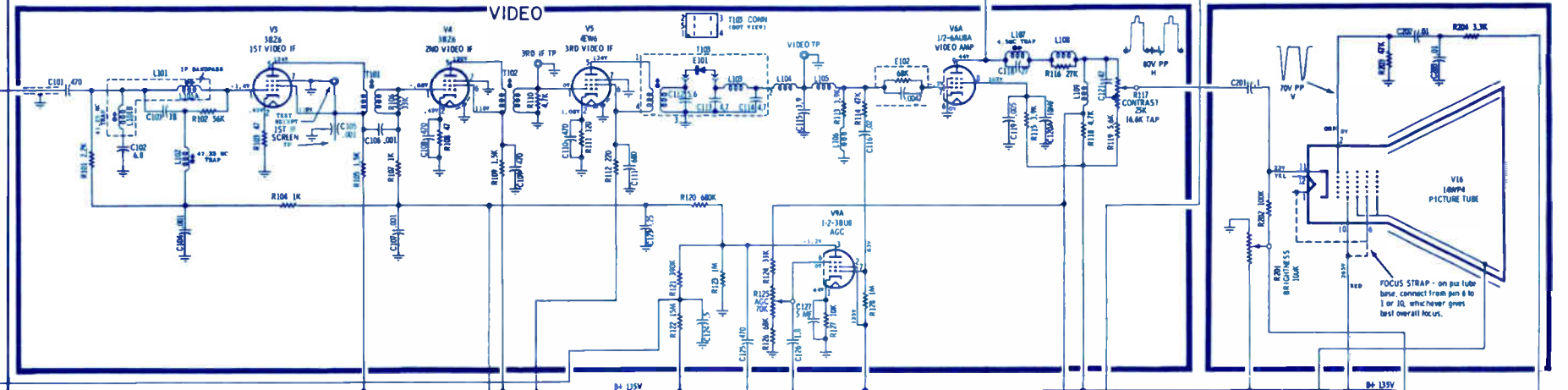
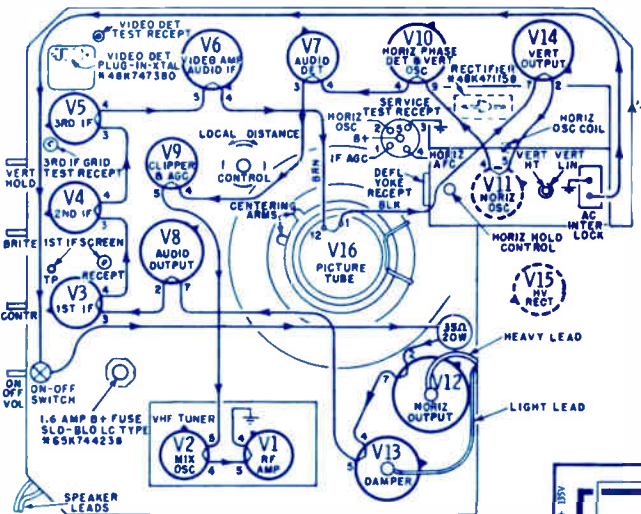
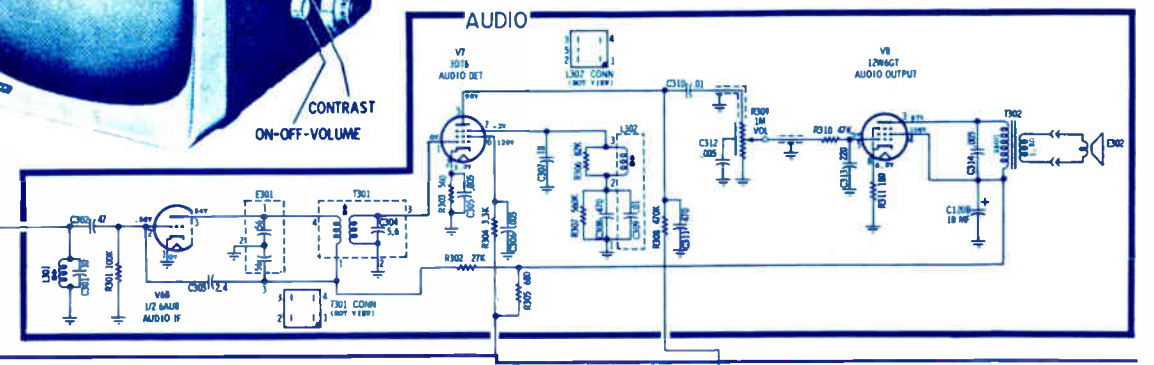
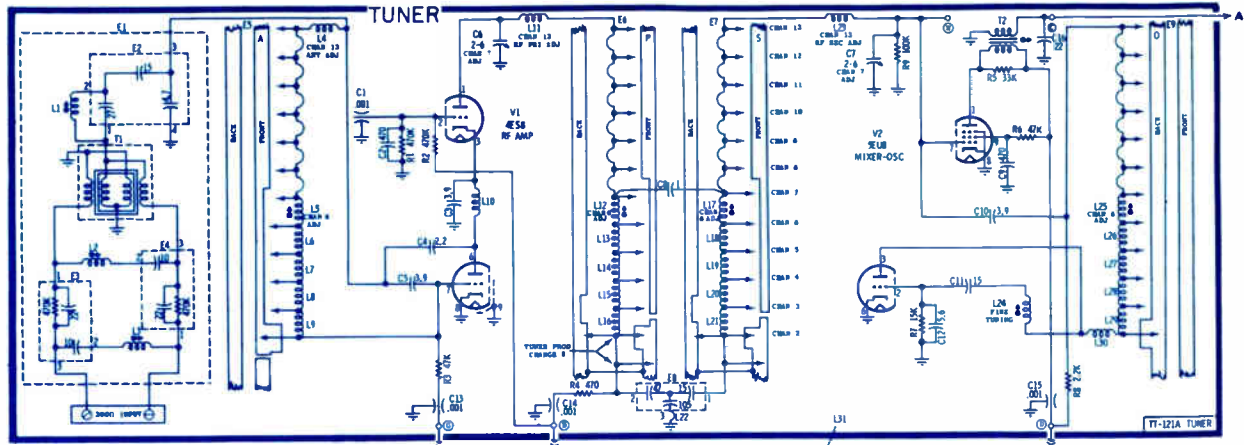
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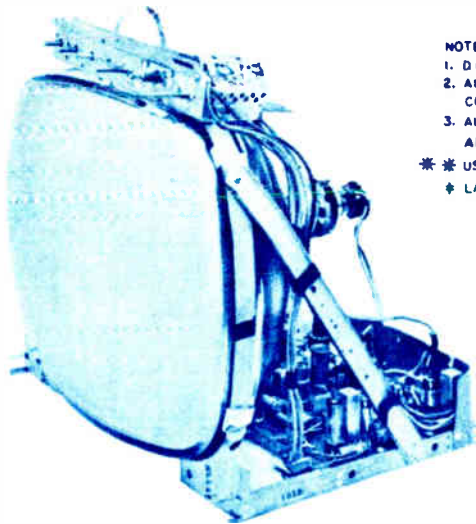
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- NOTES:**
- VOLTAGE MEASUREMENTS**
1. Taken from point indicated to chassis with a VTVM, $\pm 10\%$.
 2. Line voltage maintained at 120V AC.
 3. Voltages indicated by an asterisk will vary with associated control settings.
 4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
 5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
- WAVEFORM MEASUREMENTS**
1. Taken from point indicated to chassis with a wide-band oscilloscope.
 2. Oscilloscope synced near sweep rate indicated.
 3. Taken with strong signal; contrast control at maximum; all other controls in normal operating position.
- CAPACITORS** - Unless otherwise specified, values less than one in MF; all others in MWF.

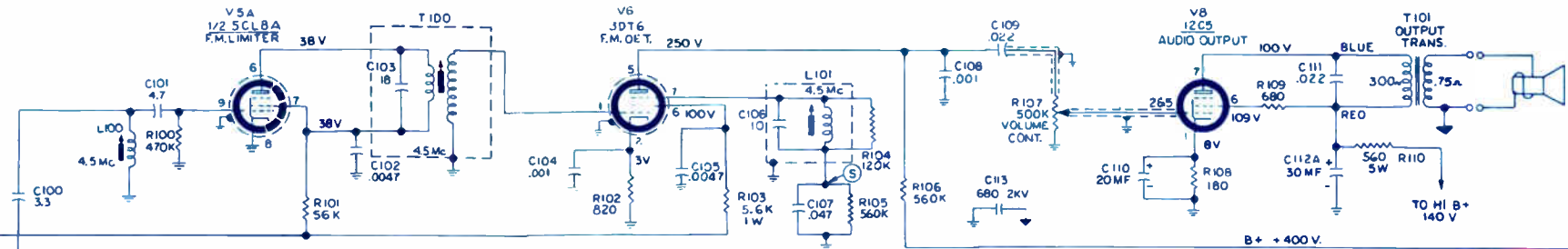


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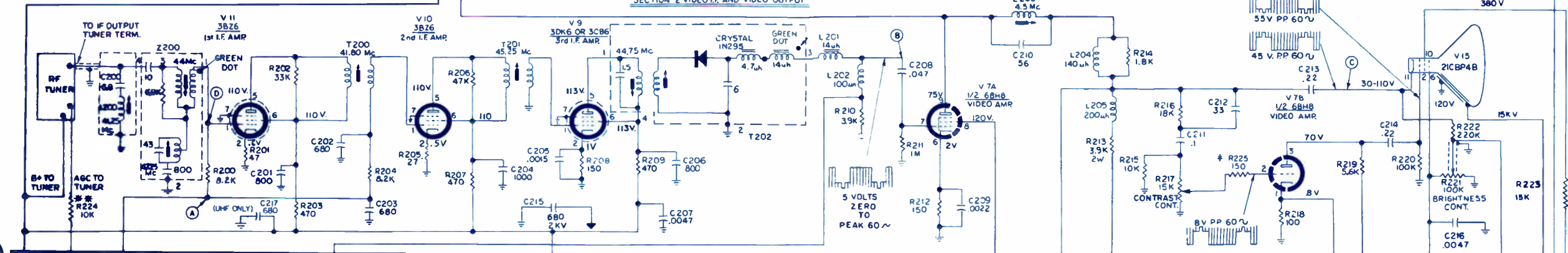


- NOTES:
1. D.C. VOLTAGES MEASURED FROM B-, NO APPLIED SIGNAL, USING A VTVM.
 2. ALL PEAK TO PEAK WAVEFORMS AND D.C. VOLTAGES (V) TAKEN WITH ALL CONTROLS SET FOR NORMAL PICTURE.
 3. ALL CAPACITANCE VALUES LESS THAN 1 ARE IN MFD AND VALUES GREATER THAN 1 ARE IN MMFD, WHILE ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.
- * USED WITH TUNERS 470V059H02 AND 470V060H02.
* LATER PRODUCTION

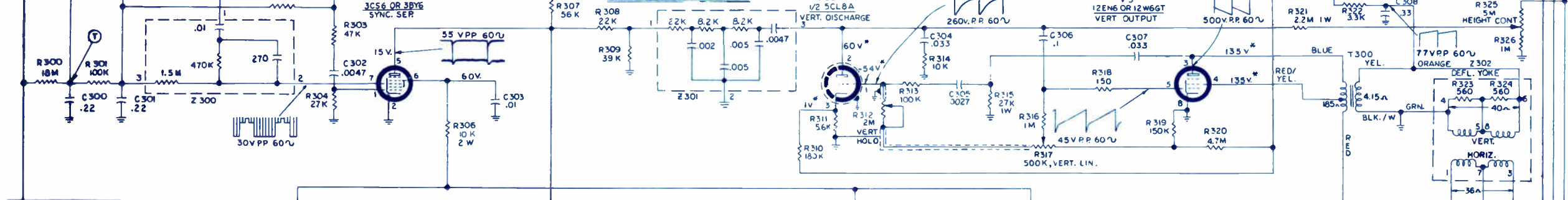
SECTION 1: SOUND I.F. AND AUDIO



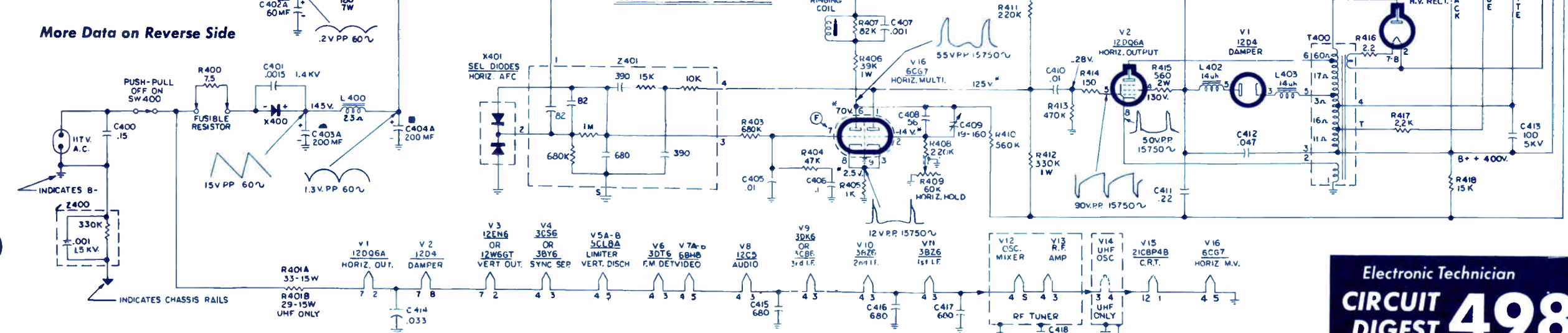
SECTION 2: VIDEO I.F. AND VIDEO OUTPUT



SECTION 3: SYNC AND VERTICAL

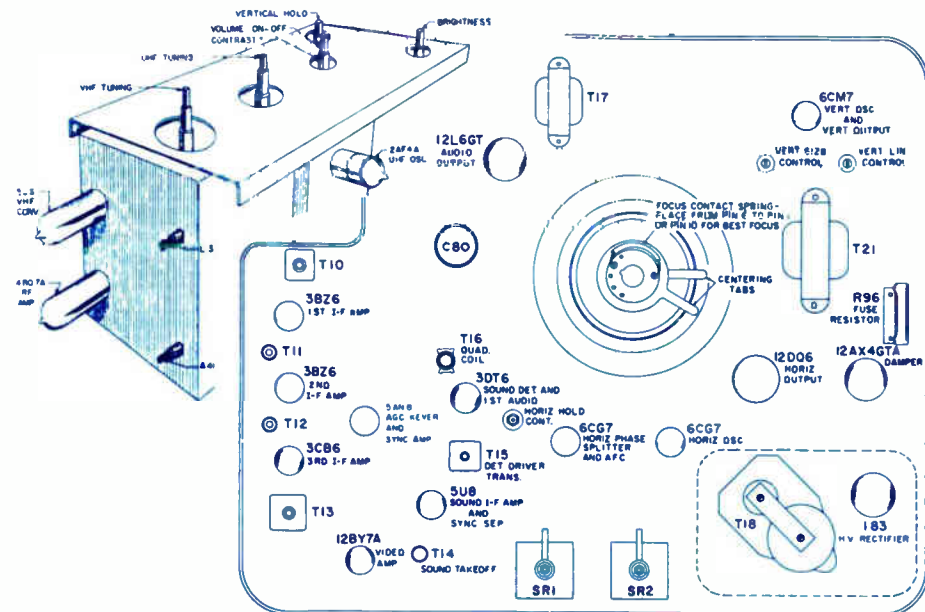


SECTION 4: HORIZ. AND POWER



More Data on Reverse Side

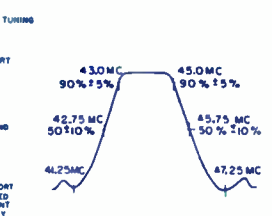
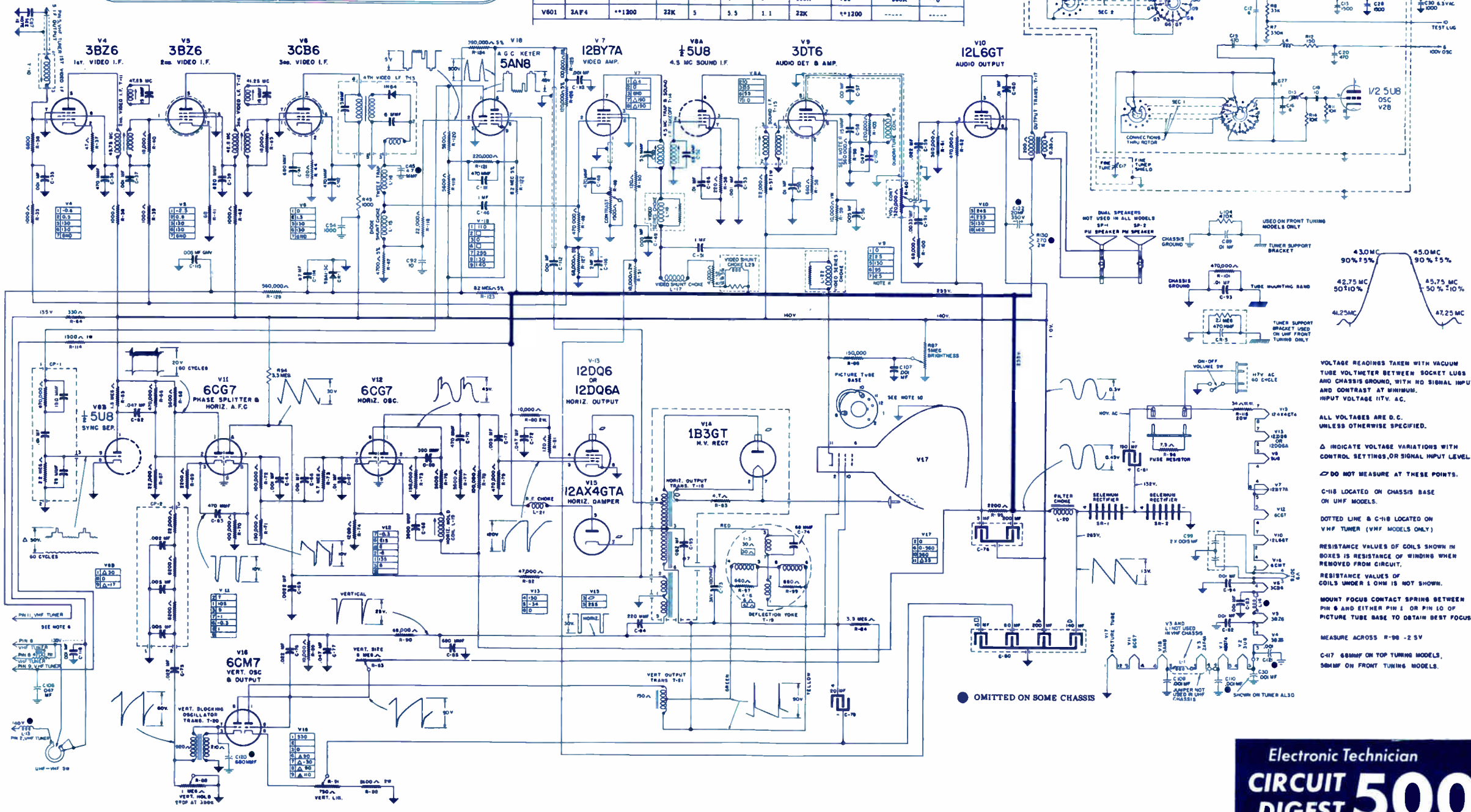
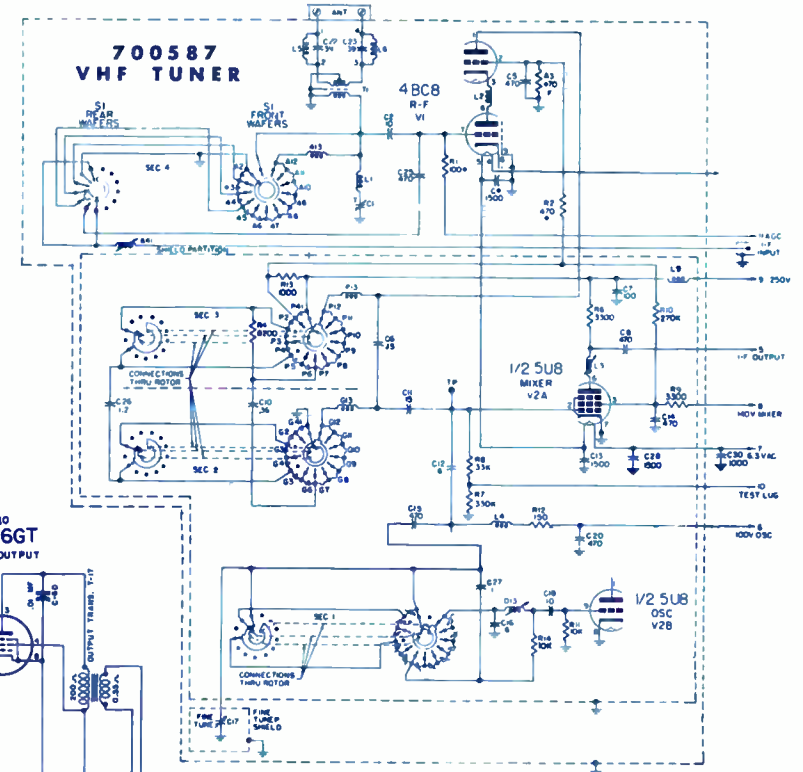
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Measured from SR1 output.
 TP - Tie Point
 NC - No Connection
 * Measured from Pin 3 of V15
 ** Measured from Pin 8 of V10
 † Varies with Control setting
 ‡ Depends on condition of electrolytic

RESISTANCE MEASUREMENTS

REF	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	5U8	**5000	380K	**47K	5.5	7.5	†4800	0	0	10K
V2	4BQ7A	†1500	230K	DNF	5.5	6.5	DNF	600K	0	0
V4	3BZ6	75K	47	8	10	**1000	**1000	0	0	0
V5	3BZ6	69K	68	8	9	**1000	**1000	0	0	0
V8	3CB6	1	120	7.5	8	**1000	**1000	0	0	0
V7	128Y7	†140	470K	0	15	15	16	†4100	†18K	0
V8	5U8	**1.5meg	8	**22K	16	17	**22K	220	0	2.2 meg
V9	3DT6	7	680	4	3.0	**320K	**10K	560K	0	0
V10	12L6	NC	11	†270	†54	250K	TP	14	†20K	0
V11	6CG7	**5800	20K	2200	15	13	40K	350K	100K	0
V12	6CG7	†100K	150K	1200	1.5	3	†8000	5 meg	1200	0
V13	12DQ6	TP	17	TP	†10K	470K	TP	22	0	Top Cap †7.5
V14	1B3GT	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	Top Cap †500
V15	12AX4GT	NC	NC	†20K	NC	†54	TP	24	22	0
V16	6CM7	†750	NC	215	11	10	**4 meg	†550K	**4 meg	†7000
V17	21ATP4	0	78K	Pin 6 †10.5	Pin 10 †10.5	Pin 11 †330K	Pin 12 1.5	0	0	0
V18	5A8B	**11K	27K	0	4	5	180K	†56	**200K	**0
V601	2AF4	**1200	22K	5	5.5	1.1	22K	**1200	0	0



VOLTAGE READINGS TAKEN WITH VACUUM TUBE VOLTMETER BETWEEN SOCKET LUGS AND CHASSIS GROUND, WITH NO SIGNAL INPUT AND CONTRAST AT MINIMUM. INPUT VOLTAGE 117V. AC.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
 Δ INDICATE VOLTAGE VARIATIONS WITH CONTROL SETTINGS, OR SIGNAL INPUT LEVEL.
 ○ DO NOT MEASURE AT THESE POINTS.
 C-118 LOCATED ON CHASSIS BASE OR UHF MODELS.
 DOTTED LINE & C-118 LOCATED ON VHF TUNER (VHF MODELS ONLY).
 RESISTANCE VALUES OF COILS SHOWN IN BOXES IS RESISTANCE OF WINDING WHEN REMOVED FROM CIRCUIT.
 RESISTANCE VALUES OF COILS UNDER 1 OHM IS NOT SHOWN.
 MOUNT FOCUS CONTACT SPRING BETWEEN PIN 6 AND EITHER PIN 1 OR PIN 10 OF PICTURE TUBE BASE TO OBTAIN BEST FOCUS.
 MEASURE ACROSS R-96 - 2.5V
 C-117 68MUF ON TOP TUNING MODELS, 58MUF ON FRONT TUNING MODELS.

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Stereo Preamp & Audio Control SP215 448

RADIART
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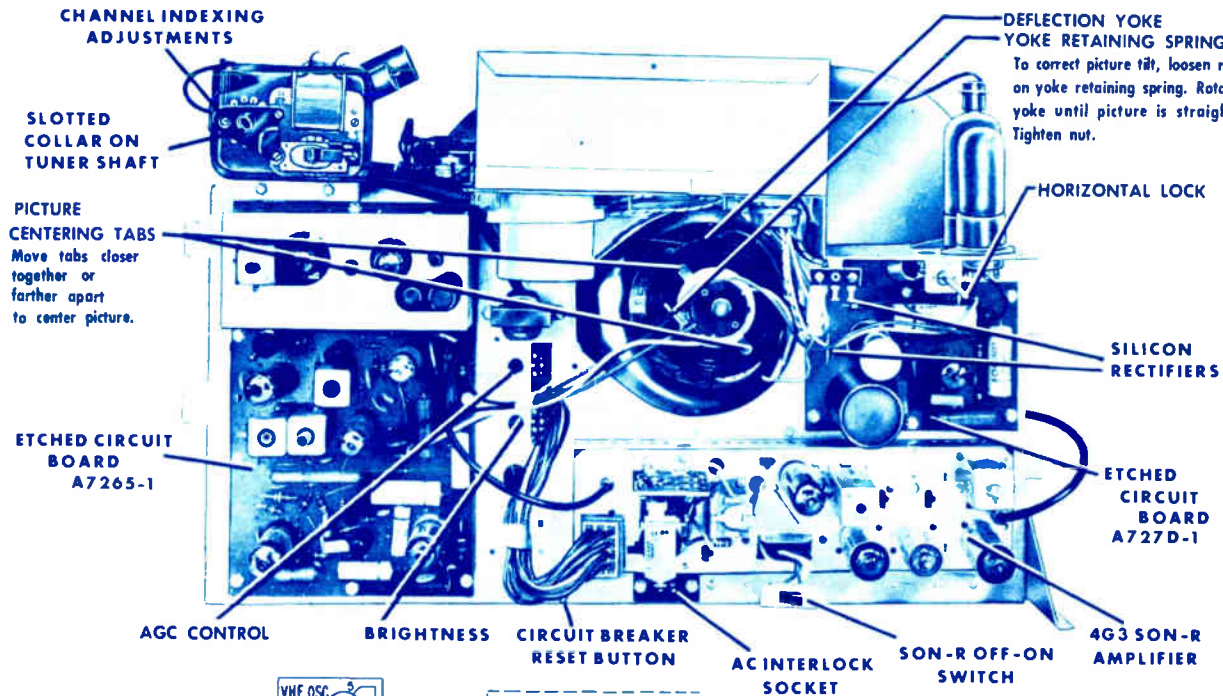
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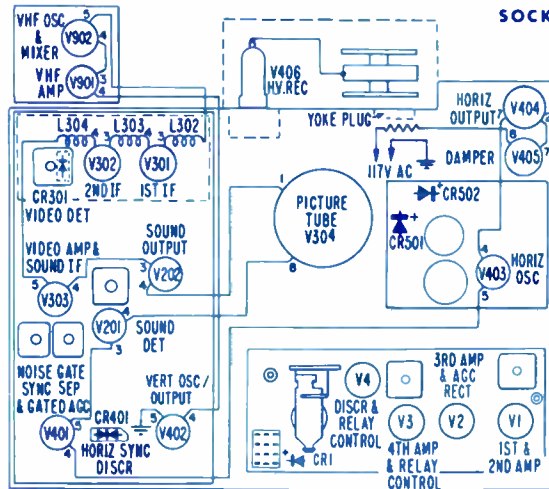


Rear View of 15B2 - 15B3 Showing Adjustment Locations.

More Data on Reverse Side

TUBE COMPLEMENT

V101-2CY5	V403-6CG7
V102-5CG8	V404-12DQ6A
V201-3DT6	V405-12AX4GTA
V202-12CU5	V406-1G3GT
V301-3BZ6	CR301-1N87
V302-3DK6	or 1N87A
V303-6AW8A	CR401-93B5-6
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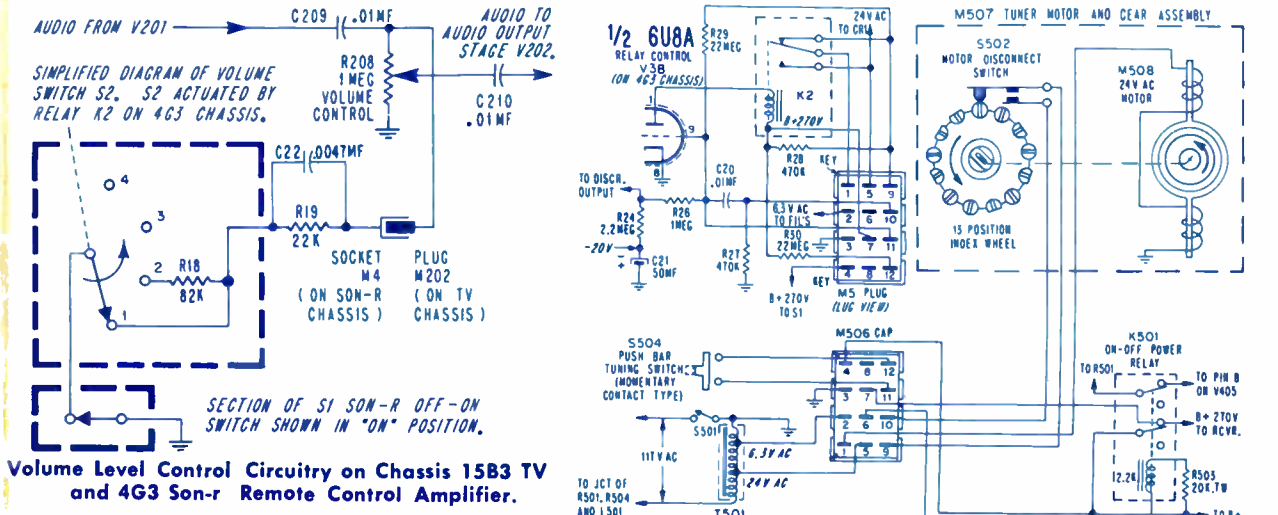
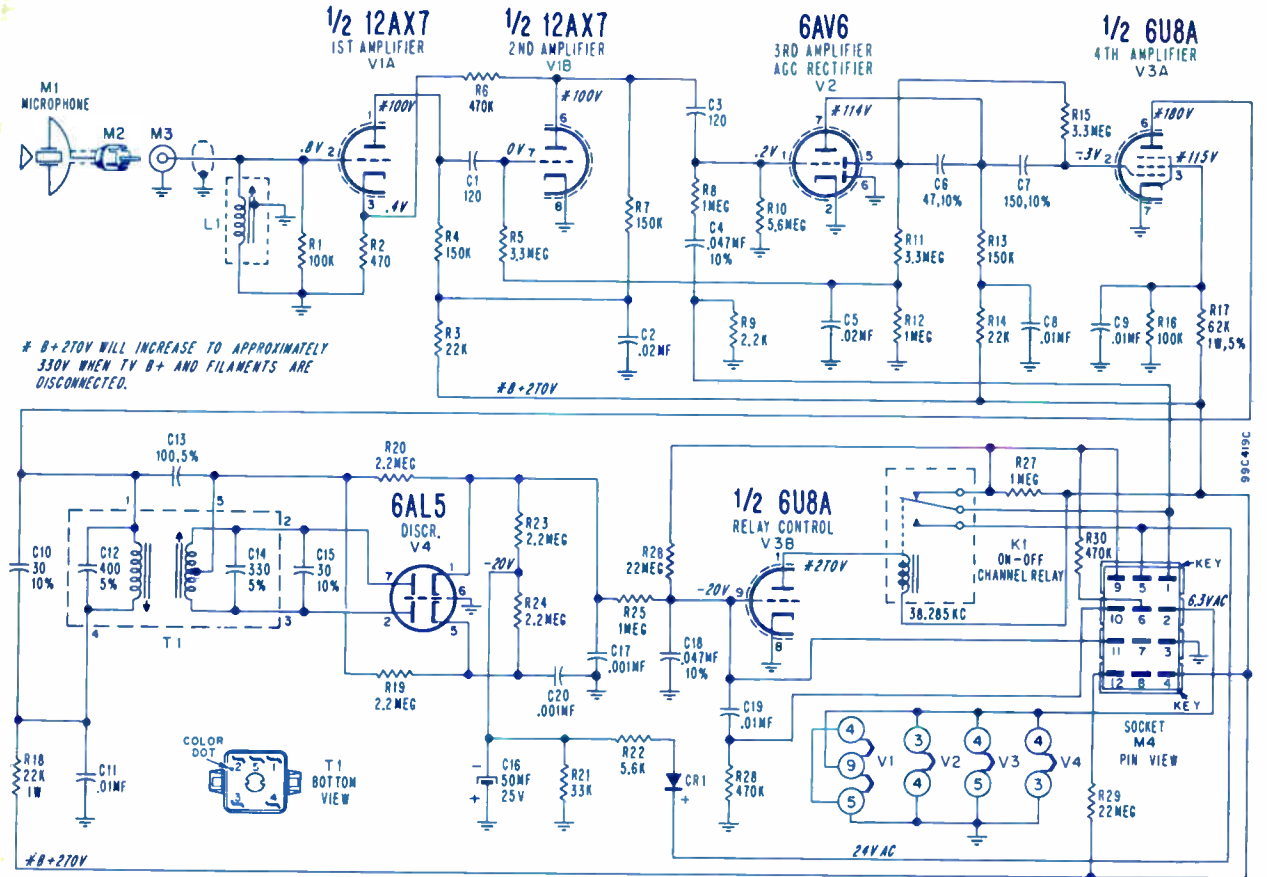
TUBE LOCATIONS 15B3 TV AND 4G3 SON-R CHASSIS

ADMIRAL
TV Chassis 15A2,
15B2, 15B3

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CIRCUIT DIGEST

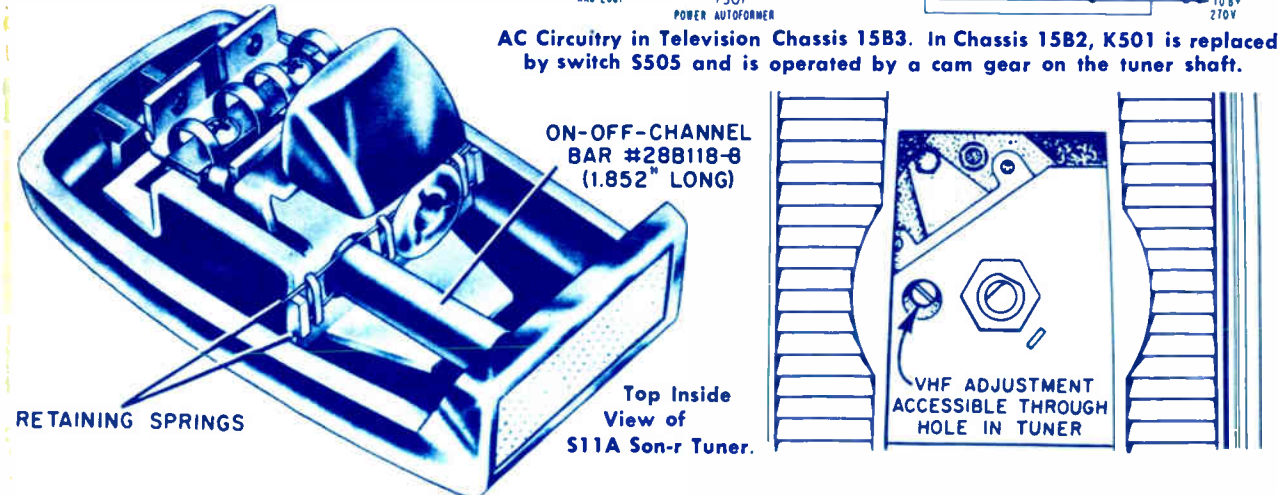
507

4H3 Remote Control Amplifier used with Television Chassis 15B2.



Volume Level Control Circuitry on Chassis 15B3 TV and 4G3 Son-r Remote Control Amplifier.

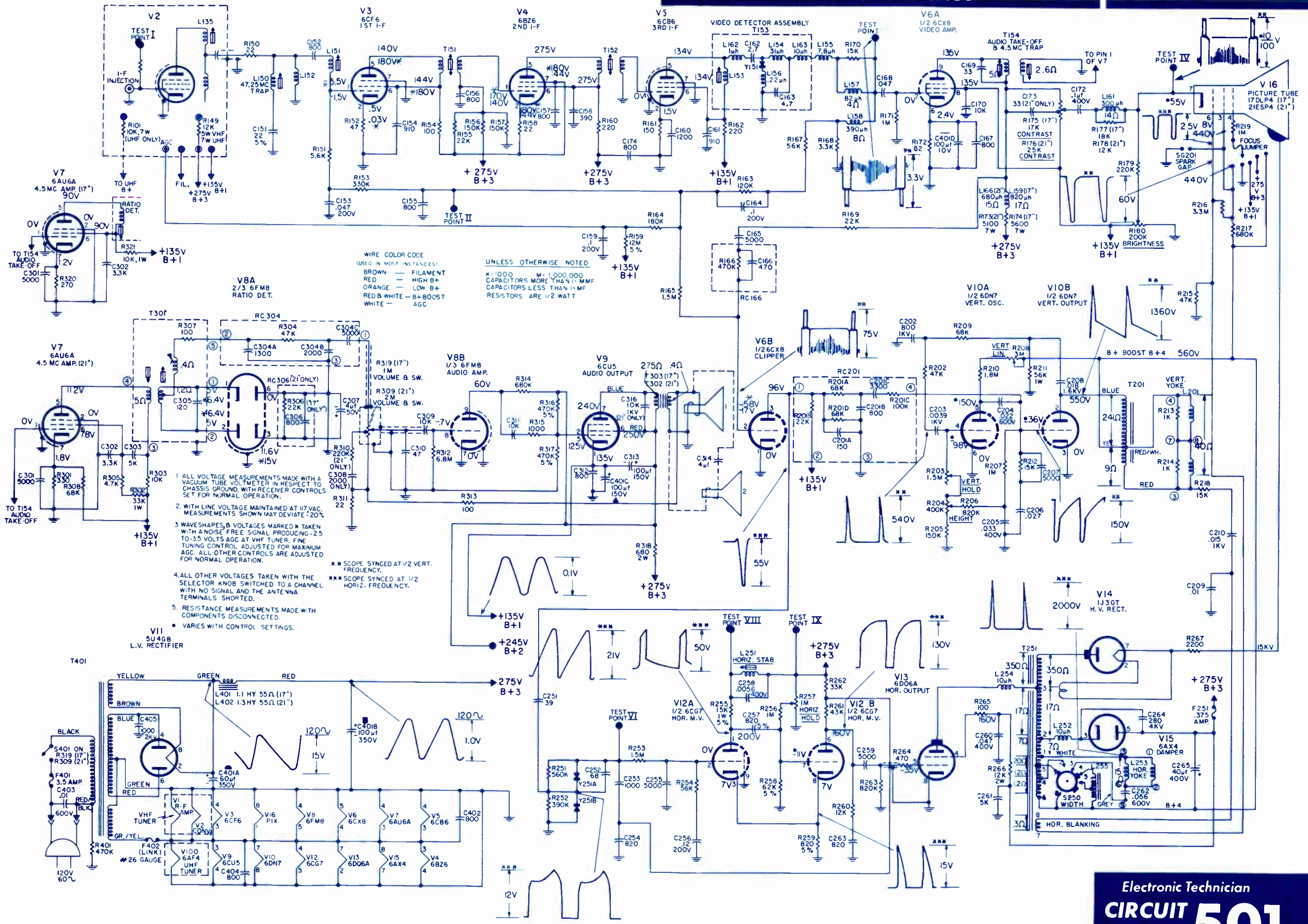
AC Circuitry in Television Chassis 15B3. In Chassis 15B2, K501 is replaced by switch S505 and is operated by a cam gear on the tuner shaft.



ELECTRONIC TECHNICIAN 501

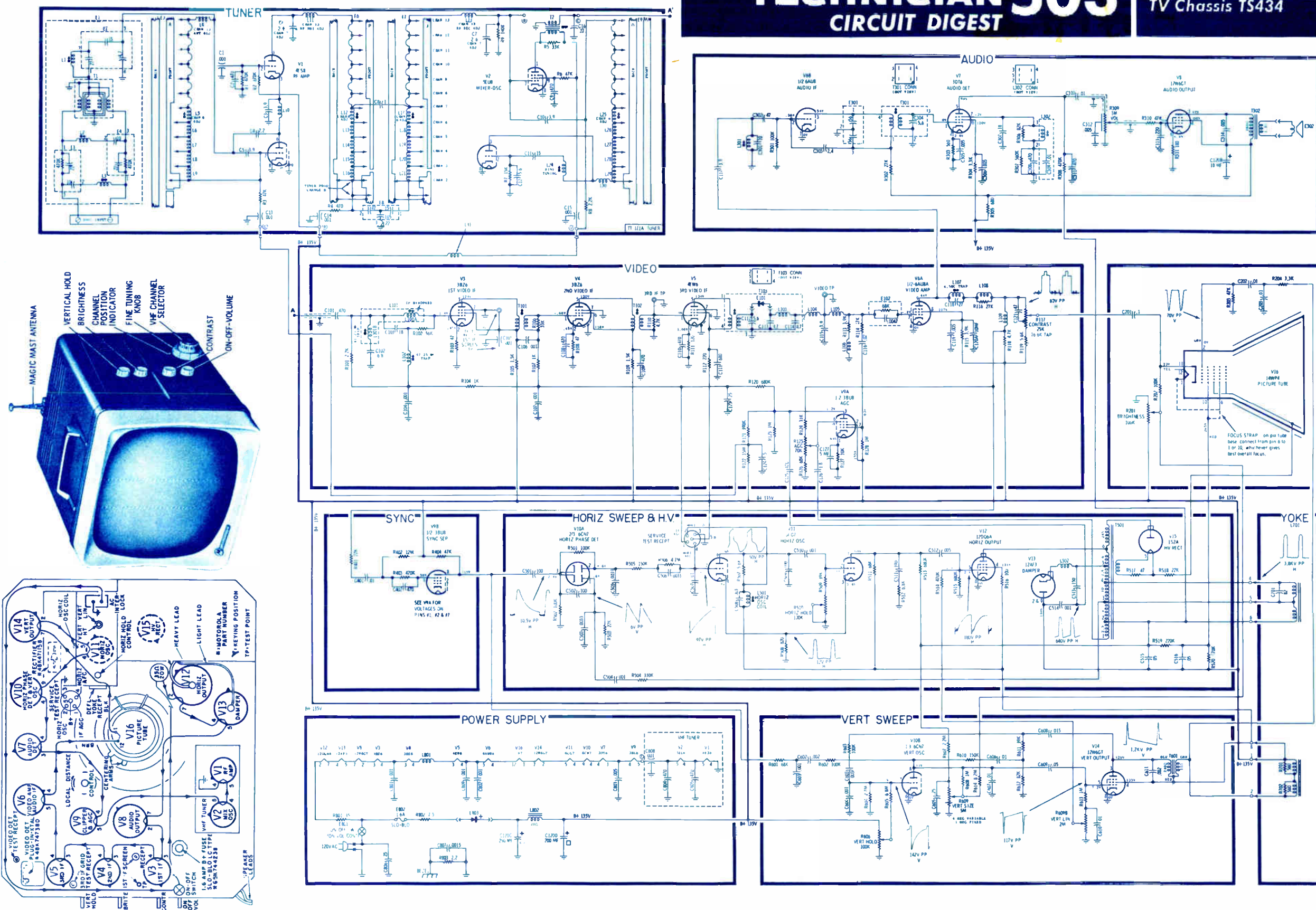
CIRCUIT DIGEST

GENERAL ELECTRIC TV Chassis M5



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1. ALL VOLTAGE MEASUREMENTS MADE WITH A VACUUM TUBE VOLTMETER IN RESPECT TO CHASSIS GROUND, WITH RECEIVER CONTROLS SET FOR NORMAL OPERATION.
 2. WITH LINE VOLTAGE MAINTAINED AT 117 VAC, MEASUREMENTS SHOWN MAY DEVIATE ±20%.
 3. WAVESHAPES & VOLTAGES MARKED * TAKEN WITH A NOISE FREE SIGNAL PRODUCING -2.5 TO -3.5 VOLTS AGC AT VHF TUNER. FINE TUNING CONTROL ADJUSTED FOR MAXIMUM AGC. ALL OTHER CONTROLS ARE ADJUSTED FOR NORMAL OPERATION.
 4. ALL OTHER VOLTAGES TAKEN WITH THE SELECTOR KNOB SWITCHED TO A CHANNEL WITH NO SIGNAL AND THE ANTENNA TERMINALS SHORTED.
 5. RESISTANCE MEASUREMENTS MADE WITH COMPONENTS DISCONNECTED.
- * VARIES WITH CONTROL SETTINGS.



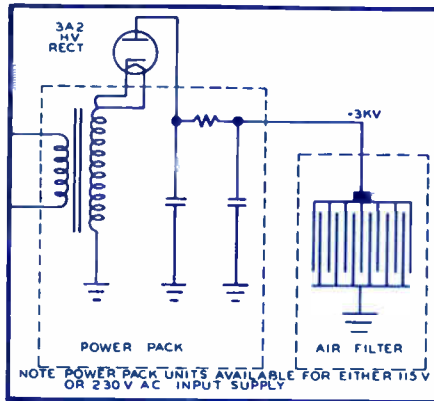
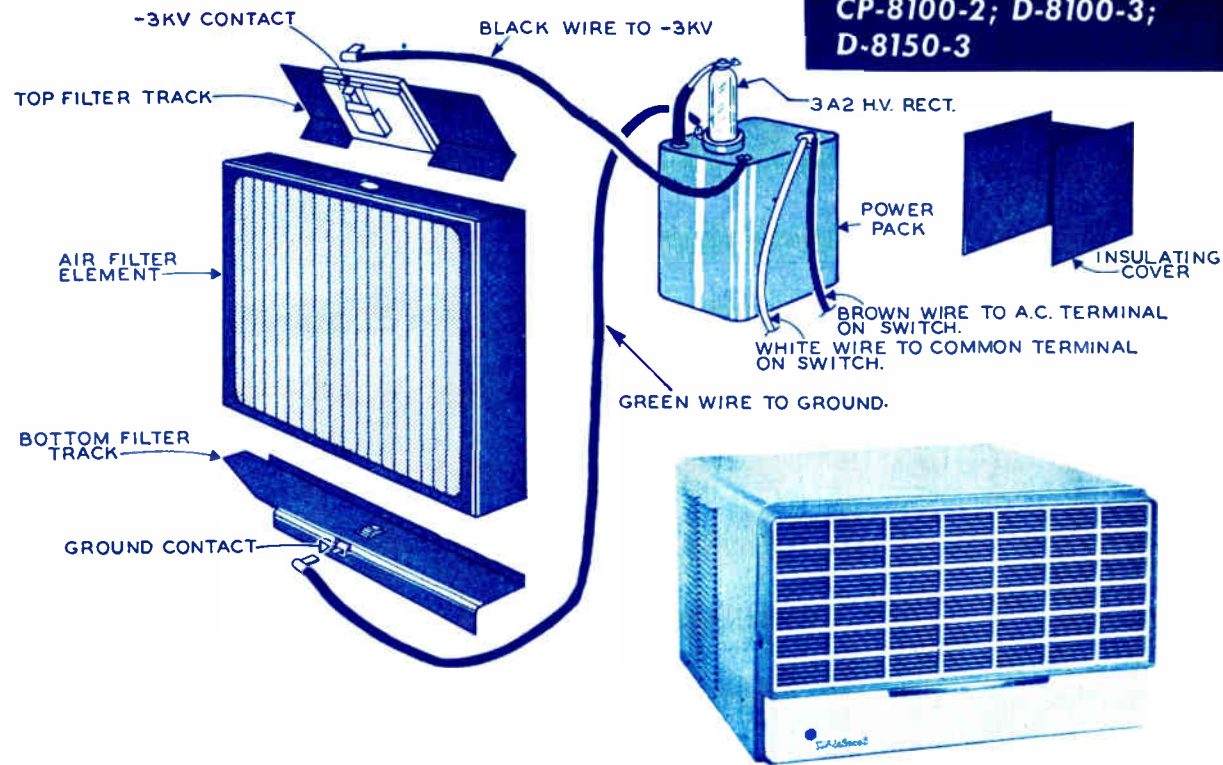
Chassis Changes
A-01 TO IMPROVE VERTICAL SYNC STABILITY: R-502 (100K) moved from ground to pin #1 of V-10 (6CN7 -Horiz Phase Det).
DESIGN CHANGE: C-125 (470 mmf) removed. The plate of V-9A (3BU8) is now connected to junction of C-513 (150) and C-514 (.001).

A-02 TO REDUCE NOISE LEVEL: R-121 (390K) changed to 470K.
Tuner Changes
TT-121B TO MAINTAIN B+ ON RF PRI TRIMMER: A buss lead is added to RF pri wafer. See Tuner Schematic.

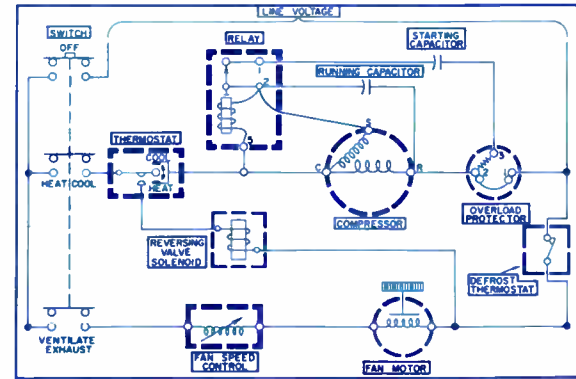
TT-121C TO MINIMIZE RESPONSE CURVE TILT ON CHANNEL 5: C-2 (470) changed to .0022 mf. This change reduces parasitic oscillation creating the tilt.

Electronic Technician
CIRCUIT DIGEST 503

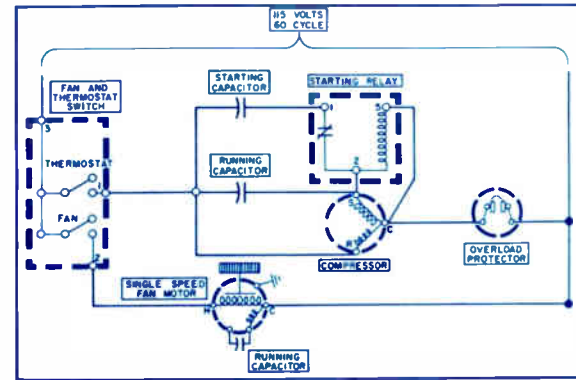
RCA
 Air Conditioners &
 Electronic Filter; Models
 C-7100-2; C-8150-2;
 CH-775-2; CH7100-3;
 CP-8100-2; D-8100-3;
 D-8150-3



The power supply filter components are sealed in the case and cannot be replaced individually. A defective power pack must be replaced as a unit.

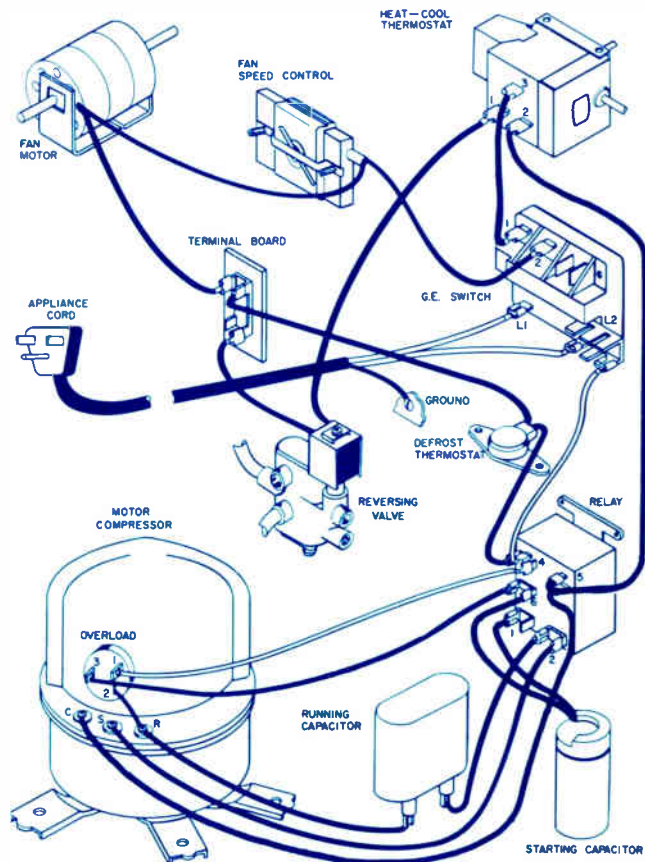


CUSTOM MODEL (HEAT PUMP) MODELS CH-775-2 AND CH-7100-3



CUSTOM MODEL C-7100-2

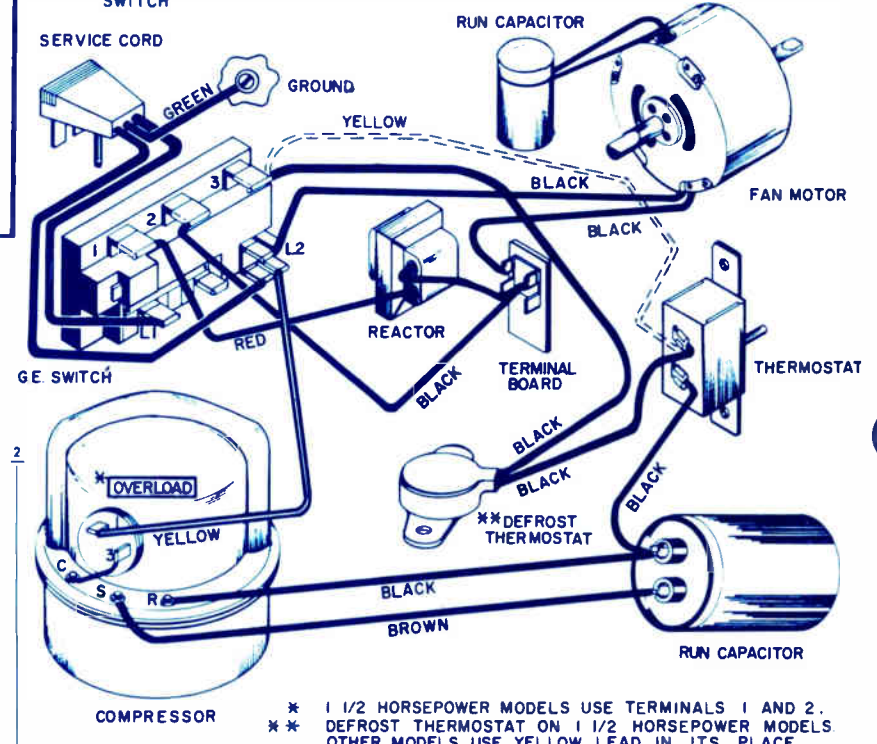
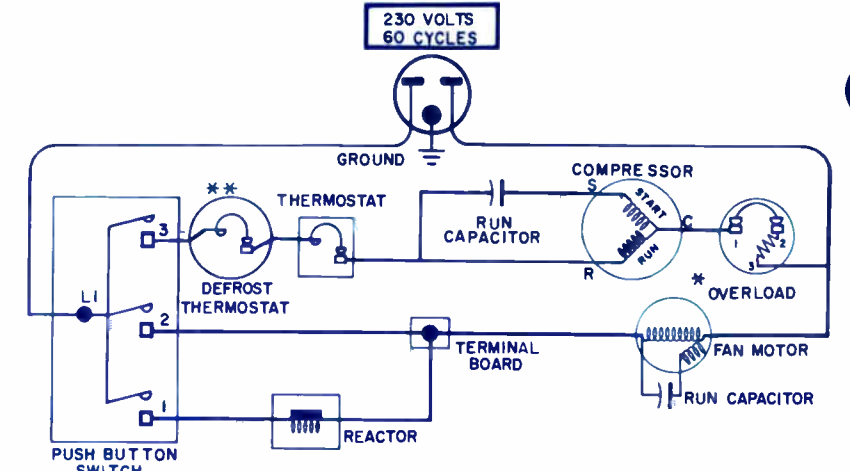
CUSTOM MODELS CH-775-2 AND CH-7100-3



Sales Model Explanation

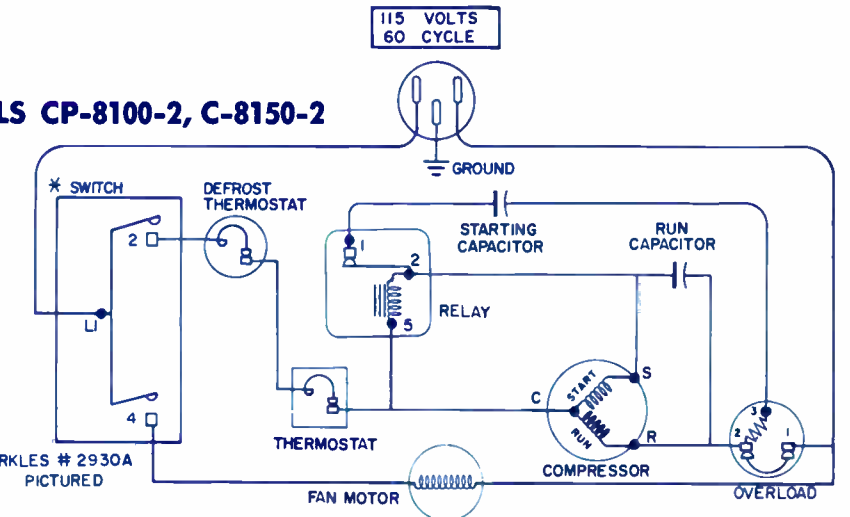
EXAMPLE	1	P	7	75	2
First Letter Classifies Model	I — Imperial	S — Supreme	D — Deluxe	C — Custom	
Second Letter, If Present	P — Low Current	W — Casement Window	H — Heater Pump		
First Digit Indicates the Line Year	7 — 1957				
Second Through Fourth Digit Indicate Approximate Unit H.P.	75 — 3/4 Horsepower	100 — 1 Horsepower	150 — 1 1/2 Horsepower	200 — 2 Horsepower	
Indicates Unit Voltage and Cycle	2 — 115 V — 60 Cycle	3 — 230 V — 60 Cycle			

DELUXE MODELS D-8100-3 AND D-8150-3

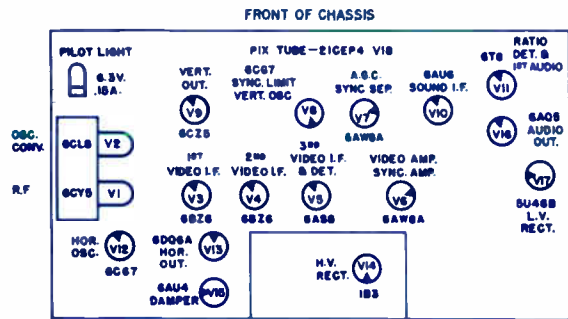


* 1 1/2 HORSEPOWER MODELS USE TERMINALS 1 AND 2. DEFROST THERMOSTAT ON 1 1/2 HORSEPOWER MODELS OTHER MODELS USE YELLOW LEAD IN ITS PLACE.

CUSTOM MODELS CP-8100-2, C-8150-2



* ARKLES # 2930A PICTURED



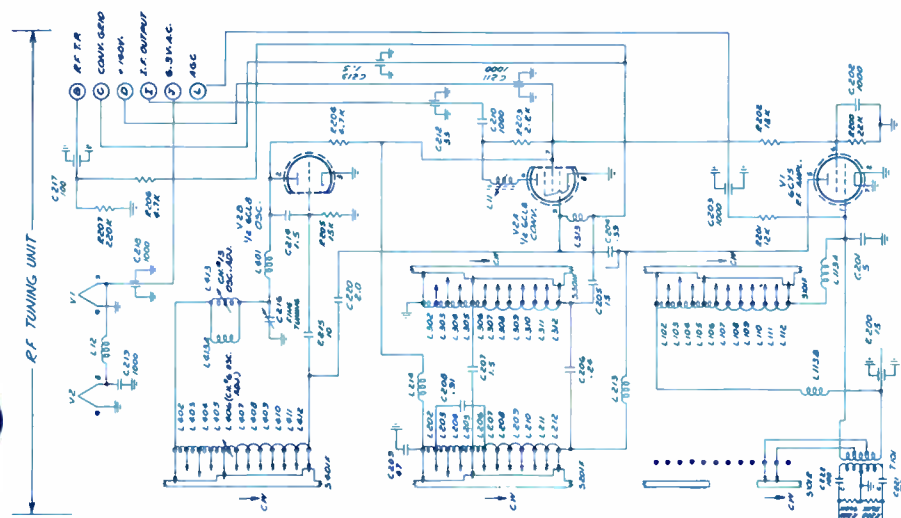
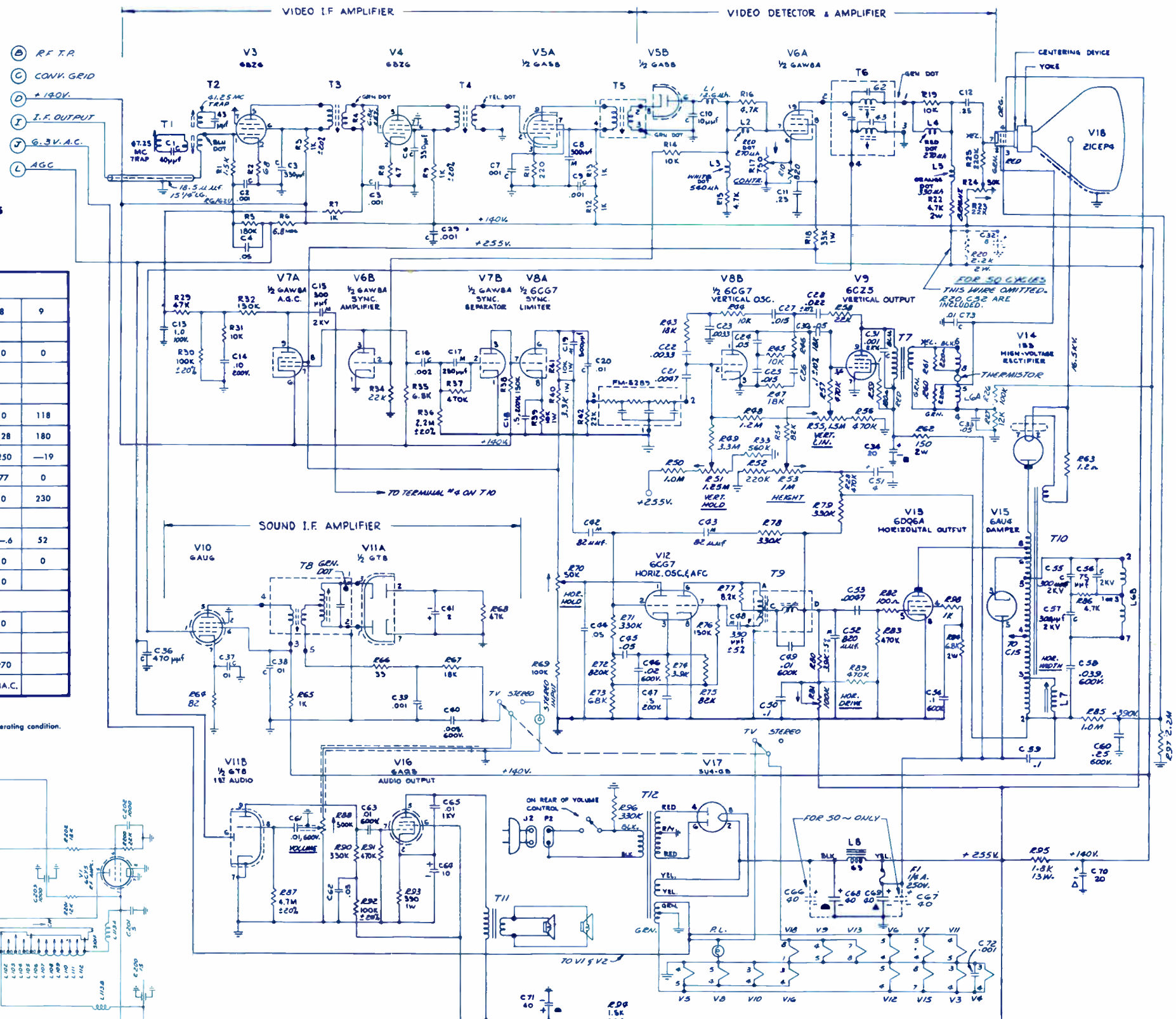
TUBE LOCATIONS TELEVISION VR121 & VR121-1 CHASSIS

VR-121 VOLTAGE READINGS

TAKEN WITH R.C.A. SENIOR VOLTOHMIST WV98A
 READINGS TAKEN FROM TUBE SOCKET CONTACTS TO CHASSIS
 SOME SOCKET CONTACTS ARE USED ONLY AS TIE POINTS
 CHANNEL SWITCH SET AT CHANNEL 4 - NORMAL SIGNAL
 Line Voltage = 117V A.C.

TUBE REF. NO.	TUBE PIN NO.								
	1	2	3	4	5	6	7	8	9
V1 6CY5*	—3	0	6.3A.C.	0	136	64	0		
V2 6CL8*	0	125	0	0	6.3A.C.	125	125	0	0
V3 6BZ6	—5.8	.3	0	6.3A.C.	130	140	0		
V4 6BZ6	—5.5	.2	0	6.3A.C.	130	140	0		
V5 6AS8	128		1.8	0	6.3A.C.	—2.2	2	0	118
V6 6AW8A	0	—1.5	128	0	6.3A.C.	1	—2	128	180
V7 6AW8A	0	—12	74	0	6.3A.C.	145	128	250	—19
V8 6CG7	62	—44	0	6.3A.C.	0	142	74	77	0
V9 6CZ5	235	28	—17	6.3A.C.	0	—17	0	0	230
V10 6AU6	0	0	0	6.3A.C.	134	134	1		
V11 6T8	—10	—32	—10	6.3A.C.	0	—2	0	—6	52
V12 6CG7	220	—4.5	20	6.3A.C.	0	185	—56	0	0
V13 6DQ6A	355	0	—34	155	—34	560	6.3A.C.	0	
V14 1B3	PIN 2 and PIN 7 = 16.5 KV								
V15 6AU4GT	170	0	620	0	245	365	6.3A.C.	0	
V16 6AQ5	0	12	0	6.3A.C.	180	200	0		
V17 5U4GB	200	270	0	270A.C.	0	270A.C.	0	270	
V18 21CEP4	0	26	390	0	0	80	6.3A.C.		

B+ AT C68 FIRST FILTER CAPACITOR = 260 V
 HIGH VOLTAGE AT 2nd ANODE OF PICTURE TUBE 16.5 KV
 * = Readings on V1 & V2 taken from top of socket without tube in socket. All other tubes in normal operating condition.



ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

Trademark

85

In This Issue (No. 85)

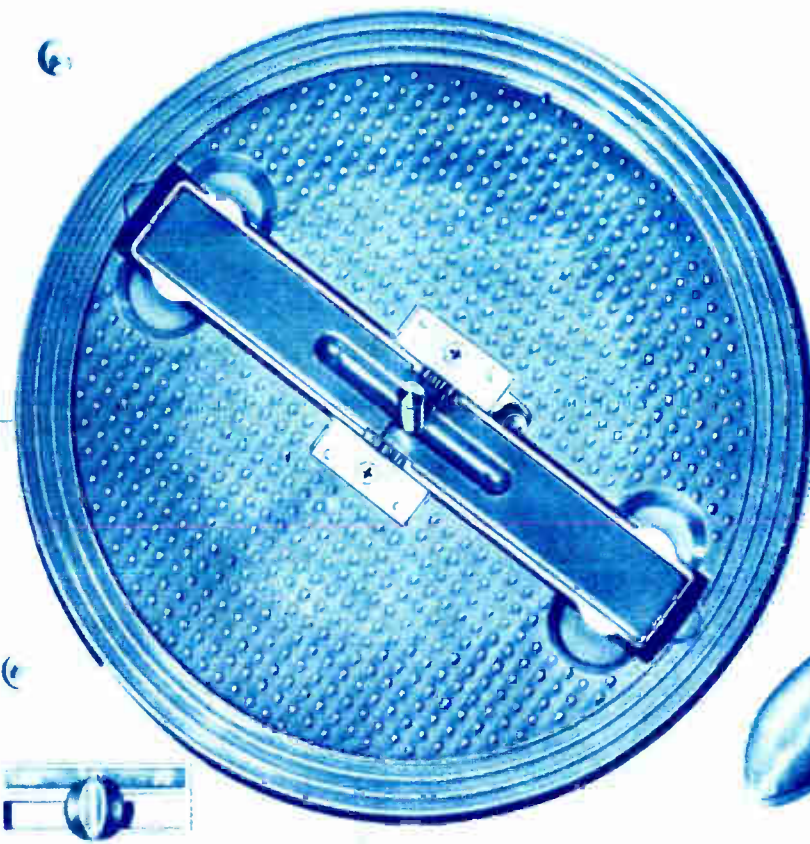
ADMIRAL TV Chassis 16X1, 16AX1	522	RCA TV Chassis 128A, B, C, E, F, H, J, M, U, AA, AB	521
PACKARD-BELL TV Chassis V8-3 Models 17VT10, 21VT6, 21VC8	523	Models 210-K-295&U, 210-K-296, 210-K-297&U, 210-K-299, 210-K-335-6-7&U, 210-K-356&7, 210-K-390&4, 210-K-415-6-7&U, 210-KR-435&6, 210-KR-455-6-7, 210-7-152-5-6-7&U, 210-TR-212	
PHILCO TV Chassis 10L60, 10L60U, 10L60R, 10L60UR	520	ZENITH Record Changer Model S-14094	524

ELECTRONIC TECHNICIAN 524

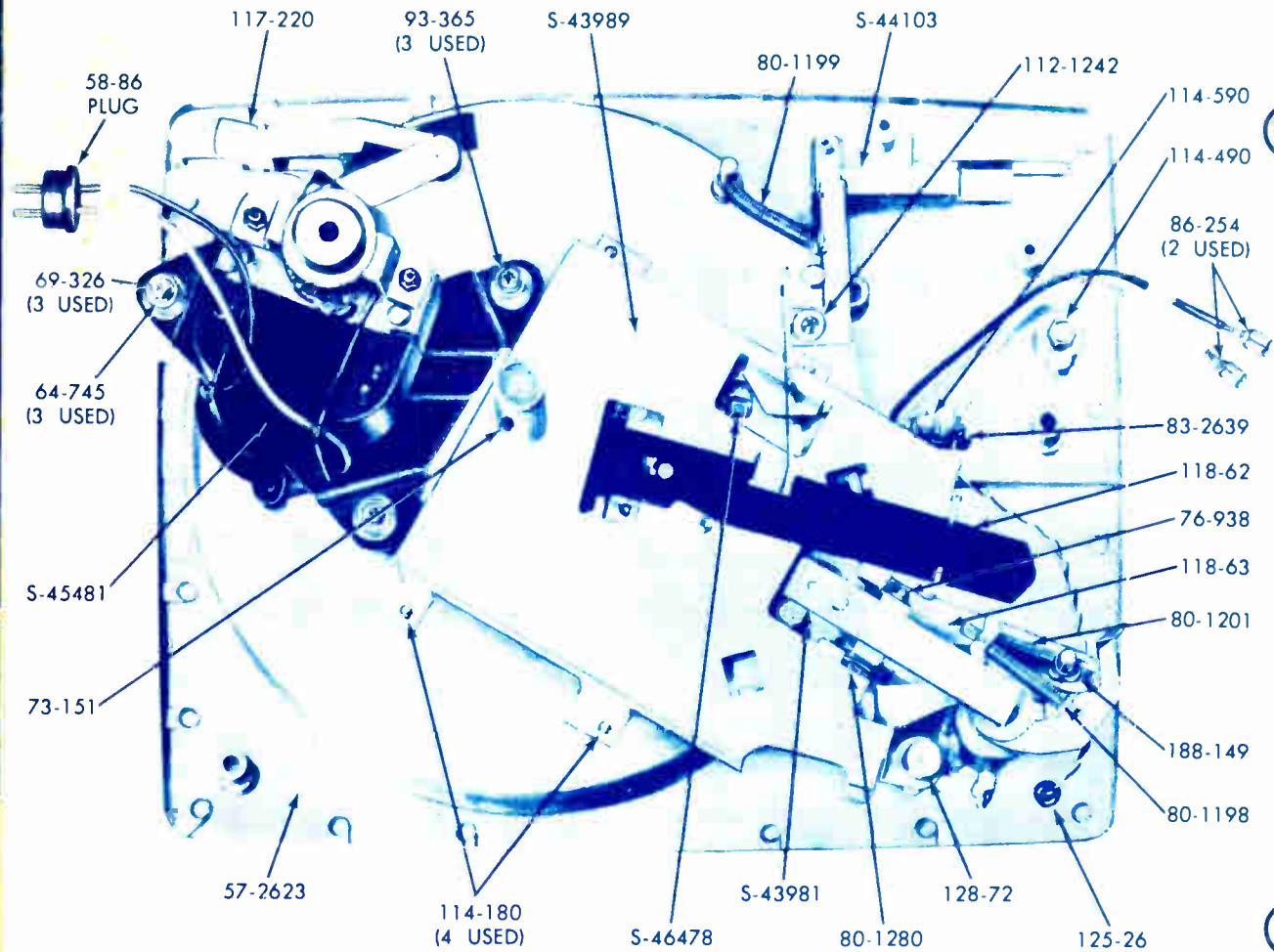
CIRCUIT DIGEST

ZENITH
Record Changer
Model S-14094

[TWO-SPEED 33-45]



Bottom View of CHANGER

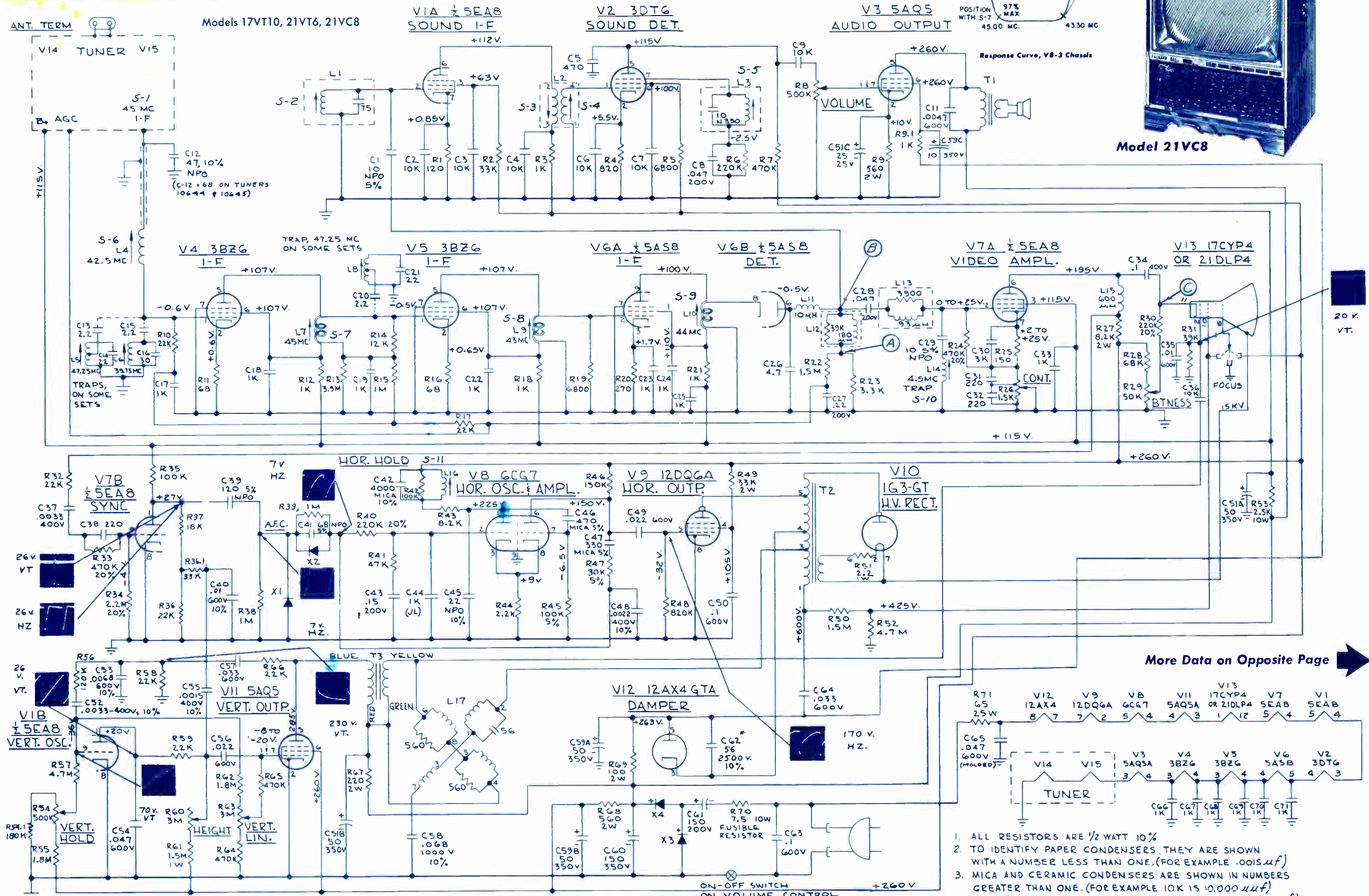


PARTS LIST

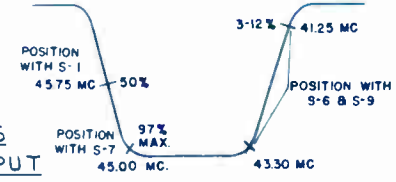
PART NO.	DESCRIPTION	PRICE			
12-2521	Retaining bracket (2 used)	.25	80-1209	Brake spring (used on 117-221)	.15
29-48	Turntable overlay	1.35	80-1259	Support bracket spring (1 part of ea. S-43986 & S-43987)	.10
46-1894	Record change knob	.25	80-1260	Adj. screw spring (used on 114-693)	.05
46-2107	Speed change knob	.25	80-1280	Retaining spring	.03
54-458	Speed nut - tinneman (1 used on S-46828)	.05	80-1286	Lift lever spring	.15
56-405	1 mil. mfd. sapphire needle (sub. 56-371)		80-1312	Separator spring (1 part of ea. S-43986 & S-43987)	.15
57-2458	Arm cover plate (2 used)	1.35	80-1337	45 R.P.M. adaptor spring - 50 cycle	.05
57-2570	Record change indicator plate	.50	80-1338	33 1/3 R.P.M. adaptor spring - 50 cycle	.05
57-2623	Base plate	5.65	83-2639	3 lug terminal strip	.05
57-2625	Speed change indicator plate	.25	84-78	Tone arm rest	.25
58-86	2 prong plug (used on S-45481)	.15	86-254	Connector terminal (2 used)	.05
61-214	Idler wheel		93-365	13/64 x 3/8 x 1/32 steel washer (3 used)	.03
64-745	Brass eyelet (3 used on motor mount)	.03	93-502	Lock washer	.03
69-326	6-32 x 5/8 phils. rd. hd. mach. screw (3 used on motor mount)	.05	93-1016	Spring washer (used on 128-72)	.03
69-352	4-40 x 5/32 rd. hd. mach. screw (2 used)		93-1332	Spring washer (7 used as needed)	.10
71-125	4-40 x 9/32 phils. flat hd. mach. screw (1 used on ea. 12-2521)	.03	93-1368	Tone arm shaft washer	.03
73-151	8-32 x 3/16 hex. socket set screw - Turntable spindle lock screw	.10	93-1369	Tone arm thrust washer	.03
73-168	6-32 x 3/8 slab hd. set screw - cuppoint (2 part of S-44101)	.15	112-1133	4-24 x 3/16 phils. pan hd. self-tap. screw (1 used on ea. 80-1205 & 80-1206)	.03
76-938	Lift lever pivot pin	.20	112-1242	4-24 x 3/16 phils. rd. hd. self-tap. screw - flat washer att.	.05
80-1196	Torsion spring (1 part of ea. S-43986 & S-43987)	.10	114-150	6/32 mach. screw (used on S-43984)	.03
80-1197	Auto-manual pin spring (used on S-46828)	.10	114-180	6-20 x 1/4 x 1/4 hex. hd. self-tap. screw (4 used)	.03
80-1198	Yoke spring	.15	114-342	6-20 x 3/16 x 1/4 hex. hd. self-tap. screw	.03
80-1199	Coil spring (used on S-44103)	.15	114-490	10-16 x 1/2 x 5/16 hex. hd. self-tap. screw	.03
80-1201	Throw-out link spring (used on 118-63)	.15	114-590	6-32 x 3/16 x 1/4 hex. hd. mach. screw - flat washer att.	.03
80-1203	Trip pawl spring (used on S-46478)	.10	114-668	4-40 x 1/4 x 3/16 hex. hd. mach. screw - flat washer att. (1 used on ea. 117-213 & 117-215)	.03
80-1205	Index spring - left	.25	114-693	4/40 hex. slot. hd. mach. screw (used on 117-215)	.03
80-1206	Index spring - right	.25	117-213	Actuating lever - right	.15
			117-215	Actuating lever - left	.15
			117-220	Motor control lever (used on S-45481)	.15
			117-221	Brake detent lever	.15
			118-62	Trip link	.25
			118-63	Throw-out link	.15
			125-26	Rubber grommet	.03
			125-94	Rubber grommet (used on S-45481)	.03
			128-72	Tone arm adj. cam	.85
			142-97	Pickup cartridge	4.50
			188-149	Retaining ring (5 used)	.03
			S-43981	Lift lever	
			S-43982	Ejector roller	
			S-43984	Clutch gear	
			S-43985	Turntable & spindle assembly	2.25
			S-43986	Left arm	2.25
			S-43987	Right arm	2.25
			S-43989	Turntable mtg. plate, bearing & stud assembly	3.25
			S-44101	Tone arm bushing, yoke & set screw	1.10
			S-44103	Record change lever assembly	
			S-44110	Tone arm actuating lever & stud	.30
			S-45481	Motor & link assembly	
			S-45760	Lift pin & speed nut assembly	
			S-46478	Trip pawl, friction pawl and bushing assembly	.30
			S-46828	Auto-manual pin and spring assembly	
				TONE ARM PARTS	
			19-339	Tone arm rest clip	.05
			56-241	Swivel pivot pin	.10
			73-121	4-40 x 1/4 allen hd. set screw special cone point (used on 148-158)	.15
			80-1195	Adj. screw spring (used on 114-604)	.15
			80-1208	Tension adj. spring	.10
			80-1275	Tone arm tension spring	.15
			114-604	4-40 x 1/4 special height adj. screw (used on 148-158)	.05
			148-158	Cobra tone arm	2.25
			S-43978	Tone arm shaft & bracket assembly	
			S-44936	Twisted wire & connector assembly	.50

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CIRCUIT DIGEST 524

More Data on Reverse Side

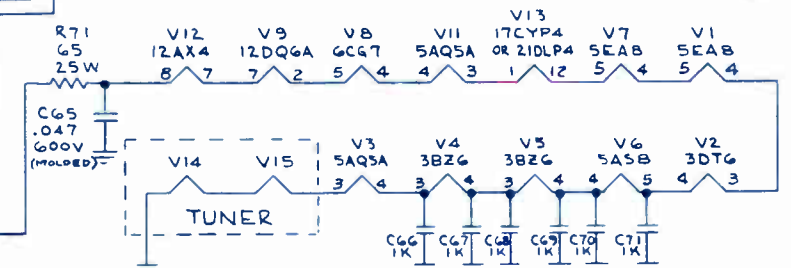


Model 21VC8



Response Curve, V8-3 Chassis

More Data on Opposite Page →



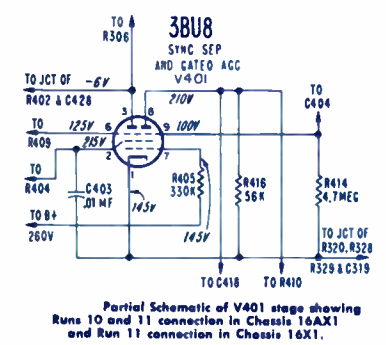
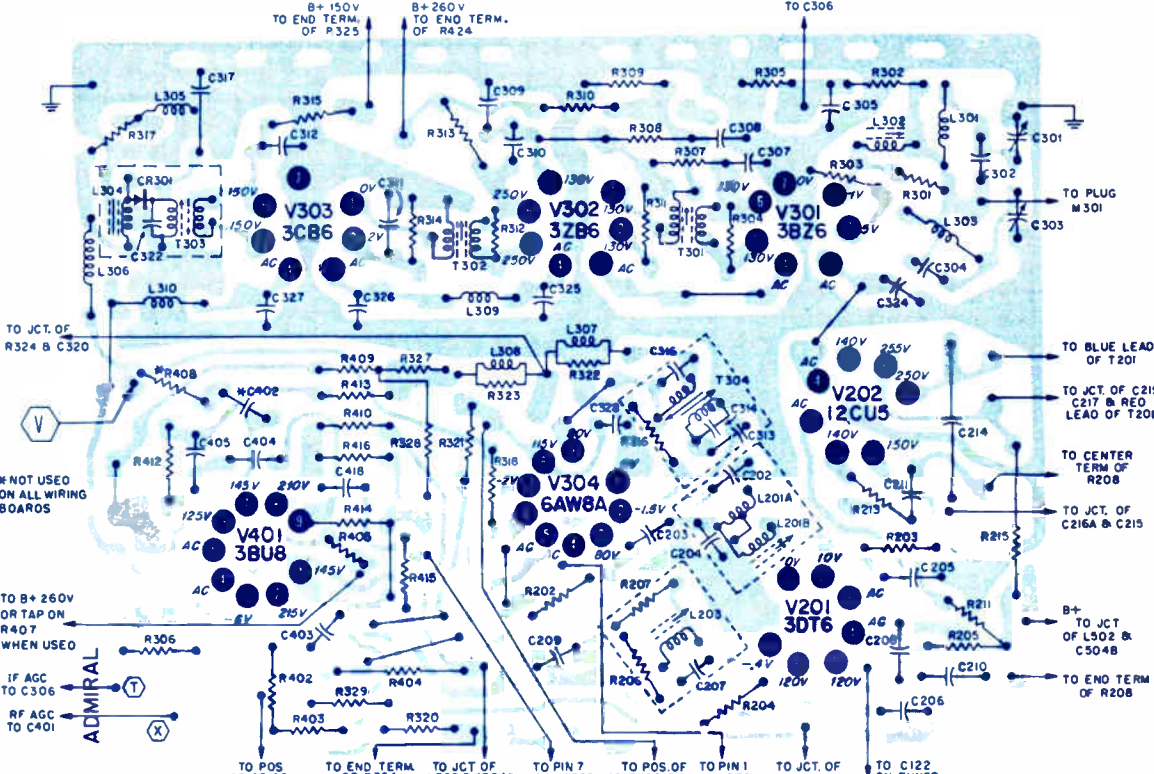
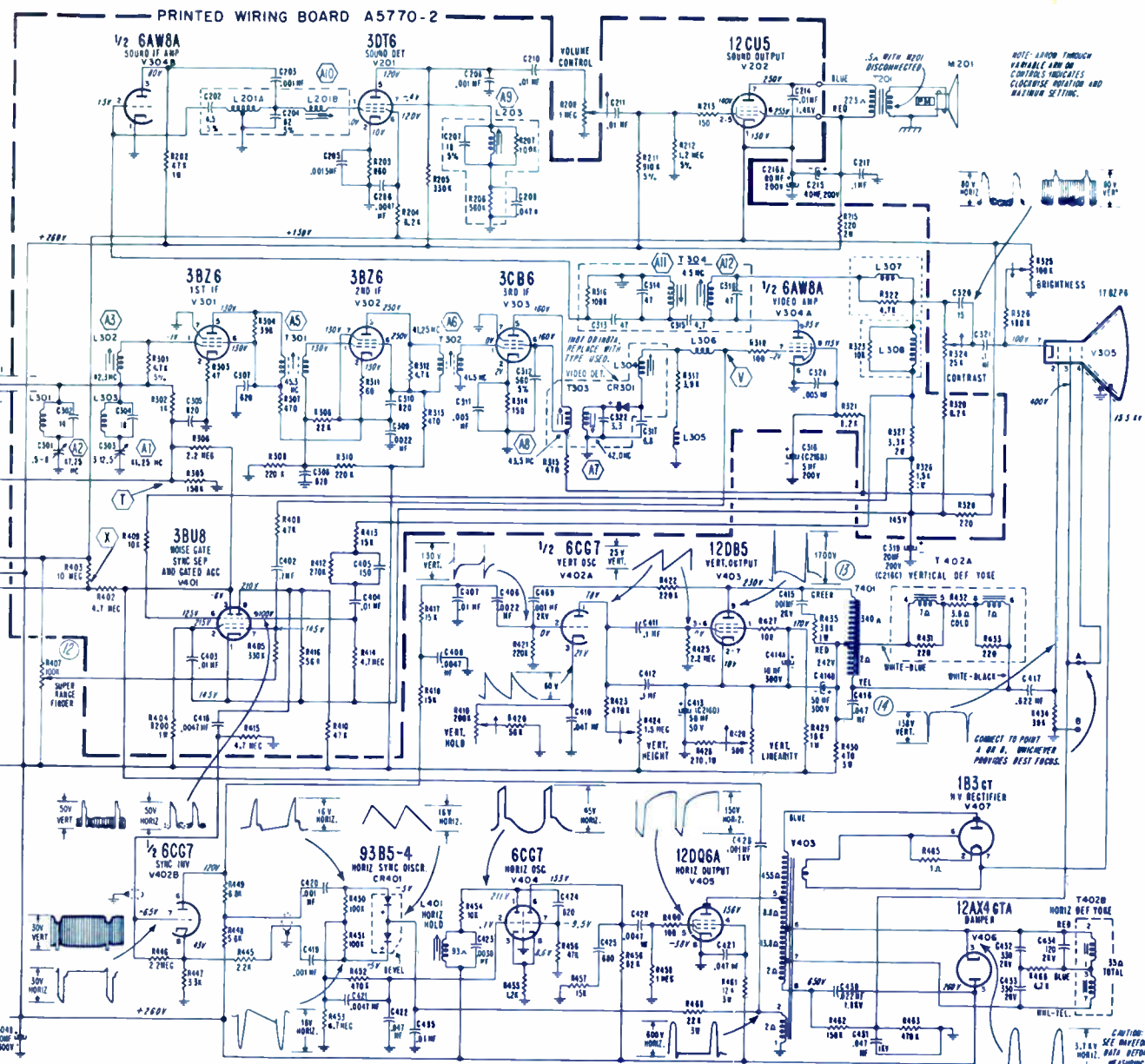
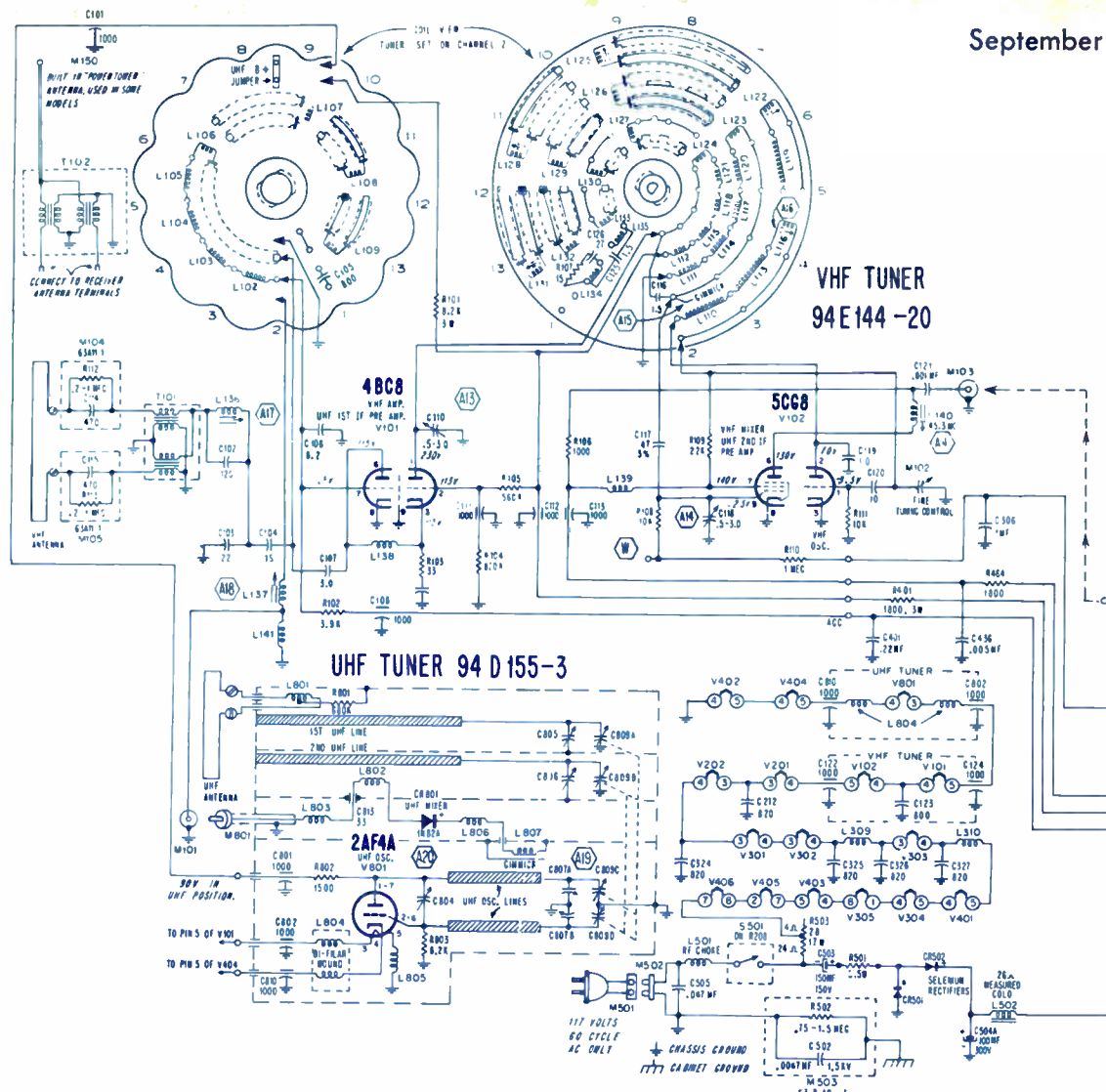
1. ALL RESISTORS ARE 1/2 WATT 10%
2. TO IDENTIFY PAPER CONDENSERS, THEY ARE SHOWN WITH A NUMBER LESS THAN ONE. (FOR EXAMPLE .0015UF)
3. MICA AND CERAMIC CONDENSERS ARE SHOWN IN NUMBERS GREATER THAN ONE. (FOR EXAMPLE 10K IS 10,000 UF)
4. VALUES FOR ELECTROLYTIC CONDENSERS ARE SHOWN IN UF
5. VOLTAGES ARE MEASURED WITH NO SIGNAL.
6. SWEEP FREQUENCY (HORIZ. OR VERT.) AND PEAK TO PEAK VOLTAGE GIVEN BY WAVEFORM PHOTO.

CAUTION, HOT CHASSIS { Chassis is connected to one side of AC line. Use an isolation transformer to connect power to set. Do not plug two sets into the same transformer.

NOTES UNLESS OTHERWISE SPECIFIED

* C62 IS BRNFF IN MODEL 17VT10

ON-OFF SWITCH ON VOLUME CONTROL



PRODUCTION CHANGES

CHANGE TO PREVENT HORIZONTAL SYNC INSTABILITY AT HIGH SIGNAL LEVELS
16AX1 Chassis Stamped Run 11

To reduce possibility of horizontal sync overload and resulting horizontal oscillator instability at extremely high signal level, C401 changed to .22MF.

DIFFERENT CIRCUIT FOR V401 STAGE USED
16X1 and 16AX1 Chassis Stamped Run 12

To improve rejection of external noise interference, R408 (.47K), C402 (.1MF) and Super Range Finder control R407 (100K) added.

CHANGE IN VERTICAL OUTPUT CIRCUIT
16X1 and 16AX1 Chassis Stamped Run 13

To reduce pulse voltage at V403, a series network consisting of C415 (.001MF, 2KV) and R435 (39K, 1W) added from pin 9 of V403 to red lead of Vertical Output transformer (T401). C416 (.047MF) removed.

CHANGE TO MINIMIZE HORIZONTAL PULSE INTERACTION IN VERTICAL OUTPUT CIRCUIT
16X1 and 16AX1 Chassis Stamped Run 14

C416 (.047MF, 600V) added between red and yellow leads of Vertical Output Transformer (T401) to minimize horizontal pulse interaction in Vertical Output circuit.

ELECTRONIC TECHNICIAN 521

CIRCUIT DIGEST

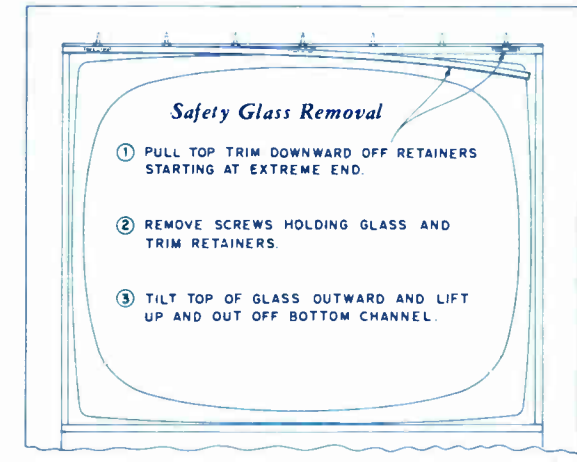
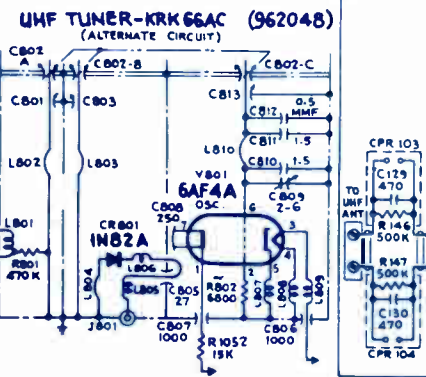
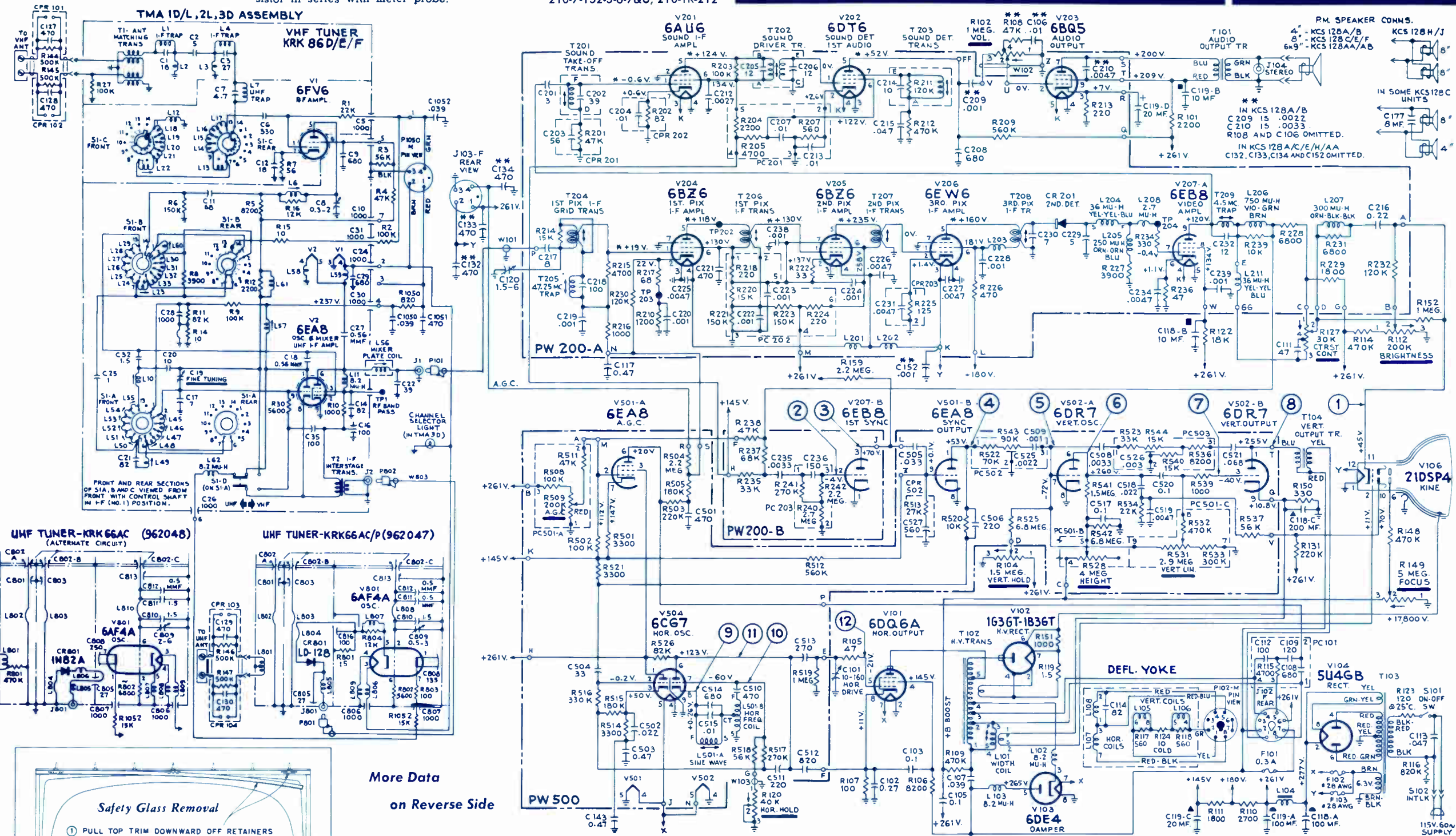
RCA
TV Chassis 128A, B, C,
E, F, H, J, M, U, AA, AB

All resistance value in ohms. K = 1000.

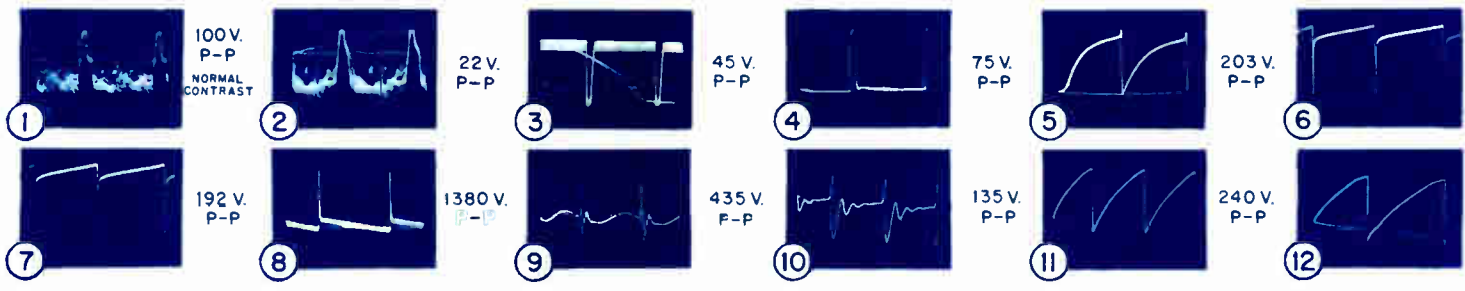
All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within $\pm 20\%$ with 117 v. a-c supply.

*Measured with 1 megohm, 1/2 watt resistor in series with meter probe.

Models 210-K-295&U, 210-K-296,
210-K-297&U, 210-K-299,
210-K-335-6-7&U, 210-K-356&7,
210-K-390&4, 210-K-415-6-7&U,
210-KR-435&6, 210-KR-455-6-7,
210-7-152-5-6-7&U, 210-TR-212

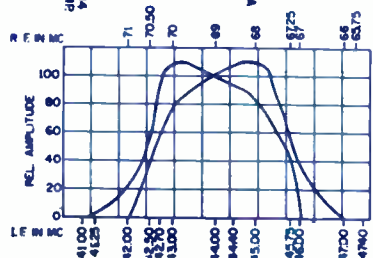


More Data
on Reverse Side

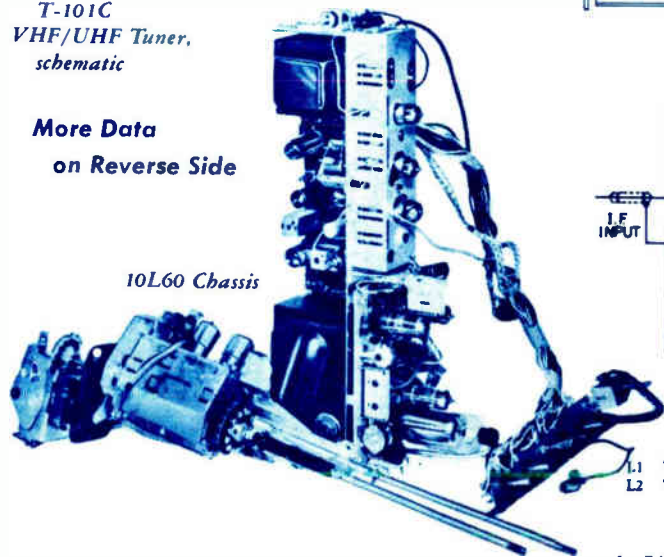


Balloons ① ② etc., shown on schematics indicate points of observation of the waveforms shown below the individual schematic.

Electronic Technician
CIRCUIT DIGEST 521

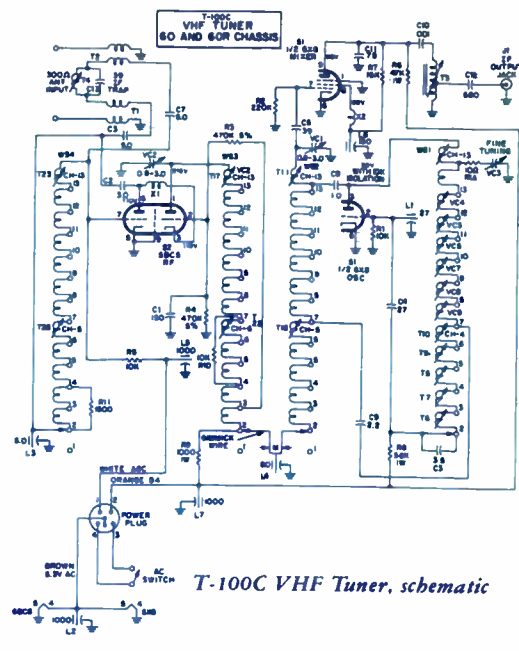
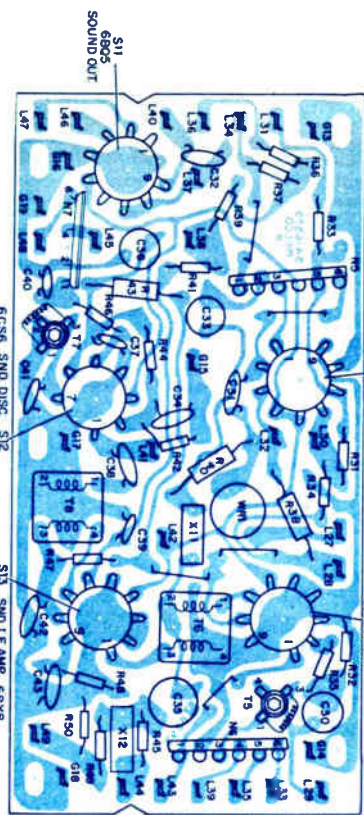


Overall r-f, i-f response curve



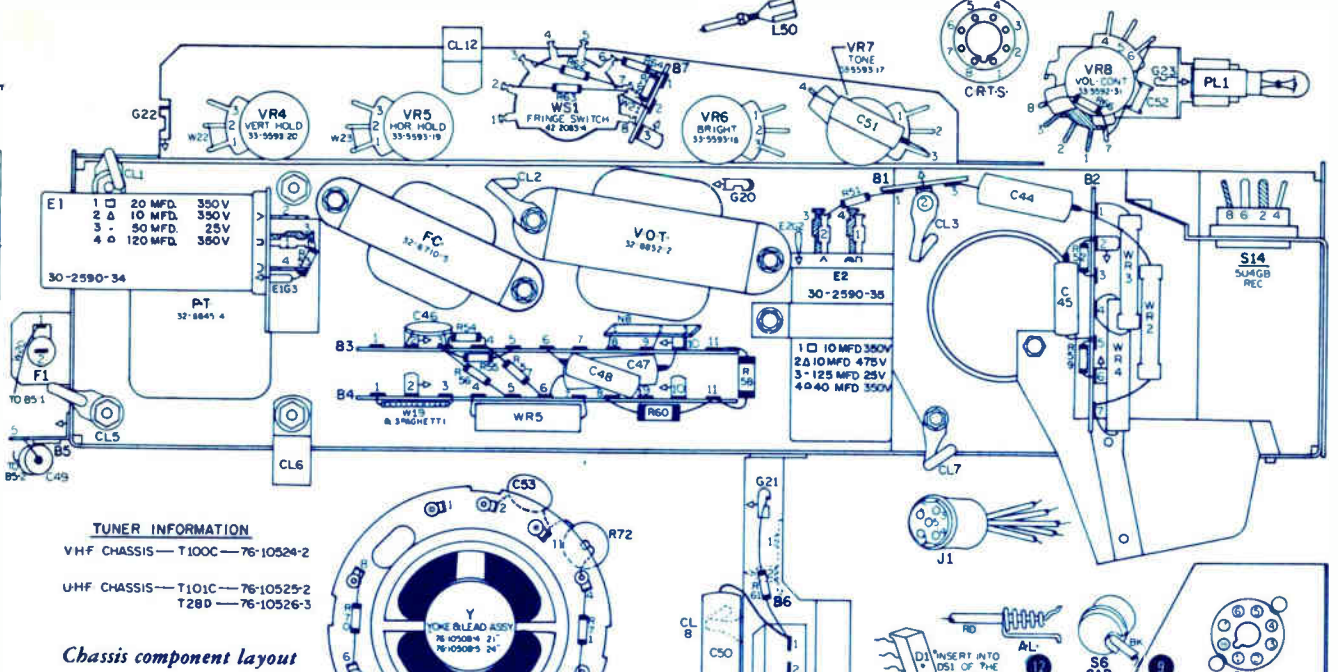
More Data
on Reverse Side

- TERMINAL LUG IDENTIFICATION—VIDEO-SOUND PERMA-CIRCUIT PANEL**
- L27 To L34 on Video-Sound Perma-Circuit Panel and terminal 1 of terminal board B2.
 - L28 To terminal 1 of terminal board B2.
 - L29 To L30 on Video-Sound Perma-Circuit Panel.
 - L30 To L31 on Video-Sound Perma-Circuit Panel.
 - L31 To terminal 1 of terminal board B4.
 - L32 To terminal 1 of terminal board B7.
 - L33 To terminal 6 of terminal board B4.
 - L34 To L36.
 - L35 To L36.
 - L36 To terminal 3 of terminal board B2.
 - L37 To A.O.T. (blue lead).
 - L38 To terminal 4 of range switch WS1.
 - L39 To L33 to terminal 3 of range switch WS1 and to terminal 3 of contrast control VR8.
 - L40 To A.O.T. (red lead) and terminal 1 of capacitor E2.
 - L41 To terminal 4 of terminal board B2.
 - L42 To terminal 4 of terminal board B4.
 - L43 To terminal 3 of capacitor E2.
 - L44 To terminal 2 of capacitor E2.
 - L45 To terminal 5 of volume control VR8.
 - L46 To terminal 4 of tone control VR7 and terminal 6 of volume control VR8.
 - L47 To terminal 1 of terminal board B2.
 - L48 To L21 of Deflection Perma-Circuit Panel.
 - L49 To L21 of Deflection Perma-Circuit Panel.



TUNER INFORMATION
VHF CHASSIS—T100C—76-10524-2
UHF CHASSIS—T101C—76-10525-2
T28D—76-10526-3

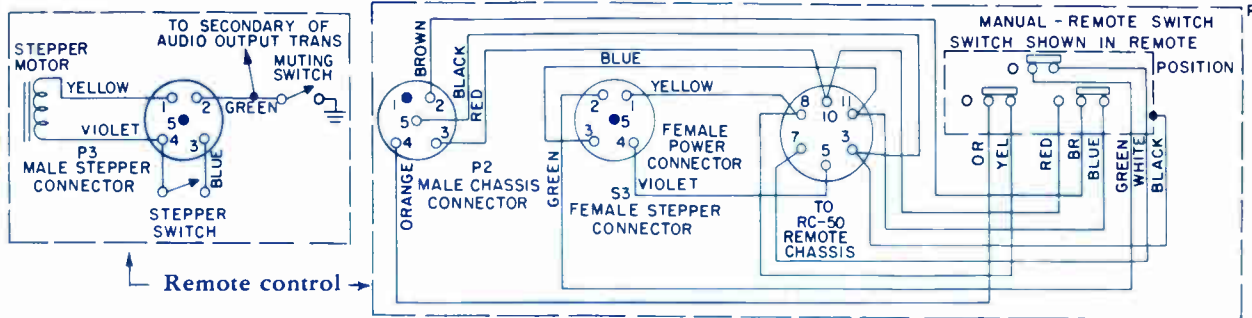
Chassis component layout



ELECTRONIC TECHNICIAN 520

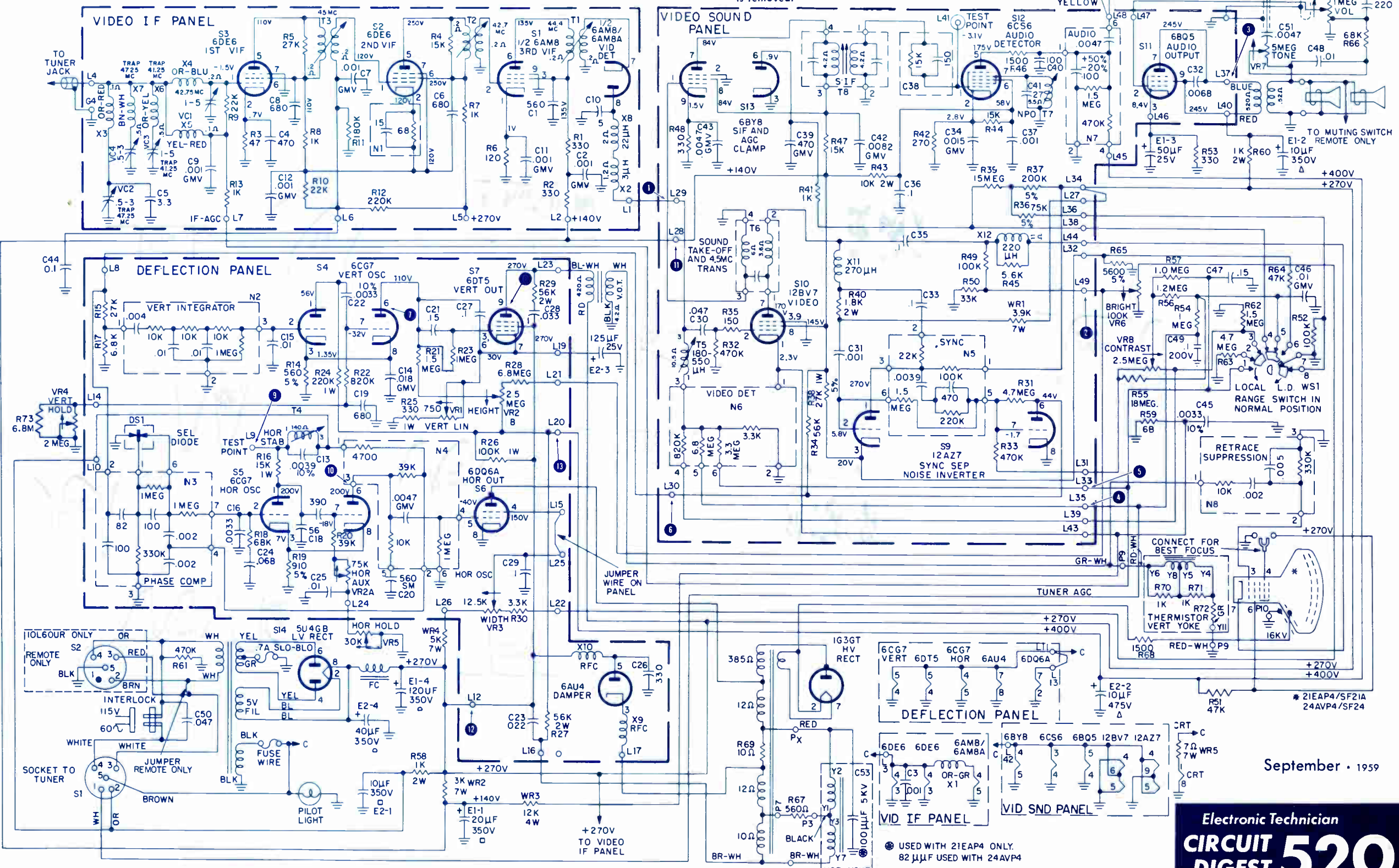
CIRCUIT DIGEST

PHILCO
TV Chassis 10L60,
10L60U, 10L60R, 10L60UR



- (1) All capacitor values greater than 1 are mmf unless otherwise noted.
- (2) All capacitor values less than 1 are in mfd unless otherwise noted.
- (3) All resistors are 1/2 watt, 10% carbon, unless otherwise noted.
- (4) Arrow through control indicates clockwise rotation.
- (5) Voltages are dc from point shown to chassis unless otherwise noted.
- (6) Voltages were read using a 20,000 ohm/volt meter.
- (7) Voltages were taken under following conditions:
The receiver was adjusted for good quality picture; i.e., normal contrast, brightness, width, height, vertical lin. and sound, then the signal is removed.

Run 2 R47 was changed from 15K to 8.2K, 1 watt part no. 66-2824340. With this change the video-sound Perma Circuit Panel was changed to Run 2 (red dot).
R73 was changed from 6.8 megohms to 8.2 megohms, part no. 66-5828340. These changes were incorporated to reduce sound buzz and to improve vertical range.
Run 3 Change RC Network N1 from part no. 30-6039-1 to 30-6039-2 to improve signal-to-noise ratio.



Special Full-Width SPRING BINDER Holds 24 Groups of ELECTRONIC TECHNICIAN'S CIRCUIT DIGESTS Available @ \$2.95

September • 1959

Electronic Technician
CIRCUIT DIGEST 520

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

In This Issue (No. 86)

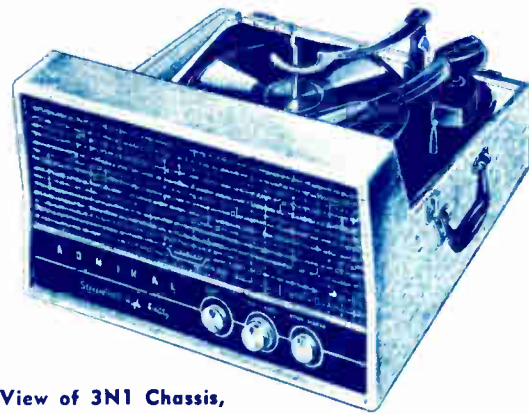
ADMIRAL Stereo Portable Phonograph Chassis 3N1 Models 761, 767	531	TRUETONE TV Chassis 2DC3030A	530
MONTGOMERY WARD (Airline) TV Models WG-5025A, WG-5026A WG-5125A, WG-5126A	525	WESTINGHOUSE TV Chassis V-2378-1 through 6	528
MOTOROLA Home AM-Clark Radio Chassis HS-753 Models C5G, C5S, C5W	526	HT3700, HT3701, HT3702, HK4000, HK4001, HK4002, HK4100, HK4101, HK4102, HK4200, HK4201, HK4202, HT3700U, HT3701U, HT3702U, HK4000U, HK4001U, HK4002U, HK4100U, HK4101U, HK4102U, HK4200U, HK4201U, HK4202U, HK4400, HK4401, HK4402, HK4403, HK4500, HK4501, HK4502, HK4503, HK4600, HK4601, HK4602	
SONY Transistor Radio Model TR-610	529		
SYLVANIA TV Chassis 1-541, 1-547, 1-548, 1-549, 1-550 Models 23523, 23524	527		



ELECTRONIC TECHNICIAN 531

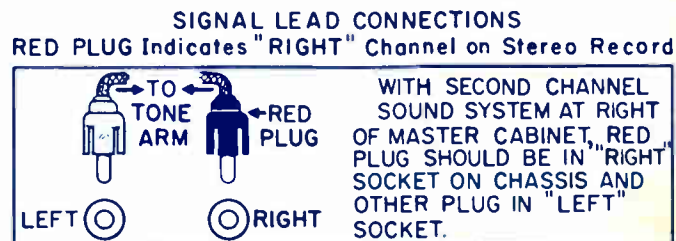
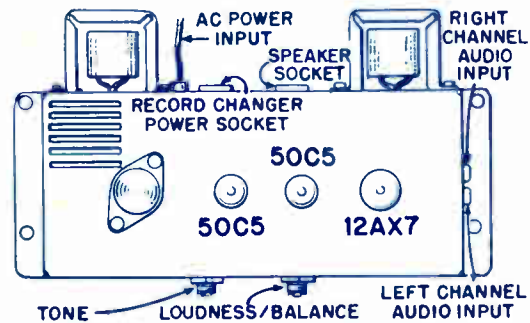
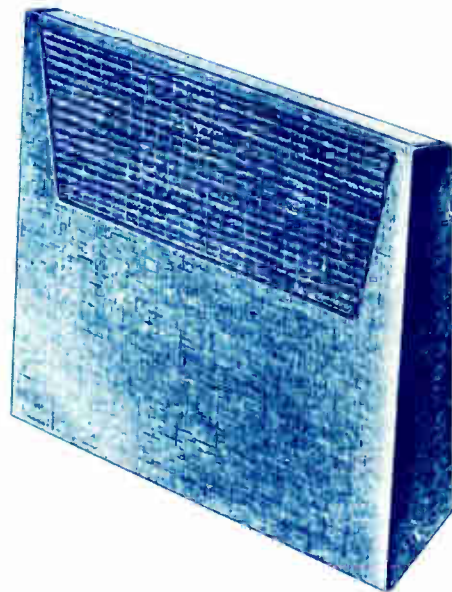
CIRCUIT DIGEST

ADMIRAL Stereo Portable Phonograph Chassis 3N1



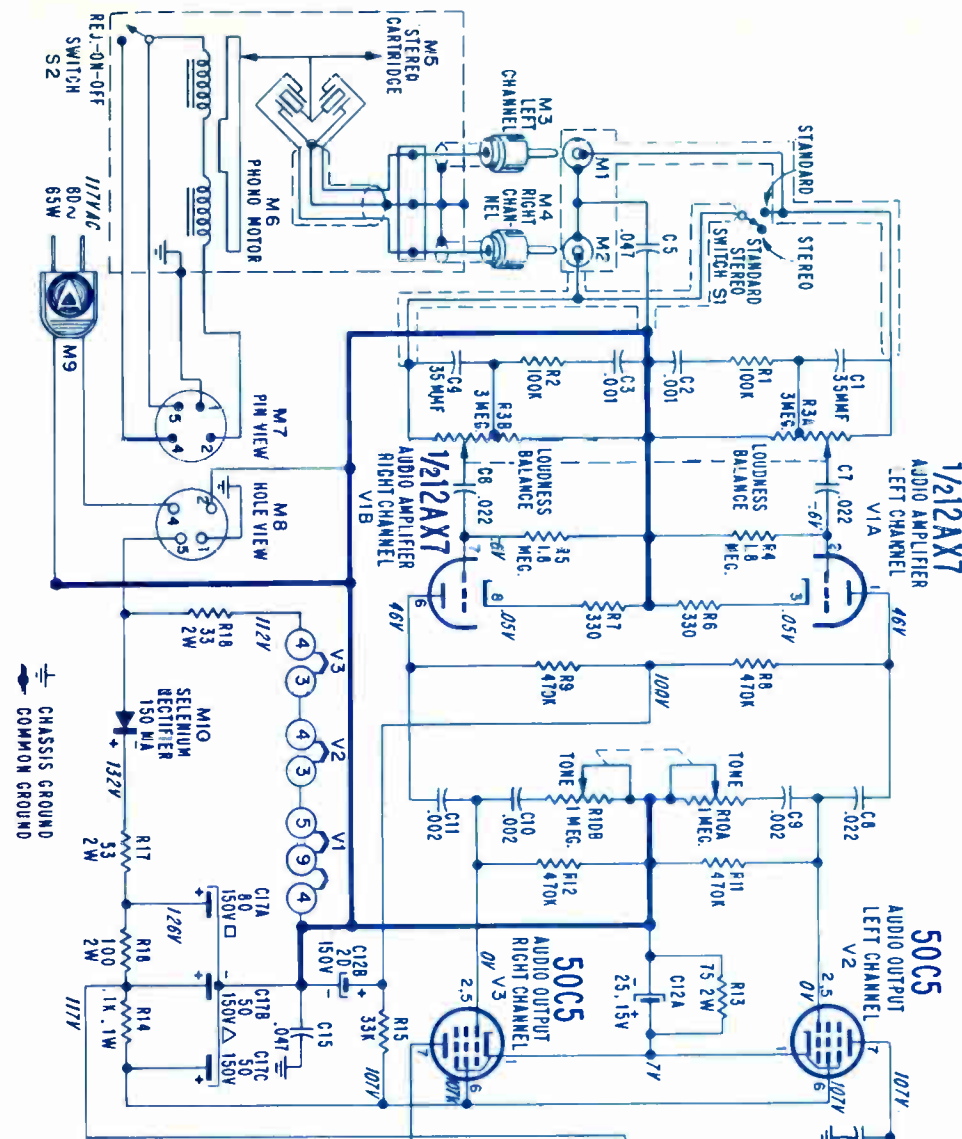
Top View of 3N1 Chassis,
Tube Locations Shown.

Model 761



Electronic Technician
CIRCUIT DIGEST 531

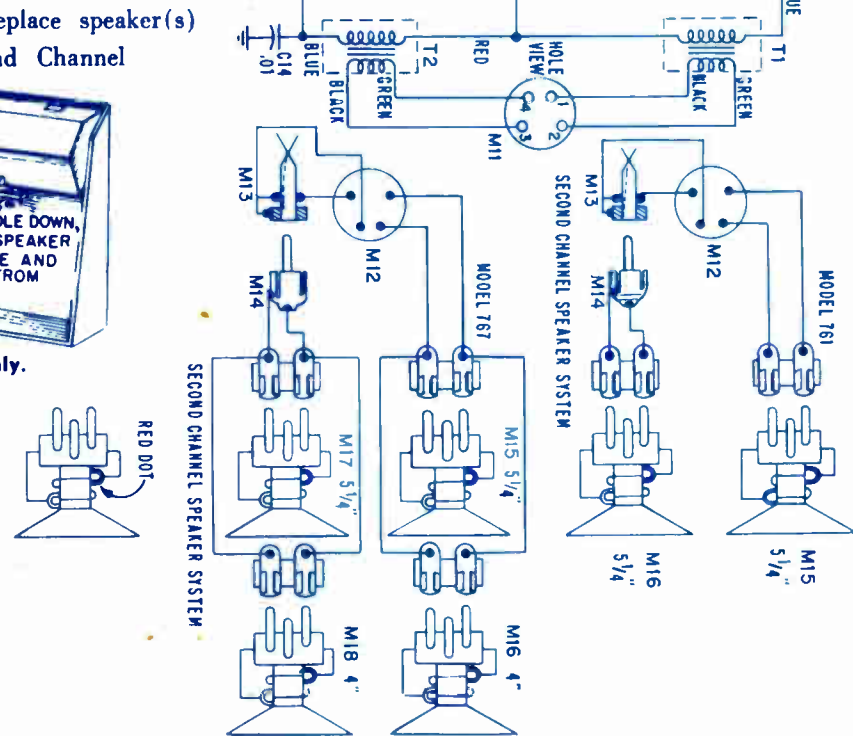
Schematic of 3N1 Stereophonic High Fidelity Amplifier Chassis Stamped Run 10.



To service or replace speaker(s) in Second Channel



Model 767 Only.

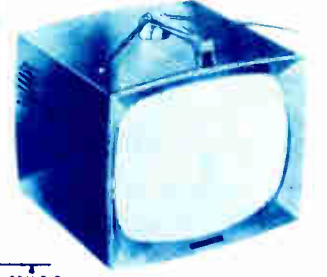
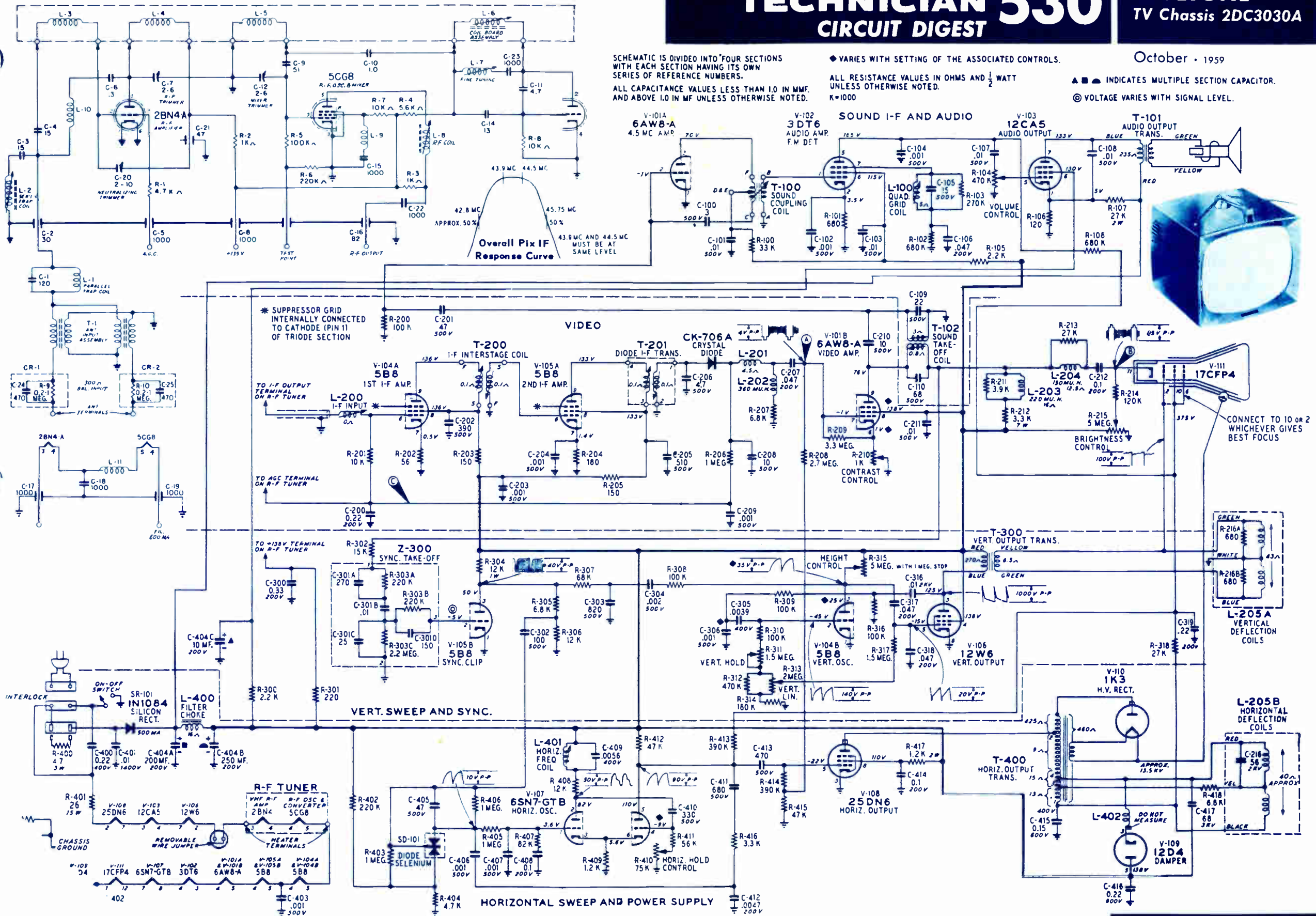


SCHEMATIC IS DIVIDED INTO FOUR SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS.
ALL CAPACITANCE VALUES LESS THAN 1.0 IN MMF. AND ABOVE 1.0 IN MF UNLESS OTHERWISE NOTED.

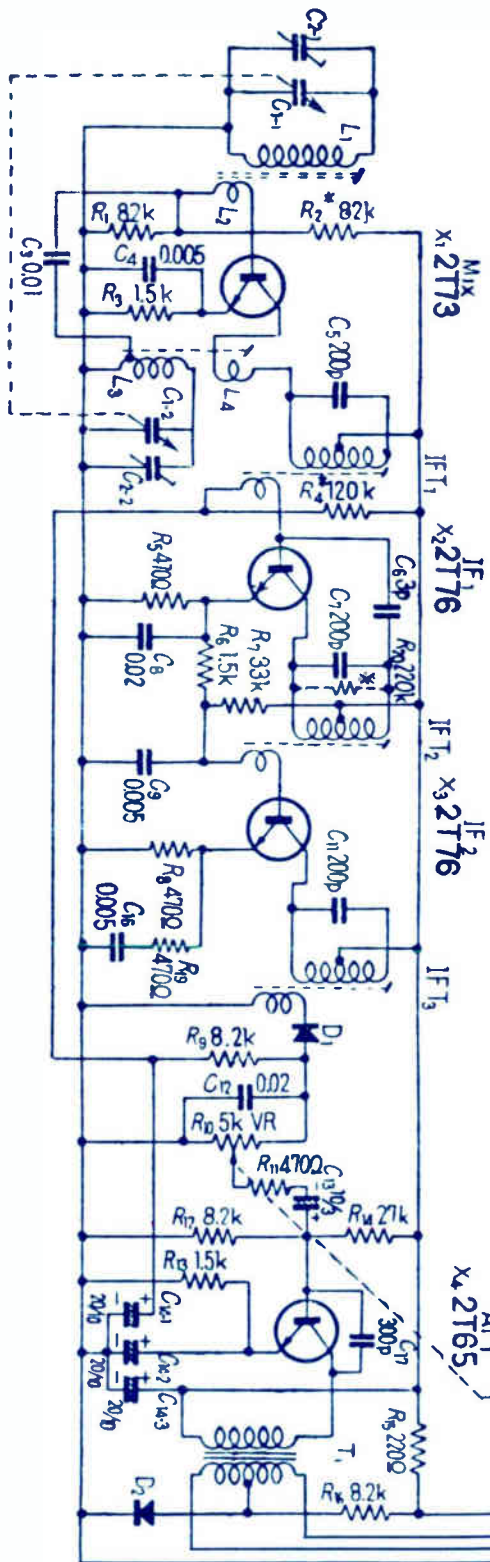
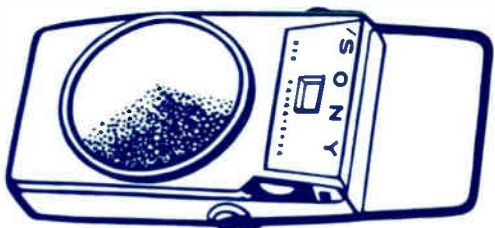
VARIES WITH SETTING OF THE ASSOCIATED CONTROLS.

ALL RESISTANCE VALUES IN OHMS AND $\frac{1}{2}$ WATT UNLESS OTHERWISE NOTED.
K=1000

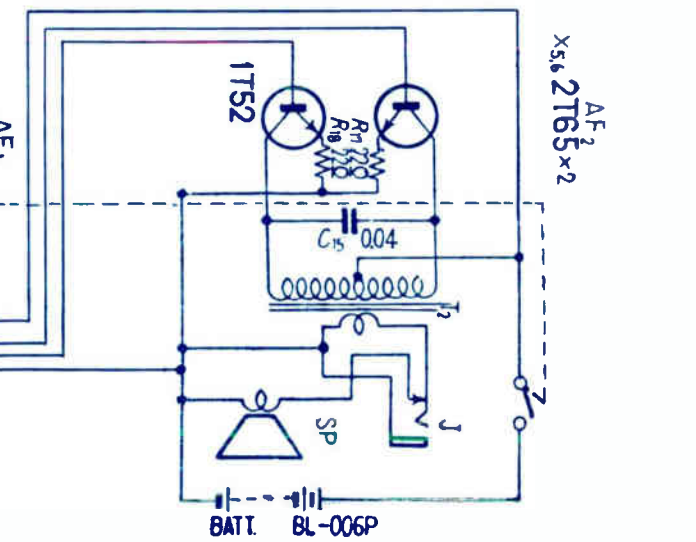
▲ ■ ■ INDICATES MULTIPLE SECTION CAPACITOR.
⊙ VOLTAGE VARIES WITH SIGNAL LEVEL.



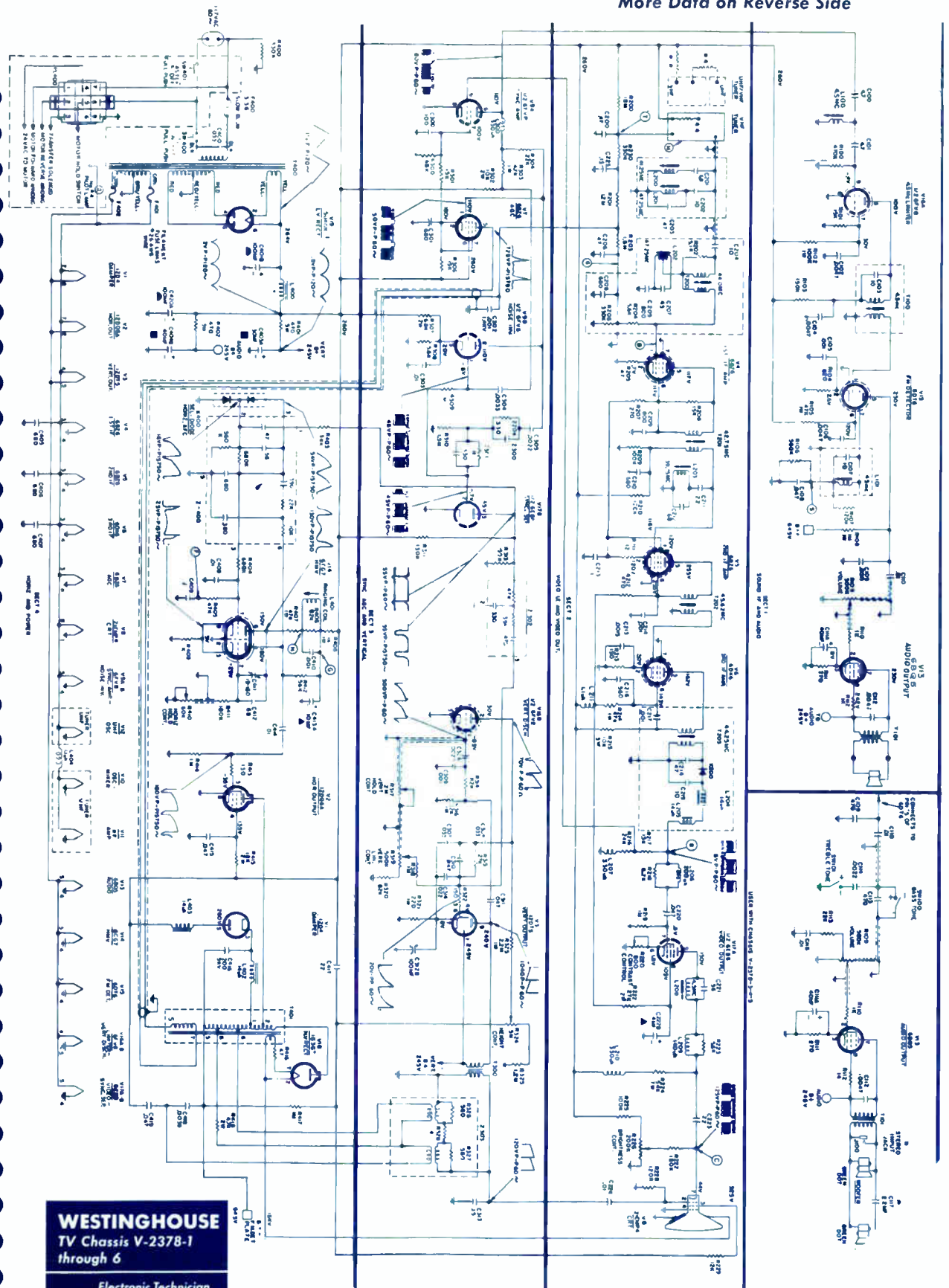
October • 1959



L1, L2	Ant. coil	R5	470 Ω	C3	0.01 μF
L3, L4	Osc. coil	R6	1.5 KΩ	C4	0.005 μF
IFT ₁	002-AP	R7	33 KΩ	C5	200 pF
IFT ₂	002-BP	R8	470 Ω	C6	3 pF
IFT ₃	002-CP	R9	8.2 KΩ	C7	200 pF
T ₁	Input Transformer	R10	VR 5 KΩ	C8	0.02 μF
T ₂	Output Transformer	R11	470 Ω	C9	0.005 μF
J	Earphone Jack	R12	8.2 KΩ	C10	200 pF
S. P.	2 1/4" Dynamic Speaker	R13	1.5 KΩ	C11	0.02 μF
R ₁	82 KΩ	R14	27 KΩ	C12	0.02 μF
R ₂	1.5 KΩ	R15	220 Ω	C13	10 μF 3 V
R ₃	120 KΩ	R16	8.2 KΩ	C14-1	20 μF 10 V
R ₄	adjust	R17	22 Ω	C14-2	"
		R18	22 Ω	C14-3	"
		R19	470 Ω	C15	0.04 μF
		R20	220 KΩ	C16	0.005 μF
		C ₁	Tuning Condenser	C17	300 pF



More Data on Reverse Side



NOTES:
 1 DC VOLTAGES MEASURED FROM CHASSIS GROUND, NO APPLIED SIGNAL USING A NTM.
 2 ALL PEAK TO PEAK VOLTAGES AND DC VOLTAGES TAKEN WITH ALL CONTROLS SET FOR NORMAL OPERATION.
 3 ALL CAPACITANCE VALUES LESS THAN 1 ARE IN PFD AND VALUES GREATER THAN 1 ARE IN μFD.
 4 ALL RESISTANCE VALUES ARE IN OHMS UNLESS OTHERWISE INDICATED.

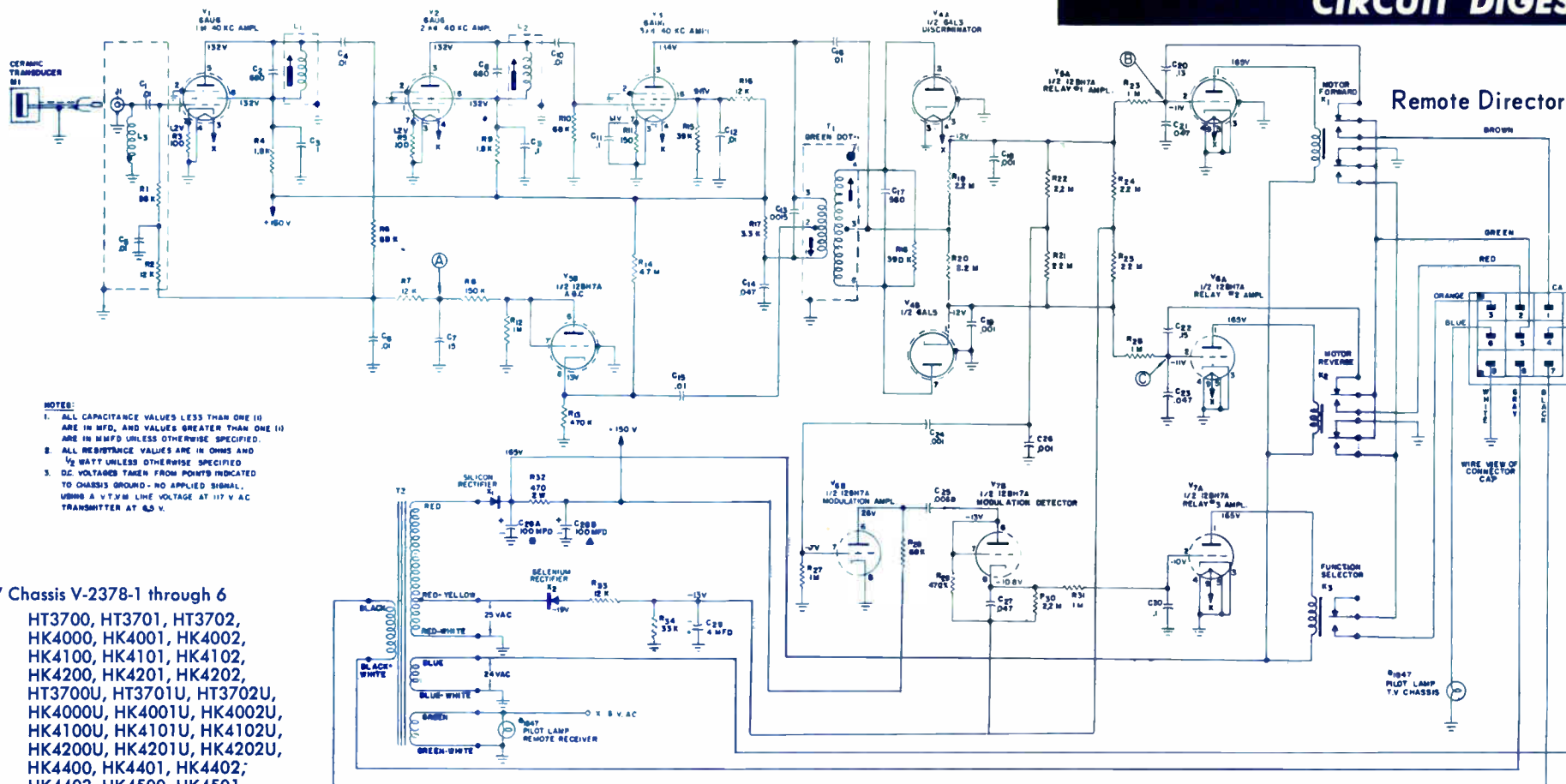
WESTINGHOUSE
 TV Chassis V-2378-1
 through 6

Electronic Technician
CIRCUIT DIGEST

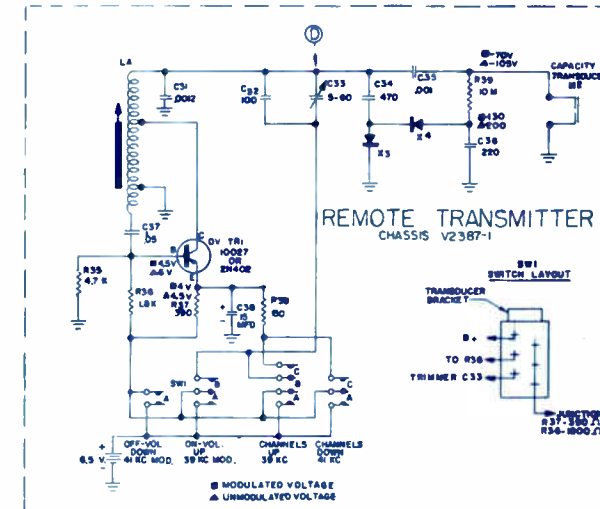
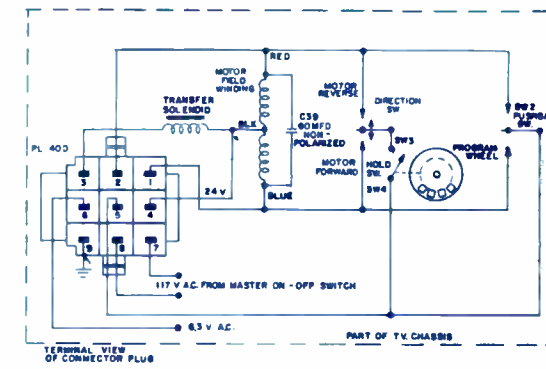
528

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World Radio History



Remote Director receiver (V-2386) and transmitter (V-2387).

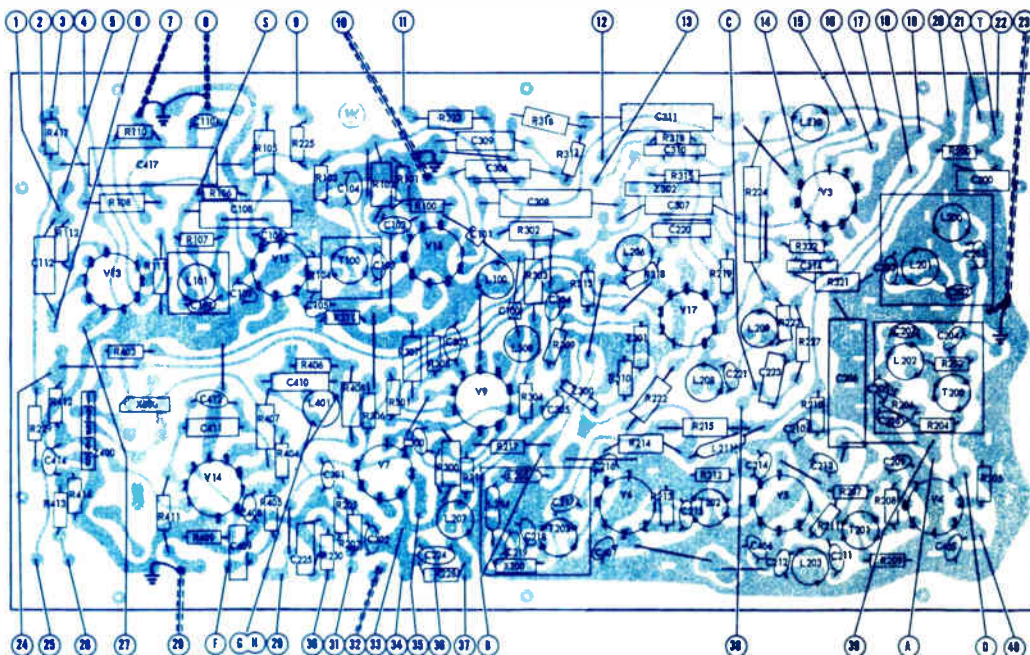


TV Chassis V-2378-1 through 6

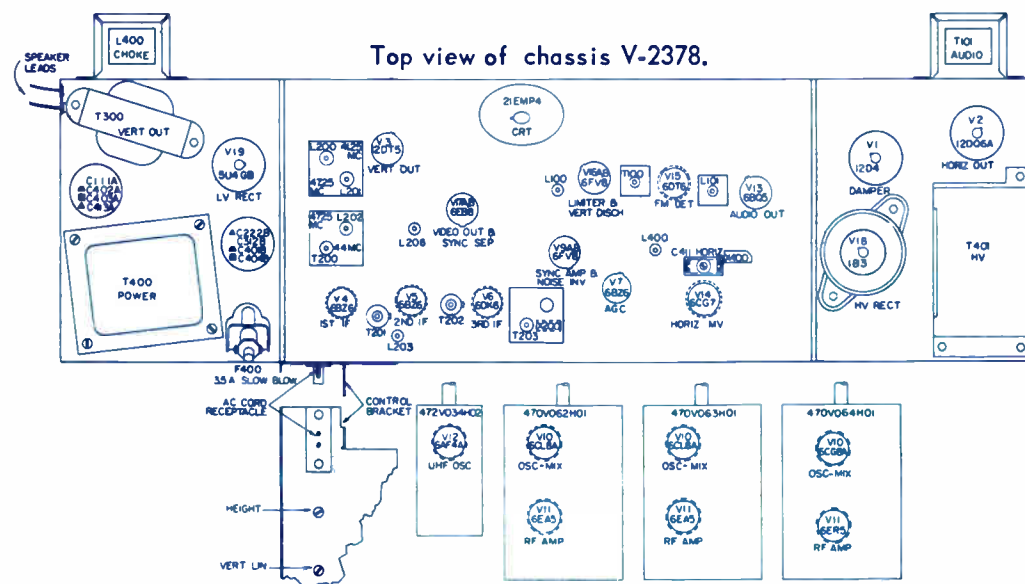
- HT3700, HT3701, HT3702, HK4000, HK4001, HK4002, HK4100, HK4101, HK4102, HK4200, HK4201, HK4202, HT3700U, HT3701U, HT3702U, HK4000U, HK4001U, HK4002U, HK4100U, HK4101U, HK4102U, HK4200U, HK4201U, HK4202U, HK4400, HK4401, HK4402, HK4403, HK4500, HK4501, HK4502, HK4503, HK4600, HK4601, HK4602

KEY TO FIGURE

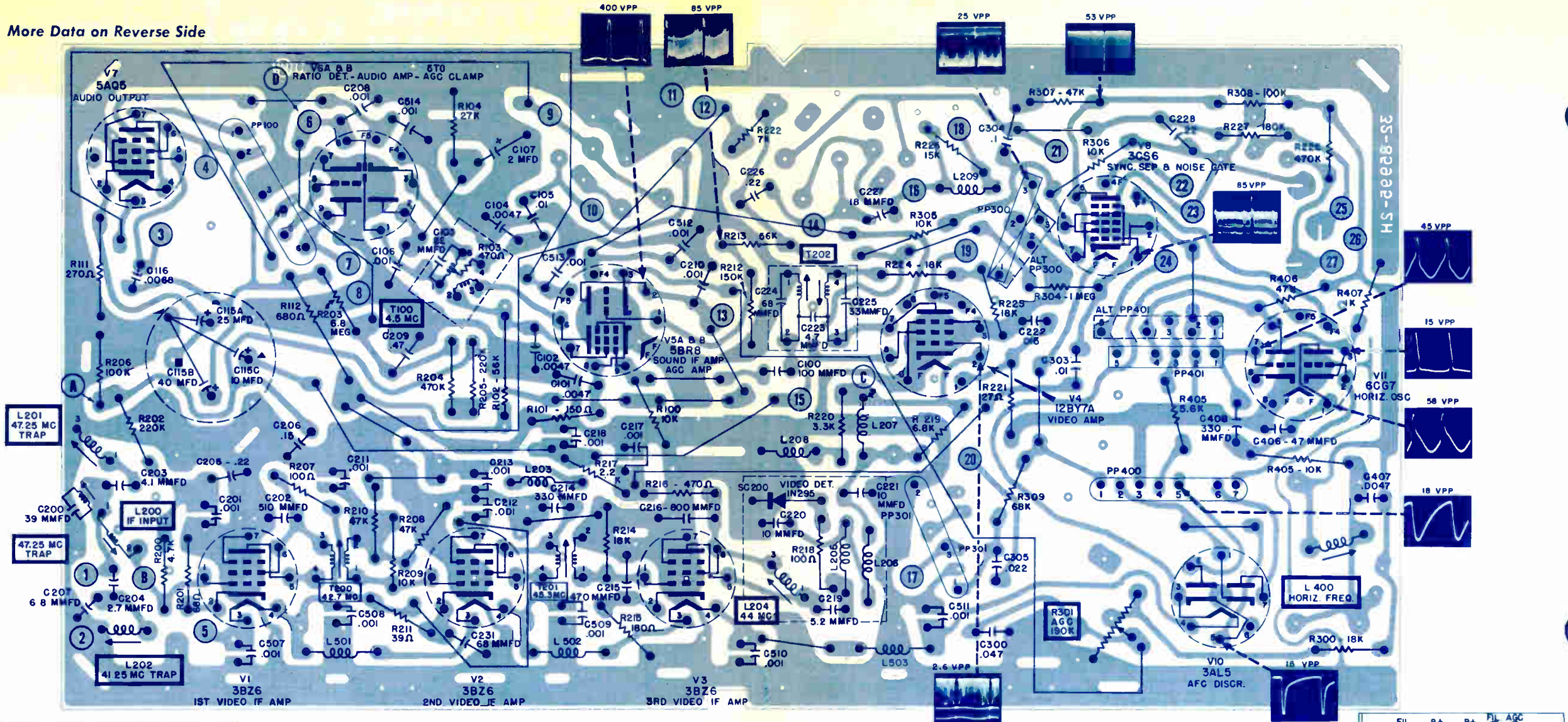
- The leads identified by letters and numbers in Figure 1 connect to the following points:
1. T101 primary, connect to red wire
 2. High side of HEIGHT CONTROL
 3. Junction of C416 & C418
 4. C111A
 5. Junction of C404B & R402
 6. T101 primary, connect to blue wire
 7. Wiper arm of VOLUME control
 8. High side of VOLUME control
 9. High side of BRIGHTNESS control
 10. High side of VERTICAL HOLD control
 11. Arm of HEIGHT control
 12. High side & wiper arm of CONTRAST control
 13. Wiper arm of VERTICAL LINEARITY control
 14. T300 primary, connect to plate of V3
 15. C222B
 16. Junction C403A & R401
 17. C312B
 18. Wiper arm of BRIGHTNESS control
 19. Tuner filament point
 20. C420A
 21. Jumper to 22
 22. Tuner AGC point
 23. Tuner IF output point
 24. C413A
 25. Pin 3 of CRT
 26. Pin 5 of V2
 27. Pin 8 of V1
 28. High side of HORIZONTAL HOLD control
 29. Junction R415 and L403
 30. Jumper to 27
 31. Jumper to 29
 32. 401 terminals T and S
 33. 4 of CRT
 34. CRT
 35. filament wire from T400



Bottom view of See-matic PC board.



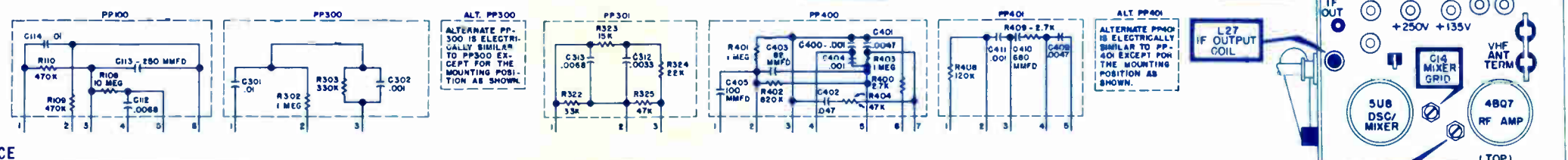
Top view of chassis V-2378.



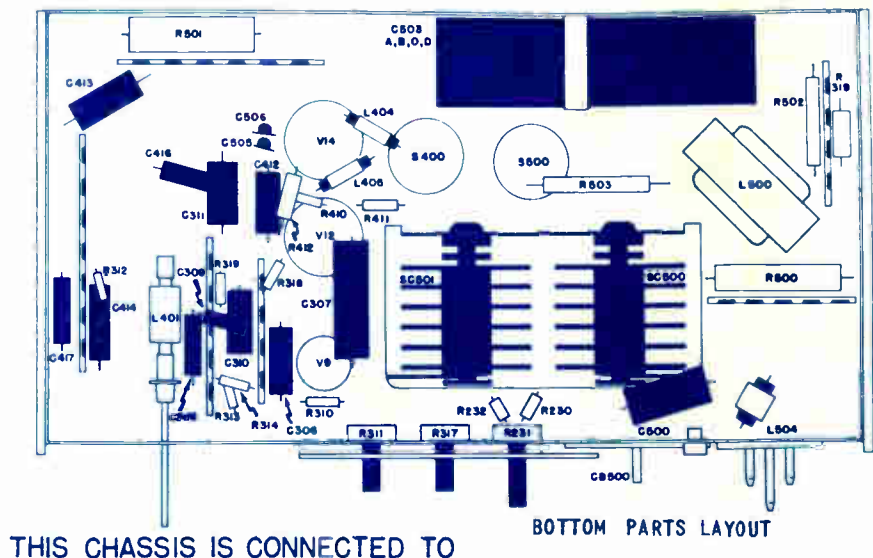
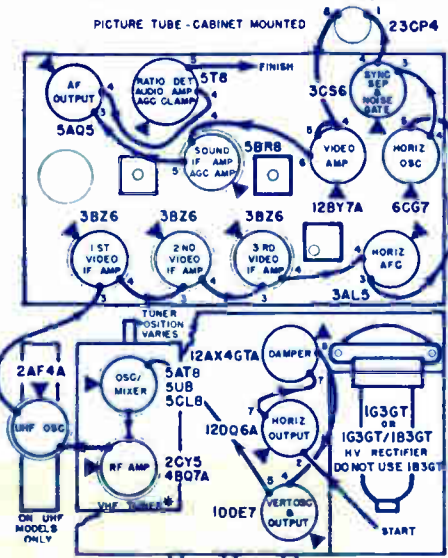
SYLVANIA
TV Chassis 1-547, 1-547,
1-548, 1-549, 1-550

Electronic Technician
CIRCUIT DIGEST

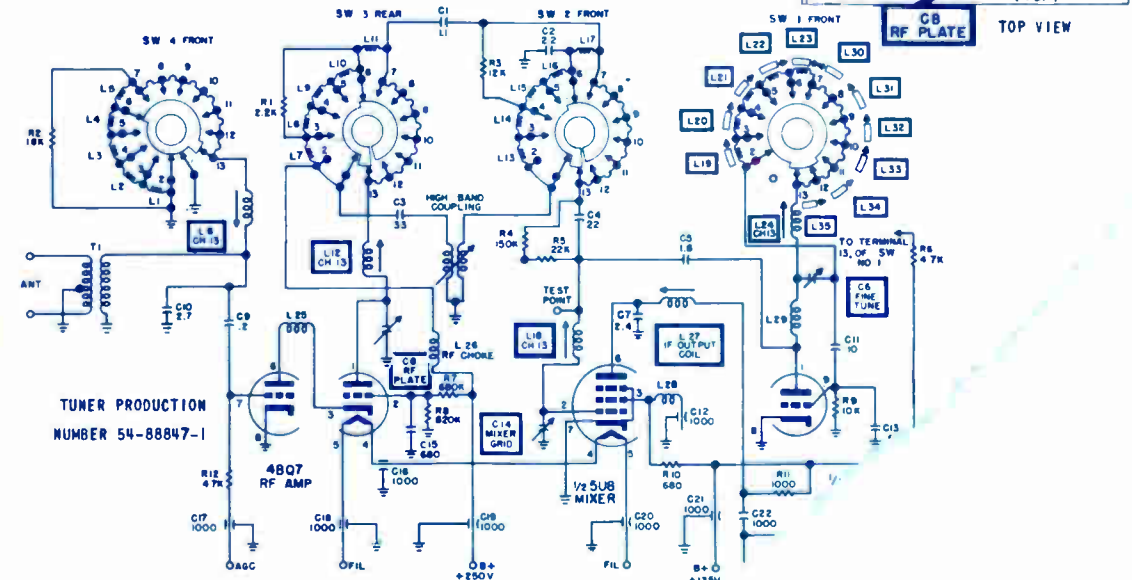
527



TUBE LAYOUT AND FILAMENT SEQUENCE



THIS CHASSIS IS CONNECTED TO ONE SIDE OF THE AC LINE.



HEAVY LINE FOLLOWS SERIES FILAMENT SEQUENCE.
REPLACE TUNER TUBES WITH ORIGINAL TUBE TYPE ONLY.
INDICATES TUBE INDEX.

ELECTRONIC TECHNICIAN 527

CIRCUIT DIGEST

SYLVANIA
TV Chassis 1-541, 1-547,
1-548, 1-549, 1-550

October • 1959

Models 23S23, 23S24

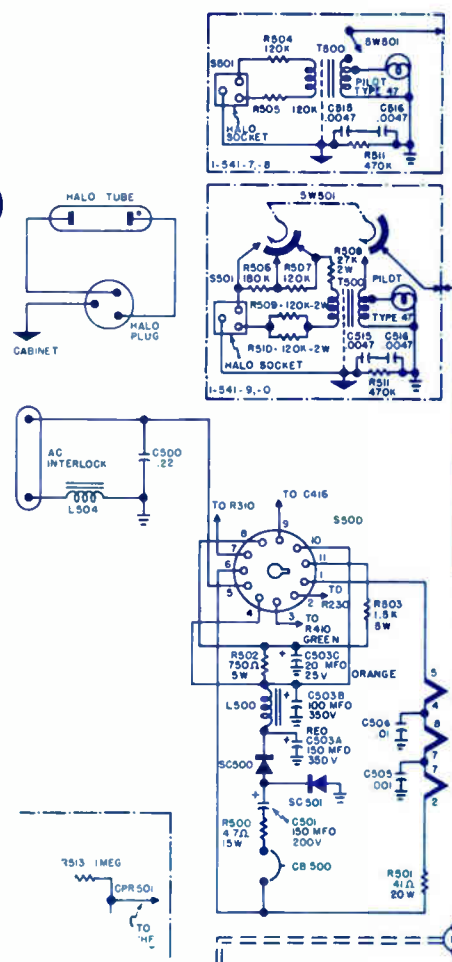
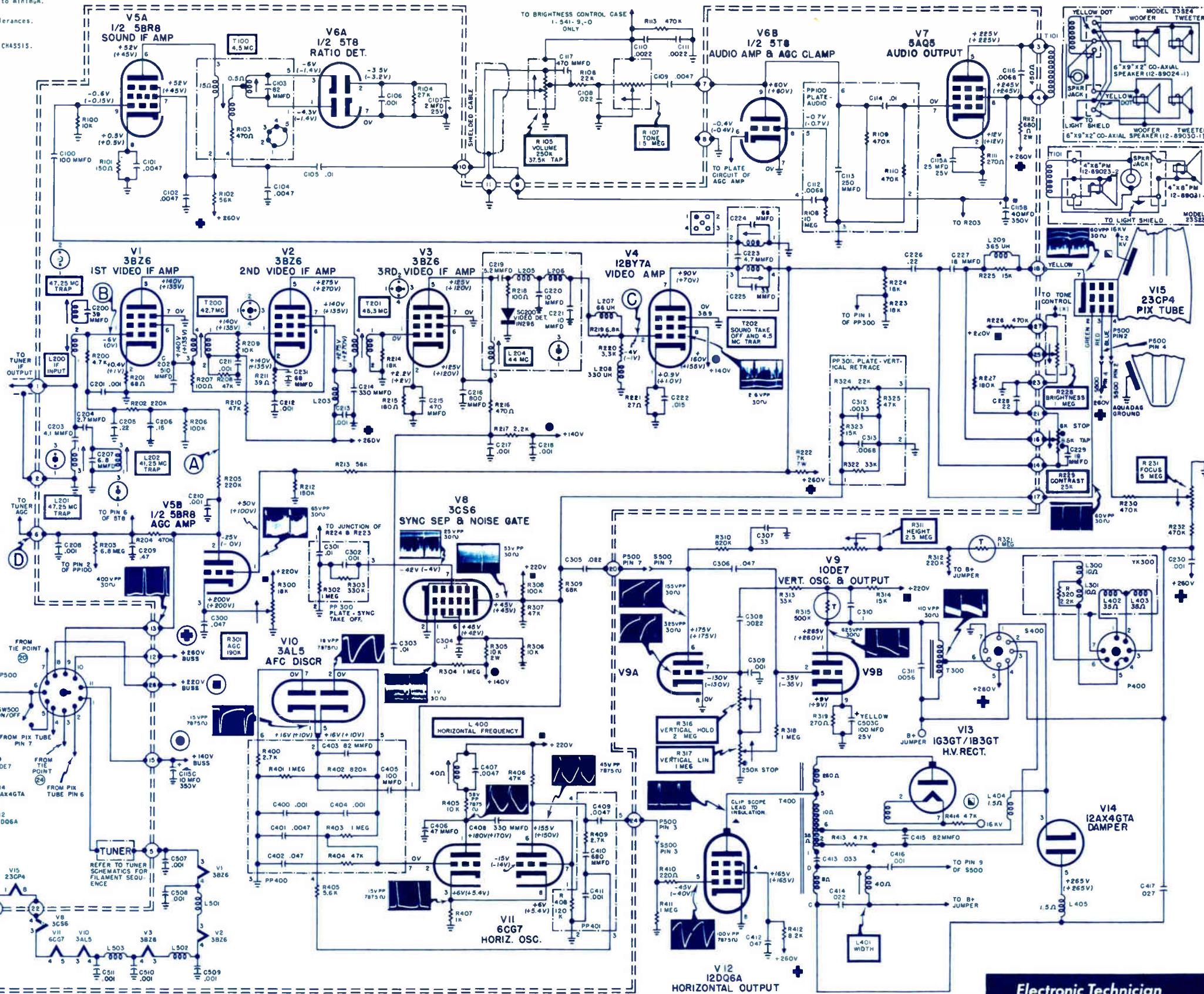
VOLTAGE MEASUREMENT CONDITIONS UNLESS OTHERWISE SPECIFIED.

1. Voltages measured to chassis using VTVM.
2. AC power source 117V, 60 cycle line.
3. Voltage readings in brackets taken with no signal input; channel selector set to a free channel. Antenna disconnected. Antenna terminals shorted together and grounded to chassis.
4. Voltage readings not in brackets taken with a strong signal input; Tuner set to strong local station developing approximately 6 volts on IF AGC Buss test point (junction of R205 and R206).
5. Contrast control set to maximum. Brightness control set to minimum.
6. Voltage values shown are average readings. Variations may be observed due to normal production tolerances.

USE POWER LINE ISOLATION TRANSFORMER WHEN SERVICING THE CHASSIS.



MODEL 23S23

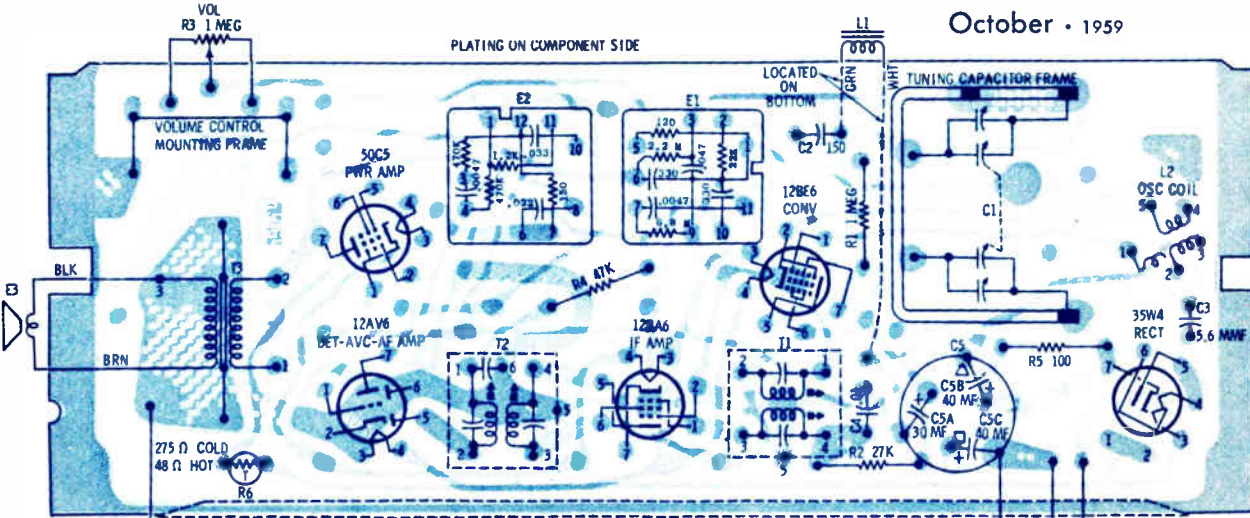


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More Data on Reverse Side

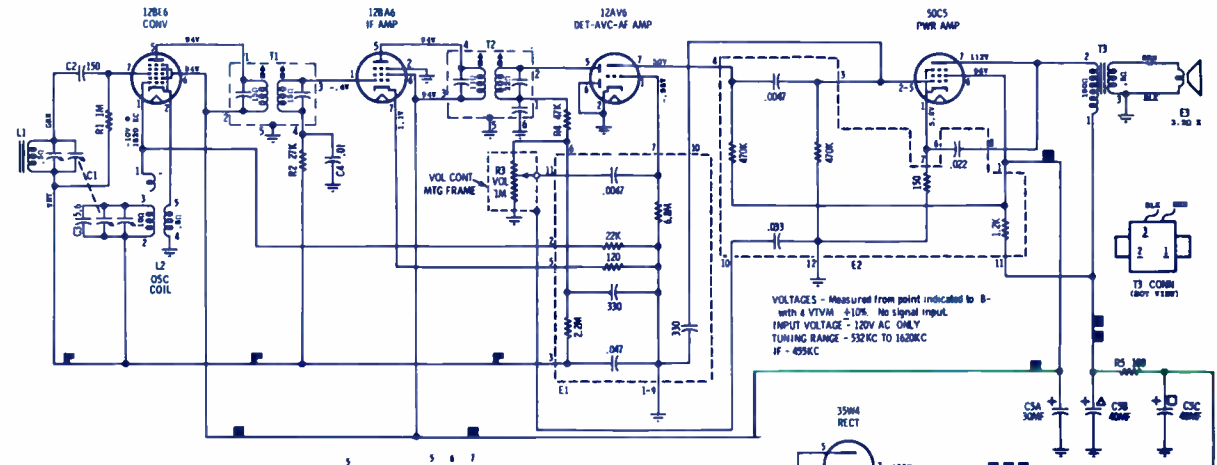
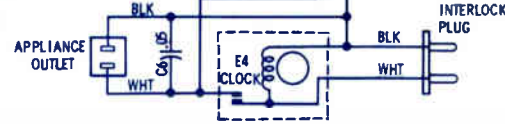
Electronic Technician
CIRCUIT DIGEST 527

October • 1959

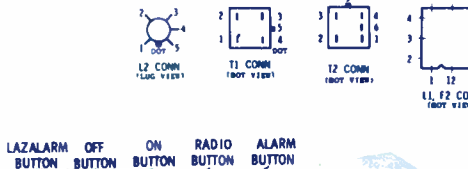


NOTES:
PLATED CHASSIS BOARD WIRING
AS VIEWED FROM
COMPONENT SIDE

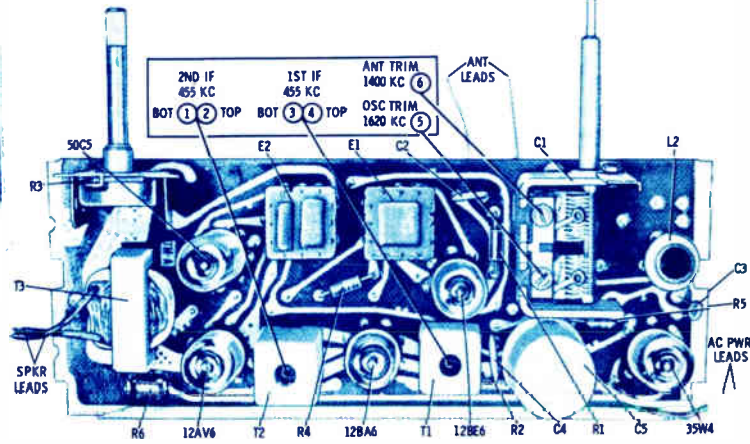
PLATED CHASSIS BOARD WIRING LEGEND
= B = PLATED CHASSIS BOARD WIRING
= B+ = FILAMENT
= B- = AVC



VOLTAGES - Measured from point indicated to B- with a VTVM $\pm 10\%$. No signal input.
INPUT VOLTAGE - 120V AC ONLY
TUNING RANGE - 530KC TO 1620KC
IF - 455KC

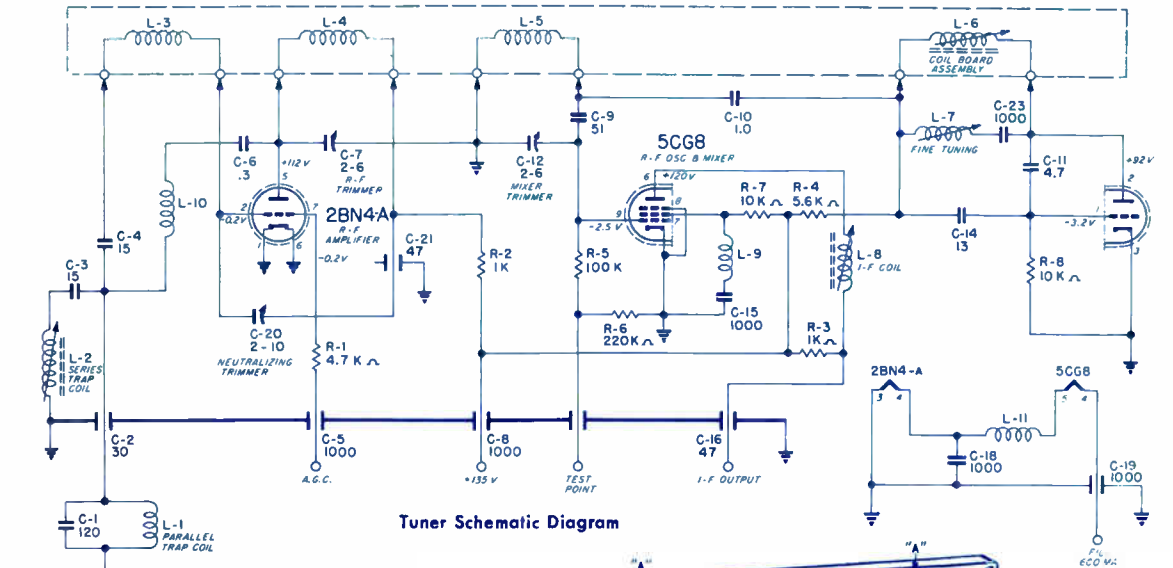


Models C5G, C5S, C5W

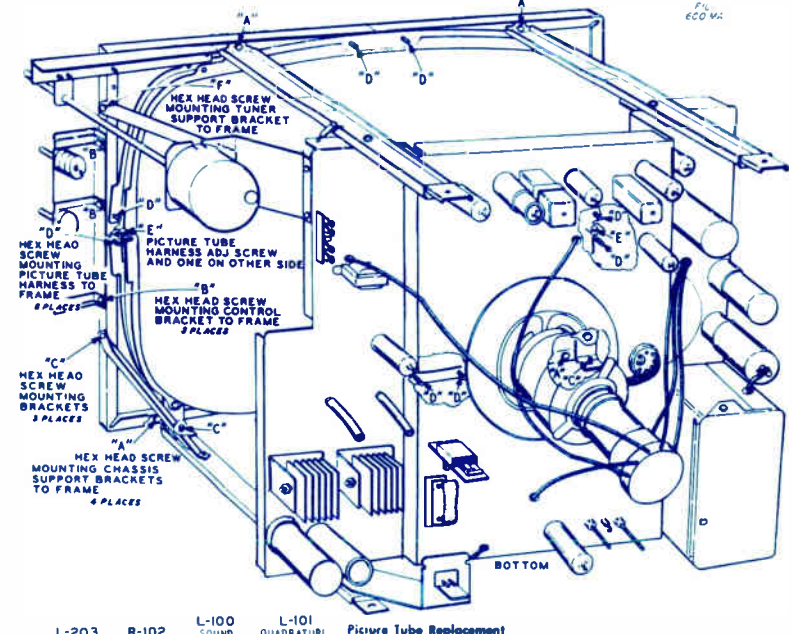


ALIGNMENT POINTS AND PARTS LOCATIONS

25A1178 TUNER INFORMATION STANDARD COIL PART No. FDNS-110



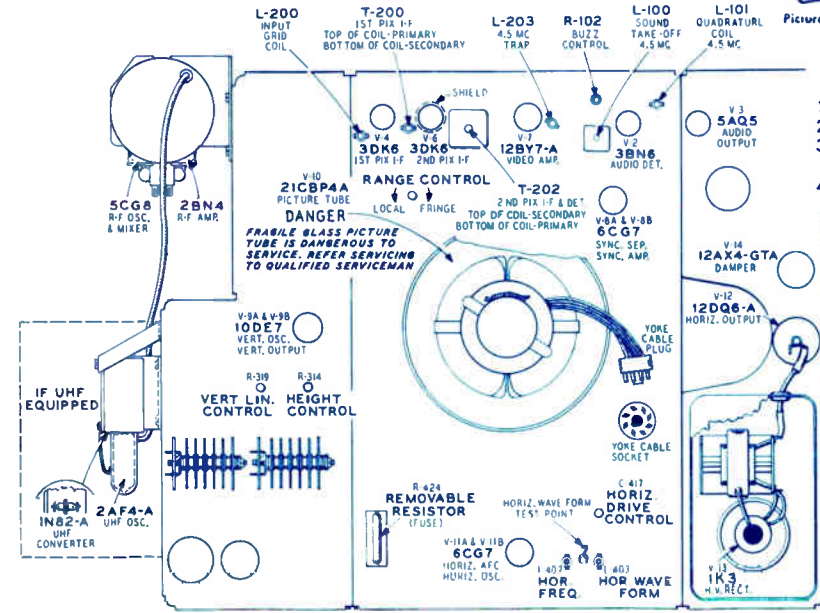
Tuner Schematic Diagram



PICTURE TUBE REMOVAL (See Fig. 2)

1. Remove 4 screws marked "A".
2. Remove 3 screws marked "B" & 1 screw marked "F".
3. Remove 3 screws marked "C" and lift chassis from Pix Tube Frame Assembly.
4. Loosen 8 screws marked "D" and 2 screws marked "E".

More Data on Reverse Side



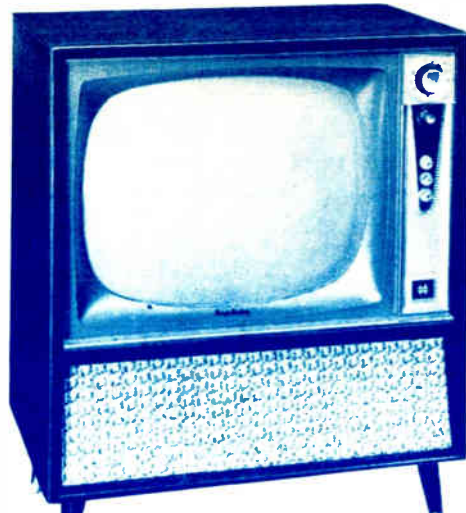
Chassis Tube Layout and Trimmers

ELECTRONIC TECHNICIAN 525

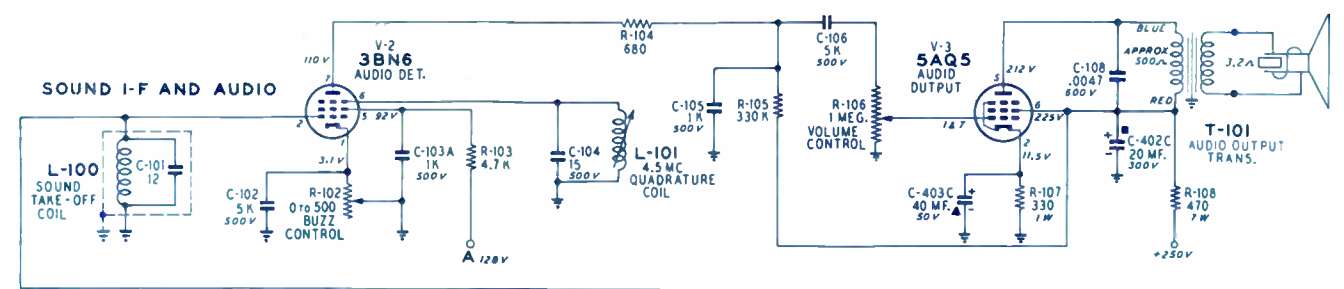
CIRCUIT DIGEST

MONTGOMERY WARD
 (Airline)
 TV Models WG-5025A,
 WG-5026A, WG-5125A,
 WG-5126A

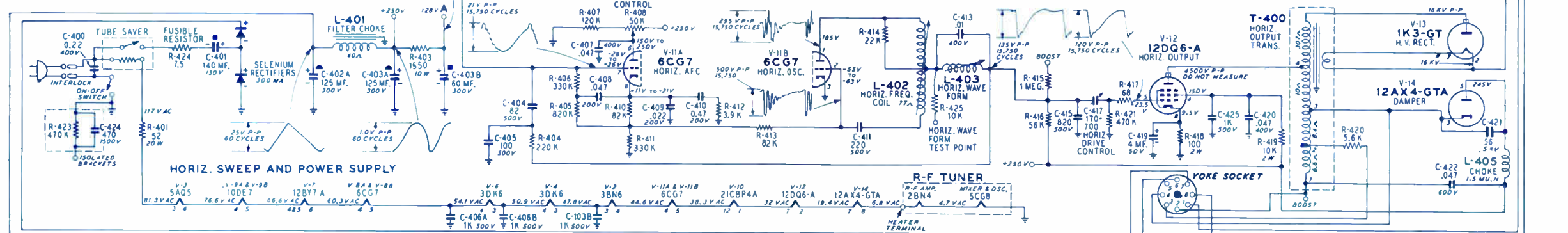
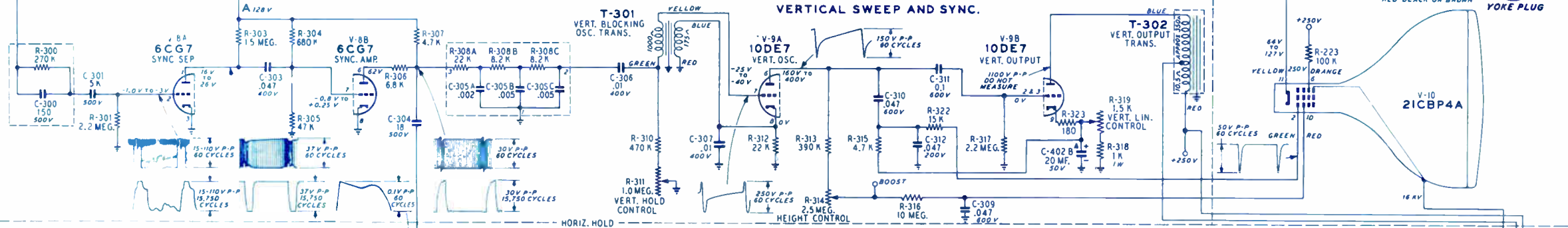
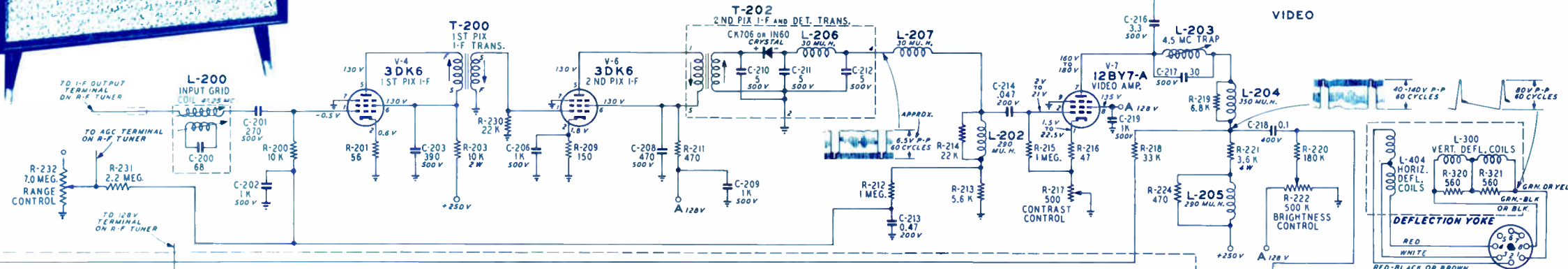
October • 1959



Special Full-Width Spring Binder Holds 24 Groups of L...
 ELECTRONIC TECHNICIAN'S CIRCUIT DIGESTS Available @ \$2.95



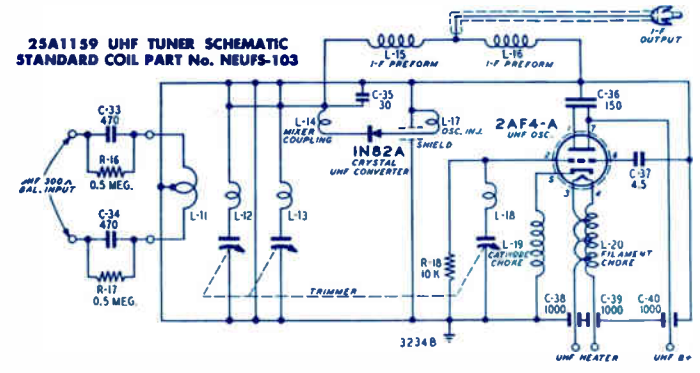
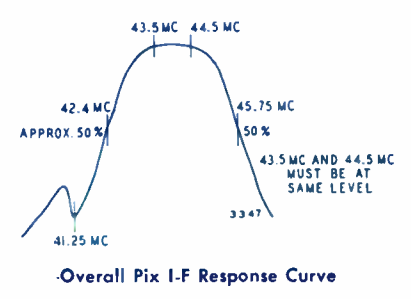
More Data on Reverse Side



NOTE-In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes

VC SOCKET VOLTAGES
 socket voltages shown
 are measured
 impedance VTVM
 conditions.

SCHEMATIC IS DIVIDED INTO FOUR SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS
 ALL RESISTANCE VALUES IN OHMS AND $\frac{1}{2}$ WATT UNLESS OTHERWISE SPECIFIED.
 ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF. UNLESS OTHERWISE NOTED.
 COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.
 K=1000

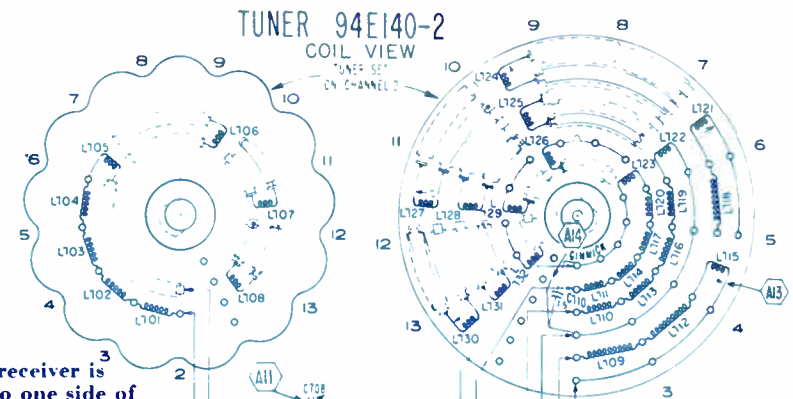


Electronic Technician
CIRCUIT DIGEST 525

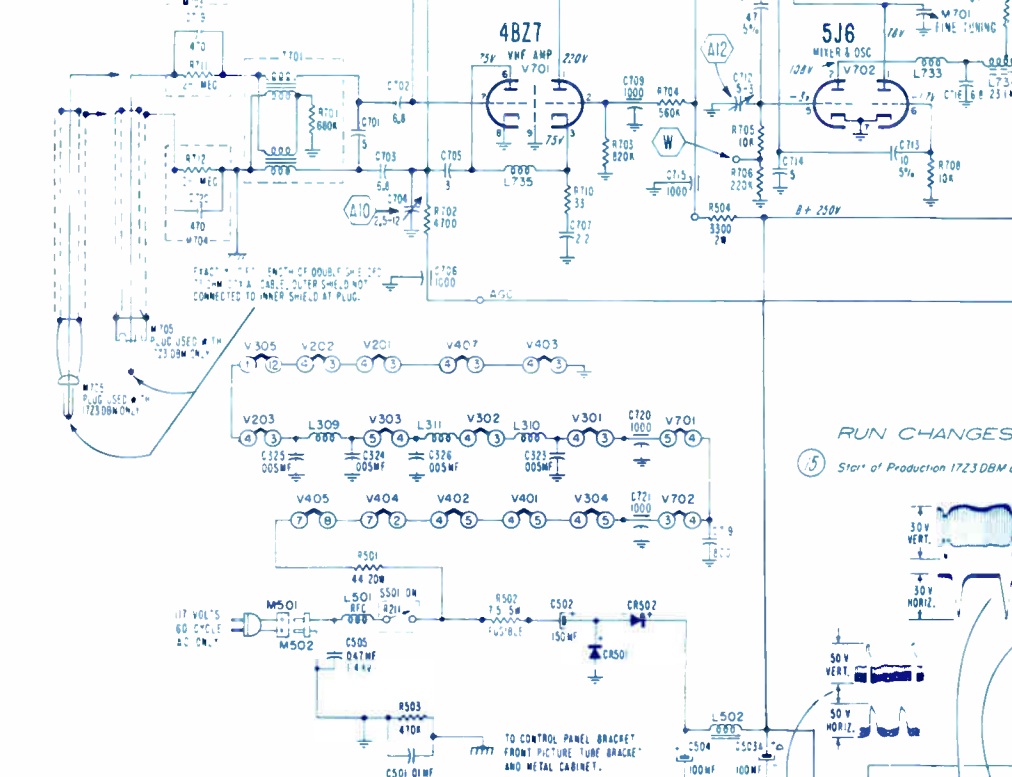
Editorial Service of ELECTRONIC TECHNICIAN, INC. ☆ 480 Lexington Ave., New York 17, N.Y.

November • 1959

ALL PARTS WITHIN HEAVY DASHED LINE LOCATED ON PRINTED CIRCUIT BOARD A4630-3



WARNING:
The chassis of this receiver is connected directly to one side of the 117 volt, 60 cycle power line.



NOTE
Z, etc., indicate alignment points and alignment

- TUBE COMPLEMENT**
- 17Z3DBM and Heater
 - 17Z3DBN and Heater
 - V401-6CG7
 - V402-6S4A
 - V403-6CG7
 - V404-12DQ6
 - V405-12AX4GTA
 - V406-1B3GT
 - V407-3AL5 or CR401-Dual Selenium Diode 93A5-4
 - V701-4BZ7
 - V702-5J6
 - V703-6CG7
 - V704-12DQ6
 - V705-12AX4GTA
 - V706-1B3GT
 - V707-3AL5 or CR401-Dual Selenium Diode 93A5-4

PRODUCTION CHANGES:

HORIZONTAL SYNC DISCRIMINATOR REPLACED WITH 3AL5 TUBE

To provide a more stable horizontal circuit, CR401 was replaced with a 3AL5 tube. The tube socket

TO PREVENT RADIATION INTERFERENCE, CHOKE COIL ADDED TO VIDEO DETECTOR CIRCUIT

In keeping with the television industry's practice of complying with FCC regulations for reduced radiation interference, a self resonant choke coil (L308) was inserted into the video detector plate circuit, between L302 and L304.

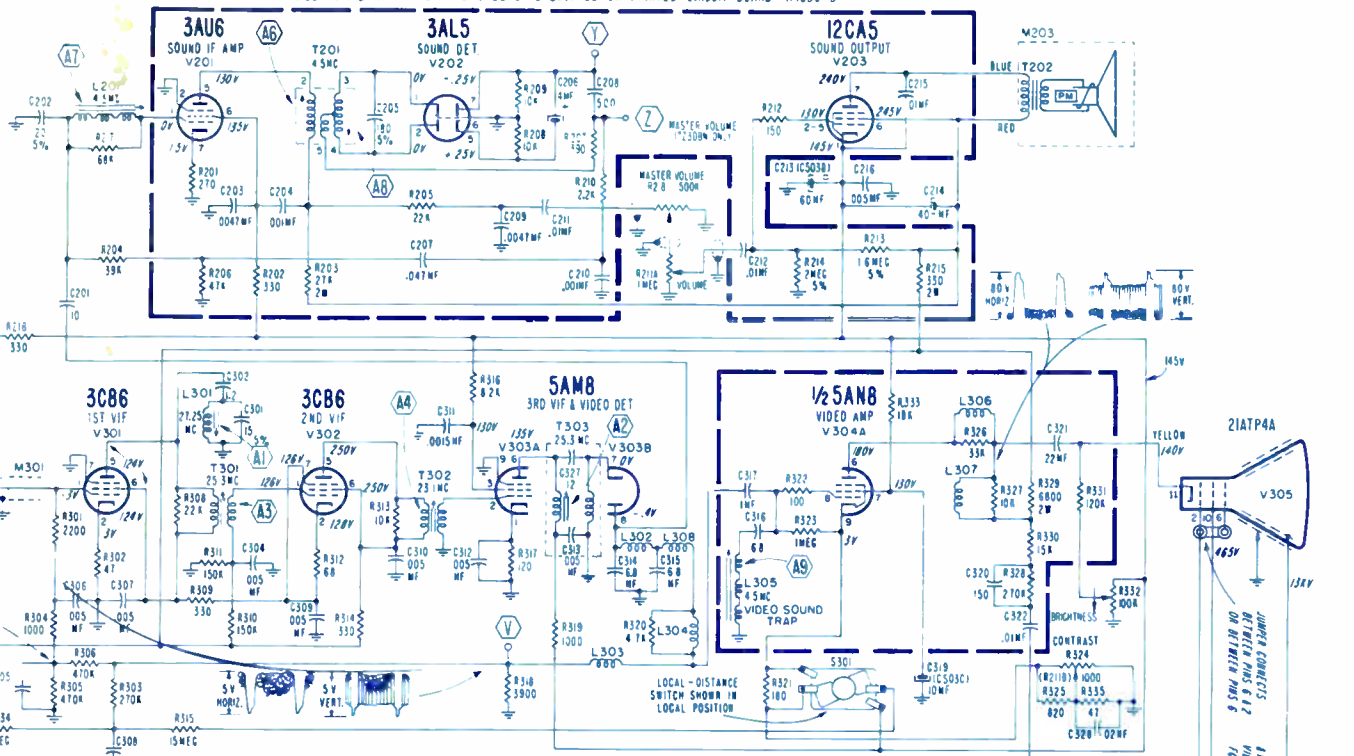
CHANGE TO IMPROVE VIDEO RESPONSE AND CONTRAST

To improve video response, C318 (1,005 mf) screen bypass capacitor deleted; R333 (3,900 ohms) video amplifier screen resistor changed to 18,000 ohms; R329 (5,600 ohms) video amplifier plate dropping resistor changed to 6,800 ohms; and R318 (5,600 ohms) video detector load resistor changed to 3,900 ohms.

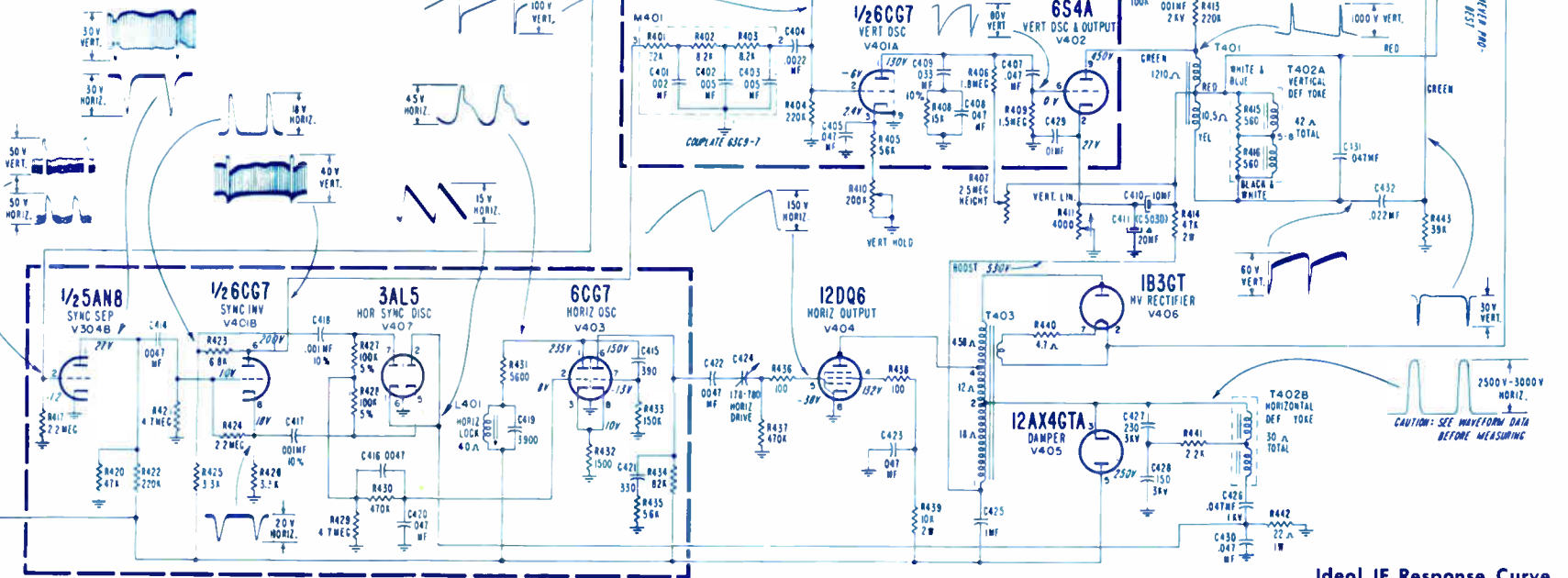
To improve the contrast, R335 (47 ohms) and C328 (1.02 mf) added across the low side of the contrast control circuit.

VERTICAL BLANKING COUPLATE REPLACED BY SEPARATE COMPONENTS. SPEAKER PLUG AND SOCKET DELETED.

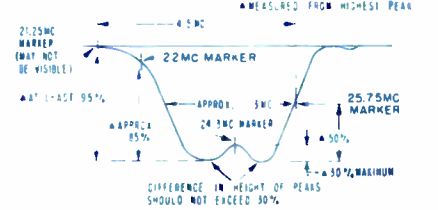
To simplify circuitry, the vertical blanking couplate, M402 (used to supply a vertical blanking pulse to grid of V305), replaced by individual components. C431 (1.047 mf) connected across vertical section of yoke (T402A). R443 (39,000 ohms) connected from pin 2 (V305) to chassis ground; and C432 (1.022 mf) connected from pin 2 (V305) to junction of C431 and T402A. The speaker plug (M202) and socket (M201) deleted and speaker output leads wired-in to a terminal strip mounted on the chassis.



RUN CHANGES
Start of Production 17Z3DBM and 17Z3DBN



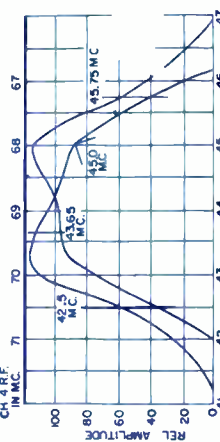
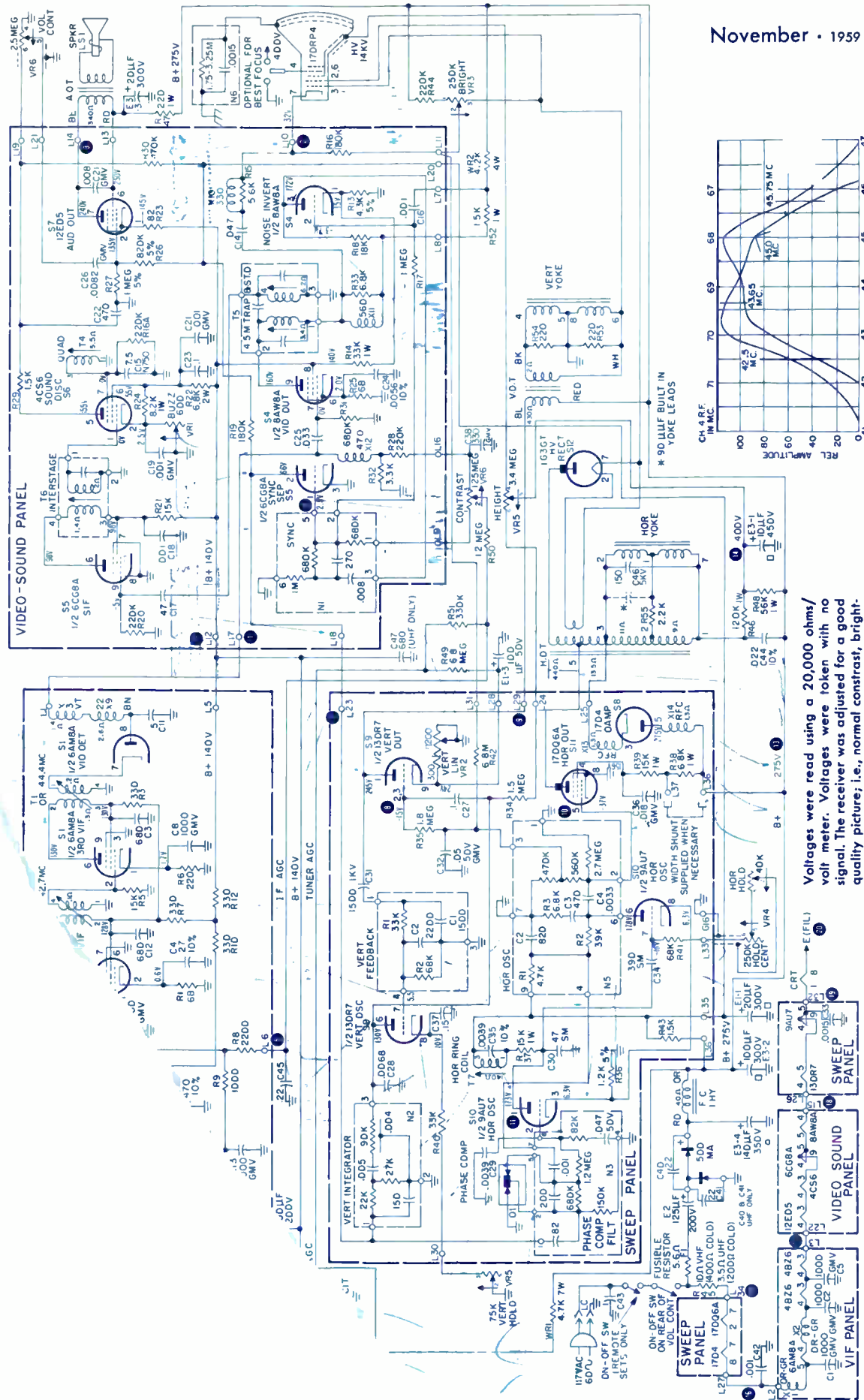
Ideal IF Response Curve.



ELECTRONIC TECHNICIAN 532

CIRCUIT DIGEST

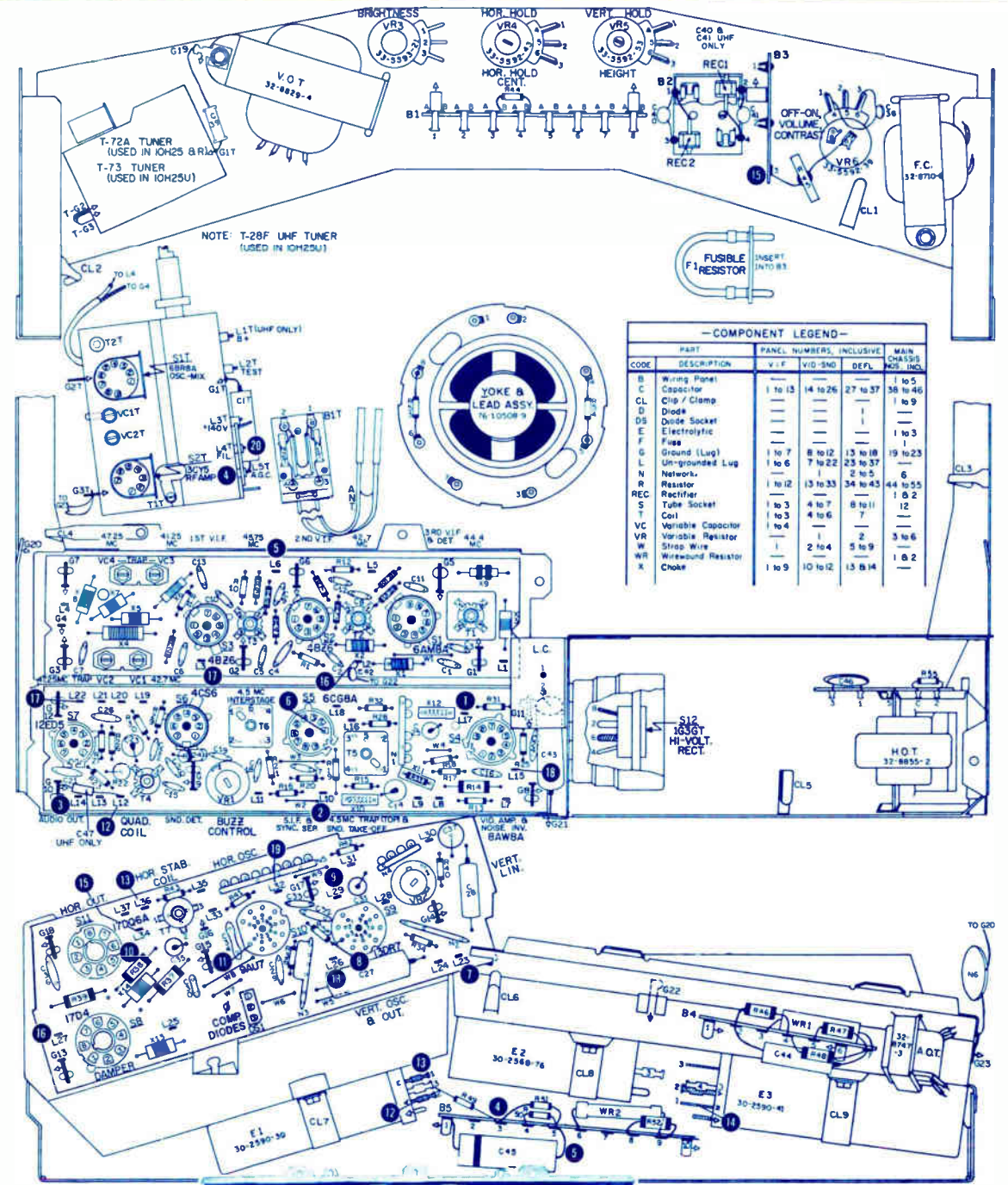
PHILCO
TV Chassis 10H25,
10H25U, 10H25R



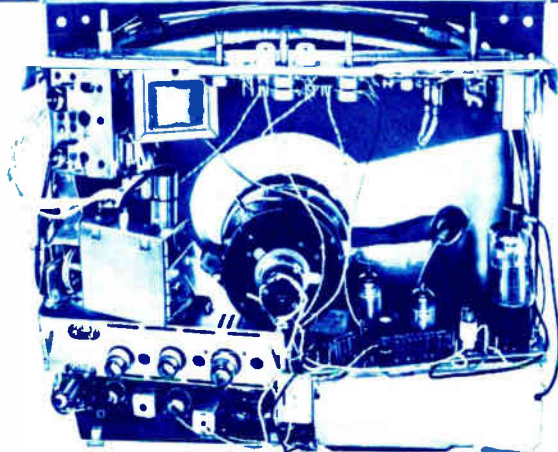
Overall R-F I-F Response Curve

Voltages were read using a 20,000 ohms/volt meter. Voltages were taken with no signal. The receiver was adjusted for a good quality picture; i.e., normal contrast, brightness, width, height, vertical lin. and sound, picture in sync, then removed signal.

Arrow through control indicates clockwise rotation.

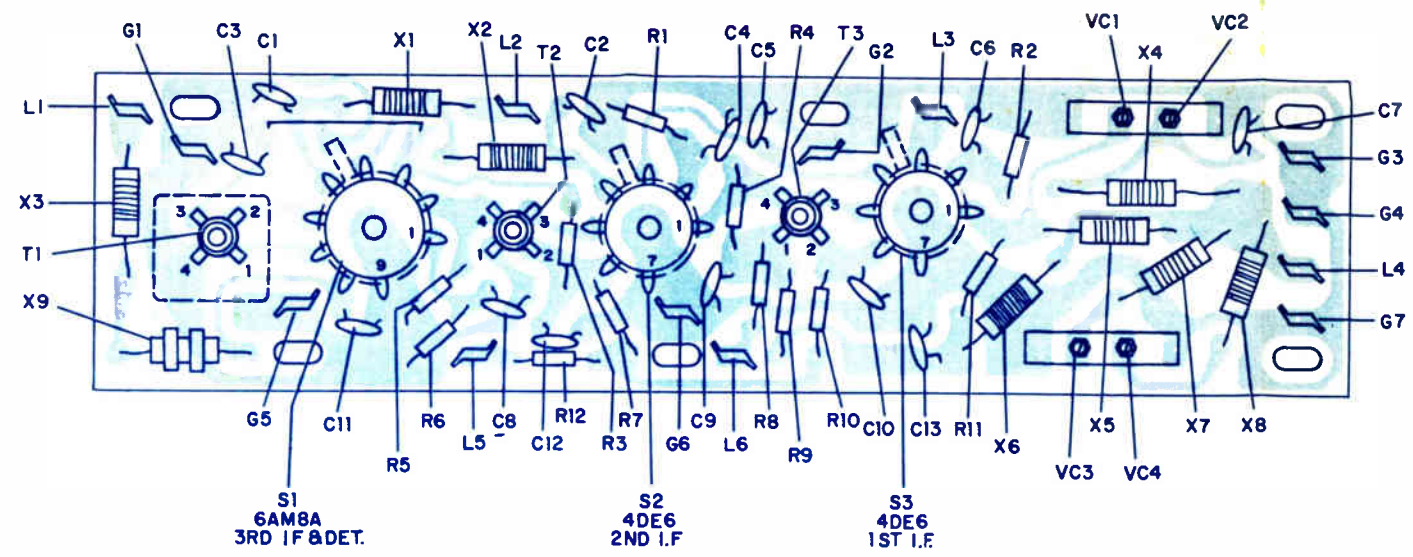


Chassis Component Layout



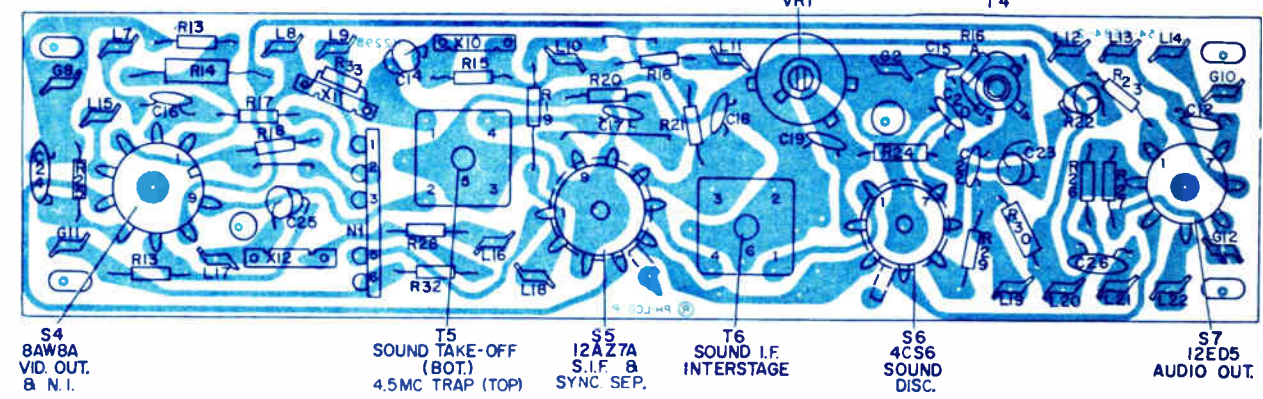
More Data on Reverse Side

Electronic Technician
CIRCUIT DIGEST 532



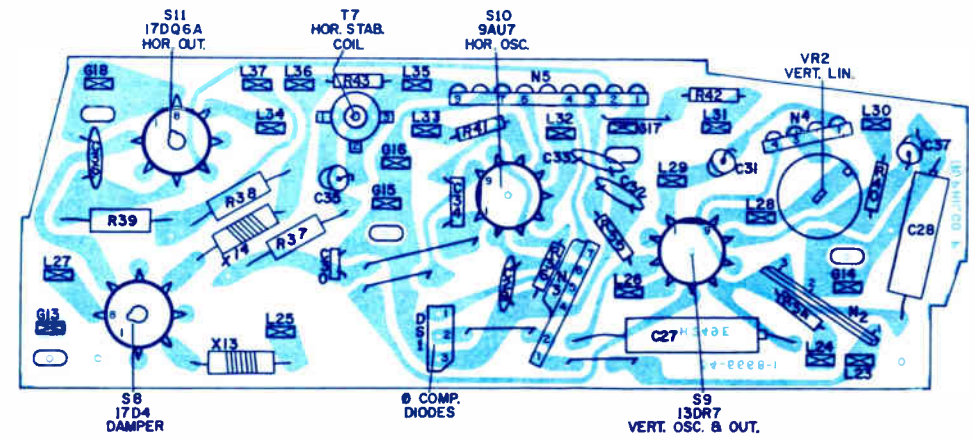
TERMINAL LUG IDENTIFICATION—I-F PANEL

- | | |
|---|------------------------------|
| L1 Video output from video 2nd detector. | L5 140V B+. |
| L2 Filament input from L27 of Deflection panel. | L6 A.G.C. |
| L3 Filament output to L22 of Video-Sound panel. | G4 Shield braid of I-F link. |
| L4 I-F input link from tuner. | |



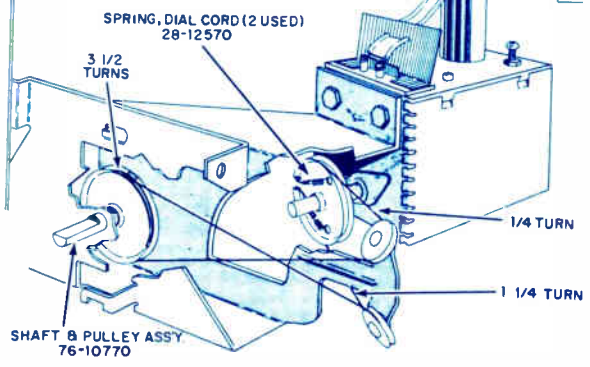
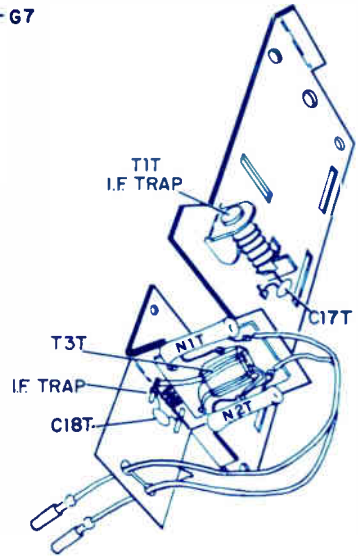
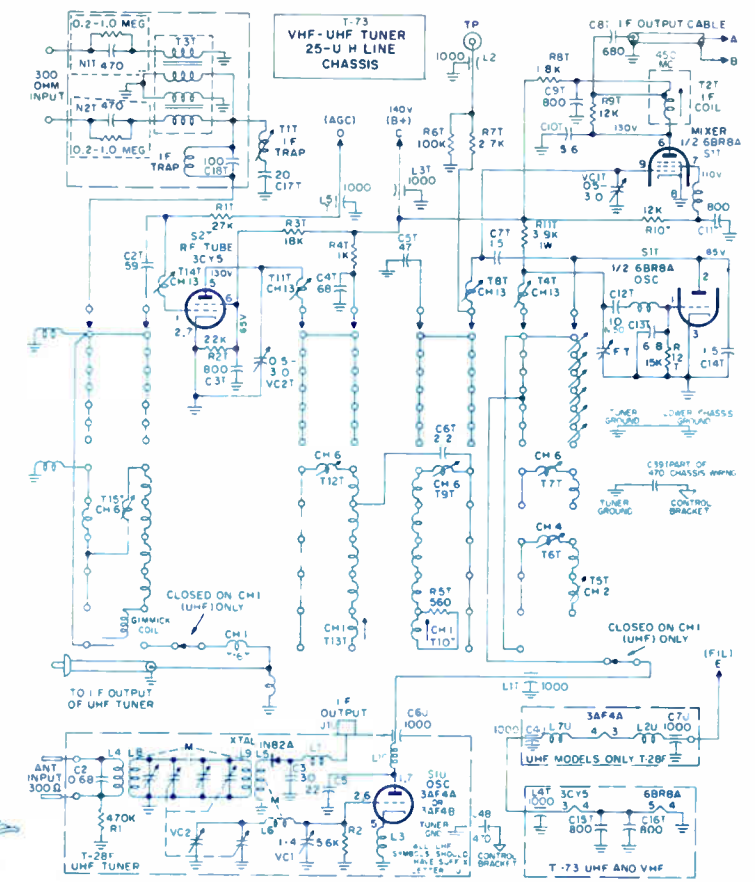
TERMINAL LUG IDENTIFICATION—VIDEO-SOUND PANEL

- | | |
|--|--|
| L7 Lead from noise inverter grid coupling (C16) to junction of R52 and WR2 (B5-9). | L15 Filament lead to L26 of Sweep panel. |
| L8 Lead to video plate supply, R52, at B5-8. | L16 Lead to contrast control, VR6-3. |
| L9 Lead to lug # 1 of VR6, the contrast control. | L17 Video input from 2nd detector, L1 of V.I.F. panel. |
| L10 Video output to CRT cathode, pin 7. | L18 Sync output to L23 of Sweep panel. |
| L11 Lead to arm of brightness control, VR3. | L19 Shielded lead to top of volume control. |
| L12 140V B+ lead. | L20 265V B+. |
| L13 Red lead of A.O.T. and B+ to audio output screen. | L21 Shielded lead from arm of volume control. |
| L14 Blue lead of A.O.T. to audio output plate. | L22 Filament lead from L3 of V.I.F. panel. |

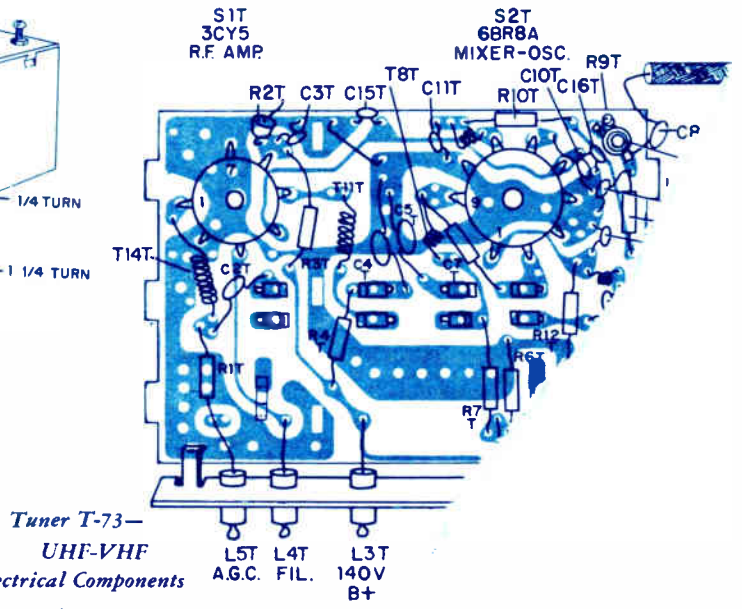


TERMINAL LUG IDENTIFICATION—DEFLECTION PANEL

- | |
|--|
| L23 Sync input from Video-Sound panel (L18). |
| L24 Lead to top of height control, VR5-6. |
| L25 Lead from damper cathode to H.O.T. terminal 3 and yoke socket pin 2. |
| L26 Filament lead to 13DR7 pin 4 from L15 of Video-Sound panel. |
| L27 Filament lead from 17D4 pin 8 to V.I.F. panel lug, L2. |
| L28 Vertical output cathode, lead to E1-3 by-pass electrolytic. |
| L29 Vertical output plate, blue lead of V.O.T. |
| L30 Lead to top of vertical hold control, VR5-3. |
| L31 Vertical output bias, lead to Video-Sound panel (L11). |
| L32 Filament lead from pins 4 and 5 of 9AU7 to C.R.T. pin 1. |



10H25U UHF Drive Cord Stringing



Tuner T-73—
 UHF-VHF
 Electrical Components

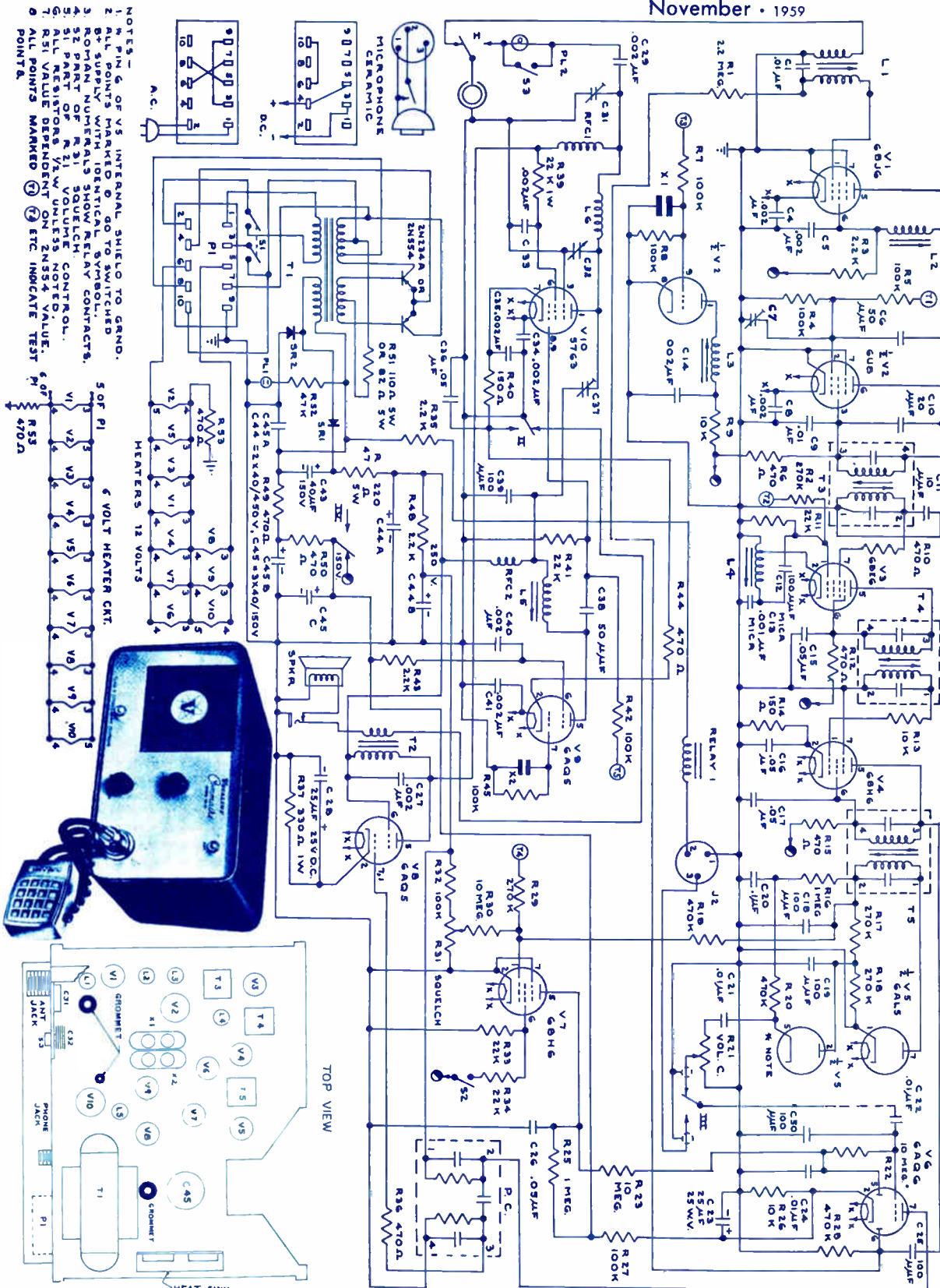
T-73 Components N

- VC1T and VC2T omit C14T, R11T and T-
 neath panel.
 C1T, A-G-C by-pr
 C6T wires bet
 R5T wires a

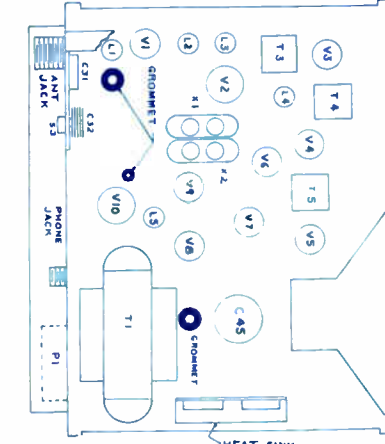
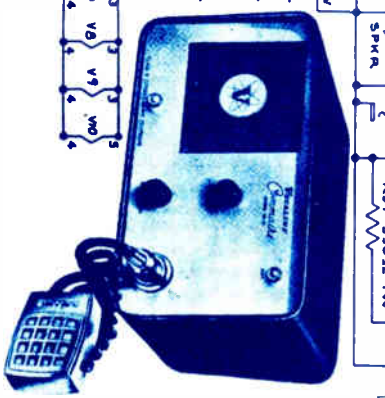
- | |
|---------------------------------------|
| L33 Shielded lead to horizo
VR4-6. |
| L34 Filament lead from |
| L35 De-coupled B+, |
| L36 275 V B+. |
| L37 Junction of T |

More Data on Reverse Side

November • 1959

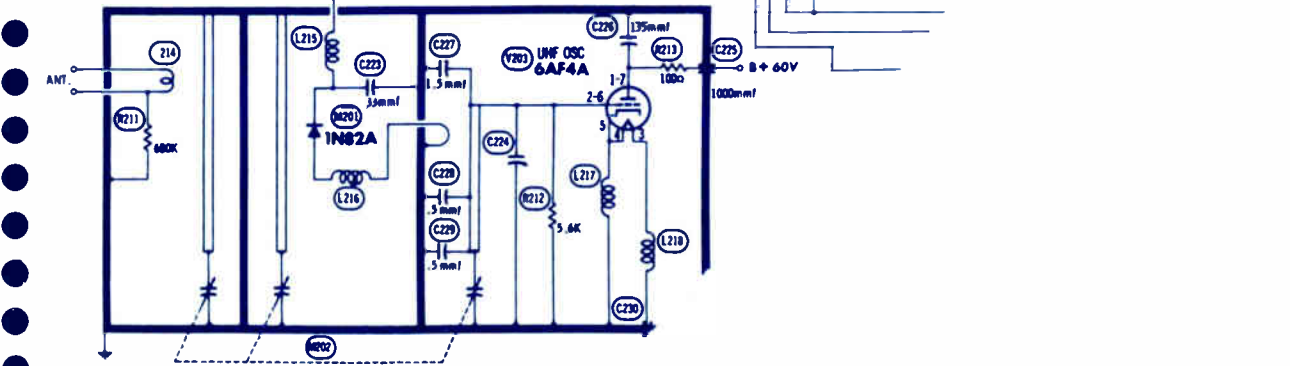
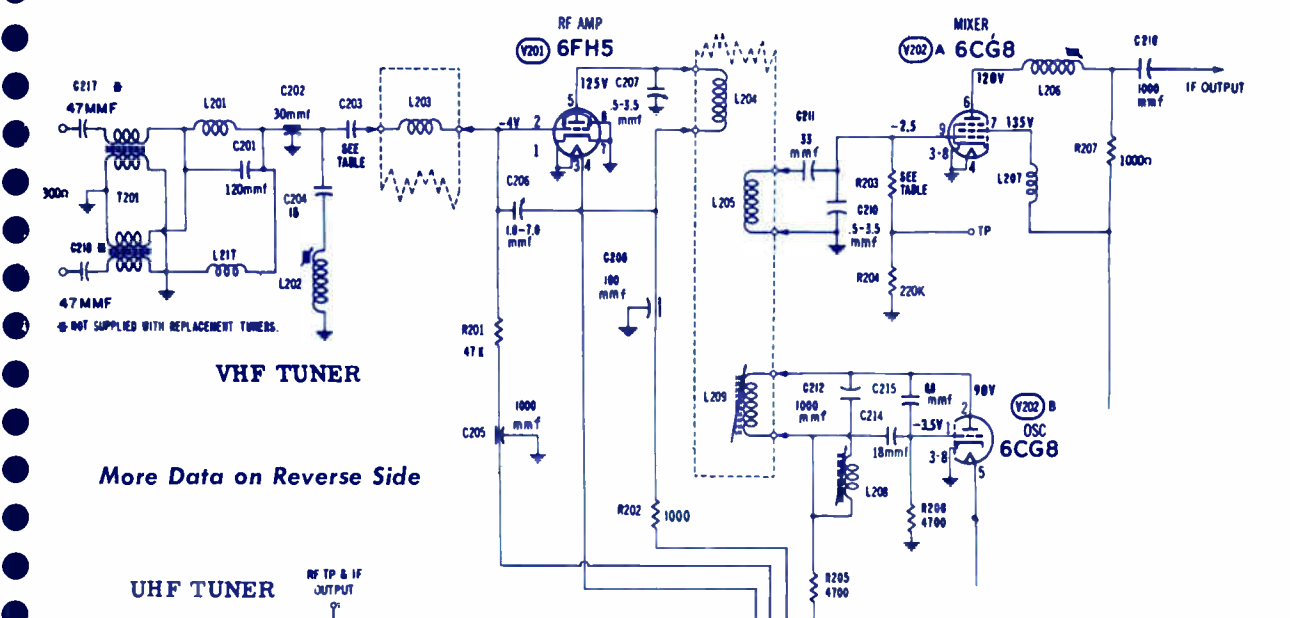
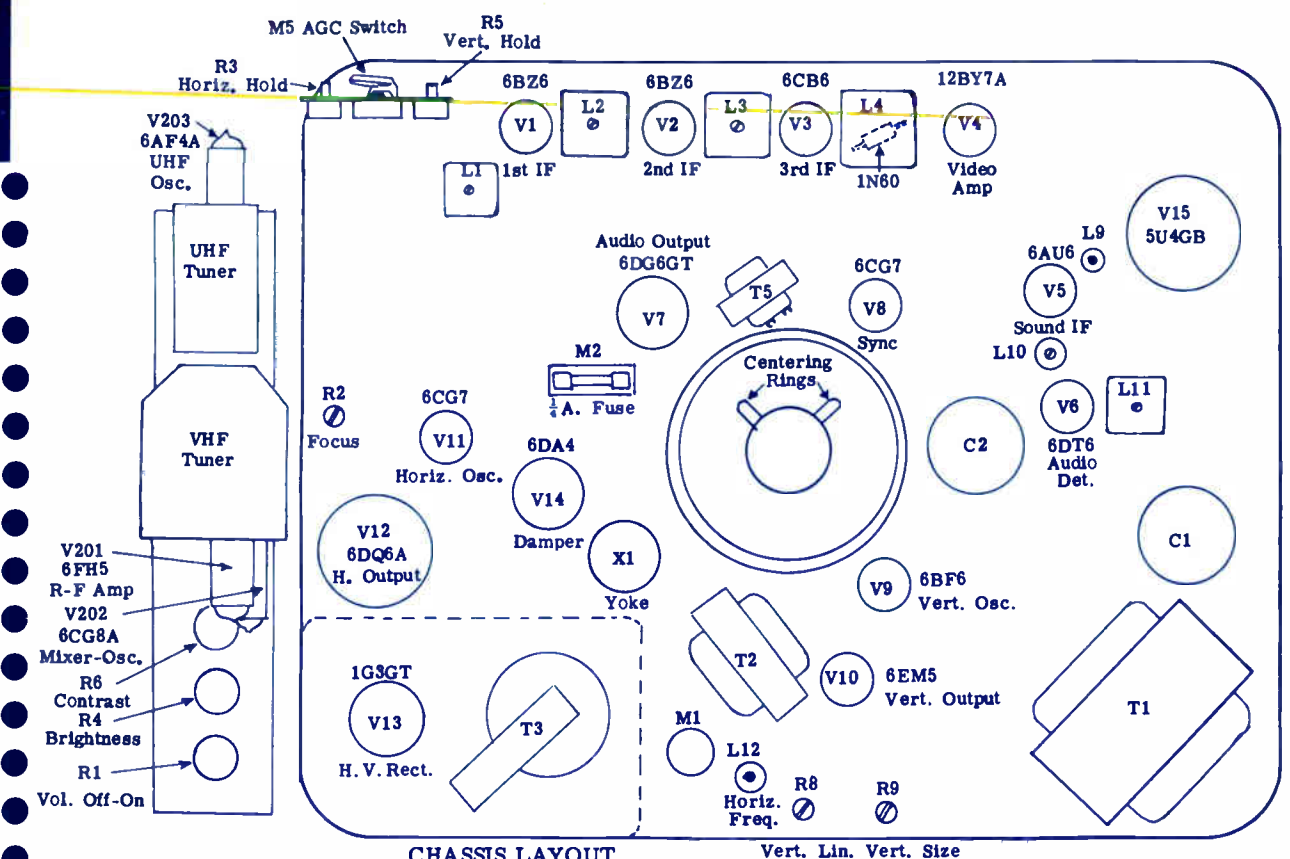


- NOTES—
1. R PIN 6 OF V5 INTERNAL SHIELD TO GND.
 2. ALL SPINNS MARKED ON BOARD TO GO TO SWITCHED.
 3. ROMAN NUMERALS SHOW RELAY CONTACTS.
 4. ALL PARTS OF R21 SHOULD BE IN PLACE.
 5. ALL PARTS OF R21 VOLUME CONTROL.
 6. ALL PARTS OF R21 VOLUME CONTROL.
 7. R21 VALUE DEPENDENT ON ZNS34 VALUE.
 8. ALL VALUES MARKED WITH * INDICATE TEST POINTS.



- VI — 6BZ6
V2 — 6U8
V3 — 6BE6
V4-V7 — 6BH6
V5 — 6AL5
V6 — 6AQ6
V8-V9 — 6AQ5
V10 — 5Y3

WARNING
If it is necessary to remove the chassis from the cabinet for any reason, be extremely careful not to disturb the copper coil located in front of C-31 and C-32. This coil is adjusted at the factory and performance will be substantially reduced if it is disturbed in any way.



AMPLIFIER SECTION

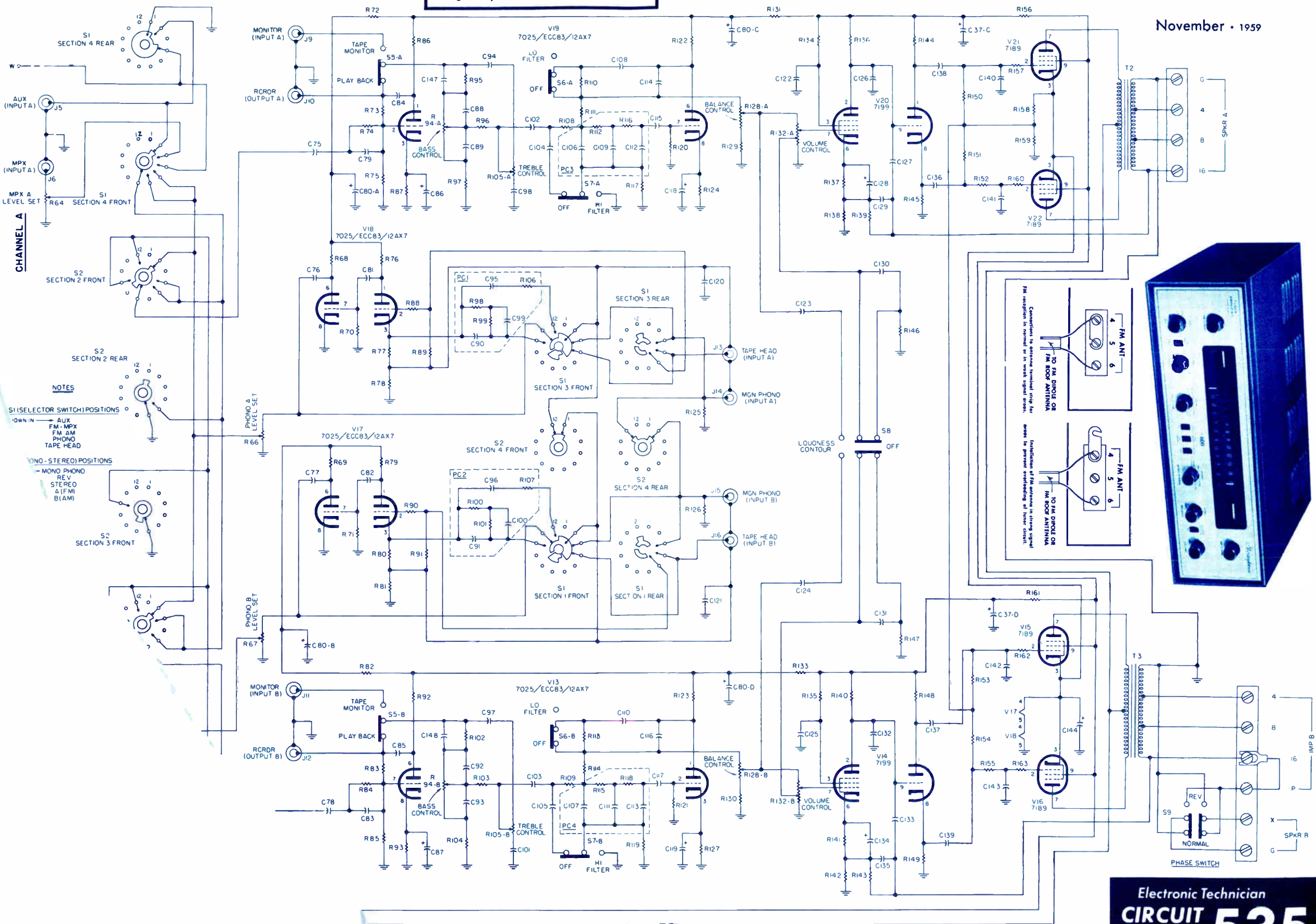
Important! Do not attempt to operate the TA-600 Receiver without first connecting both speakers or otherwise loading the speaker terminals.

ELECTRONIC TECHNICIAN 535

CIRCUIT DIGEST

FISHER
FM-AM Stereo Receiver
Model 600

November • 1959



CHANNEL A

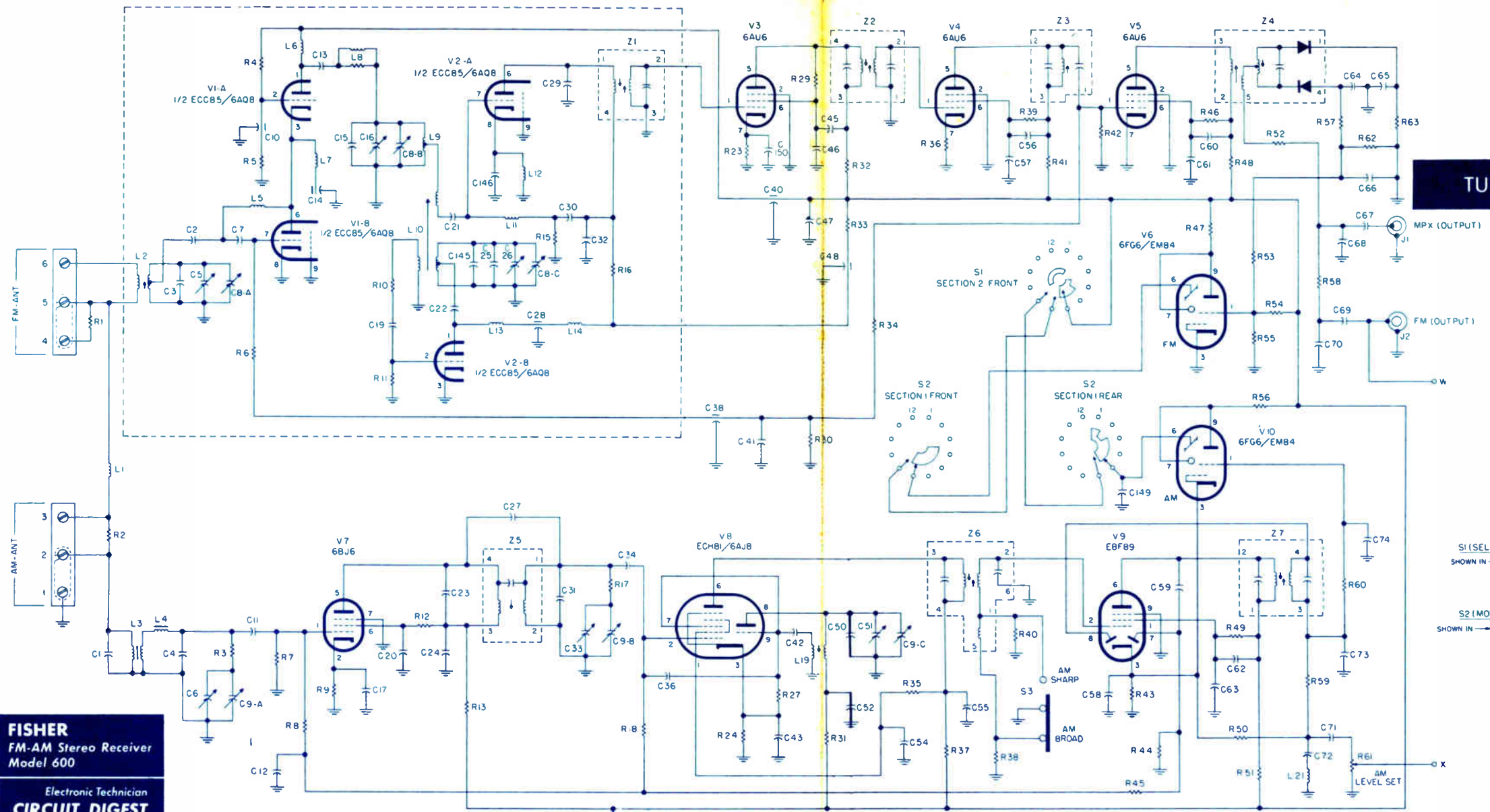
NOTES

(S1 SELECTOR SWITCH) POSITIONS
 DOWN IN - AUX
 FM - MPX
 FM - AM
 PHONO
 TAPE HEAD

PHONO - STEREO POSITIONS
 MONO PHONO
 REV
 STEREO
 A (FM)
 (B) AM

FISHER
FM-AM Stereo Receiver
Model 600
Electronic Technician
CIRCUIT DIGEST
535

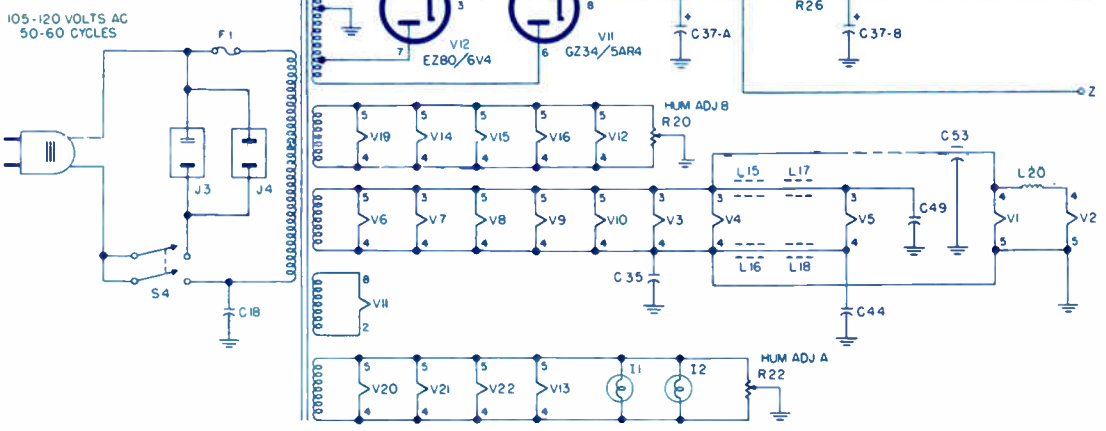
TUNER SECTION



NOTES

S1 (SELECTOR SWITCH) POSITIONS
 SHOWN IN → AUX
 FM-MPX
 FM-AM
 PHONO
 TAPE HEAD

S2 (MONO-STEREO) POSITIONS
 SHOWN IN → MONO PHONO
 REV
 STEREO
 A (FM)
 B (AM)



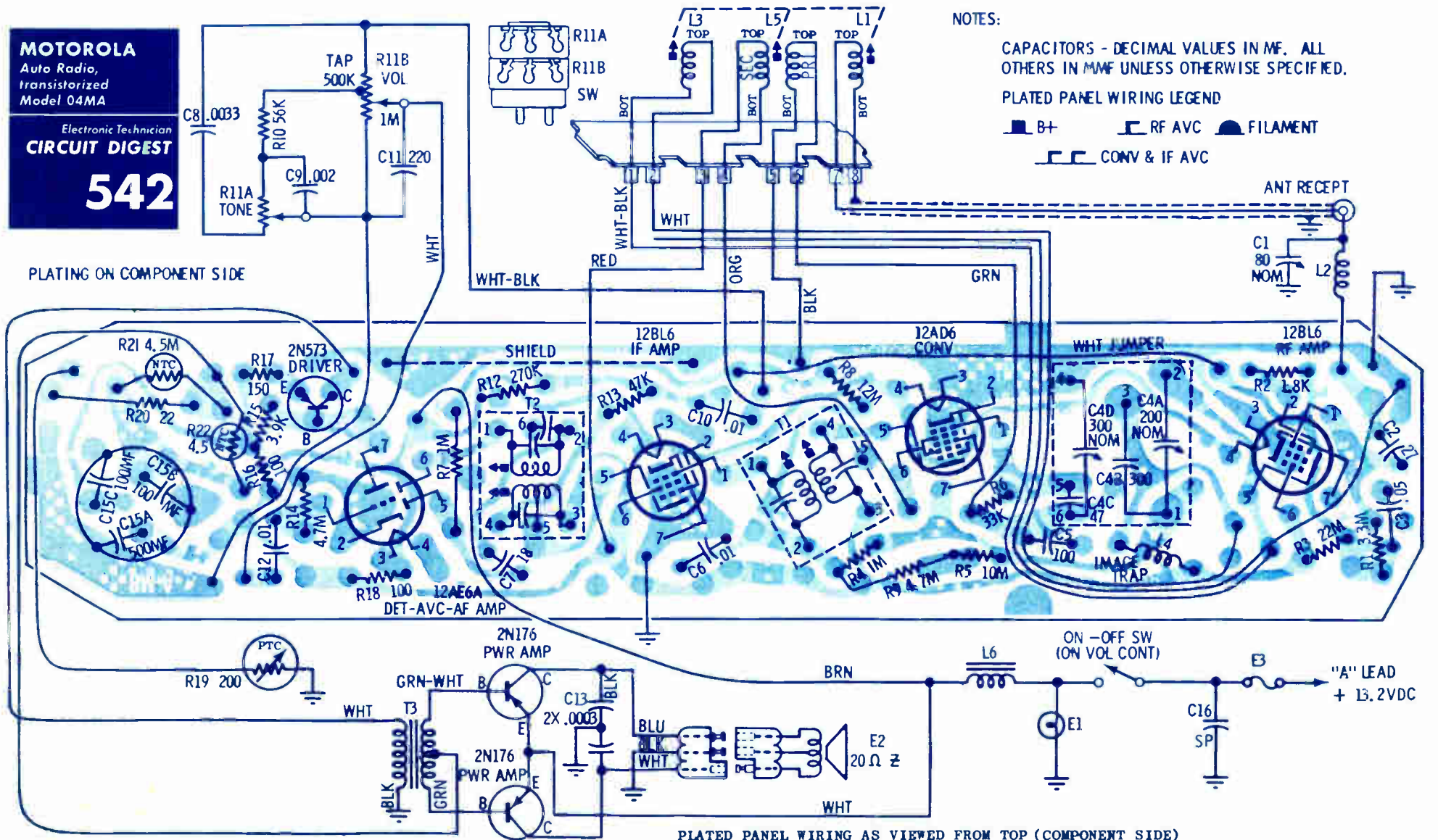
SYMBOL	TUBE	FM RF	FM MIX	FM OSC	1st FM IF	2nd FM IF	300 FM IF	AM RF	AM MIX	AM OSC	IF	Detector	Phase Inv.	Driver	Phase Inv.	Output	Audio	Power Amp	Phase Inv.	Power Amp
V1	6AQ8	184																		
V2	6AC6	184	-1.8																	
V3	6AU6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V4	6AU6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V5	6AU6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V6	6EM8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V7	6B16	-0.1	0.8	0.3AC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V8	6CH8	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V9	6BR8	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V10	6EM8	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V11	6X4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V12	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V13	6X4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V14	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V15	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V16	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V17	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V18	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V19	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V20	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V21	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
V22	6V4	AC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

MOTOROLA
Auto Radio,
transistorized
Model 04MA

Electronic Technician
CIRCUIT DIGEST

542

PLATING ON COMPONENT SIDE



NOTES:

CAPACITORS - DECIMAL VALUES IN MF. ALL OTHERS IN MMF UNLESS OTHERWISE SPECIFIED.

PLATED PANEL WIRING LEGEND



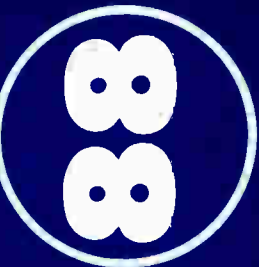
PLATED PANEL WIRING AS VIEWED FROM TOP (COMPONENT SIDE)

December • 1959

**ELECTRONIC
TECHNICIAN**

Trademark

CIRCUIT DIGESTS



In This Issue (No. 88)

Circuit Digest No. 539

ADMIRAL

TV Chassis 15D1B
Models PL17F31B, PL17F32B,
PL17F33B, PL17F41B,
PL17F42B, PL17F43B

CONTINENTAL

Transistor Portable Radio,
Models TR-182, TR-300

541

HOFFMAN
TV Chassis 348, 350
Models 3653, 3663, 3673, 3683

537

MATHES

TV Models 7323, 9323

542

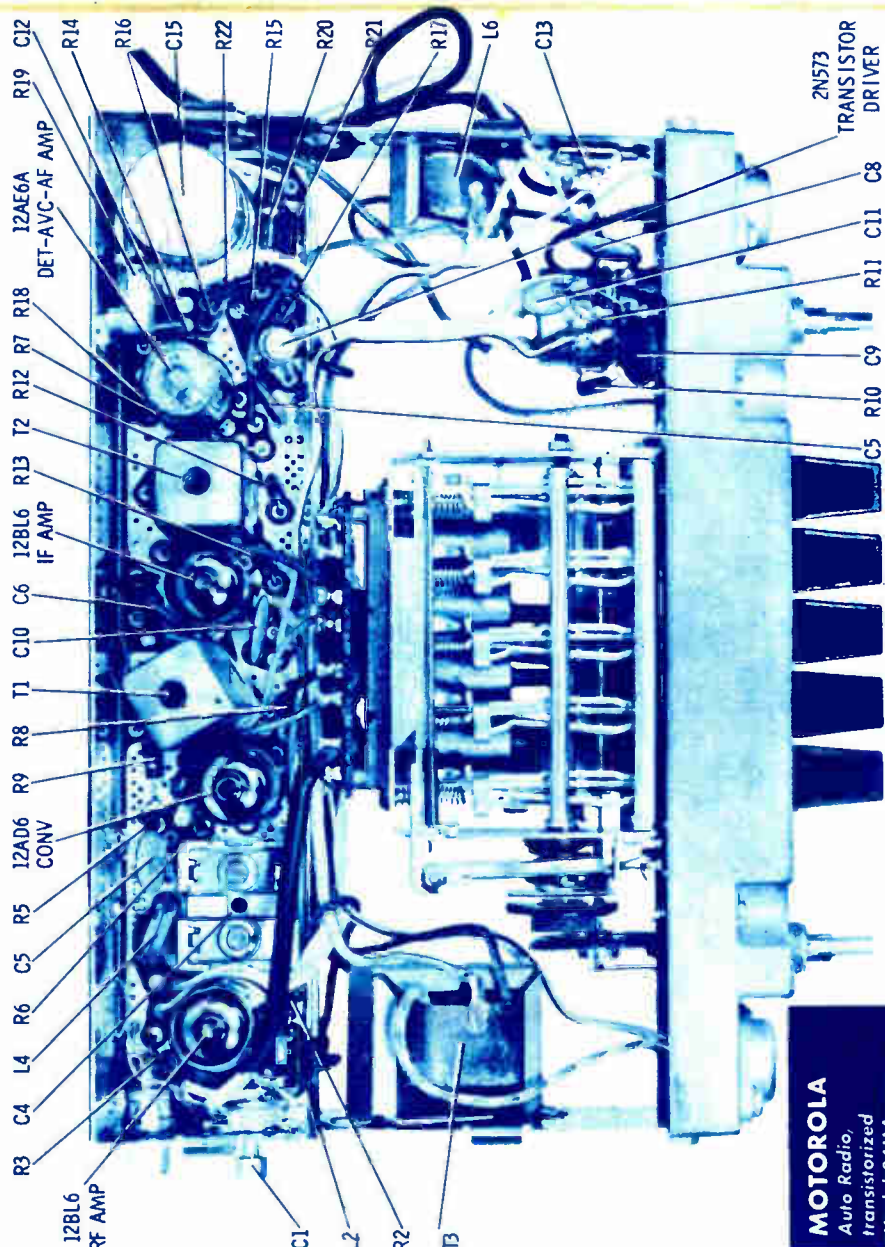
MOTOROLA

Auto Radio, transistorized, Model 04MA

540

PACO Stereo Preamp-amplifier, Model SA-40W

PARTS LOCATION

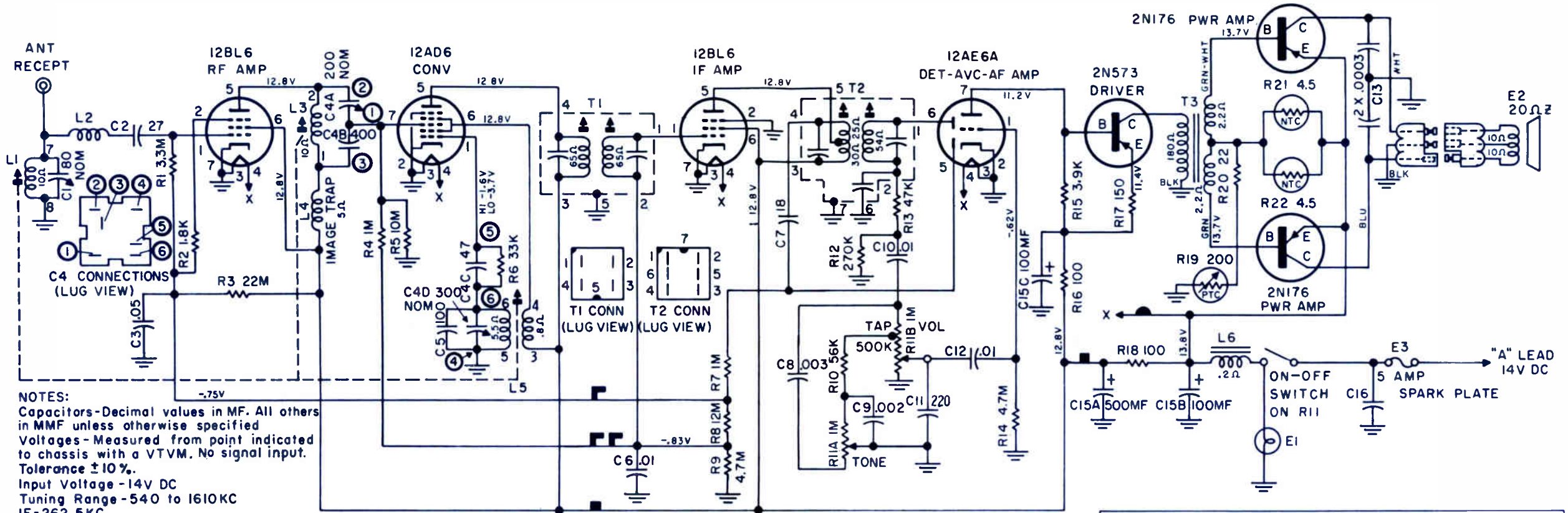


More Data on Reverse Side

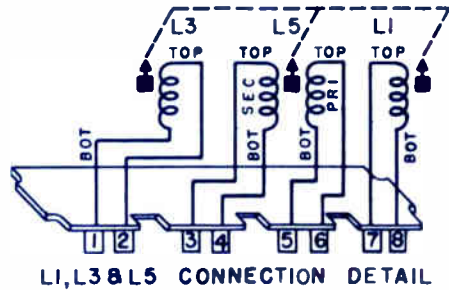
MOTOROLA
Auto Radio,
transistorized
Model 04MA

Electronic Technician
CIRCUIT DIGEST

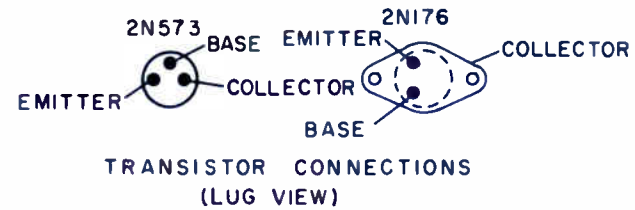
542



NOTES:
 Capacitors-Decimal values in MF. All others in MMF unless otherwise specified
 Voltages-Measured from point indicated to chassis with a VTVM. No signal input. Tolerance $\pm 10\%$.
 Input Voltage -14V DC
 Tuning Range -540 to 1610KC
 IF-262.5KC.

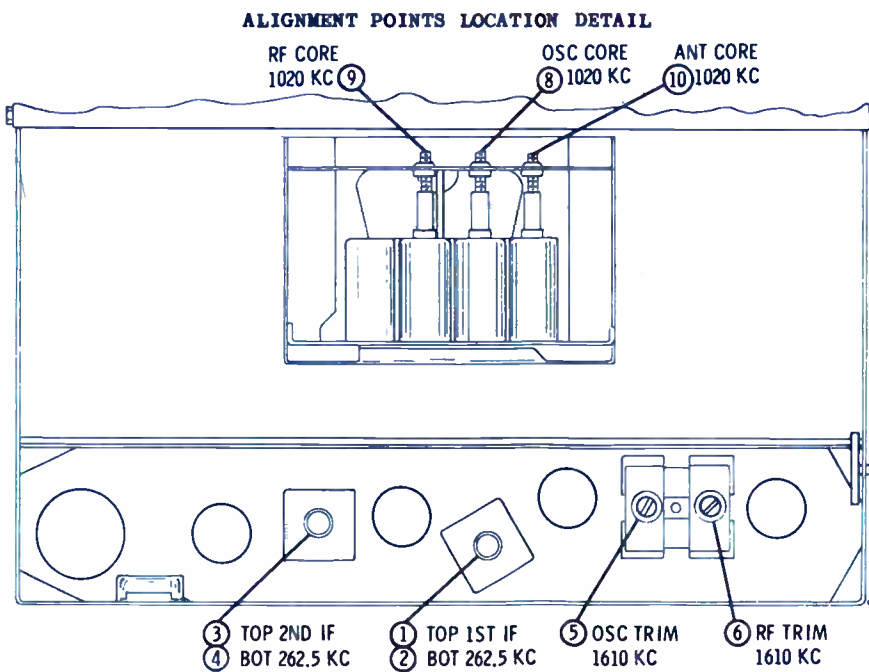
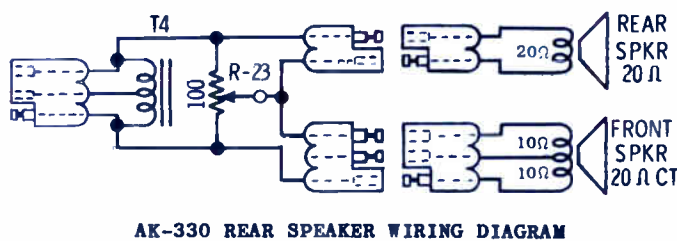
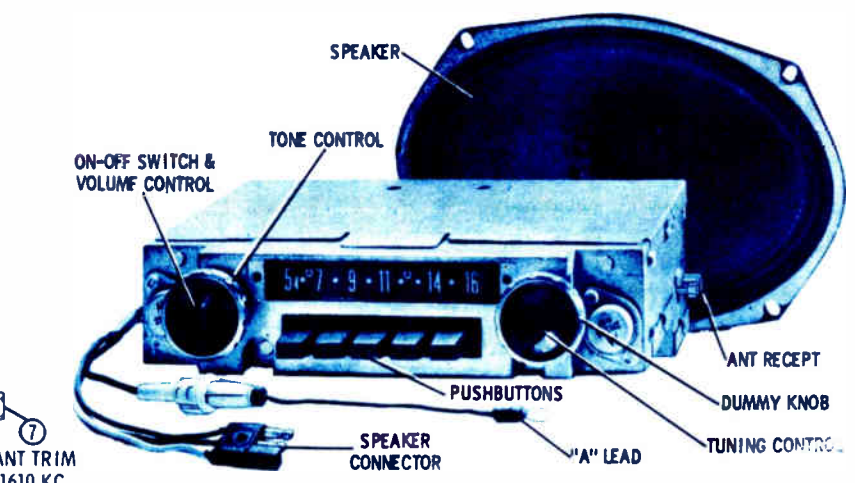


PLATED PANEL WIRING LEGEND



CAUTION
 "A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE

More Data on Reverse Side

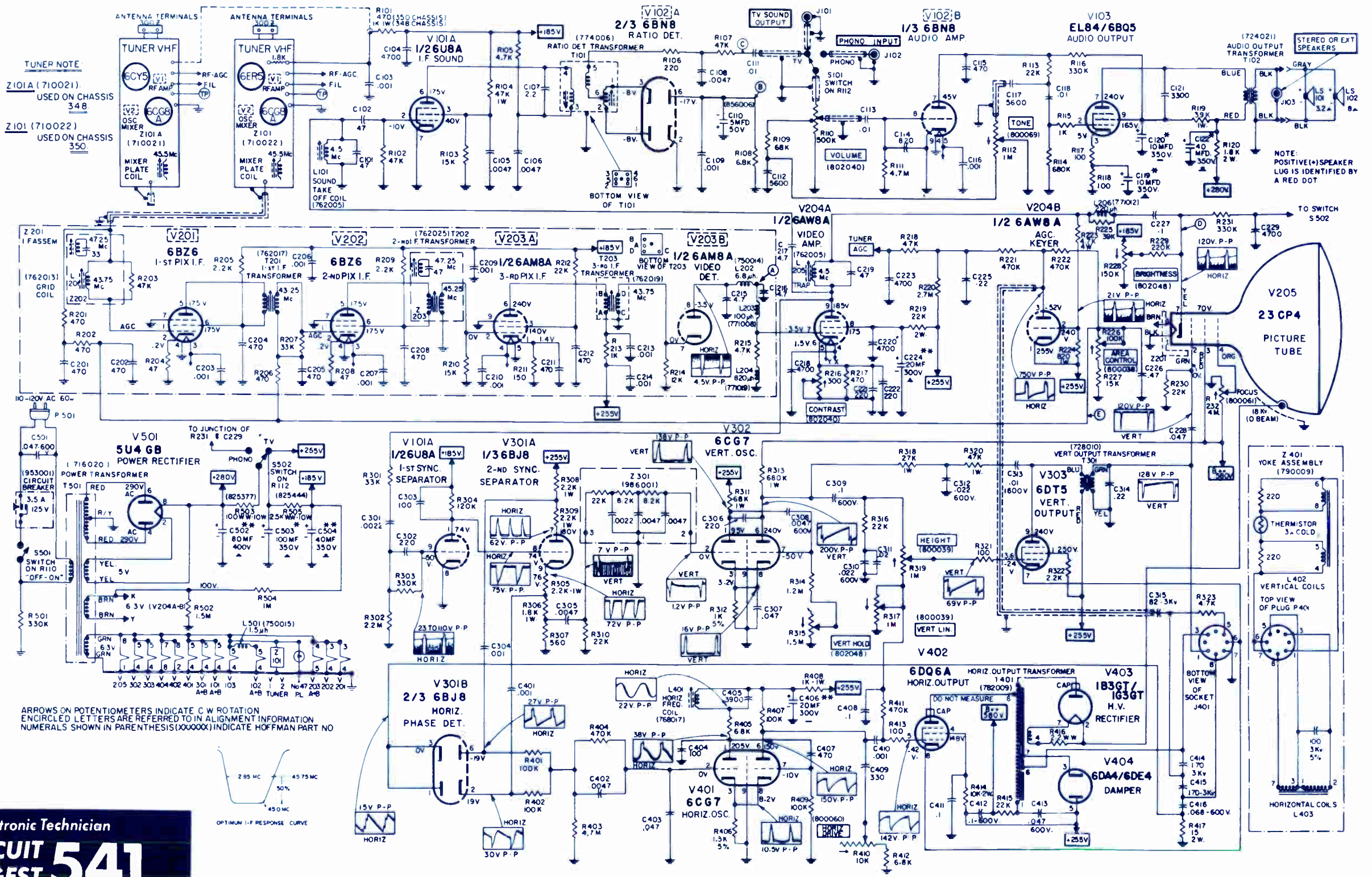
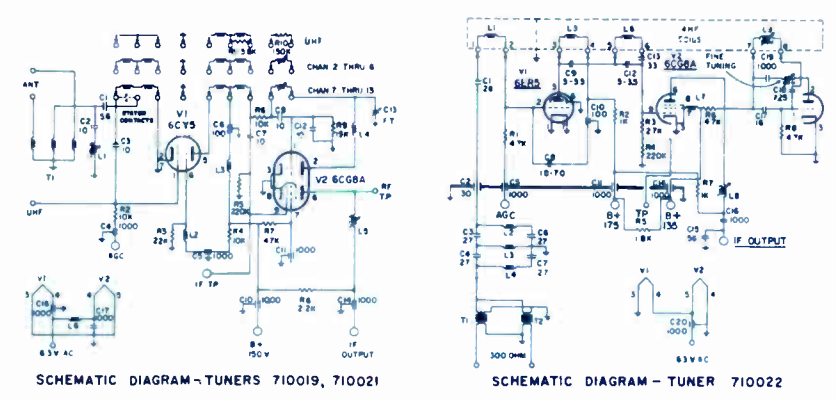
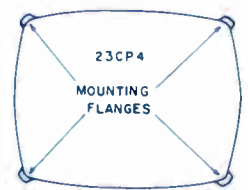


PICTURE TUBE REMOVAL

3653, 3663, 3673, 3683 SERIES

This series, known as the PAN-O-VISION series, uses the new 23" picture tube. The lens is an integral part of the picture tube. The lens is formed to closely fit the face of the picture tube. There is no air space between the lens and the face of the picture tube to collect dust. The only cleaning required on the PAN-O-VISION series is to clean the outer surface of the lens in the same manner as cleaning a window.

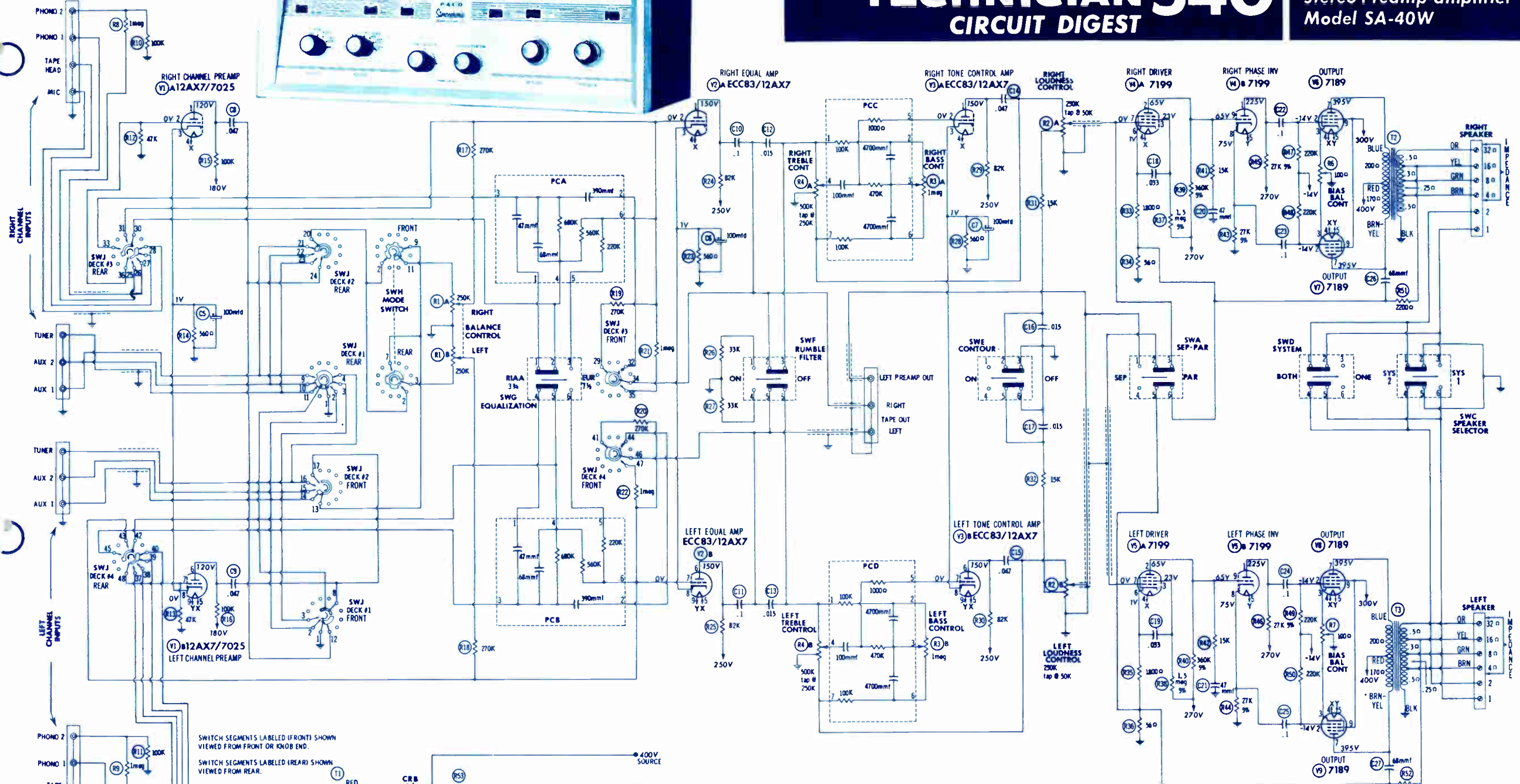
To remove the picture tube, the escutcheon around the edge of the tube is held in place with 4 clips from the rear. The clips are removed by depressing and sliding to the side. The escutcheon can now be pulled out from the front. Located at each corner of the picture tube is a small bracket, held in place with an Allen head screw. Remove the 4 brackets and the entire picture tube assembly can be lifted out of the cabinet. Special flanges are molded into the corners of the lens and serve as the mounting lugs for the picture tube. Reverse the above procedure to reassemble.



ELECTRONIC TECHNICIAN 540

CIRCUIT DIGEST

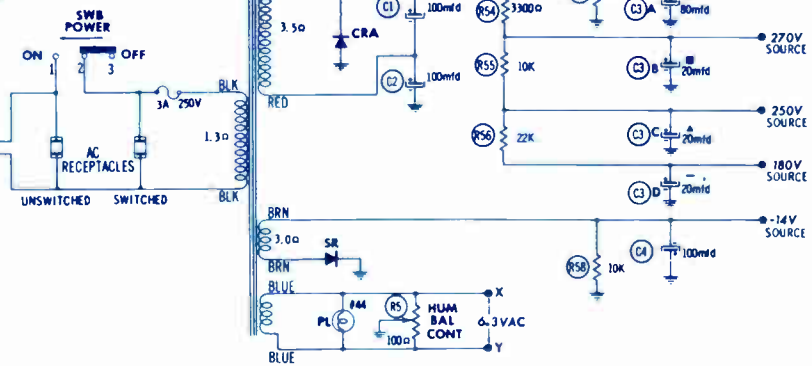
PACO
Stereo Preamp-amplifier
Model SA-40W



SWITCH SEGMENTS LABELED (FRONT) SHOWN VIEWED FROM FRONT OR KNOB END.
SWITCH SEGMENTS LABELED (REAR) SHOWN VIEWED FROM REAR.

SWJ INPUT SWITCH
SHOWN IN "AUX 1" POSITION.
SEQUENCE OF ROTATION:
1. - AUX 1
2. - AUX 2
3. - TUNER
4. - PHONO 1
5. - PHONO 2
6. - TAPE HEAD
7. - MIC

SWJ MODE SWITCH
SHOWN IN "BAL RIGHT" POSITION.
SEQUENCE OF ROTATION:
1. - BAL RIGHT
2. - BAL LEFT
3. - MONO
4. - STEREO
5. - STEREO REV
6. - CHAN RIGHT
7. - CHAN LEFT



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	130K	47K	560 ohms	28 ohms	28 ohms	130K	47K	560 ohms	28 ohms
V2	ECC83	100K	520K	560 ohms	28 ohms	28 ohms	110K	270K	560 ohms	28 ohms
V3	ECC83	100K	750K	560 ohms	28 ohms	28 ohms	100K	750K	560 ohms	28 ohms
V4	7199	33K	1400K	1.6 meg	28 ohms	28 ohms	1800 ohms	100K	27K	400K
V5	7199	33K	1400K	1.6 meg	28 ohms	28 ohms	1800 ohms	100K	27K	400K
V6	7189	NC	220K	50 ohms	28 ohms	28 ohms	NC	1200 ohms	NC	12000 ohms
V7	7189	NC	220K	50 ohms	28 ohms	28 ohms	NC	1170 ohms	NC	12000 ohms
V8	7189	NC	220K	50 ohms	28 ohms	28 ohms	NC	1200 ohms	NC	12000 ohms
V9	7189	NC	220K	50 ohms	28 ohms	28 ohms	NC	1170 ohms	NC	12000 ohms

1. MEASURED FROM POSITIVE (+) TERMINAL OF CRB.
2. MEASURED WITH HUM BAL CONTROL AT APPROX. CENTER OF ROTATION.
NC. NO CONNECTION.

- All resistors in ohms (ohm), 10% tolerance, 1/2 watt, unless otherwise noted.
- All capacitors in mfd, 20% tolerance, unless otherwise noted.
- K = 1000
- meg = 1,000,000

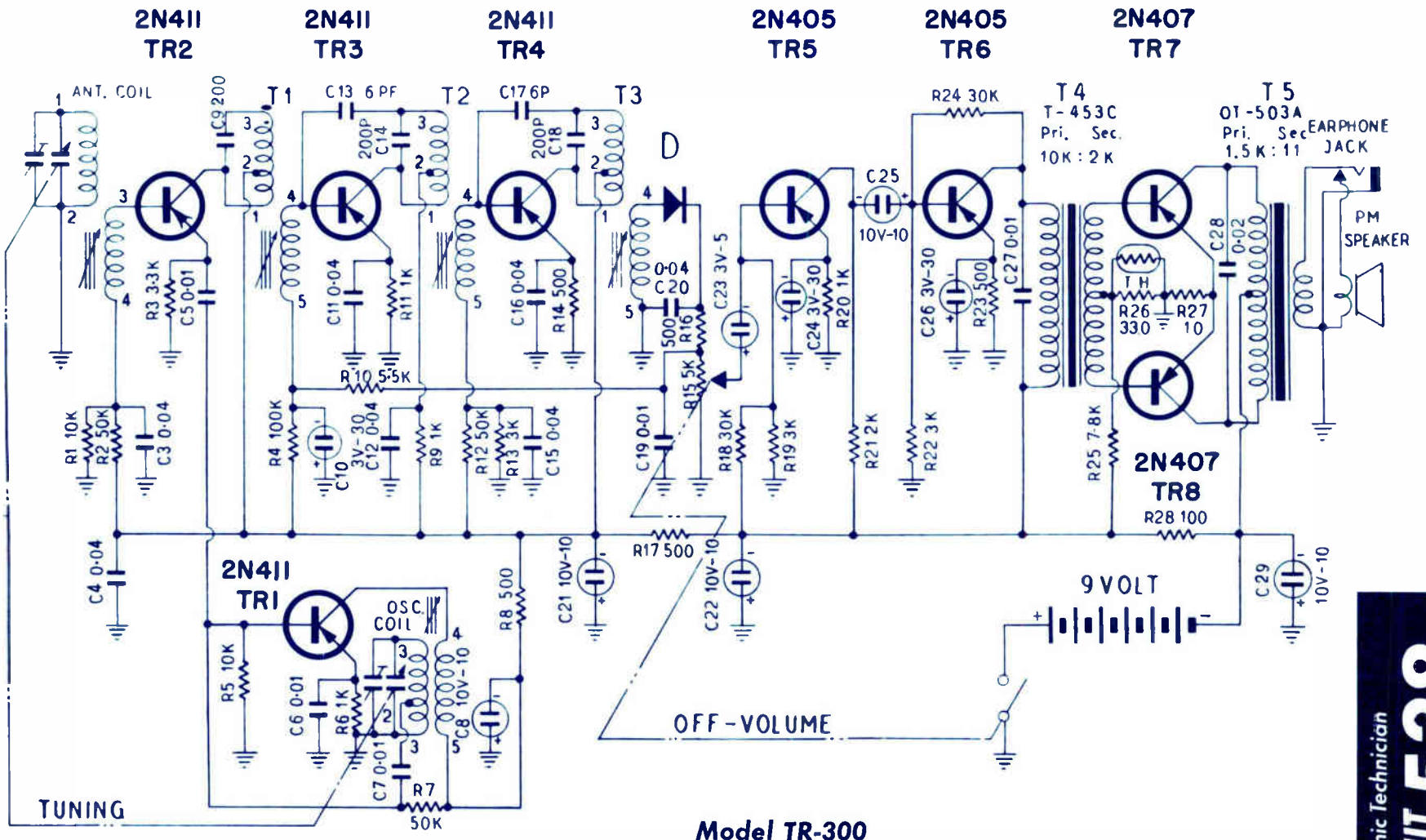
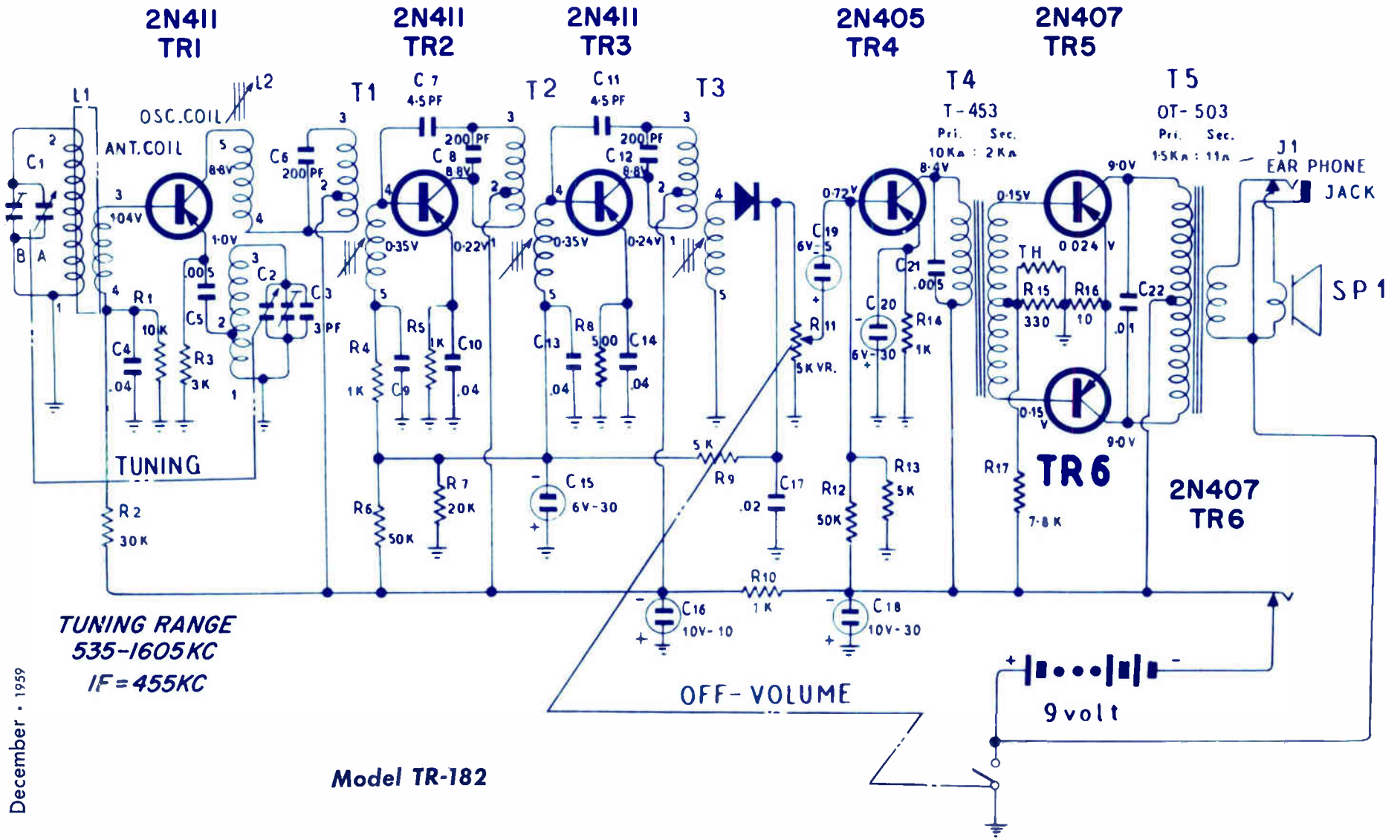
RESISTANCE MEASUREMENTS ±20%
All resistance measurements taken under the following conditions:

- Input selector set to "Aux. 1".
- Loudness control at full clockwise position.
- Mode switch set to "Stereo" position.
- Bass and Treble controls set at center of rotation.
- Bias Bal. controls set at center of rotation.
- All readings taken with 20,000 ohms-per-volt VOM or equivalent.
- All readings taken to chassis ground unless otherwise stated.
- Line cord disconnected from wall receptacle.
- Set Balance control to full clockwise position.

VOLTAGE MEASUREMENTS ±20%
All voltage measurements taken under the following conditions:

- Input selector set "Aux. 1" position.
- Loudness control at full counterclockwise position.
- No signal present.
- All reading taken to chassis ground with a 20,000 ohms-per-volt VOM, and line voltage maintained at 117 volts AC.
- Voltage from pins 4 and 5 to pin 9 of V1, V2, and V3 should be 6.3 VAC.
- Voltage from pin 4 to pin 5 of V4, V5, V6, V7, V8, and V9 should be 6.3 VAC.

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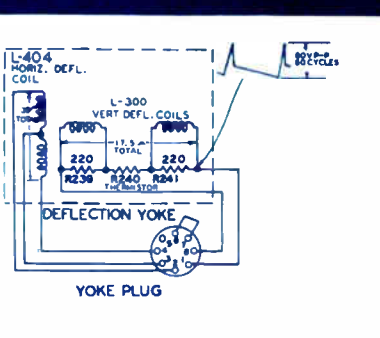
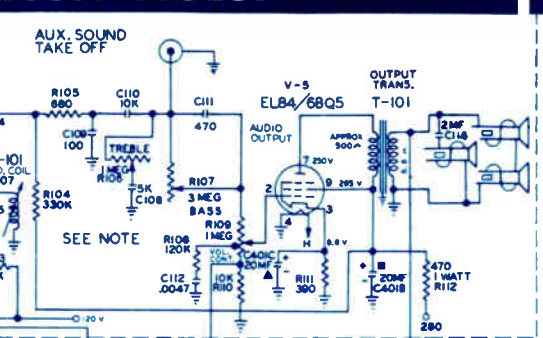
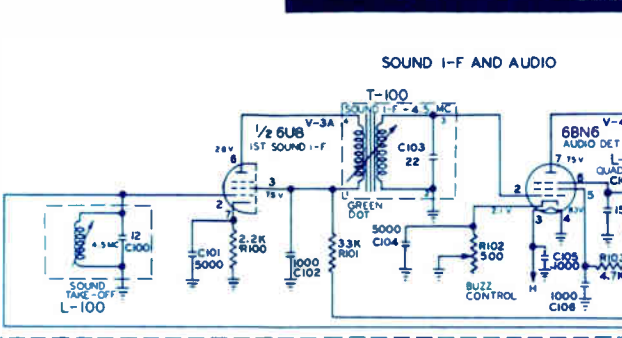
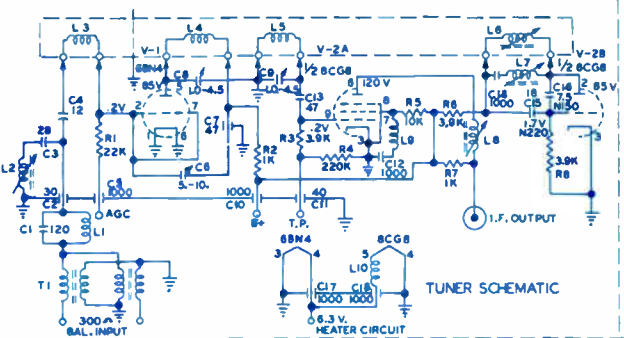
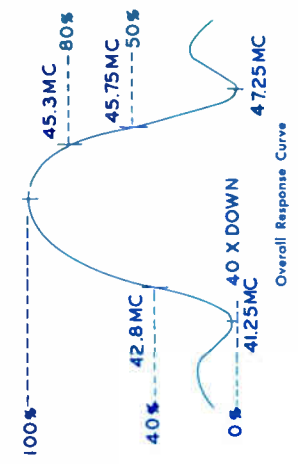
ELECTRONIC TECHNICIAN 537

CIRCUIT DIGEST

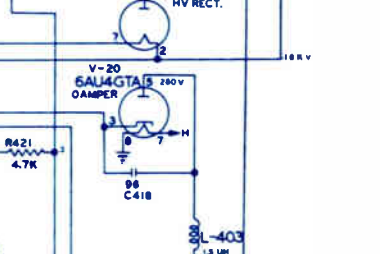
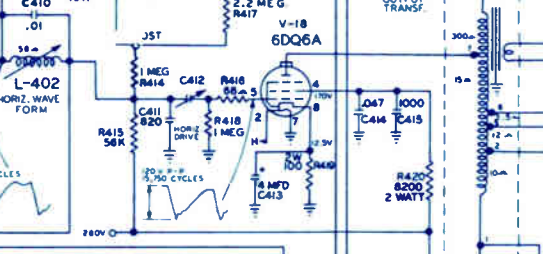
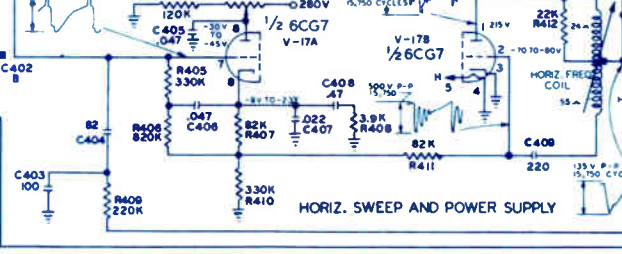
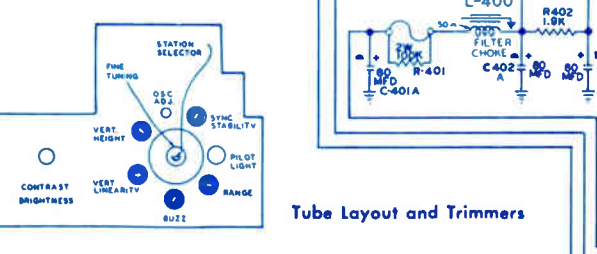
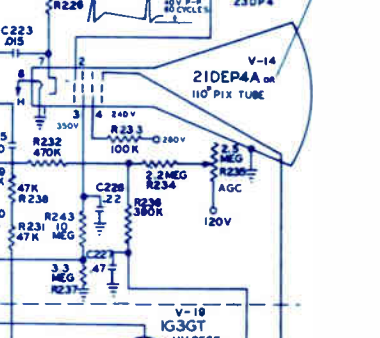
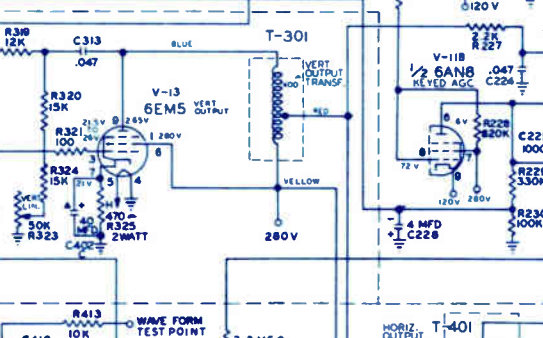
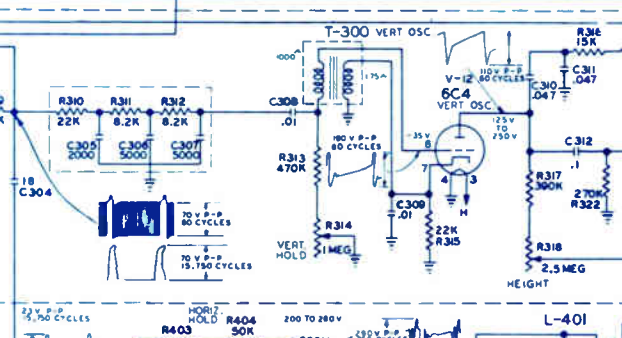
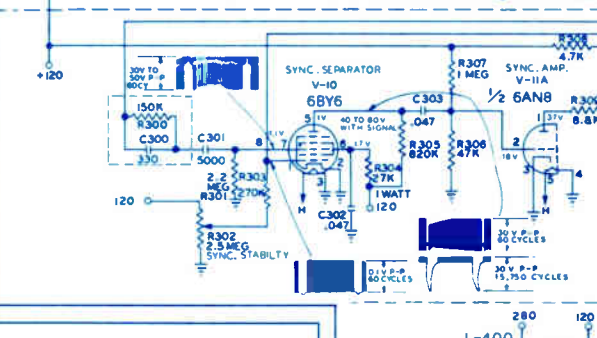
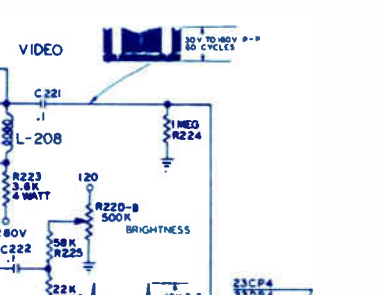
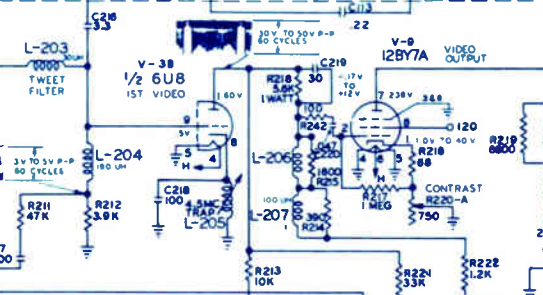
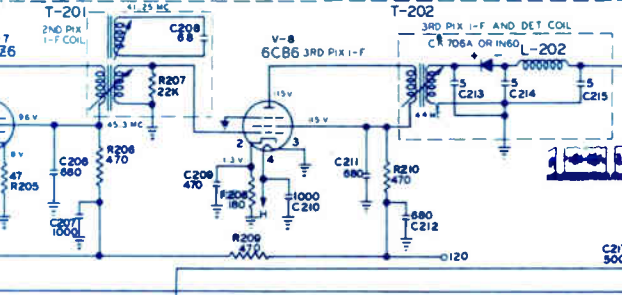
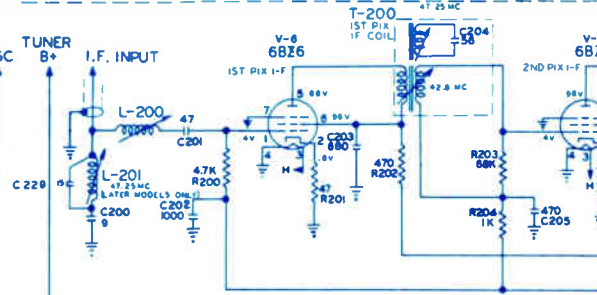
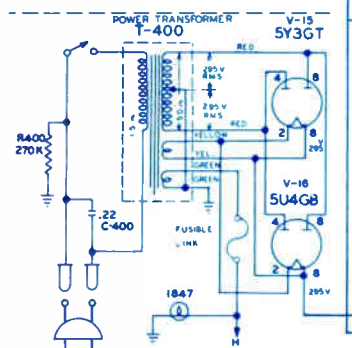
MATHES
TV Models 7323, 9323

December • 1959

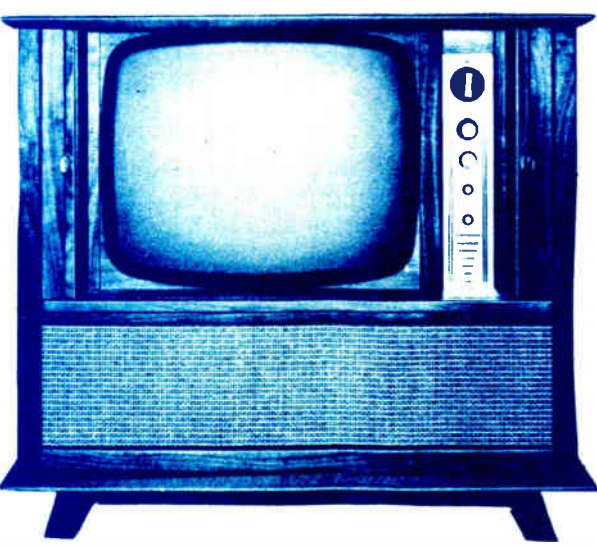
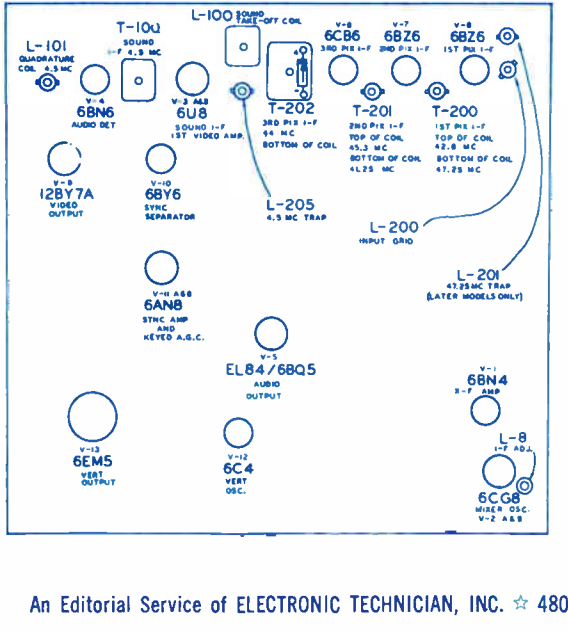
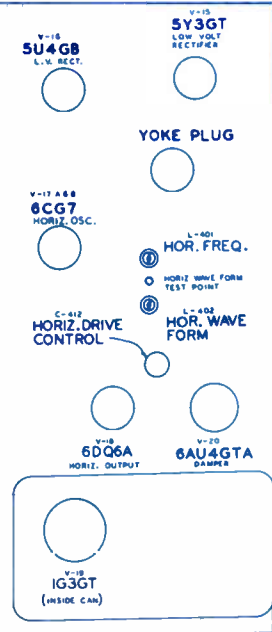
SCHEMATIC IS DIVIDED INTO FIVE SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS.
COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.
K=1000



NOTE:
ON SOME MODELS C109 IS .001 MMF AND C108, C111, R106 AND R107 ARE NOT USED.



Tube Layout and Trimmers



TUBE COMPLEMENT					
Symbol	Type	Function	Symbol	Type	Function
V-1	6B8 or 6ER5	R-F Amplifier	V-14	23CP4	Picture Tube 23" Glass Rectangular (Electrostatic)
V-2A & B	6CG8A	R-F Osc. & Mixer	V-15	5Y3GT	Low Voltage Rectifier
V-3A & B	6U8A	1st Sound I-F & 1st Video Amplifier	V-16	5U4GB	Low Voltage Rectifier
V-4	6B8	Audio Detector	V-17A & B	6CG7	Horizontal AFC & Horizontal Oscillator
V-5	6BQ5	Audio Output	V-18	6DQ6A	Horizontal Output
V-6	6BZ6	1st Pix I-F Amp.	V-19	1G3GT	High Voltage Rectifier
V-7	6BZ6	2nd Pix I-F Amp.	V-20	6AU4-GTA	Damper
V-8	6CB6	3rd Pix I-F Amp.			
V-9	12BY7A	Video Output			
V-10	6B8	Sync. Separator			
V-11A & B	6AN8	Sync. Amp. & Keyed AGC			
V-12	6C4	Vertical Oscillator			
V-13	6EM5	Vertical Output			

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CIRCUIT DIGEST 537

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CIRCUIT DIGESTS

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Models 930, 933

GONSET 552
Citizens Band transmitter-receiver
Model G-12

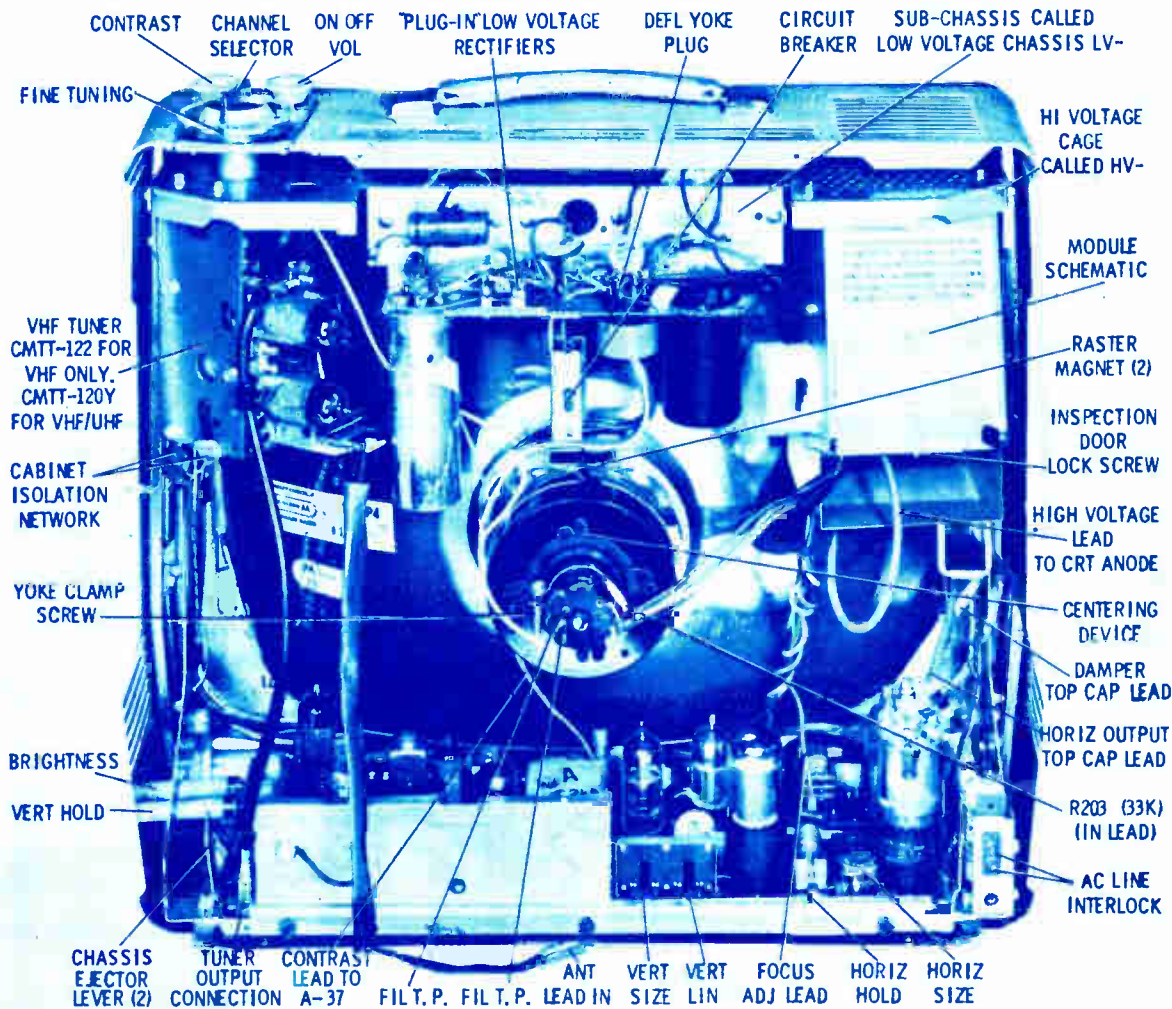
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Models HP3200 & U, HP3300 & U,
HP3301 & U

ZENITH 549
TV Chassis 16E21, 16E21Q, 16D21,
16D21Q

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INITIAL INSTALLATION ADJUSTMENTS



REAR VIEW OF RECEIVER

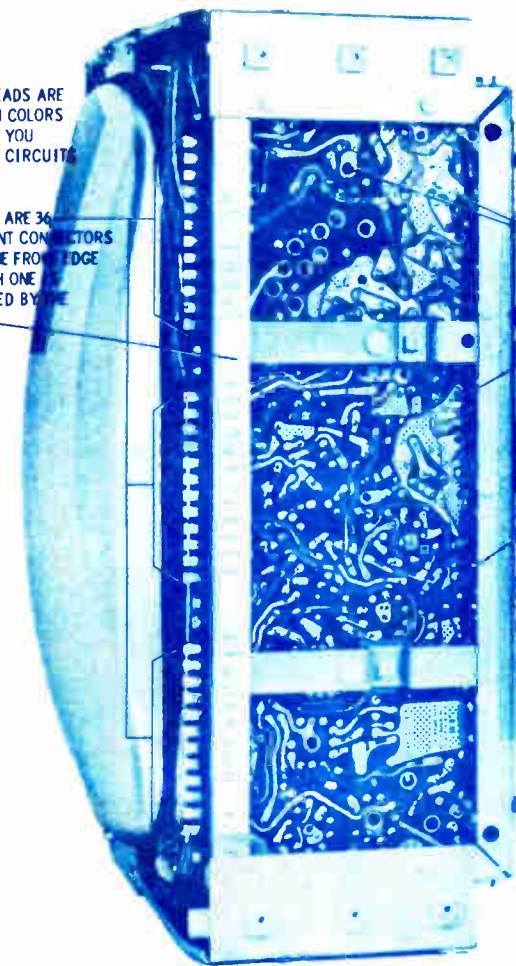
1. THE LEADS ARE CODED IN COLORS TO GUIDE YOU THRU THE CIRCUITS

2. THERE ARE 36 TEST POINT CONNECTORS ALONG THE FRONT EDGE AND EACH ONE IDENTIFIED BY A LABEL

3. EACH TUBE TYPE IS IDENTIFIED RIGHT ON THE CHASSIS

4. A TUBE PIN NUMBER IS SHOWN RIGHT ON THE CHASSIS

5. A LOCATING PIN OF EVERY RESCAP & MODULE IS SHOWN RIGHT ON THE CHASSIS



More Data

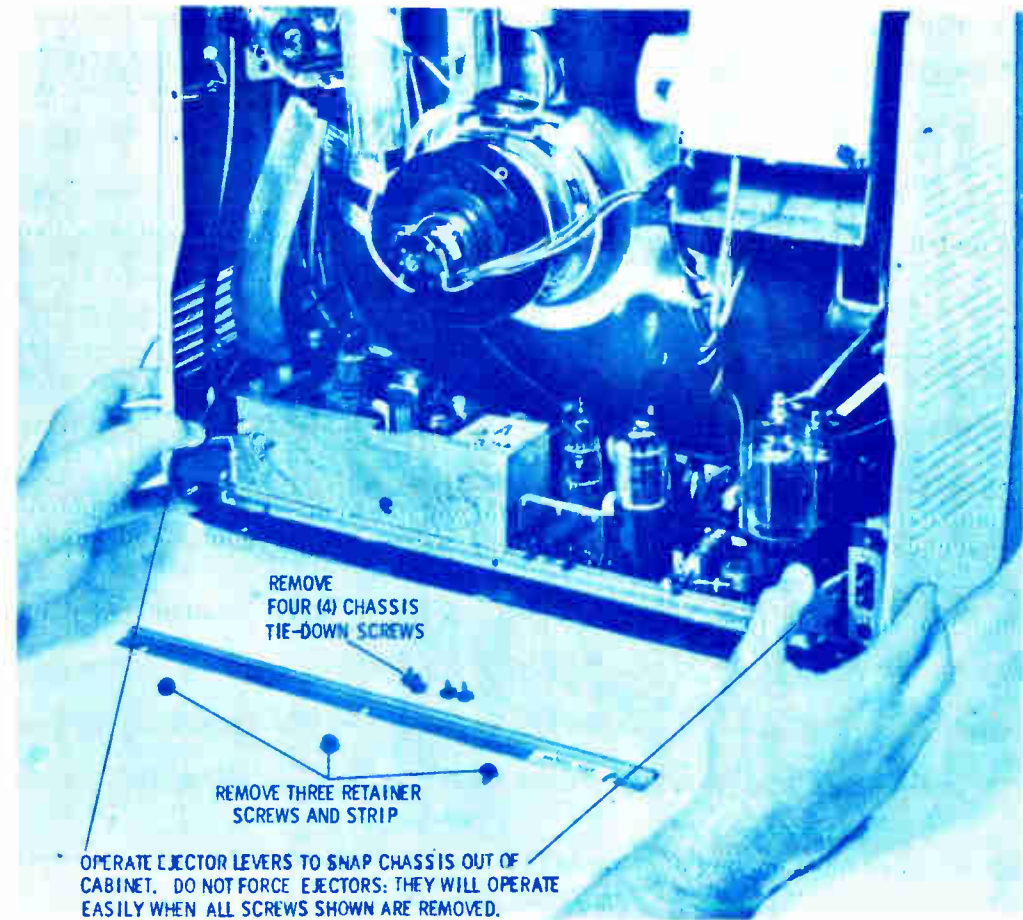
on Reverse Side

MOTOROLA
TV Chassis TS-433
Model 17P6 Series

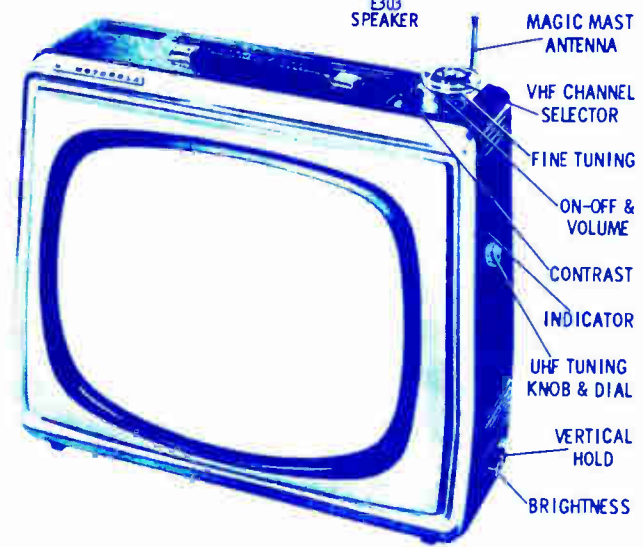
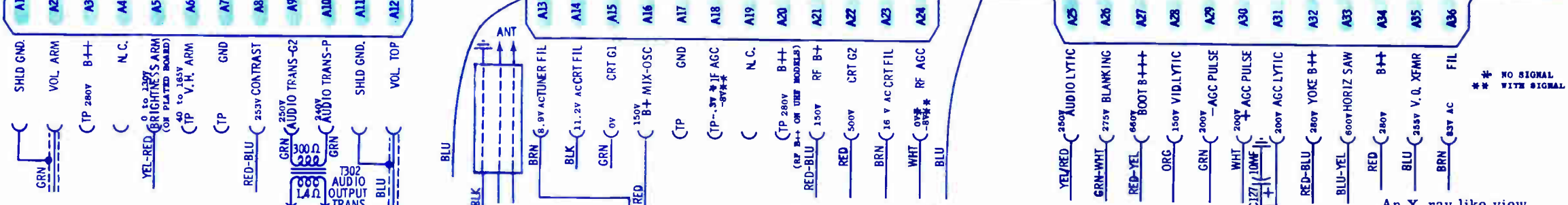
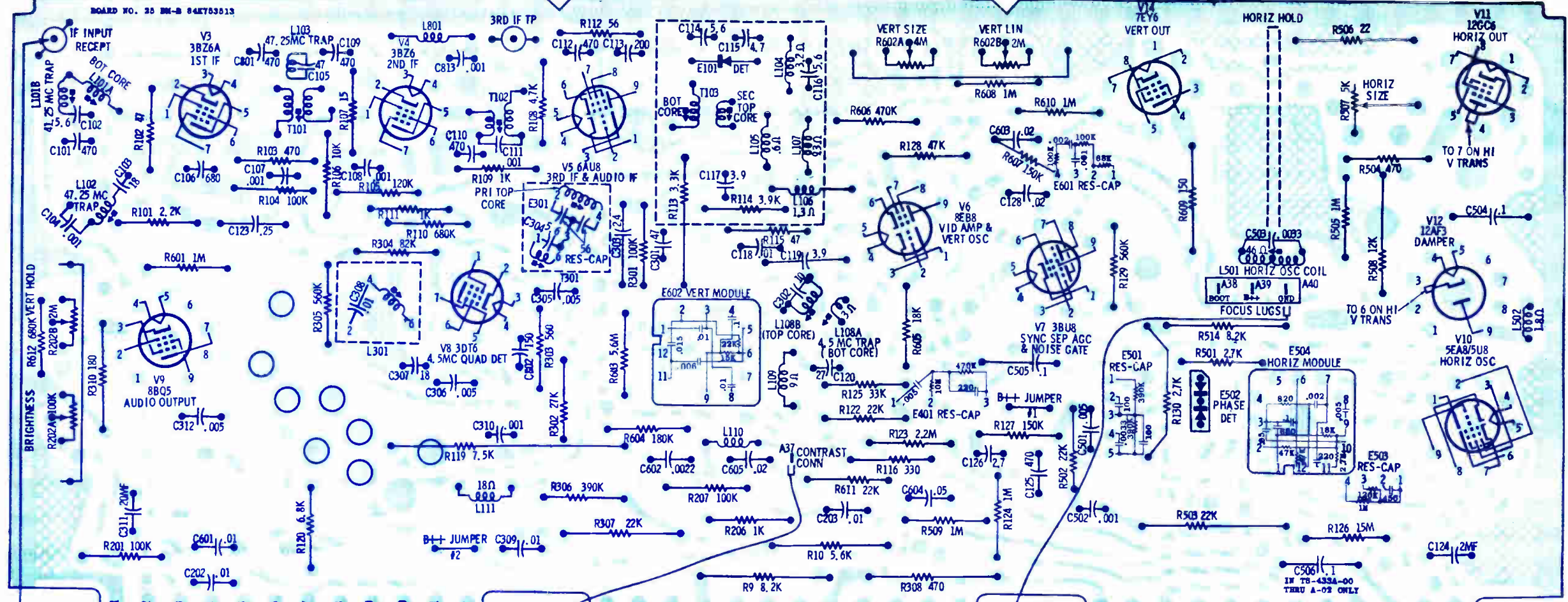
Electronic Technician
CIRCUIT DIGEST

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Red.....B+
Green and Red.....Plates (P)
Yellow and Red.....Screen grids (G2)
Yellow.....Cathodes (K)
Copper.....Filament wiring
Checkerboard copper.....ground
Black.....duplicates the route of the plating on the opposite side of the plated board to give an X-ray-like view

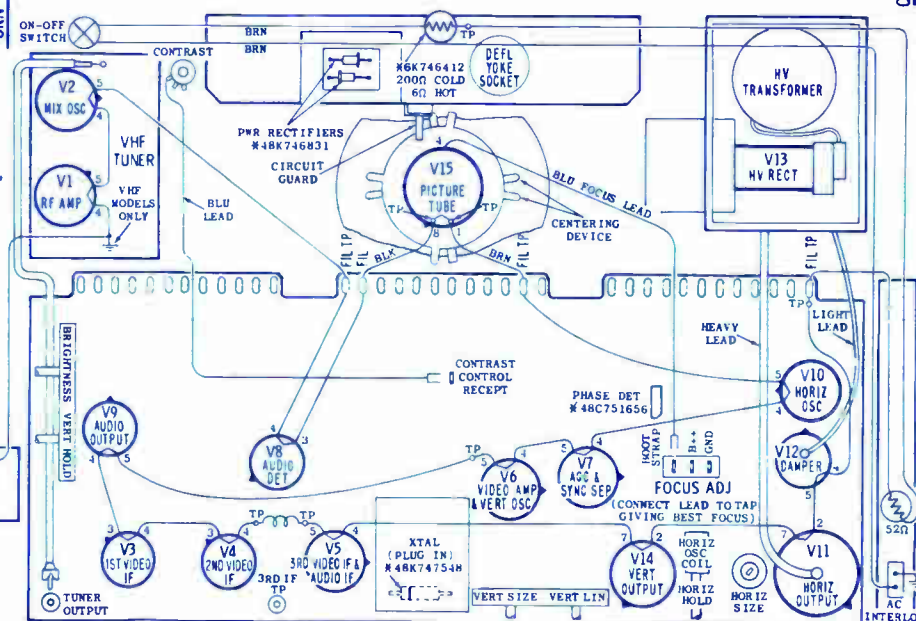


BOARD NO. 25 BM-B 84E75313



TUBE LOCATION, FILAMENT GUIDE AND FOCUS INFORMATION

KEYING POSITION
 * = MOTOROLA PART NO.
 TP = TEST POINT



TUBE LIST

TUBE REF	STANDARD TYPE
V1	4E58
V2	5E8
V3	3BZ6A
V4	3BZ6
V5	6AU8
V6	8E88
V7	3B8
V8	3DT6
V9	8BQ5
V10	5E8
OR 5U8	
V11	12CC6
V12	12AF3
V13	152A
V14	7EY6
V15	17DTP4
V16	2AF4A

An X-ray like view can be obtained by placing the plated-chassis-board wiring detail near the receiver so it is in a similar position. With this system there can be no unknown areas.

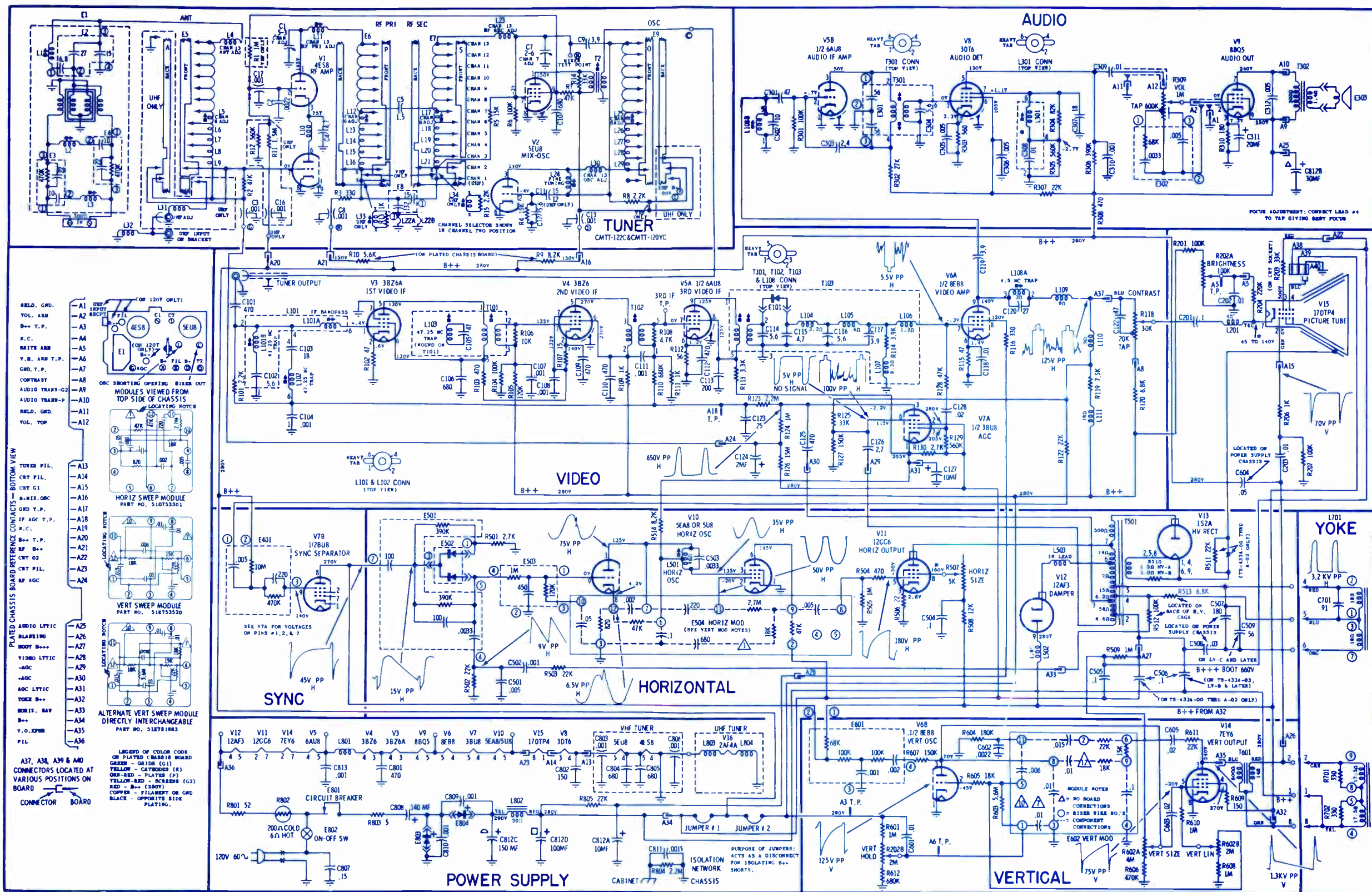
More Data on Reverse Side

More Data on Opposite Page

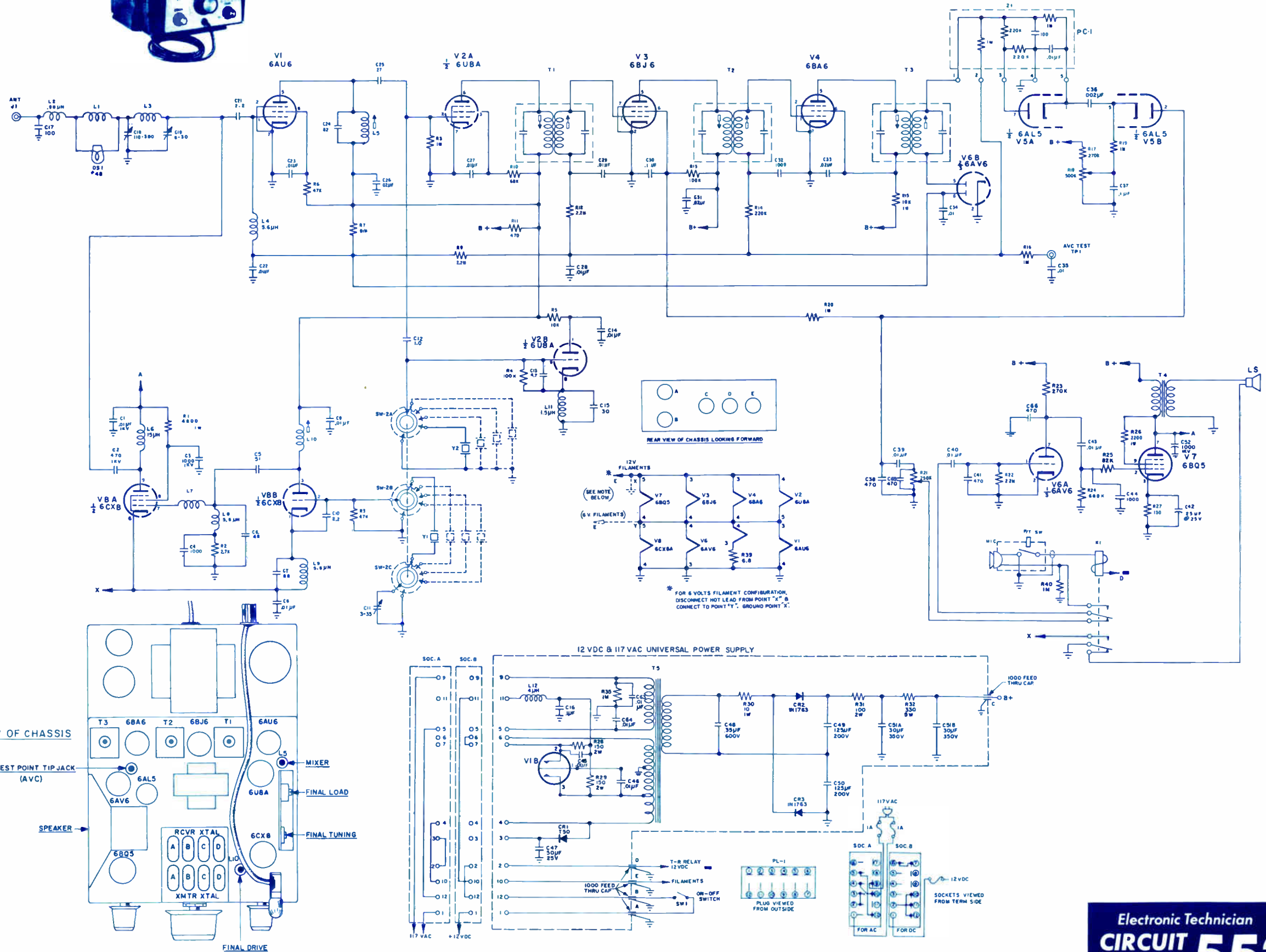
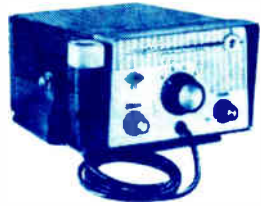
MOTOROLA
 TV Chassis TS-433
 Model 17P6 Series

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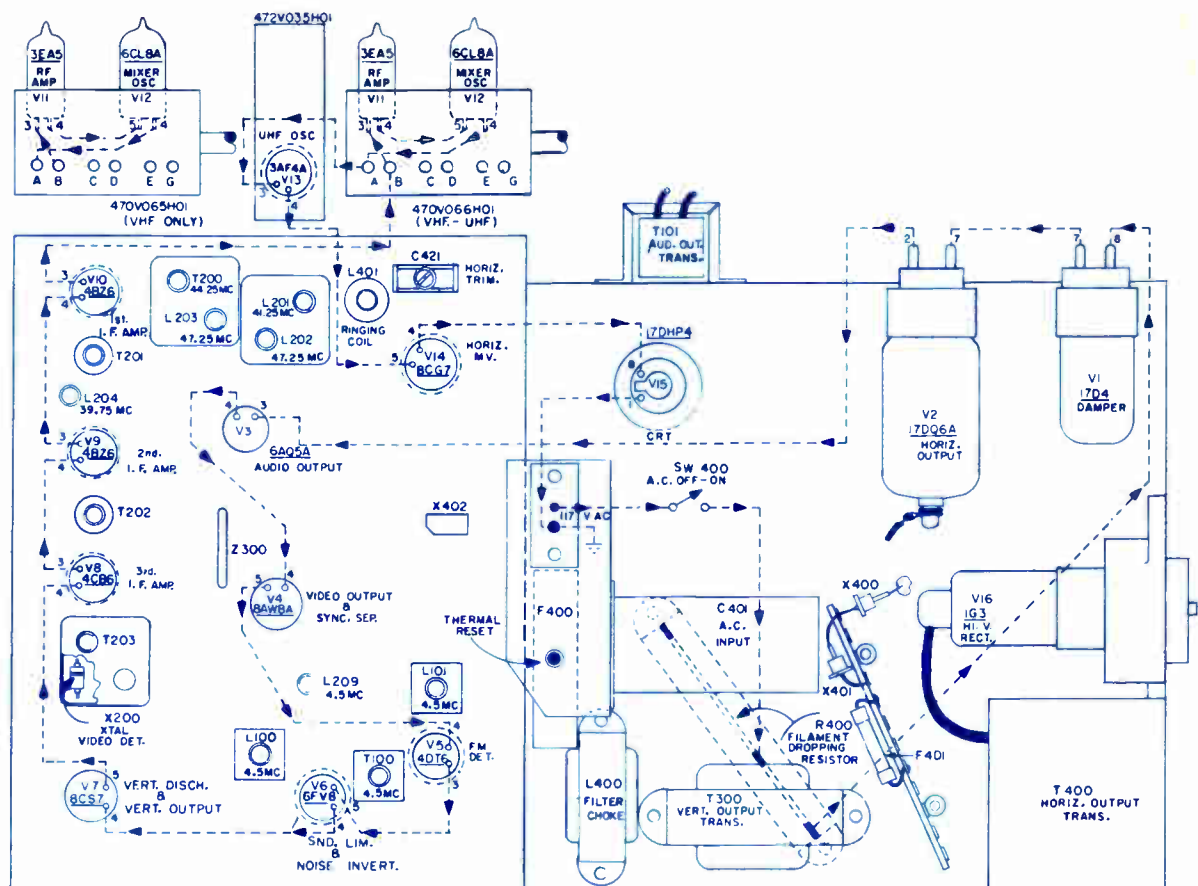
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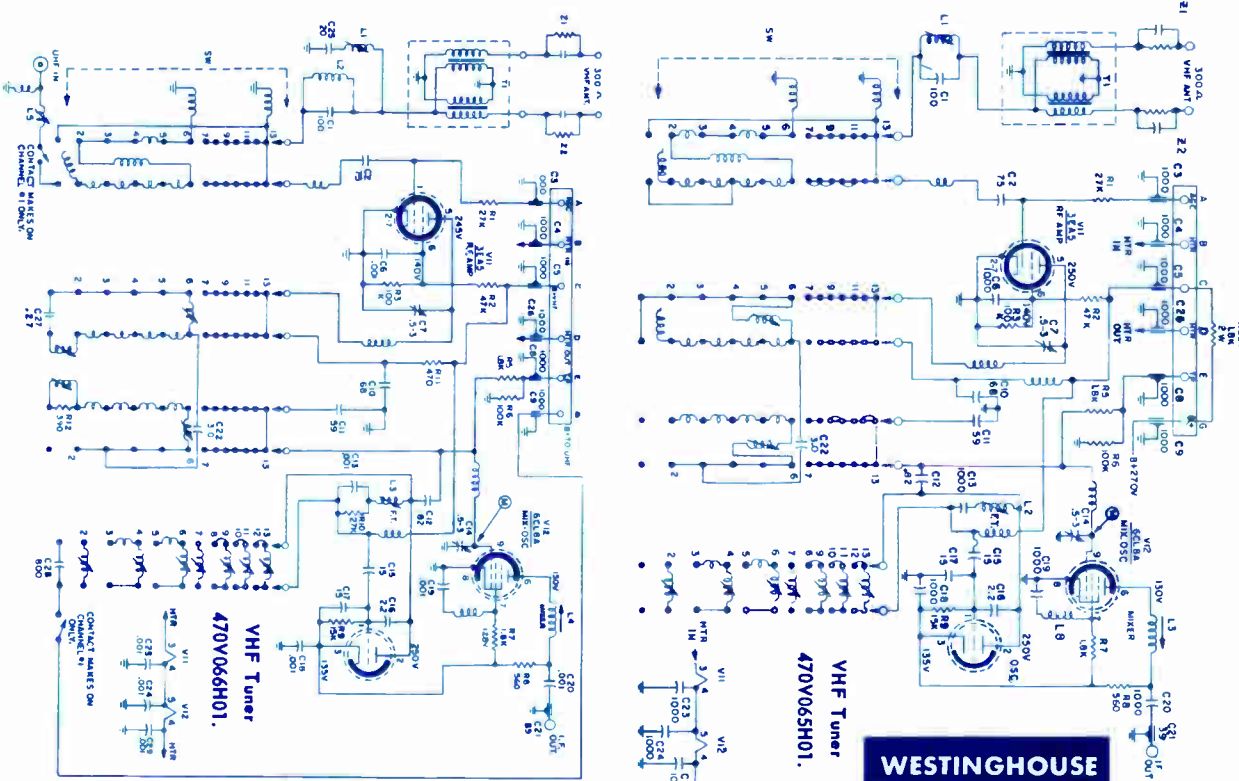
THIS SCHEMATIC COVERS PLATED CHASSIS BOARDS CODED TS-433A-00 THRU A-B. LOW VOLTAGE CHASSIS LV-A THRU C. HI VOLTAGE CHASSIS HV-B AND TUNERS CMTT-122A THRU C & CMTT-120Y A THRU C. IF THE RECEIVER YOU ARE WORKING ON SHOULD HAVE A PLATED CHASSIS BOARD, OR RELATED SECTION, WHICH IS STAMPED WITH A CODE LETTER OR NUMBER LATER THAN THAT SHOWN ON THIS SCHEMATIC... THE DIAGRAM WILL STILL BE APPLICABLE SINCE THE CHANGES WILL BE SLIGHT.



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Top view of chassis.

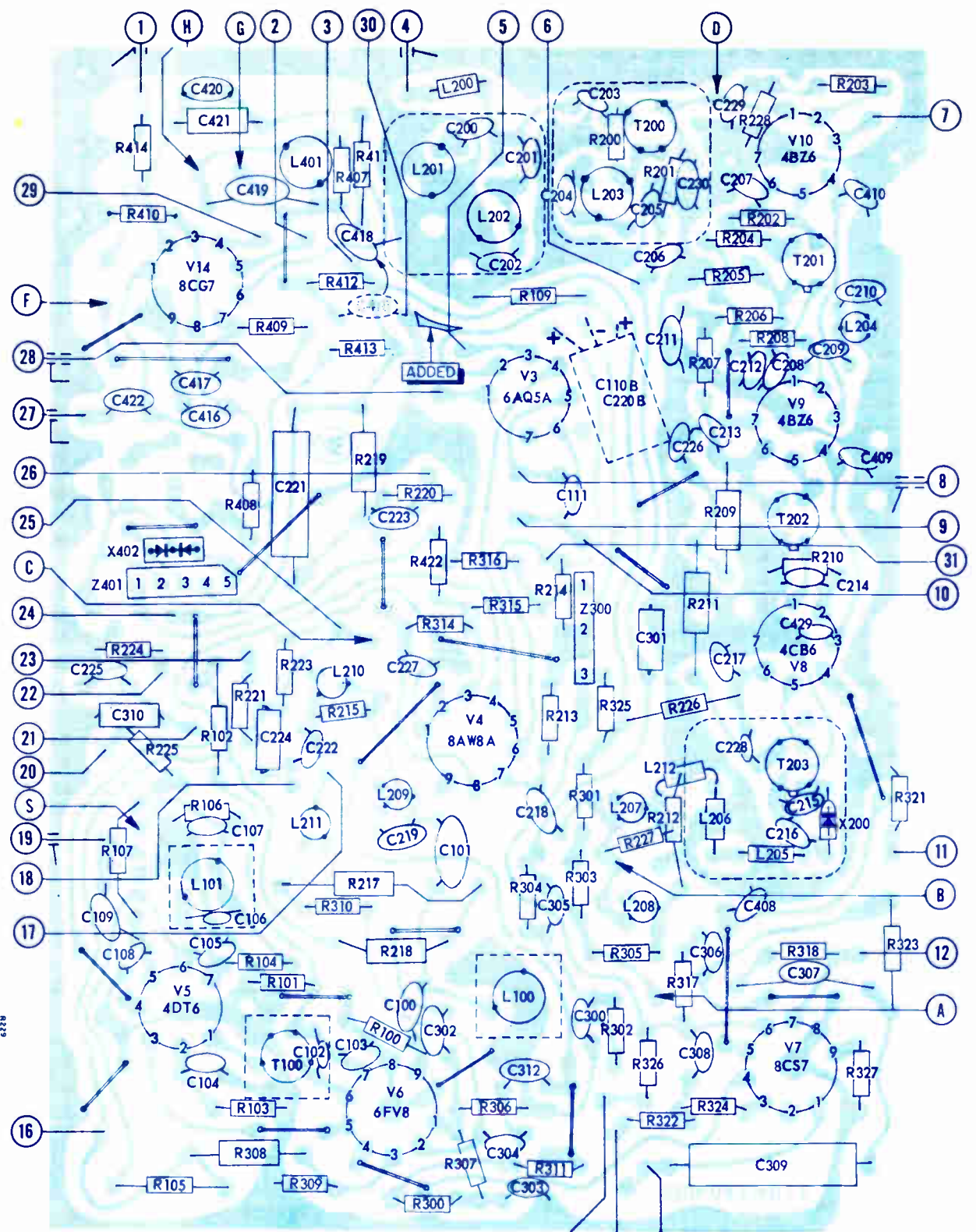


More Data on Reverse Side

WESTINGHOUSE
TV Chassis V-2384-1,
2384-2

Electronic Technician
CIRCUIT DIGEST

551



Bottom view of PC board showing location of top components in solid outlines. Tube pin numbering is for bottom of socket.

- | | | | |
|----------------------|--------------------------------|-----------------------------------|--|
| 1. Horiz Hold R415 | 11. R320, Vert Lin, bottom | 22. CRT pin #3 | TEST POINTS
A. AGC for 1st IF:
also AGC for tuner
B. Video detector
C. CRT cathode
D. 1st IF input
F. Horiz MV
G. Ringing coil
H. Ringing coil
S. FM sound |
| 2. Tuner filament | 12. R319 Vert Hold | 23. R222 Brightness control, arm | |
| 3. Tuner B+ | 13. T300 Vert output | 24. R222 Brightness control, top | |
| 4. Tuner to IF input | 14. R320 Vert Lin Control, Arm | 25. CRT pin #7 | |
| 5. Pin 2 of 17DQ6A | 15. R328 Height control, arm | 26. R216 Contrast control, bottom | |
| 6. Tuner AGC | 16. L400 Hi B+ | 27. R416 grid of Horiz output | |
| 7. Tuner filament | 17. R216 Contrast control, top | 28. R108 Volume control, arm | |
| 8. T101 primary | 18. R216 Contrast control, arm | 29. CRT pin #8 | |
| 9. Audio B+ | 19. R108 Volume control, top | 30. *To C110B | |
| 10. T101 primary | 20. CRT pin #3 | 31. *To C220B | |
| | 21. T300 Vert output | * Not on early boards | |

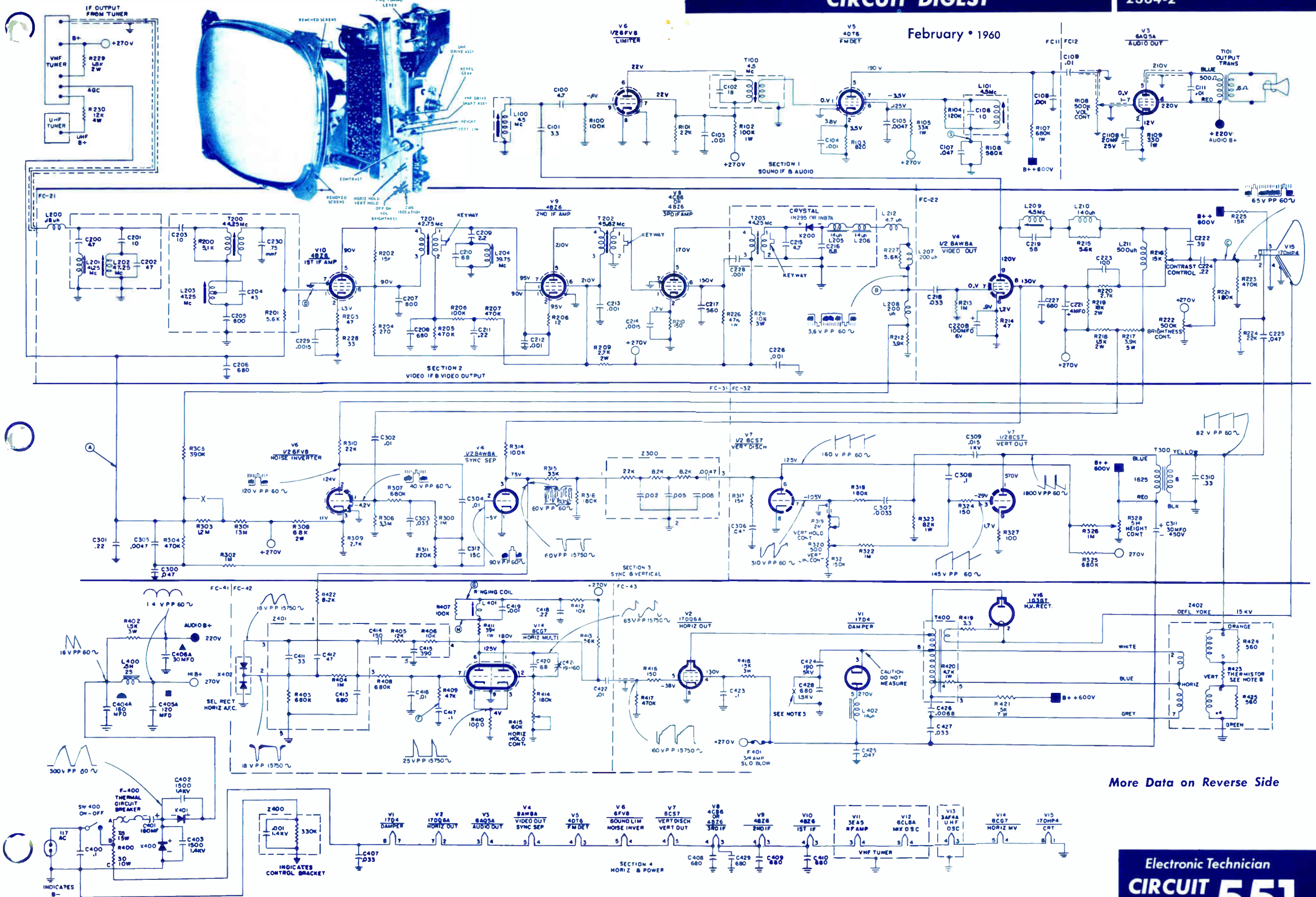
Always use an isolation transformer between the power source and the receiver line input when servicing. After receiver repair, check resistance between the B- side of the receiver and the control mounting bracket (line cord disconnected). A resistance of less than 300,000 ohms indicates a short circuit (or leakage) to metal parts which are accessible. Remove the cause of leakage before the set is released.

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CIRCUIT DIGEST

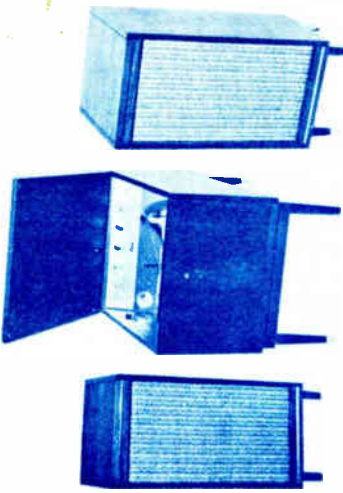
WESTINGHOUSE
TV Chassis V-2384-1,
2384-2

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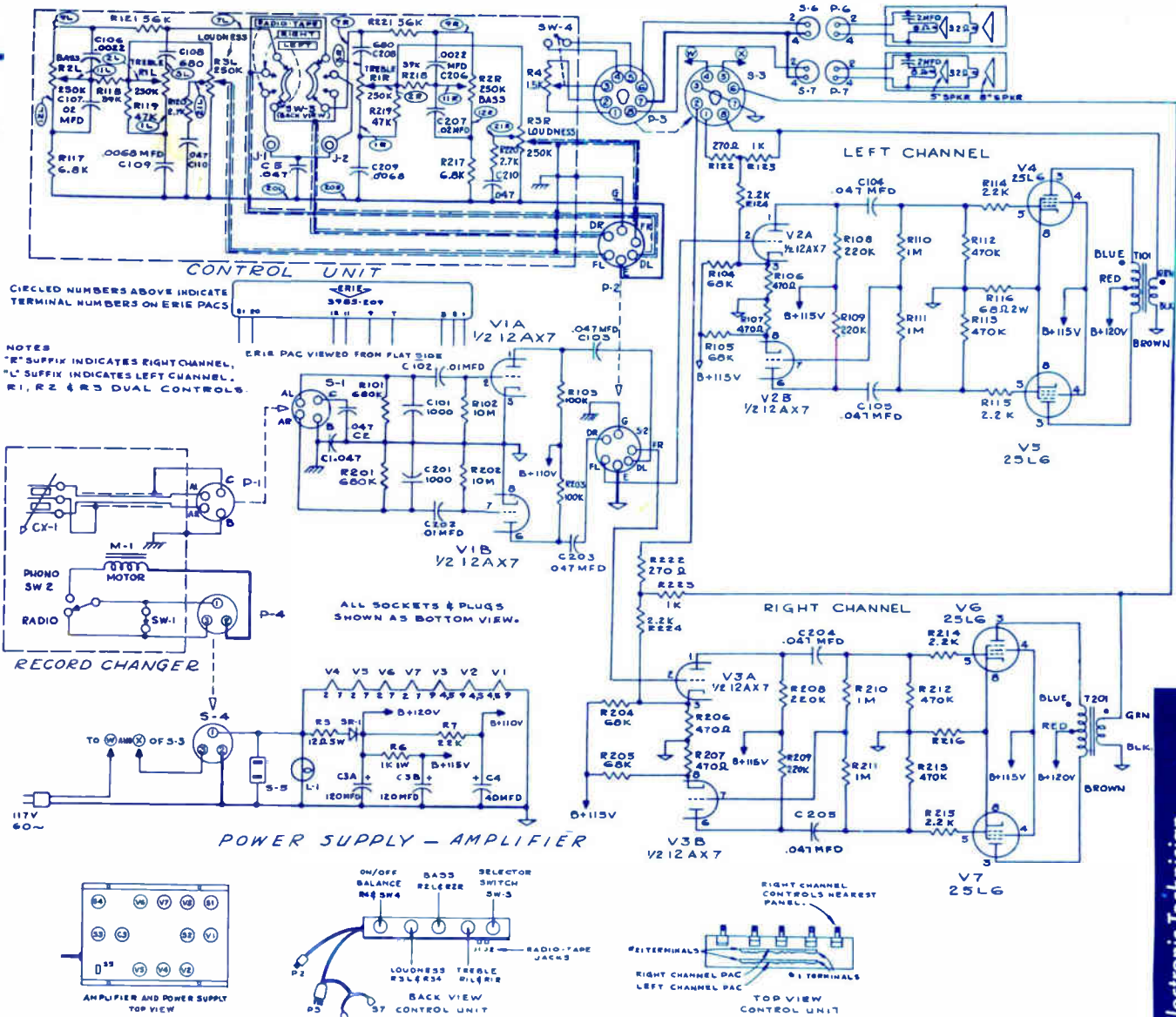


February • 1960

930 & 933 AMPLIFIER VOLTAGES		1	2	3	4	5	6	7	8	9
V1	95	95	0	6.5VAC	6.5VAC	90	0	0	0	0
V2	85	0	.75	6.5VAC	6.5VAC	90	0	0	0	13VAC
V3	90	0	.85	13VAC	13VAC	75	0	0	0	18.5VAC
V4	NC	117VAC	135	135	0	85	85VAC	8	0	0
V5	NC	85VAC	135	135	0	NC	70VAC	8	0	0
V6	NC	70VAC	135	135	0	75	45VAC	8.5	0	0
V7	NC	45VAC	135	135	0	NC	18.5VAC	8.5	0	0

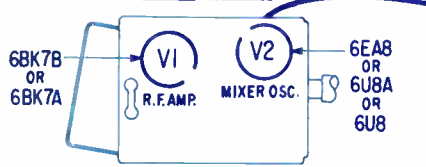


CAPITOL
Stereo Phonograph
Models 930, 933



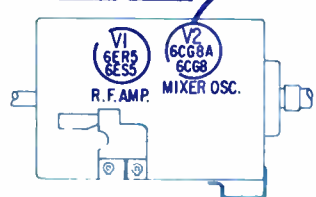
BANDSWITCH TUNERS (SOME MODELS)

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175-151, 175-131 ("U" MODELS)



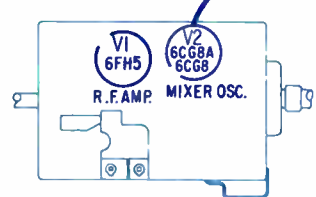
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175-136 (SPACE COMMAND)
175-134
175-133 ("U" MODELS)

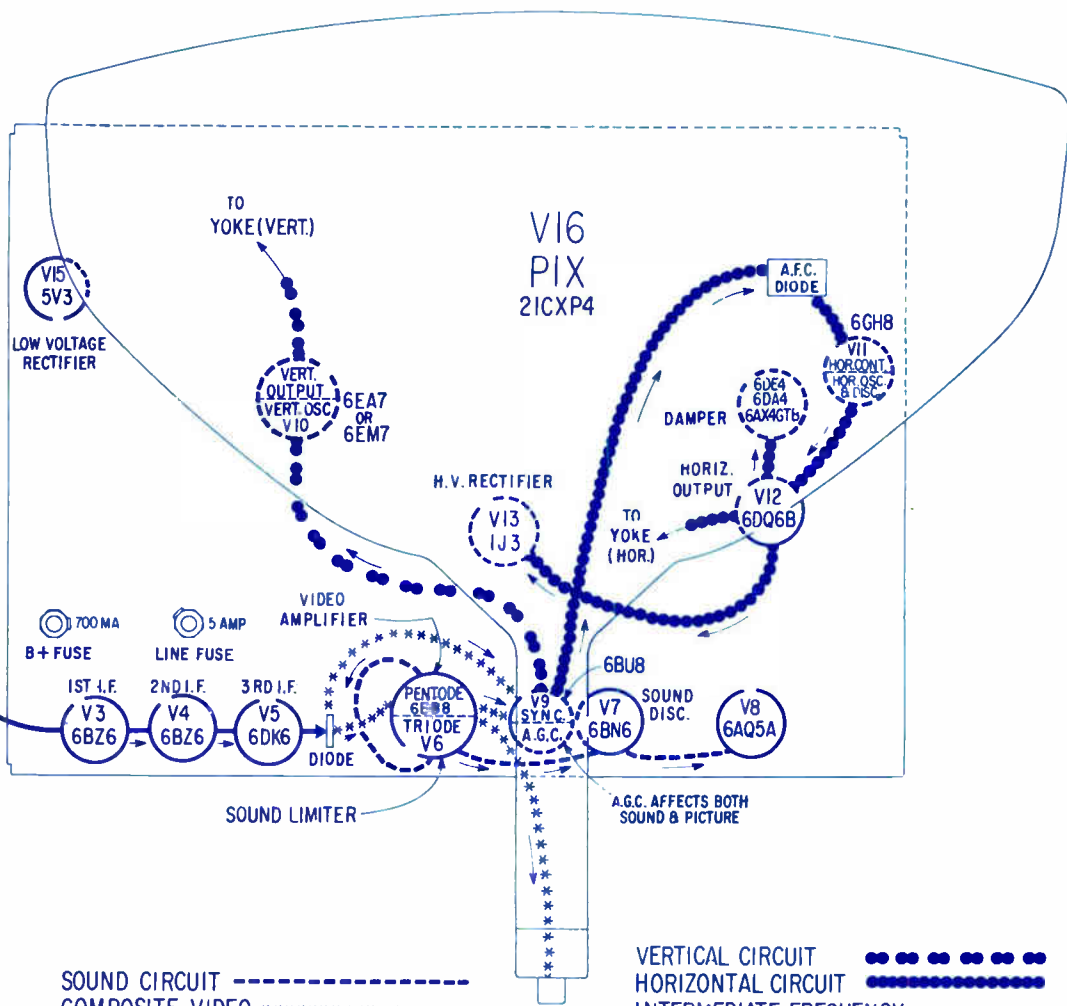


TARGET TUNERS (SOME MODELS)

175-144
175-143 ("U" MODELS)



TUBE POSITIONING GUIDE (KEY WAY)



SOUND CIRCUIT -----
 COMPOSITE VIDEO *****
 CYCLES 60 VOLTS 117A.C.

VERTICAL CIRCUIT
 HORIZONTAL CIRCUIT
 INTERMEDIATE FREQUENCY
 WATTS 215 (16E21) 295 (16E21Q)
 AMPS 1.95 (16E21) 2.65 (16E21Q)

ZENITH
 TV Chassis 16E21,
 16E21Q, 16D21, 16D21Q
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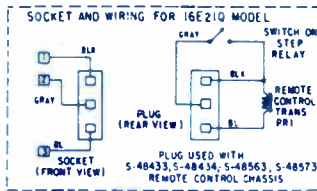
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ZENITH
TV Chassis 16E21,
16E21Q, 16D21, 16D21Q

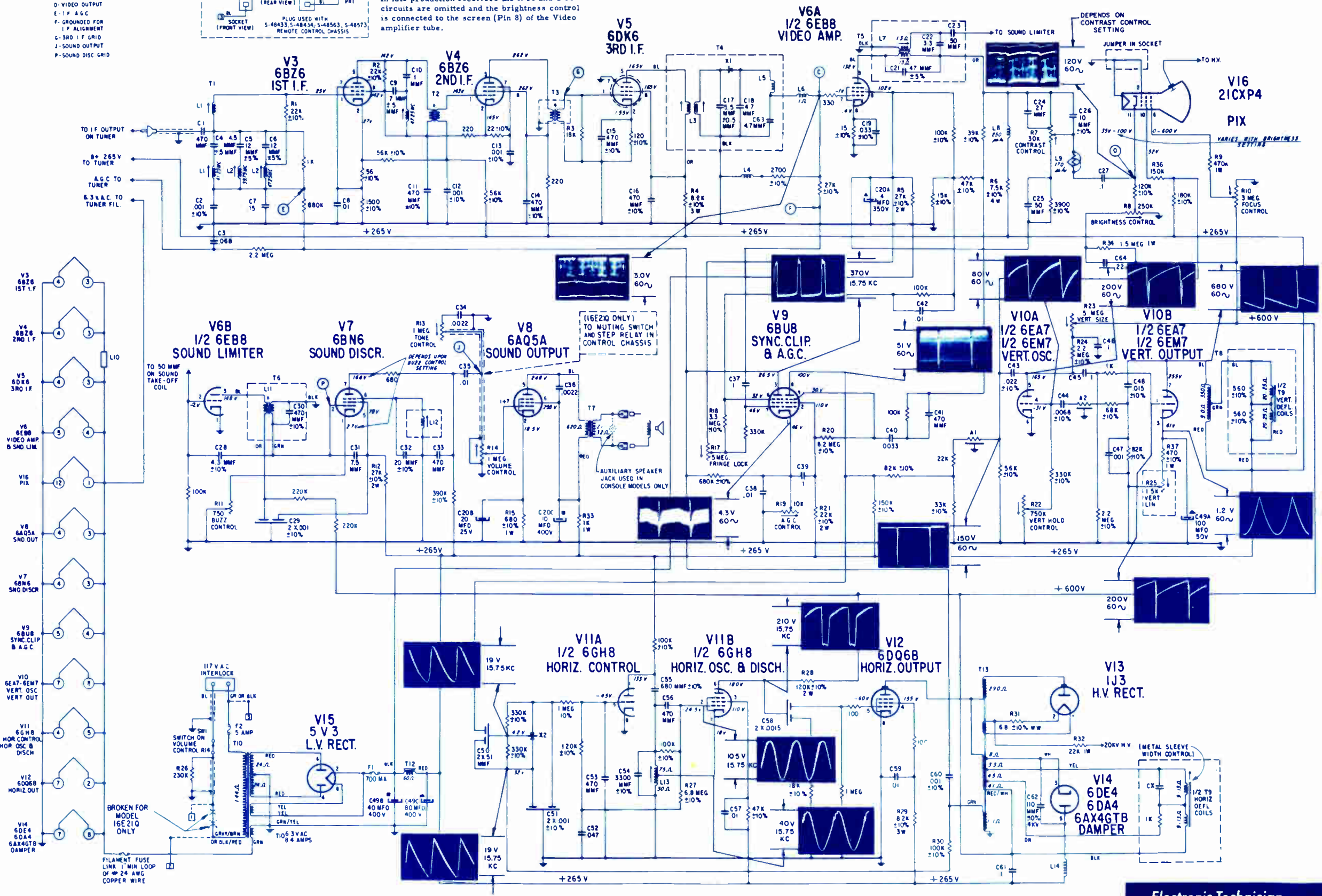
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ALIGNMENT POINTS
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS.

- TEST POINTS
C - DETECTOR OUTPUT
D - VIDEO OUTPUT
E - I.F. A.G.C.
F - GROUND FOR I.F. ALIGNMENT
G - 3RD I.F. GRID
J - SOUND OUTPUT
P - SOUND DISC GRID



In late production receivers the R 34 and C 64 circuits are omitted and the brightness control is connected to the screen (Pin 8) of the Video amplifier tube.



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PHILCO 566

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1952 to 1960



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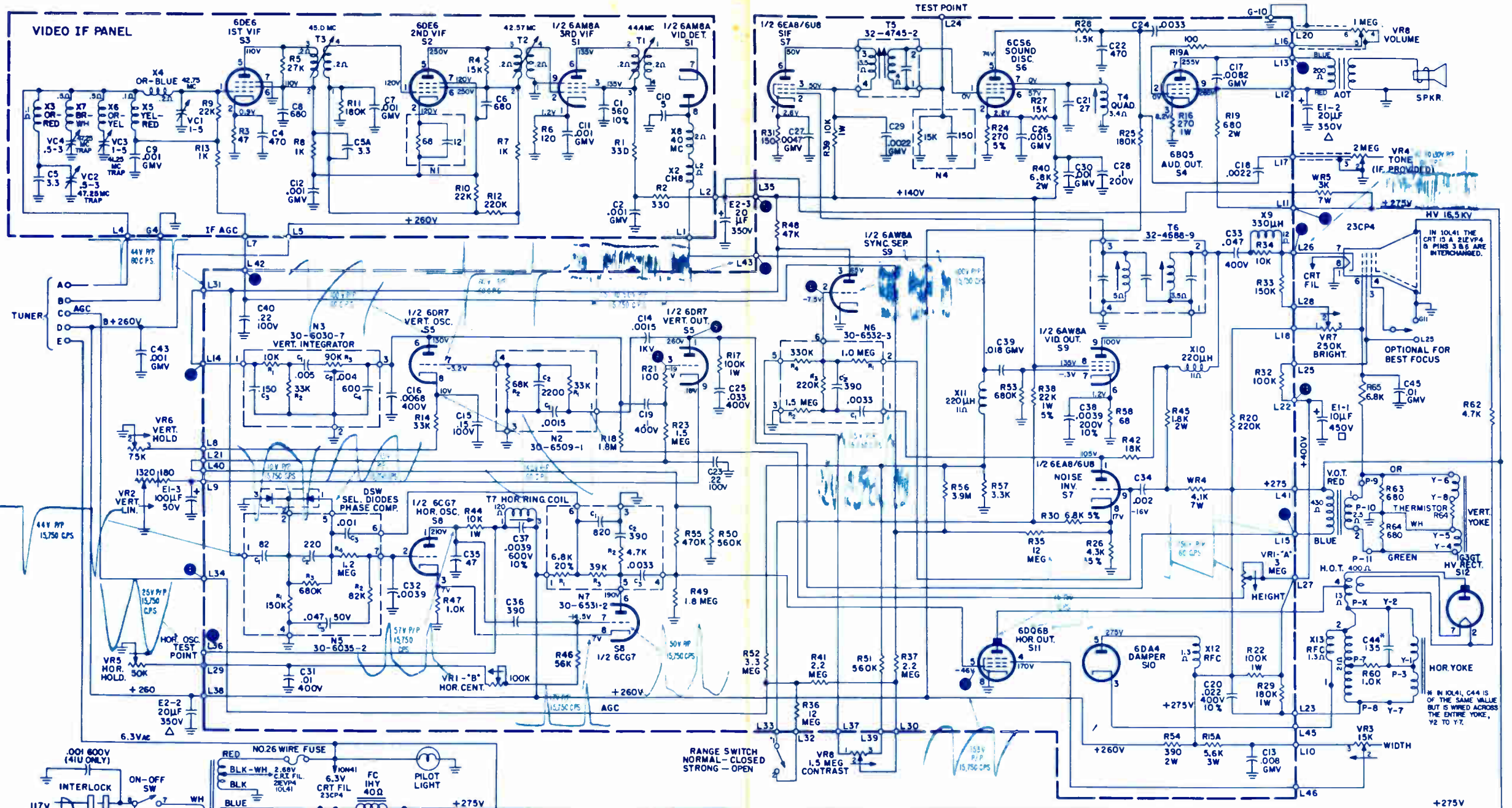
Chassis 321 (U): Models K1081 (U), B1081 (U), B1091(U), M1091(U), M1111(U), B1111(U), W1111(U), M3061(U), B3061(U), W3061(U), SP3061(U), M3101(U), B3101(U), W3101(U), P3101(U). Chassis 322(U): Models M1121(U), W1121(U), B1121(U), P1121(U), M3071(U), W3071(U), B3071(U), P3071(U), M3114(U), W3114(U), B3114(U), P3114(U) . . . 276
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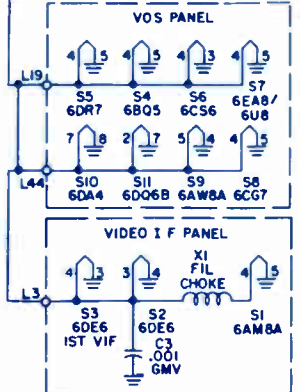
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All Units Are TV Receivers Unless Otherwise Noted



NOTES:
 Arrow through control indicates clockwise rotation.
 Coil resistance read with coil in circuit.



TUBE COMPLEMENT

- 6A8A/6A8 3rd V.I.F.-2nd Detector
- 6DE6 2nd V.I.F.
- 6DE6 1st V.I.F.
- 6BQ5 Audio Output
- 6DR7 Vertical Oscillator & Output
- 6CS6 Sound Discriminator
- 6U8/6U8A/6EA8 Sound IF—Noise Inverter
- 6CG7 Horizontal Oscillator
- 6A8A Video Output—Sync Separator
- 6A4 Damper
- 6DQ6B Horizontal Output
- 1G3GT High Voltage Rectifier
- 5U4GB Low Voltage Rectifier

VHF TUNER

- 6X8 Oscillator-Mixer
- 6BC8 RF Amplifier

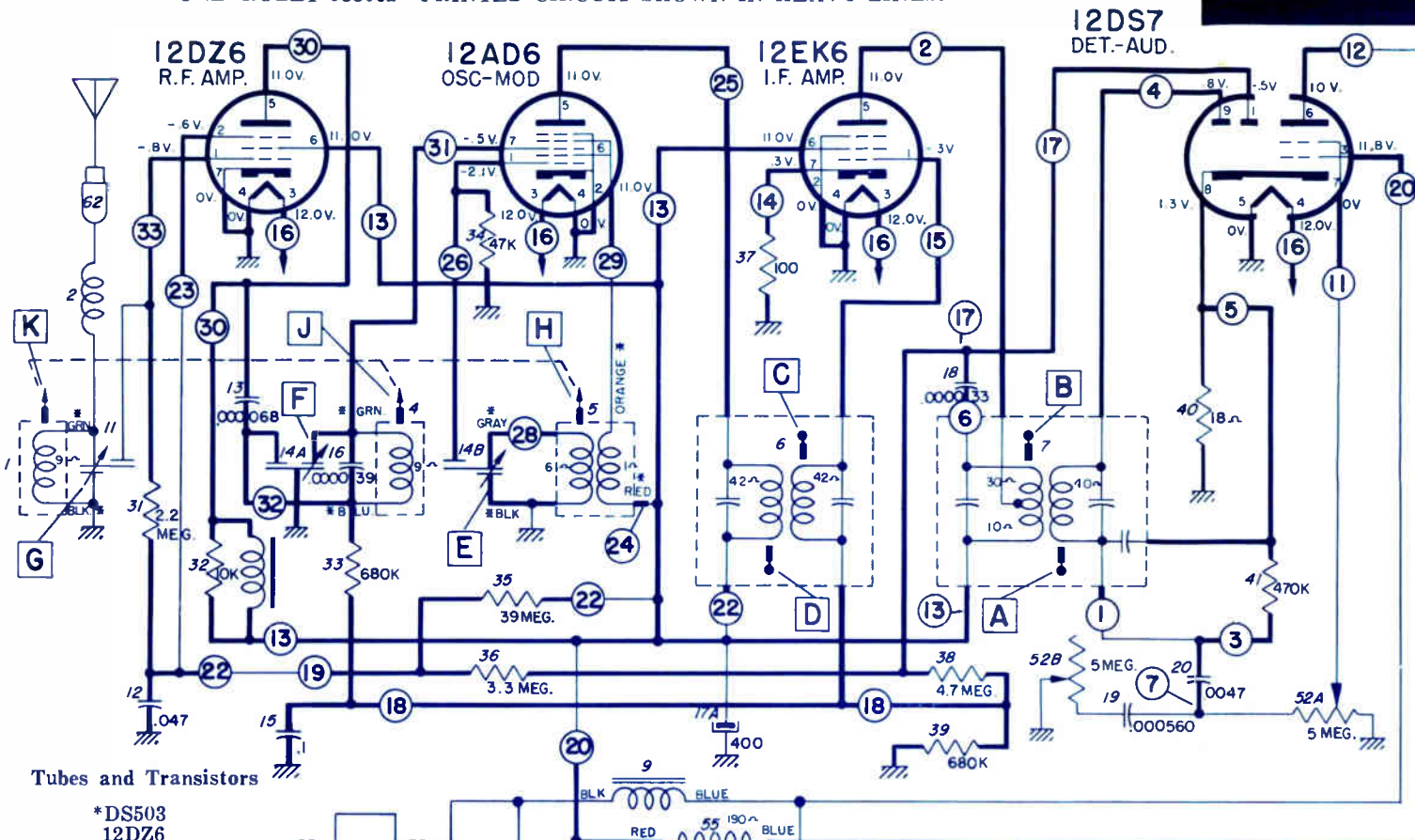
UHF TUNER

- 6AF4A/B UHF Oscillator
- 1N82A Mixer

PICTURE TUBE

- 23CP4 23" Electrostatic Focus C.R.T.

CHEVROLET 988062—PRINTED CIRCUIT SHOWN IN HEAVY LINES.



Tubes and Transistors

- *DS503
- 12DZ6
- 12AD6
- 12EK6
- 12DS7

* Part first used in 1960.

VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM - NO SIGNAL AND 12.0 VOLTS AT ILLUS. 21.

OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.

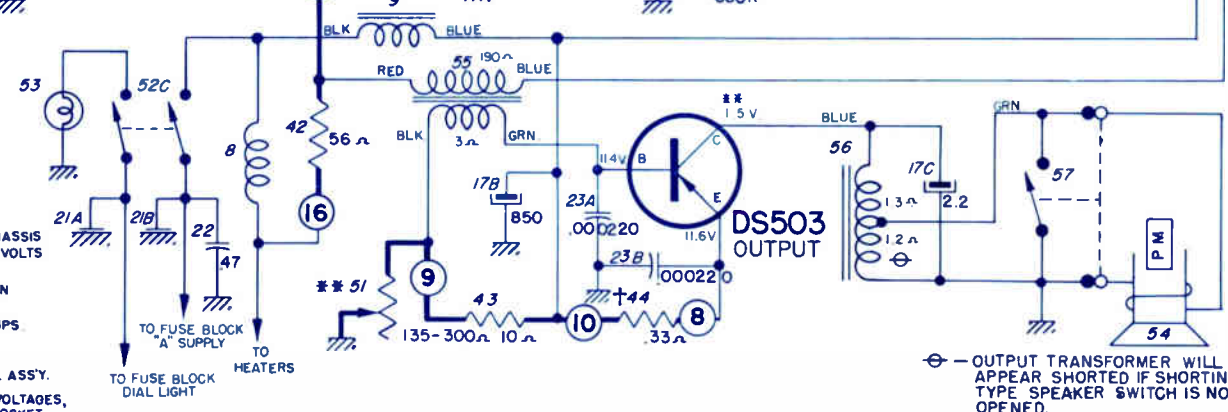
TOTAL "A" DRAIN AT 12 V. - 1.5 AMPS

TOLERANCE ON VOLTAGES ± 10%

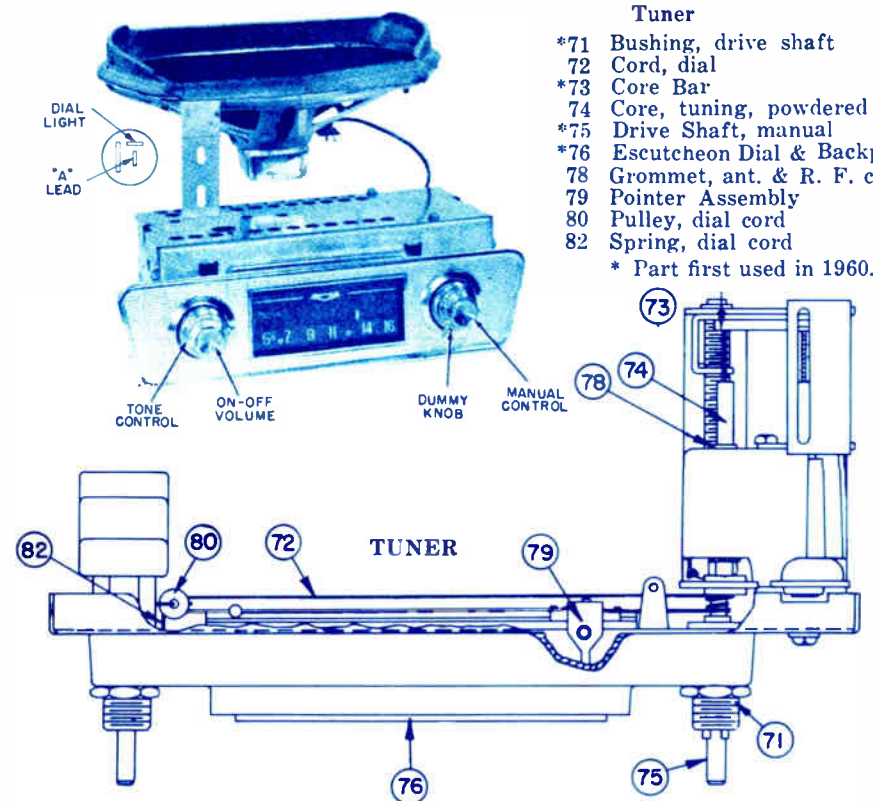
* - INDICATES LEAD FROM TUNER COIL ASSY.

** - BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 51) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.

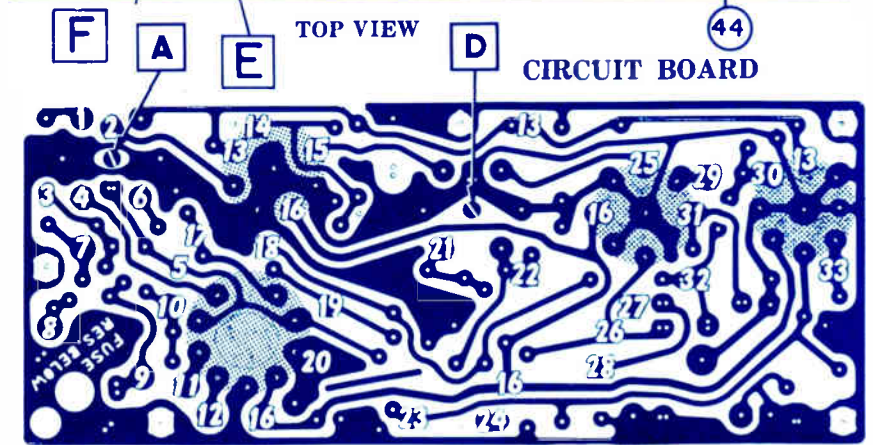
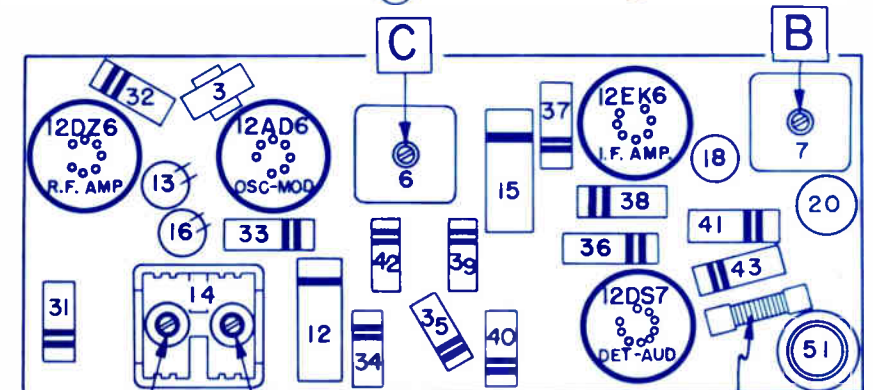
† - ILLUS. 44 IS A FUSE RESISTOR FOR THE TRANSISTOR.



⊖ - OUTPUT TRANSFORMER WILL APPEAR SHORTED IF SHORTING TYPE SPEAKER SWITCH IS NOT OPENED.



- Tuner**
- *71 Bushing, drive shaft
 - *72 Cord, dial
 - *73 Core Bar
 - *74 Core, tuning, powdered iron
 - *75 Drive Shaft, manual
 - *76 Escutcheon Dial & Backplate
 - *78 Grommet, ant. & R. F. coil
 - *79 Pointer Assembly
 - *80 Pulley, dial cord
 - *82 Spring, dial cord
- * Part first used in 1960.

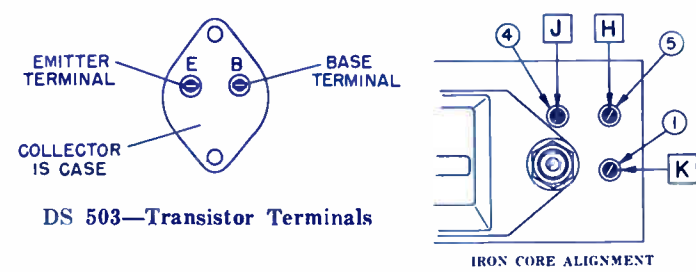


BOTTOM VIEW

SERVICE PARTS LIST

No. Illus.	Service Part No.	DESCRIPTION
1	1221138	Antenna
2	7255738	Choke, antenna series
3	7269684	Choke, R. F. plate
4	1221138	R. F.
5	1221263	Oscillator
6	1221257	1st I. F. Coil Assembly
7	1221255	2nd I. F. Coil Assembly
8	1217846	Choke, hash
9	7274342	Choke, "A" supply, input

STEPS	SERIES CAPACITOR OR DUMMY ANTENNA	CONNECT SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	TUNE RECEIVER TO	ADJUST IN SEQUENCE FOR MAX OUTPUT
1	0.1 Mfd.	12AD6 Grld (Pln #7)	262 KC	High Frequency Stop	A, B, C, D,
2	0.000082 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*E, F, G,
3	0.000082 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	J, K
4	0.000082 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G



*Before making this adjustment check mechanical setting of oscillator core "H." The rear of the core should be 1% from the mounting end of the coil form.

More Data on Reverse Side

ELECTRONIC TECHNICIAN

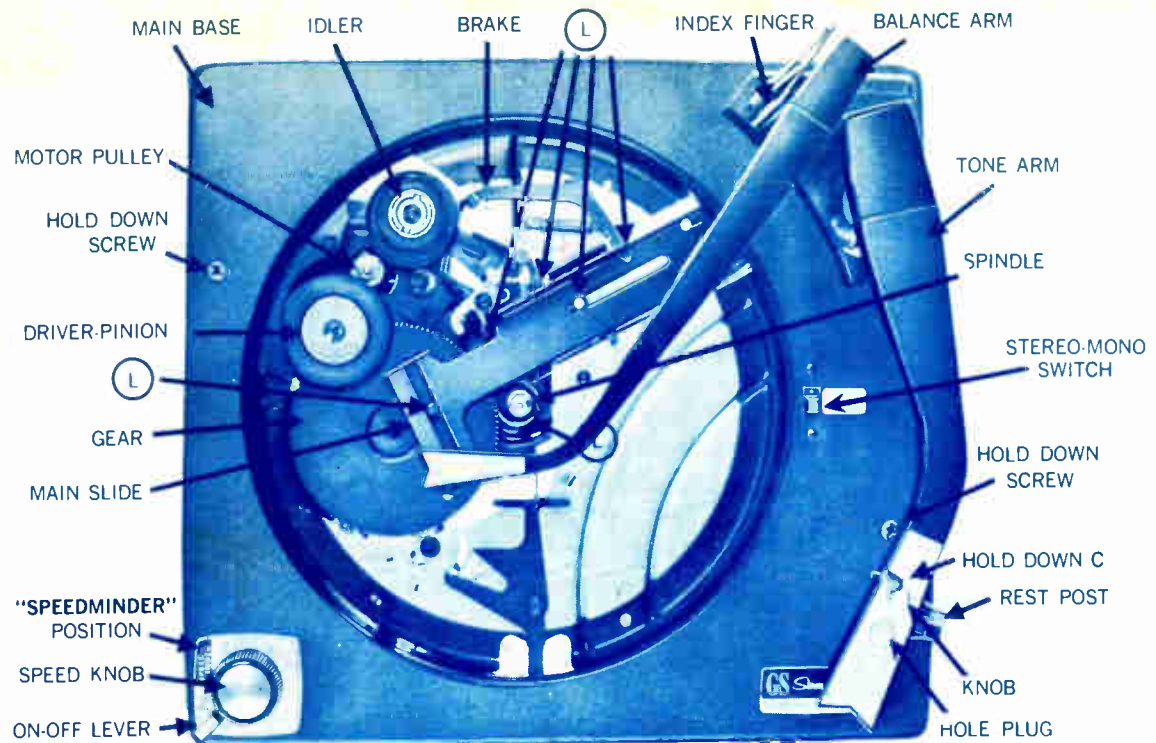
CIRCUIT DIGESTS

In This Issue (No. 96)

Circuit Digest Schematic No.

G. E.	580
TV Chassis M-6	
GLASER-STEERS	582
Record Changer GS-77	
MOTOROLA	581
Transistor Radio Chassis HS-797	
Model X16	

PACKARD-BELL	578
TV Chassis 98D6	
Models 21DC16, 23DC5, 23DC6	
PHILCO	577
TV Chassis 11N51	
VOCALINE	579
Intercom "Vocatron" Model CC-60	



(L) LUBRICATION POINTS

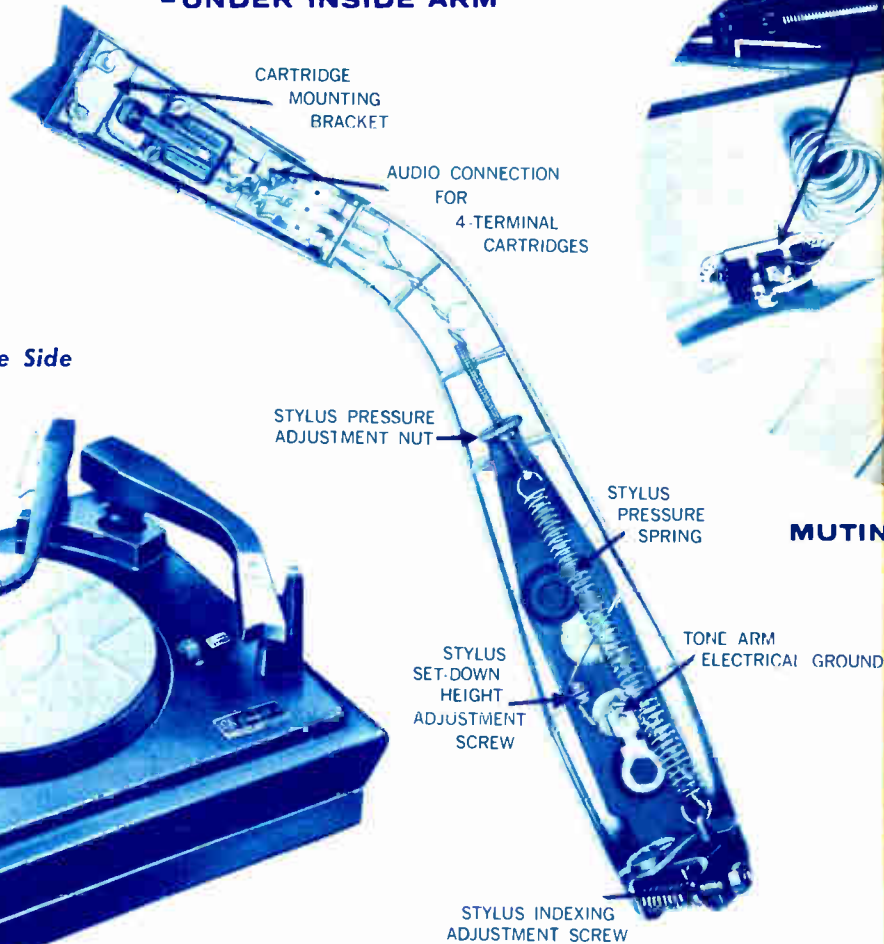
GLASER-STEERS Record Changer GS-77

Electronic Technician

CIRCUIT DIGEST

582

More Data on Reverse Side



GLASER-STEERS Record Changer GS-77

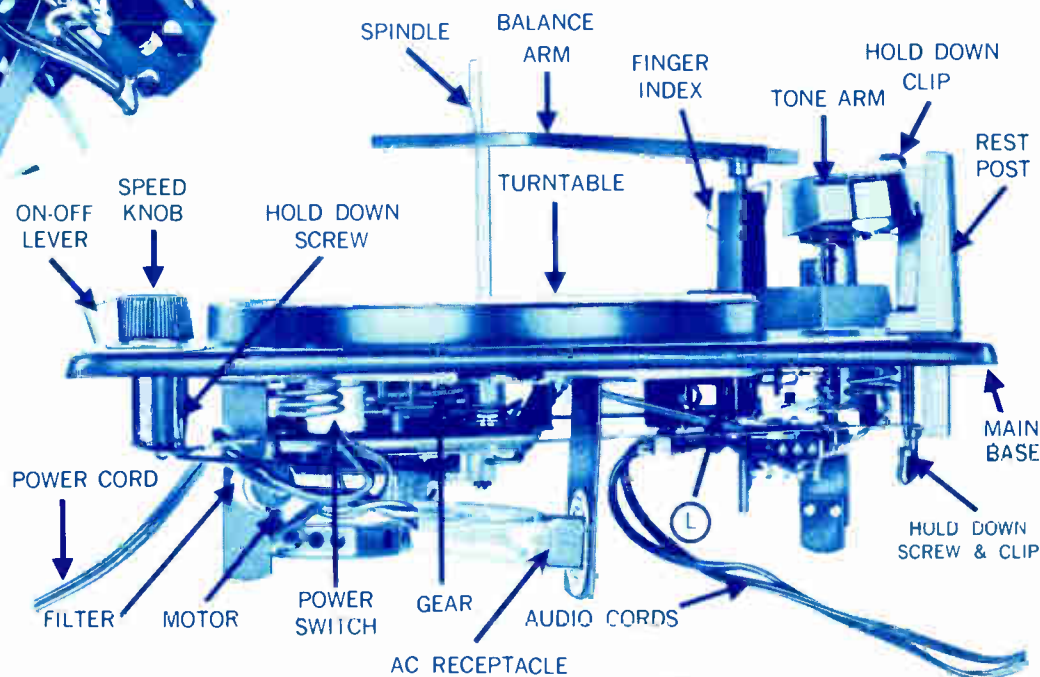
Electronic Technician

CIRCUIT DIGEST

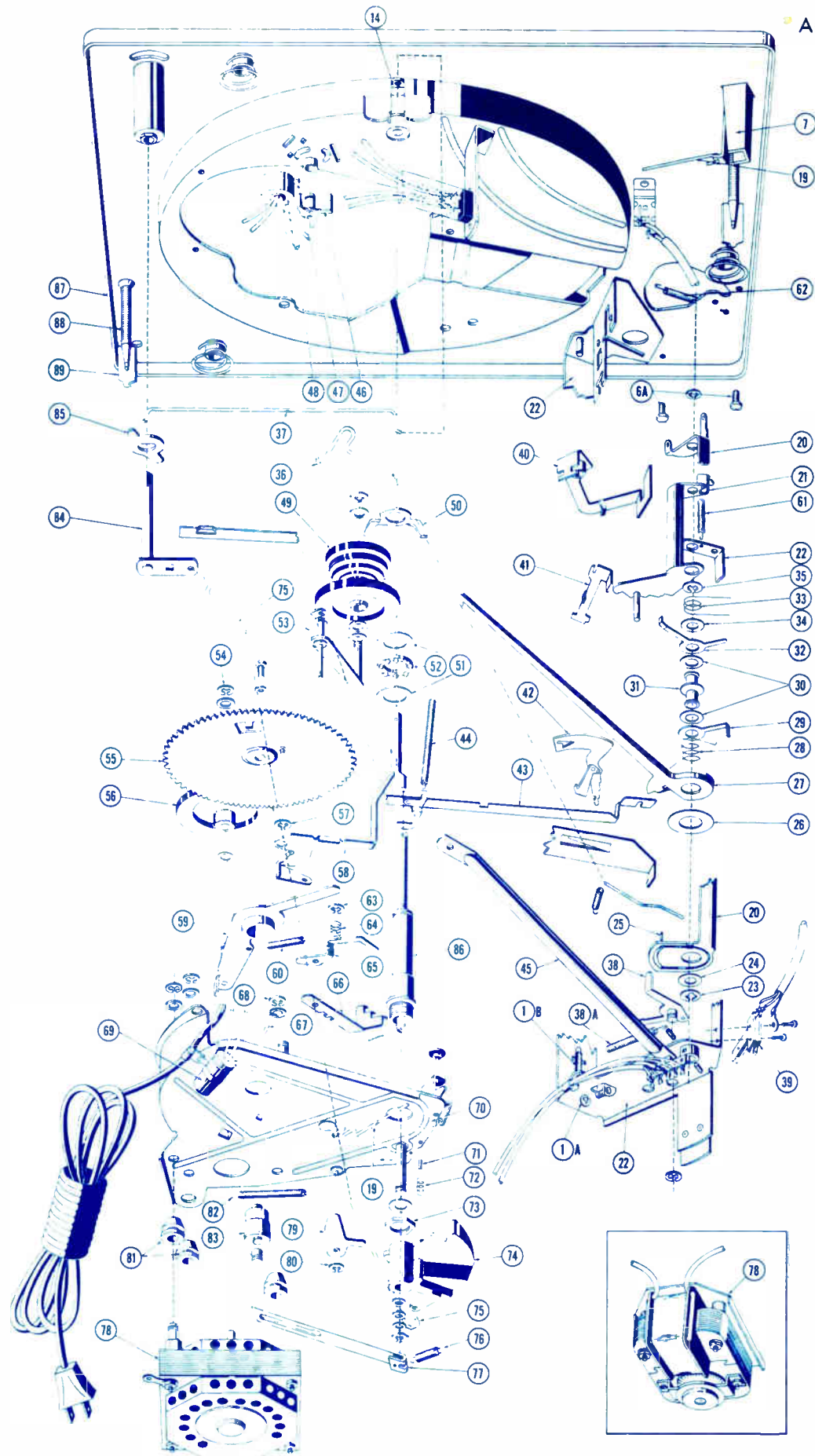
582

More Data on Reverse Side

ELEVATION-SIDE VIEW

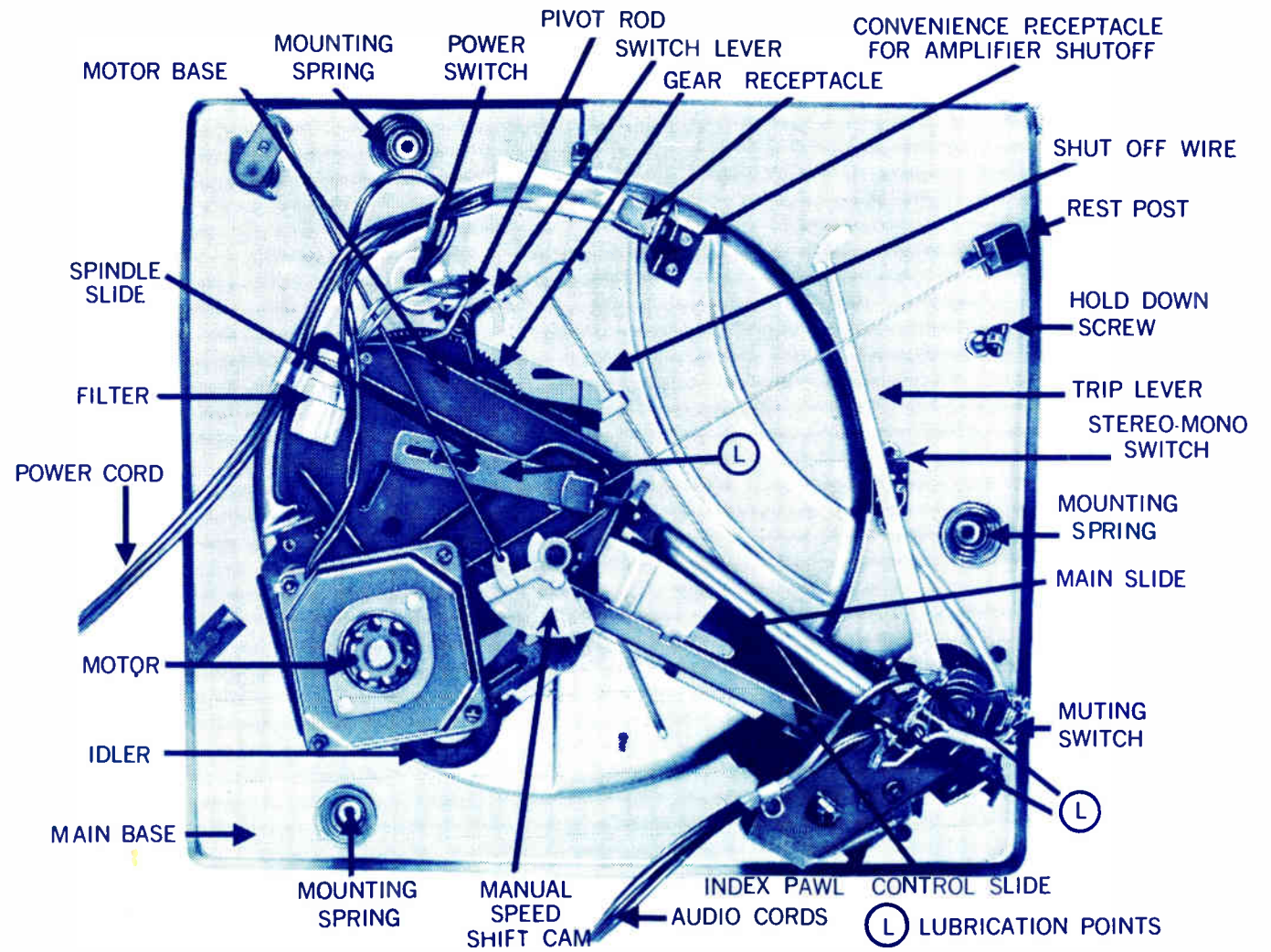


(L) LUBRICATION POINTS



Spare Parts List

GLASER-STEERS PART NUMBER	DESCRIPTION	LIST PRICE EACH	GLASER-STEERS PART NUMBER	DESCRIPTION	LIST PRICE EACH
11411-1	Index Finger	.29	13004-2	Motor (4-pole)	15.80
DL-5709-501	Balance Arm Assembly	1.79	12001-1	Spindle Assembly	4.68
13403-2	Turntable Rubber Mat	.65	12950-7	Trim Plate, Tone Arm	.27
DL-5723-501	Tone Arm Assembly	5.19	12954-6	Audio Cord & Plug Assembly	1.07
DL-5708-502	Turntable Assembly	3.99	12955-1	Click Filter, Motor	.85
12307-2	Speed Knob	.34	13406-1	Tone Arm (Casting Only)	.87
10151-1	On-Off Lever	.36	11841-1	Plug Tone Arm	.05
100-22-1/	Muting Switch Assembly	3.35	11827-1	AC Receptacle	.23
DL-5736-502			11837-1	Switch, Stereo-Monophonic	.25
11801-3	Power Switch	.66	DL-5724-501	Qk. Change Cartridge Mnt. Bkt.	1.01
13005-2	Idler Wheel Assembly	2.90	DL-5714-506	Qk. Change Cartridge Mnt. Kit.	4.24
10001-2	Pinion-Driver Wheel	.61			



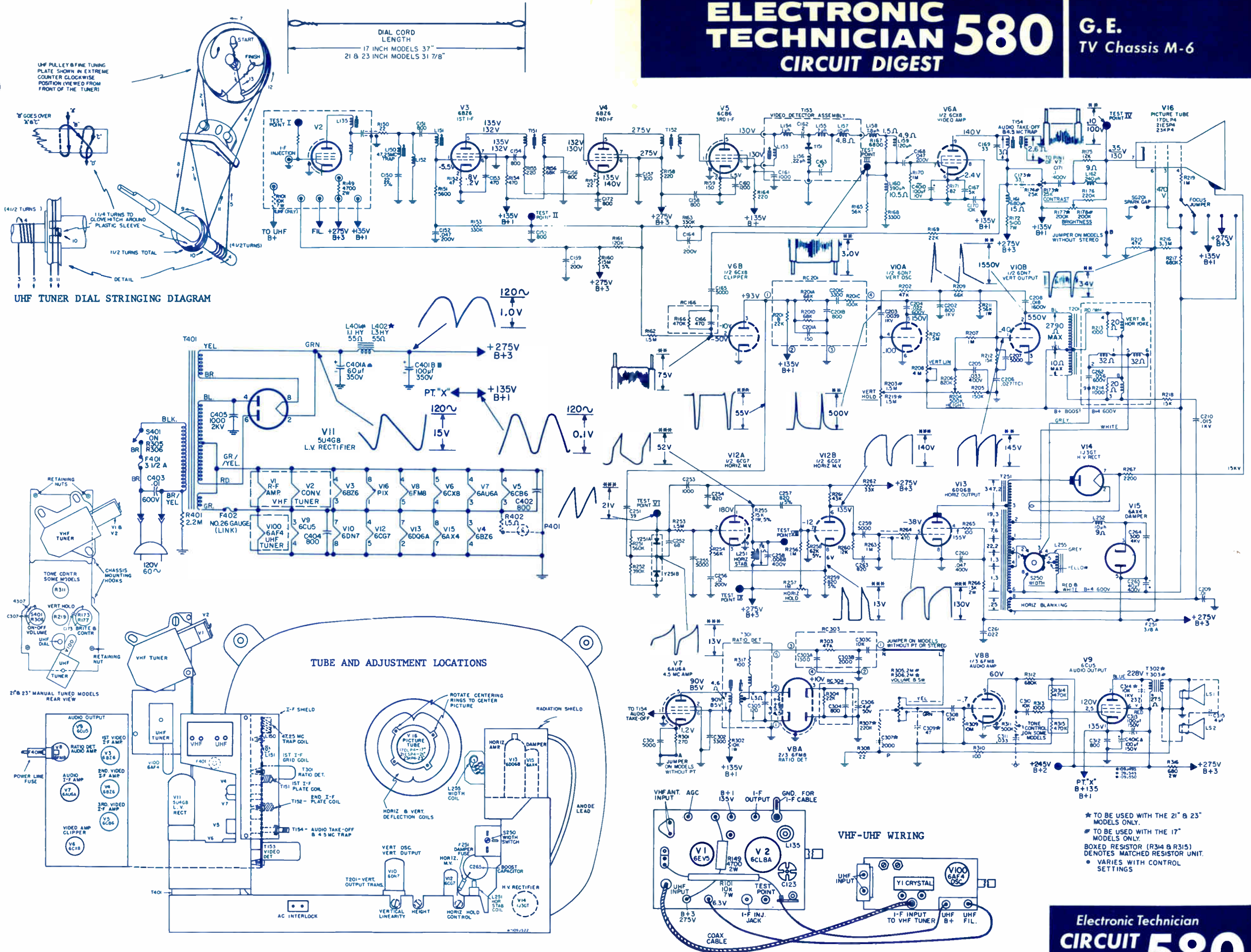
BOTTOM VIEW CHANGER

More Data on Reverse Side

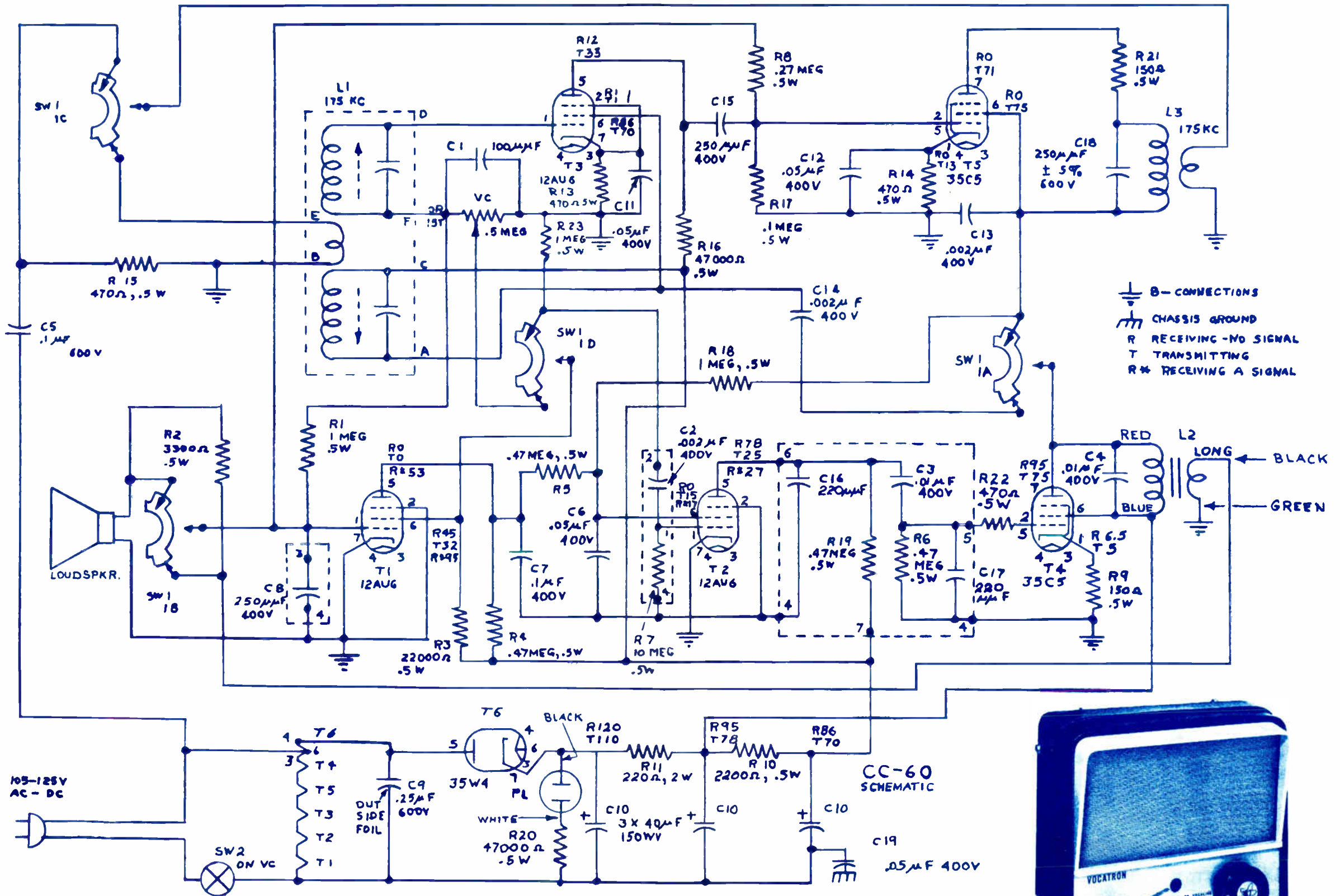
ELECTRONIC TECHNICIAN 580

CIRCUIT DIGEST

G.E.
TV Chassis M-6



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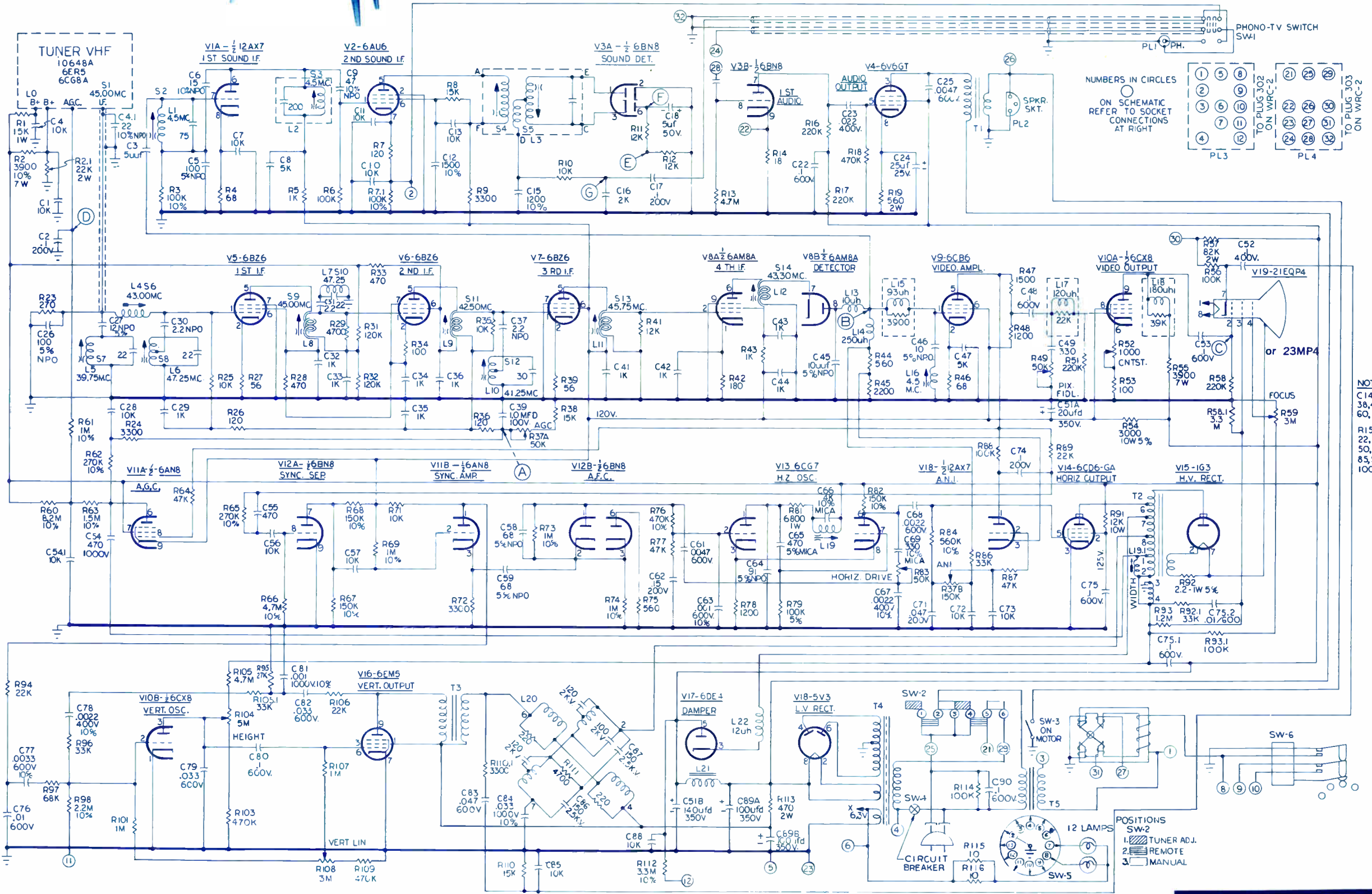


August • 1960

ELECTRONIC TECHNICIAN 578

CIRCUIT DIGEST

PACKARD-BELL
 TV Chassis 98D6
 Models 21DC16
 23DC5, 23DC6



NOT USED:
 C14, 19, 20, 21,
 38, 40, 50,
 60, 70, 92
 R15, 20, 21,
 22, 30, 40,
 50, 70, 80,
 85, 90, 99,
 100, 102, 115

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Electronic Technician
CIRCUIT DIGEST 578

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

GROUP
97

In This Issue (No. 97)

Circuit Digest Schematic No.

- ANDREA** 587
TV Chassis VRT-123 Series
- ELECTROHOME, Canada** 585
TV Models Breton, Breton "A", Burnaby
- MOTOROLA** 588
TV (Transistorized) TV Chassis TS-432
Model 19P1 "Astronaut"

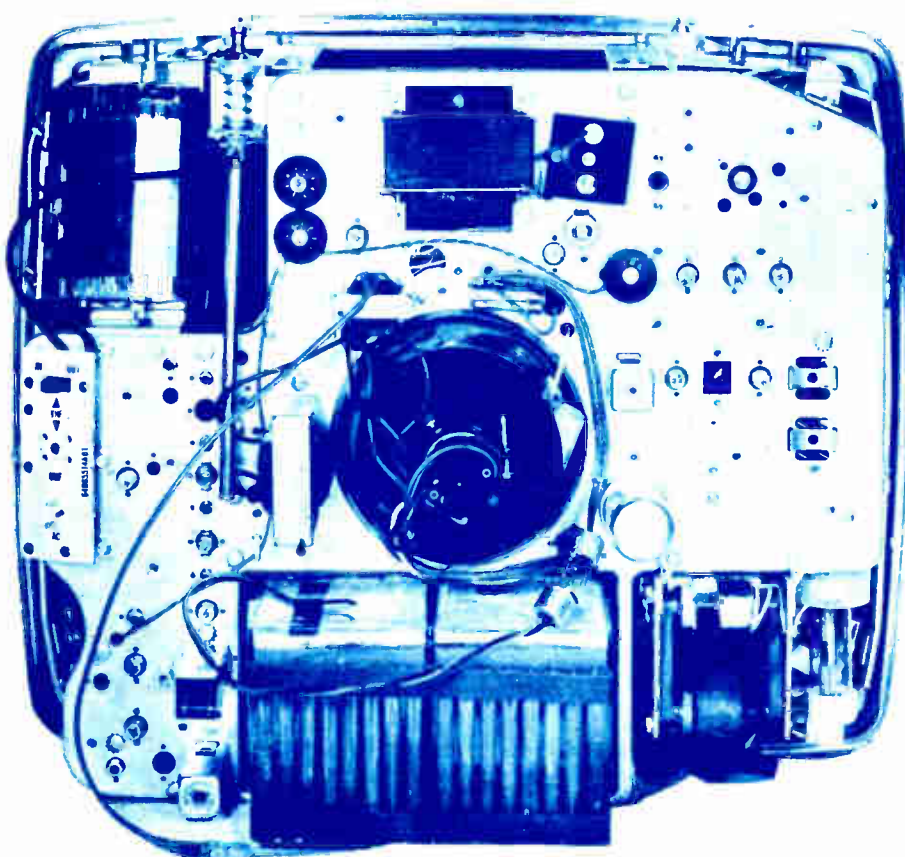
- PHILCO** 584
Transistor Portable Radio
Model T-66
- RCA** 586
TV Chassis KCS131 Series
- TANDBERG** 583
Tape Recorder, 4-Track
Model 5

More Data on Reverse Side

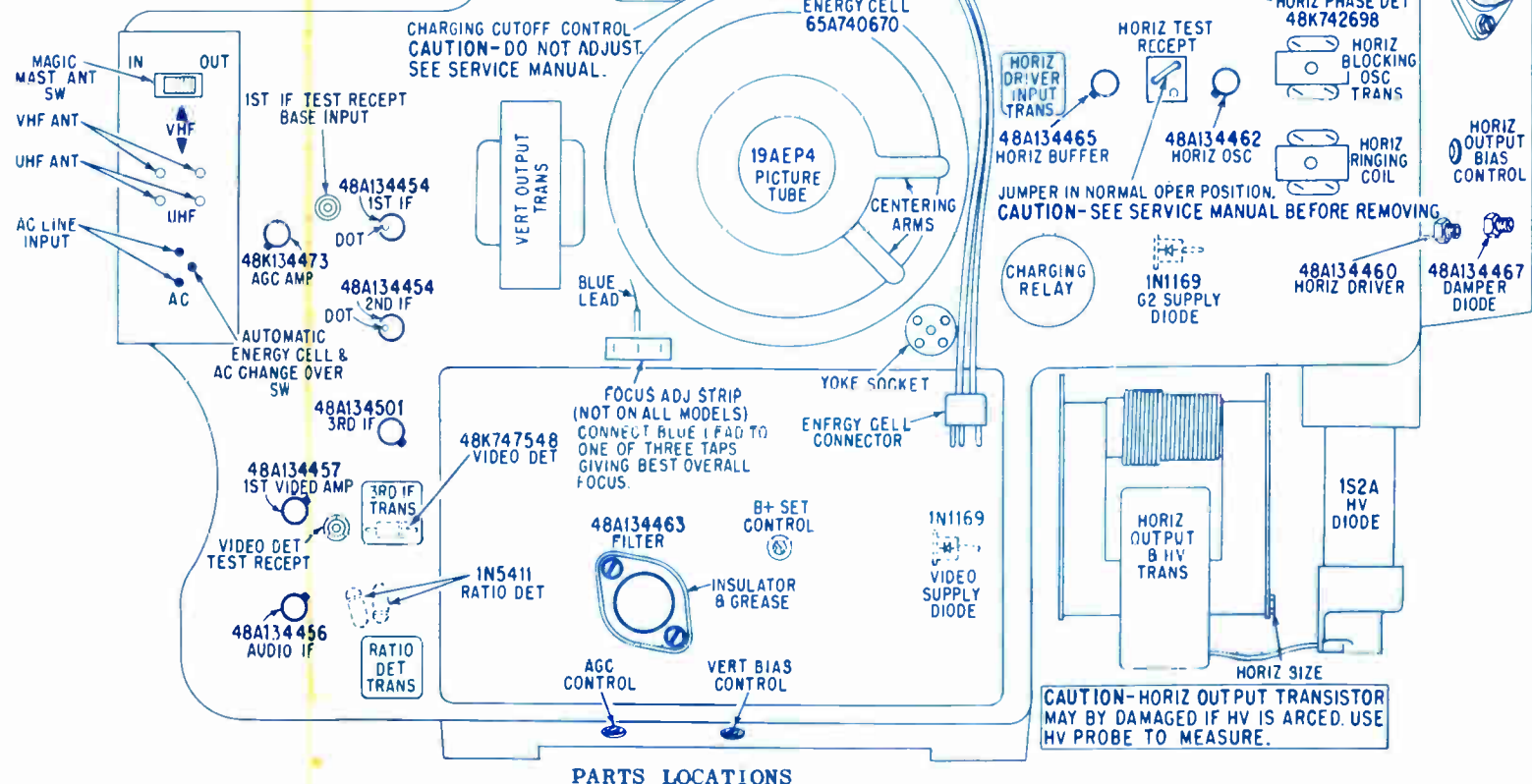
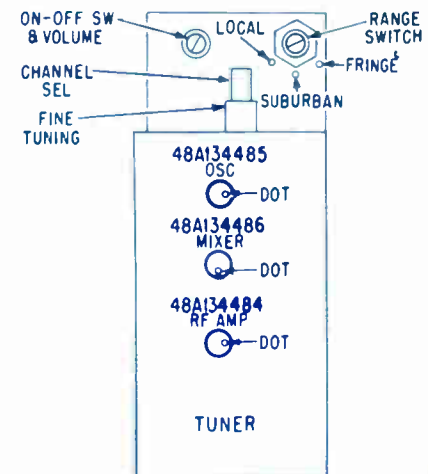
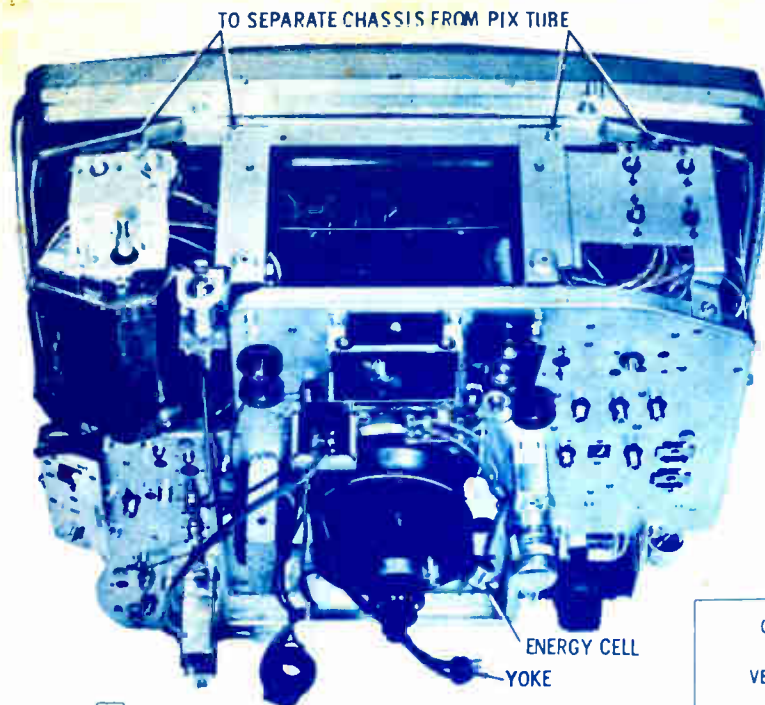
MOTOROLA
TV (Transistorized)
Chassis TS-432
Model 19P1 "Astronaut"

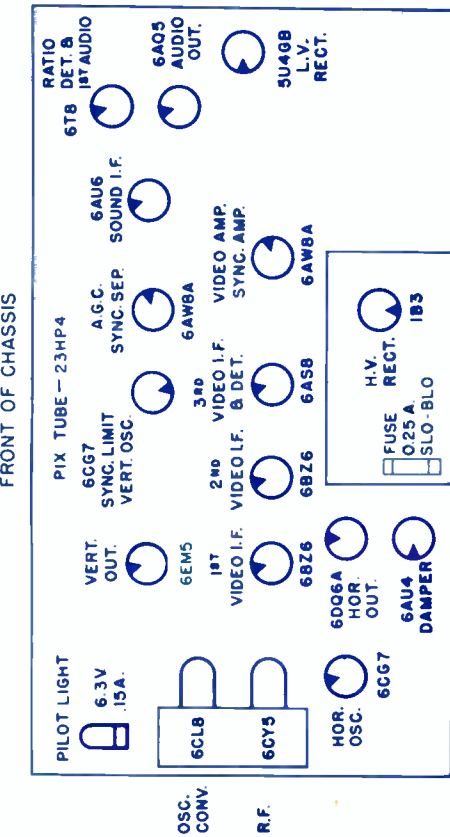
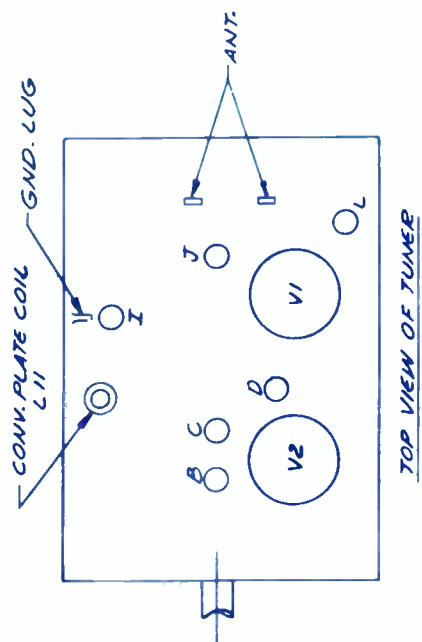
Electronic Technician
CIRCUIT DIGEST

588



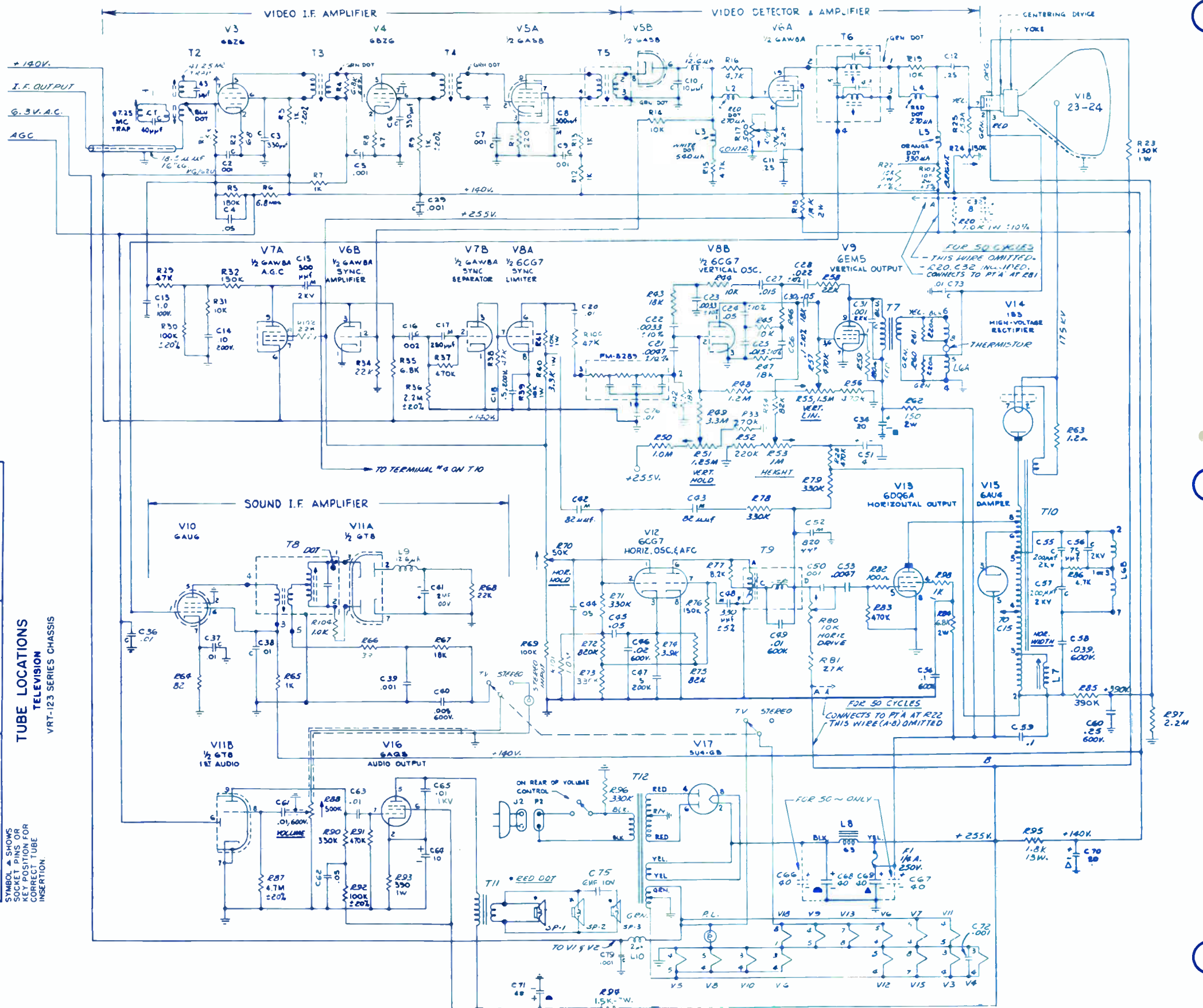
SET WITH BACK REMOVED AND ENERGY CELL INSTALLED

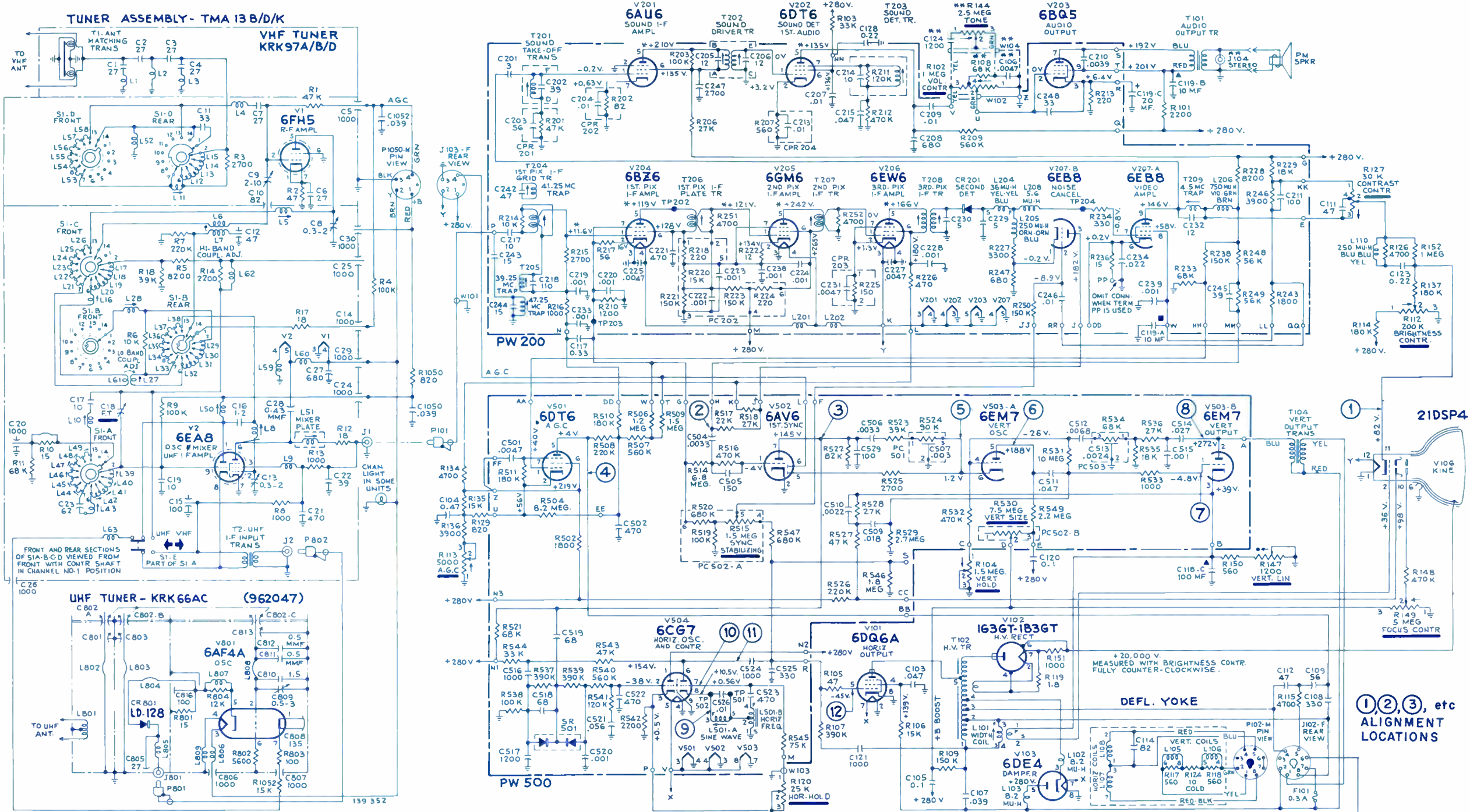




TUBE LOCATIONS TELEVISION CHASSIS VRT-123 SERIES CHASSIS

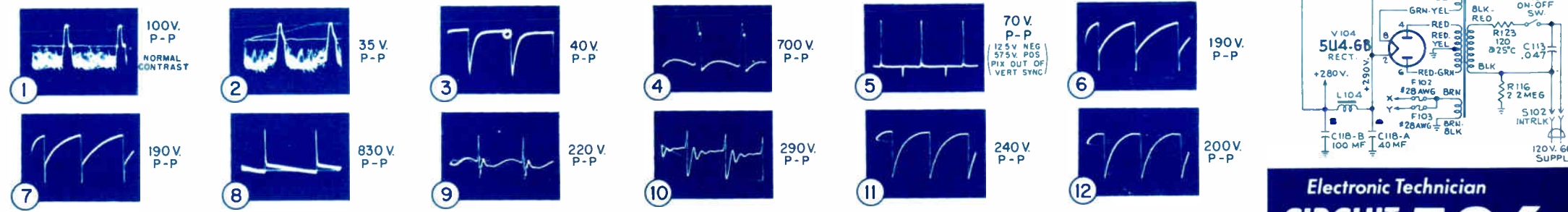
SYMBOL ▲ SHOWS SOCKET PINS OR KEY POSITION FOR CORRECT TUBE INSERTION.

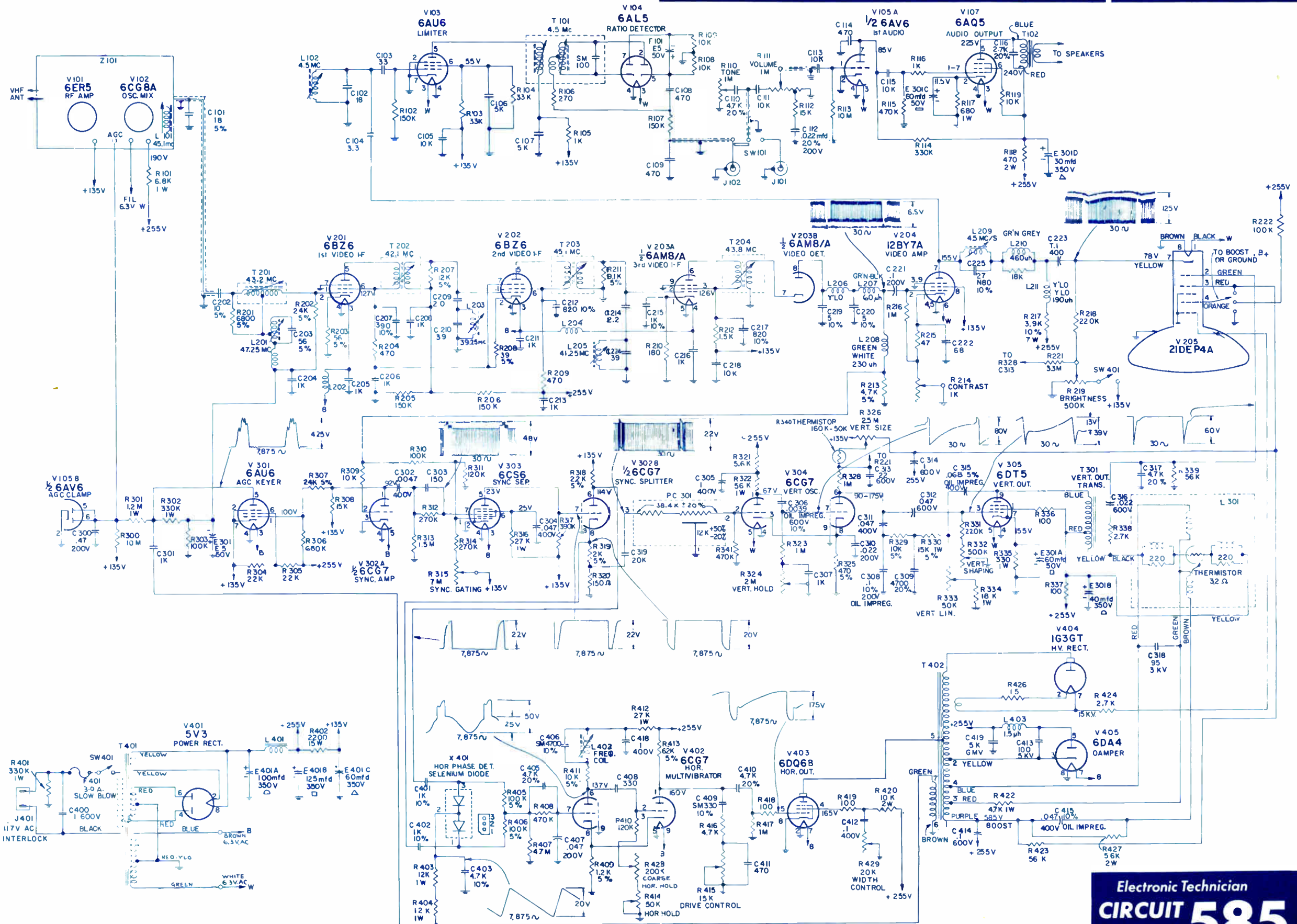




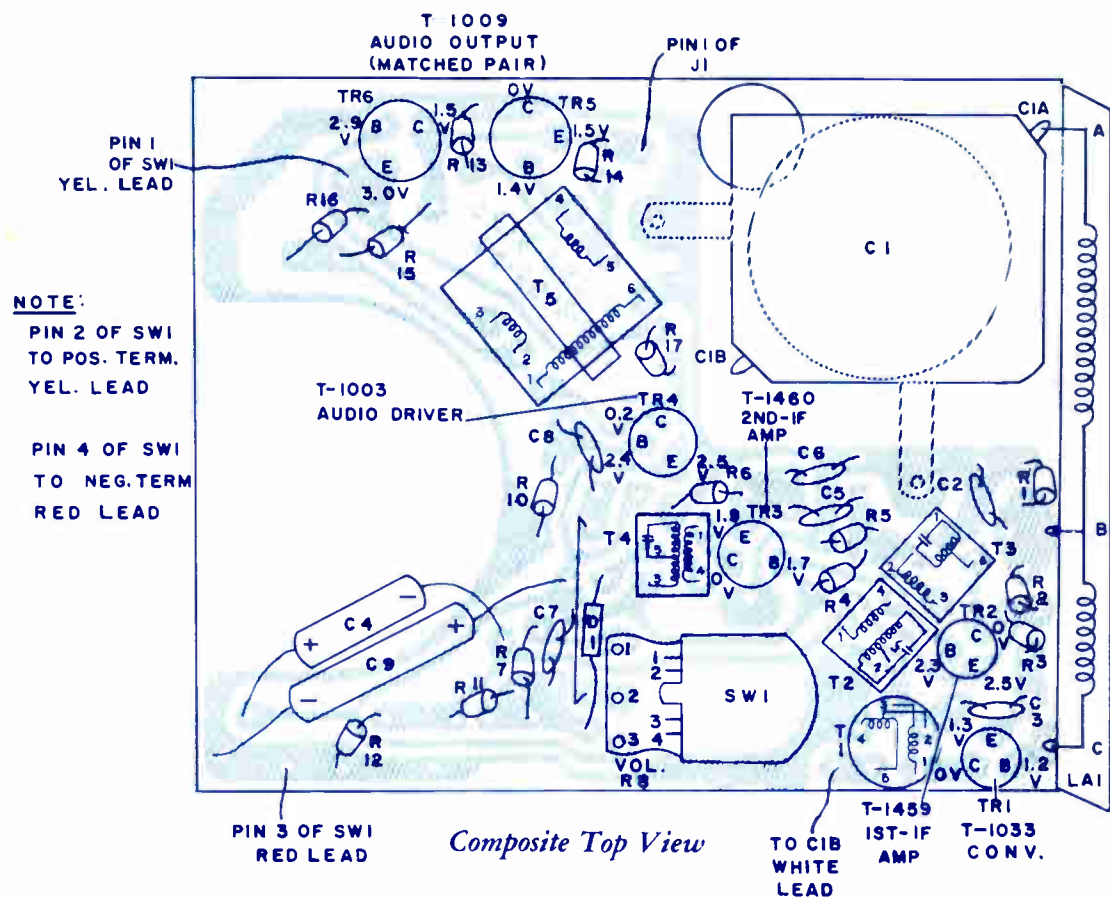
* VOLTAGES MEASURED WITH 1 MEG 1/2 WATT RESISTOR IN SERIES WITH METER PROBE.
 ** R108, R144, C106, C124, J104 AND W104 OMITTED IN SOME UNITS.

More Data on
 ← Opposite Page

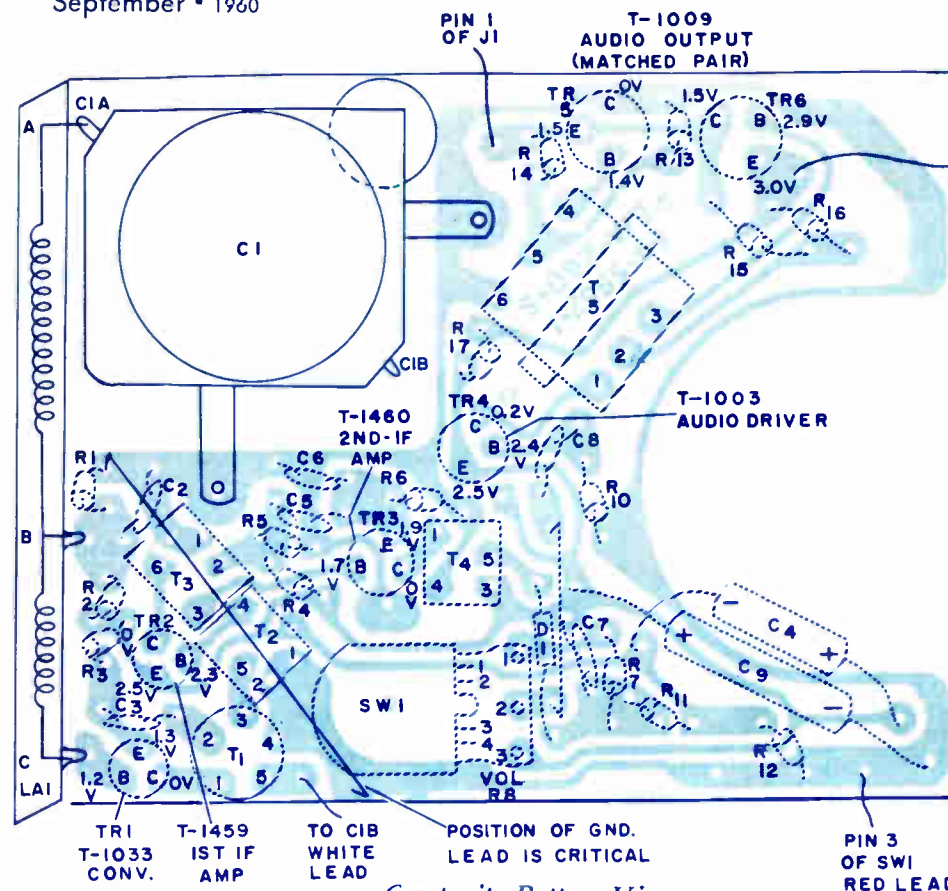




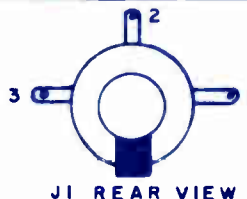
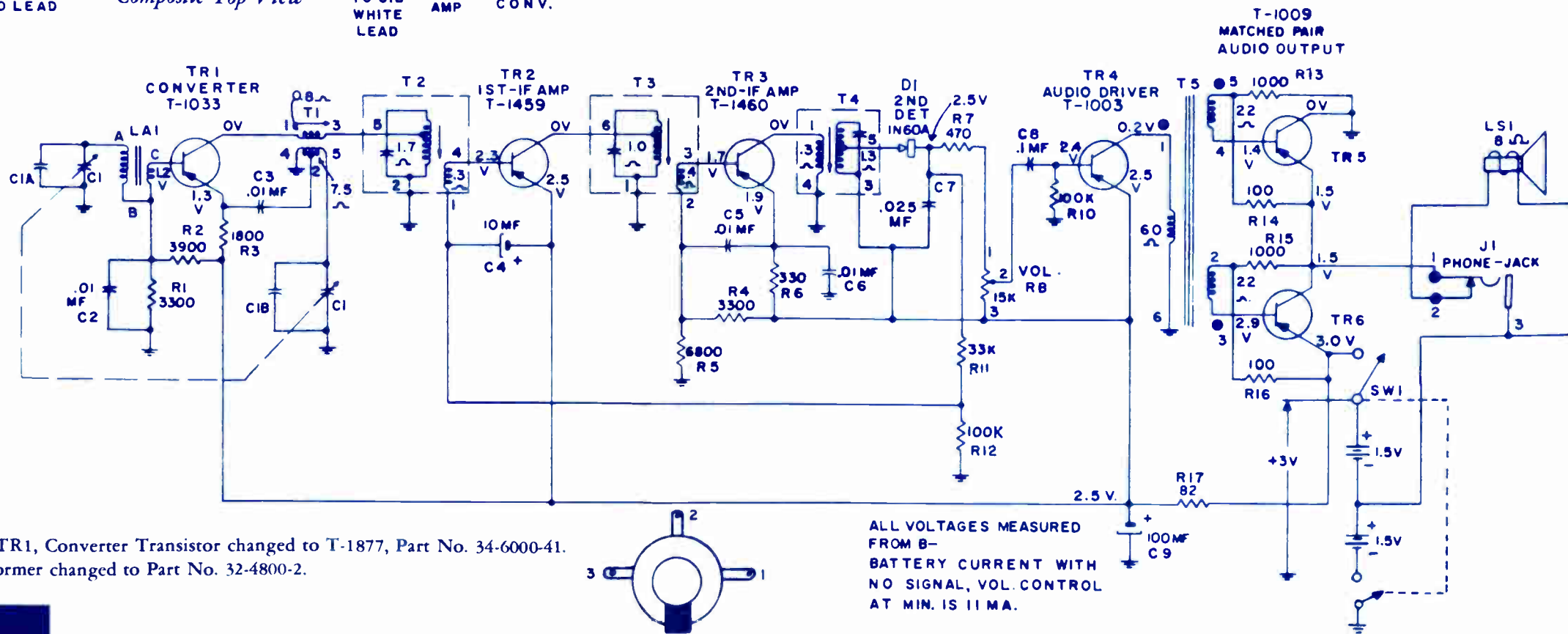
September • 1960



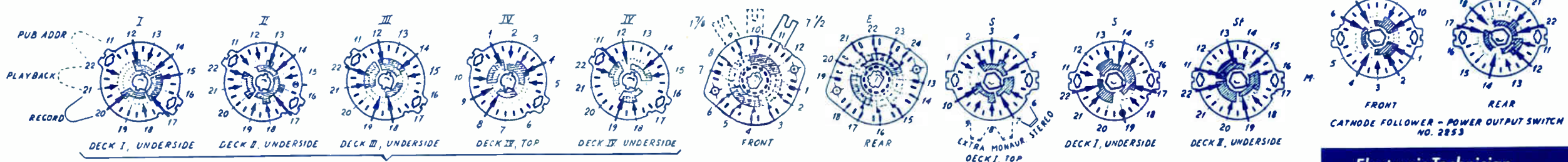
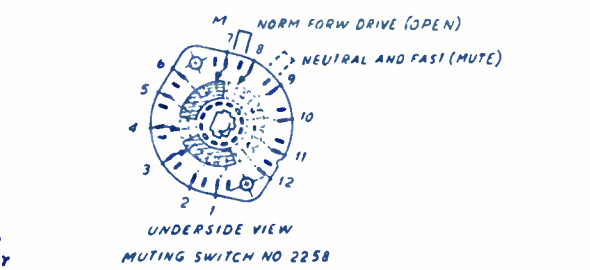
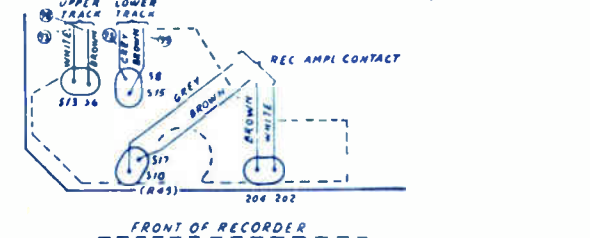
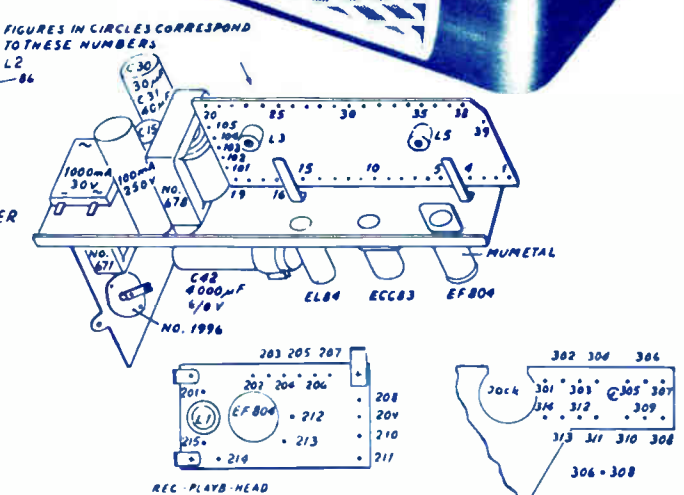
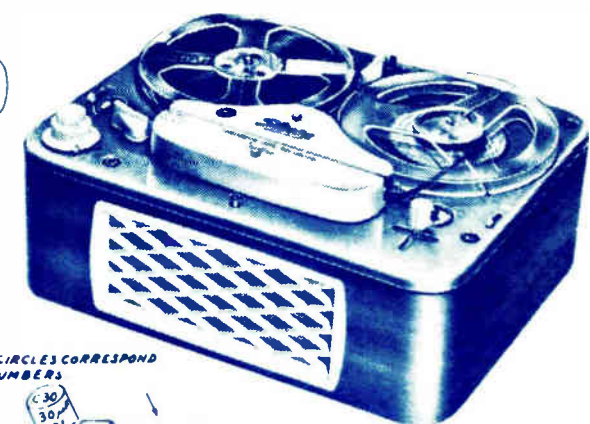
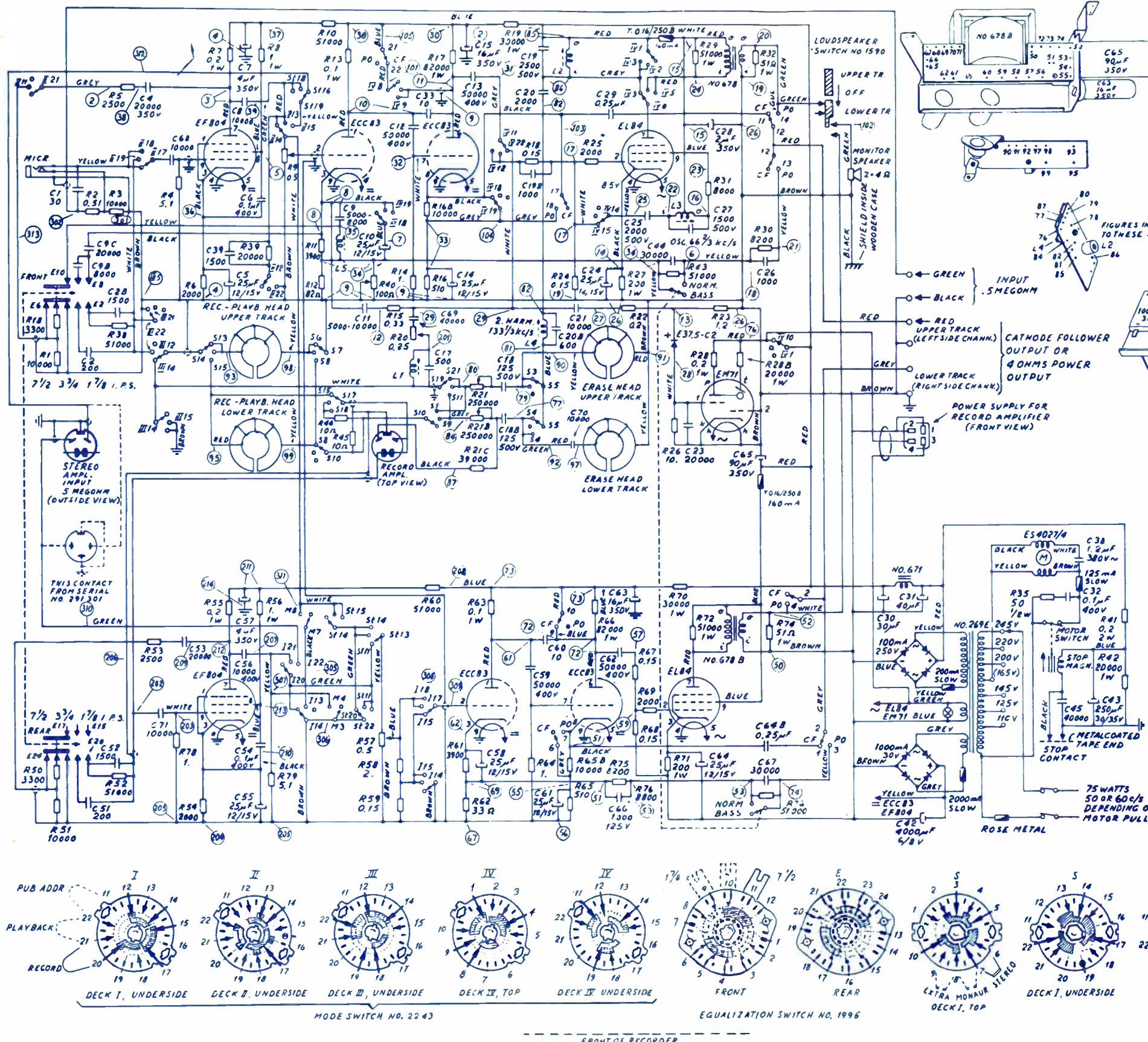
Composite Top View



Composite Bottom View



T-66, Code 126: TR1, Converter Transistor changed to T-1877, Part No. 34-6000-41.
T2, 1st i-f Transformer changed to Part No. 32-4800-2.



ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

Trademark

In This Issue (No. 98)

Circuit Digest Schematic No.

- ADMIRAL** TV Chassis 20B7 **589**
- HOFFMAN** TV Chassis 356, 358 **591**
Models 3803, 3813, 3823, 3833, 3843, 3853
- MONTGOMERY WARD (Airline)** **592**
Stereo Console, AM-FM-Phono
Models WG-2805A, WG-2806A, WG-2807A

- MOTOROLA** Auto Radio, FM Model FM-900 **590**
- WESTINGHOUSE** Transistor Portable Radio, Chassis V2397-4 **594**
Models H-771P6, H-771P6GP, H-772P6, H-772P6GP, H-773P6, H-773P6GP
- ZENITH** TV Chassis 16F25, 16F26, 16F25T, 16F26T, 16F25Q, 16F26Q **593**

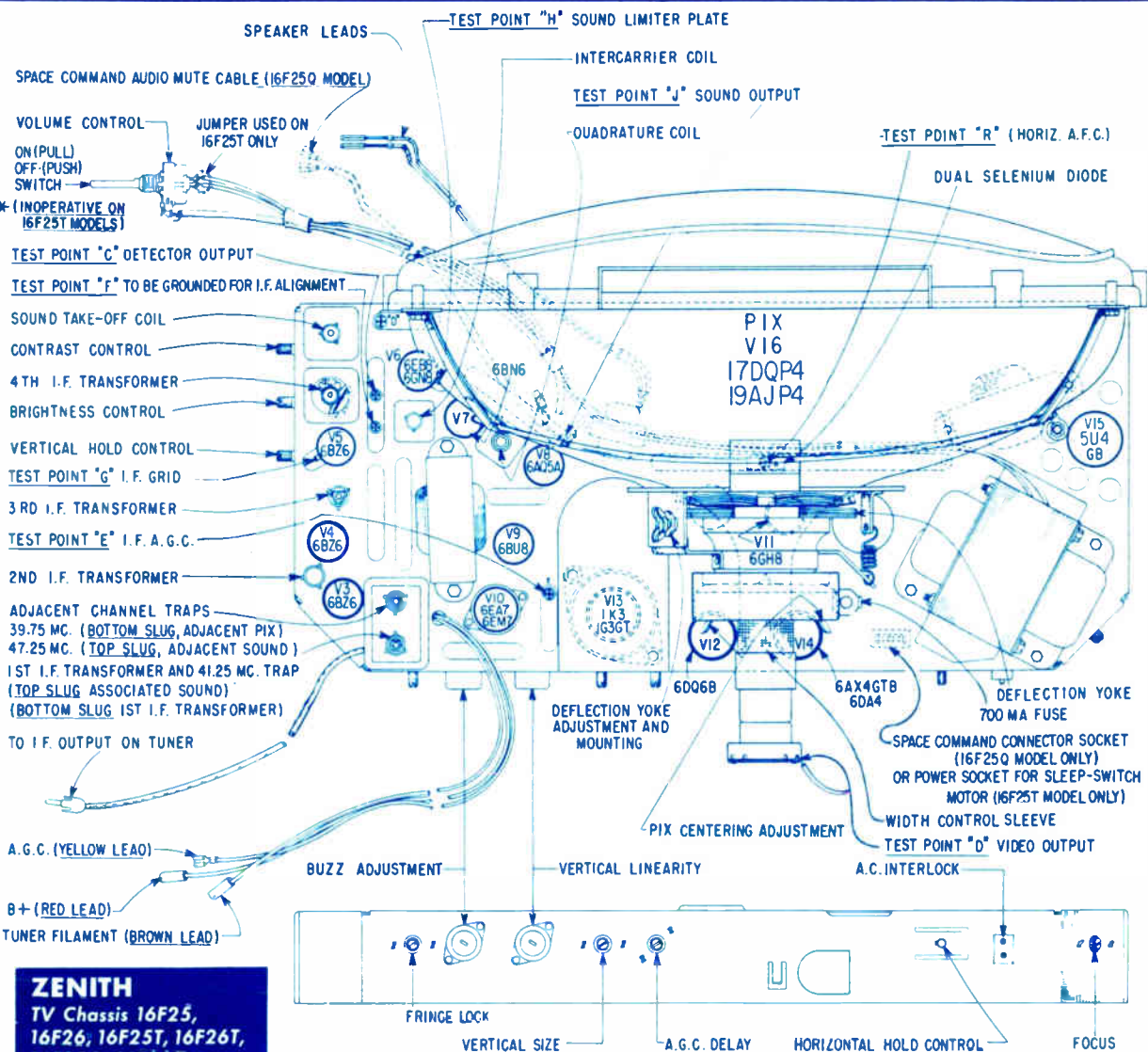
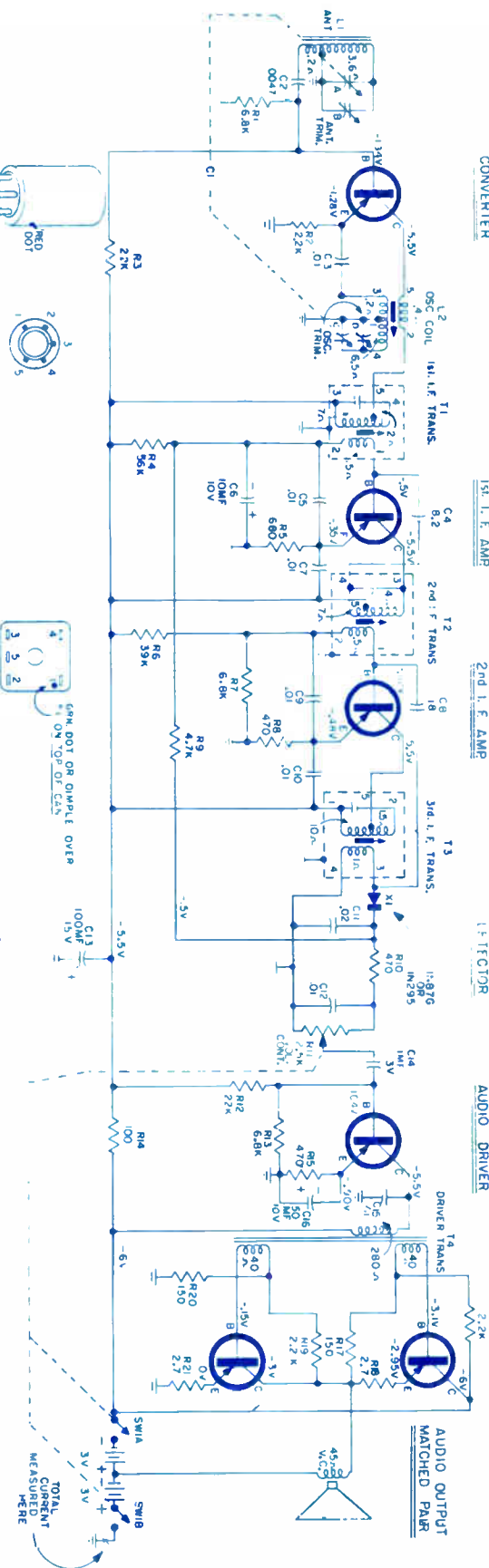
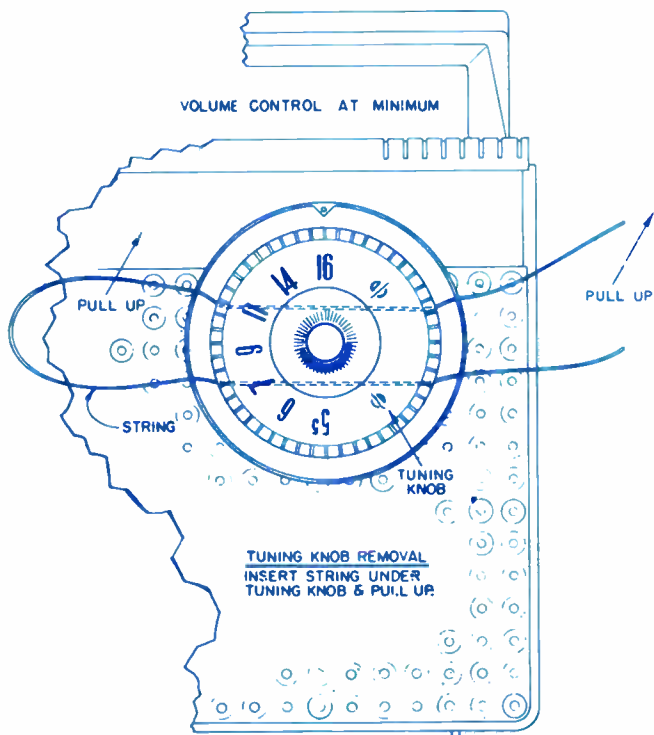
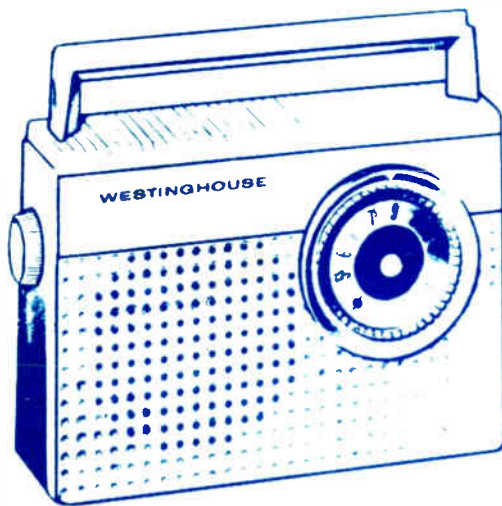


WESTINGHOUSE
Transistor Portable Radio
Chassis V2397-4
Models
H-771P6, H-771P6GP
H-772P6, H-772P6GP
H-773P6, H-773P6GP

ELECTRONIC TECHNICIAN 594

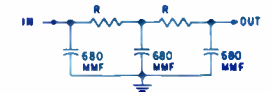
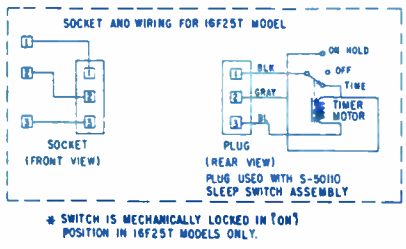
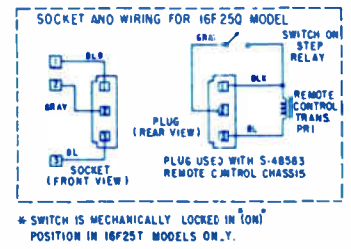
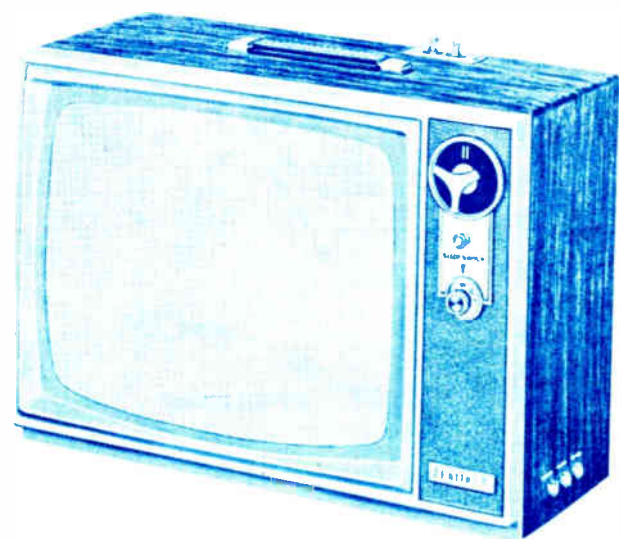
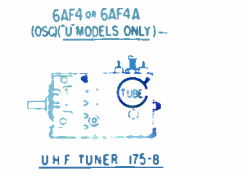
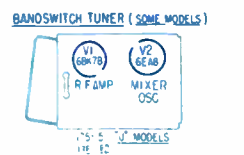
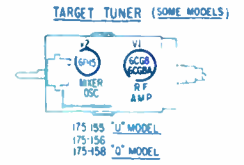
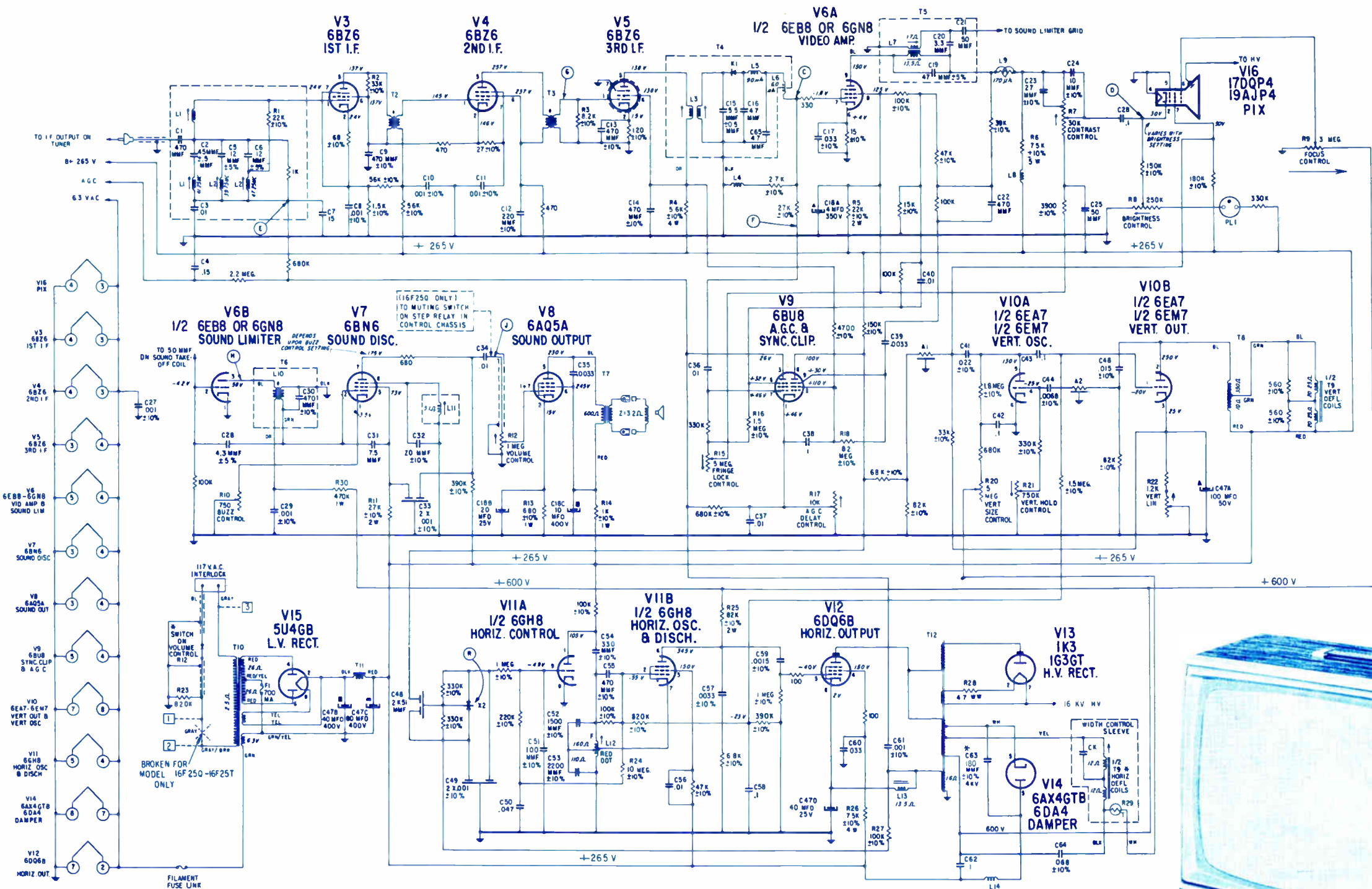
CIRCUIT DIGEST

FUNCTION	TYPE	W PART NO	ALTERNATES	W PART NO.
CONVERTER	PNP	297VQIH01	2N412	297VQIH01, 04
1st I.F. AMP	PNP	297VQI2H05	2N410	297VQI2H05, 04
2nd I.F. AMP	PNP	297VQI2H0F	2N410	297VQI2H0F, 04
AUDIO DRIVER	PNP	297VQ04H03	2N406	297VQ04H03, 04
AUDIO OUTPUT	PNP	297VQ03H06	2N406	297VQ03H06, 04



* TIMER SWITCH AND MOTOR USED ON 16F25T CHASSIS ONLY

Electronic Technician
CIRCUIT DIGEST 594



EQUIVALENT CIRCUIT A-1 and A-2 INTEGRATORS
87-7 R is 68K
87-8 R is 82K

16F26 CHASSIS
C63 22-3185 CAPACITOR (200 MMFD, 4 KV)
T9 95-1796 YOKE

ALIGNMENT POINTS
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS

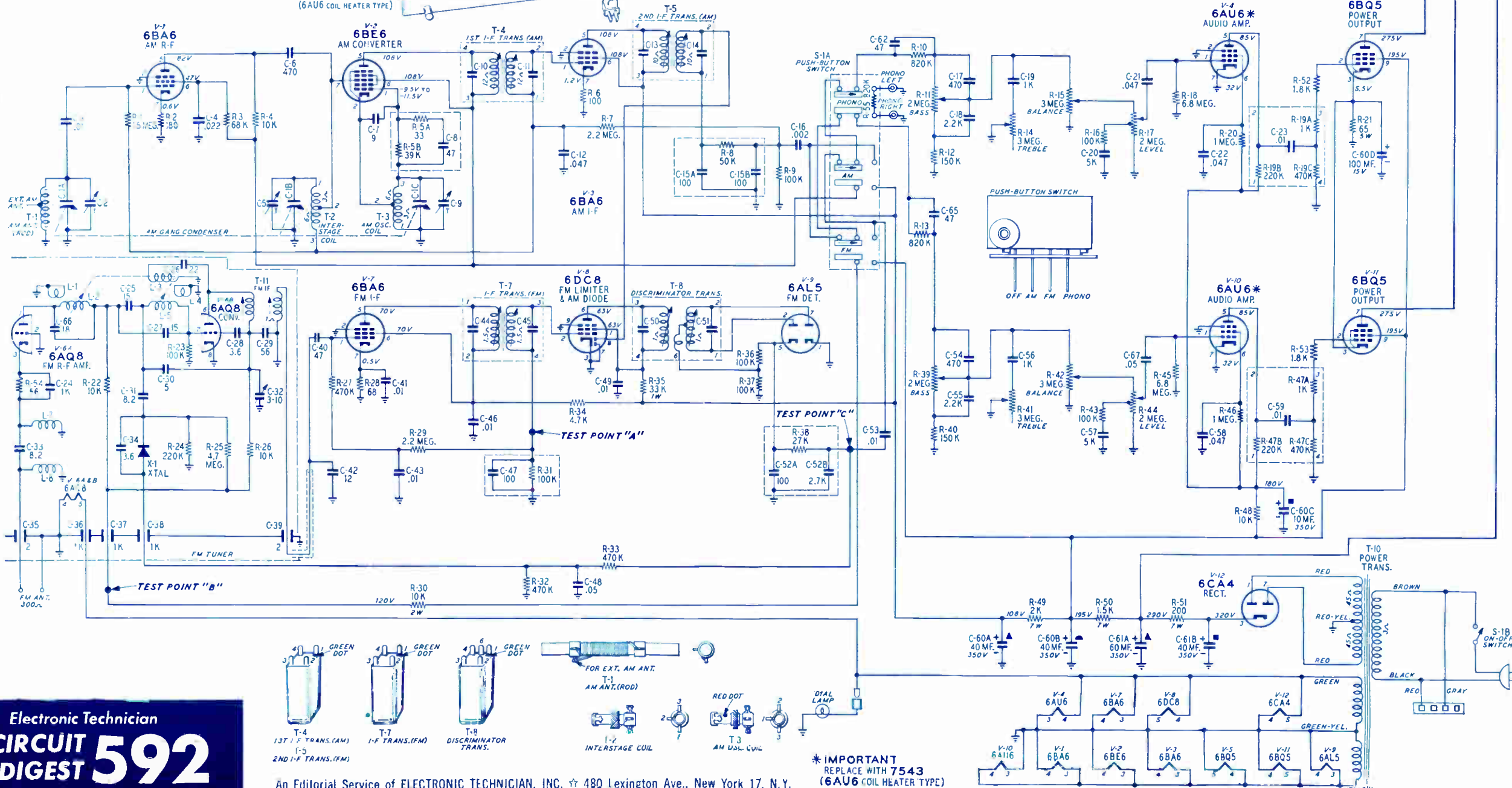
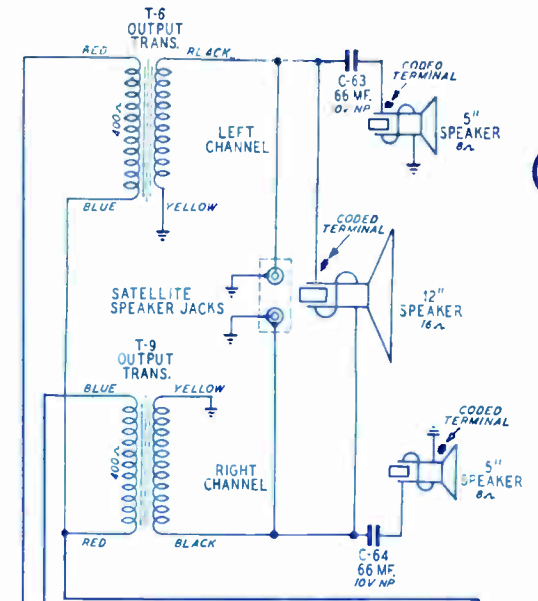
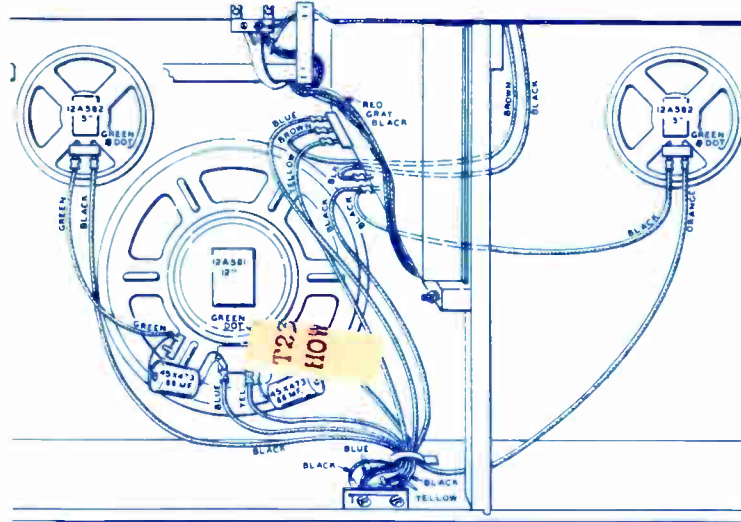
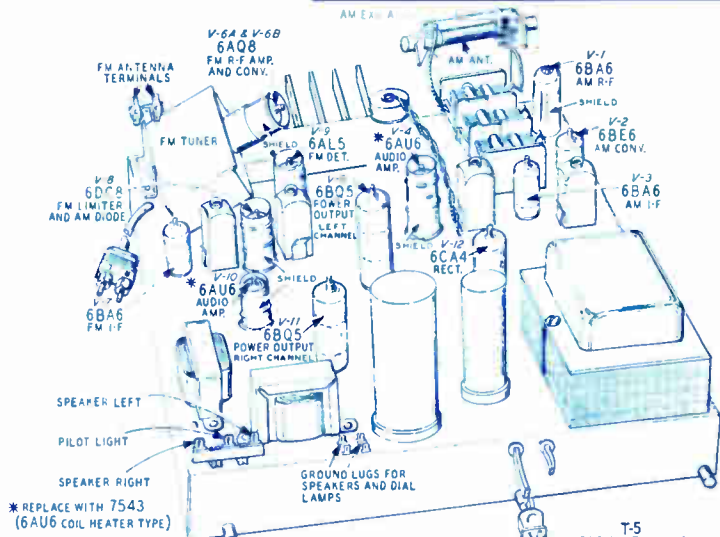
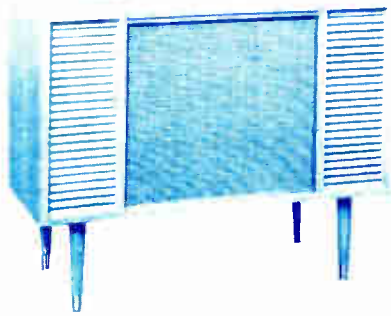
TEST POINTS:
C - DETECTOR OUTPUT
D - VIDEO OUTPUT
E - I.F. A.G.C.
F - GROUND DURING I.F. ALIGNMENT
G - 3RD I.F. 2ND
H - SOUND LIMITER PLATE
J - SOUND OUTPUT
K - PLATE OF A.V.C. DIODE

ELECTRONIC TECHNICIAN 592

CIRCUIT DIGEST

MONTGOMERY WARD
(Airline)
Stereo Console, AM-FM-Phono Models WG-2805A, WG-2806A, WG-2807-A

October • 1960

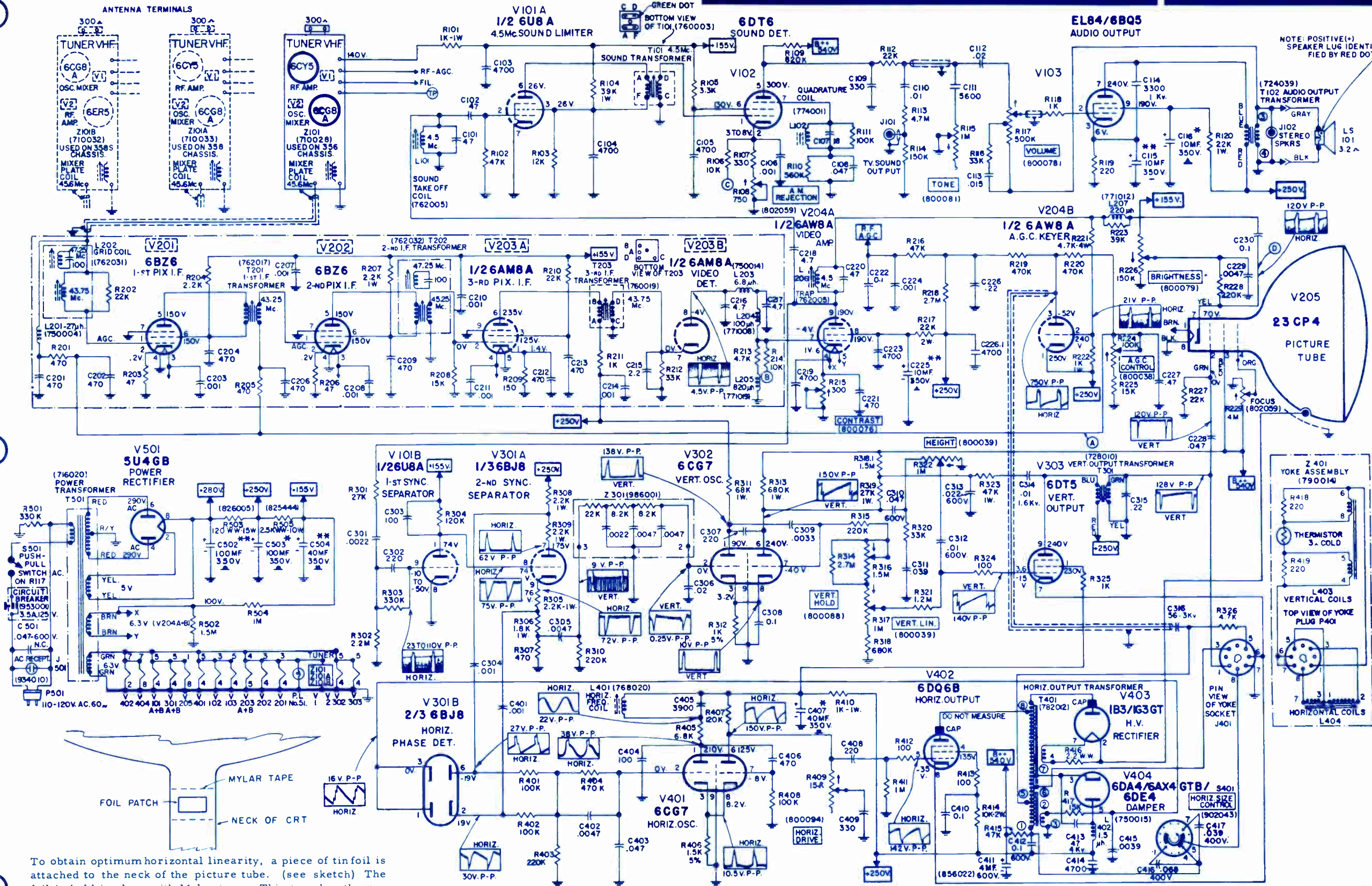


Electronic Technician
CIRCUIT DIGEST 592

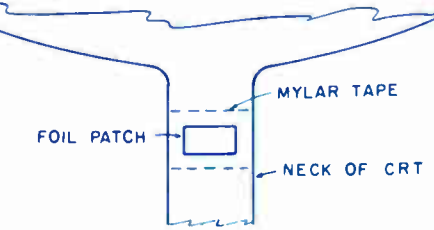
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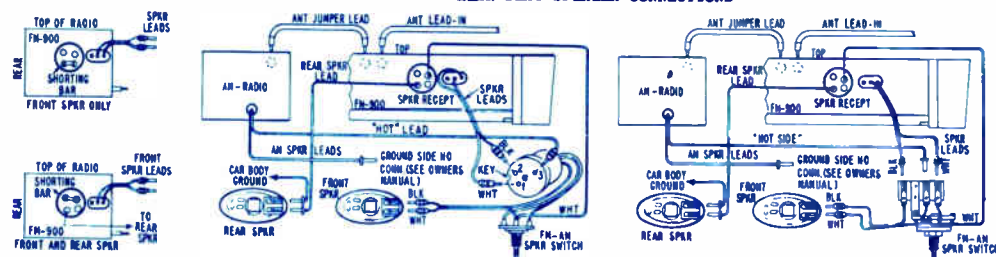
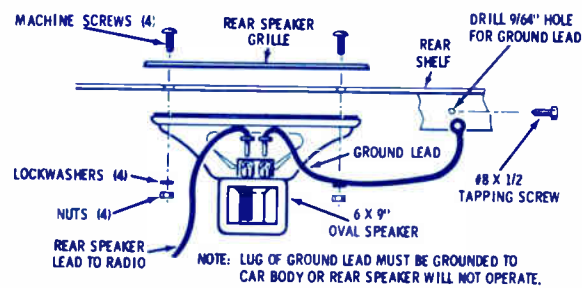
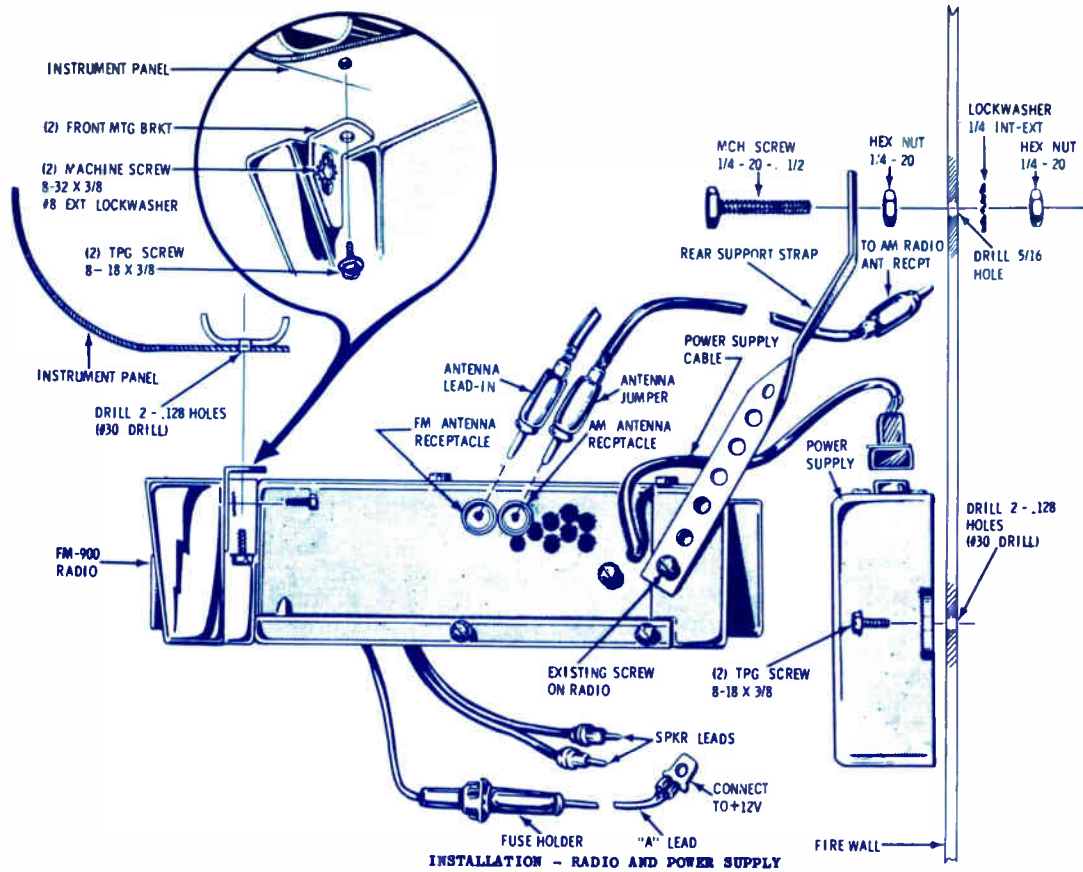
*** IMPORTANT**
 REPLACE WITH 7543
 (6AU6 COIL HEATER TYPE)

World Radio History

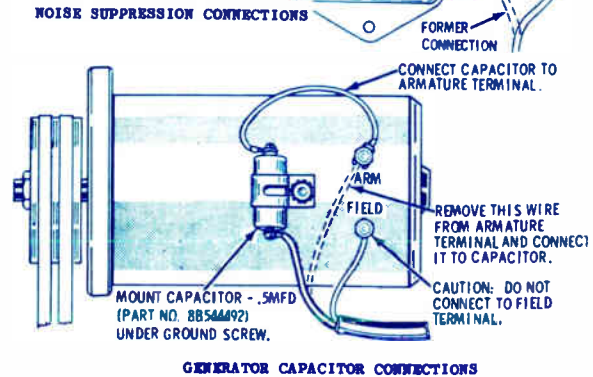
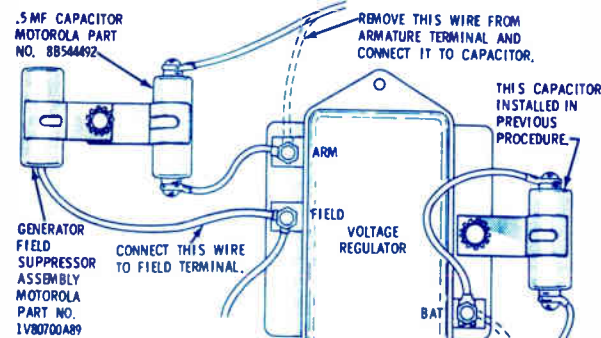
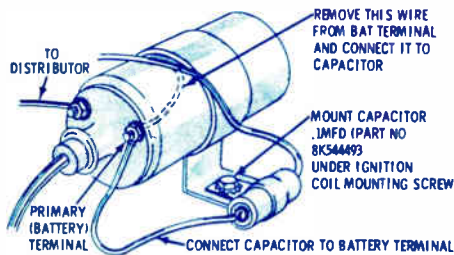
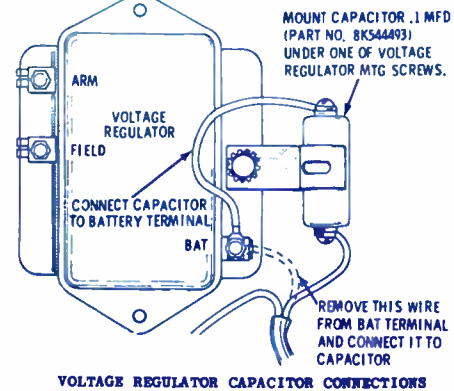
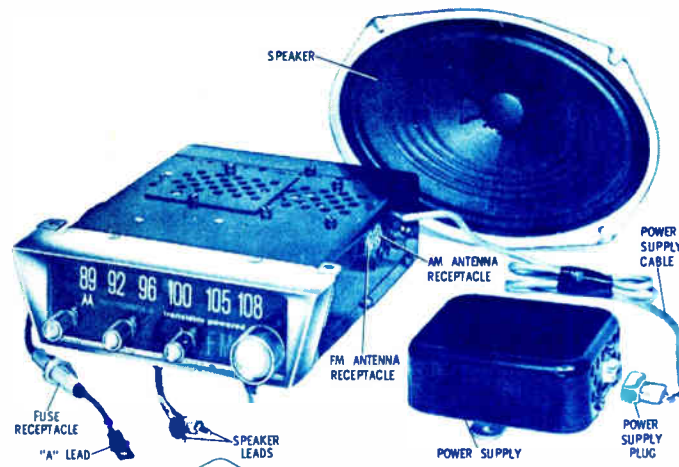
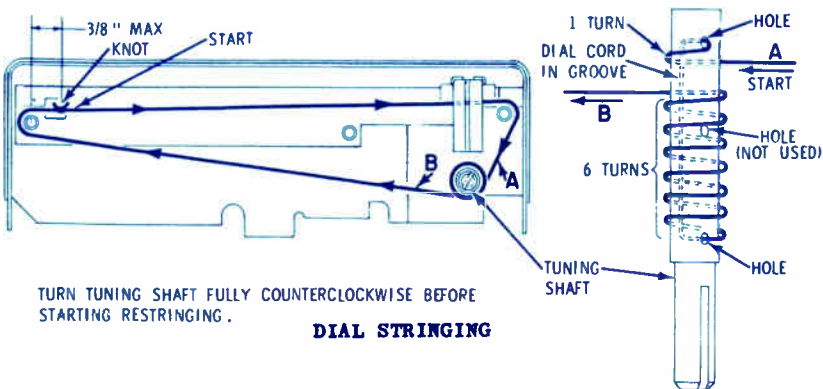


To obtain optimum horizontal linearity, a piece of tin foil is attached to the neck of the picture tube. (see sketch) The foil is held in place with Mylar tape. This tape has the required high voltage breakdown potential. The foil should be removed from the old picture tube and placed on the neck of the new replacement picture tube, before the replacement tube is installed.





POSITION OF SHORTING BAR WHEN USING FM-900 ALONE

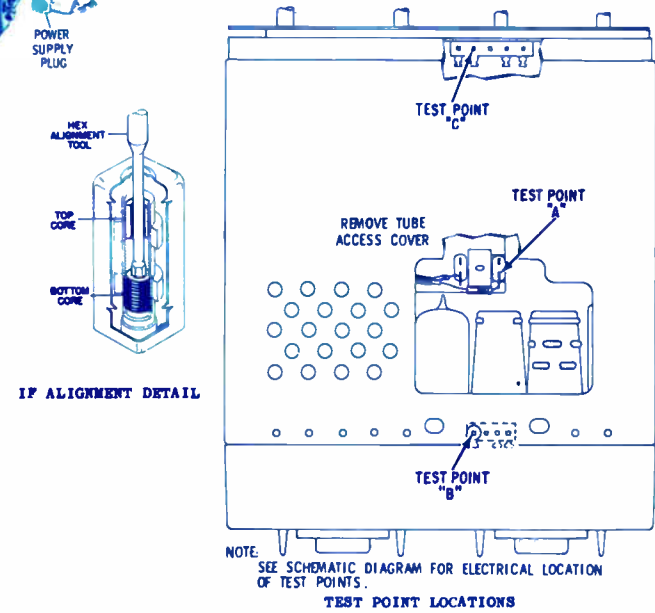


INTERFERENCE ELIMINATION

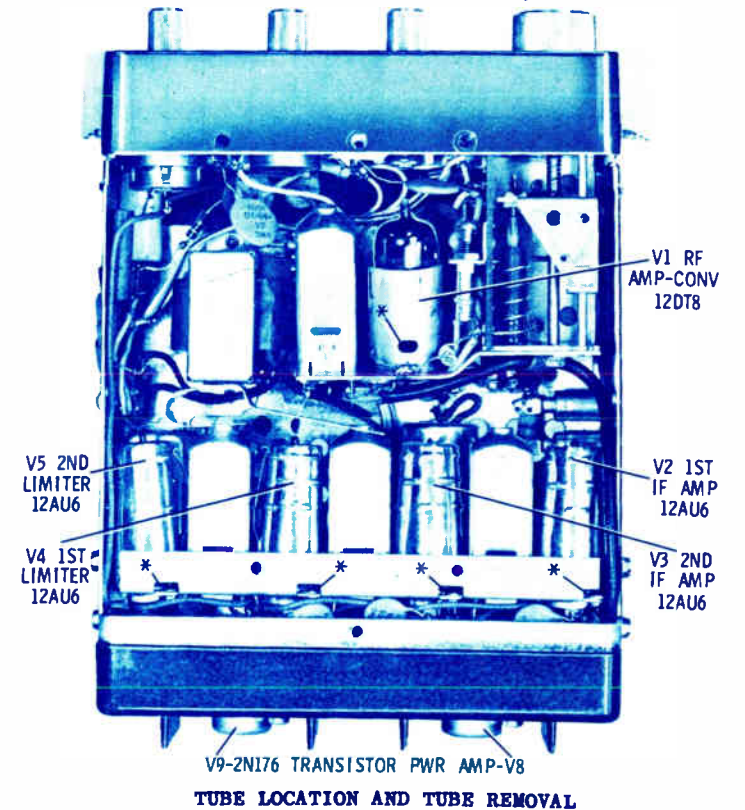
The ignition noise suppression capacitors supplied with the FM-900 must be installed, even though the car may have existing suppression equipment for an AM radio.

POWER SUPPLY REQUIREMENTS - It is preferable to use a storage battery (without a battery charger) in place of a battery eliminator. If a battery eliminator is used, it must be well regulated and filtered.

TRANSISTOR REPLACEMENT - When replacing a transistor, be sure transistor insulator is in place and well greased and that the mounting screws are securely and evenly tightened.



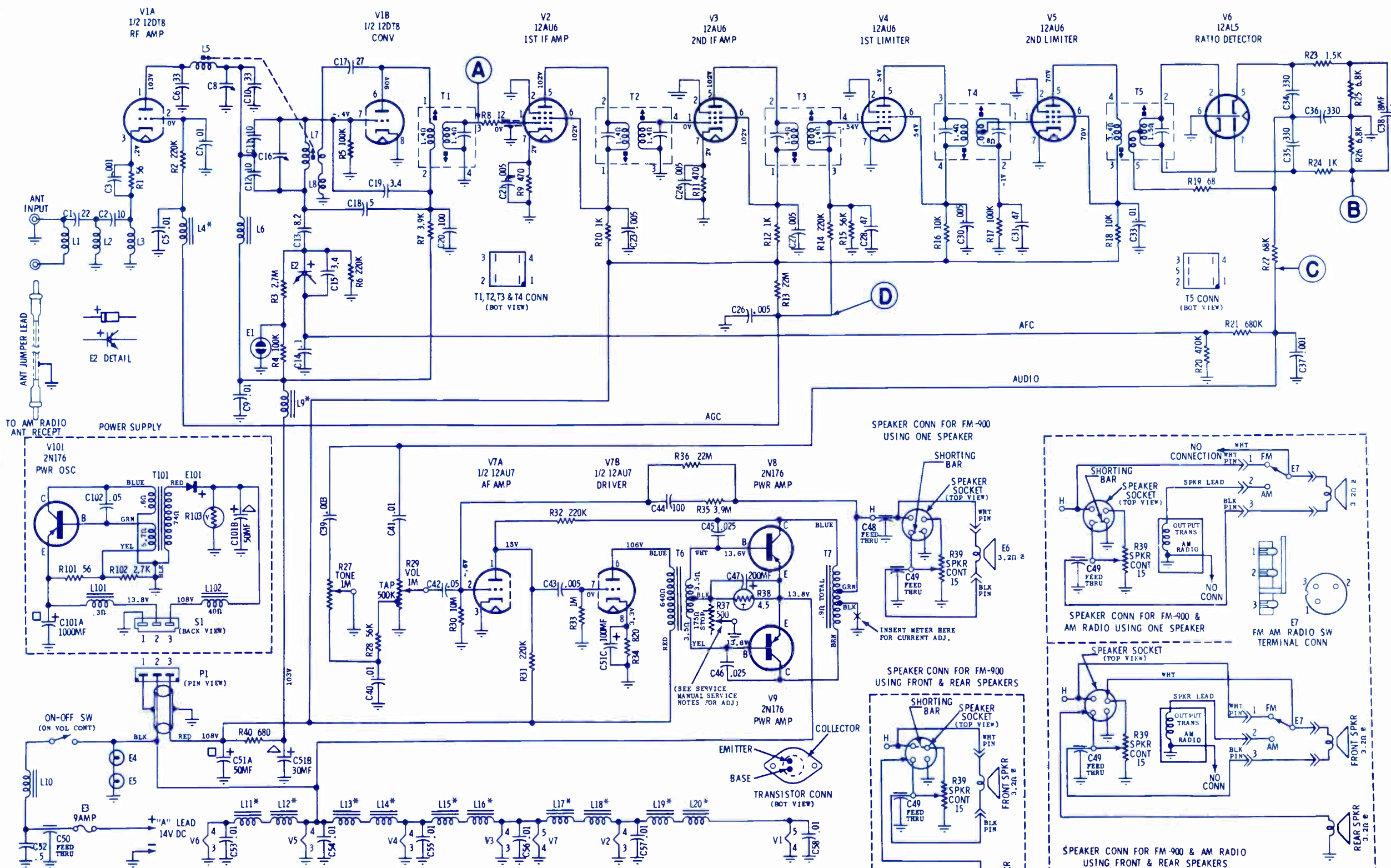
* TO REMOVE TUBES AND SHIELDS INSERT SCREWDRIVER IN SLOT & PRY UP.



MOTOROLA
Auto Radio, FM
Model FM-900

Electronic Technician
CIRCUIT DIGEST

590

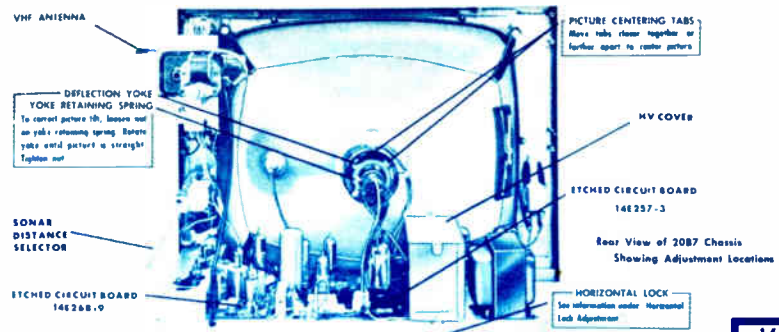


CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

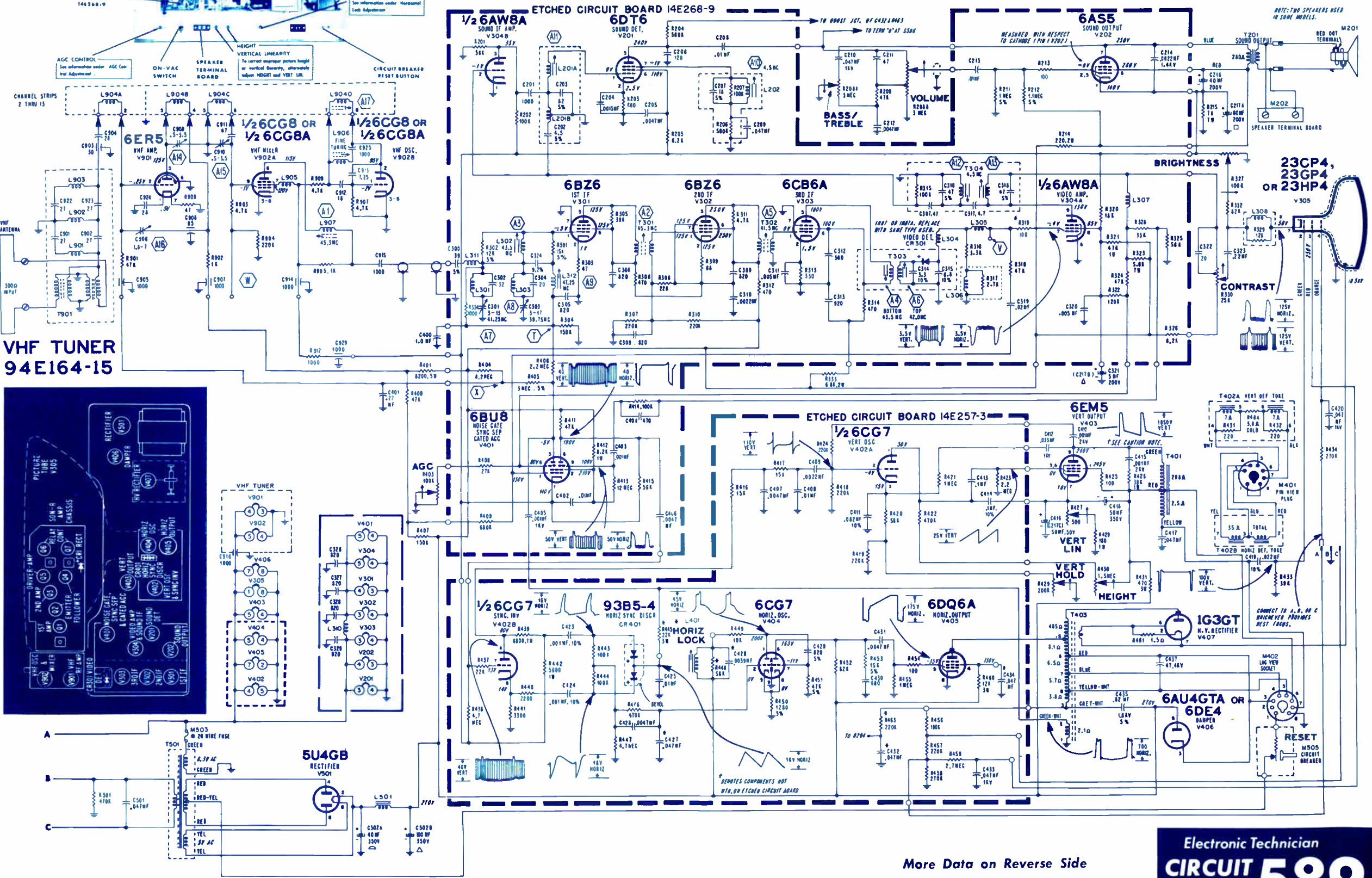
NOTES:
CAPACITORS - Unless otherwise specified, decimal values in MF, all others in MMF.
VOLTAGES - Measured from point indicated to chassis with a VTVM. No signal in. Tolerance ± 10%.

INPUT VOLTAGE - 14V DC.
TUNING RANGE - 88 MC TO 108 MC.
IF FREQUENCY - 10.7 MC.
* Denotes ferrite bead.

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More Data on Reverse Side

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

In This Issue (No. 100)

Circuit Digest Schematic No.

- DELCO GMC Truck Radio Model 2233850 605
- DUMONT TV Chassis 120530-C, 531-D Models 600B-4B, 600B-49 606
- GENERAL ELECTRIC Transistorized Intercom Model W300A 601

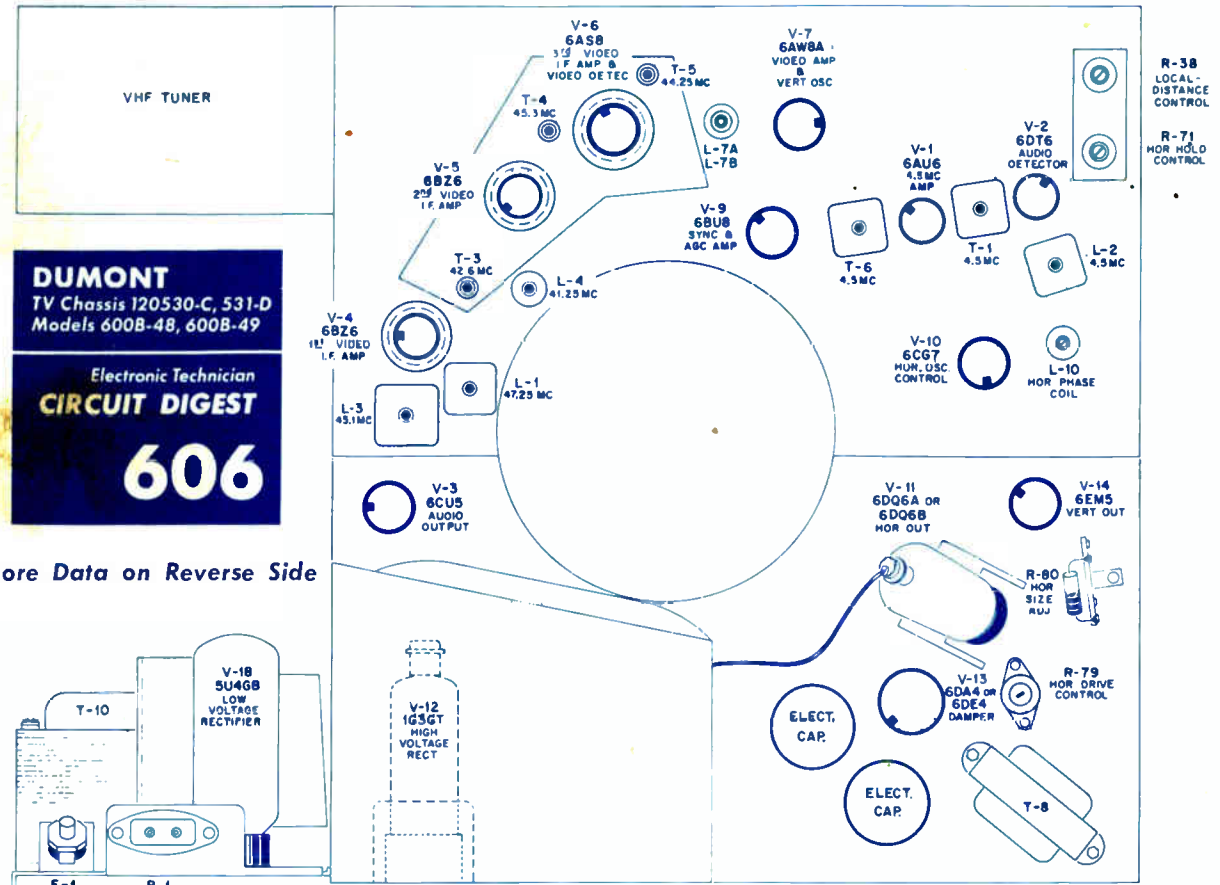
- PHILCO AM-FM Radio Models J-996, J-997 603
- RCA TV Chassis KCS133 Series 602
- SYLVANIA TV Chassis 546-1, 2 Models 19P10, 19P11 604
- WESTINGHOUSE TV Chassis V-2412-1, -2 Models H-P3310, 11, 12 600

GROUP
100

DUMONT
TV Chassis 120530-C, 531-D
Models 600B-4B, 600B-49

Electronic Technician
CIRCUIT DIGEST
606

More Data on Reverse Side

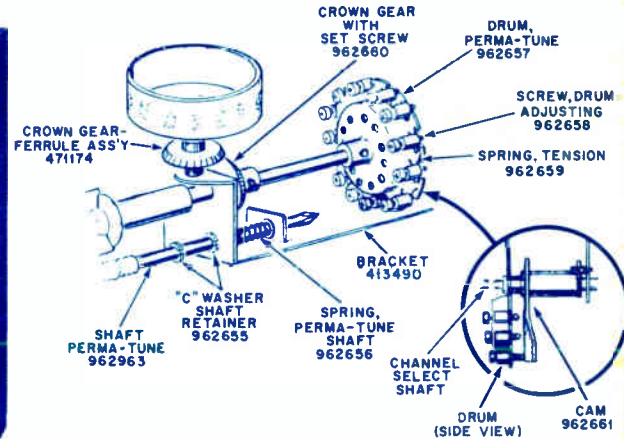
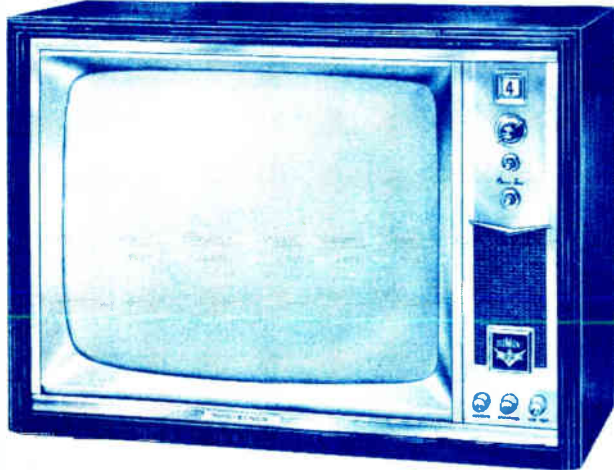


TUBE LOCATION AND ALIGNMENT POINTS

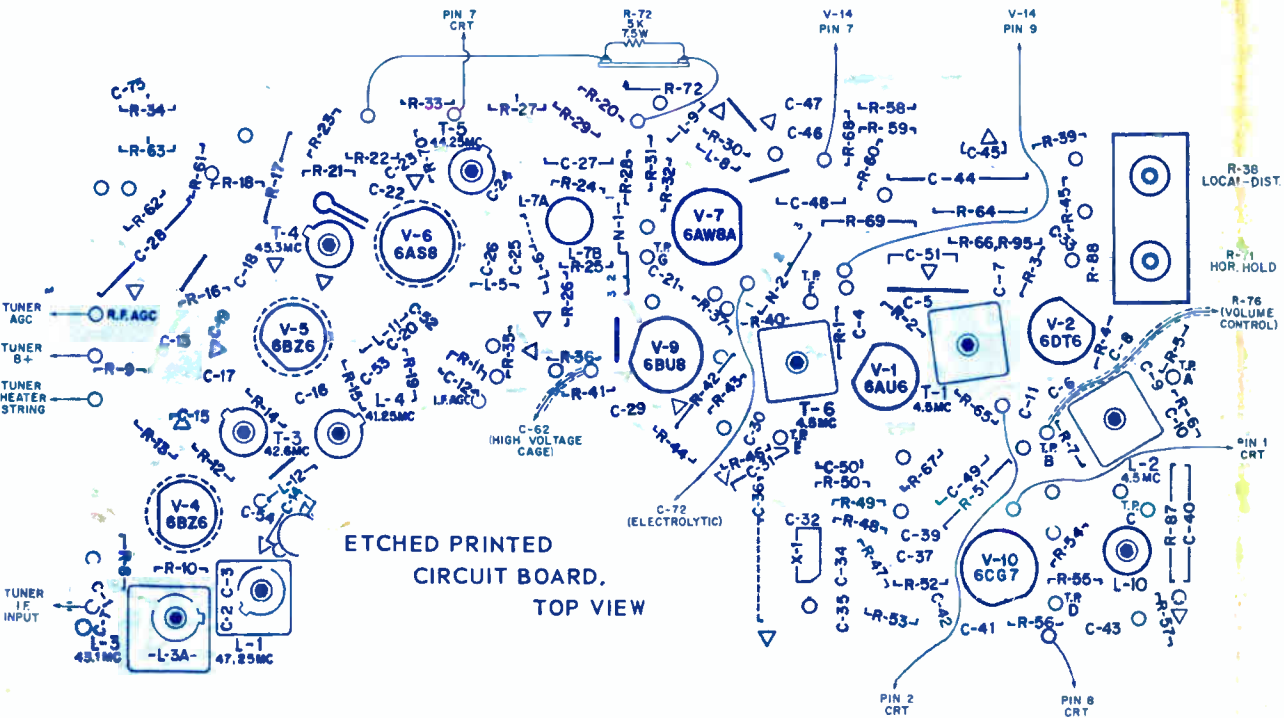
RESISTANCE READINGS

SYM	TUBE TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V- 1	6AU6	1.5	0	0	.1	*50K	*50K	220	-	-
V- 2	6DT6	5	390	0	.1	*300K	*50K	560K	-	-
V- 3	6CU5	*50K	1.2 M	.1	0	N.C.	*50K	*50K	-	-
V- 4	6BZ6	68K	56	0	.1	*55K	*55K	0	-	-
V- 5	6BZ6	69K	47	.1	0	*50K	*52K	0	-	-
V- 6	6AS8	*48K	0	180	.1	0	4.5 K	0	0	*44K
V- 7	6AW8	0	500K to 2 M	5.9M to 8.4 M	0	.1	20 to 300	4.5K	*48K	*34K
V- 8	CRT	.1	22K	*3.5M	0 to 3.5M	-	-	100K to 240K	0	-
V- 9	6BU8	*50K	*50K	270 K	.1	0	*46K	250 K	*70K	3M
V-10	6CG7	*82K	100 K	1.2K	0	.1	*50K	3M	1.2K	0
V-11	6DQ6	T.P.	0	N.C.	*44K	680 K	T.P.	.1	0 to 30	-
V-12	1G3-GT	I	N	F	I	N	I	T	E	-
V-13	6DA4 / 6DE4	N.C.	N.C.	3.5M	N.C.	*42K	N.C.	.1	0	-
V-14	6EM5	*40K	T.P.	N.C.	.1	0	2.3M-2.8M	270	N.C.	*44K
V-18	5U4-GB	N.C.	*40K	N.C.	20	N.C.	20	N.C.	*40K	-

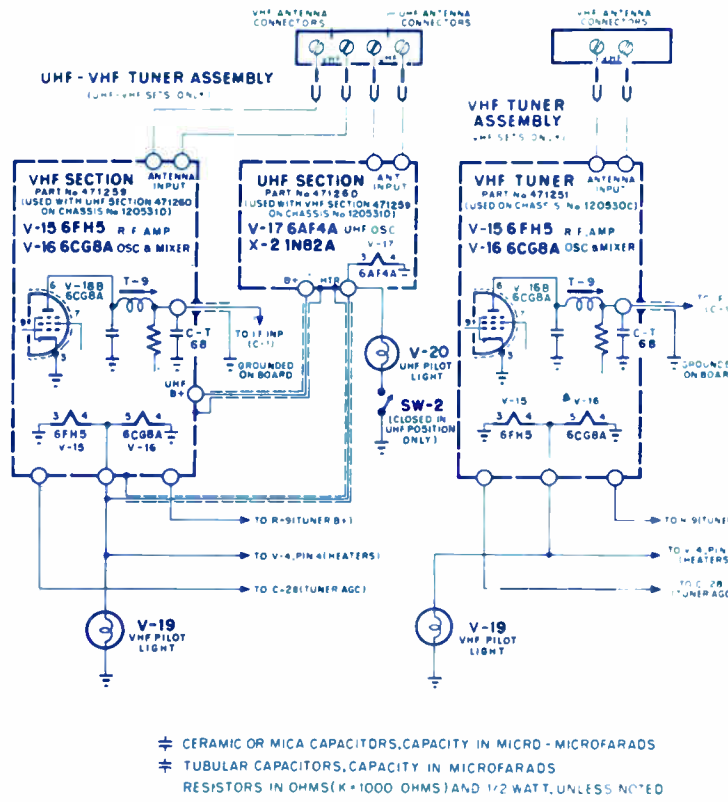
NOTES: All resistance readings given are in ohms, "K" is Kilohms, "M" is Megohms. * Indicates varying resistance: allow 30 seconds for meter to settle. N.C. Denotes no connection at terminal indicated. T.P. Denotes connection used as terminal post.



MECHANICAL PARTS, PERMA-TUNE (USED WITH VHF TUNERS 471251, 471259)



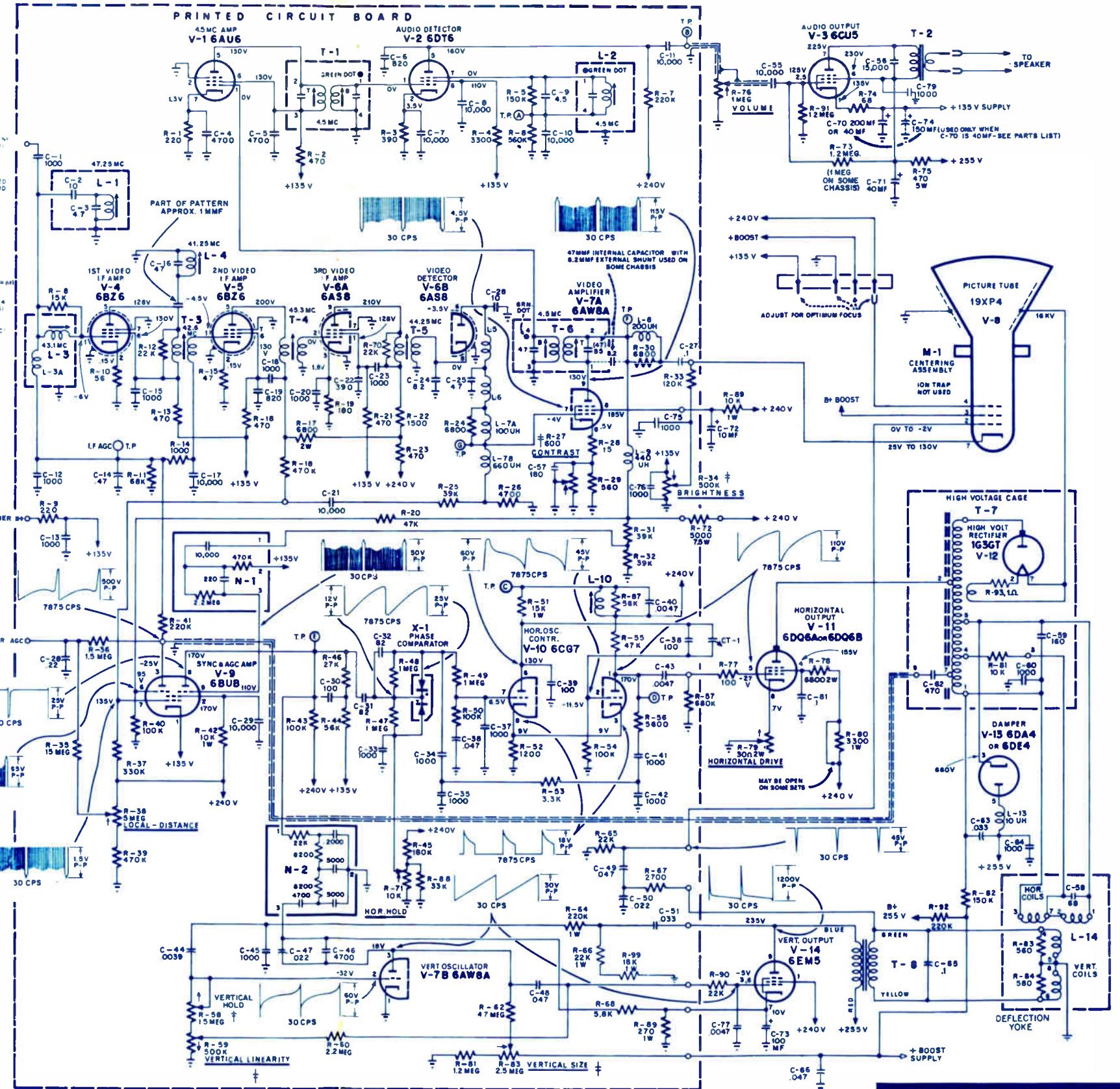
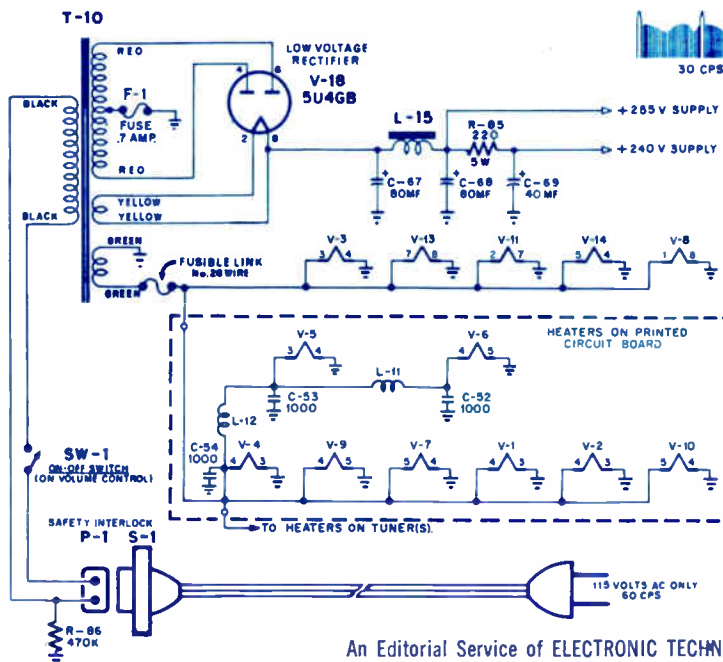
ETCHED PRINTED CIRCUIT BOARD. TOP VIEW



FOCUS ADJUSTMENT

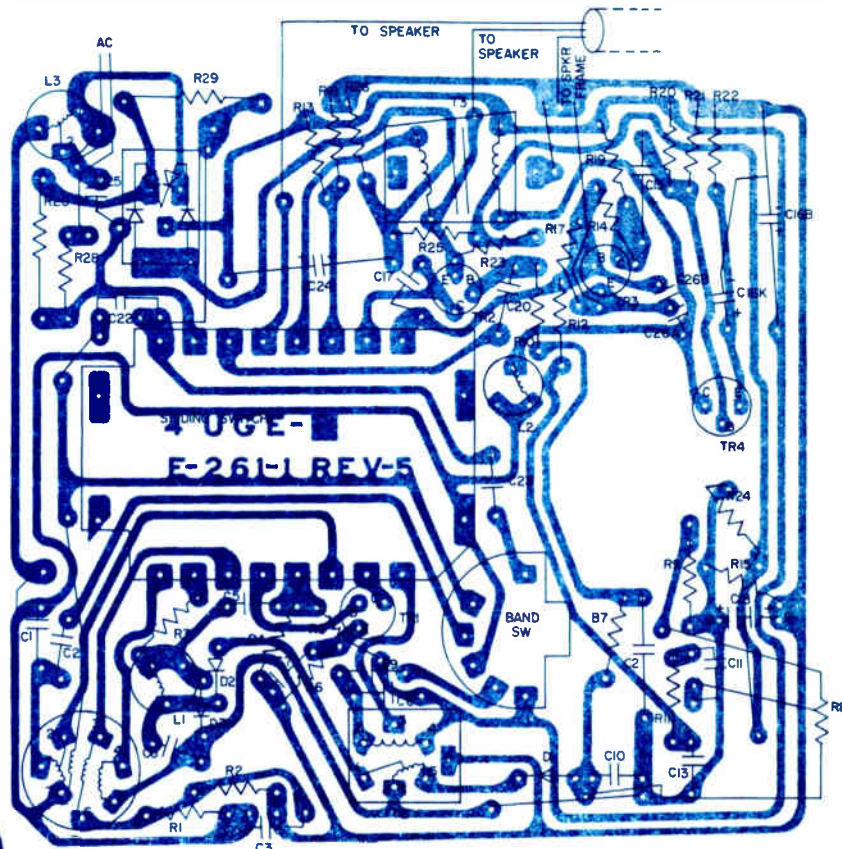
Any one of four different voltages (available at the quadruple terminal strip mounted directly below the 6CG7 tube) may be utilized as a focus potential. Remove the insulated clip-lead connector (attached to one of the terminals on this strip) and alternately try connecting it to each possible terminal, leaving it connected to the one which gives the best overall focus.

More Data on Reverse Side

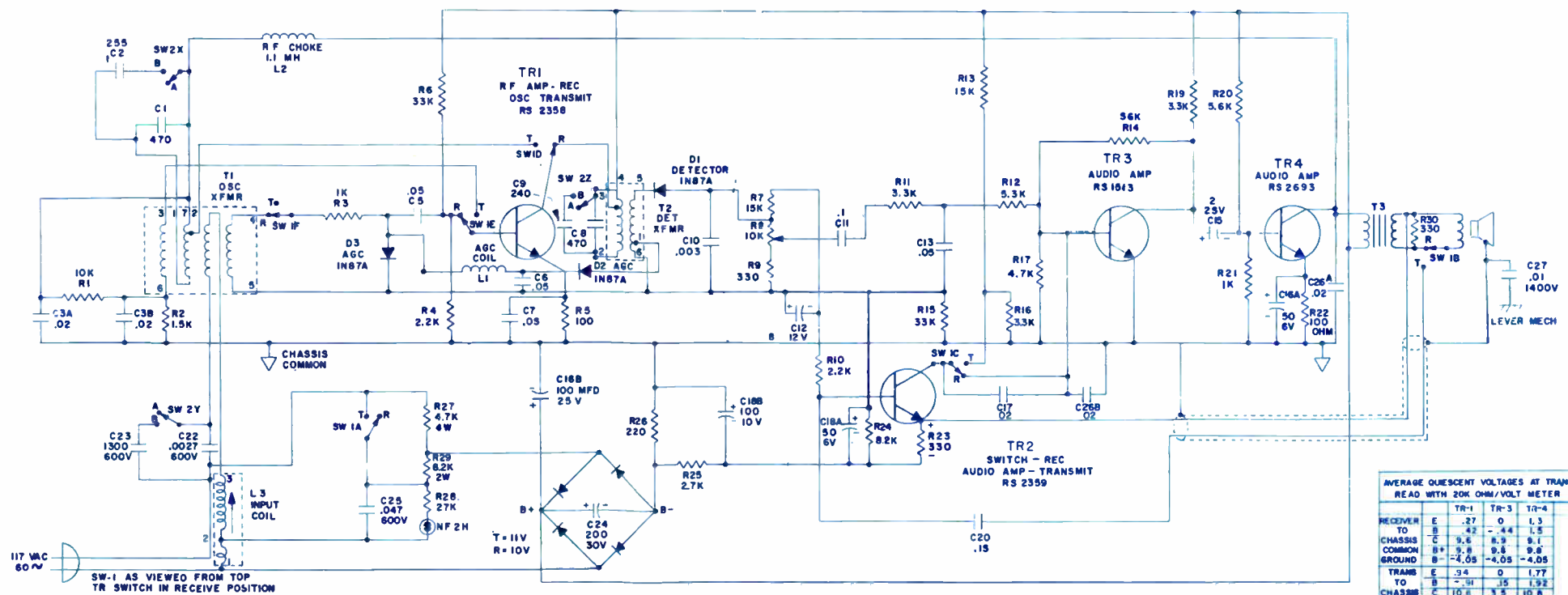
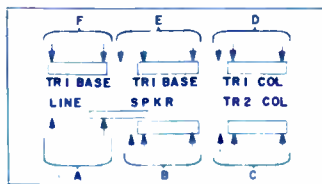
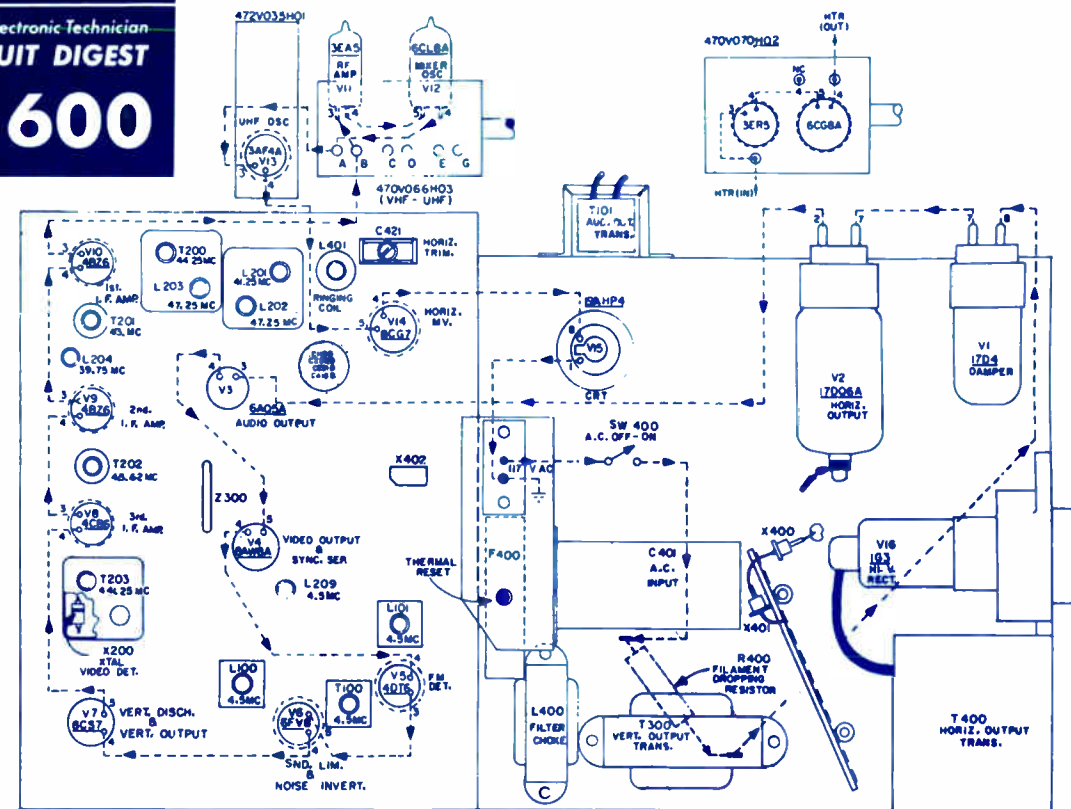


December • 1960

COMPONENT
WIRING



More Data on Reverse Side



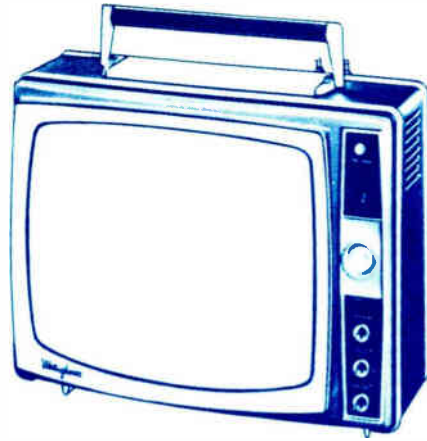
SW-1 AS VIEWED FROM TOP
TR SWITCH IN RECEIVE POSITION



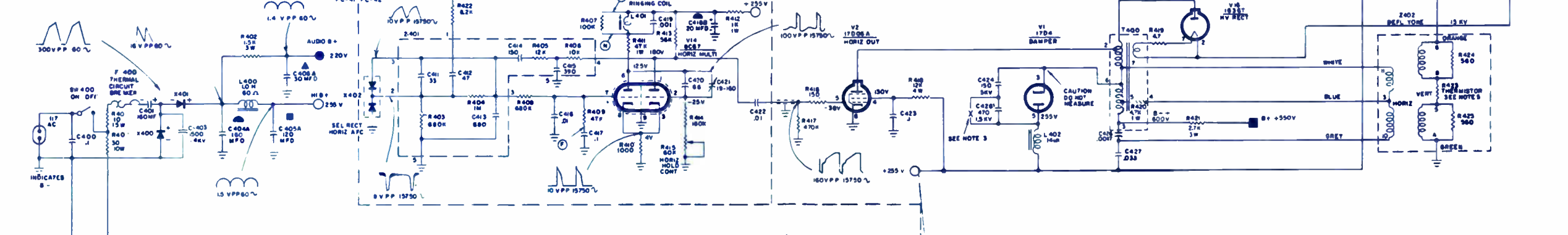
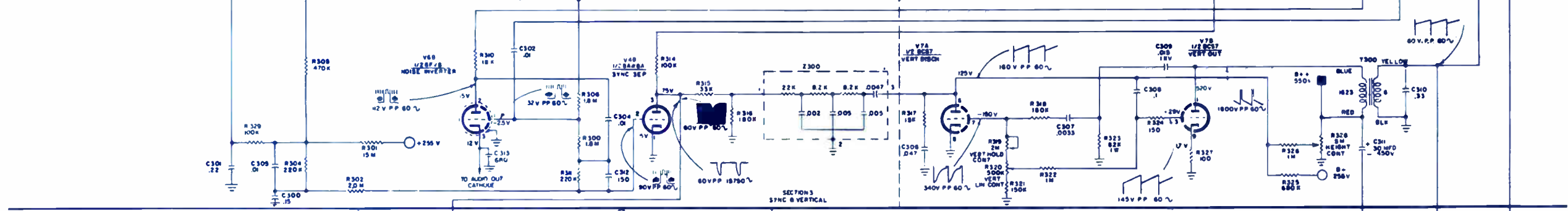
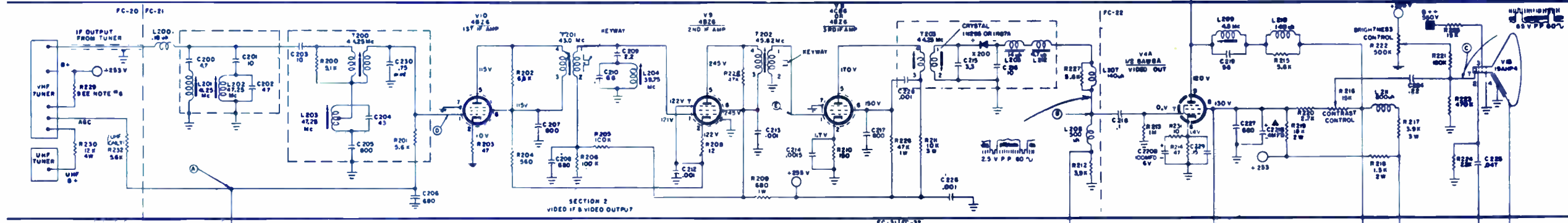
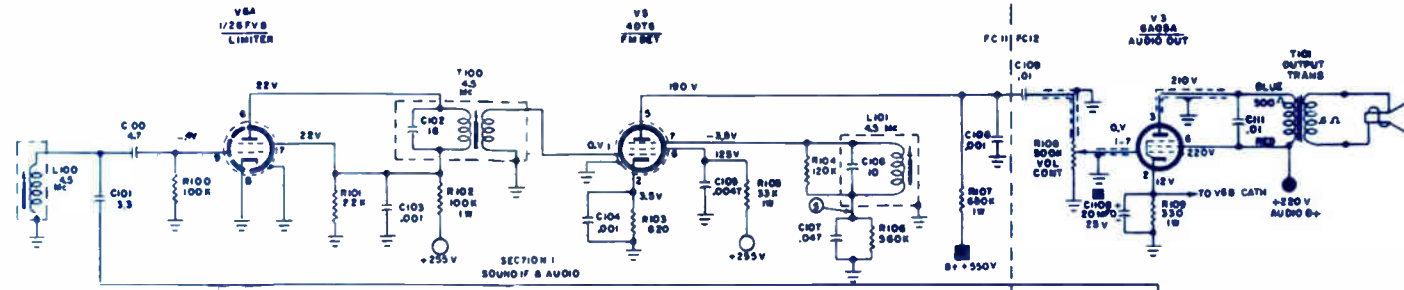
BOTTOM VIEW OF PLUG IN COILS & XFMR

	E	B	C	TO GND
RECEIVER TO CHASSIS COMMON	.27	.42	9.6	9.8
TR-1	0	-4.4	8.9	9.8
TR-3	0	-4.05	9.8	9.8
TR-4	1.3	1.5	9.8	9.8
TRANS TO CHASSIS COMMON	.34	.51	10.8	11.7
TR-1	0	1.77	5.5	10.6
TR-2	1.1	1.1	11.7	11.7
TR-3	1.1	1.1	11.7	11.7
TR-4	1.1	1.1	11.7	11.7

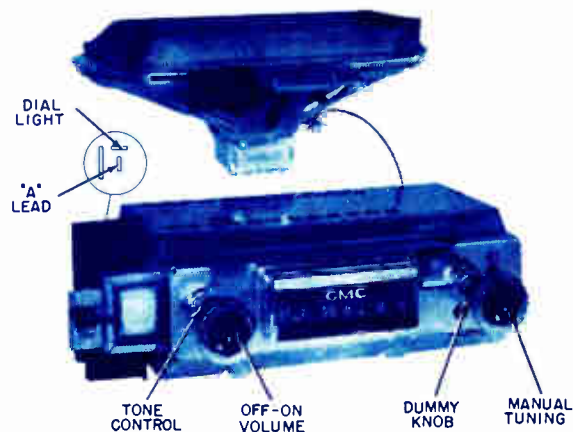
NOTE:
CHASSIS COMMON IS NOT THE SAME AS THE 117V AC GROUND. DO NOT USE CHASSIS COMMON FOR ANY MEASUREMENT INVOLVING THE 117V AC LINE.
SW-1 SHOWN IN REC POSITION
SW-2 SHOWN IN "A" OR 200 KC POSITION
MEASURE TR2 EMITTER CURRENT ACROSS R23 WITH SW-1 IN RECEIVE POSITION. QUESCENT VOLTAGE SHOULD BE APPROX 11V. VOLTAGE WHEN SIGNAL IS PRESENT DROPS TO .05V.



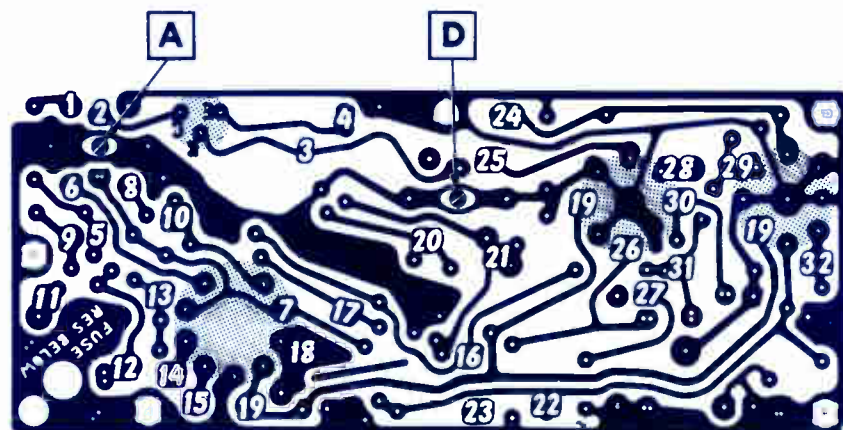
Special Full-Width Spring Binder Holds 24 Groups of Electronic Technician's Circuit Digests Available @ \$2.95



- NOTES:
- ALL CAPACITANCE VALUES LESS THAN 1 μF ARE IN μF AND VALUES GREATER THAN 1 μF ARE IN MFD. ALL RESISTANCE VALUES ARE IN OHMS, 1/2 WATT UNLESS OTHERWISE INDICATED.
 - DC VOLTAGES MEASURED FROM B-WITH A VTVM NO SIGNAL APPLIED LINE VOLTAGE AT 117 VAC.
 - SERVICE & FACTORY ADJ.-JUMPER IN GIVEN MAXIMUM WIDTH.
 - WAVEFORMS WERE TAKEN WITH CONTROLS SET FOR A NORMAL PICTURE WITH CONTRAST CONTROL SET FOR 65 V.P.P AT 1/2 C.
 - RESISTANCE MEASURED 5 OHMS HOT AND 1 OHM COLD.
 - R229 IS 680 OHMS, 1W WHEN 470V0580HZ TUNER IS USED.
 - R229 IS 680 OHMS, 1/2W WHEN 470V0570HZ OR 470V0730HZ TUNERS ARE USED.

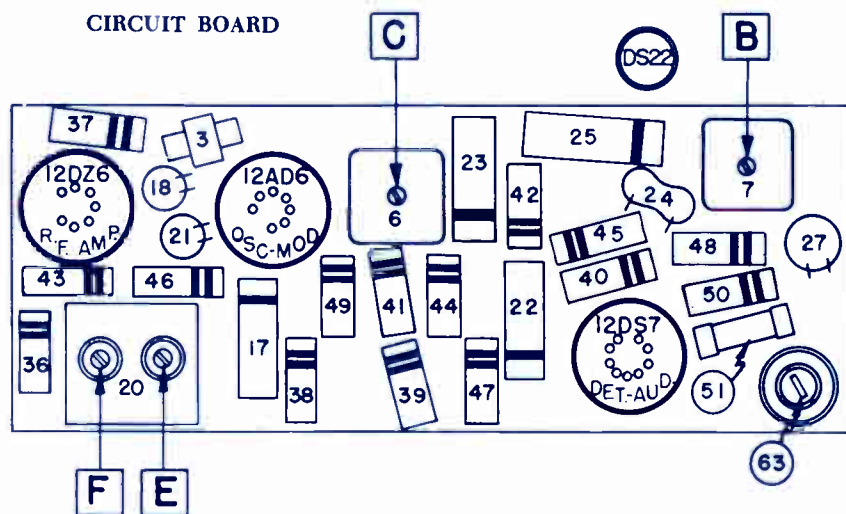


I.F. TRANSISTOR TERMINALS MARKED E, B, C ON CIRCUIT BOARD

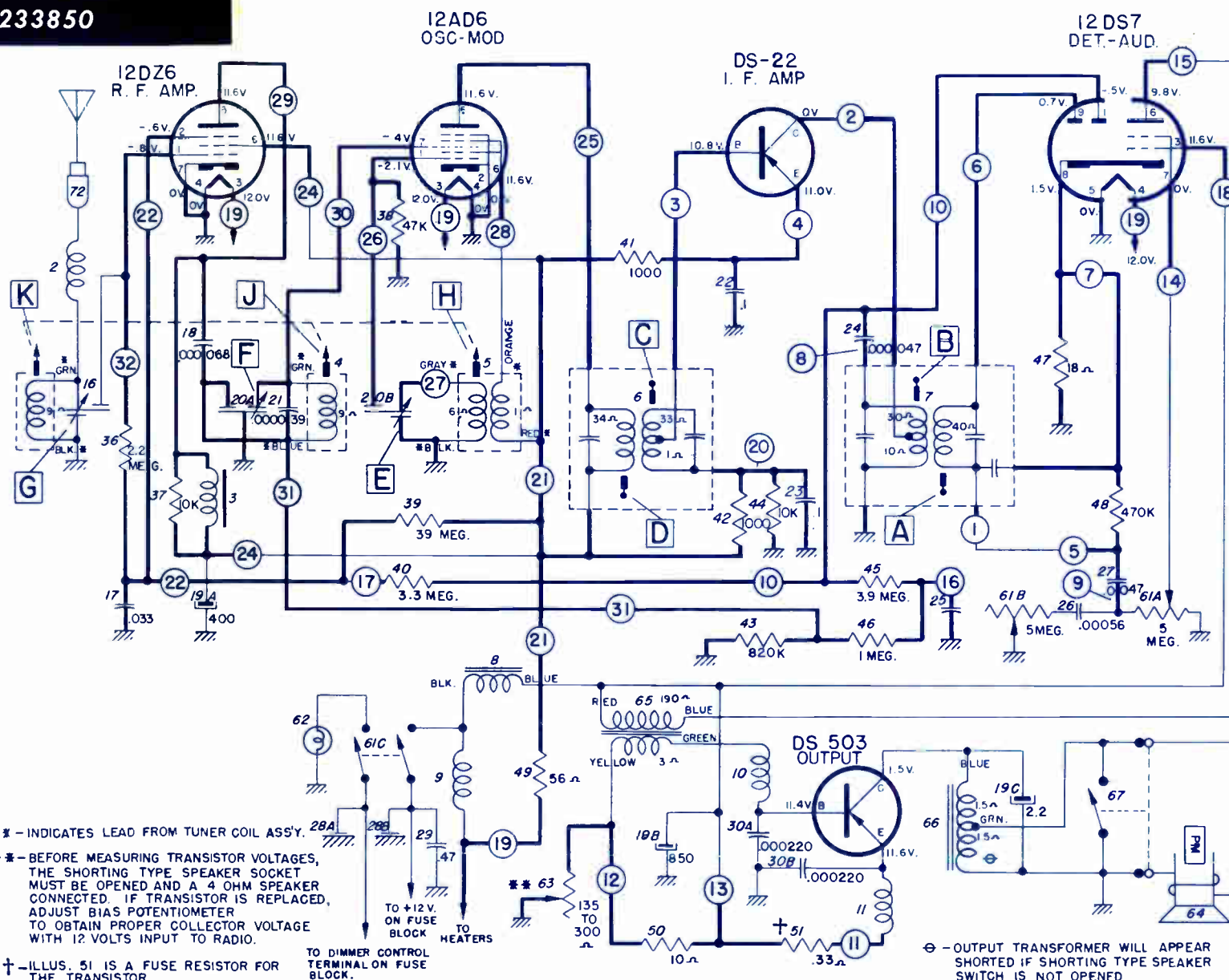


BOTTOM VIEW

CIRCUIT BOARD



TOP VIEW



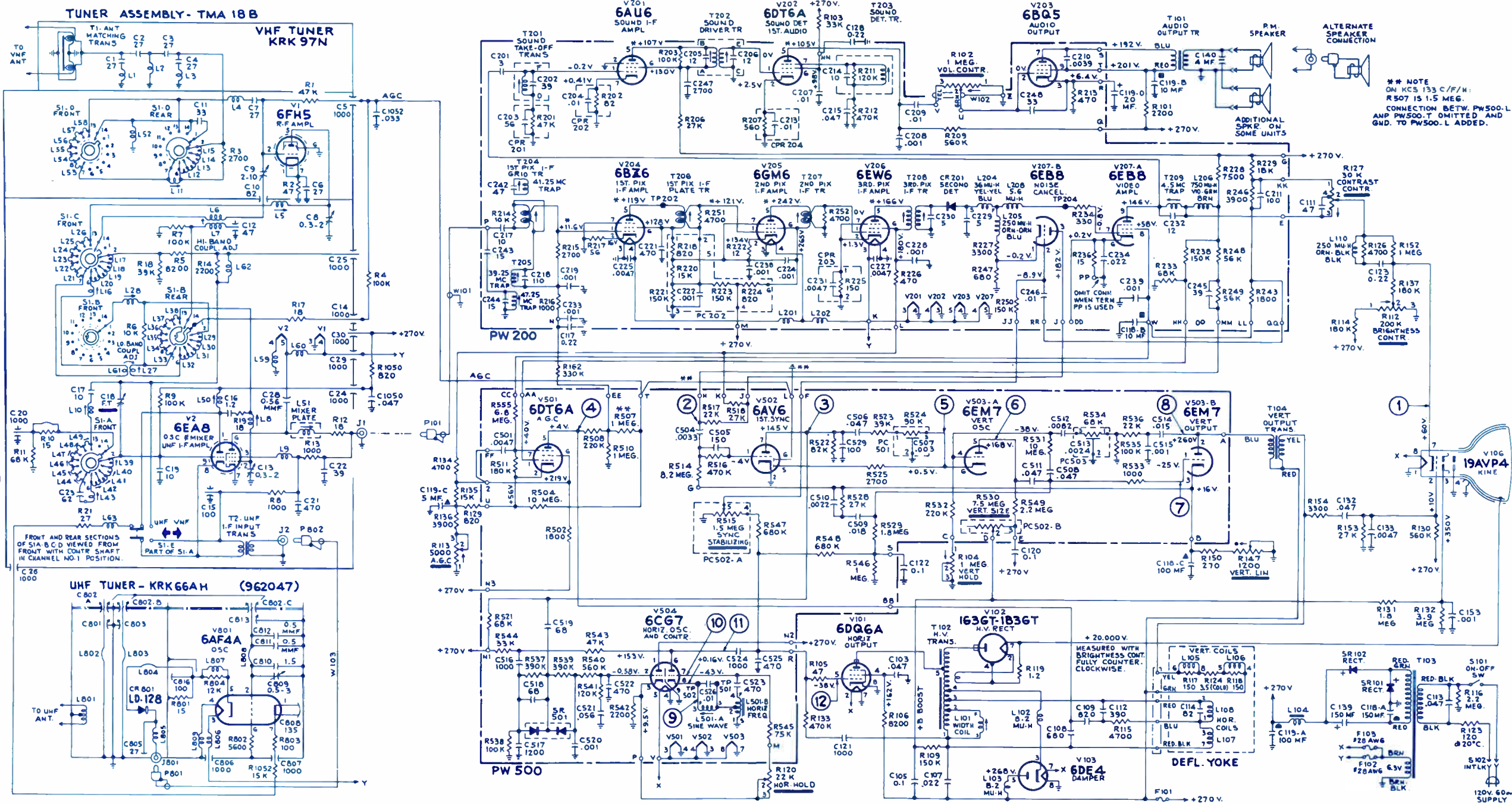
* - INDICATES LEAD FROM TUNER COIL ASSY.
 ** - BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.
 † - ILLUS. 51 IS A FUSE RESISTOR FOR THE TRANSISTOR.

PRINTED CIRCUIT SHOWN IN HEAVY LINES.

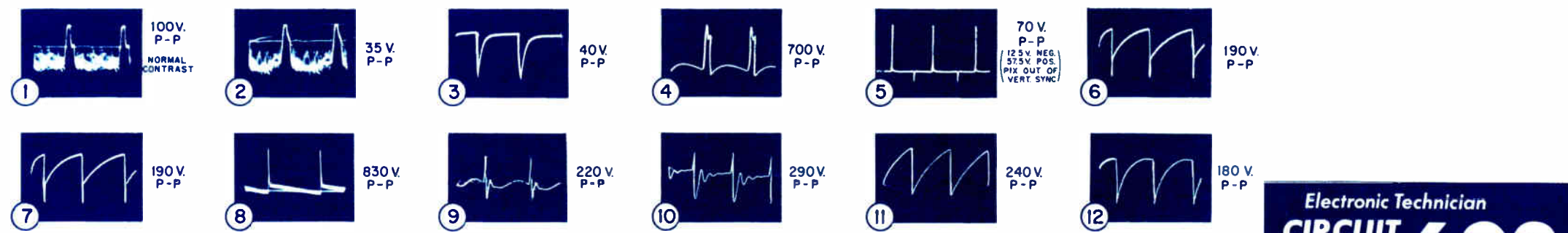
Steps	Series Capacitor or Dummy Antenna	Connect Signal Generator To	Signal Generator Frequency	Tune Receiver To	Adjust In Sequence For Max. Output
1	0.1 Mfd.	12AD6 Grid (Pin #7)	262 KC	High Frequency Stop	A, B, C, D,
2	0.000082 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	*E, F, G,
3	0.000082 Mfd.	Antenna Connector	600 KC	Signal Generator Signal	J, K
4	0.000082 Mfd.	Antenna Connector	1615 KC	High Frequency Stop	F, G

*Before making this adjustment check mechanical setting of oscillator core "H." The rear of the core should be 1 5/8" from the mounting end of the coil form. (This measurement is readily made by inserting a suitable plug in the mounting end of the coil form.) Core adjustment should be made with a non-metallic screw driver.

With the radio installed and the car antenna plugged in adjust the antenna trimmer "G" for maximum volume with the radio tuned to a weak station between 600 and 1000 KC (see sticker on case.)



More Data on Reverse Side



ELECTRONIC TECHNICIAN

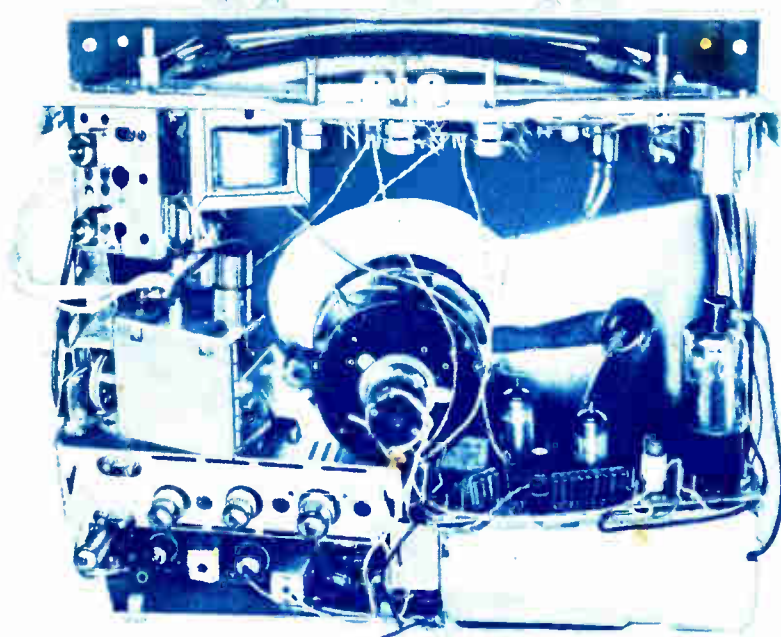
CIRCUIT DIGESTS

In This Issue (No. 101)

Circuit Digest Schematic No.

ADMIRAL TV Chassis 15H1 with Stereo Chassis 3Y1	608	PACKARD BELL TV Chassis 88-9 Models 19T3 & 23T3	607
GENERAL ELECTRIC TV Chassis M575 Models CS733, CS734, CS901, CS902	609	PHILCO TV Chassis 11H25 & 11J27	613
LAFAYETTE Stereo Amplifier Model KT-236	610	SHERWOOD FM Stereo Tuner Model S-3000 III	612
		SYLVANIA TV Chassis 1-537-5, -6 Models 17P Series	611

GROUP
101



More Data on Reverse Side

PHILCO
TV Chassis 11H25 & 11J27

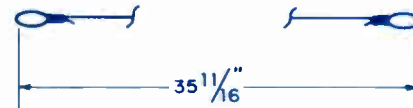
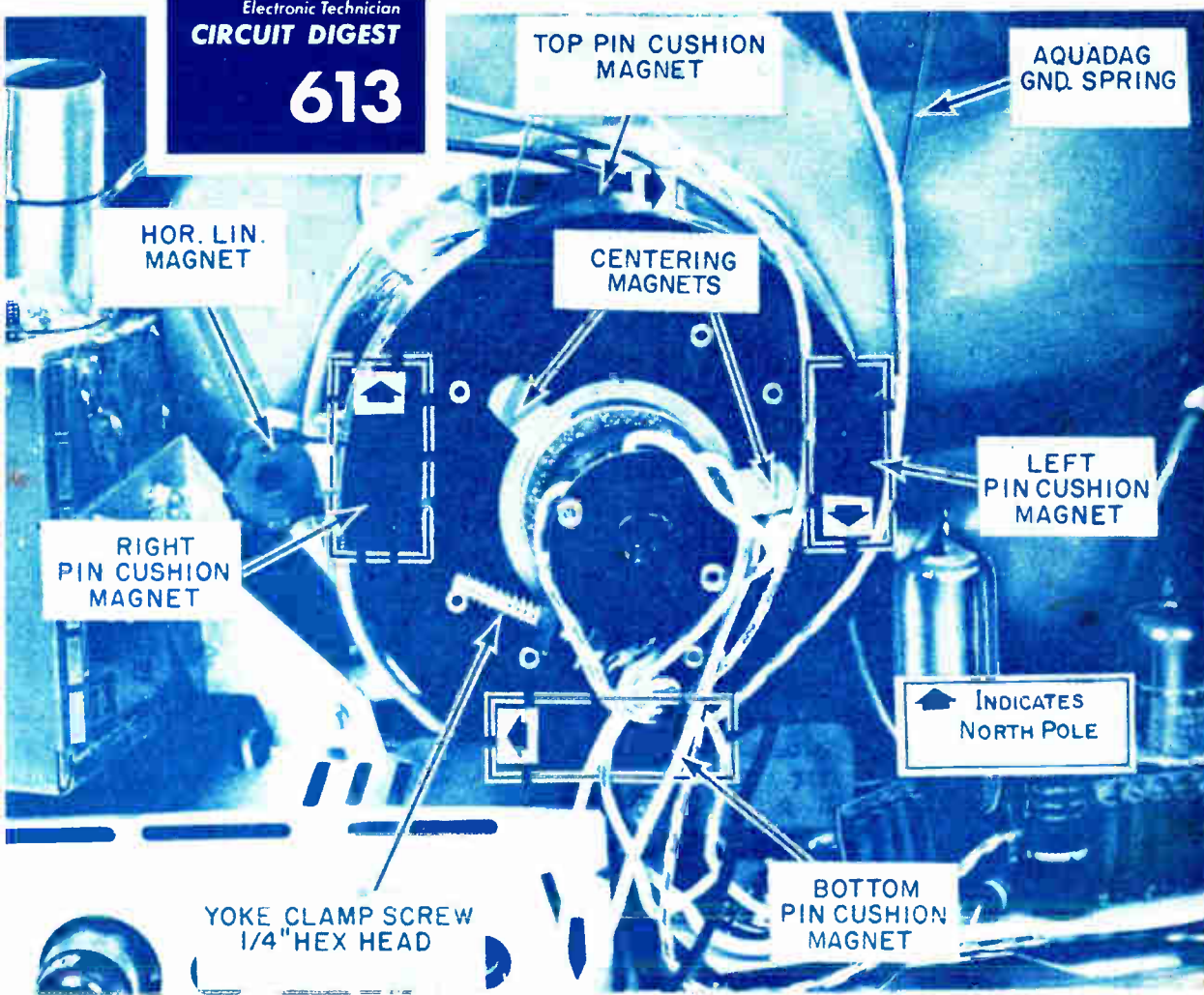
Electronic Technician
CIRCUIT DIGEST

613

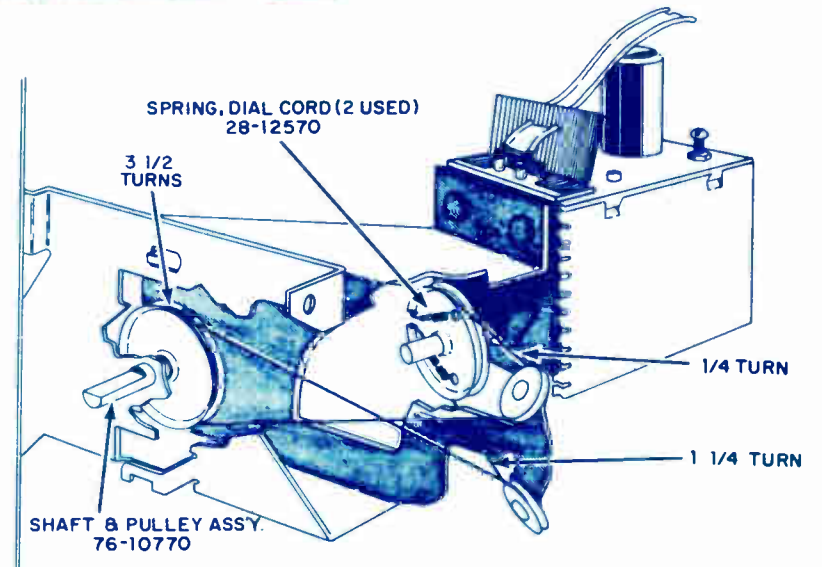
PHILCO
TV Chassis 11H25 & 11J27

Electronic Technician
CIRCUIT DIGEST

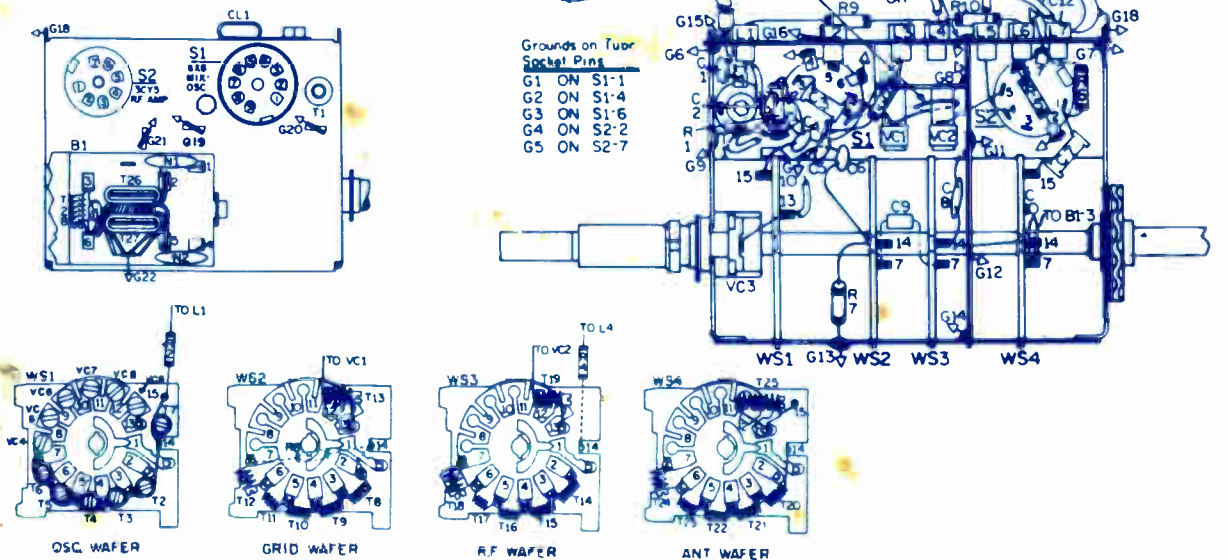
613

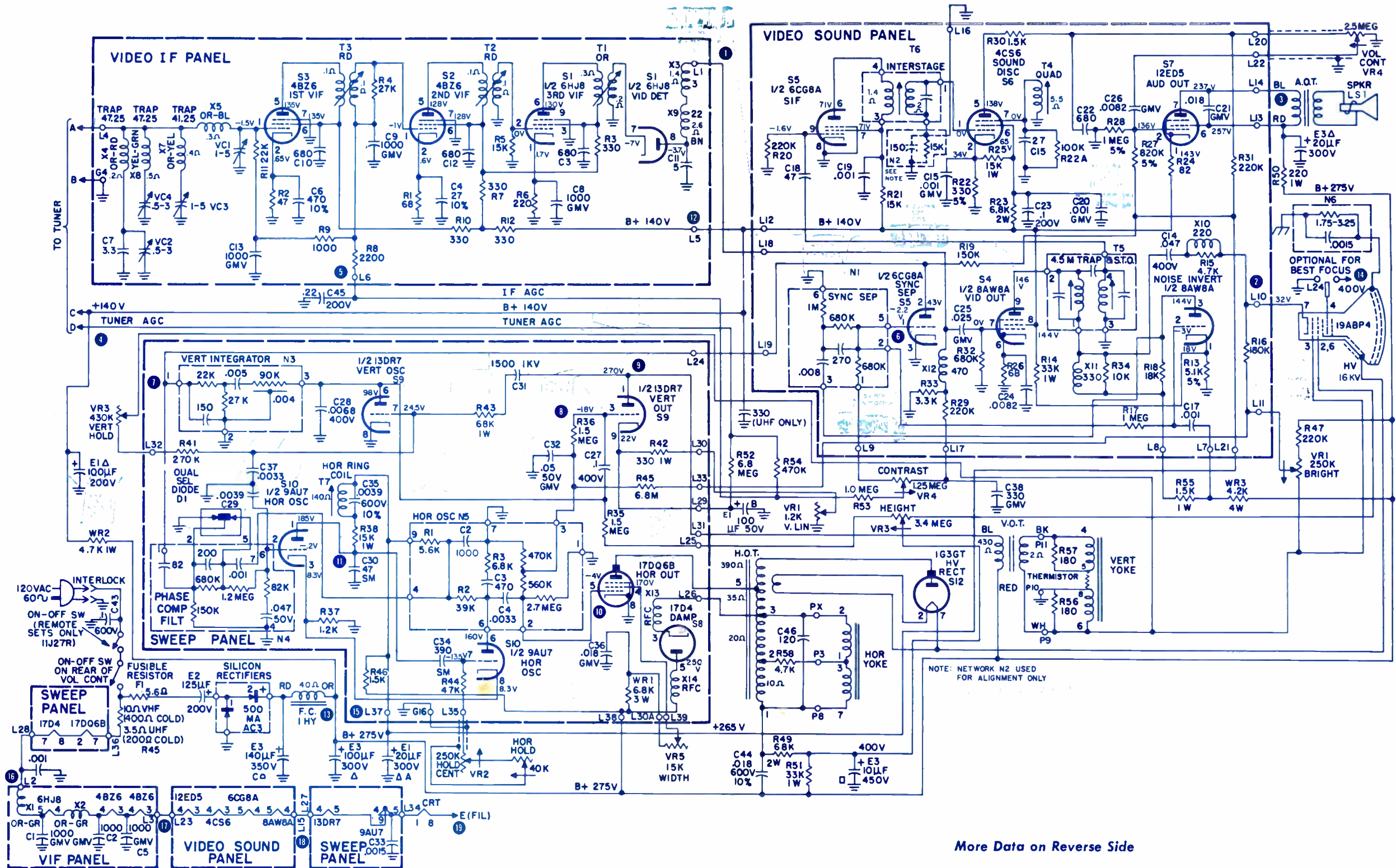


UHF DIAL CORD STRINGING



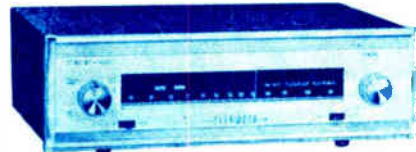
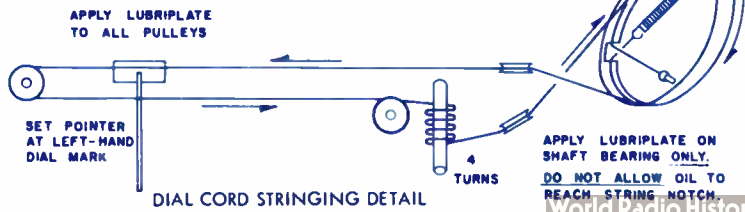
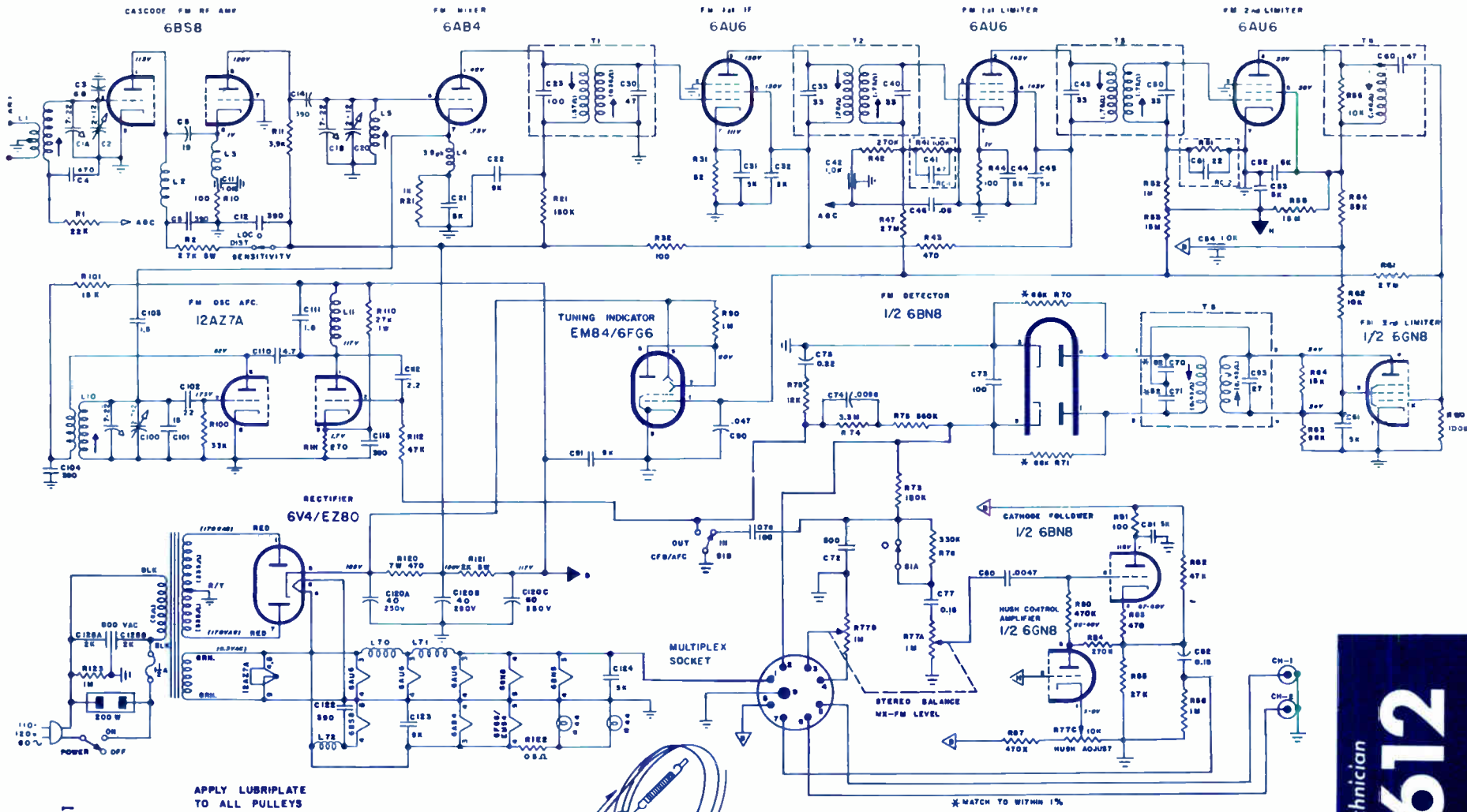
COMPONENT PLACEMENT, TUNER T-102





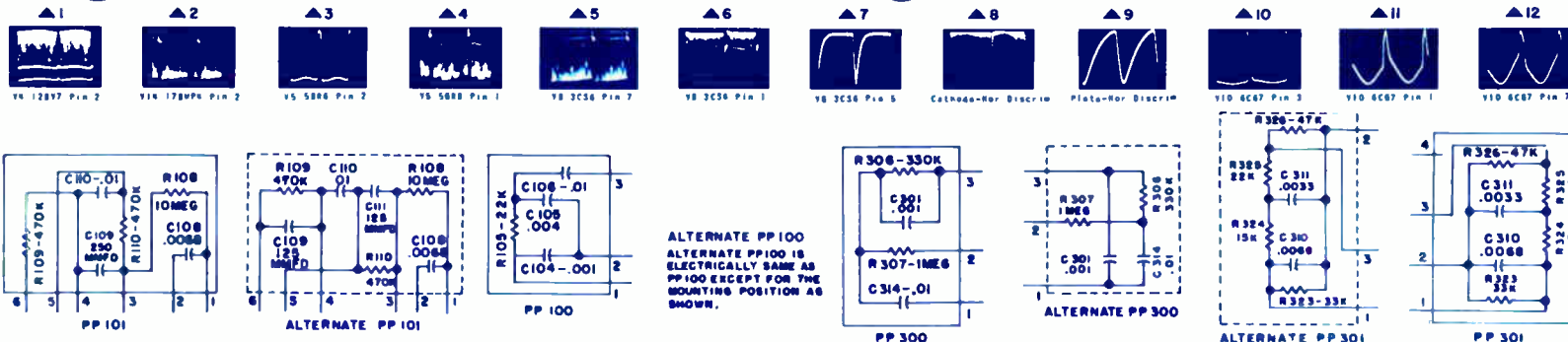
More Data on Reverse Side

January • 1961



TOP DECK — PRINTED BOARD ASSEMBLY

More Data on Reverse Side

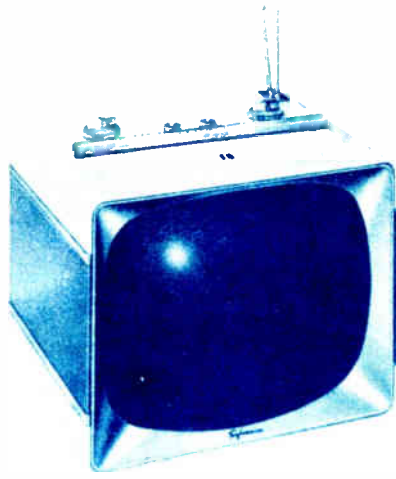


SYLVANIA
TV Chassis 1-537-5, -6
Models 17P Series

Electronic Technician
CIRCUIT DIGEST

611

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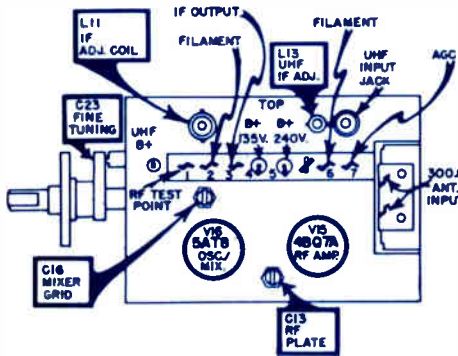


Voltage readings in brackets taken with no signal input:
Voltage readings not in brackets taken with a strong signal input:

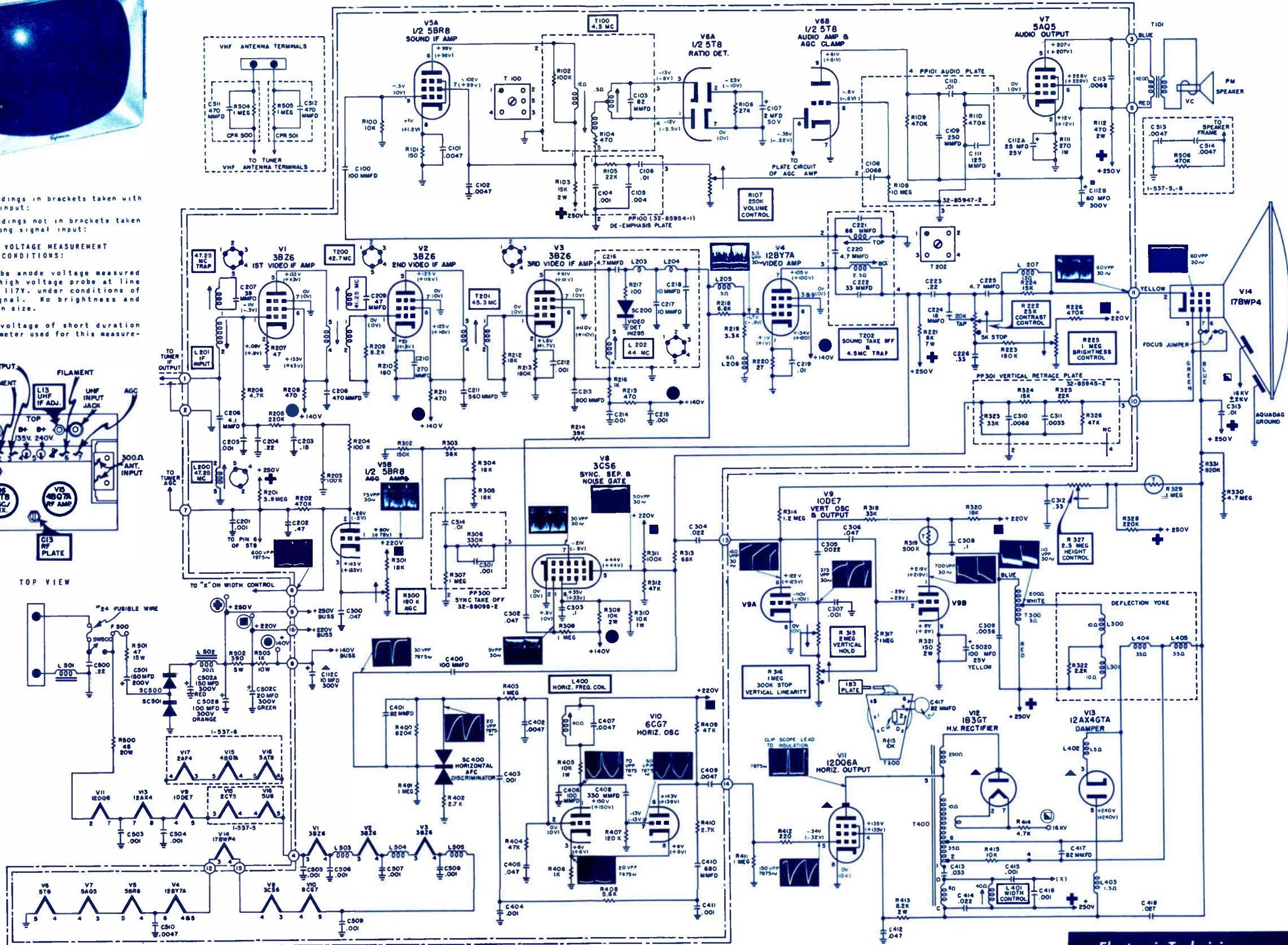
SPECIAL VOLTAGE MEASUREMENT CONDITIONS:

Picture tube anode voltage measured with VTVM high voltage probe at line voltage of 117V. under conditions of normal signal. No brightness and correct scan size.

High peak voltage of short duration may damage meter used for this measurement.

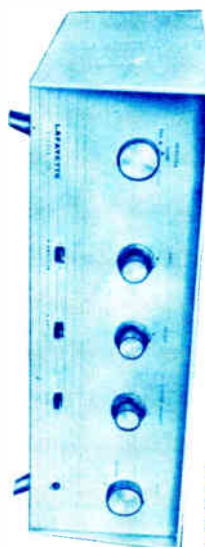


TOP VIEW

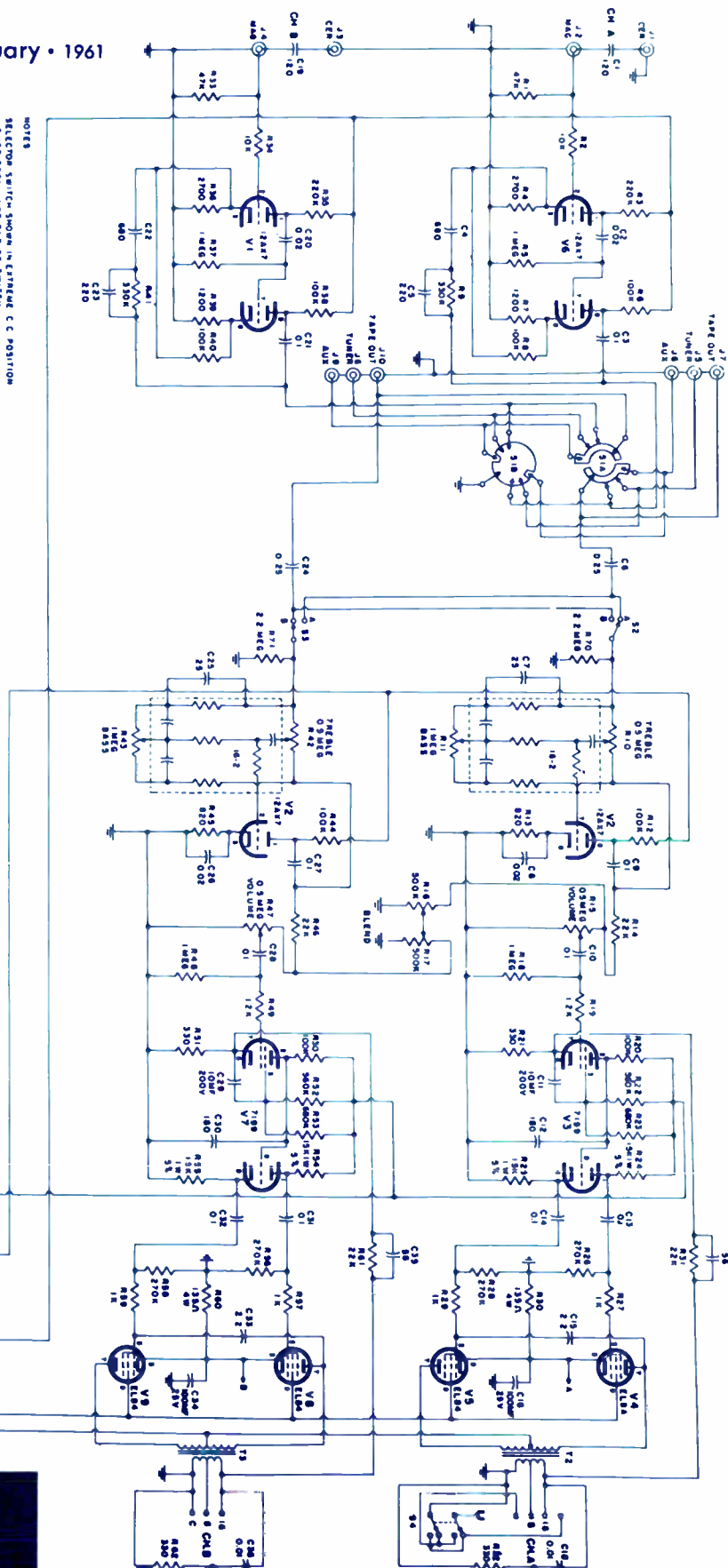


More Data on Reverse Side

January • 1961



NOTES
 SELECTOR SWITCH SHOWN IN EXTREME C POSITION
 VIEWED FROM FRONT END OF SWITCH
 ALL RESISTORS 1/2 W. 0.5% UNLESS OTHERWISE
 SPECIFIED
 ALL CAPACITORS 50V. 5% UNLESS OTHERWISE
 SPECIFIED



GENERAL ELECTRIC
 TV Chassis M575
 Models CS733, CS734,
 CS901, CS902

Electronic Technician
CIRCUIT DIGEST
609

More Data
 on
 Reverse Side

ROMAN VIII NUMERALS

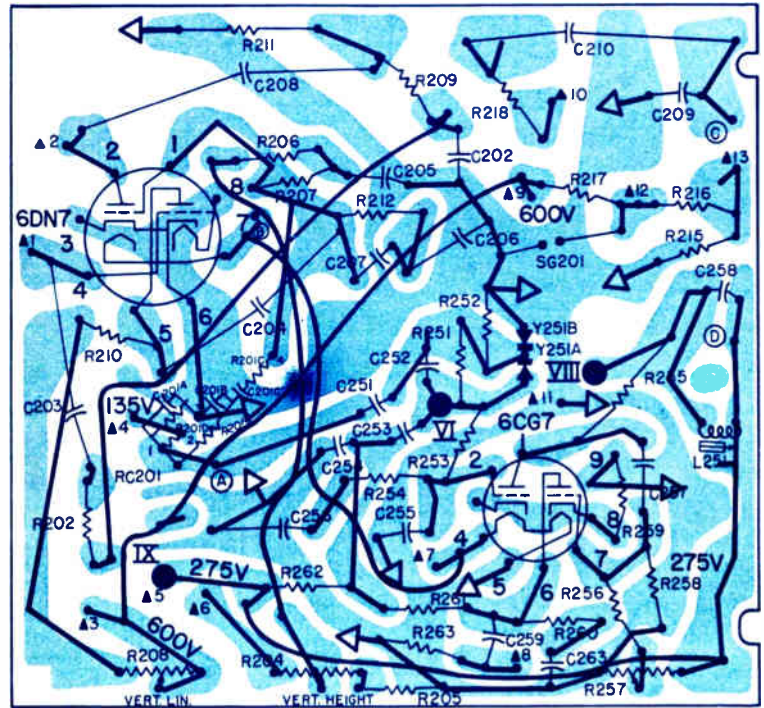
REPRESENT TEST POINTS

CIRCLED A LETTERS

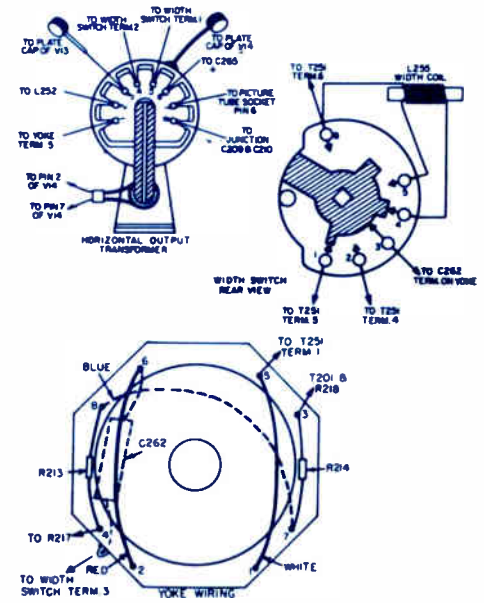
REPRESENT INTERCONNECTING WIRES
 SOLDERED INTO BOARD
 (A) TO I-F BOARD (PIN 36CX8)
 (B) TO FIL FUSE & I-F 46CX811 F BOARD
 (C) TO TERMINAL 8 ON T251
 (D) TO F251

TRIANGLE (Δ) NUMBERS

DENOTE WIREWRAP TERMINALS MOUNTED ON
 COMPONENT BOARD TO CONNECT WIRES FROM
 OTHER COMPONENTS
 Δ1 TO R203-R219 VERT HOLD CONTROL
 Δ2 TO T201 (BLUE LEAD)
 Δ3 TO T201 (YELLOW LEAD)
 Δ4 TO C401C (+135V B+)
 Δ5 TO C401B (+275V B+)
 Δ6 TO R203 VERT HOLD CONTROL
 Δ7 TO V16, PIN 7
 Δ8 TO V13, PIN 7
 Δ9 TO R264
 Δ10 TO TERM 4 OF YOKE, TO C265 +
 Δ11 TO T201 (RED LEAD), TO TERM 3 OF YOKE
 Δ12 TO V16, PIN 3
 Δ13 TO TERM 7 ON T251
 Δ14 TO V16, PIN 6



SWEEP BOARD COMPONENT LOCATIONS AS VIEWED FROM COMPONENT SIDE



CIRCLED A LETTERS

REPRESENT INTERCONNECTING WIRES SOLDERED
 INTO BOARD
 (A) TUNER IF LINK CABLE
 (B) TO C401B

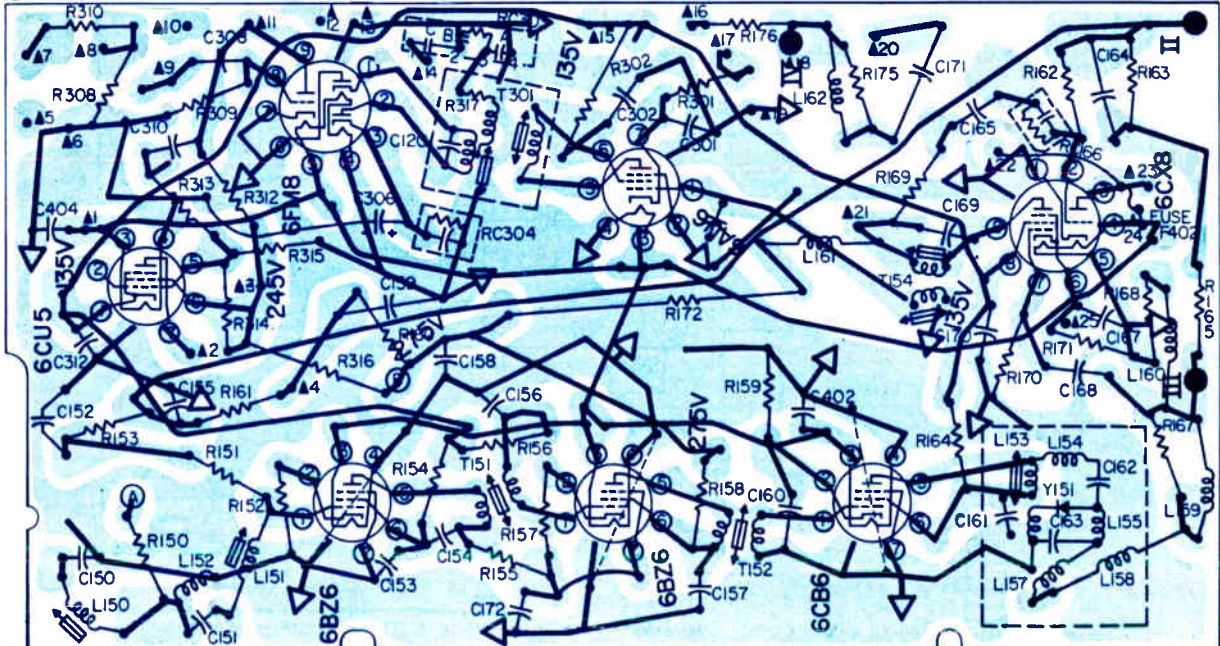
TRIANGLE (Δ) NUMBERS

DENOTE WIREWRAP TERMINALS MOUNTED ON COMPONENT
 BOARD TO CONNECT WIRES FROM OTHER COMPONENTS
 Δ1 TO TUNER FILAMENT CONNECTION
 Δ2 TO AUDIO OUTPUT TRANSFORMER

Δ3 TO C313 +
 Δ4 TO TUNER AGC TERMINAL
 Δ5 THRU Δ14, Δ17 & Δ19, SEE AUDIO CABLE AND
 CONNECTION DRAWING VARIATIONS
 Δ15 TO C401C + B C313 -
 Δ16 TO BRIGHTNESS CONTROL ARM
 Δ18 TO PIN 7, V16 (CRT)

ROMAN II NUMERALS

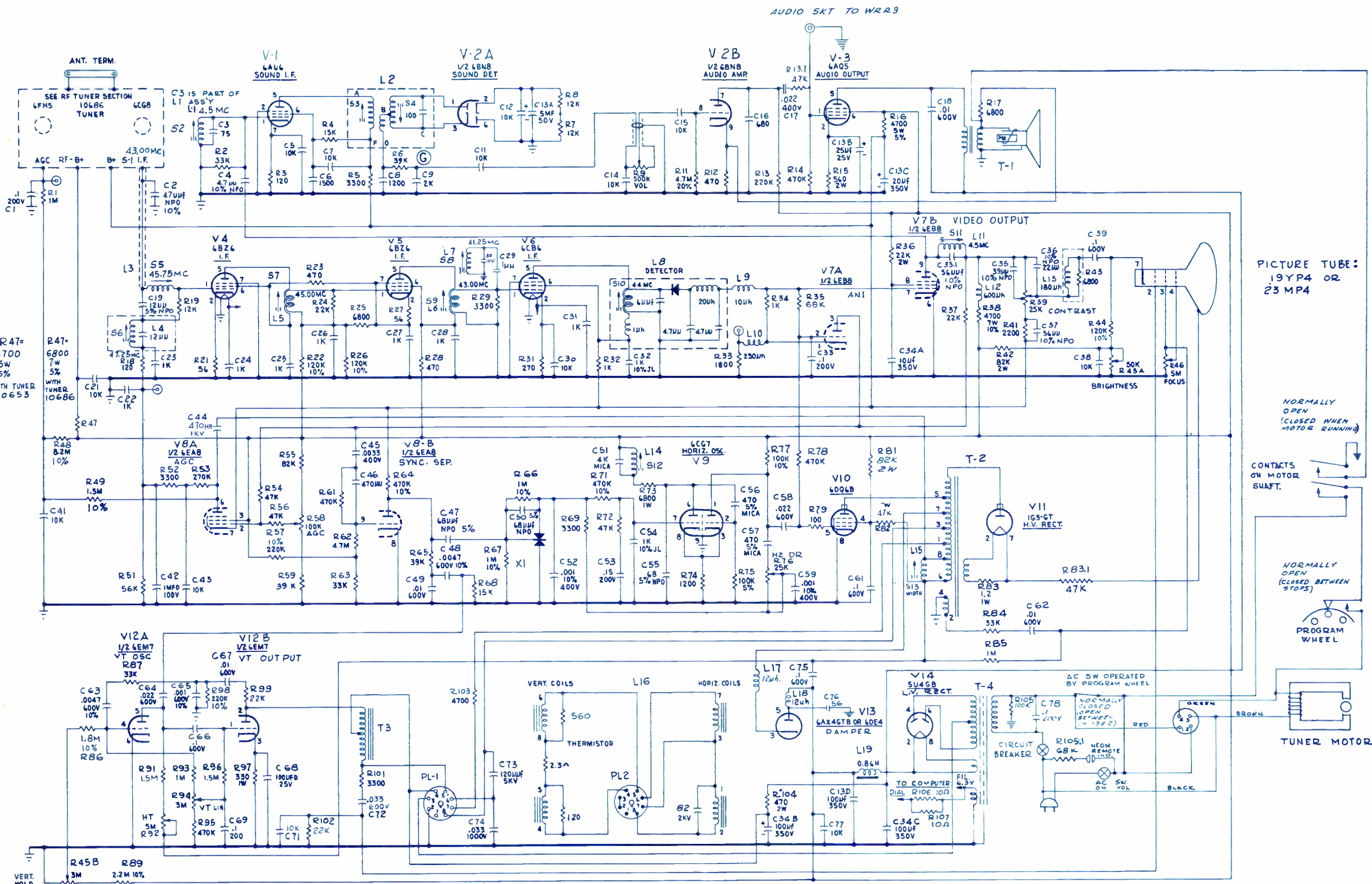
REPRESENTS TEST POINTS
 II 20 TO CONTRAST CONTROL ARM
 II 21 TO CONTRAST CONTROL
 II 22 TO POWER TRANSFORMER T401
 II 23 TO (A) ON SWEEP BOARD
 II 24 TO (B) ON SWEEP BOARD
 II 25 TO C401D



IF BOARD LOCATIONS AS VIEWED FROM COMPONENT SIDE

THE GROUND PLANE IS INDICATED BY →

Special Full-Width SPRING BINDER Holds 24 Groups of ELECTRONIC TECHNICIAN'S CIRCUIT DIGESTS Available @ \$2.95



PICTURE TUBE:
19YP4 OR
23MP4

NORMALLY OPEN
(CLOSED WHEN
MOTOR RUNNING)

CONTACTS
ON MOTOR
SHAFT.

NORMALLY OPEN
(CLOSED BETWEEN
STOPS)

PROGRAM
WHEEL

TUNER MOTOR

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

In This Issue (No. 102)

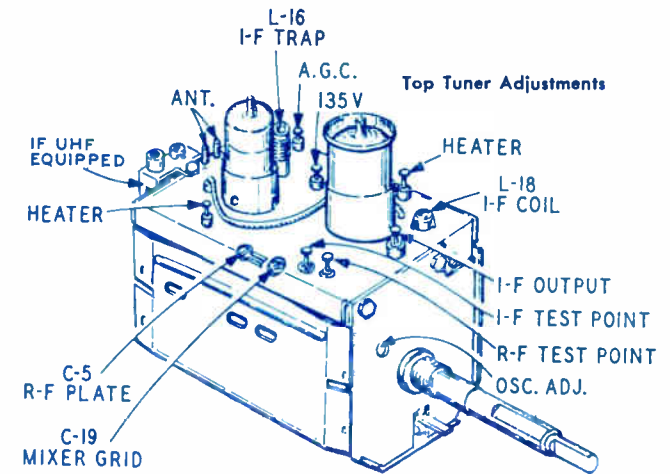
Circuit Digest Schematic No.

ELECTROHOME TV Model "Selkirk"	617
EMERSON Air Purifier Ionizer Model EP-40	618
GENERAL ELECTRIC Transistor Radio Models CT110, CP775	619

MONTGOMERY WARD TV Models WG-4225A, WG4325A	620
MOTOROLA TV Chassis TS-STS & WTS-435	614
RCA Reverberation Amplifier Chassis RS-194A	615
ZENITH TV Chassis 16F23, 16F23Q	616

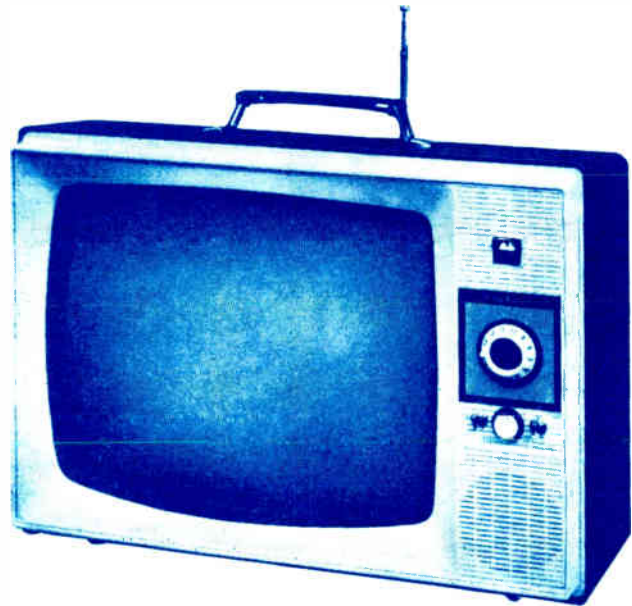
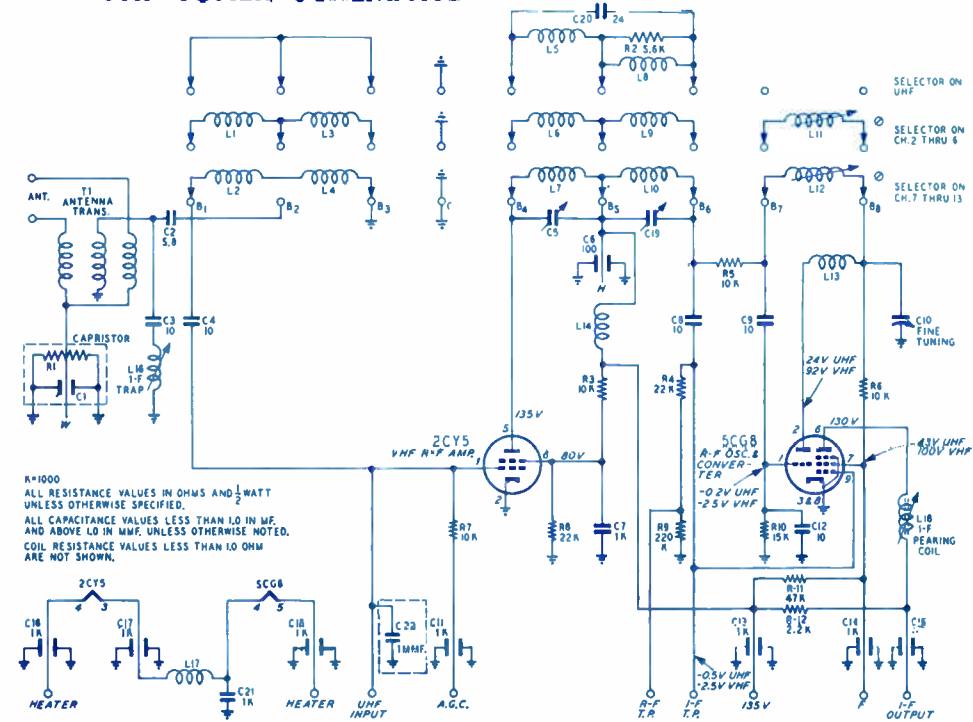
GROUP
102

MONTGOMERY WARD
TV Models
WG-4225A, WG4325A
Electronic Technician
CIRCUIT DIGEST
620

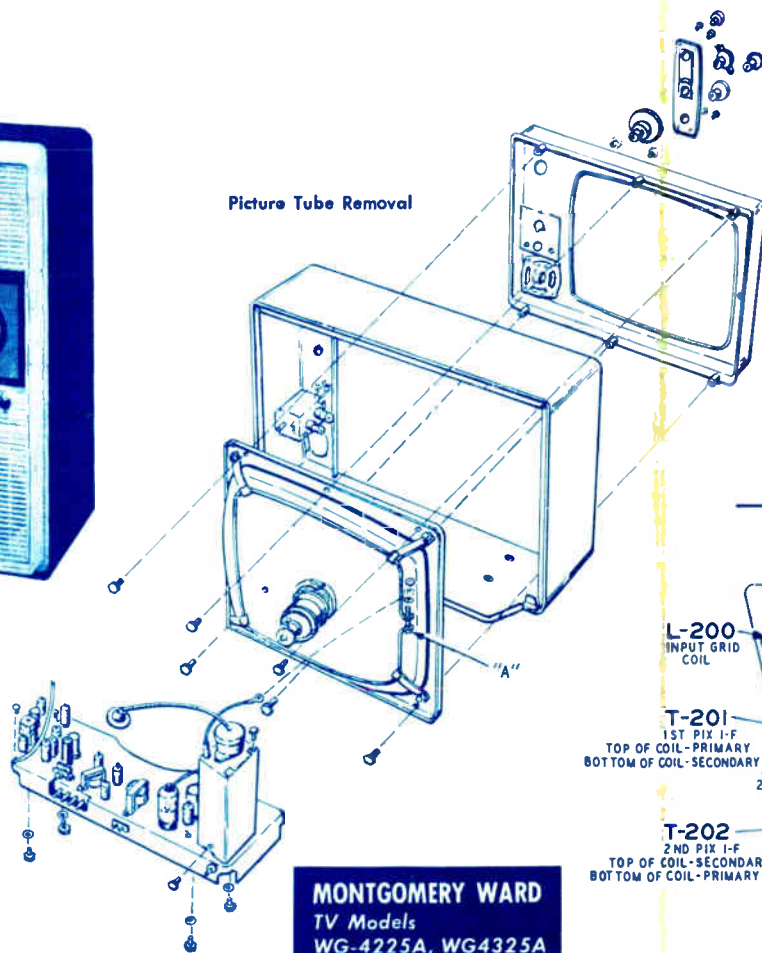


More Data on Reverse Side

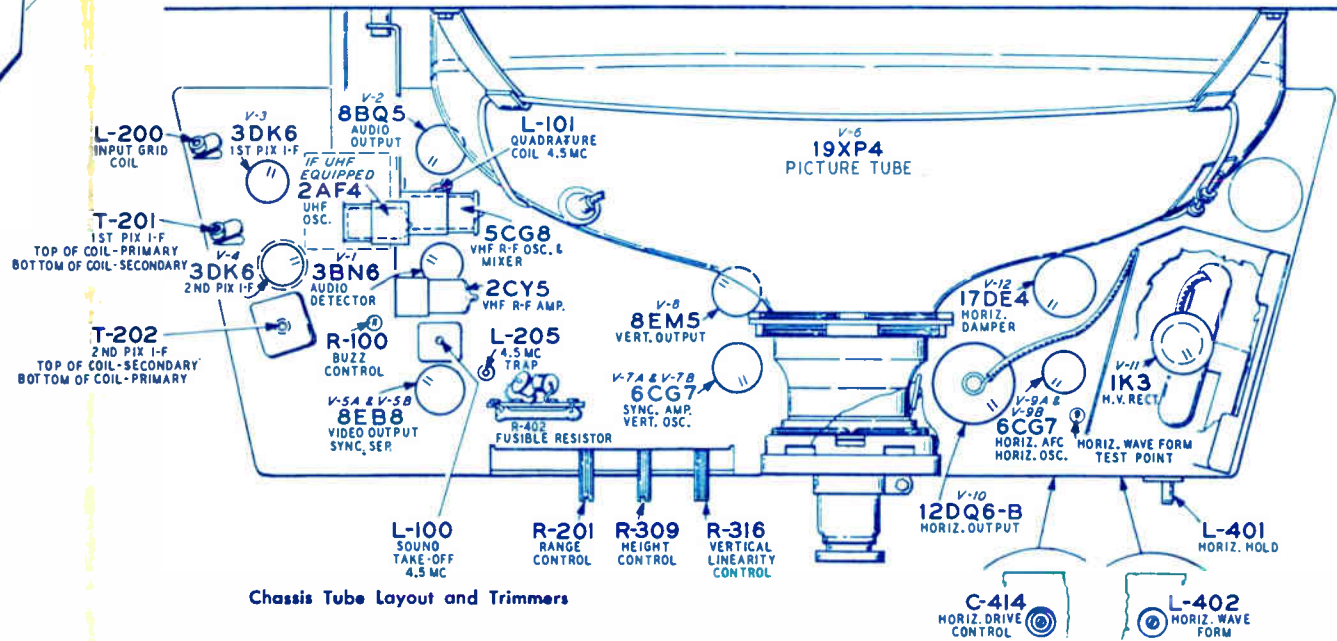
VHF TUNER SCHEMATIC



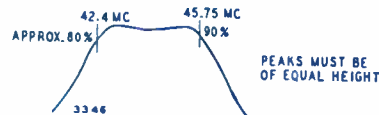
Picture Tube Removal



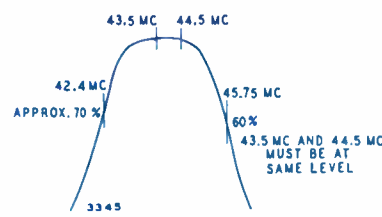
MONTGOMERY WARD
TV Models
WG-4225A, WG4325A
Electronic Technician
CIRCUIT DIGEST
620



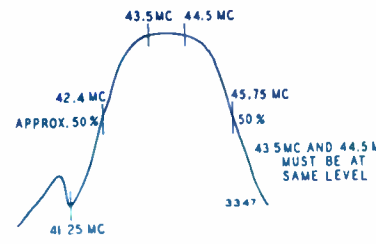
February • 1961



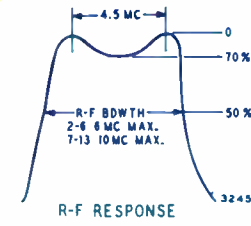
2nd Pix I-F Response



Pix I-F Response From 1st Pix I-F Grid

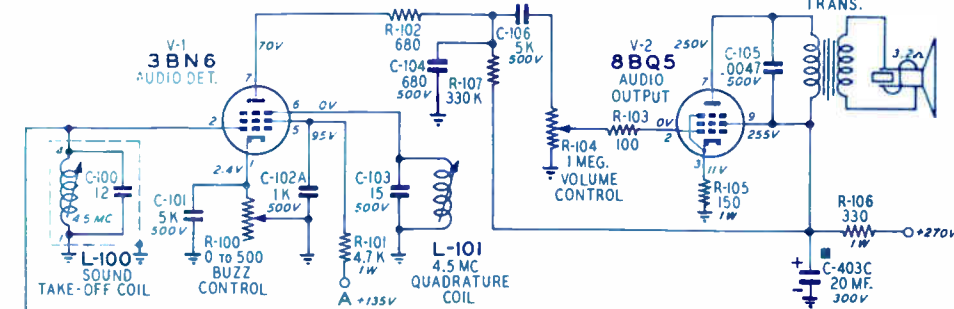


Overall Pix I-F Response



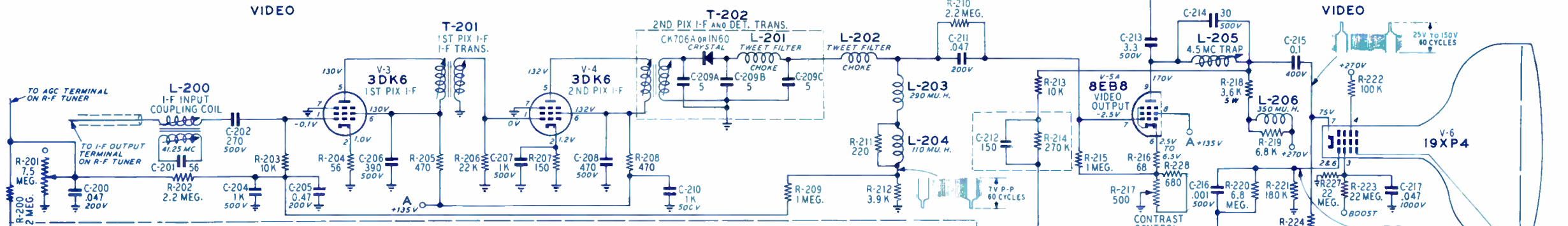
R-F RESPONSE
-Pix & Audio Markers

SOUND I-F AND AUDIO



VIDEO

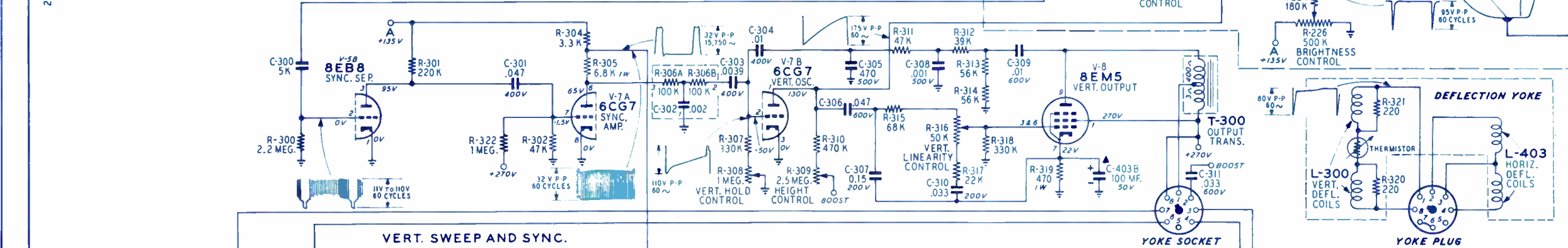
VIDEO



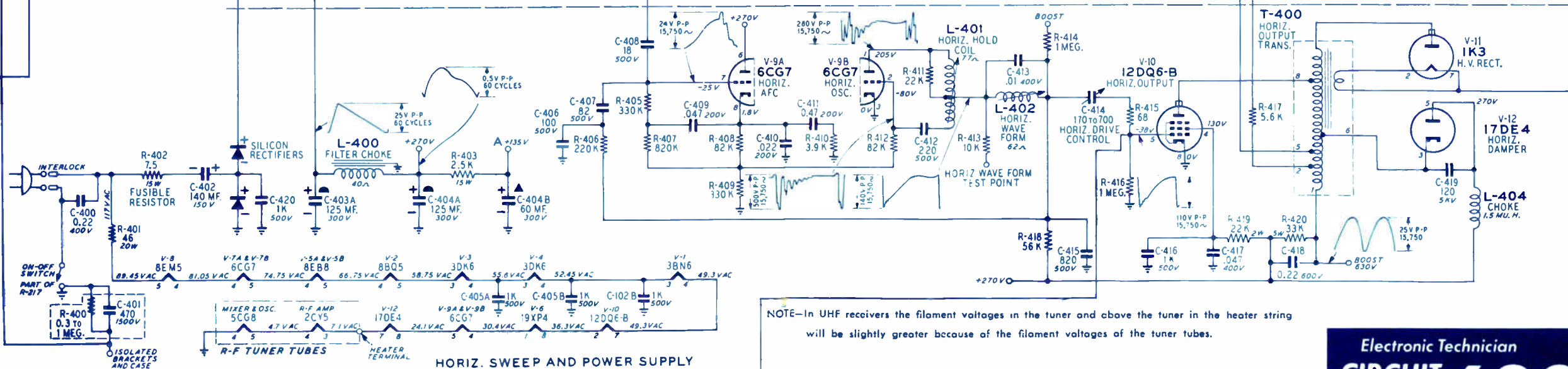
VERT. SWEEP AND SYNC.

YOKE SOCKET

YOKE PLUG



HORIZ. SWEEP AND POWER SUPPLY



NOTE-In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes.

More Data on Reverse Side

ELECTRONIC TECHNICIAN 618

CIRCUIT DIGEST

EMERSON

Air Purifier Ionizer Model EP-40

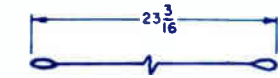
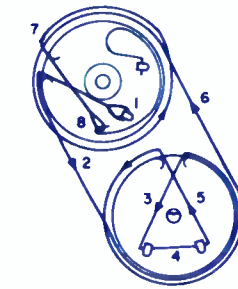
ELECTRONIC TECHNICIAN 619

CIRCUIT DIGEST

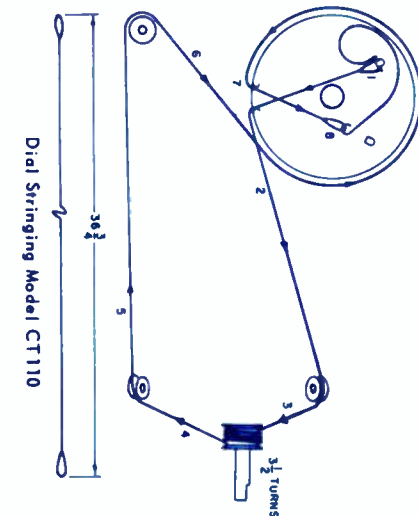
GENERAL ELECTRIC

Transistor Radio Models CT110, CP775

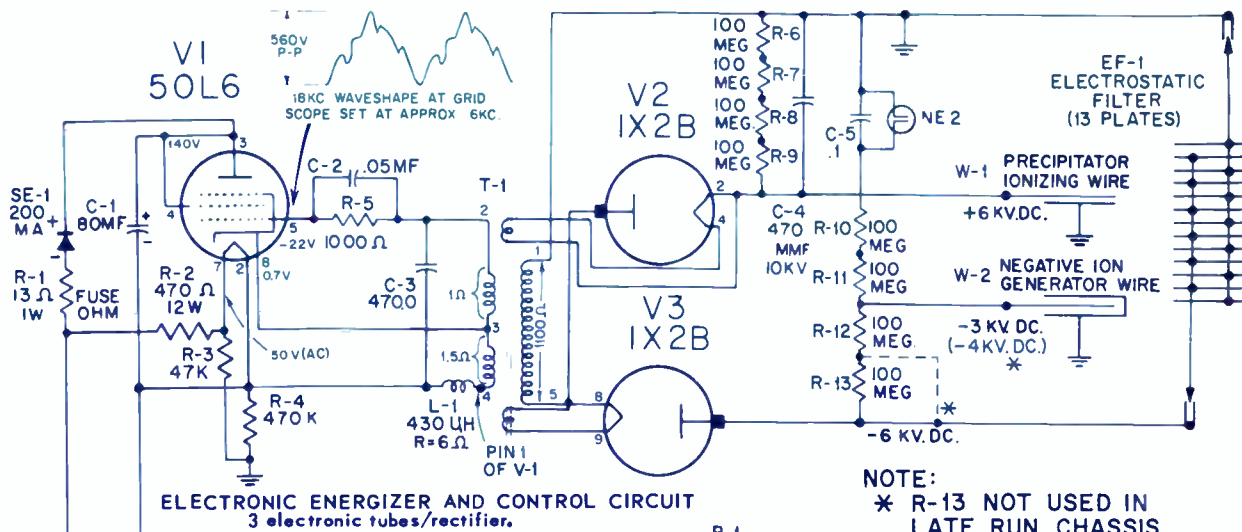
February • 1961



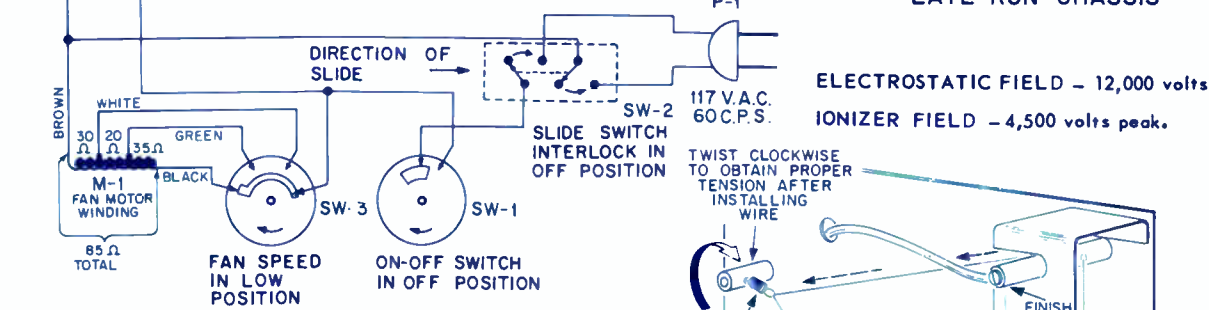
Dial Stringing Model CP775



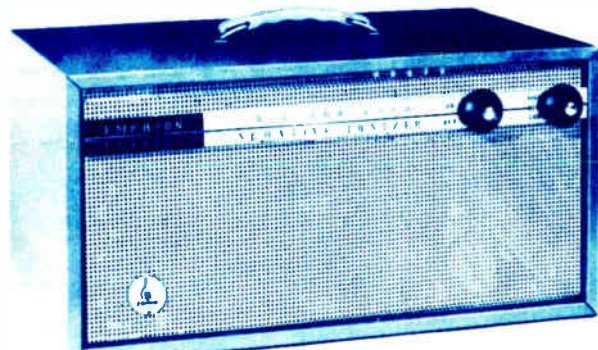
Dial Stringing Model CT110



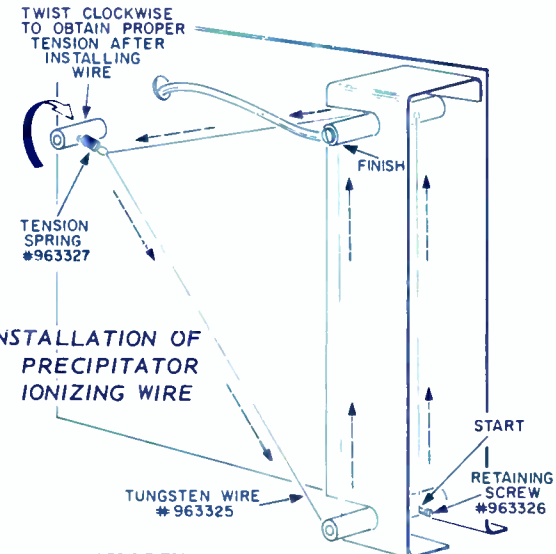
ELECTRONIC ENERGIZER AND CONTROL CIRCUIT
3 electronic tubes/rectifier.



NOTE:
* R-13 NOT USED IN LATE RUN CHASSIS

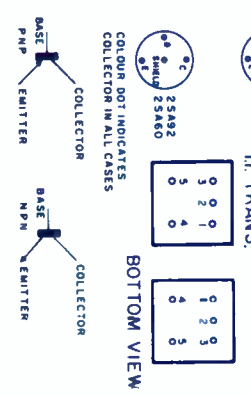
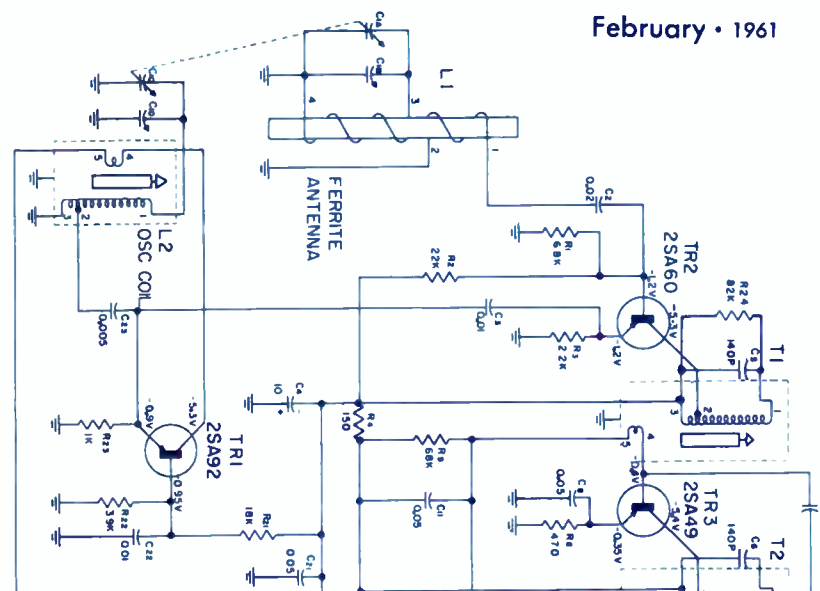
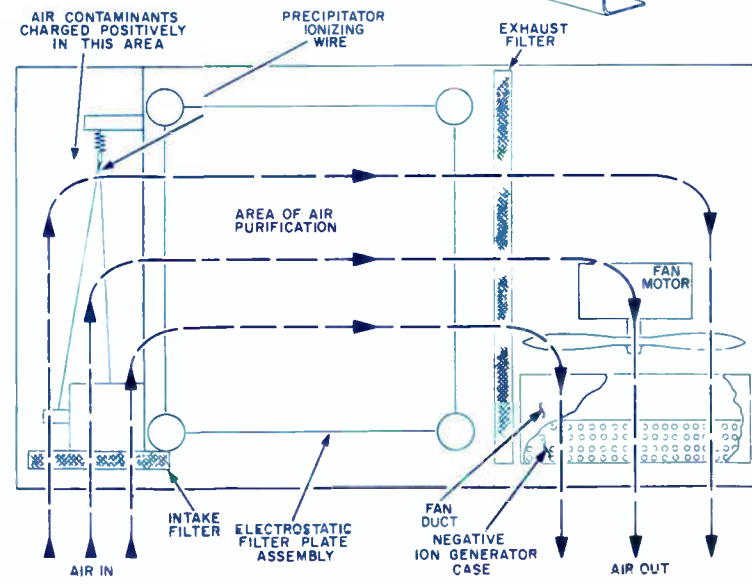


INSTALLATION OF PRECIPITATOR IONIZING WIRE



CARE OF FILTERS AND ELECTROSTATIC PLATE ASSEMBLY

1. Remove power cord from electrical outlet.
2. Remove knobs by pulling gently forward.
3. Remove front grille by grasping bar across grille and pushing downward. This releases the top edge of grille so that it tilts outward freely.
4. Inspect the black filter on the left side first. A vacuum cleaner may be used for cleaning this filter. After a fourth cleaning, however, the filter should be replaced.
5. Each of the 13 plates in the larger electrostatic plate at the center of the ionizer should be inspected for surface accumulation of dirt. When this accumulation becomes visible, it should be removed either with a vacuum cleaner or a thin wire brush or both. The plates may be removed easily by following the instructions on the back side of the front grille.
6. The large black fibre glass filter, located between the electrostatic unit, described in 4 above, and the circulation fan should be inspected from time to time. In normal use, however, this filter will not require more than an occasional cleaning. Its only function is to trap flakes which may fall from the electrostatic filter plates, due to excessive accumulation.



EMITTER CURRENT NO SIGNAL

TR1	0.80	1.0 mA
TR2	0.55	0.70 mA
TR3	0.50	0.80 mA
TR4	1.05	1.05 mA
TR5	0.95	1.15 mA
TR6, 7	1.95	3.0 mA

Schematic Diagram
Models CT110 and CP775

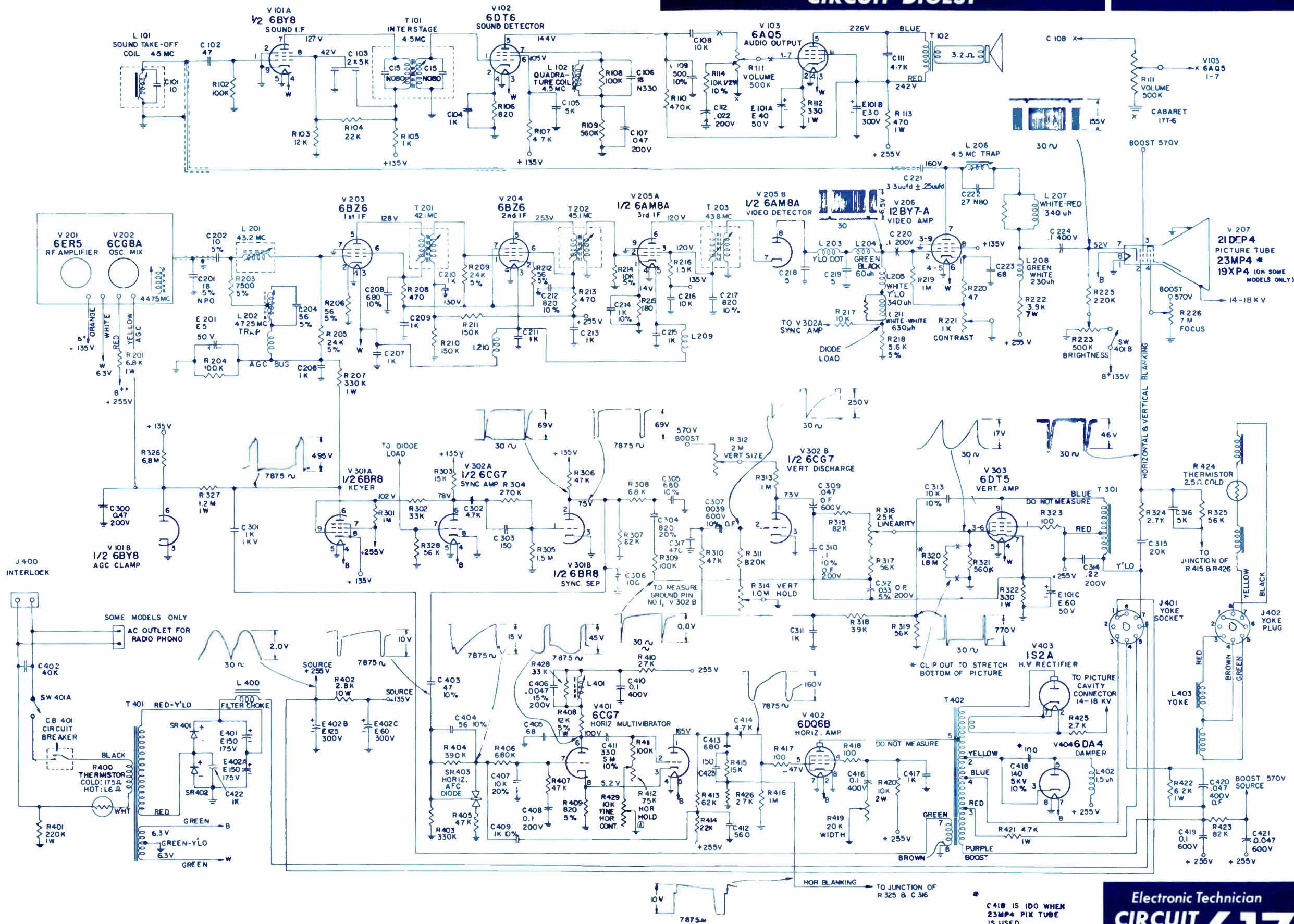
Electronic Technician

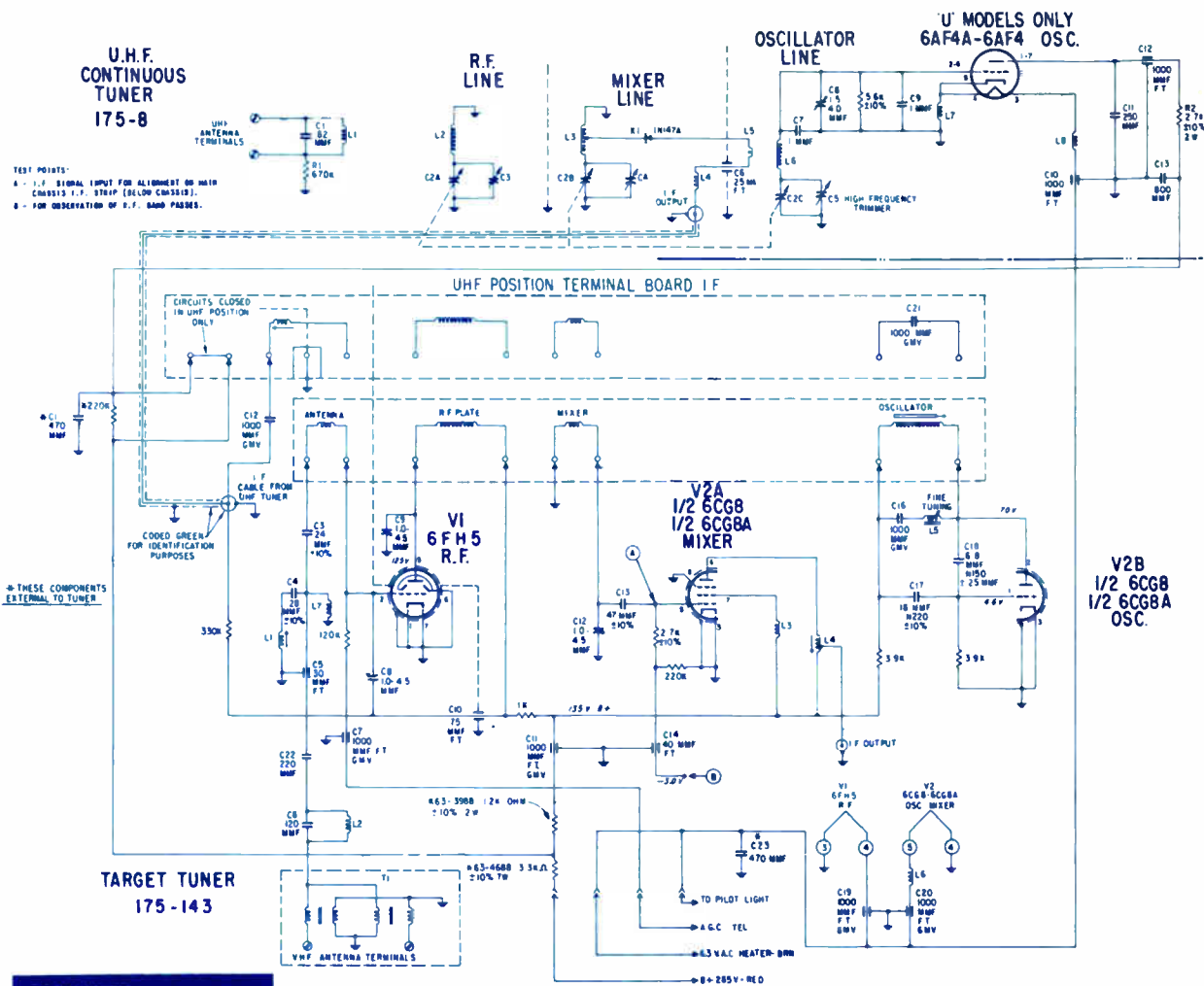
CIRCUIT DIGEST 619

World Radio History

Electronic Technician

CIRCUIT DIGEST 618

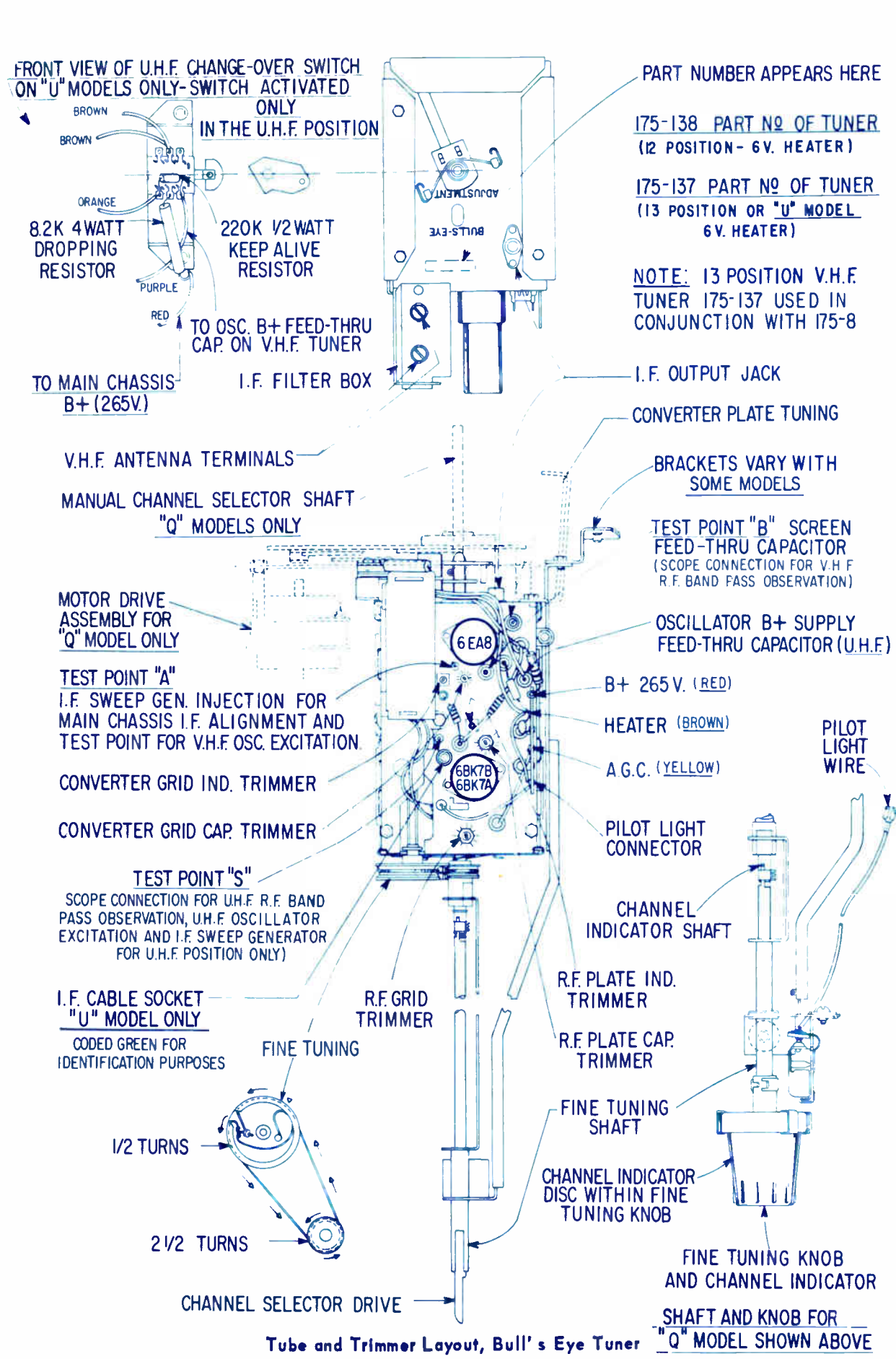
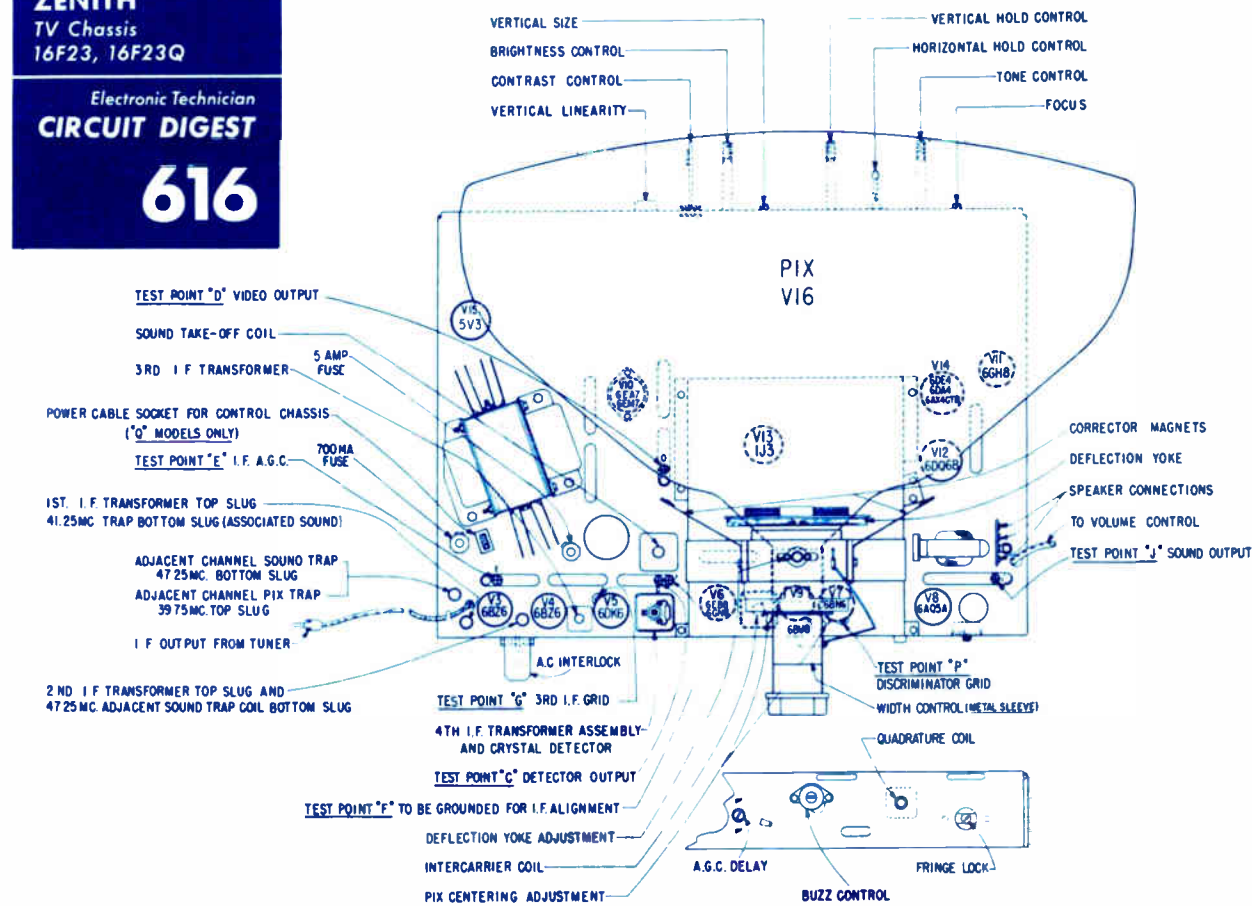




ZENITH
TV Chassis
16F23, 16F23Q

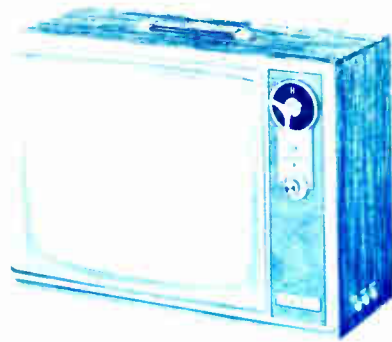
Electronic Technician
CIRCUIT DIGEST

616

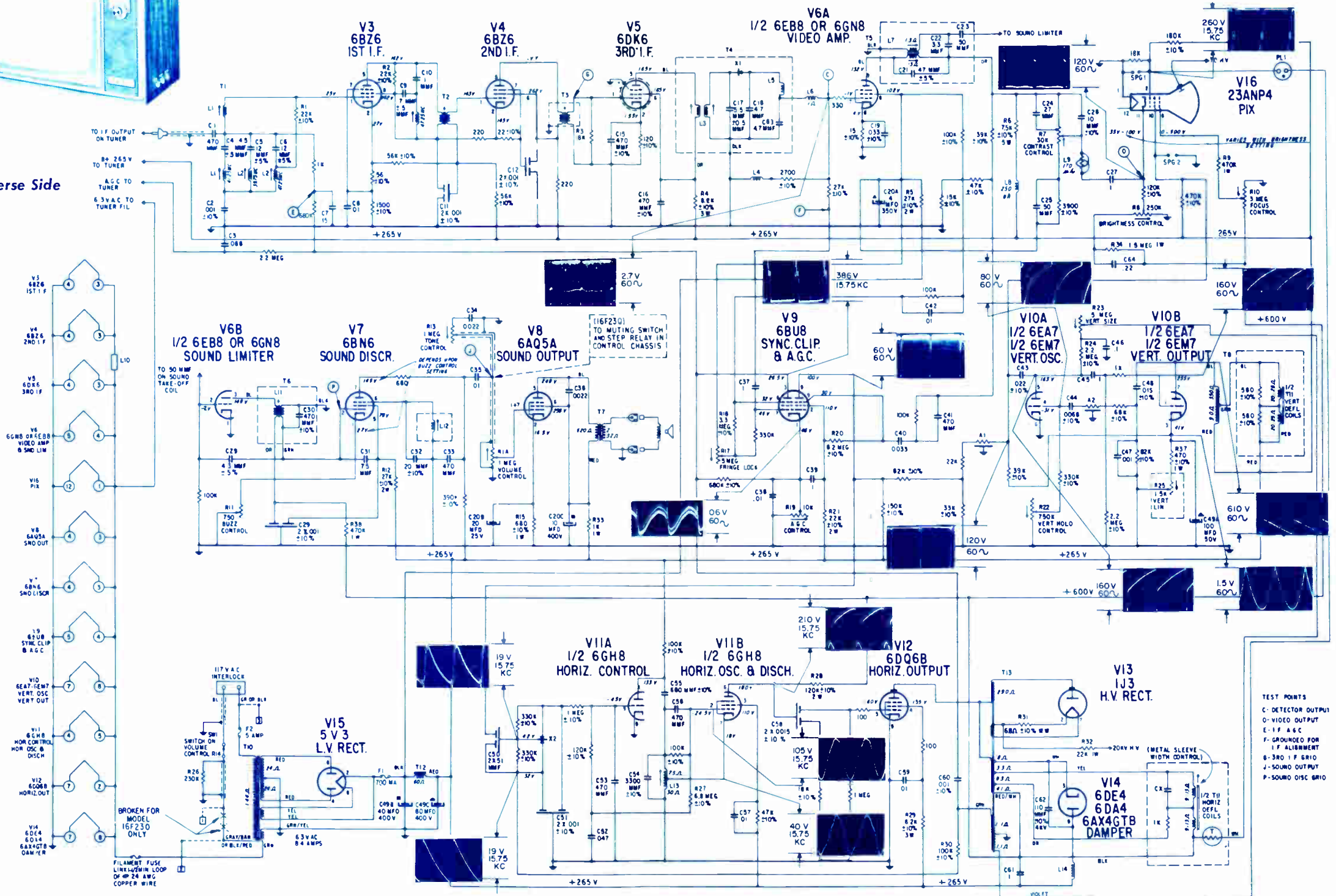


Tube and Trimmer Layout, Bull's Eye Tuner

More Data on Reverse Side



More Data on Reverse Side



CIRCUIT FUNCTION SPG 1 AND SPG 2 SPARK GAPS

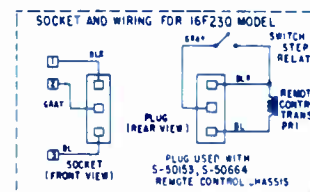
SPG 1 slips over pins 1 and 2 of the picture tube. The gap prevents heater burnout, should an arc occur in the gun. If the picture tube is replaced, install the gap as on the original tube. SPG 2 similarly protects integrator A1.

HORIZONTAL BLANKING CIRCUIT

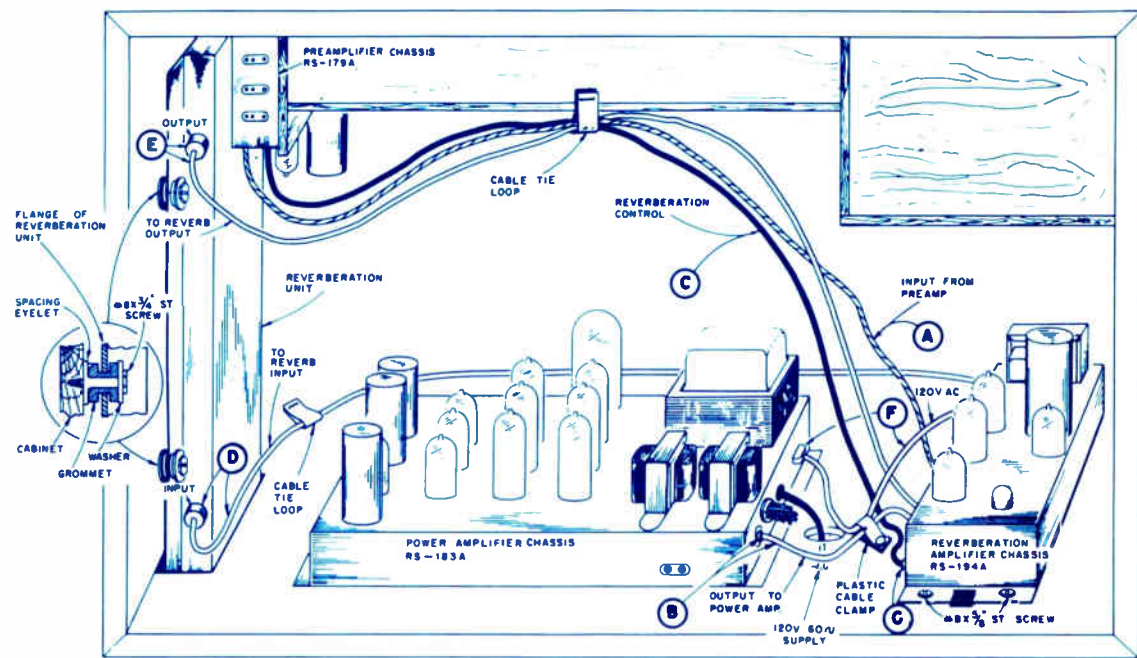
A negative pulse from the horizontal sweep transformer (violet lead) is applied to grid 1 (pin 2) of the picture tube which cuts off the beam during the horizontal retrace period. The neon bulb acts as a switch which allows the pulse to pass through, but blocks off any transients that may reach the grid during the trace period.

EQUIVALENT CIRCUIT A-1 and A-2 INTEGRATORS

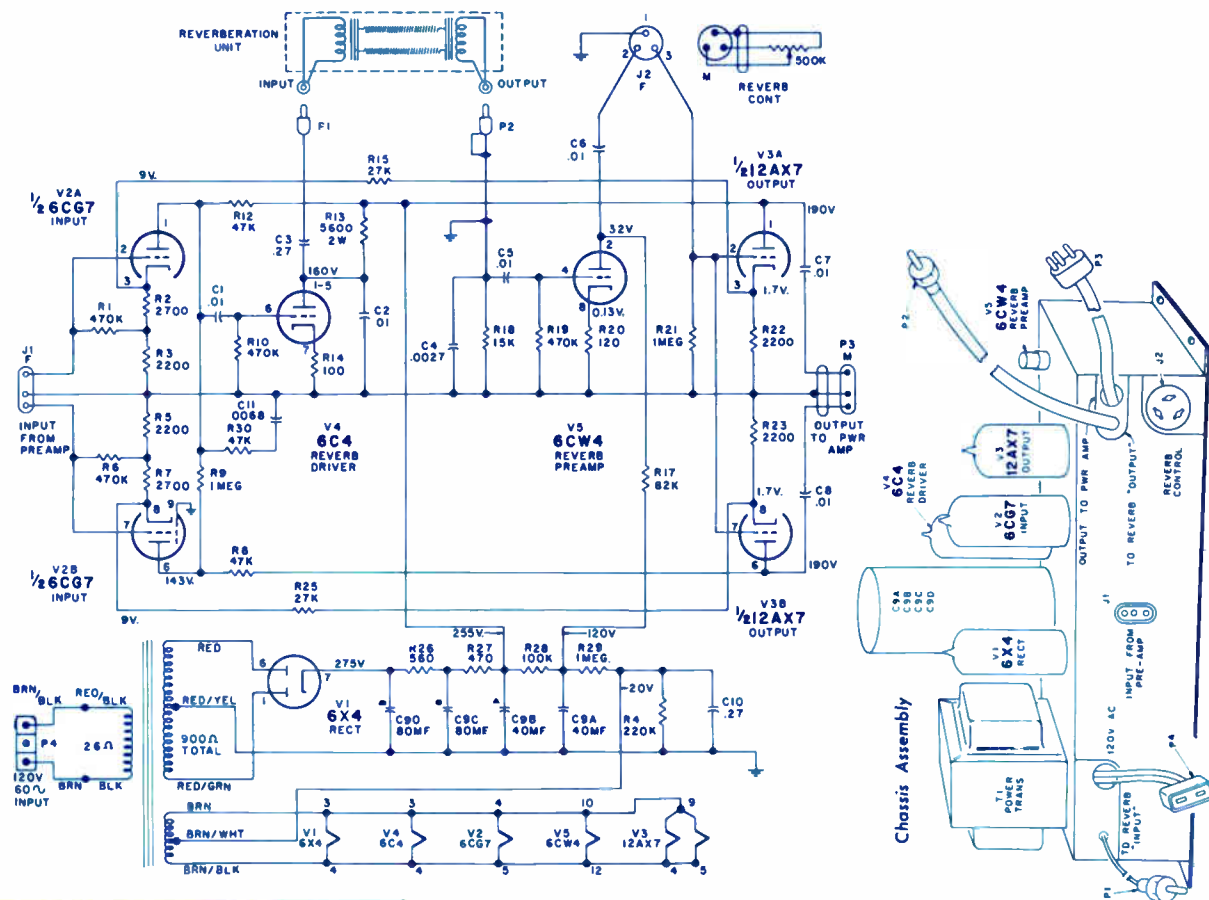
- 87-4 R is 47K
- 87-5 R is 33K
- 87-7 R is 68K
- 87-8 R is 82K



ALIGNMENT POINTS
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS.

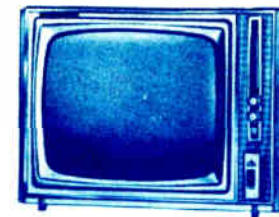


Placement and Connection of Reverberation Unit and Amplifier in Models RVCR-45, RVCR-46, and RVCR-84



Reverberation Amplifier Chassis RS-194A

More Data on Reverse Side

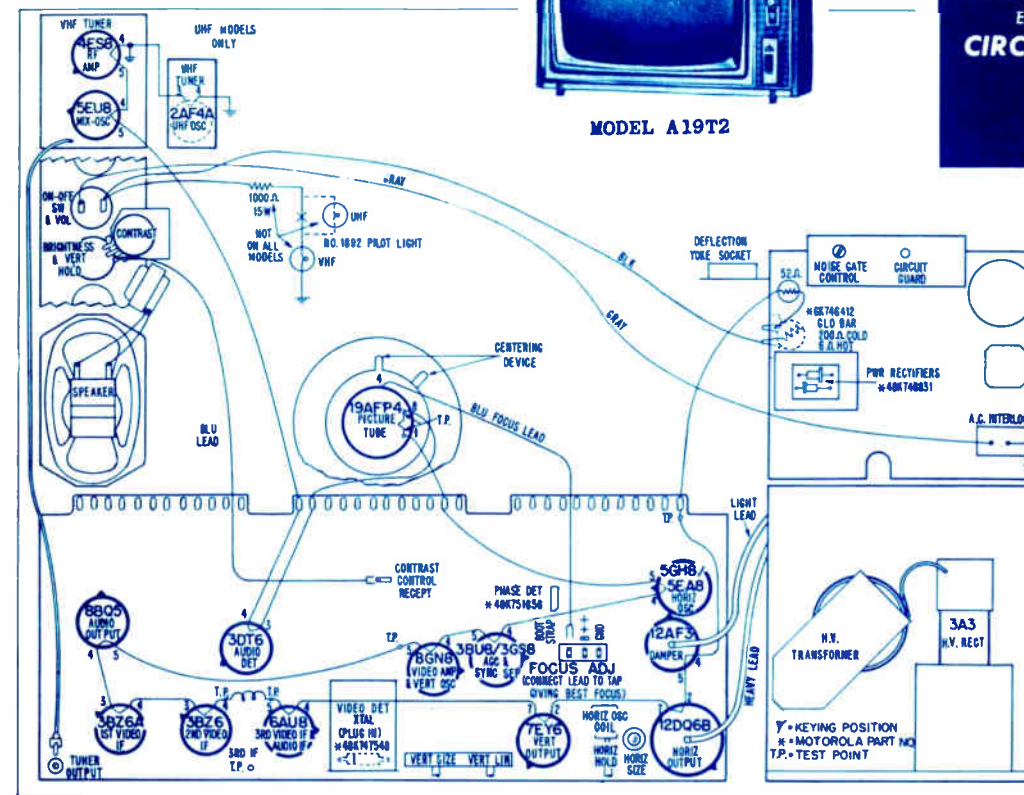


MODEL A19T2

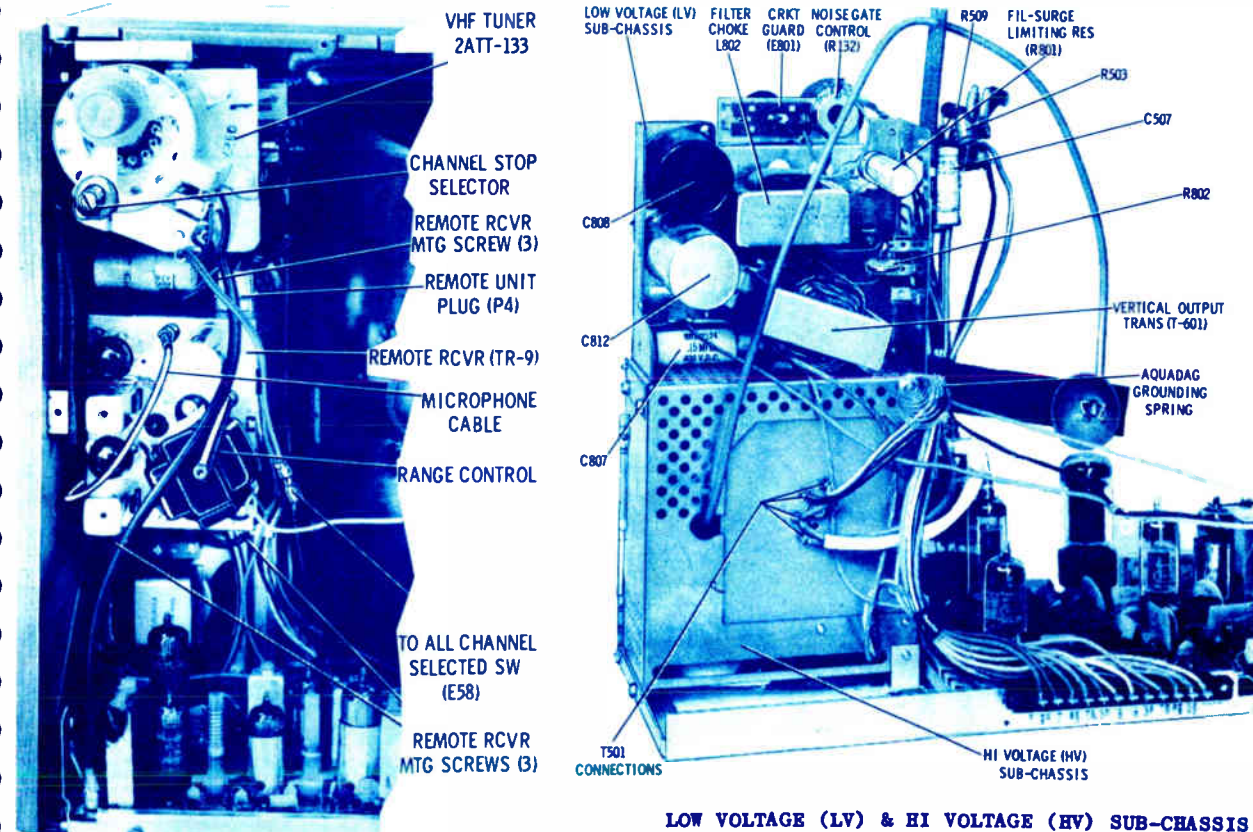
MOTOROLA
TV Chassis
TS-5T5 & WTS-435

Electronic Technician
CIRCUIT DIGEST

614



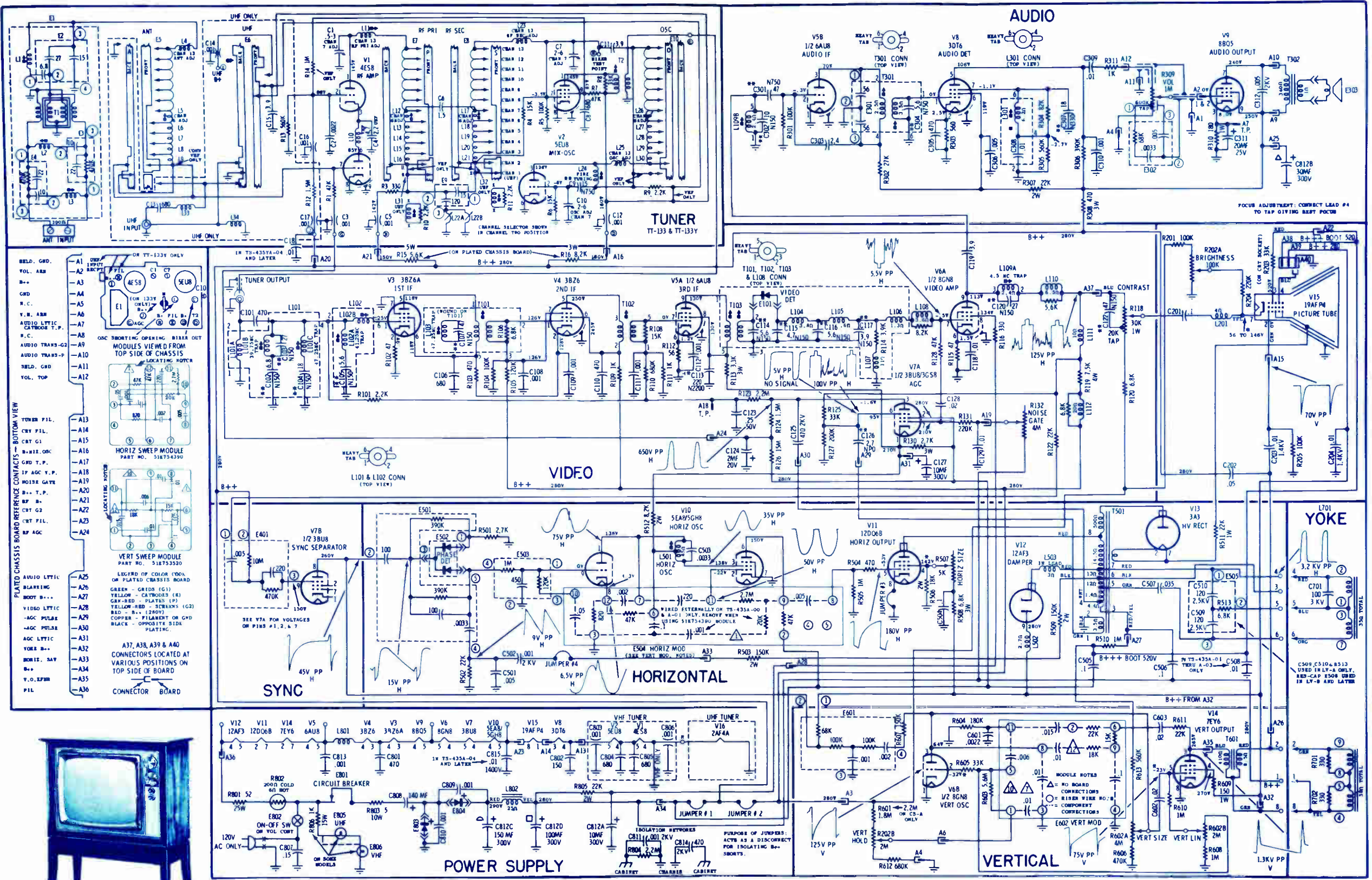
TUBE LOCATION, FILAMENT GUIDE AND FOCUS INFORMATION



REAR VIEW OF AUTOMATIC MODELS

LOW VOLTAGE (LV) & HI VOLTAGE (HV) SUB-CHASSIS COMPONENT LOCATIONS

Special Full-Width SPRING BINDER Holds 24 Groups of ELE... IC TECHNICIAN'S CIRCUIT DIGESTS Available @ \$2.95



THIS SCHEMATIC COVERS PLATED CHASSIS BOARD TS-435A-00 THRU TS-435A-04 LOW VOLTAGE CHASSIS LV-A, LV-A-1 & LV-B, H) VOLTAGE CHASSIS HV-A, CONTROL STRIP CS-A & CS-B, TUNERS TT-133 & TT-133Y. IF THE RECEIVER YOU ARE WORKING ON SHOULD HAVE A PLATED CHASSIS BOARD, OR RELATED SECTION, WHICH IS STAMPED WITH A CODE LETTER OR NUMBER LATER THAN THAT SHOWN ON THIS SCHEMATIC... THE DIAGRAM WILL STILL BE APPLICABLE SINCE THE CHANGES WILL BE SLIGHT.



MODEL 19K12

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

Trademark

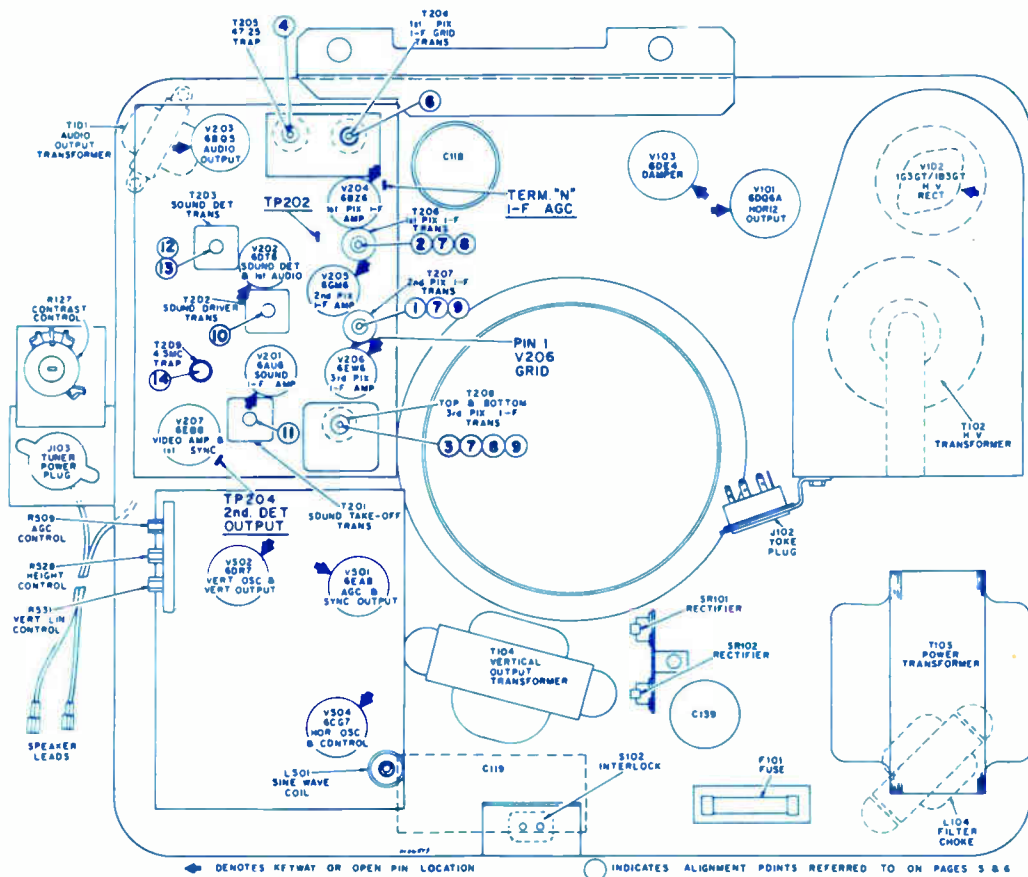
In This Issue (No. 103)

Circuit Digest Schematic No.

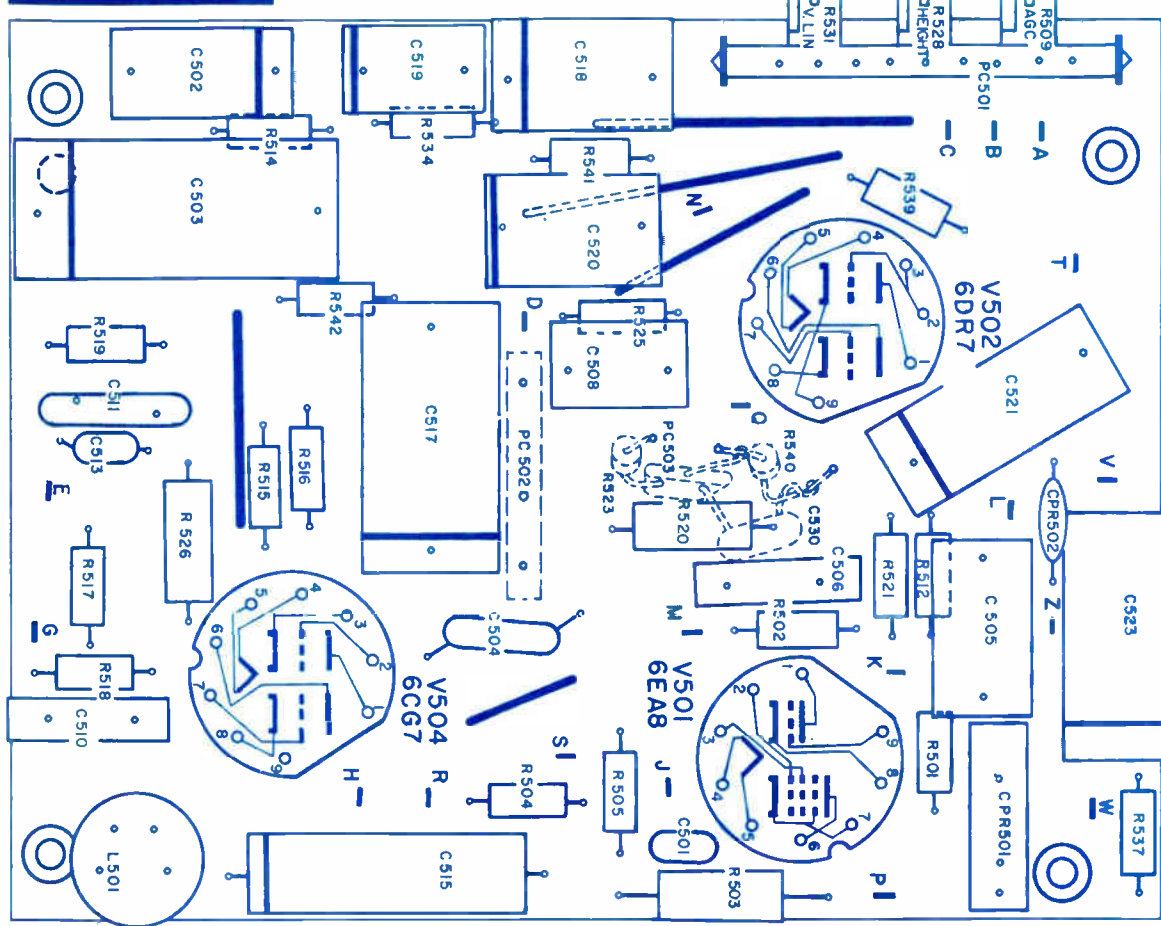
EMERSON Portable Transistor Radio Chassis 120528	624
GENERAL ELECTRIC TV Chassis "LW" Models M202 through 205	621
PHILCO Stereo Console W/Reverberation Model J-1720R	626

RCA TV Chassis KCS 134 Series	627
STRIBEL Auto Radio	622
WESTINGHOUSE TV Chassis V-2409-1, -2, -3	625
ZENITH "Gold Video Guard" Tuner	623

GROUP 103

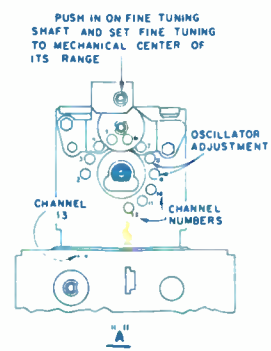


RCA TV Chassis KCS 134 Series

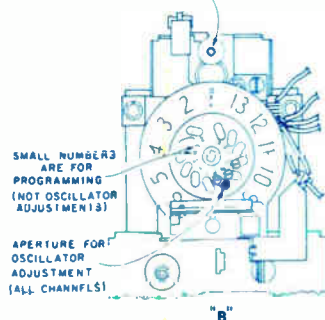


PW500 Sealed Circuit Deflection Assembly Composite Diagram

VHF Oscillator Adjustments

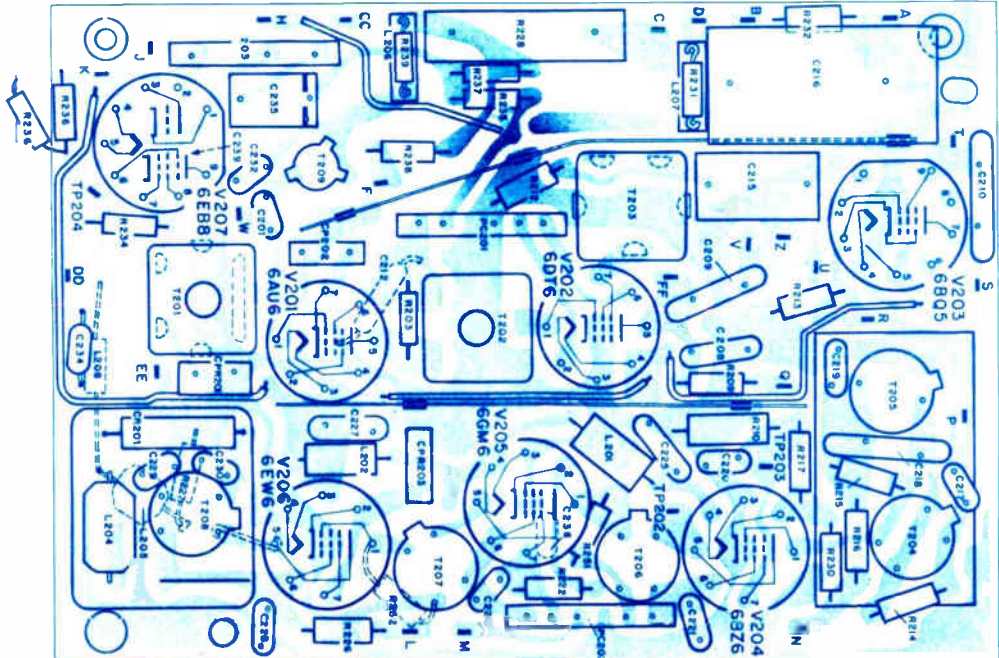


TO SET FINE TUNING AT CENTER OF ITS RANGE—
PUSH IN ON FINE TUNING SHAFT AND TURN
CLOCKWISE SIX OR MORE FULL TURNS. THEN
COUNTER-CLOCKWISE THREE FULL TURNS—
REPEAT FOR ALL CHANNELS TO BE USED



SMALL NUMBERS ARE FOR PROGRAMMING (NOT OSCILLATOR ADJUSTMENTS)
APERTURE FOR OSCILLATOR ADJUSTMENT (ALL CHANNELS)

PW200 Sealed Circuit I-F and Video Assembly Composite Diagram



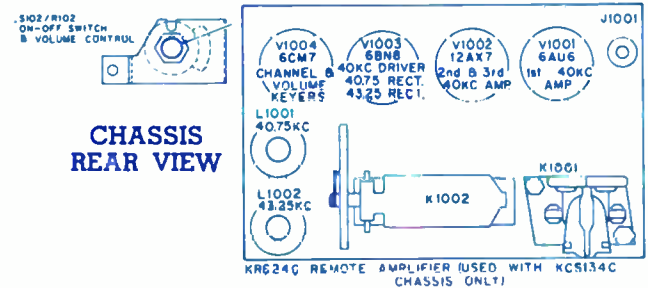
More Data on Reverse Side

RCA
TV Chassis
KCS 134 Series

Electronic Technician
CIRCUIT DIGEST

627

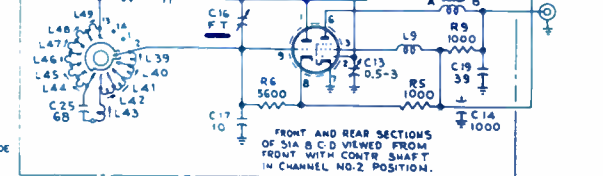
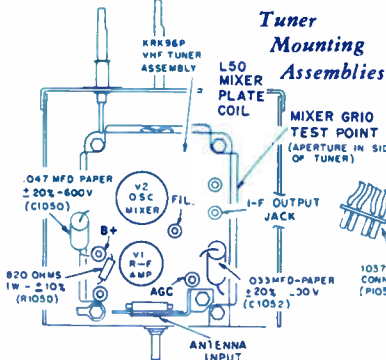
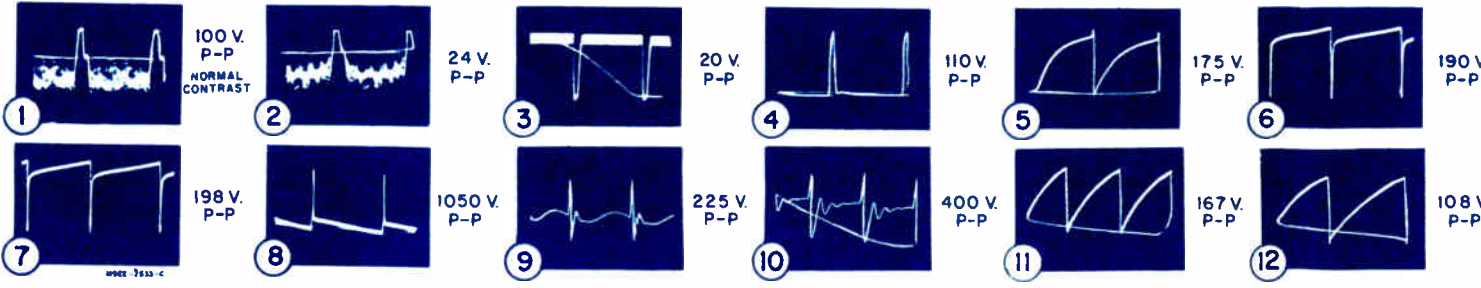
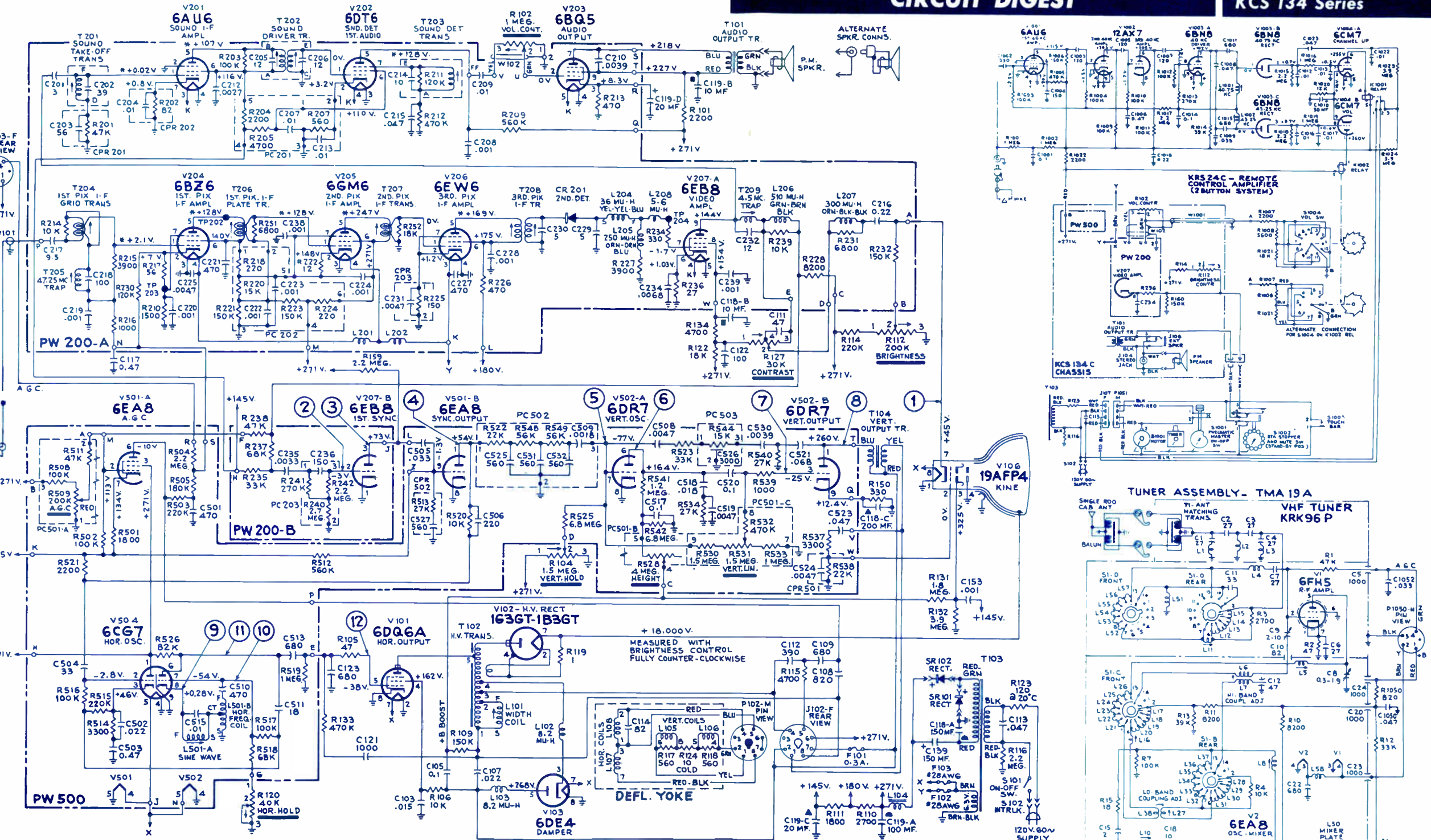
CHASSIS REAR VIEW



KR624G REMOTE AMPLIFIER (USED WITH KCS134C CHASSIS ONLY)

Electronic Technician
CIRCUIT DIGEST

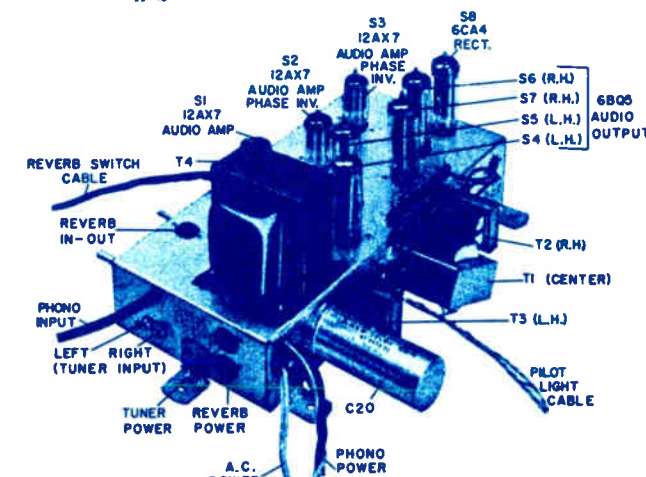
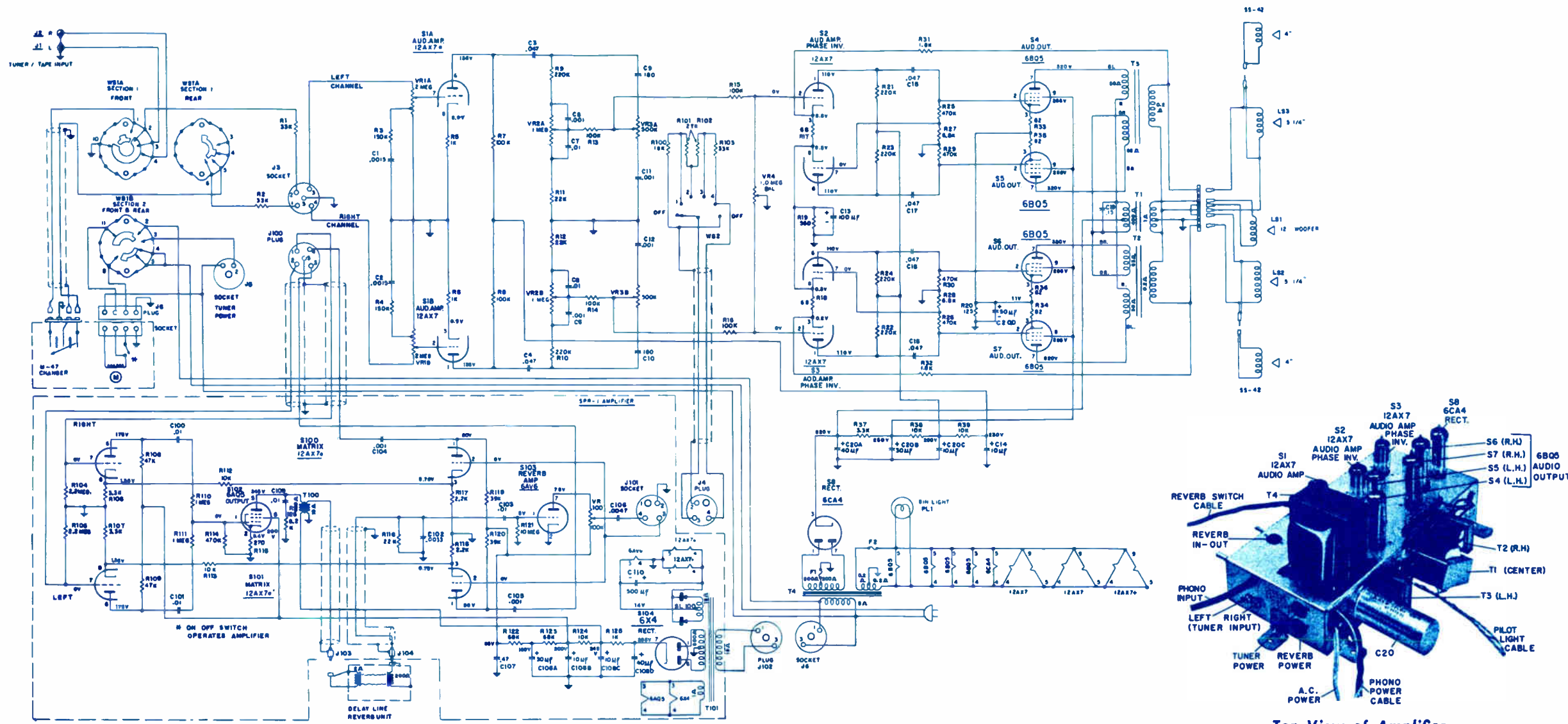
627



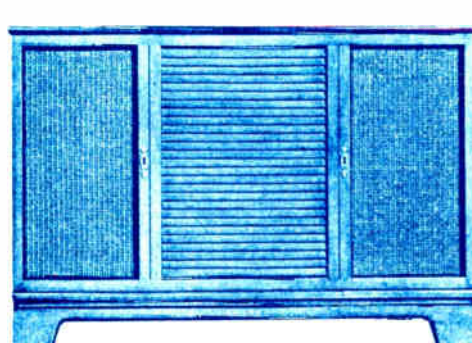
ELECTRONIC TECHNICIAN 626

CIRCUIT DIGEST

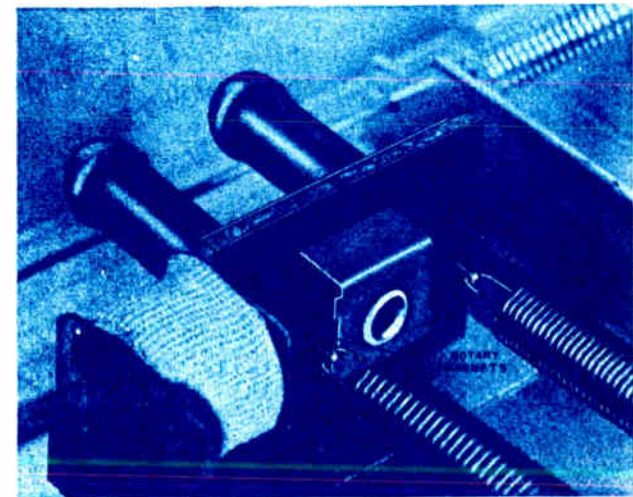
PHILCO
Stereo Console
W/Reverberation
Model J-1720R



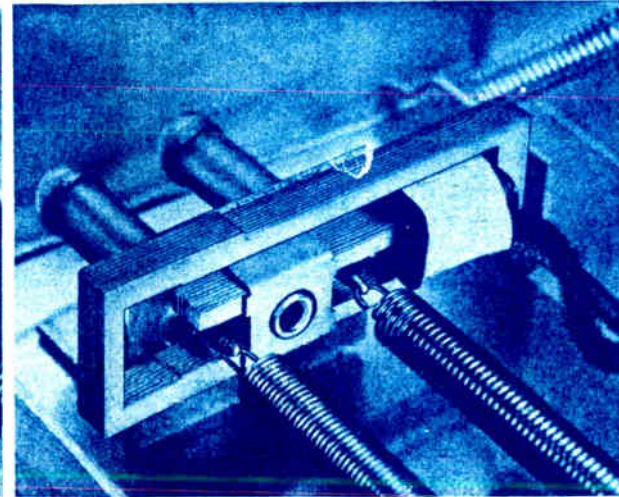
Top View of Amplifier



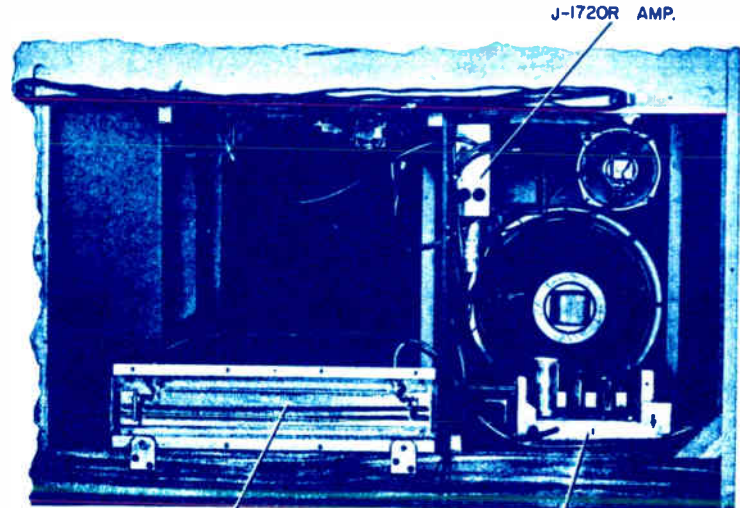
Model J-1720R



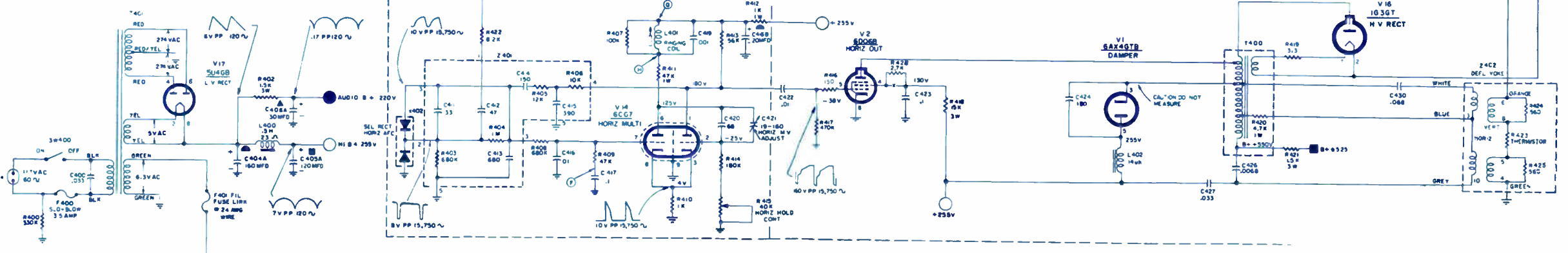
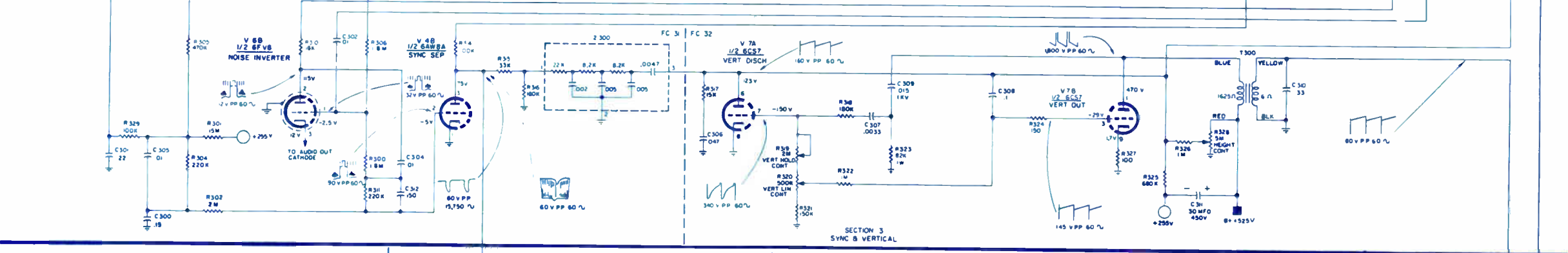
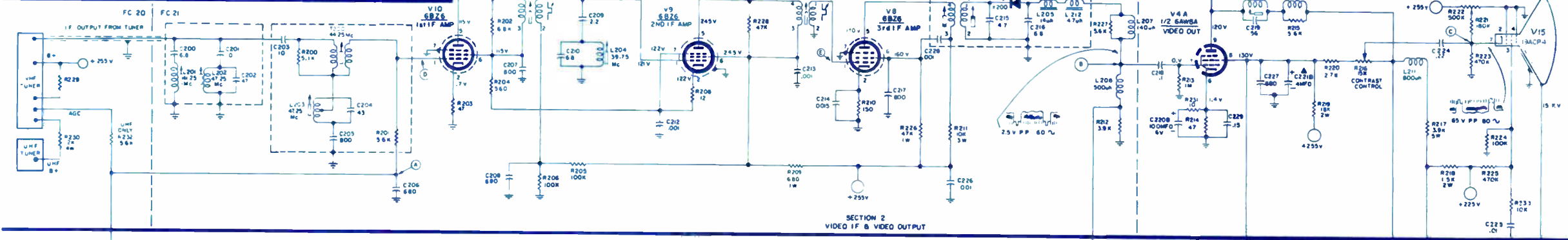
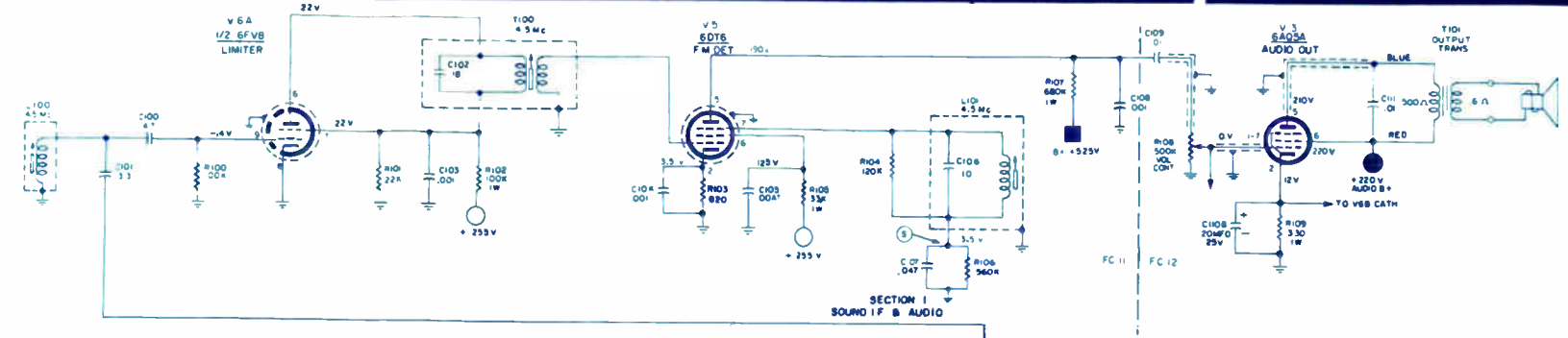
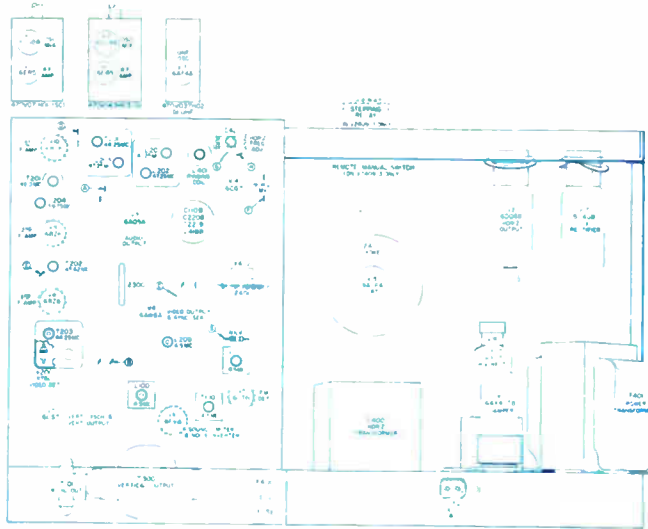
Reverb Motor



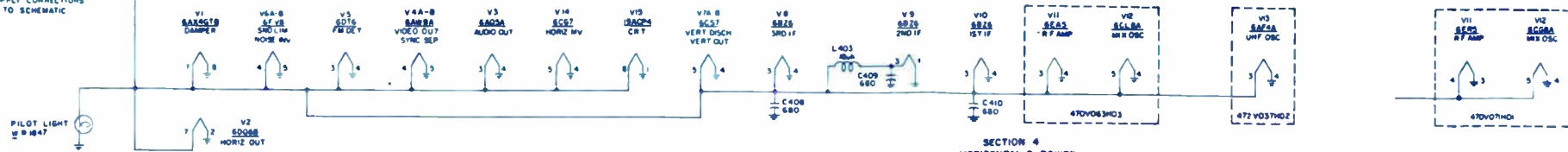
Reverb Generator

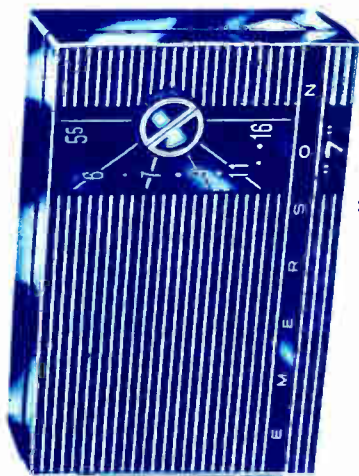


REVERB UNIT
SPR-1
Location of Reverberaphonic Unit



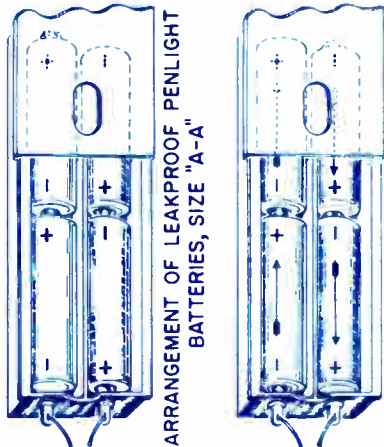
FOR REMOTE CONTROL POWER SUPPLY CONNECTIONS ON V-2409-3 CHASSIS, REFER TO SCHEMATIC FOR V-2408 CHASSIS.



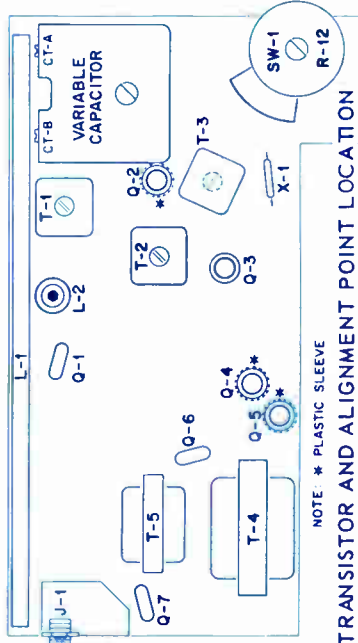


MODEL 977 "FALCON"

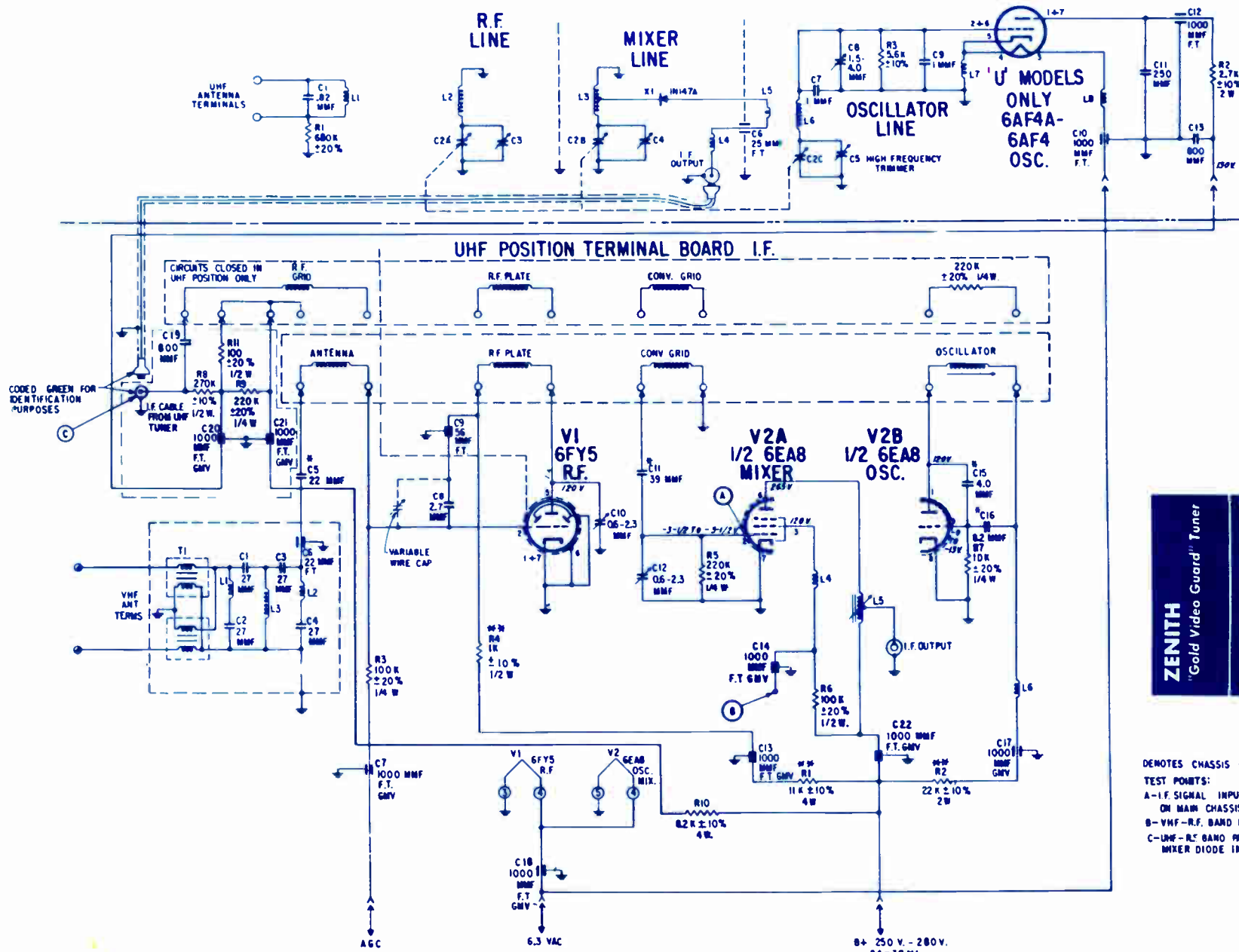
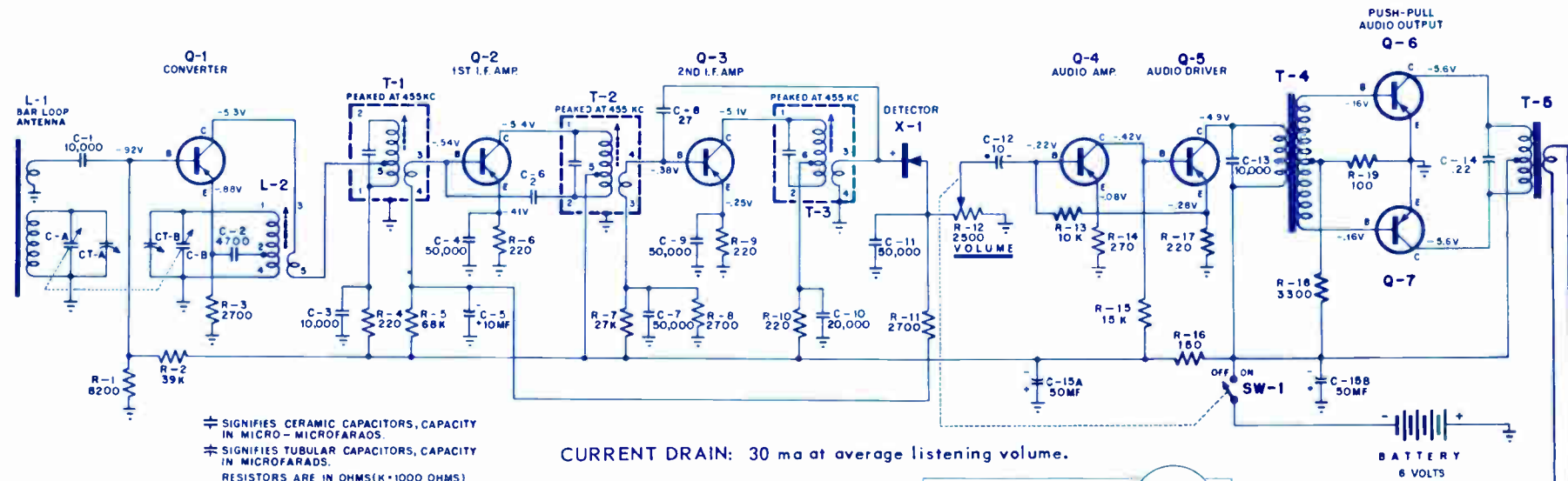
BATTERY POLARITY



ARRANGEMENT OF LEAKPROOF PENLIGHT BATTERIES, SIZE "A-A"
ARRANGEMENT OF MERCURY BATTERIES, EVEREADY E-9 OR MALLORY ZM-9.
WARNING: IF BATTERIES ARE REVERSED, RADIO MAY BE DAMAGED.



NOTE: * PLASTIC SLEEVE
TRANSISTOR AND ALIGNMENT POINT LOCATION



ZENITH
"Gold Video Guard" Tuner
Electronic Technician
CIRCUIT DIGEST
623

⬇ DENOTES CHASSIS
TEST POINTS:
A-I.F. SIGNAL INPUT FOR ALIGNMENT ON MAIN CHASSIS I.F. STRIP.
B-VHF-R.F. BAND PASSES OBSERVATION POINT.
C-UHF-R.F. BAND PASSES OBSERVATION AND UHF MIXER DIODE INJECTION POINT.

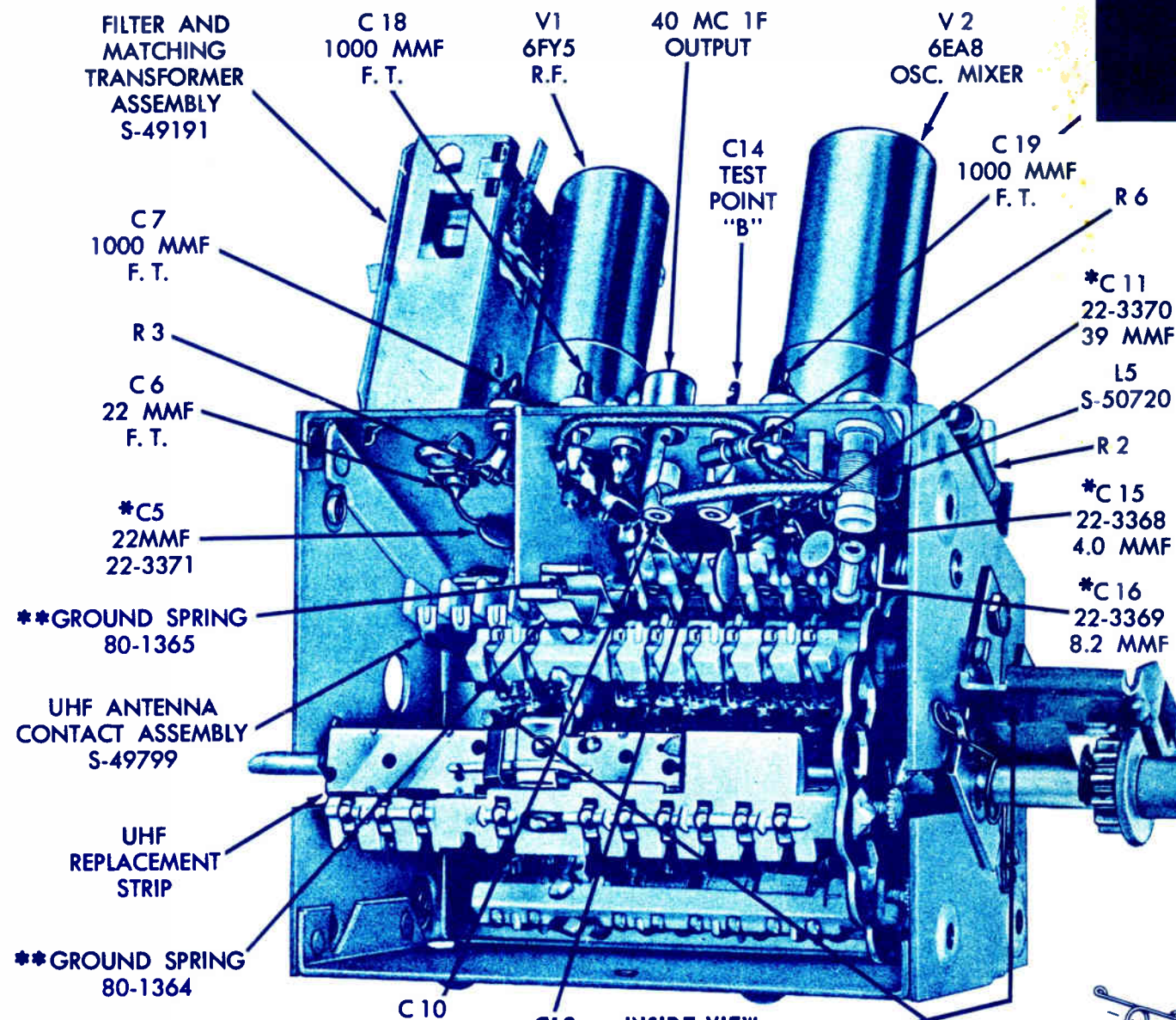
More Data on Reverse Side

ELECTRONIC TECHNICIAN 623

CIRCUIT DIGEST

ZENITH
"Gold Video Guard" Tuner

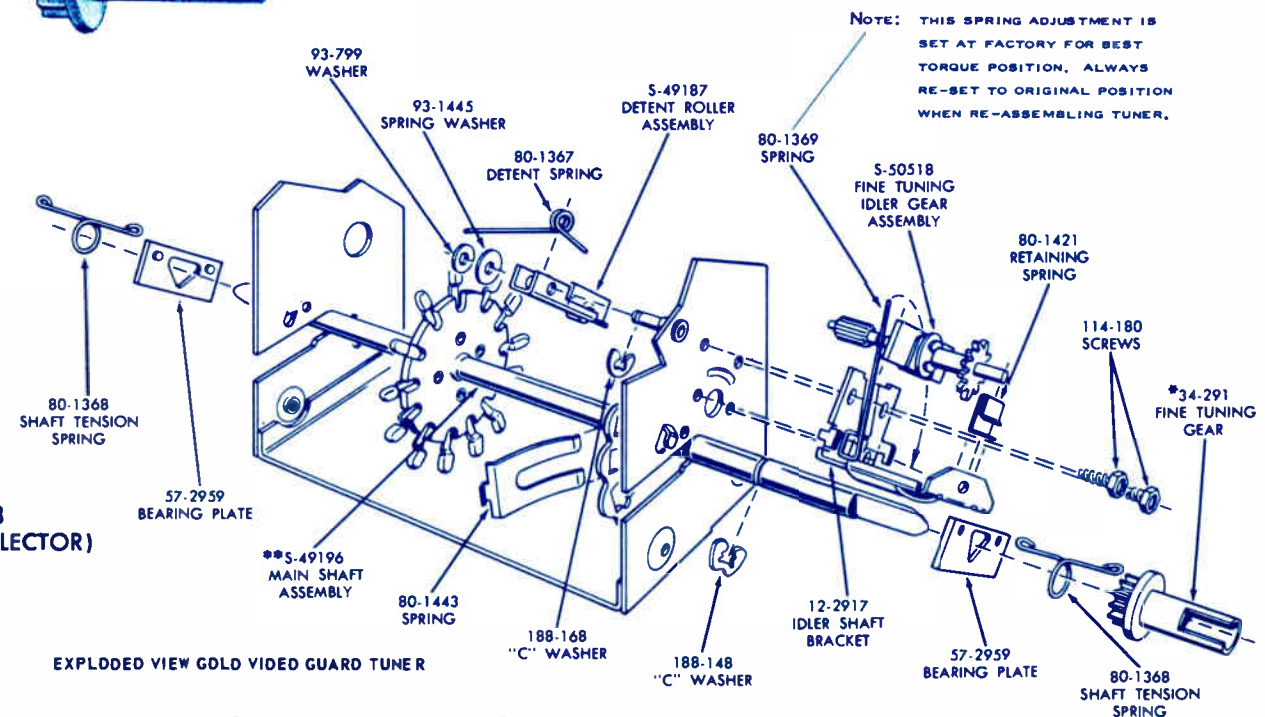
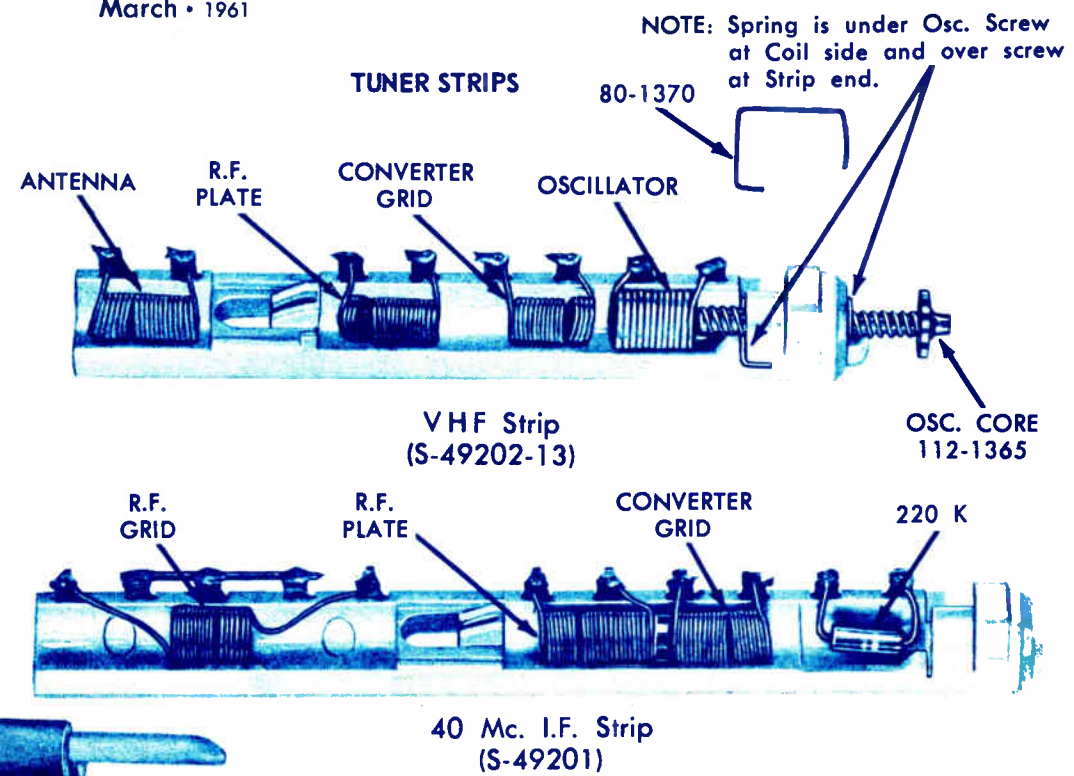
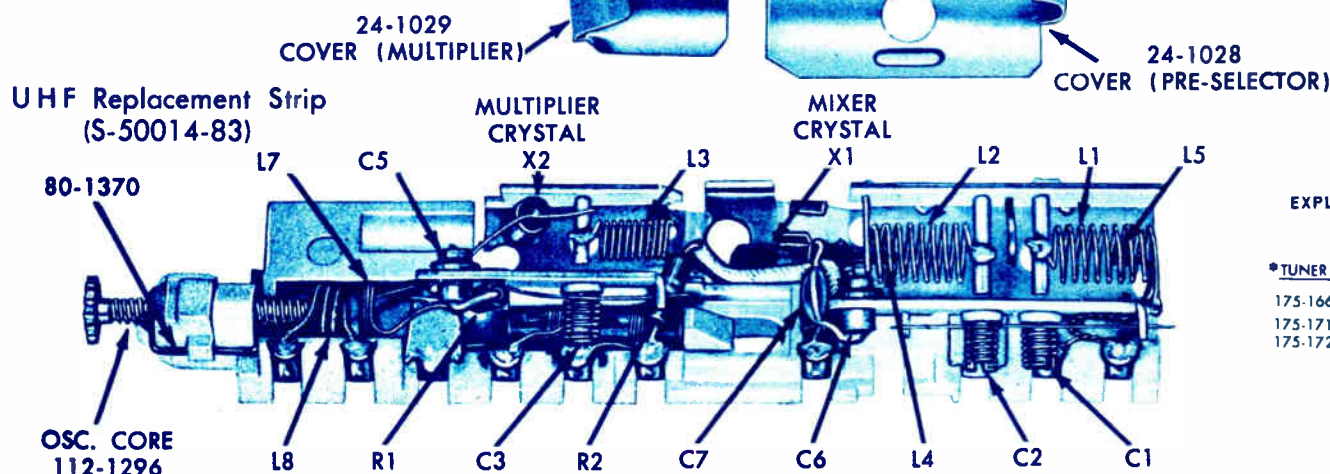
March • 1961



*USE ONLY ZENITH REPLACEMENT TYPE LEAD LENGTH IS IMPORTANT FOR PROPER INDUCTANCE

**NOTE: LATER PRODUCTION UNITS USE ONE GROUND SPRING 80-1469

NOTE: DO NOT LOOSEN RED-DABBED STATOR STRIP MOUNTING SCREWS (NOT SHOWN) UNLESS REPLACING STATOR STRIP ASSEMBLY.



NOTE: THIS SPRING ADJUSTMENT IS SET AT FACTORY FOR BEST TORQUE POSITION, ALWAYS RE-SET TO ORIGINAL POSITION WHEN RE-ASSEMBLING TUNER.

*TUNER	FINE TUNING GEAR ASSEMBLY	**TUNER	MAIN SHAFT ASSEMBLY
175-166	S-51242	175-166	S-51244
175-171 / 175-172	S-51283	175-171 / 175-172	S-51282
		175-304	S-52638
		175-306	S-52639

NOTE: 175-141, 175-142, 175-301, 175-302, 175-171, 175-172, 175-166, 175-304, AND 175-306 TUNERS ARE SIMILAR EXCEPT FOR MINOR MECHANICAL AND ELECTRICAL VARIATIONS

More Data on Reverse Side

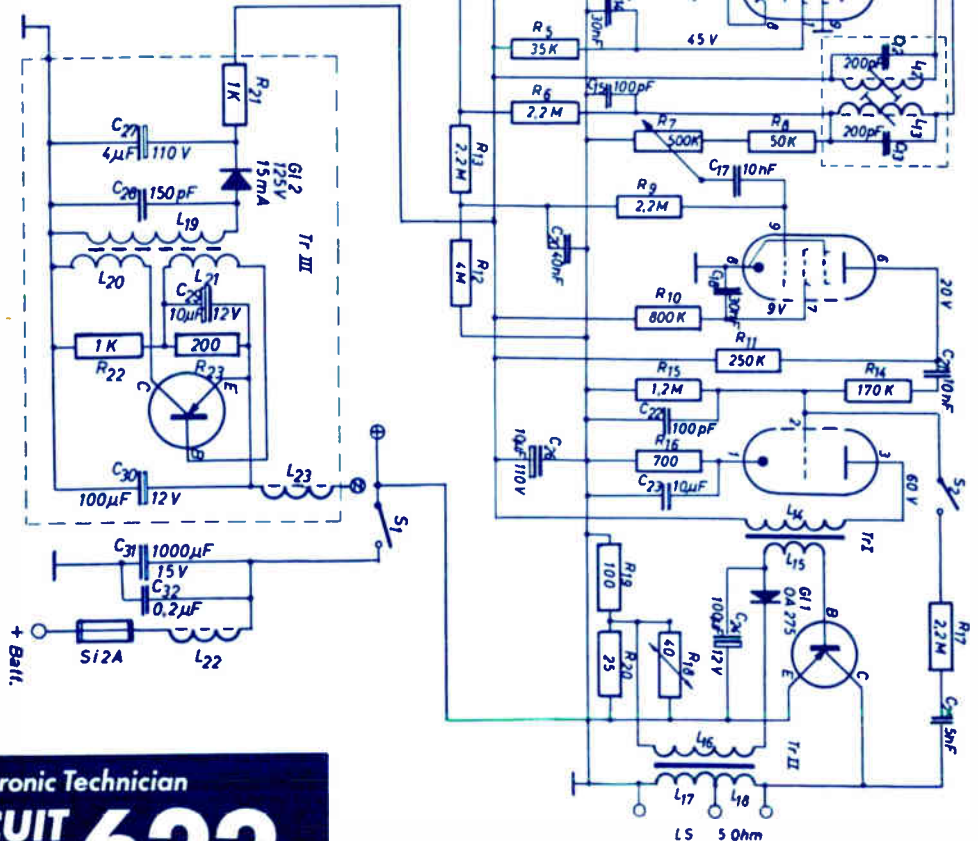
March • 1961

WAVEBANDS:
STANDARD 510-1620 KC
SHORT WAVE 30-50 MC
INTERMEDIATE FREQ. 460 KC
CAPACITY 10 WATTS
POSITION OF WAVEBAND SWITCH MW
TUBE VOLTAGE MEASURED WITH A 10K

MINUS POLE OF THE BATTERY TO GROUND

ECH 81
EBF 89
ECF 83

TF 80/30
TF 77/30Z

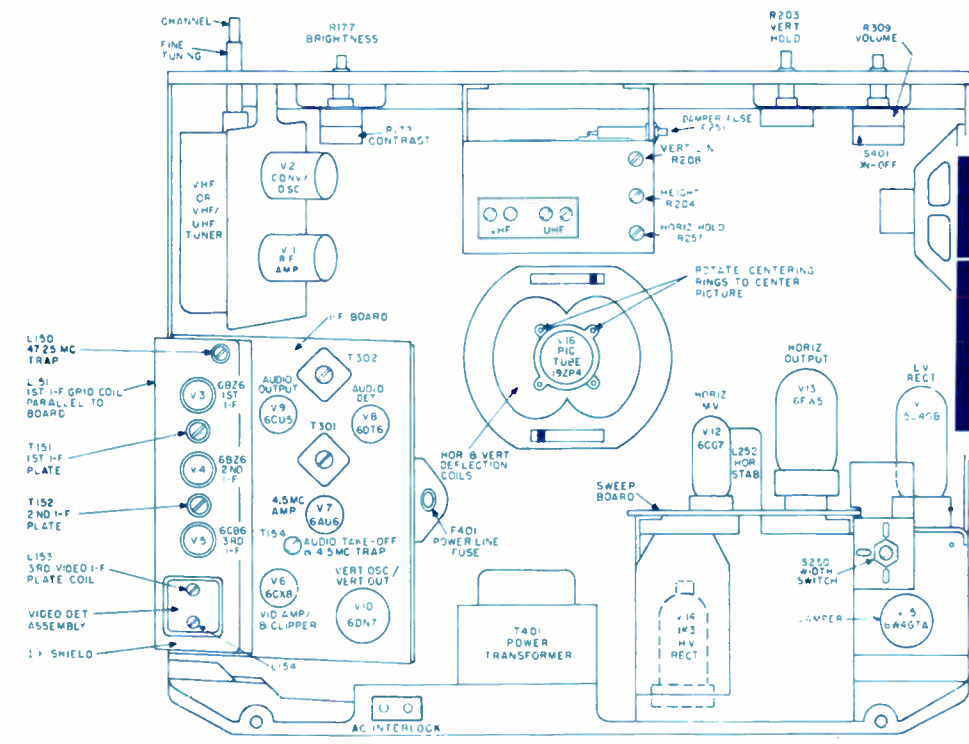
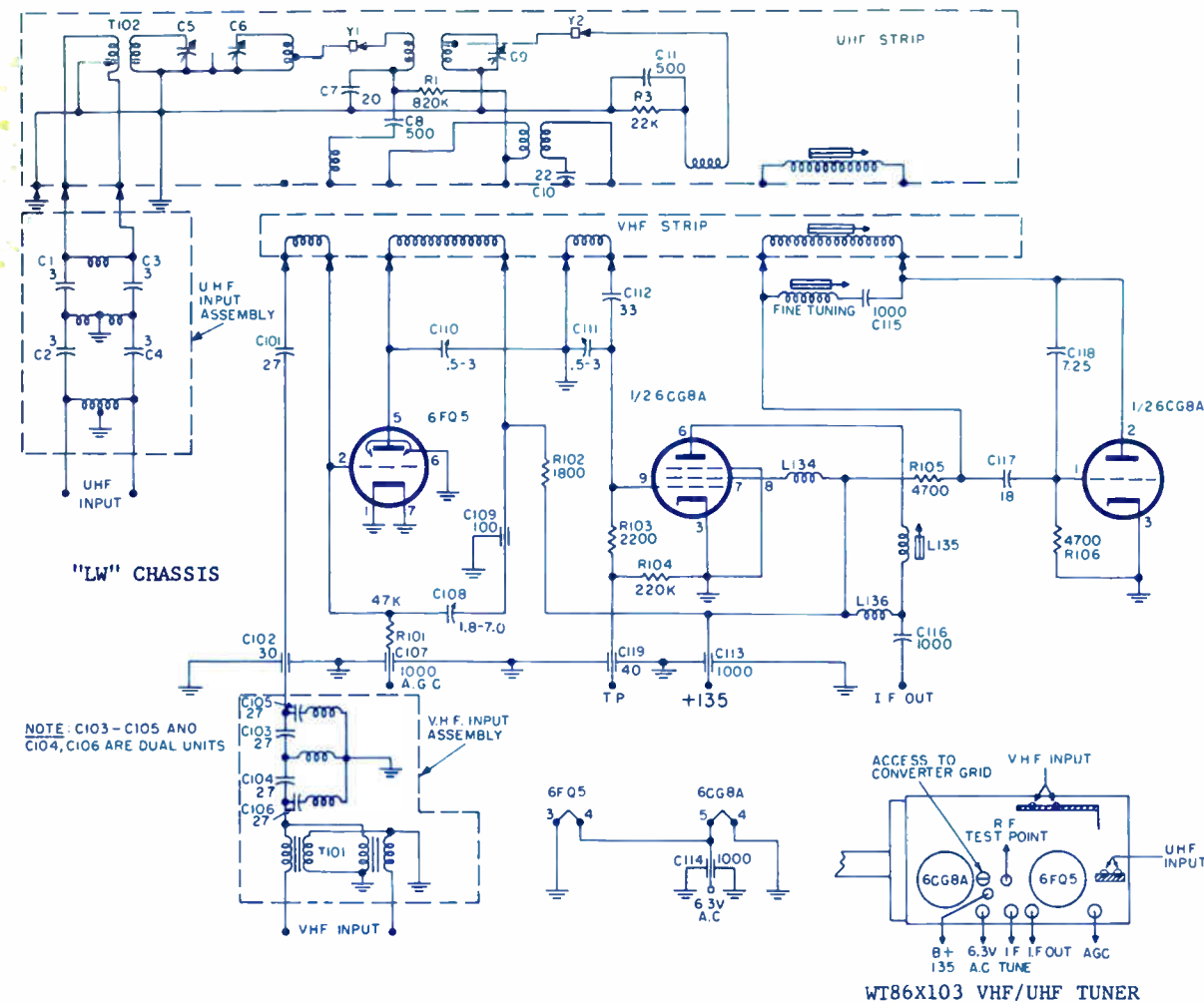


ECH 81

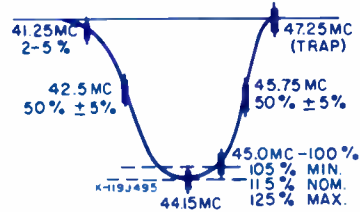
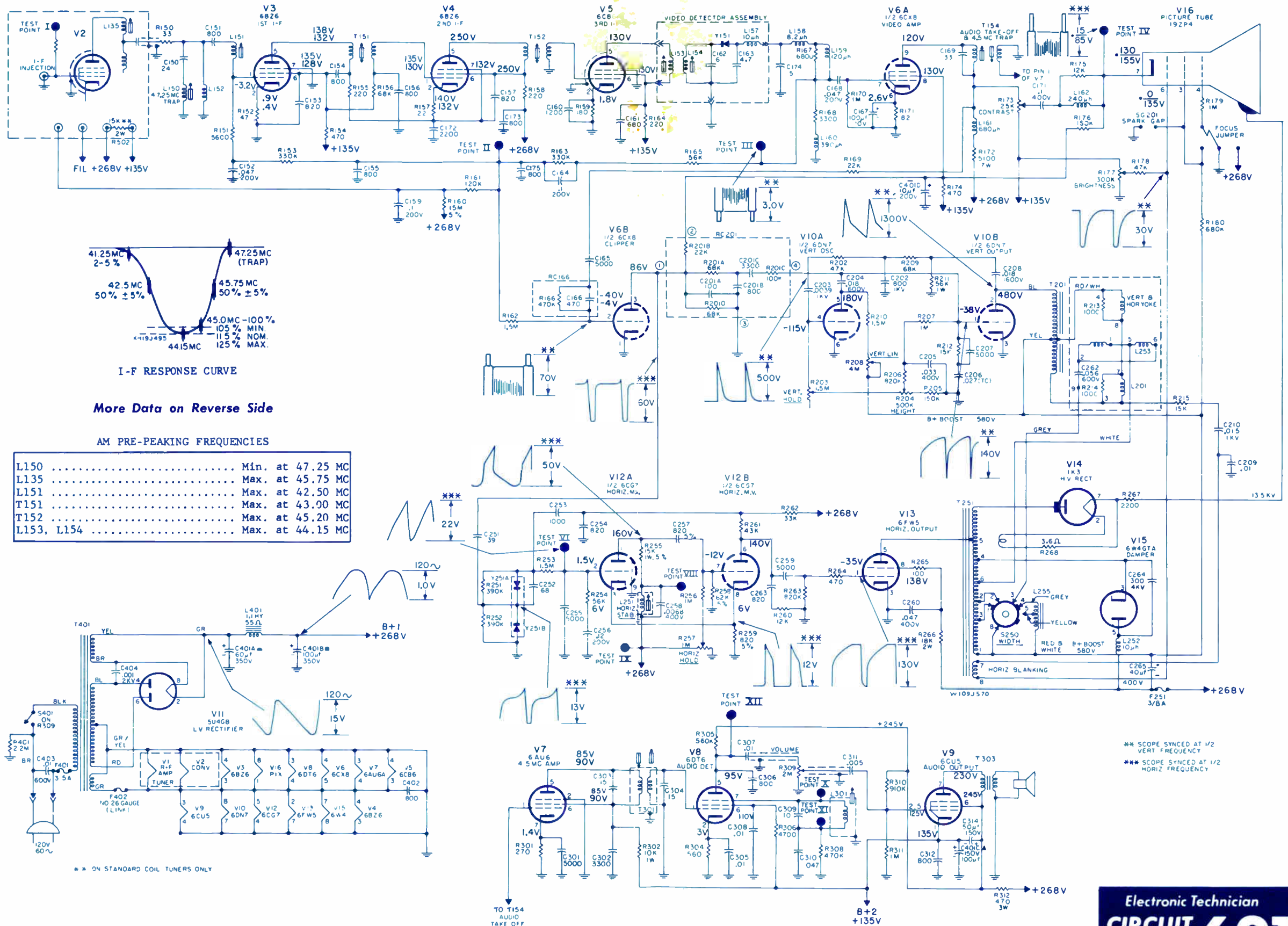
EBF 89

ECF 83

TF 80/60



Special Full-Width Spring Binder Holds 24 Groups of Electronic Technician's Circuit Digests Available @ \$2.95

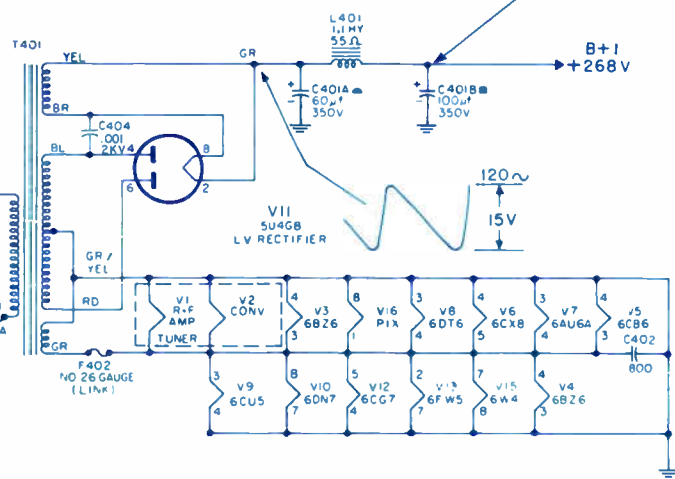


I-F RESPONSE CURVE

More Data on Reverse Side

AM PRE-PEAKING FREQUENCIES

L150	.....	Min.	at	47.25 MC
L135	.....	Max.	at	45.75 MC
L151	.....	Max.	at	42.50 MC
T151	.....	Max.	at	43.00 MC
T152	.....	Max.	at	45.20 MC
L153, L154	.....	Max.	at	44.15 MC



** SCOPE SYNCED AT 1/2 VERT. FREQUENCY
*** SCOPE SYNCED AT 1/2 HORIZ. FREQUENCY

ELECTRONIC TECHNICIAN

Trademark

CIRCUIT DIGESTS

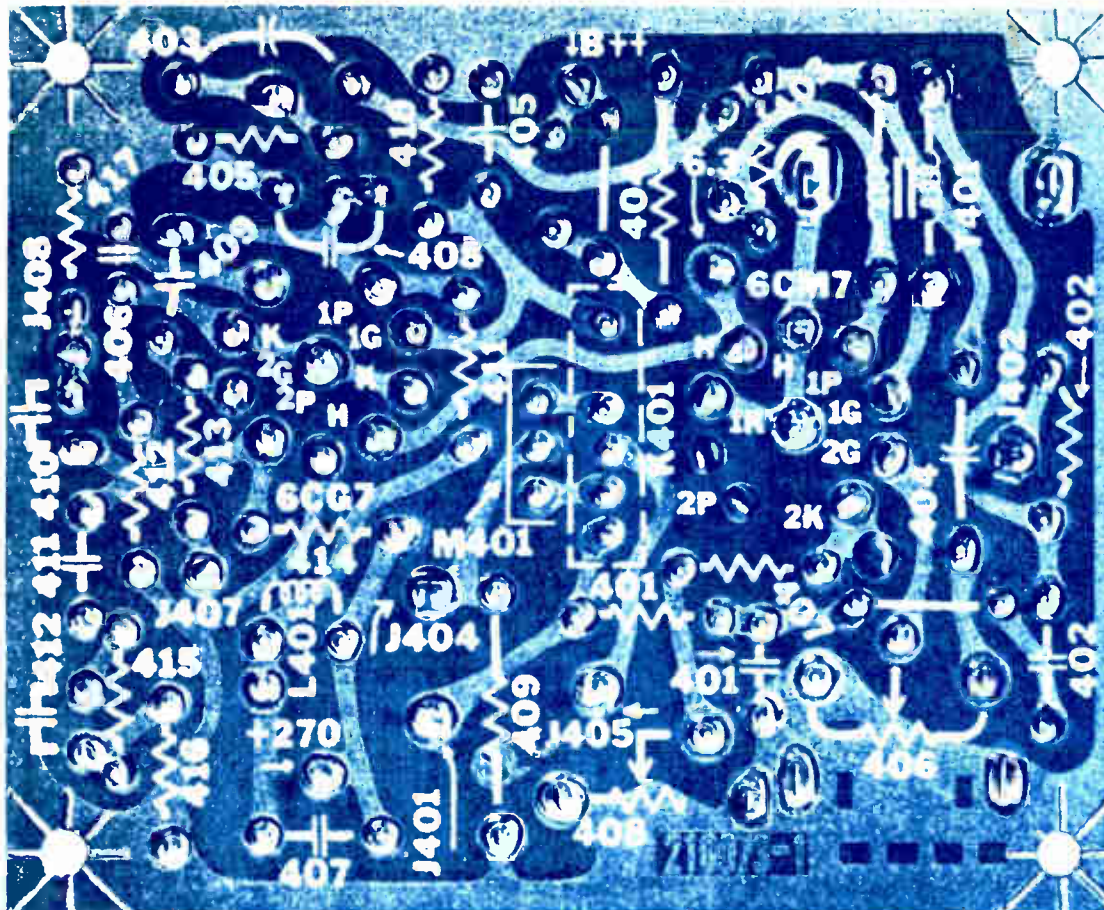
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GROUP 104

SWEEP CIRCUIT

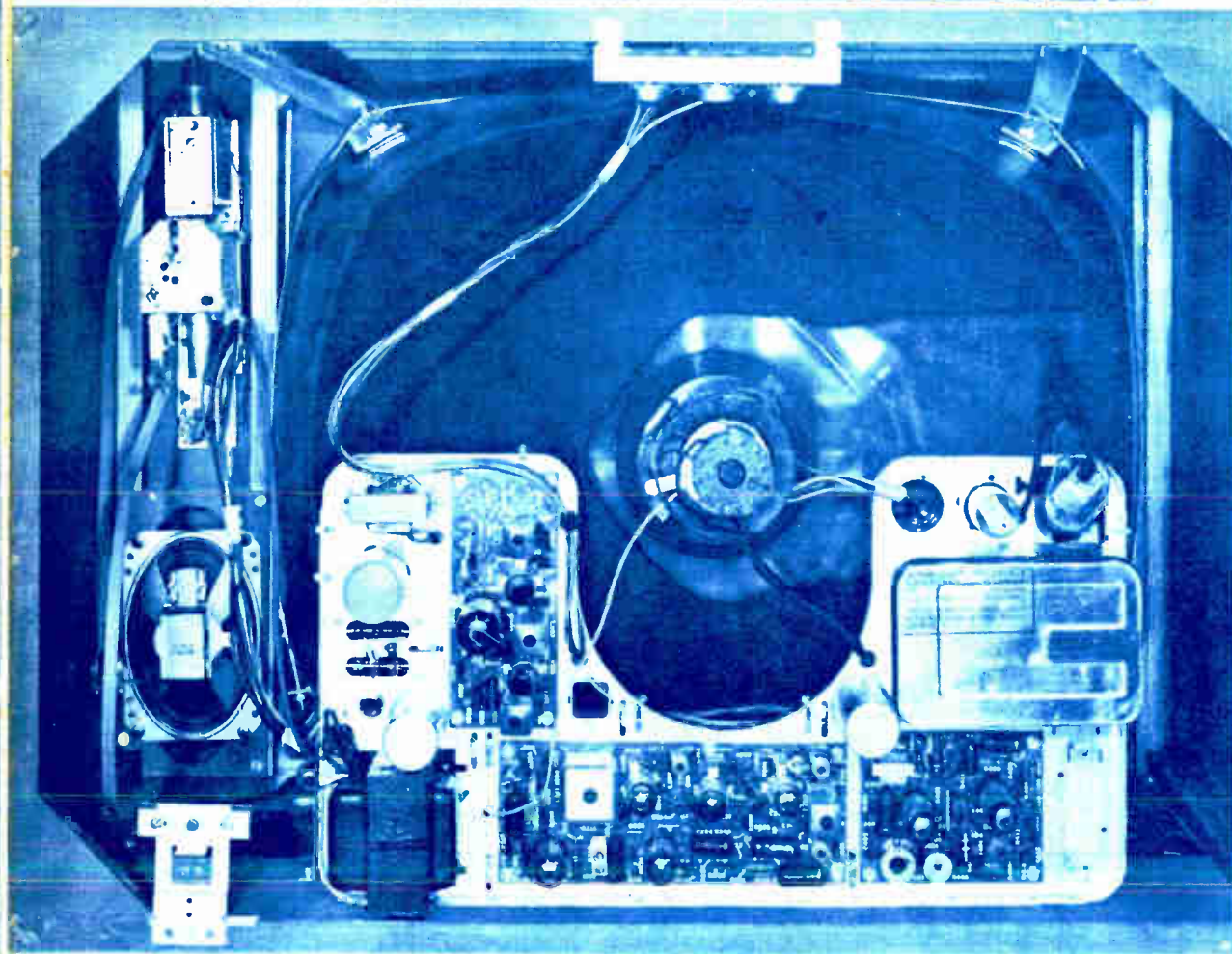
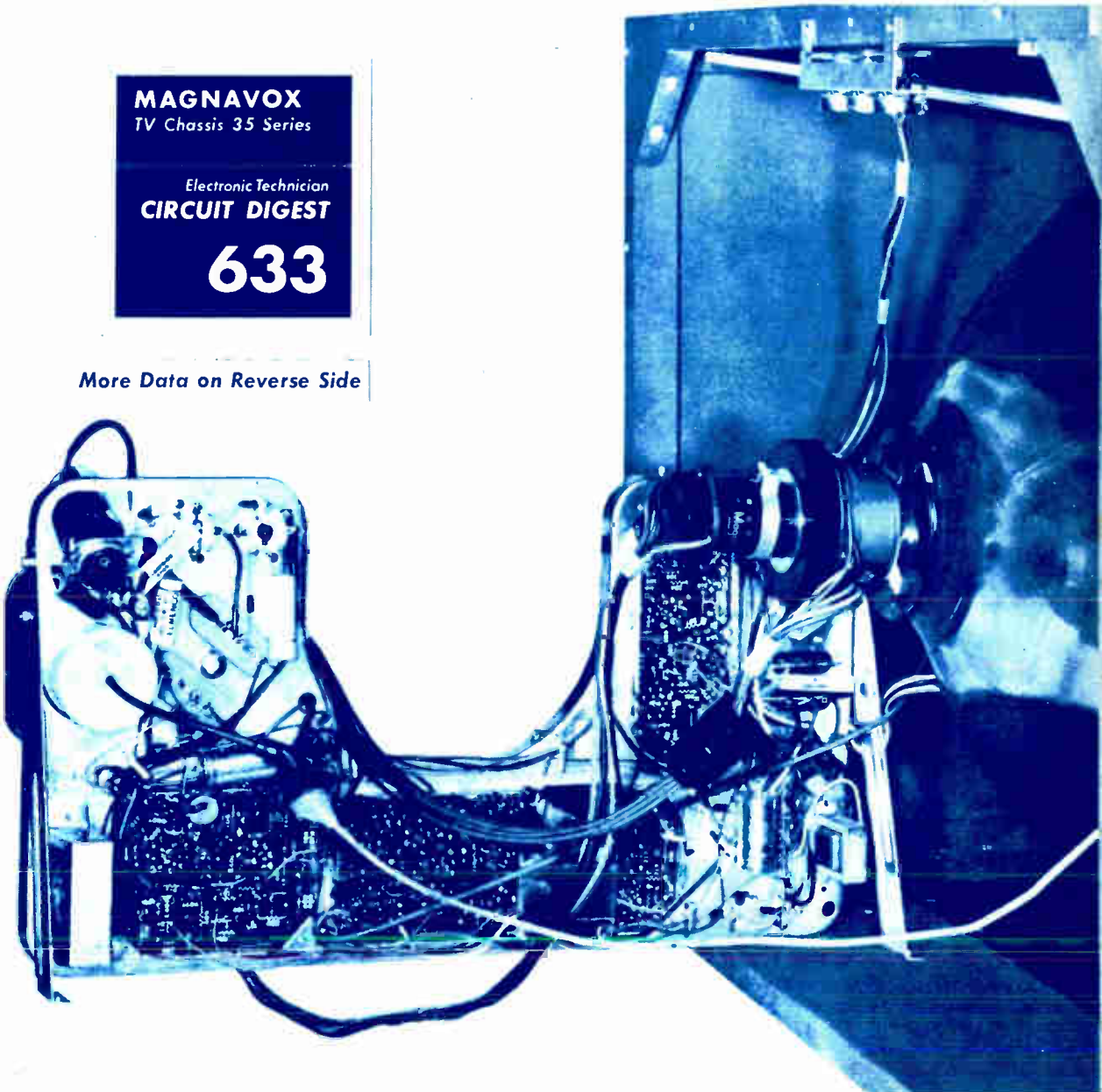


MAGNAVOX
TV Chassis 35 Series

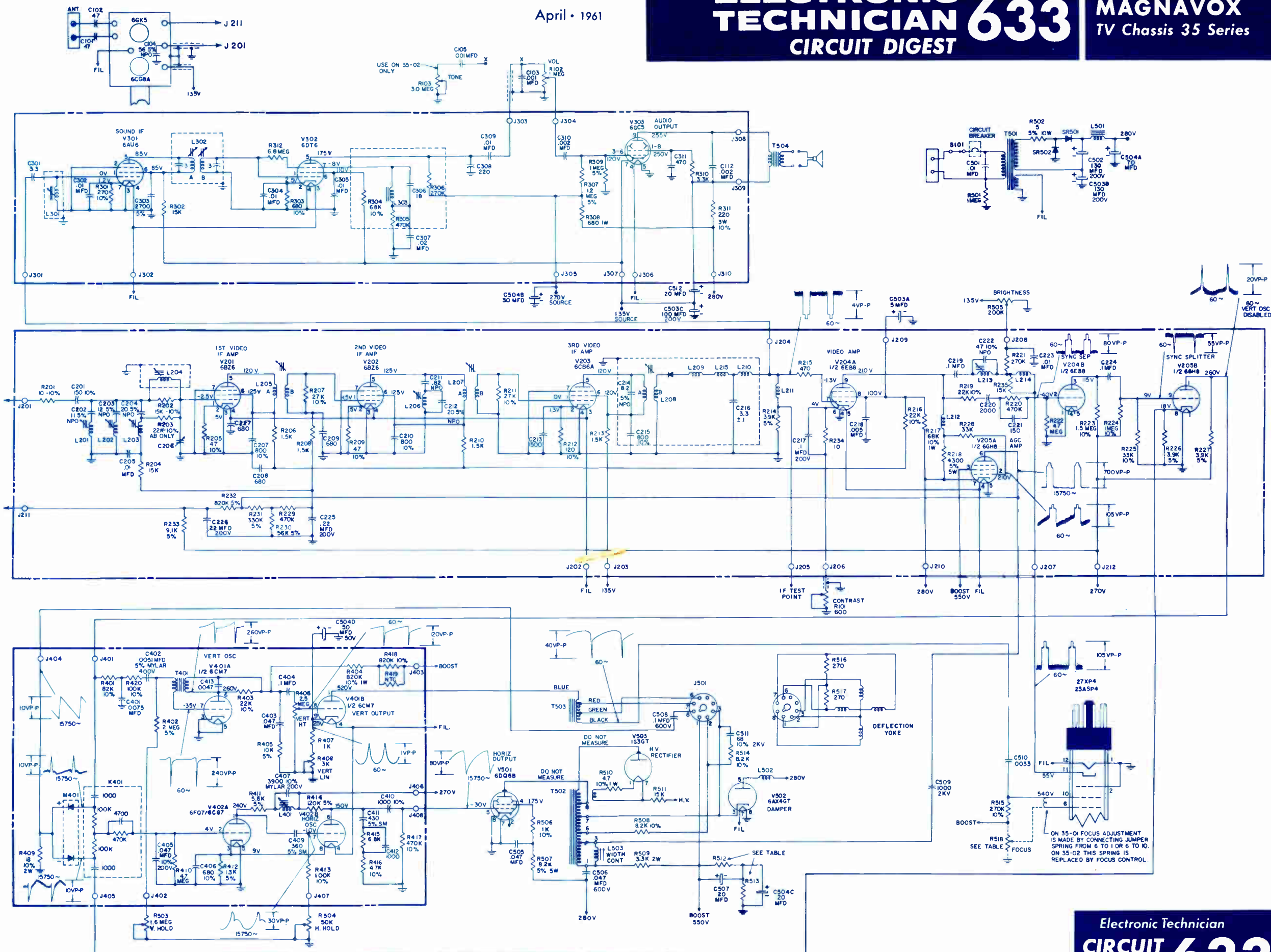
Electronic Technician
CIRCUIT DIGEST

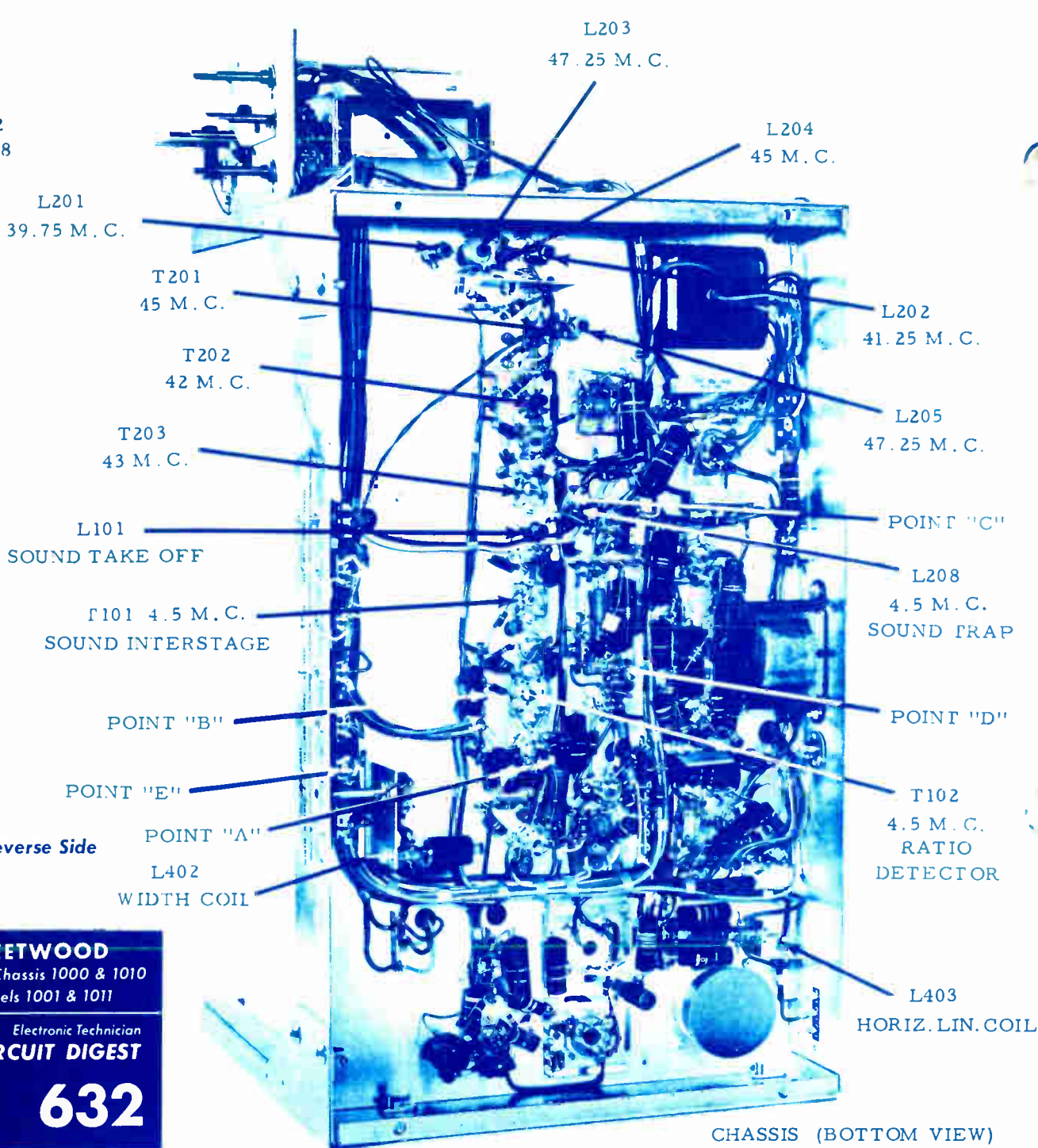
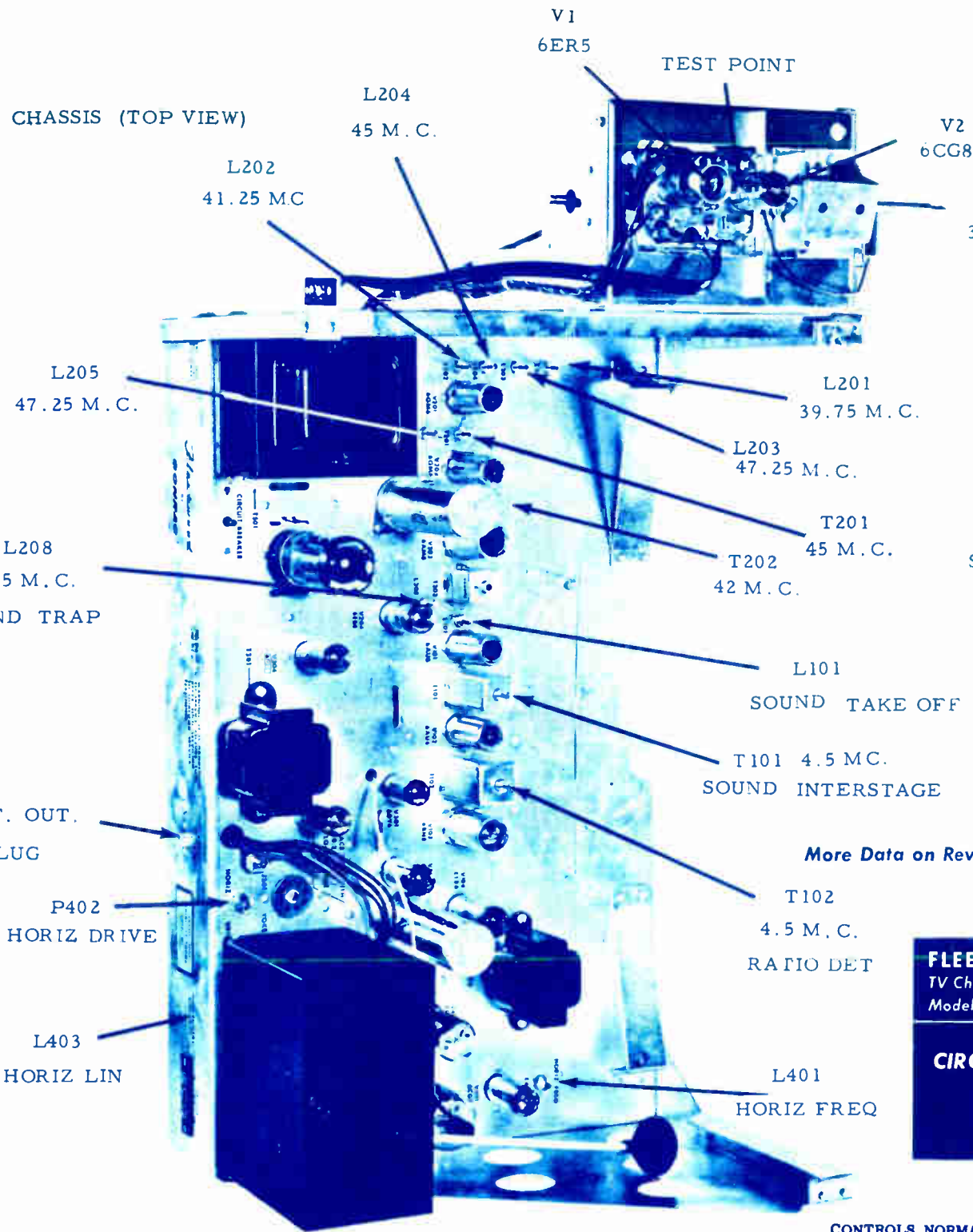
633

More Data on Reverse Side



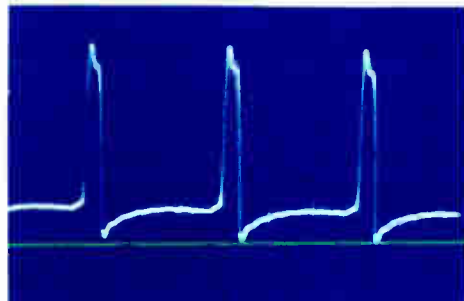
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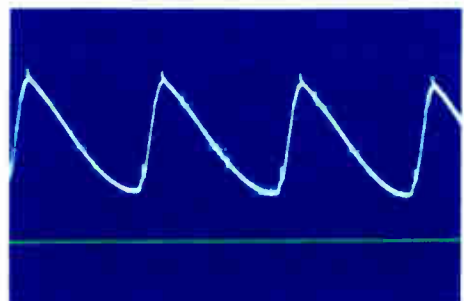


More Data on Reverse Side

FLEETWOOD
 TV Chassis 1000 & 1010
 Models 1001 & 1011
 Electronic Technician
CIRCUIT DIGEST
632



V204B/6EB8, Pin 3, 900 V p-p Horizontal Sweep Rate



V302/6BJ8, Pins 1 and 3, 15 V p-p Horizontal Sweep Rate

VOLTAGE TABLE

CONTROLS NORMAL 117 VAC	VOLTAGE MEASURED TO GROUND VOLTAGE MEASURED with VTVM									
	PIN	1	2	3	4	5	6	7	8	9
V101/6AU6	0	G	G	F	184	184	2.7			
V102/6AU6	-19.5	G	G	F	67	73	G			
V103/6BN8	-5.9	G	-6	F	G	-13	46	-78	G	
V104/EL84	NC	0	5.4	F	G	NC	225	NC	180	
V201/6GM6	-3.4	.32	G	F	165	168	G			
V202/6GM6	-3.4	.36	G	F	159	160	G			
V203/6AM8	1.70	0	135	G	F	270	0	-4.7	G	
V204/6EB8	285	274	-24	F	F	0 to 3.6	-5	230	243	
V205/23CP4 or 23AVP4	F	0-155	600	0-600			125-190	F		

VOLTAGE TABLE

CONTROLS NORMAL 117 VAC	VOLTAGE MEASURED TO GROUND VOLTAGE MEASURED with VTVM									
	PIN	1	2	3	4	5	6	7	8	9
V301/6BY6	66	G	G	F	80	27	-25			
V302/6BJ8	0	25.5	0	F	G	-28	203	81	82	
V303/6CG7	100	0	3.4	G	F	195	-38	3.4	G	
V304/6DT5	280	NC	-27	F	G	NC	0	NC	275	
V401/6CG7	240	96	9.3	G	F	160	-15	9.3	G	
V402/6DQ6A	NC	F	NC	170	-45	-24	G	1.45		
V403/6DE4	NC	NC	Do Not Measure	NC	270	NC	F	G		
V404/1B3		-	DO NOT MEASURE	-						
V501/5V3	NC	290	NC	-5.4	NC	-5.4	NC	290		

VIDEO BANDPASS: 3.75 MC

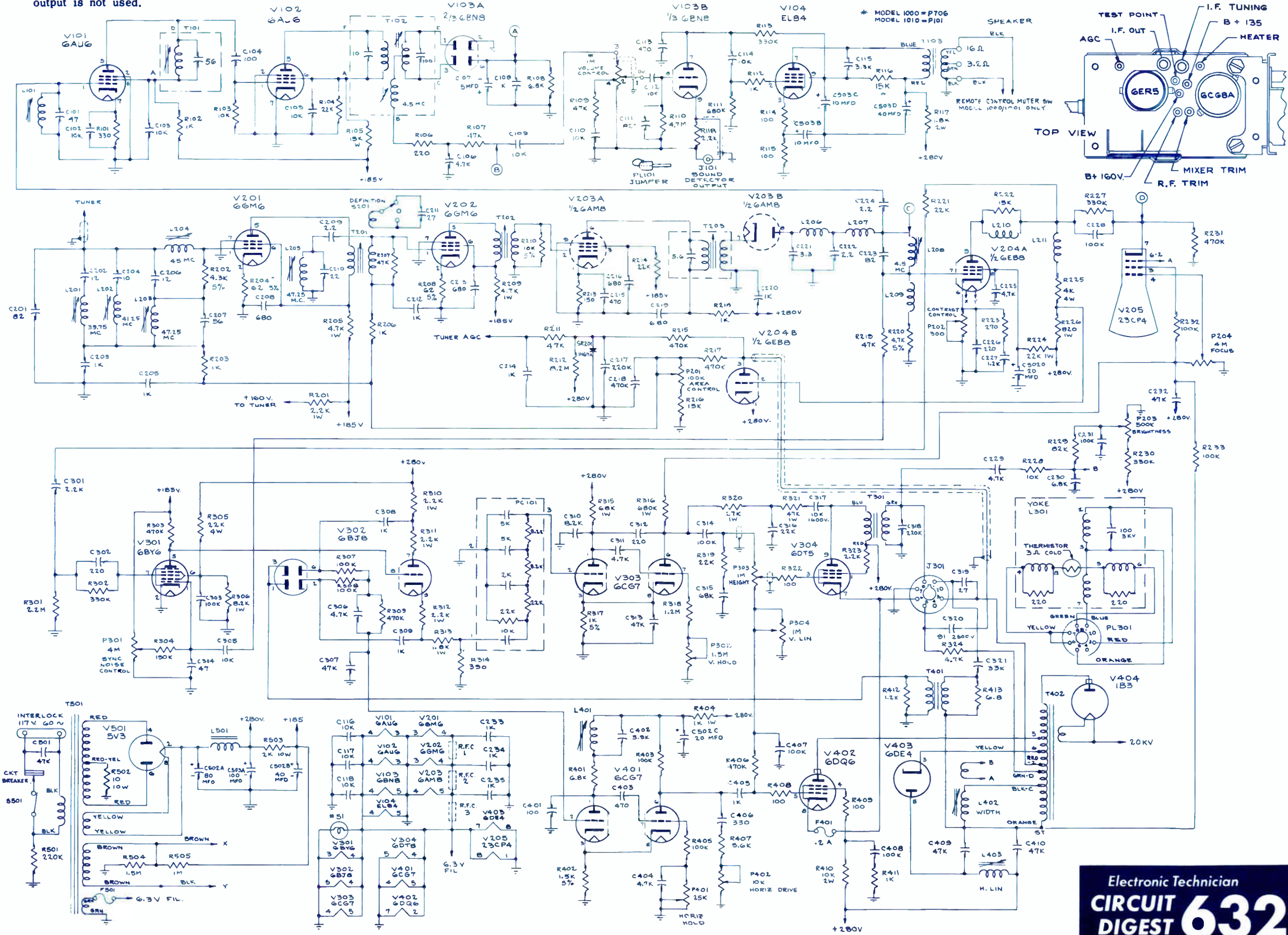
ANODE VOLTAGE: 20,000 v. April • 1961

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CIRCUIT DIGEST

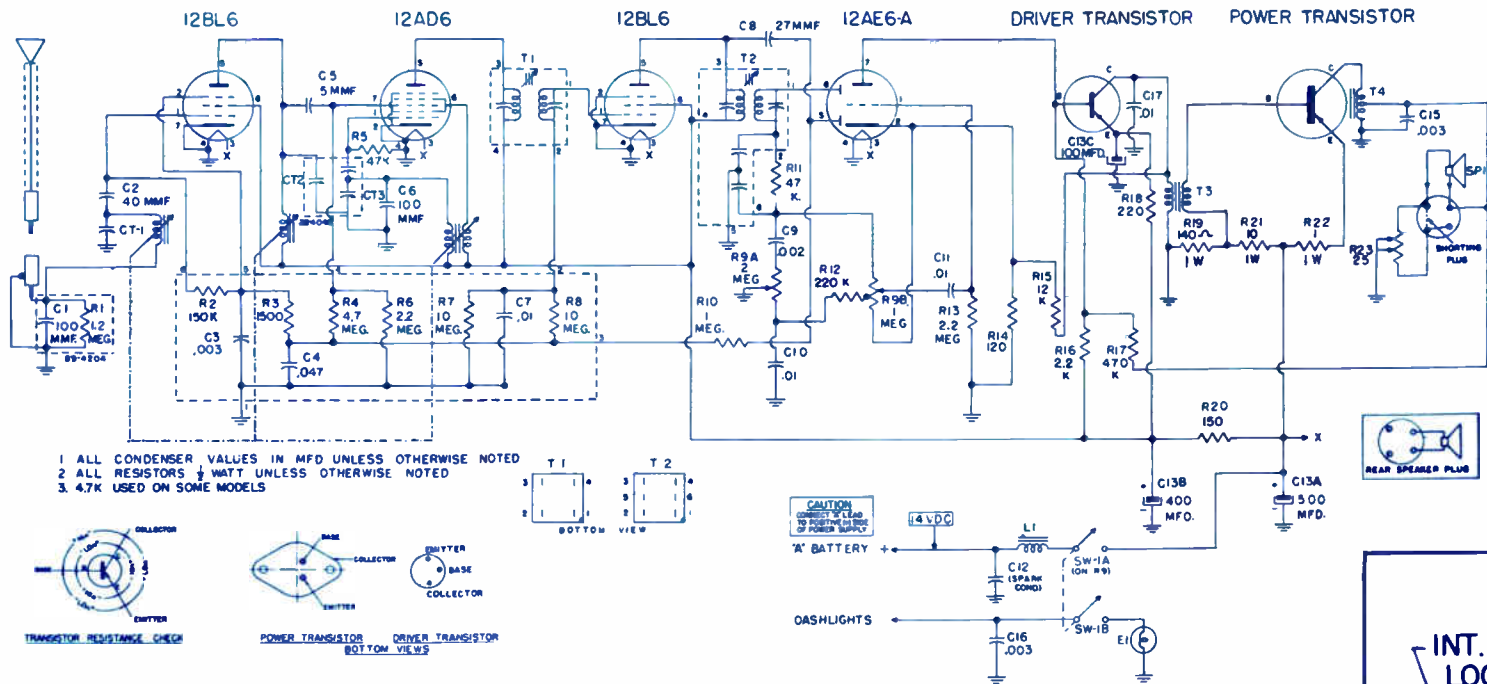
FLEETWOOD
TV Chassis 1000 & 1010
Models 1001 & 1011

HIGH FIDELITY AUDIO CONNECTION: A Cathode Follower Jack is located in the rear apron of the chassis to permit quick, easy connection to a high fidelity system. A short-circuiting plug should be inserted in the jack if the cathode follower output is not used.



Pin	12BL6 RF		12AD6 Conv.		12BL6		12AE6		TRANSISTOR	
	Res	V	Res	V	Res	V	Res	V	Power Res	Pin V
1	5 MEG	-35	50K ohms	-5	8 MEG	-4	2.2 MEG	-6	30	11.5
2	5 MEG	-6	1 ohm	0	0	0	120 ohms	0	3.8 ohm	11
5	80 ohms	11.8	110 ohms	11.8	140 ohms	11.8	6 MEG	-2	0	0
6	70 ohms	11.8	70 ohms	11.8	70 ohms	11.8	500 K	-6	0	0
7	300 ohms	.0	MEG	-.25	0	0	150	10	150	10

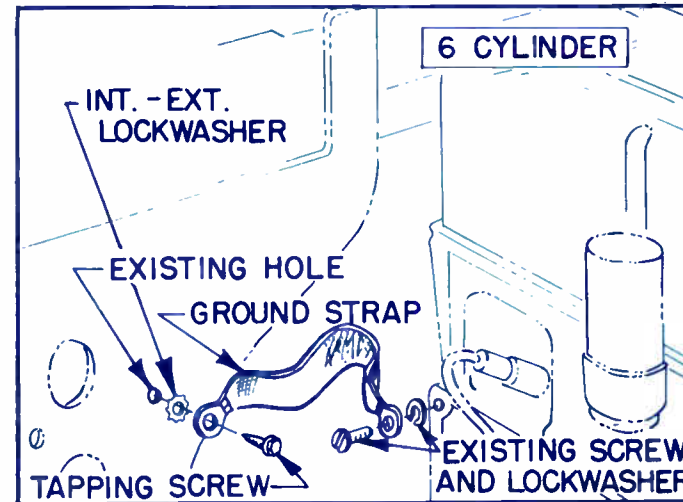
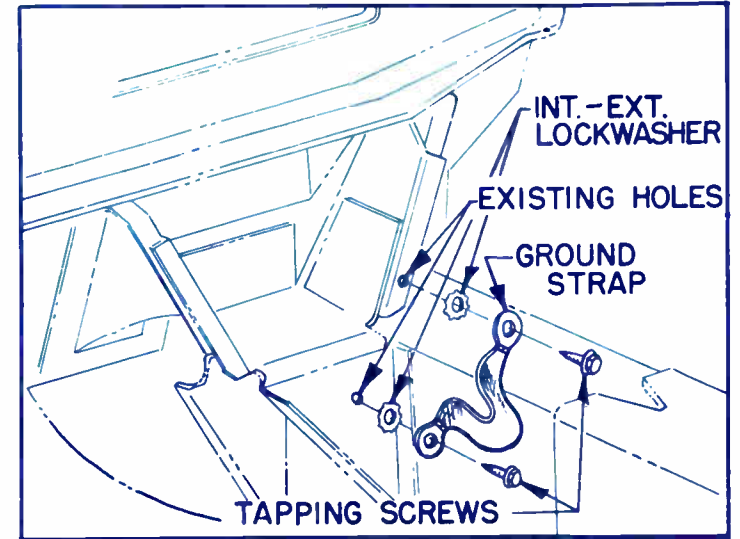
Driver Res	Driver V	Pin	Pin
150	10	BASE	330
330	11	EMITTER	170
170	1	COLLECTOR	



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MOTOR NOISE ELIMINATION

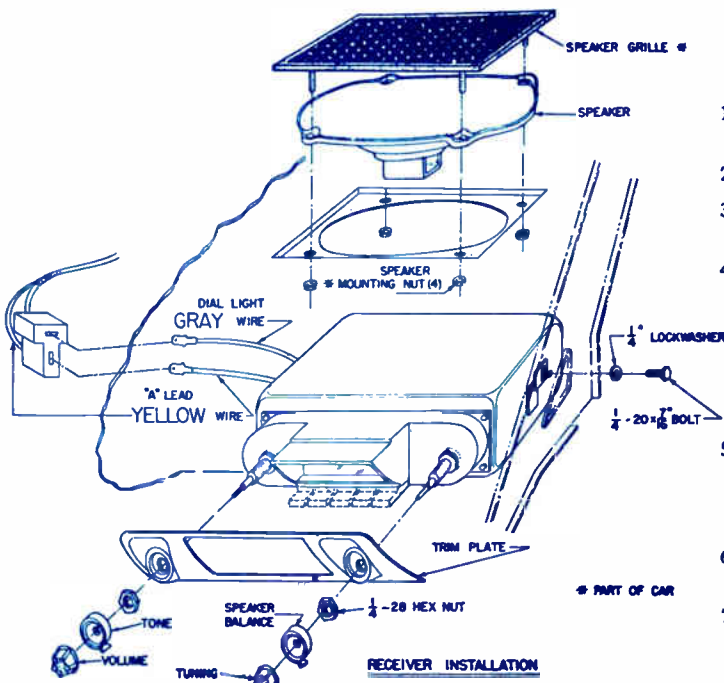
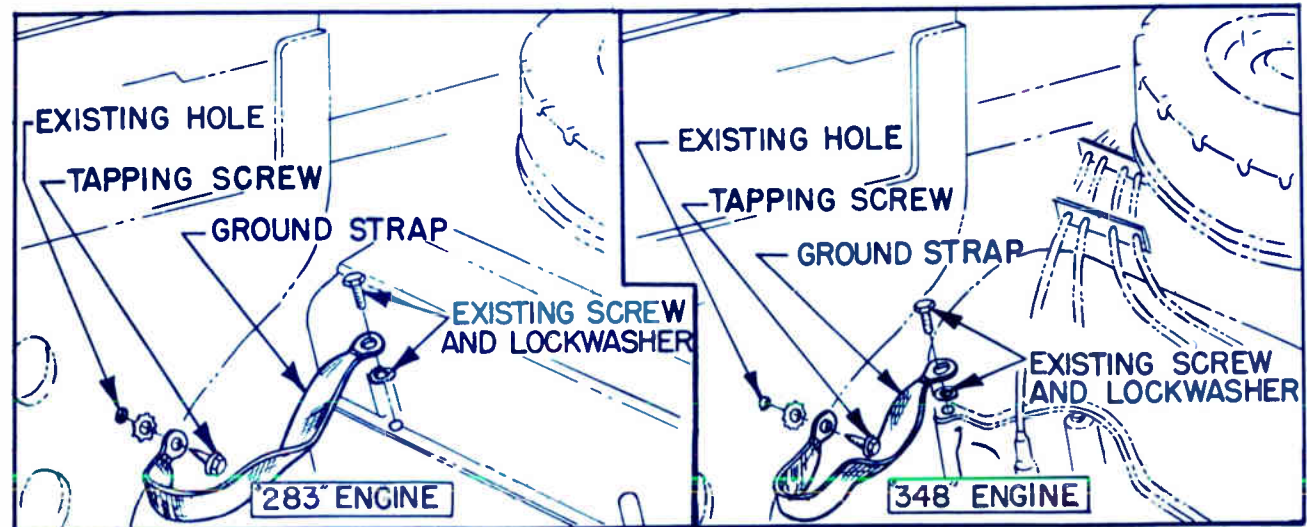
On all vehicles except those equipped with the 348 engine, install one strap from the body mounting bracket to the dash-frame brace on the right side only.



INSTALLATION OF GROUND STRAPS

On vehicles equipped with a six cylinder engine, install one strap to the existing screw and lockwasher. Attach the other end of strap to the dash with a tapping screw and an internal-external tooth lock-washer.

On vehicles equipped with a 283 engine (left) or a 348 engine (right) install one strap to the rocker panel cover, using the existing screw and lockwasher. Attach the other end of the strap to the dash with a self-tapping screw and internal-external lockwasher.

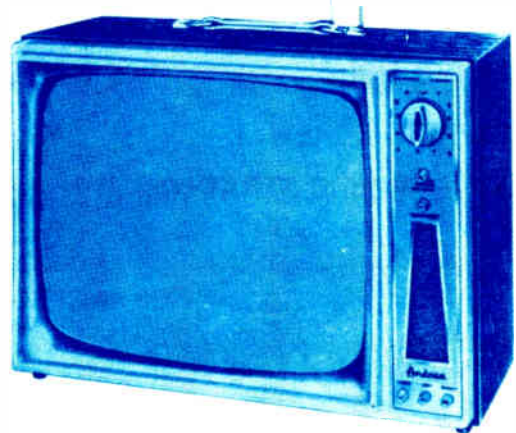
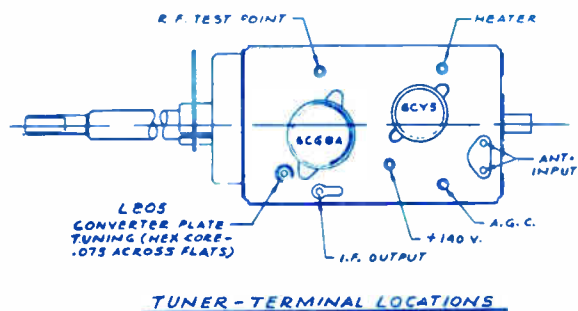
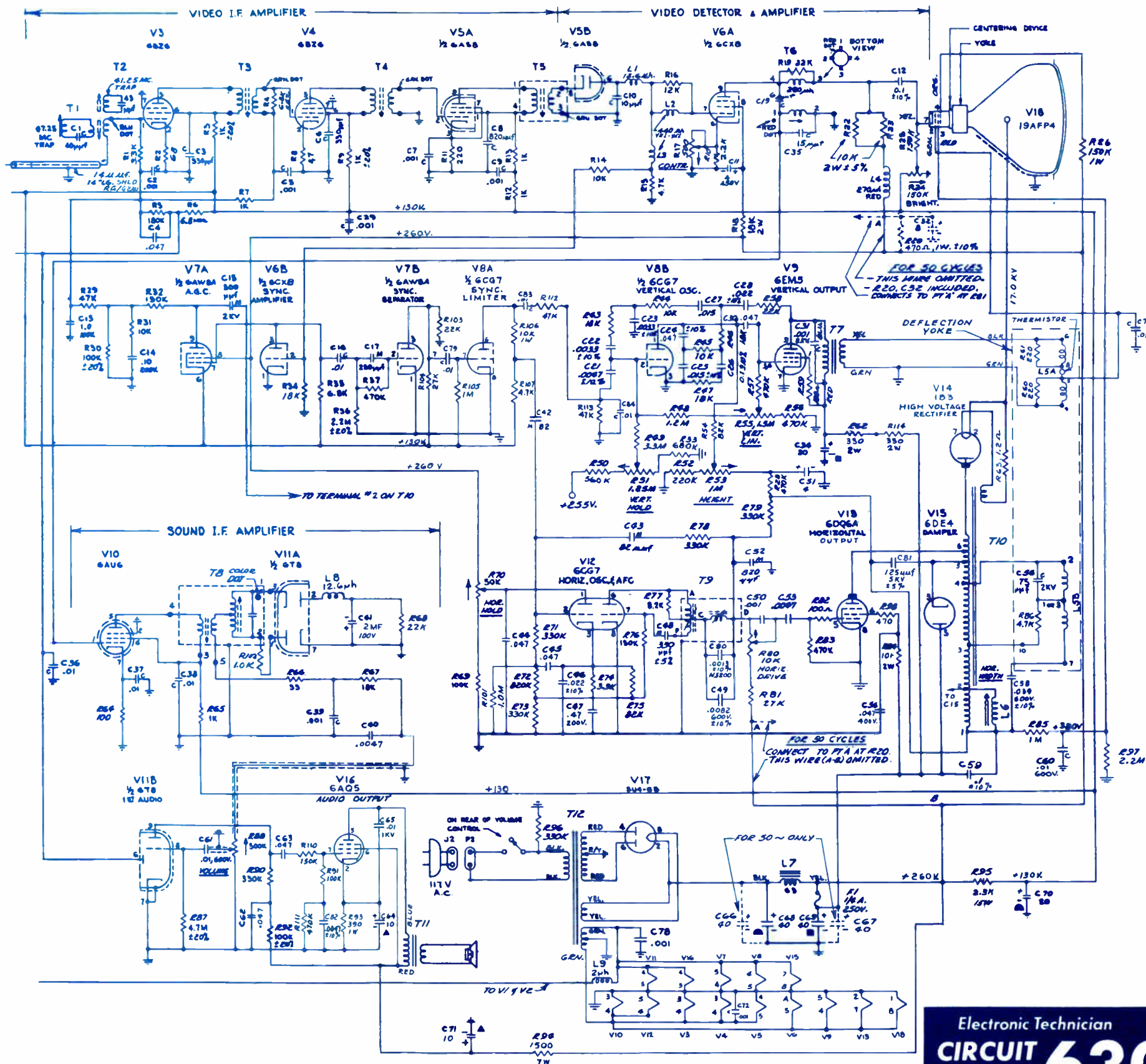


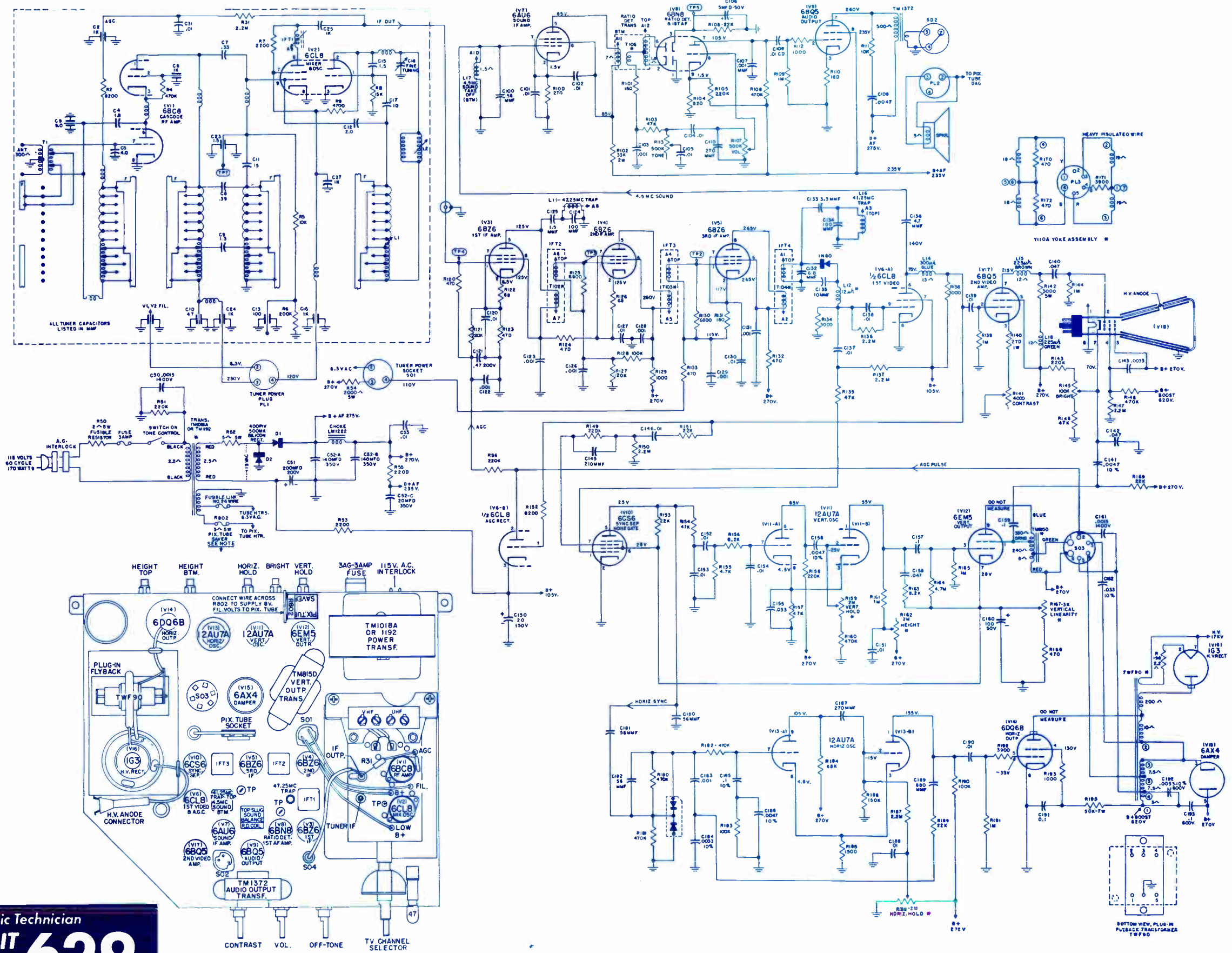
RADIO INSTALLATION
 PUSH-BUTTON MODEL ILLUSTRATED

INSTALLATION

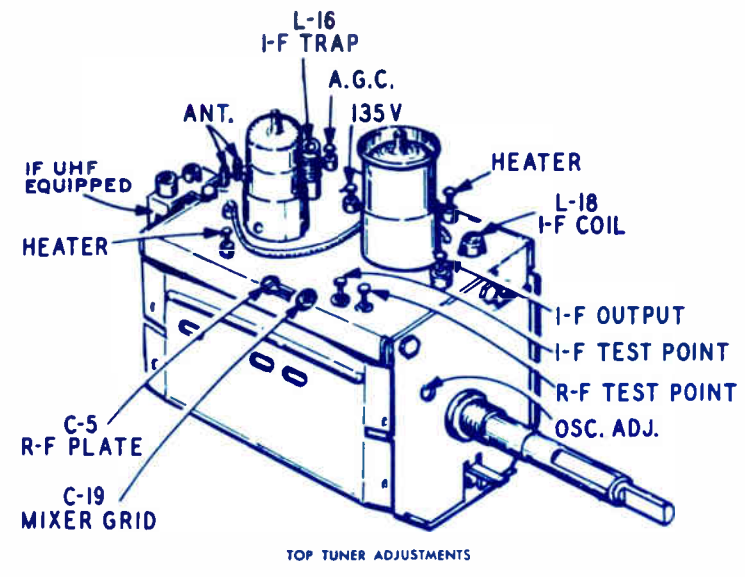
1. Remove dummy cover plate and speaker grille.
2. Install speaker as illustrated.
3. Remove knobs, nuts and trim plate from radio.
4. Position radio behind instrument panel with mounting bushings protruding through control holes in panel. Place trim plate over mounting bushings and attach radio to instrument panel by replacing mounting nuts. Retain radio in mounted position by tightening nuts finger tight.
5. Slip lockwasher over mounting bolt. Insert bolt through re-inforcement brace and into captive floating nut on rear bracket. Secure radio by tightening bolt.
6. Tighten mounting nuts securely and replace knobs.
7. Connect "A" leads as illustrated. Install fuse in junction block terminals designated "Radio."
8. Turn on radio and allow it to warm up for a few minutes. Raise antenna to maximum height and tune in a weak station near 1400KC (14 on dial scale). Adjust antenna compensator for maximum volume.

1. **A52-3128** 60 Cycle Power Transformer
 Primary Black-Black 1 Ohm
 H.V. Sec. Red-R/Y-Red 44 Ohms Center Tapped
 12.8V Green-G/Y-Green Less than .1 Ohm
 5.0V Yellow-Yellow Less than .1 Ohm
2. **A51-0428** Hor. Osc. & A.F.C. Transformer
 A to C 20 Ohms
 A to D 69 Ohms
 A to F 72 Ohms
3. **A52-3104** Audio Output Transformer
 Primary 360 Ohms
 Secondary 0.5 Ohms
4. **A52-3129** Filter Reactor 42 Ohms
5. **A51-0418** Hor. Width Coil 6.5 Ohms
6. **A52-3106** Vertical Output Transformer
 Primary 460 Ohms
 Secondary 4.05 Ohms
7. **A52-3096** Deflection Yoke At 25° C
 Horizontal Coils 2 to 7 35 Ohms
 Vertical Coils 4 to 6 (With temperature compensating resistor) 17.6 Ohms
 (Without thermistor) 13.8 Ohms
8. **A52-3120** Horizontal Output Transformer
 Terminals 1-2 1.94 Ohms
 2-3 6.0 Ohms
 3-4 9.0 Ohms
 4-5 1.8 Ohms
 5-6 11.5 Ohms
 6-H.V. 338 Ohms

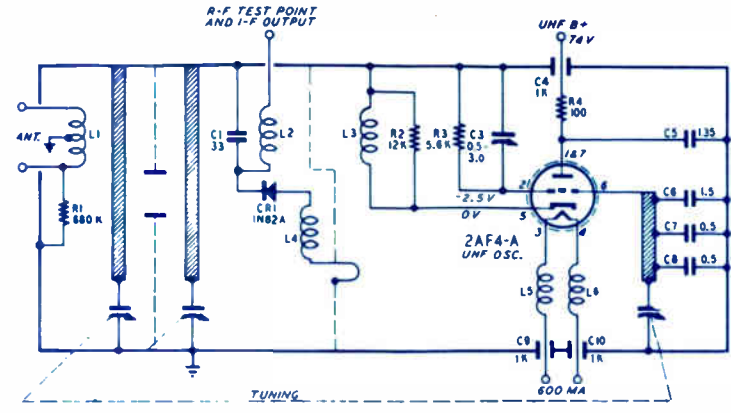




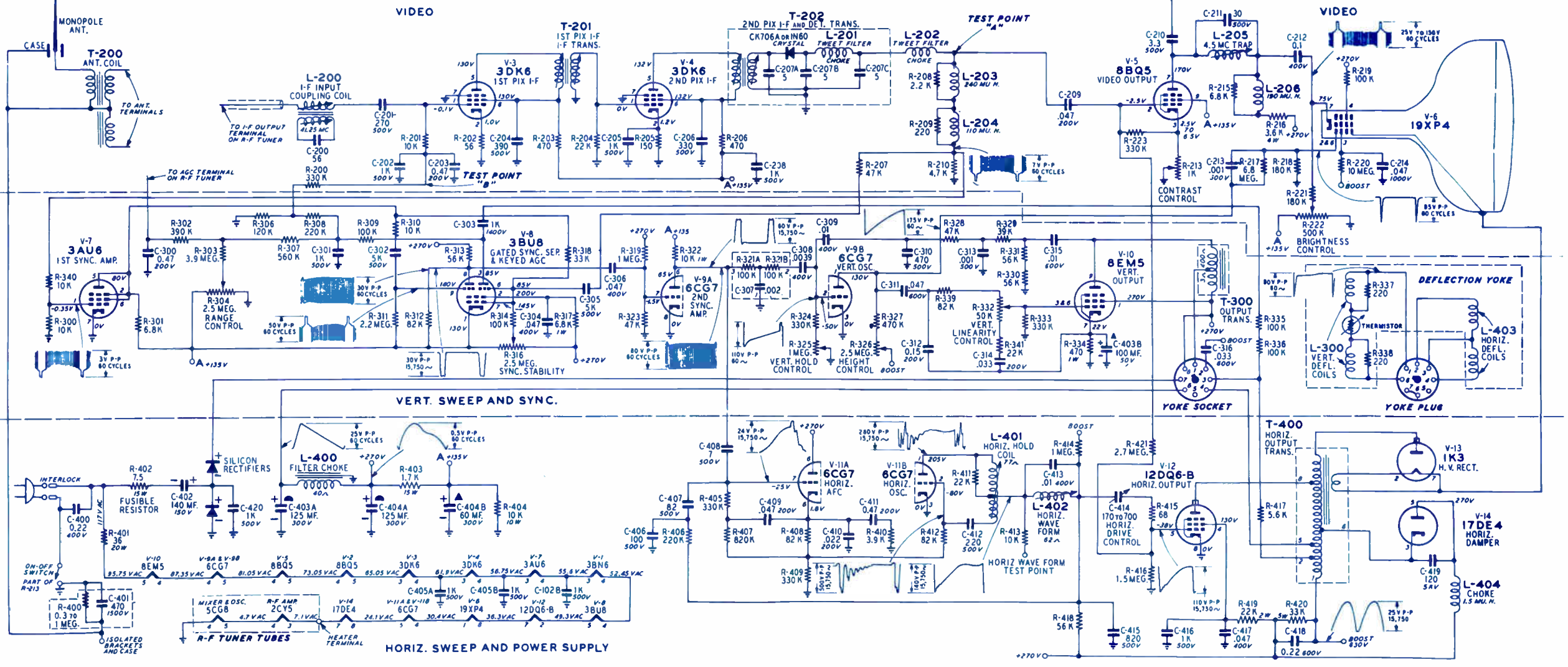
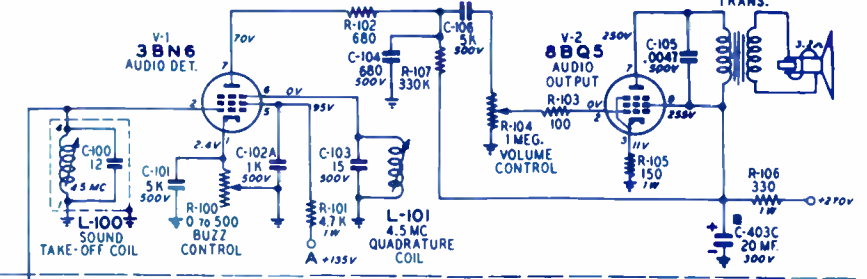
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UHF TUNER SCHEMATIC (IF UHF EQUIPPED)



SOUND I-F AND AUDIO



NOTE—In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes.

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

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ZENITH 635

Transistor Portable Radio
Model Royal 150
Chassis 6GT4222

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Cumulative Index To Date
1952 to 1961



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All Units are TV Receivers Unless Otherwise Noted

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Western Auto—See Truetone

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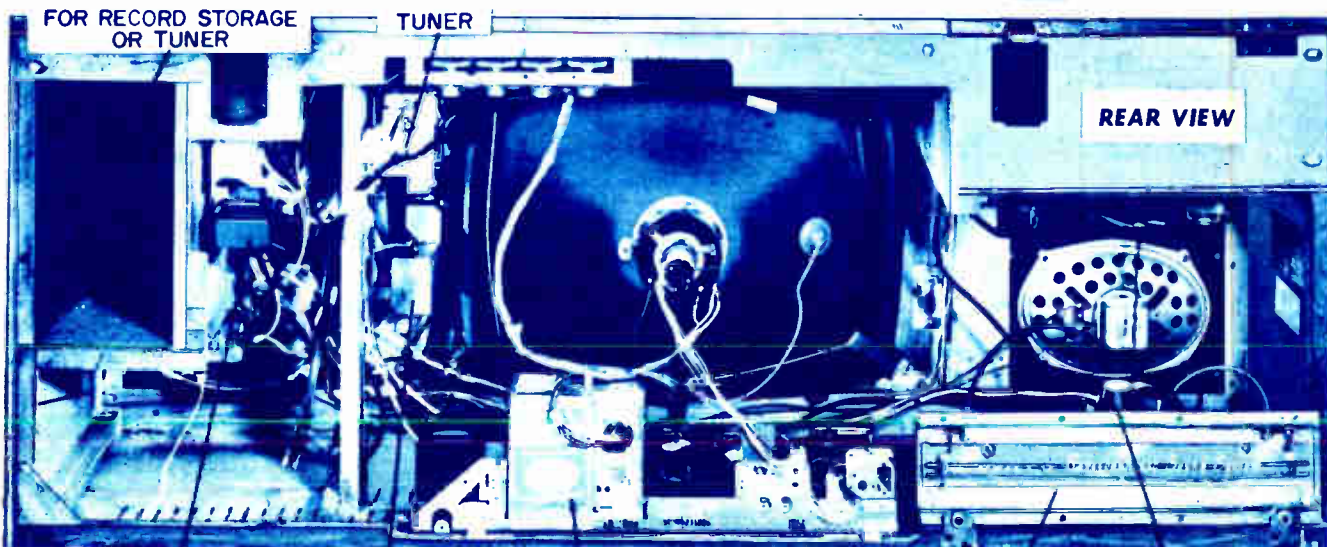
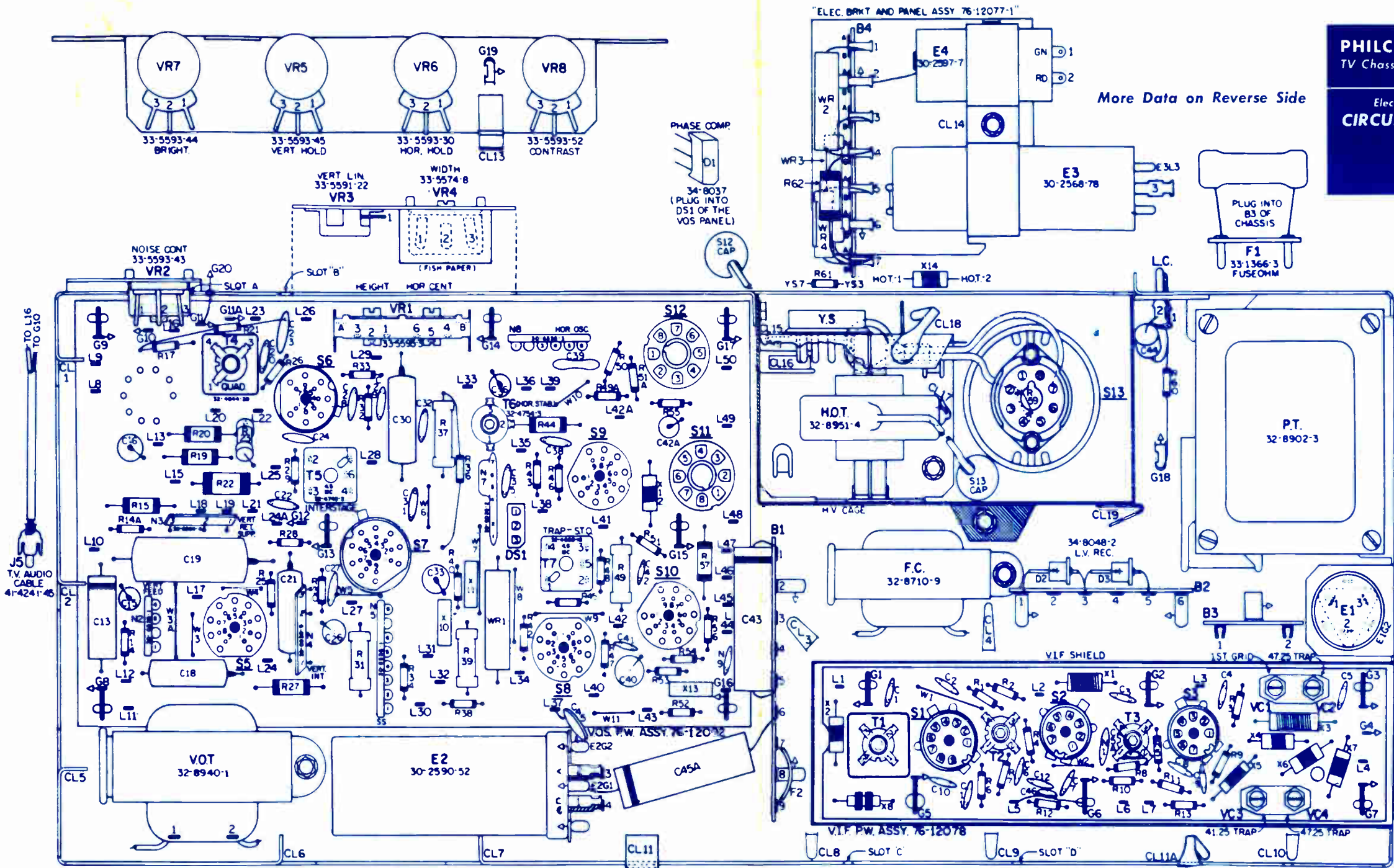
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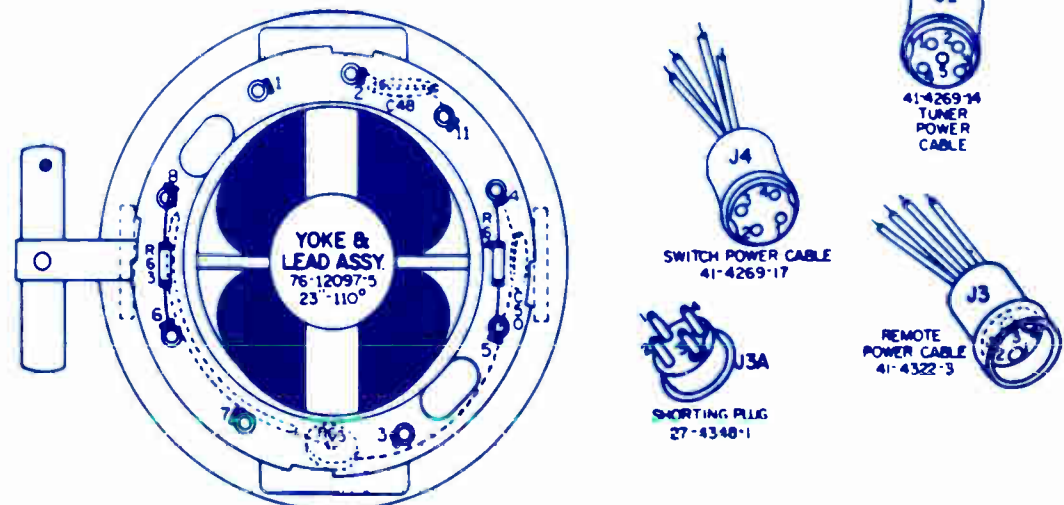
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TV Chassis V-2409-1, -2, -3 **625**

More Data on Reverse Side



MAIN AMP FUNCTION SWITCH 11N56 CHASSIS DELAY LINE REVERB AMP



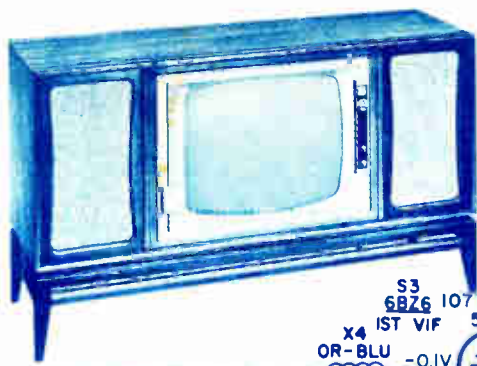
Yoke & Lead Assy. 76-12097-3 23°-110°

ELECTRONIC TECHNICIAN 636

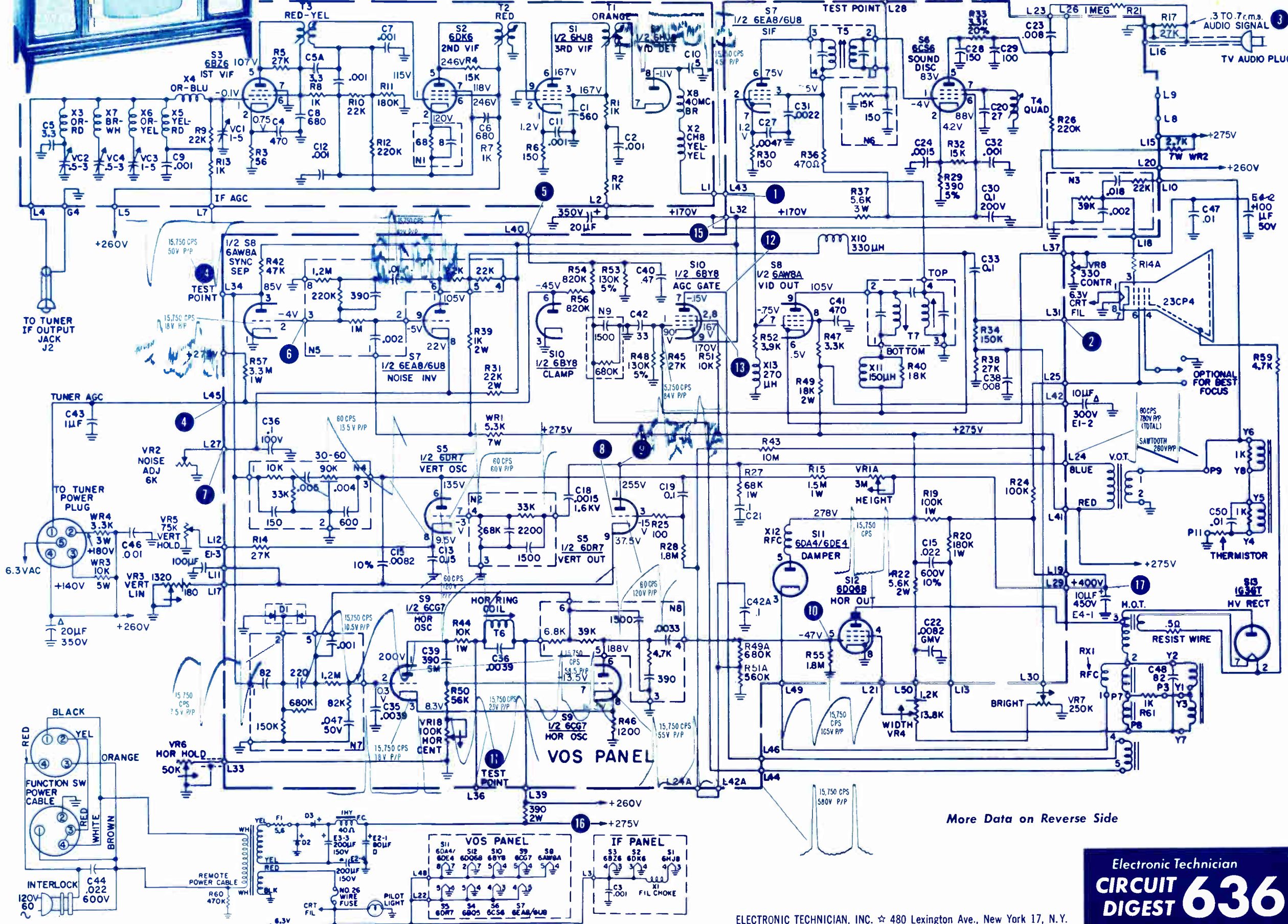
CIRCUIT DIGEST

PHILCO
TV Chassis 11N56

May • 1961

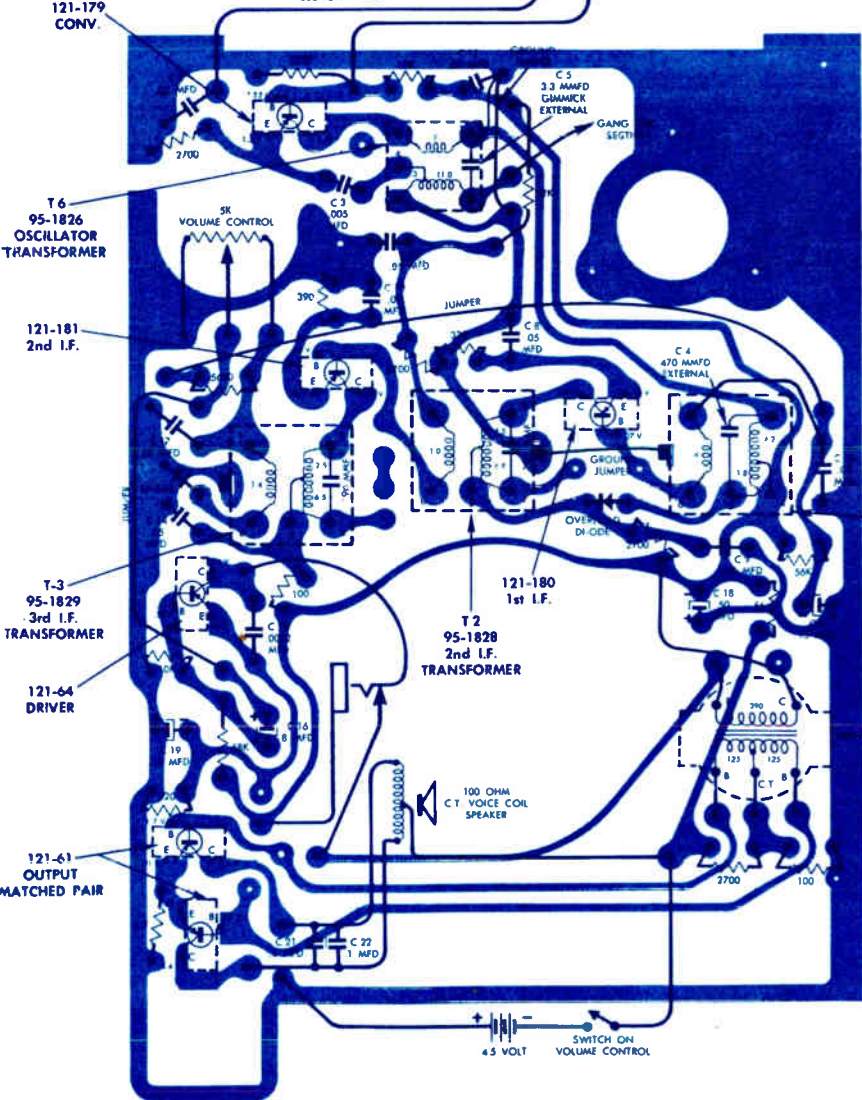
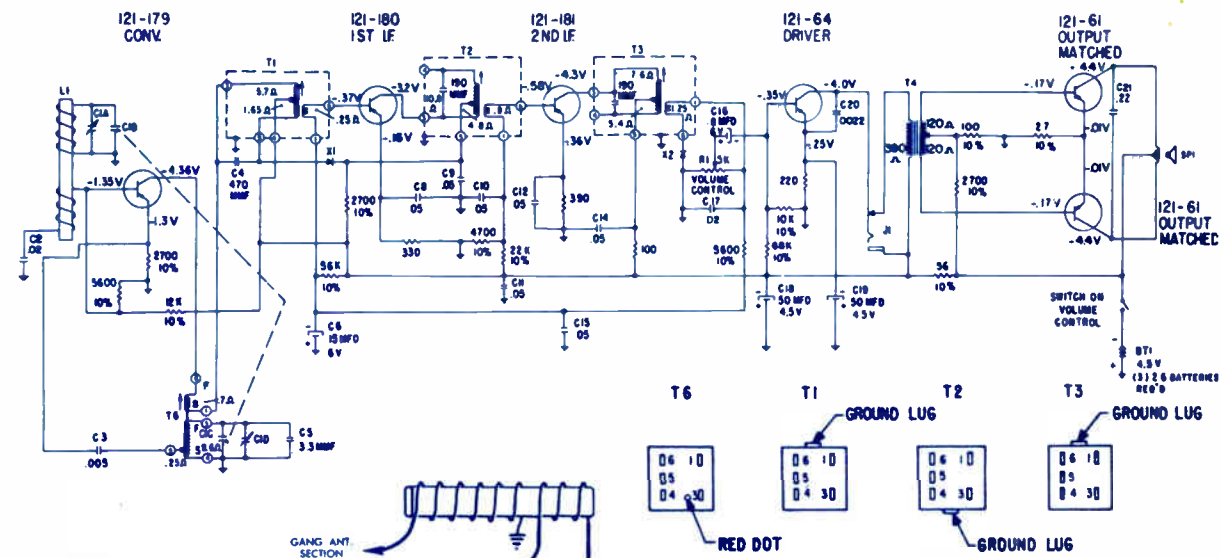


VIDEO IF PANEL

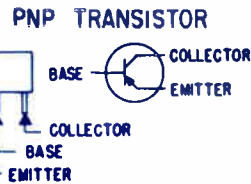


More Data on Reverse Side

Electronic Technician
CIRCUIT DIGEST 636



NOTES:
 ALL RESISTORS ARE CARBON, 1/2 WATT, ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.
 ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
 ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 D.C. VOLTAGES SHOWN ARE MEASURED FROM CHASSIS WITH NO SIGNAL USING AN A.C.-D.C. OR VACUUM TUBE VOLTMETER.
 DENOTES CHASSIS.
 BATTERY CURRENT DRAIN: APPROXIMATELY 12 M.A. WITH VOLUME CONTROL AT MINIMUM.
 SPEAKER IMPEDANCE 100 OHM.



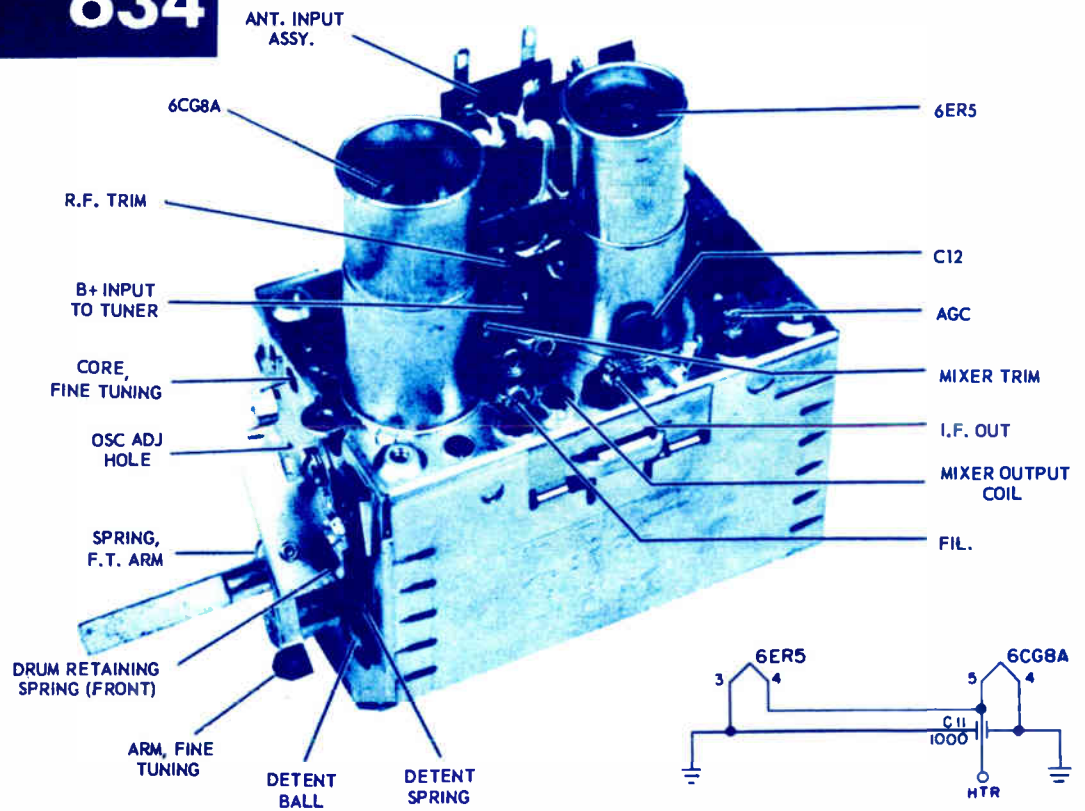
CHASSIS, WIRING AND COMPONENTS VIEWED FROM WIRING SIDE

WESTINGHOUSE TV Chassis V-2411-1, V-2411-3

Electronic Technician CIRCUIT DIGEST

634

More Data on Reverse Side



VHF Tuner 470V071H01.

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

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PEARCE-SIMPSON Citizens Band Radio Model CBD-5	638
RAYTHEON CO. Citizens Band Radio "Raytel" Model TWR-1	640
SETCHELL-CARLSON TV Chassis, Model 159	639

STERLING AM FM SW Radio, Phono Chassis 1 633 US Stereo Models Tannhauser US, Isabella US, Arabella US	641
TRAVLER TV Chassis 1U51-90 Model 23SP6095	642
TRUETONE TV Model 2D3246	637

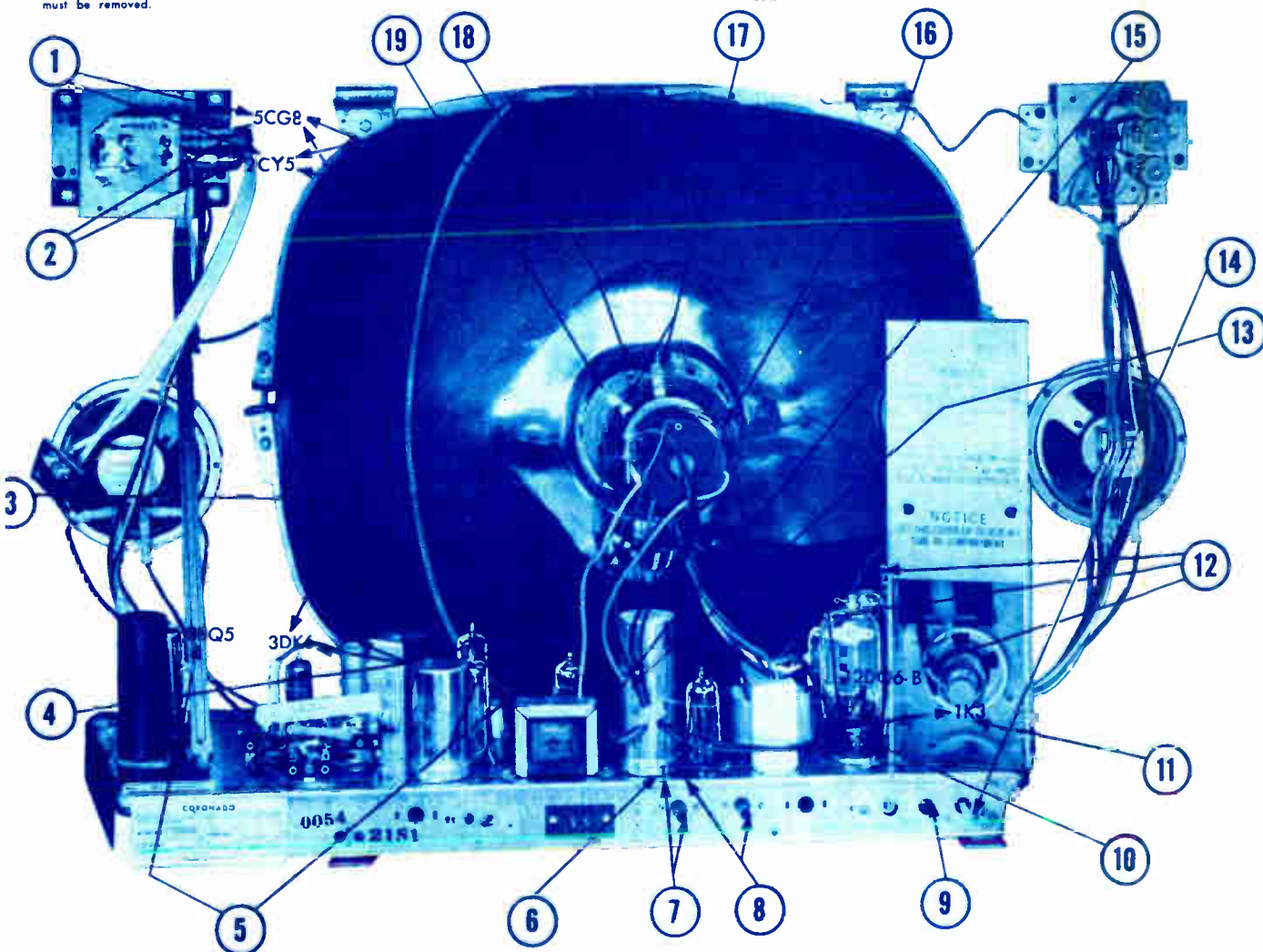
GROUP 106

SERVICE HINTS

To provide a simple "Service Saver" procedure, the controls associated with a service condition that can be adjusted without removing the cabinet back are listed adjacent to each picture. To accomplish other control adjustments or to substitute tubes, the cabinet back must be removed.

SERVICE SAVER PROCEDURE

- Carefully study face of picture tube.
- Select one of the pictures on chart that is closest to the picture portrayed by the TV set.
- Adjust controls indicated adjacent to picture.

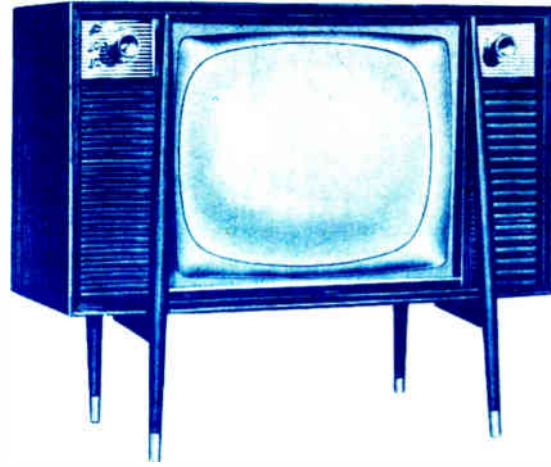


<p>1 NO PICTURE - SNOW Check—Station Selector Position and Antenna Connections.</p>	<p>2 WEAK PICTURE Check—Antenna Connections and Adjustment of Range Control at Front of Receiver.</p>	<p>3 NO PICTURE - NO SNOW</p>	<p>4 HUM BAR</p>
<p>5 NORMAL PICTURE With Weak or Distorted Sound or No Sound.</p>	<p>6 WHITE LINE</p>	<p>7 POOR LINEARITY Check—Vertical Linearity Adjustment.</p>	<p>8 INSUFFICIENT VERTICAL HEIGHT Check—Height Adjustment.</p>
<p>9 WAVE FORM "FACTORY ADJUSTMENT ONLY"</p>	<p>10 NO LIGHT ON PICTURE TUBE Check—Brightness Control, A.C. Line Cord Power Connections and Fusible Resistor.</p>	<p>11 PICTURE BLOOMING</p>	<p>12 INSUFFICIENT HORIZONTAL SIZE</p>
<p>13 UNSTABLE PICTURE (ROLLING) Check—Vertical Hold Control Adjustment.</p>	<p>14 DIAGONAL BARS Check—Horizontal Hold Control Adjustment.</p>	<p>15</p>	<p>16 BEAM ALIGNER (If Used) Rotate and Slide Backward or Forward Until Best Overall Focus Is Obtained. In Some Receivers, Position of Aligner Will Be on Tube Base.</p>
<p>17 MIS-CENTERING Rotate Tabs Individually or Together Until Picture Is Centered.</p>	<p>18 TILTED PICTURE Loosen Locking Screw, Rotate Yoke Until Picture is Level and Push Yoke Forward as Far as it Will Go. Re-Tighten Locking Screw.</p>	<p>19</p>	<p>SHADOW</p>

GAMBLE-SKOGMO
TV Models 9590A,
9591A, 9592A

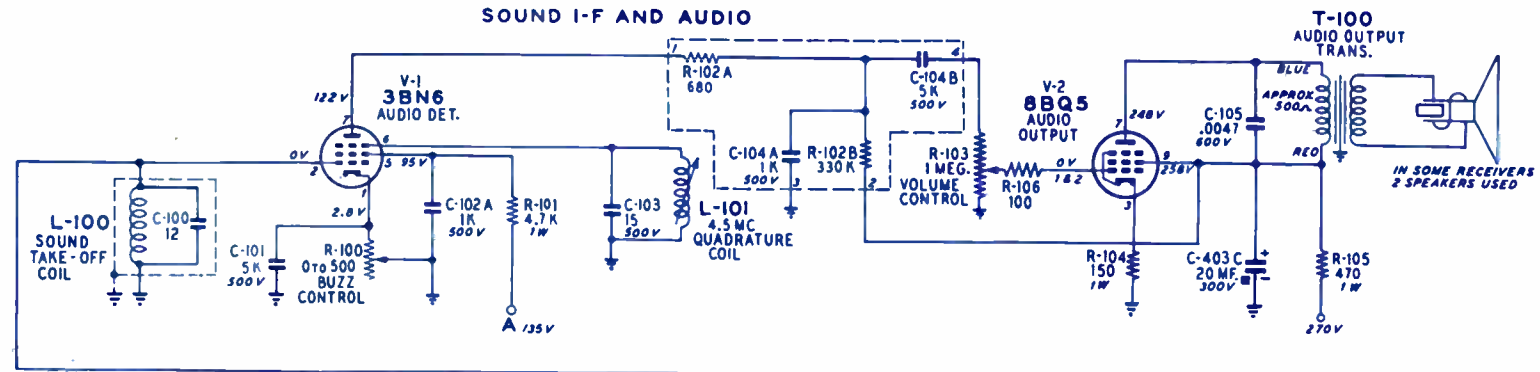
Electronic Technician
CIRCUIT DIGEST
643

More Data on Reverse Side

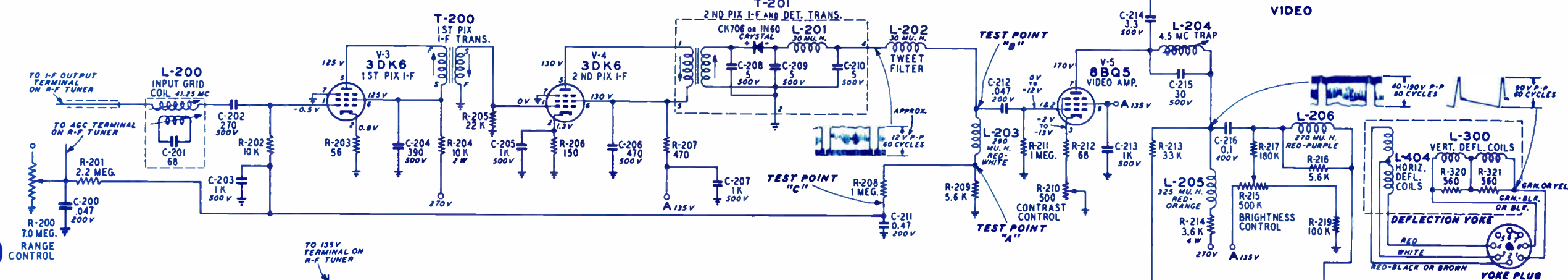


More Data on Reverse Side

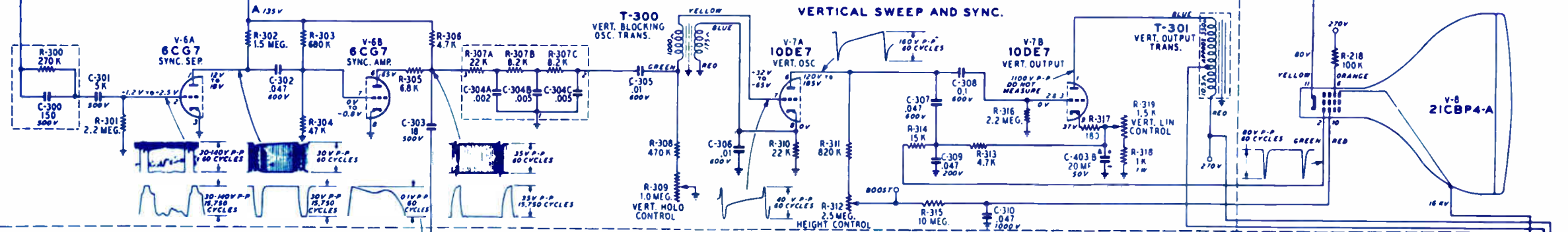
SOUND I-F AND AUDIO



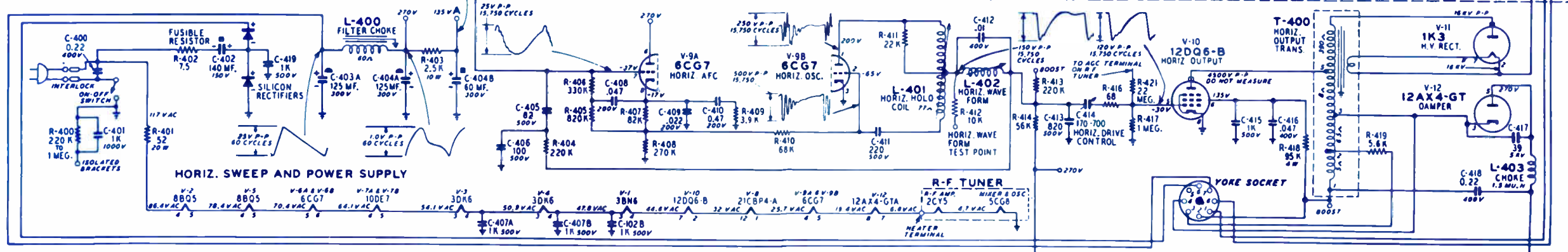
VIDEO



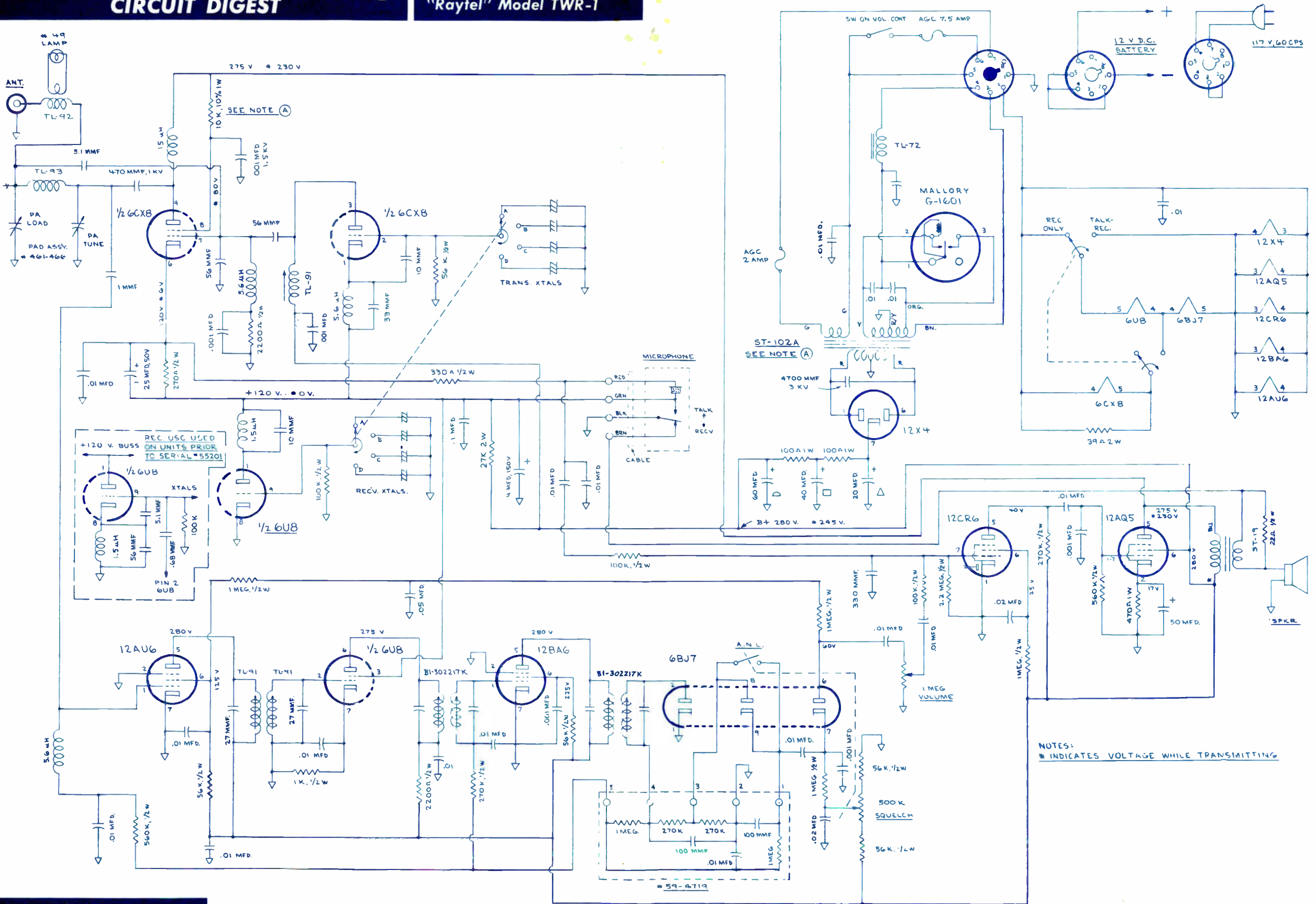
VERTICAL SWEEP AND SYNC.



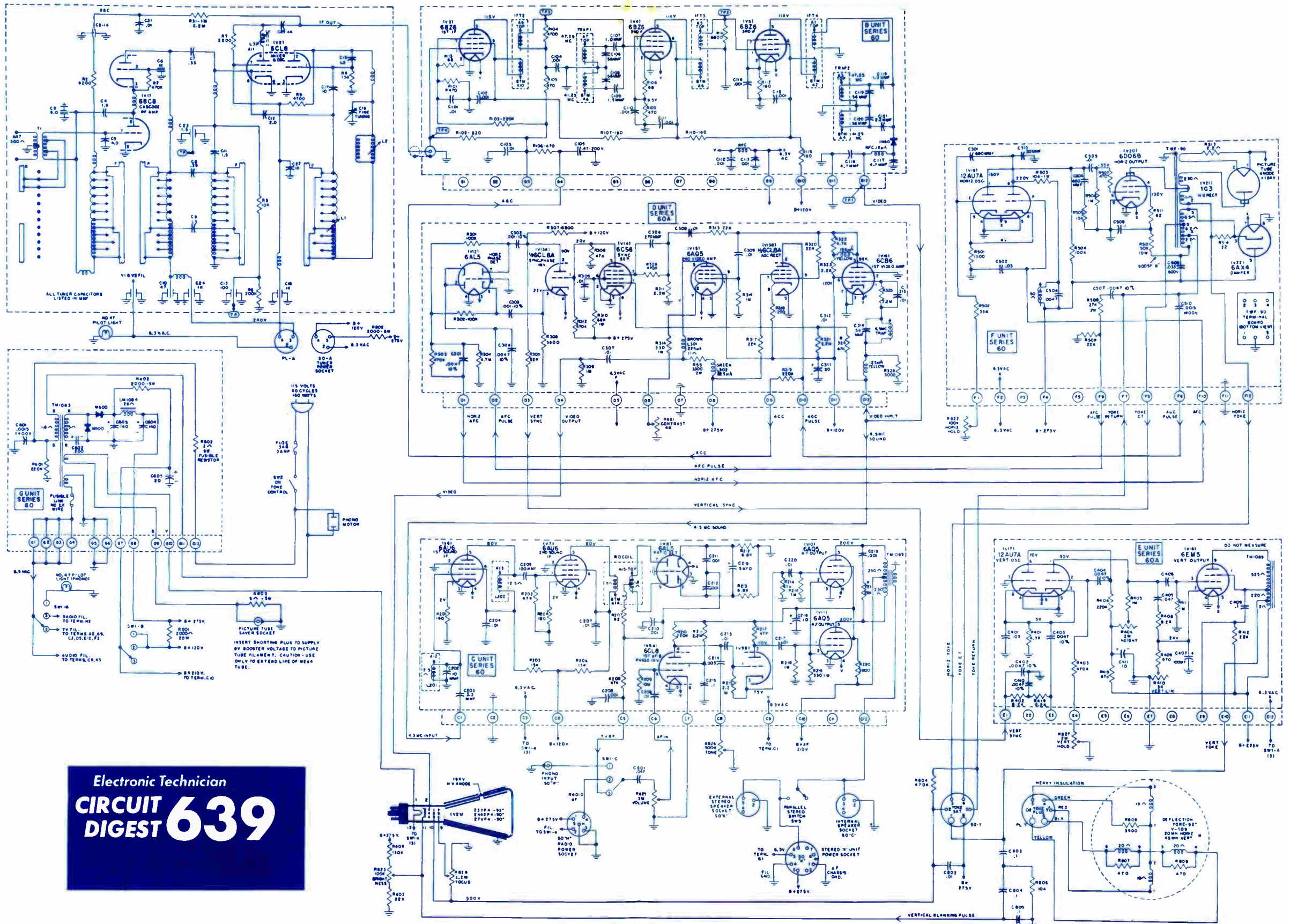
HORIZ. SWEEP AND POWER SUPPLY



NOTE—In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes.

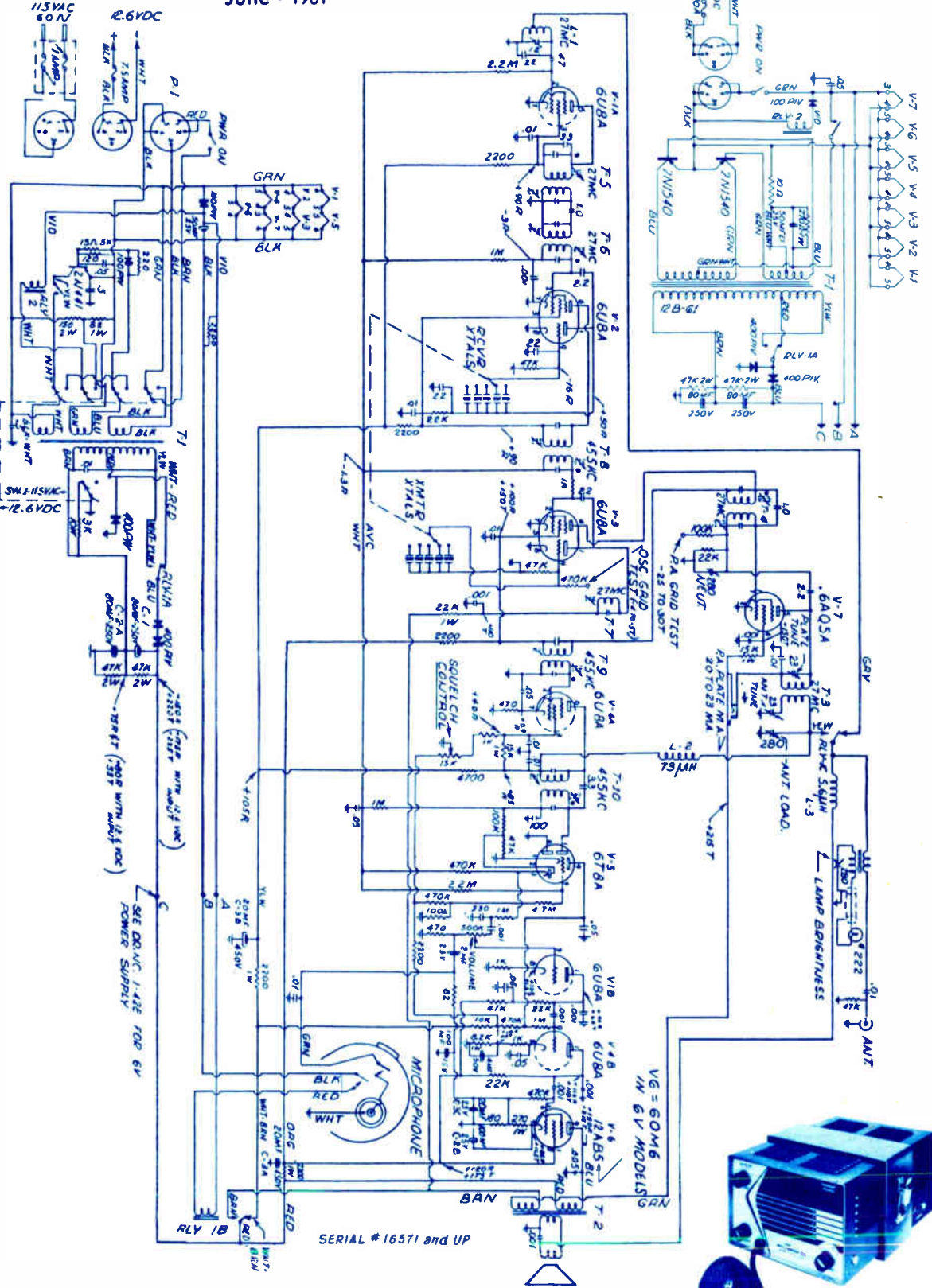


NOTES:
* INDICATES VOLTAGE WHILE TRANSMITTING

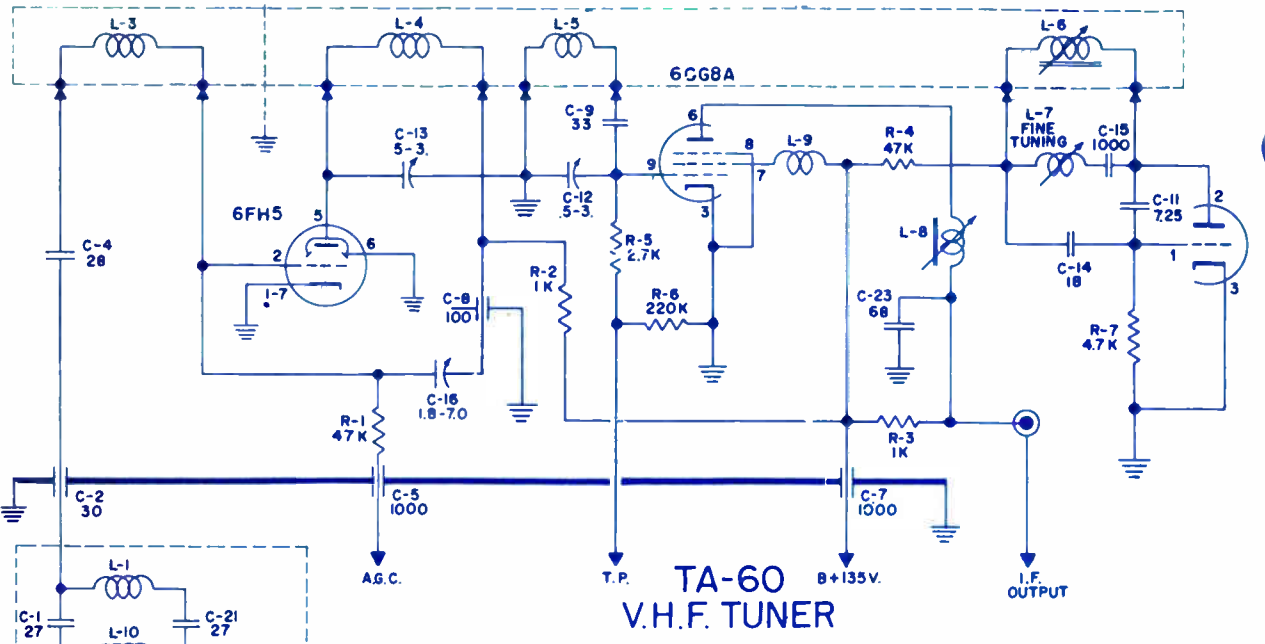


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CIRCUIT DIGEST 639

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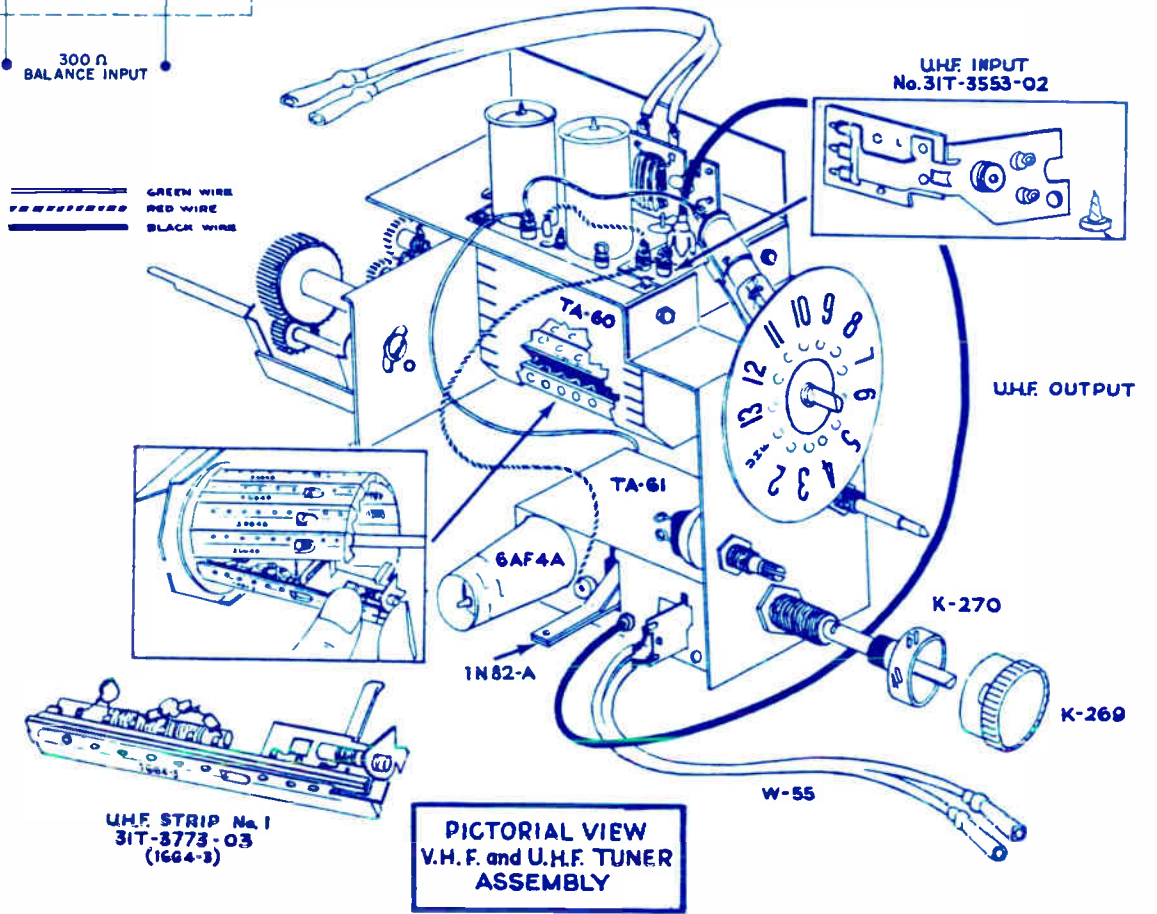
SERIAL # 16571 and UP



TRUETONE
TV Model 2D3246

Electronic Technician
CIRCUIT DIGEST
637

More Data on Reverse Side



PICTORIAL VIEW
V.H.F. and U.H.F. TUNER
ASSEMBLY

ELECTRONIC TECHNICIAN

Trademark

CIRCUIT DIGESTS

In This Issue (No. 107)

ADIRAL
TV Chassis 20A7, 20A7B, 20A47,
20A47B, 20B7, 20C7

DELCO
Auto Radio 1961 Chevrolet
Model 988414

DELMONICO
TV Portable
Model PTV-19

EMERSON
TV Chassis 120530C, 120549C, 550D,
551C, 120552E, 553F, 554E,
120555E, 556F, 557E

647
MOTOROLA
Auto Radio 1961 Ford & Falcon
Model 14MF

645
RCA
Citizens Band Radio
Model MARK VII "Radio Phone"

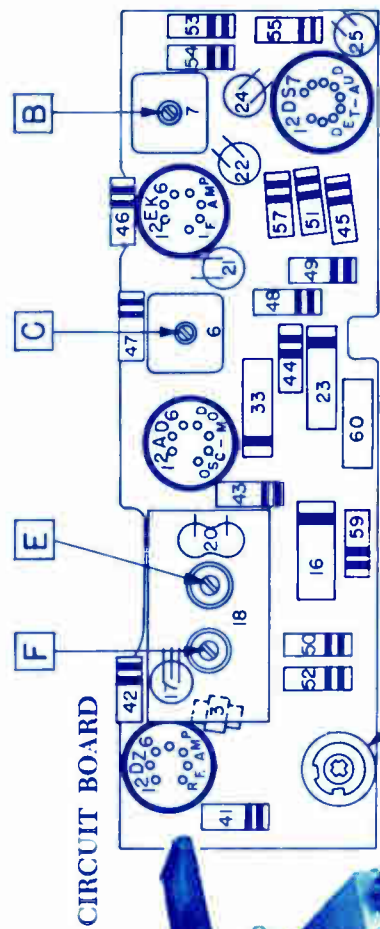
646
SYLVANIA
TV Chassis 552-1, -2, -9



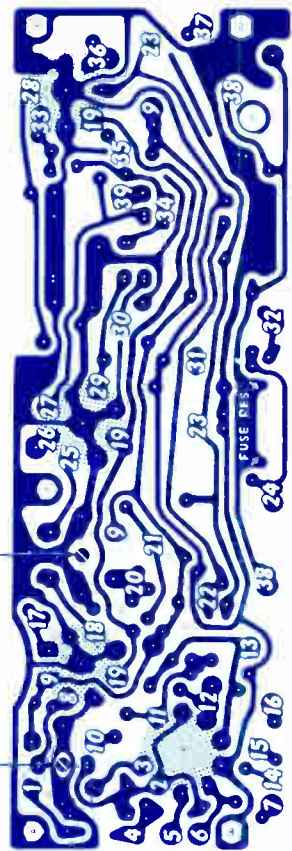
ELECTRONIC TECHNICIAN 650

CIRCUIT DIGEST

DELCO
Auto Radio 1961
Chevrolet Model 988414

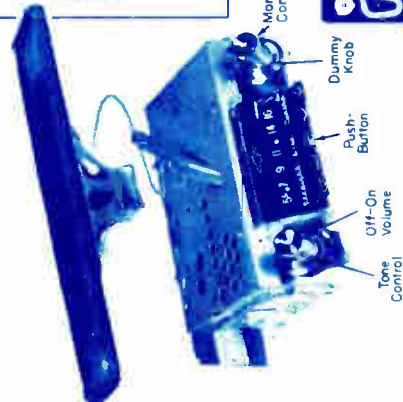


TOP VIEW



BOTTOM VIEW

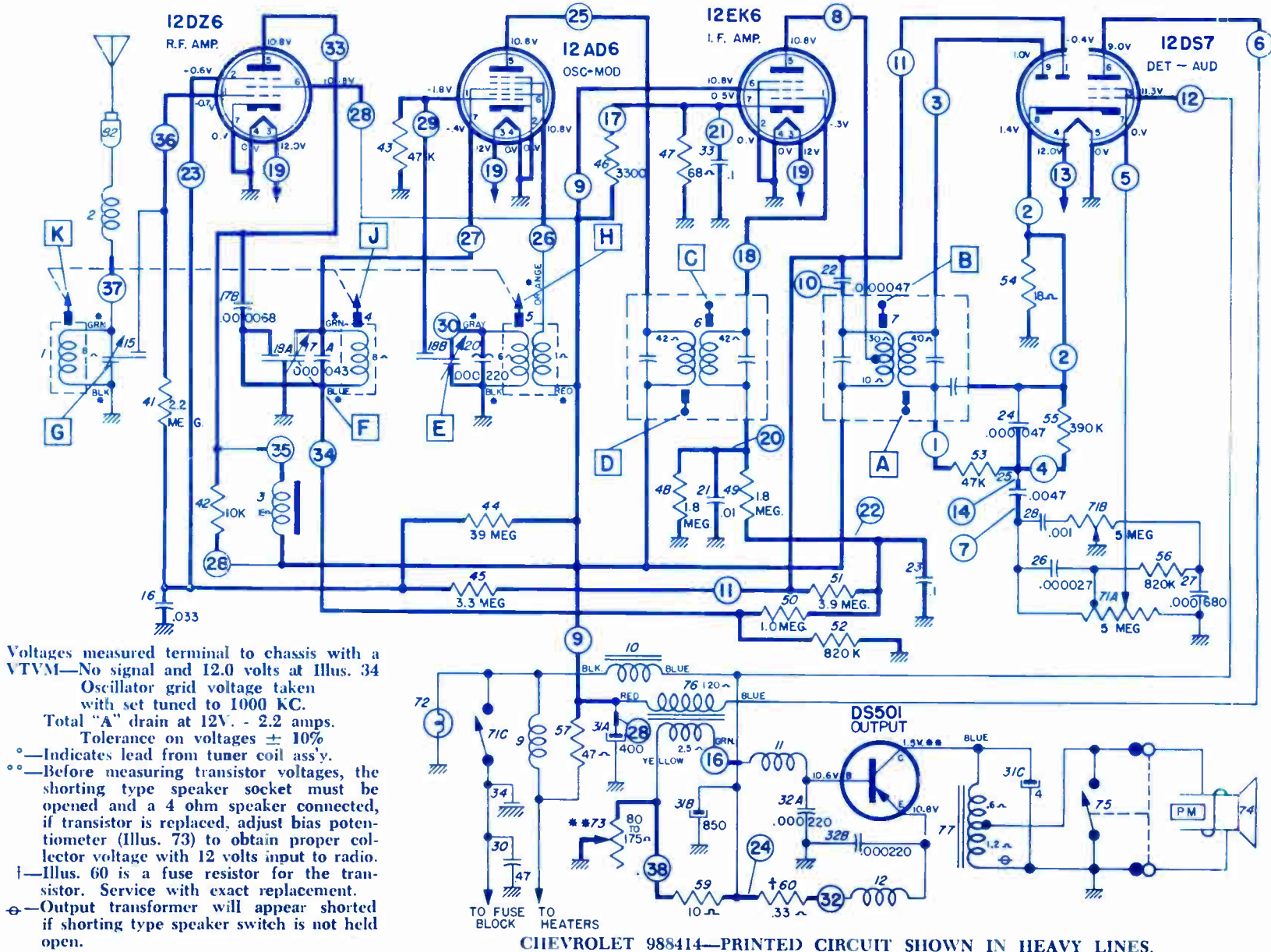
CIRCUIT BOARD



Electronic Technician

CIRCUIT DIGEST 650

NUMBERS ON PRINTED CIRCUIT BOARD CORRESPOND WITH NUMBERS IN CIRCLES ON SCHEMATIC DIAGRAM.



Voltages measured terminal to chassis with a VTVM—No signal and 12.0 volts at Illus. 34
 Oscillator grid voltage taken with set tuned to 1000 KC.
 Total "A" drain at 12V. - 2.2 amps.
 Tolerance on voltages $\pm 10\%$
 — Indicates lead from tuner coil ass'y.
 — Before measuring transistor voltages, the shorting type speaker socket must be opened and a 4 ohm speaker connected, if transistor is replaced, adjust bias potentiometer (Illus. 73) to obtain proper collector voltage with 12 volts input to radio.
 †— Illus. 60 is a fuse resistor for the transistor. Service with exact replacement.
 ⊕— Output transformer will appear shorted if shorting type speaker switch is not held open.

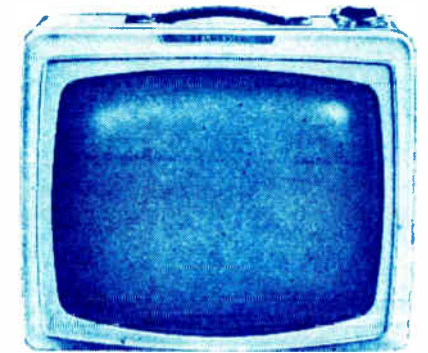
CHEVROLET 988414—PRINTED CIRCUIT SHOWN IN HEAVY LINES.

July • 1961

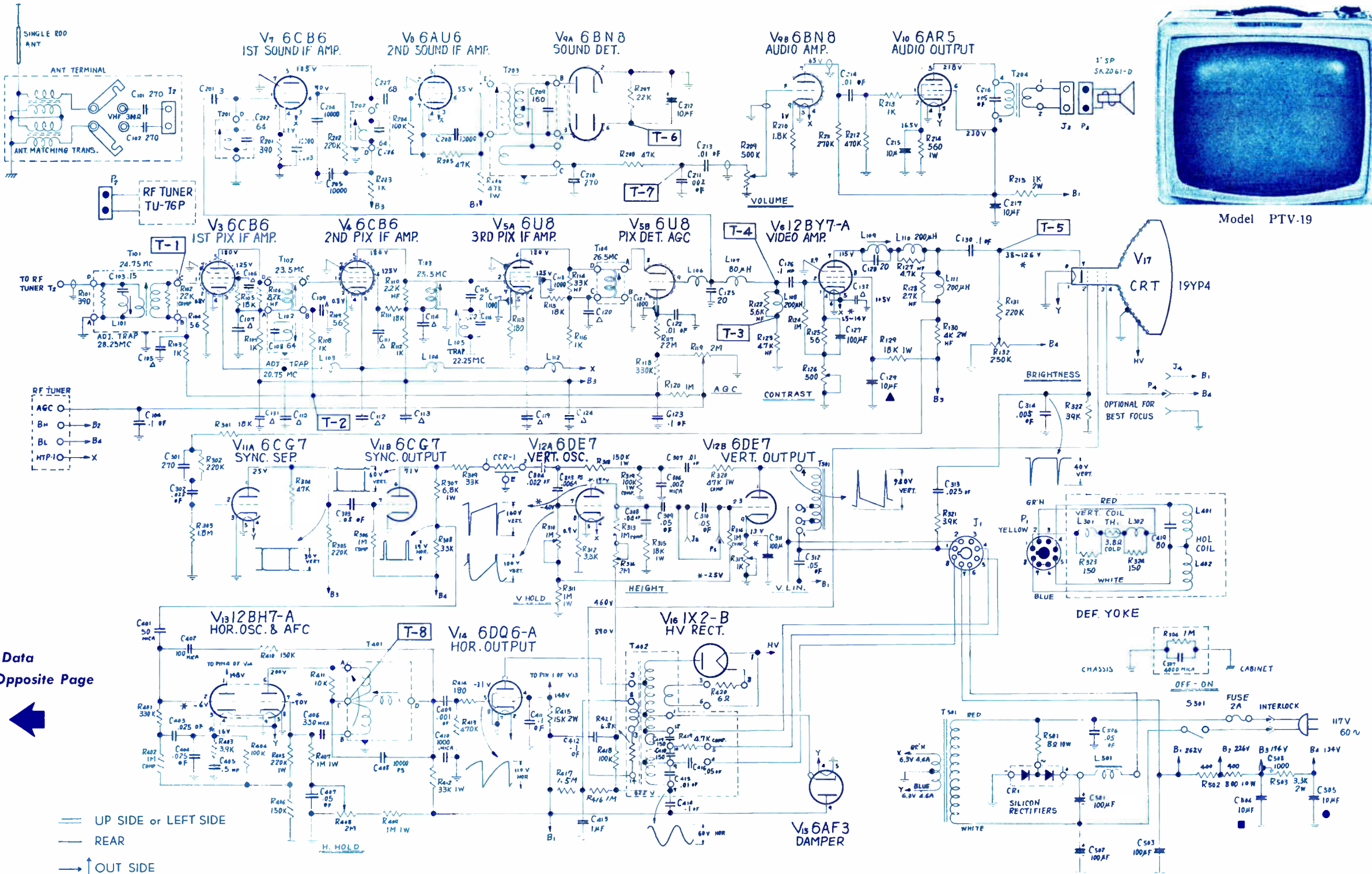
NOTES:

COMP: composition resistor
 PR: porcelain resistor
 Unspecified capacitors are ceramic capacitor
 Δ: 1600 MMF ceramic capacitor

MP: metallized capacitor
 OF: oilfilled capacitor
 PA: paper capacitor
 PS: polystyrol capacitor



Model PTV-19

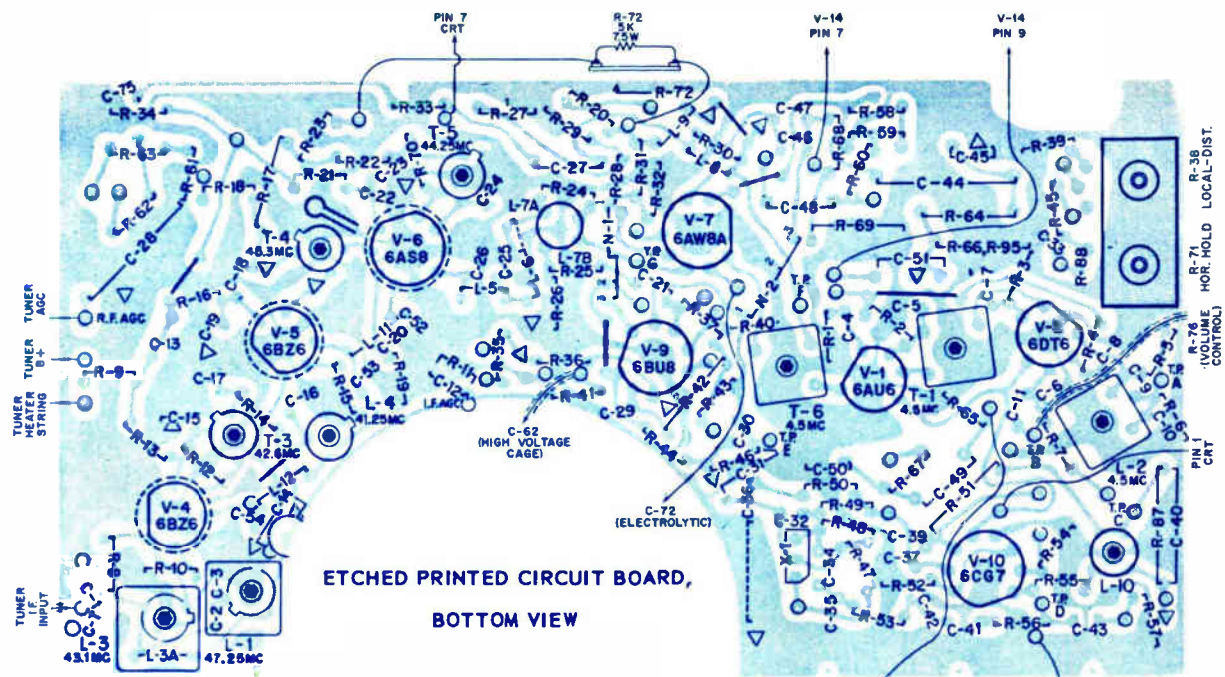


More Data on Opposite Page



- UP SIDE or LEFT SIDE
- REAR
- OUT SIDE
- ← IN SIDE

※ Voltage readings will vary with setting of controls.



ETCHED PRINTED CIRCUIT BOARD,
BOTTOM VIEW

RESISTANCE READINGS

SYM	TUBE TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6AU6	1.5	0	0	.1	*50K	*30K	220	-	-
V-2	6DT6	5	390	0	.1	*300K	*30K	540K	-	-
V-3	6CU5	*50K	1.2 M	.1	0	N.C.	*50K	*50K	-	-
V-4	6BZ6	68K	56	0	.1	*55K	*55K	0	-	-
V-5	6BZ6	69K	47	.1	0	*30K	*52K	0	-	-
V-6	6AS8	*48K	0	180	.1	0	4.5 K	0	0	*48K
V-7	6AW6	0	500K to 2 M	5.9M to 8.4 M	0	.1	20 to 300	4.5K	*48K	*34K
V-8	CRT	.1	22K	*3.5M	0 to 3.5M	-	-	100K to 240K	0	-
V-9	6BU8	*30K	*30K	270 K	.1	0	*46K	250 K	*70K	3M
V-10	6CD7	*82K	100 K	1.2 K	0	.1	*50K	3 M	1.2K	0
V-11	6DQ6	T.P.	0	N.C.	*44K	680 K	T.P.	.1	0 to 30	-
V-12	IG>GT	I	N	F	I	N	I	T	E	-
V-13	6DA4	N.C.	N.C.	3.5M	N.C.	*42K	N.C.	.1	0	-
V-14	6EM5	*40K	T.P.	N.C.	.1	0	2.3M-2.8M	270	N.C.	*48K
V-18	5U4-GB	N.C.	*40K	N.C.	20	N.C.	20	N.C.	*40K	-

NOTES: All resistance readings given are in ohms. "K" is Kiloohms, "M" is Megohms.
* Indicates varying resistance: allow 30 seconds for meter to settle.
N.C. Denotes no connection at terminal indicated.
T.P. Denotes connection used as terminal post.

CONDITIONS FOR CHASSIS READINGS

VOLTAGES AND WAVESHAPES were taken under actual operating conditions (normal picture and sound). AGC voltage developed at junction of C-12, C-14 and R-11 was minus six volts. Voltage and waveshape readings obtained may vary 20% in value due to component tolerances and strength of input signal to chassis under test.

RESISTANCE READINGS were taken with no power applied. Where readings are affected by control settings, both maximum and minimum values are given. All resistance readings may vary 10% due to normal component tolerances.

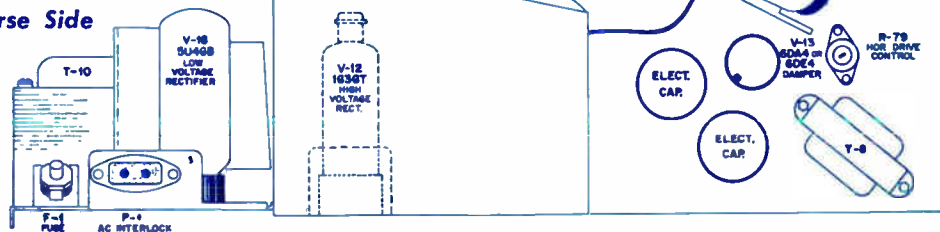
ALL MEASUREMENTS were taken between points indicated and chassis (unless otherwise noted), with line voltage maintained at 115 volts AC. A VTVM was used for all voltage and resistance measurements and a low capacity probe was used for all waveshapes shown.

EMERSON
TV Chassis 120530C,
120549C, 550D, 551C,
120552E, 553F, 554E,
120555E, 556F, 557E

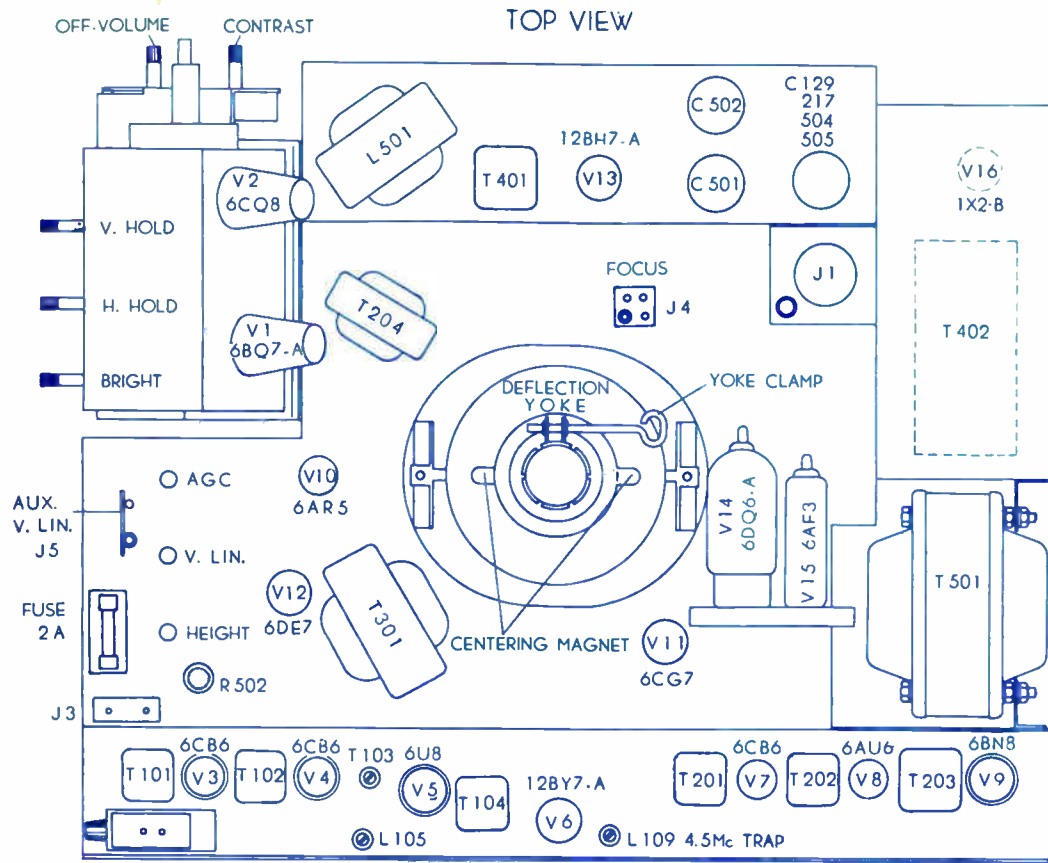
Electronic Technician
CIRCUIT DIGEST

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More Data
on Reverse Side



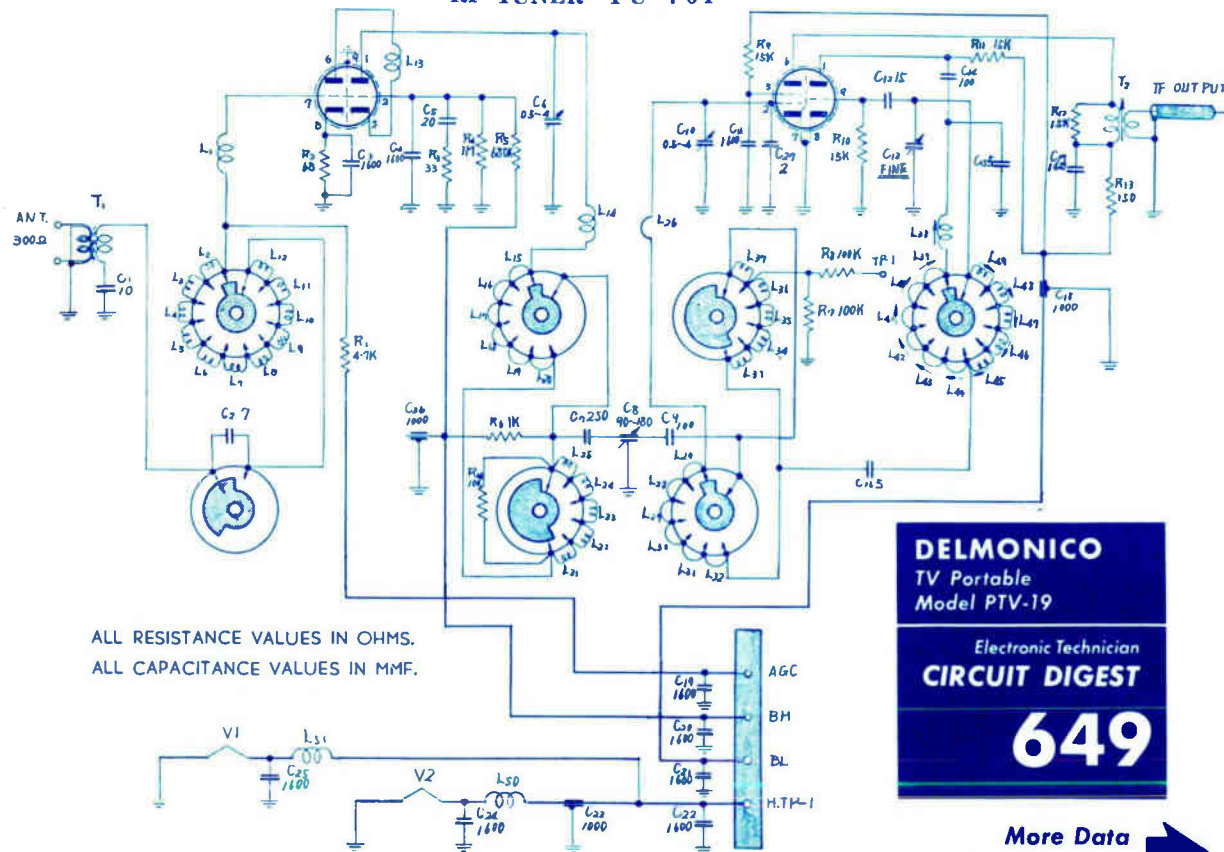
TUBE LOCATION AND ALIGNMENT POINTS



TUBE LOCATION CHART

RF AMP.
V1 6BQ7-A
RF TUNER TU-76P

OSC. & MIX.
V2 6CQ8



ALL RESISTANCE VALUES IN OHMS.
ALL CAPACITANCE VALUES IN MMF.

DELMONICO
TV Portable
Model PTV-19

Electronic Technician
CIRCUIT DIGEST

649

More Data
on Opposite Page

ELECTRONIC TECHNICIAN 648

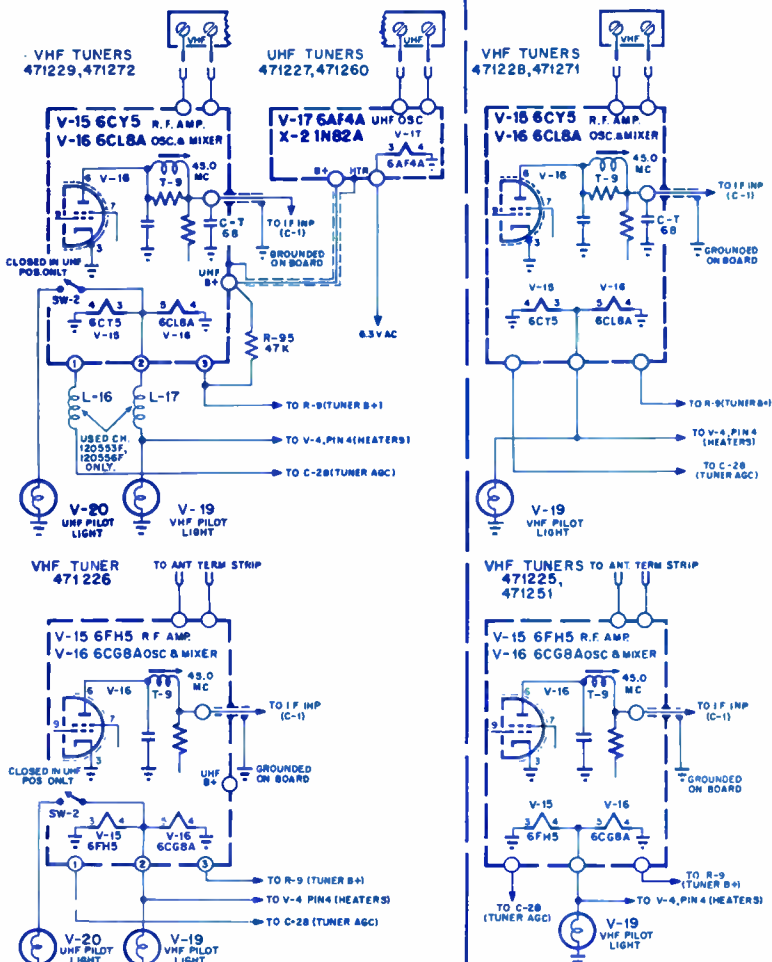
CIRCUIT DIGEST

EMERSON
 TV Chassis 120530C,
 120549C, 550D, 551C,
 120552E, 553F, 554E,
 120555E, 556F, 557E

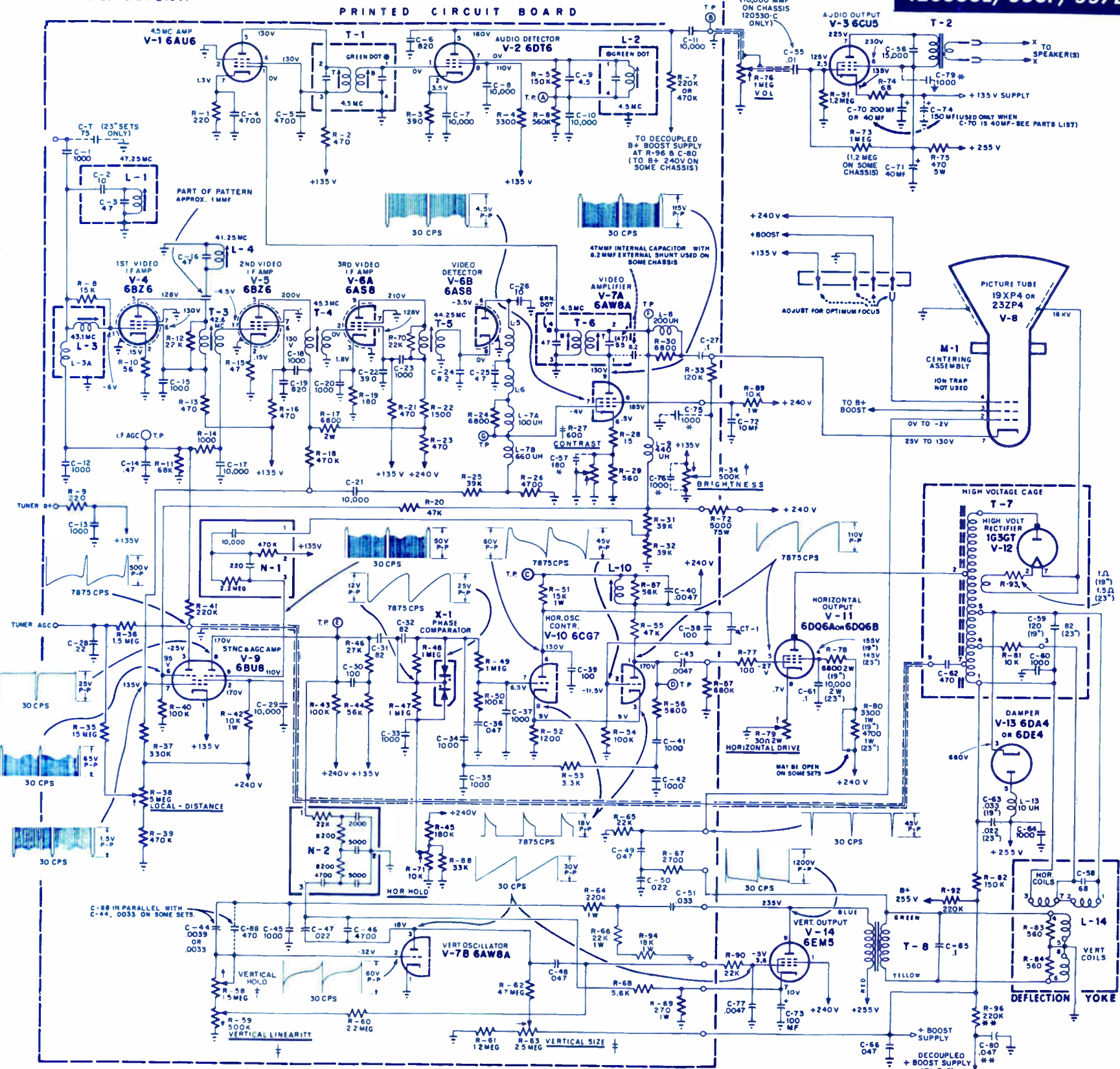
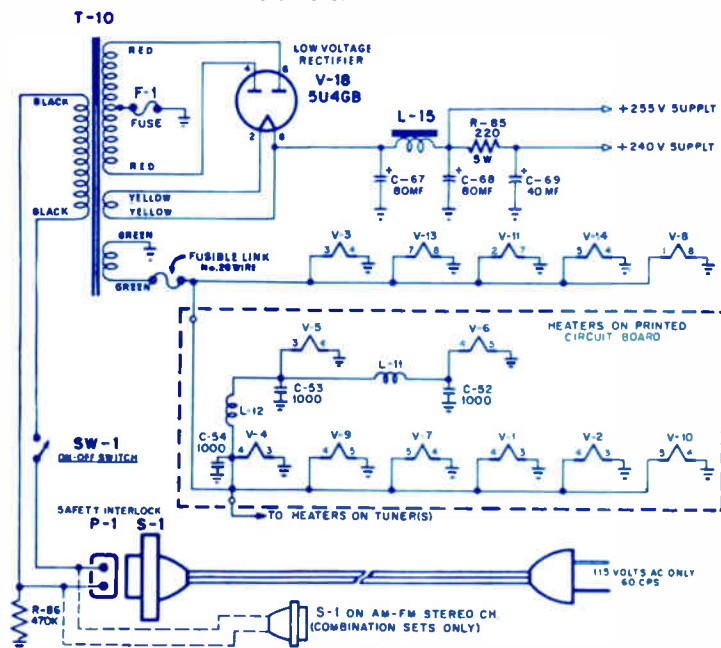
UHF-VHF TUNER ASSEMBLIES

VHF TUNERS

NOTES: † CONTROLS R-27, R-58, R-59, R-63 AND R-34 NOT MOUNTED ON ETCHED CIRCUIT BOARD ON ALL CHASSIS.
 * C-57, C-75, C-76 AND C-79 NOT USED ON CHASSIS 120555E, 556F AND 557E.
 ** R-96 AND C-80 NOT USED WHEN R-7 IS CONNECTED TO B+ 240V.



⊕ CERAMIC OR MICA CAPACITORS, CAPACITY IN MICRO-MICROFARADS.
 ⊕ TUBULAR CAPACITORS, CAPACITY IN MICROFARADS.
 ⊕ RESISTORS IN OHMS (K=1000 OHMS) AND 1/2 WATT, UNLESS NOTED.
 ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION.
 † INDICATES TOP CORE, B INDICATES BOTTOM CORE IN DOUBLE TUNED TRANSFORMERS.

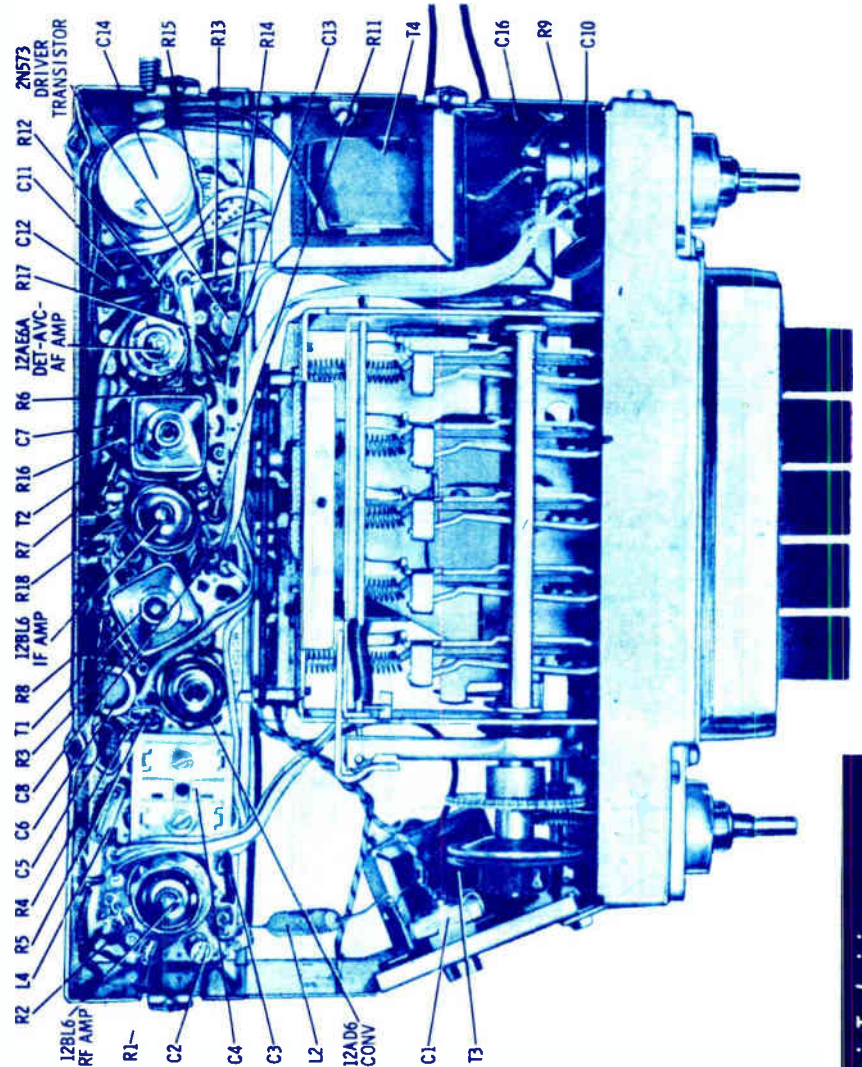
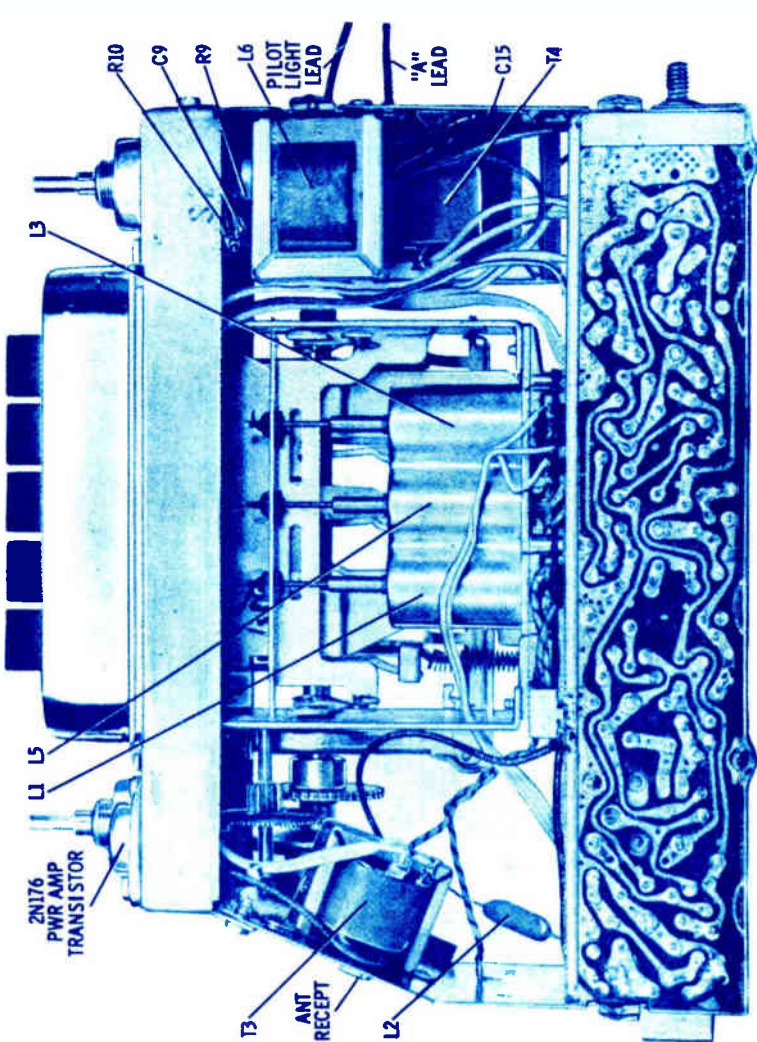
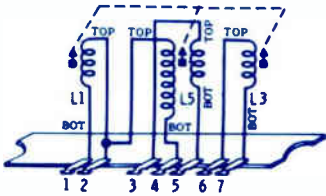
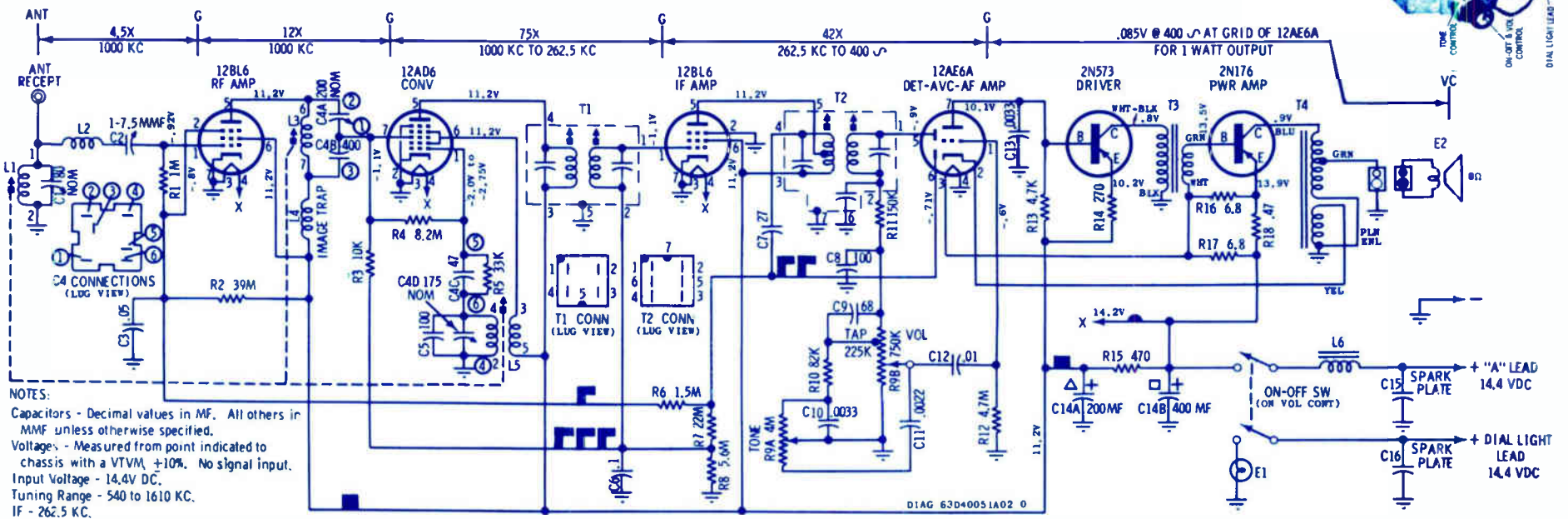
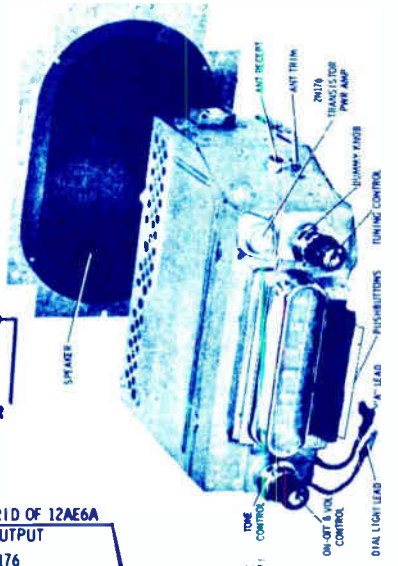
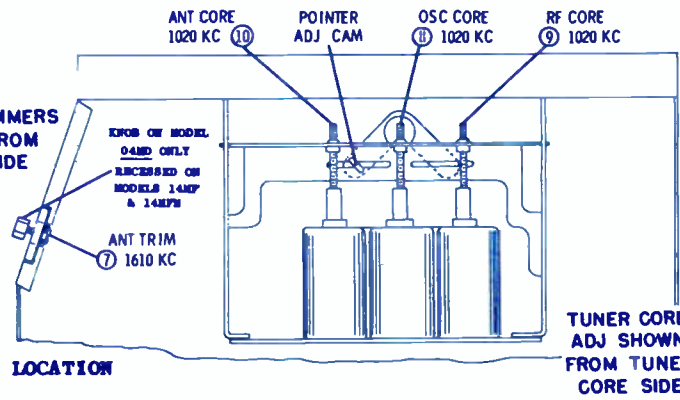
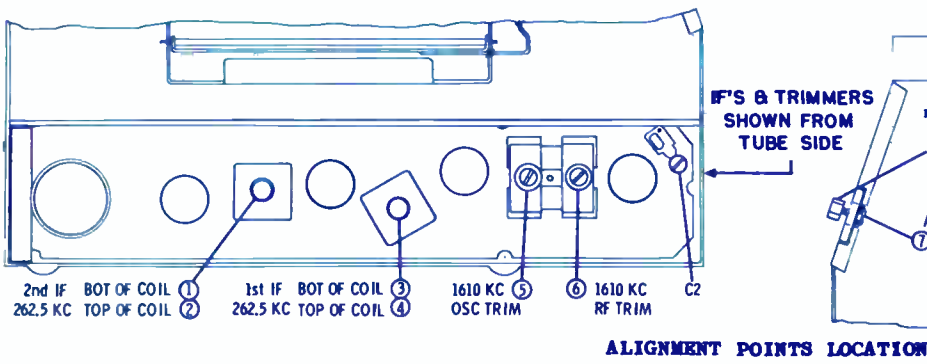


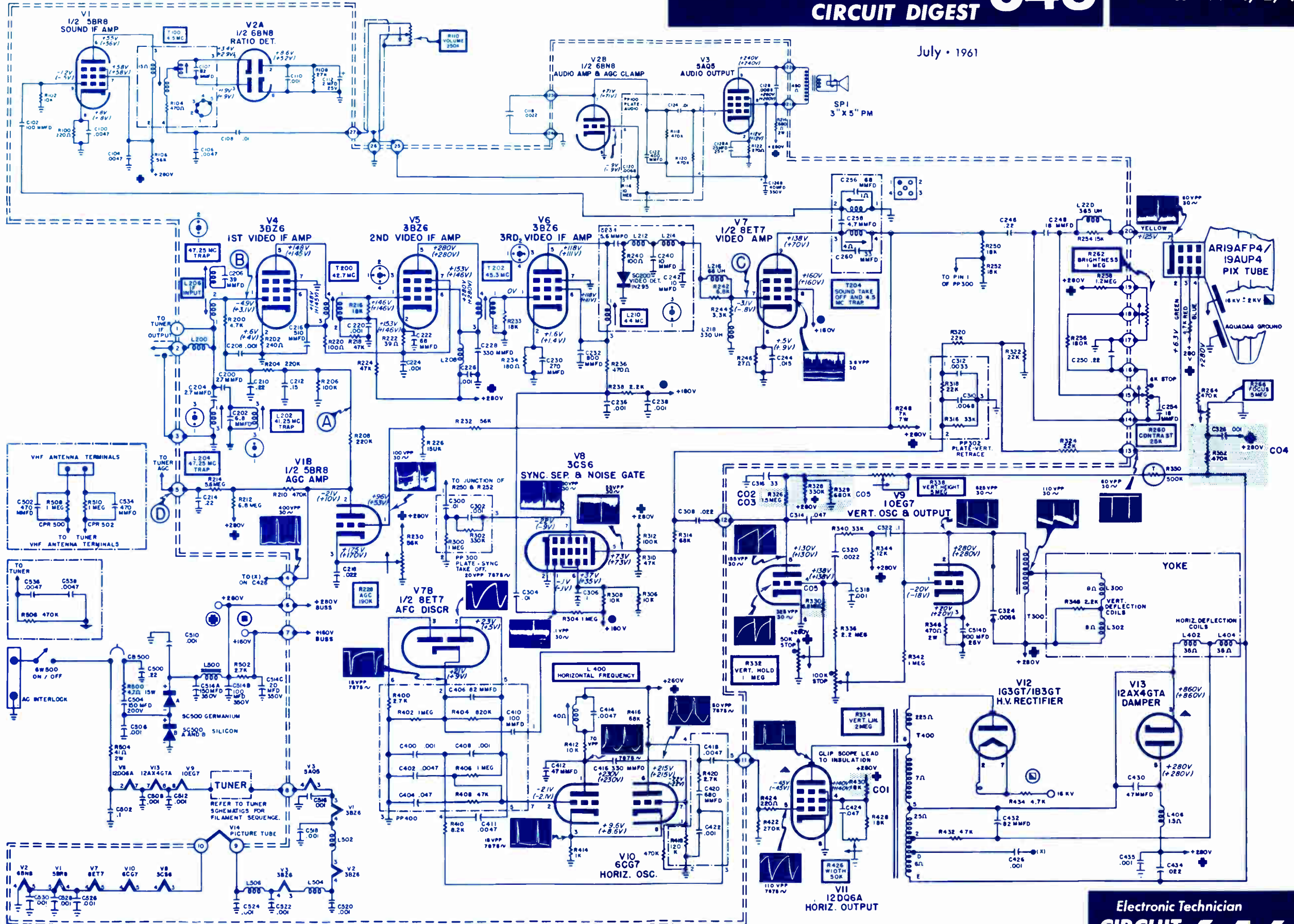
More Data on Reverse Side

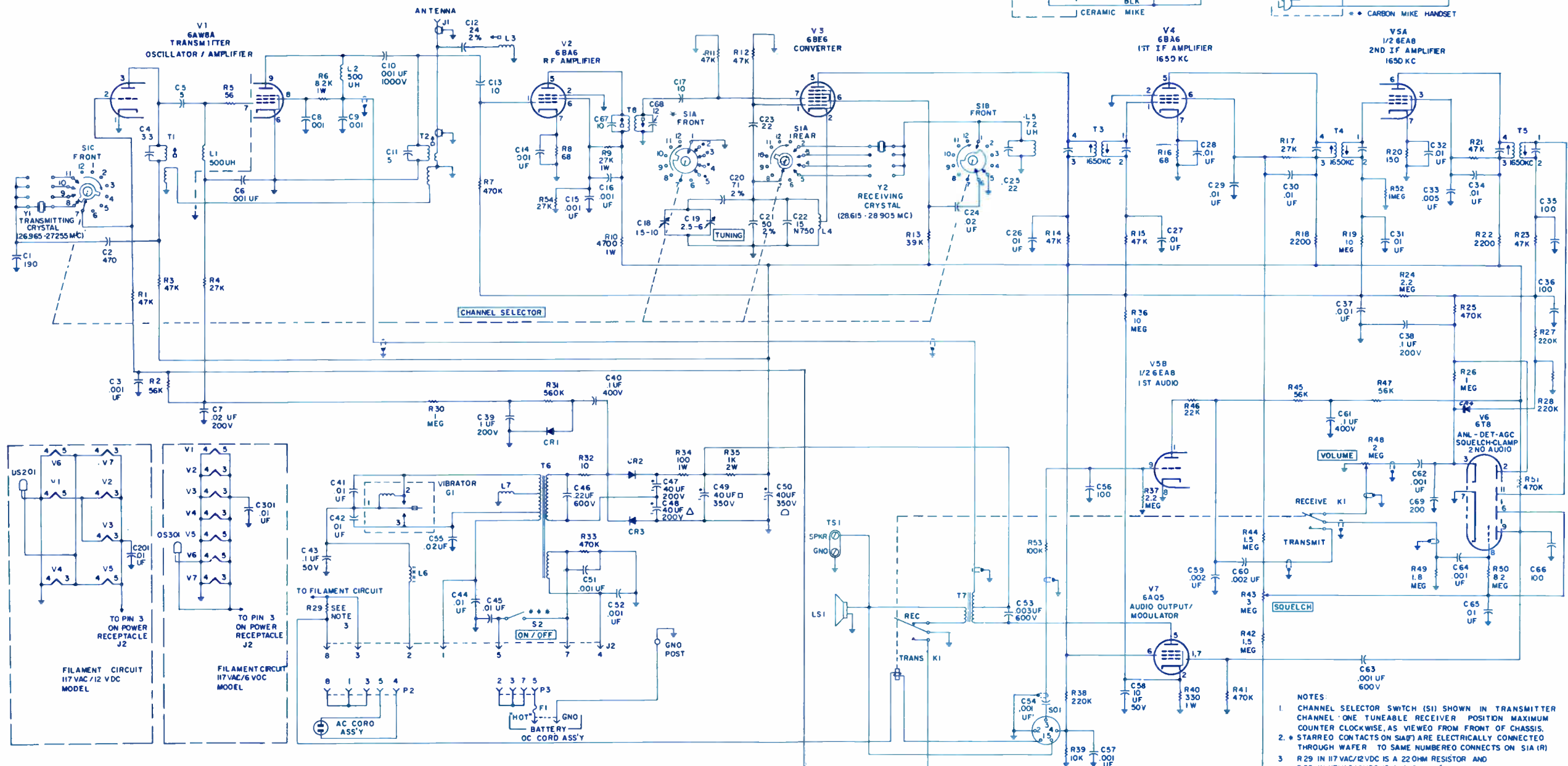
July • 1961

Electronic Technician
CIRCUIT DIGEST 648

July • 1961







NOTES:
 1. CHANNEL SELECTOR SWITCH (S1) SHOWN IN TRANSMITTER CHANNEL ONE TUNEABLE RECEIVER POSITION MAXIMUM COUNTER CLOCKWISE, AS VIEWED FROM FRONT OF CHASSIS.
 2. * STARRED CONTACTS ON SIA(F) ARE ELECTRICALLY CONNECTED THROUGH WAFER TO SAME NUMBERED CONNECTS ON SIA (R)
 3. R29 IN 117VAC/12VDC IS A 22 OHM RESISTOR AND R29 IN 117VAC/6VDC IS A 5 OHM RESISTOR

TYPICAL TUBE SOCKET VOLTAGES

Symbol, Type, Function	Operation	Pin 1	2	3	4	5	6	7	8	9
V1 - 6AW8A	Receive	0	-77	220	H	H	0	-80	265	265
Crystal Oscillator/ R.F. Power Amplifier	Transmit	0	-6.6	105	H	H	0	-7.2	190	245
V2 - 6BA6	Receive	0	0	H	H	163	82	0.8	-	-
R.F. Amplifier	Transmit	-82	0	H	H	211	166	0.4	-	-
V3 - 6BE6	Receive	-3.2	0	H	H	158	66	0	-	-
Mixer - Oscillator	Transmit	-3.7	0	H	H	202	74	-6.1	-	-

Symbol, Type, Function	Operation	Pin 1	2	3	4	5	6	7	8	9
V4 - 6BA6	Receive	0	0	H	H	187	90	1.0	-	-
First I.F. Amplifier	Transmit	-70	0	H	H	232	225	0	-	-
V5 - 6EA8	Receive	14	0	105	H	H	200	1.3	0	-0.9
Second I.F. Amplifier/ Microphone Amplifier	Transmit	14	-6.3	210	H	H	230	0.3	0	-0.9
V6 - 6T8	Receive	-1.0	-0.6	0.2	H	H	*-0.3	0	*-1.0	*60
Noise Limiter - Detector- Squelch Clamp	Transmit	-11.0	-8.0	-5.2	H	H	** -28	0	** -26	** 215
V7 - 6AQ5	Receive	0	11	H	H	250	218	0	-	-
Audio Output-Modulator	Transmit	0	11	H	H	250	235	0	-	-

* Squelch control maximum clockwise.
 ** Squelch control maximum counterclockwise.
 Voltages measured to chassis with VTVM (RCA VoltOhmyst or equivalent) and are positive except where noted.
 Transmitter tuned and loaded, with no signal input to receiver.



ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

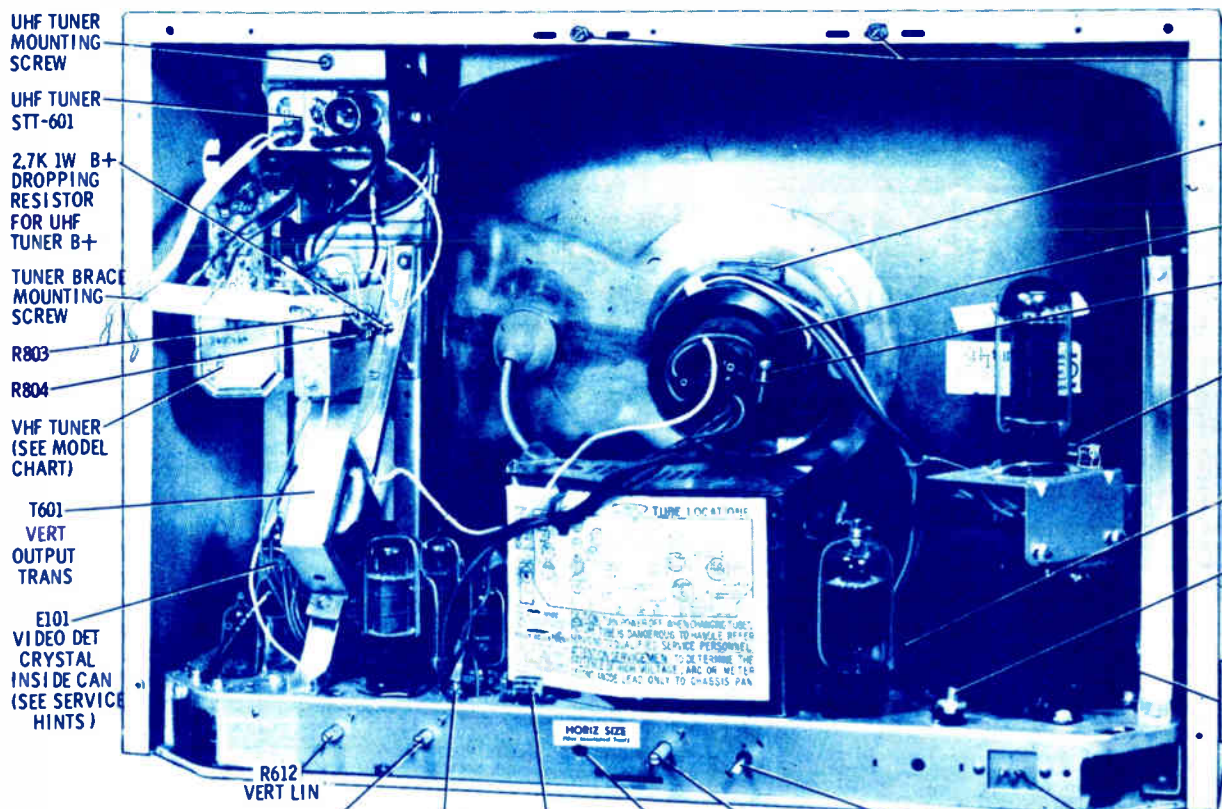
In This Issue (No. 108)

Circuit Digest Schematic No.

DELCO Auto Radio 1961 Buick Model 980134	652
MONTGOMERY WARD TV Models W9-5220A, W9-5226A, W9-5230A, W9-5320A, W9-5326A, W9-5330A	655
MOTOROLA TV Chassis 436 Series Models 1915, 7, 8, 11, 12, 13, & 14 Series	656

RCA TV Chassis KCS 137 & KCS 138	653
TELEFUNKEN AM-FM-SW Radio Model Jubilate 5061W	654
ZENITH TV Chassis 17G28 & 17G28Q	651

GROUP 108



- BRACE MOUNTING SCREWS (2)
- PIN CUSHION CORRECTOR MAGNETS (4)
- MAGNETIC CENTERING DEVICE
- YOKE CLAMP SCREW
- E801 LINE FUSE 5 AMP
- YOKE PLUG
- E804 B+ FUSE .5 AMP SLO-BLO
- TUBE SENTRY THERMISTOR IS BEHIND PWR TRANS

- R612 VERT LIN
- R609 VERT SIZE
- FOCUS ADJUST STRIP
- E501 HORIZ PHASE DET
- R515 HORIZ SIZE
- R124 NOISE GATE
- L501 HORIZ OSC & HOLD
- AC INTERLOCK

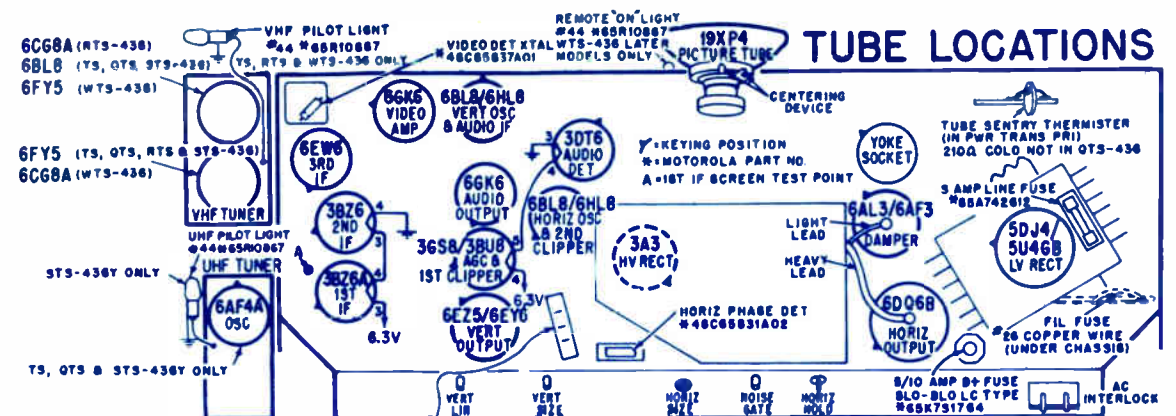
REAR VIEW OF MANUAL TUNING MODELS

More Data on Reverse Side

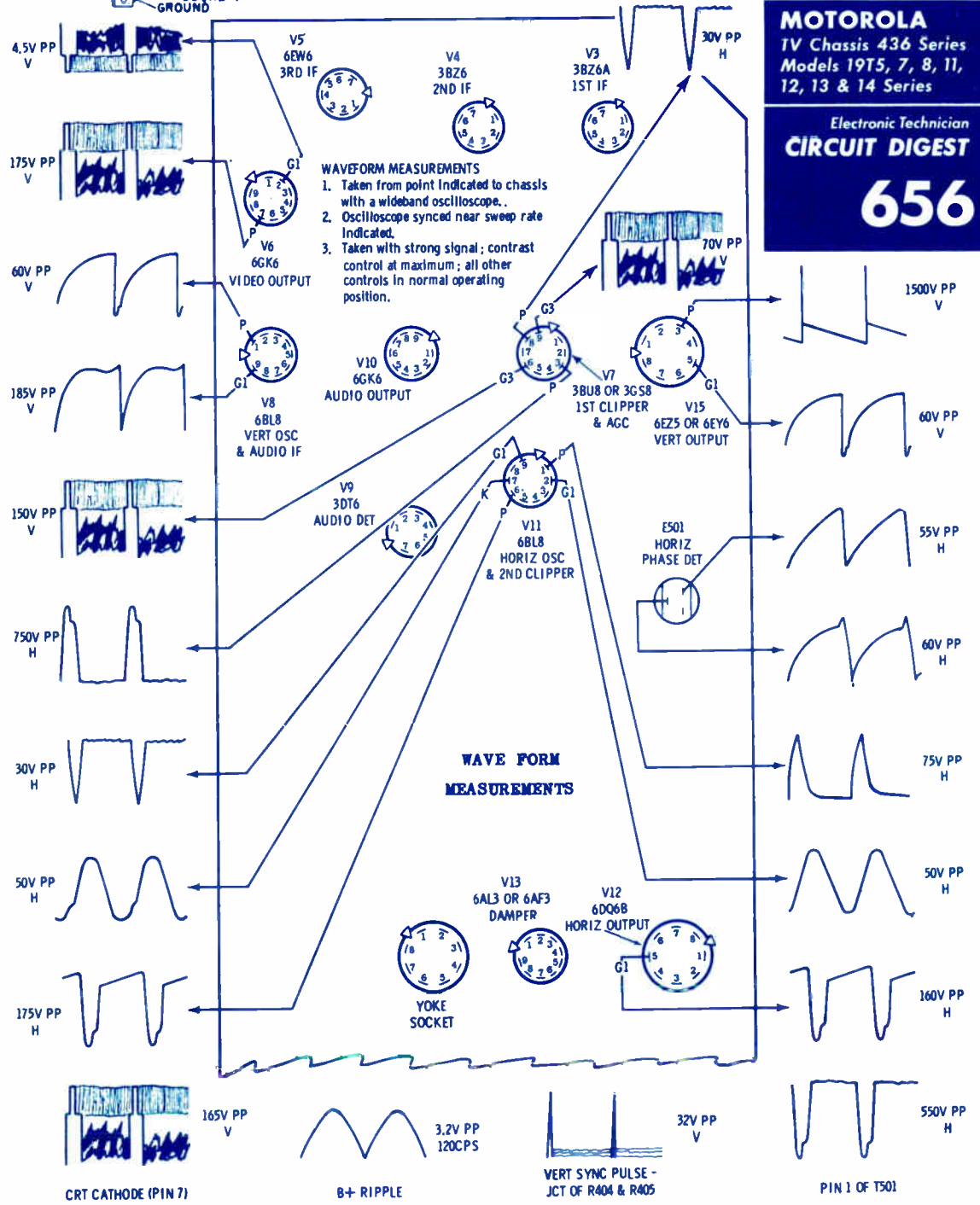
MOTOROLA
TV Chassis 436 Series
Models 1915, 7, 8, 11,
12, 13 & 14 Series

Electronic Technician
CIRCUIT DIGEST

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FOCUS ADJUSTMENT
LEAD FROM PIN 4 OF PICTURE TUBE SOCKET MUST CONNECT TO ONE OF THREE TAPS OF FOCUS ADJUST STRIP. CONNECT TO TAP GIVING BEST FOCUS.

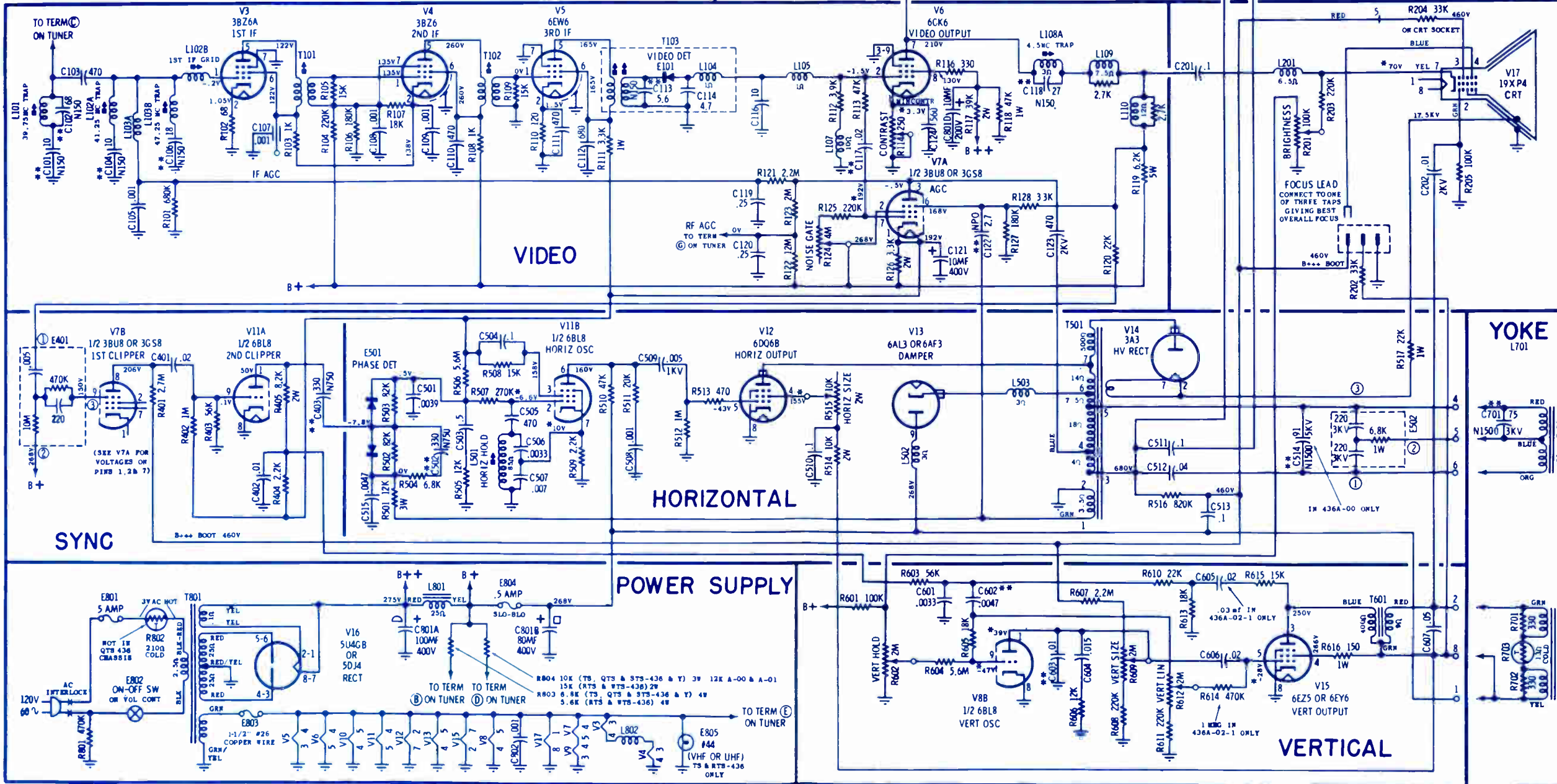
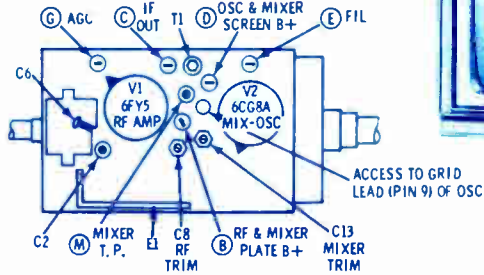
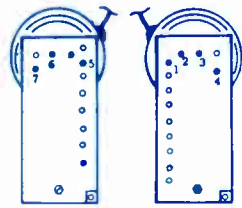
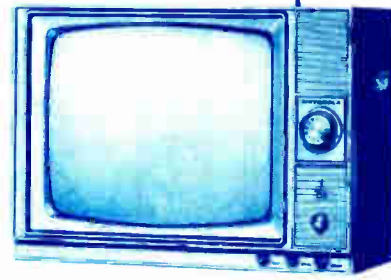


MOTOROLA
TV Chassis 436 Series
Models 1915, 7, 8, 11,
12, 13 & 14 Series

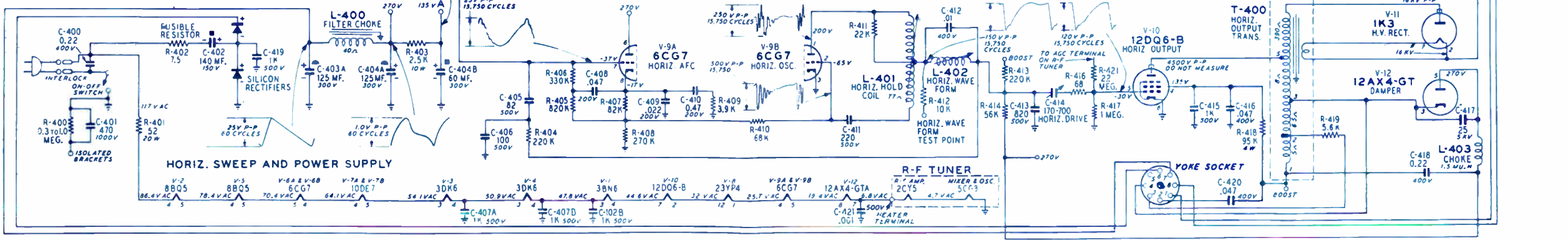
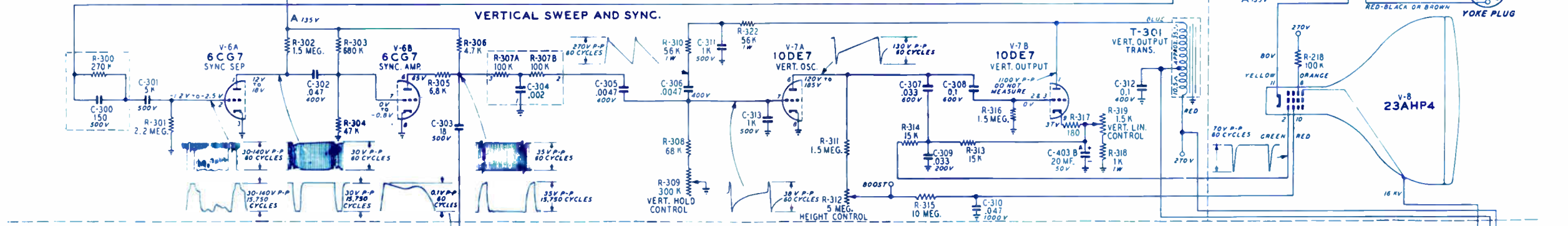
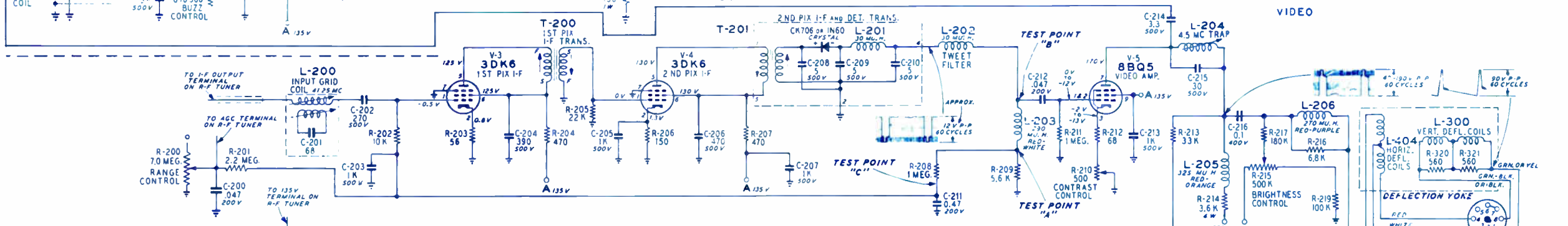
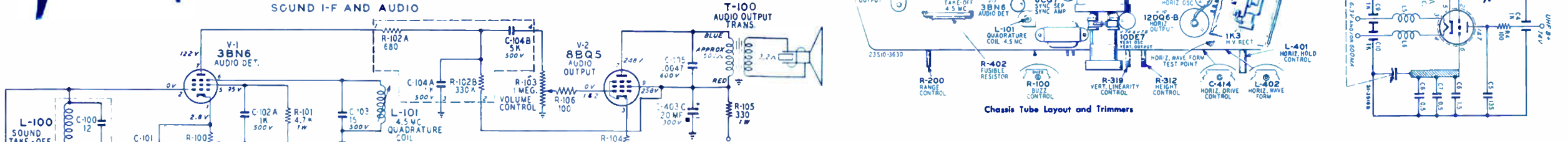
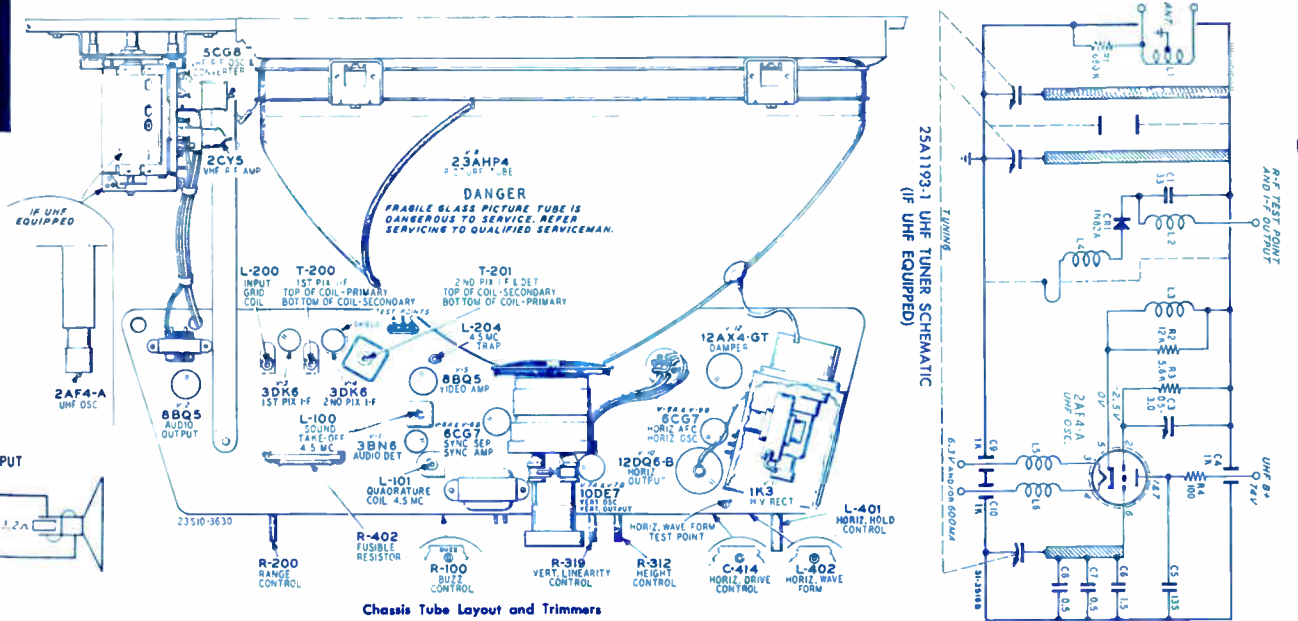
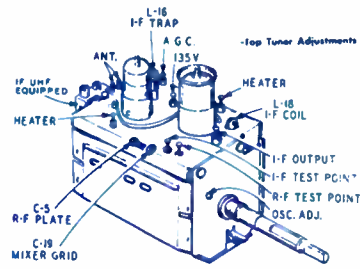
Electronic Technician
CIRCUIT DIGEST

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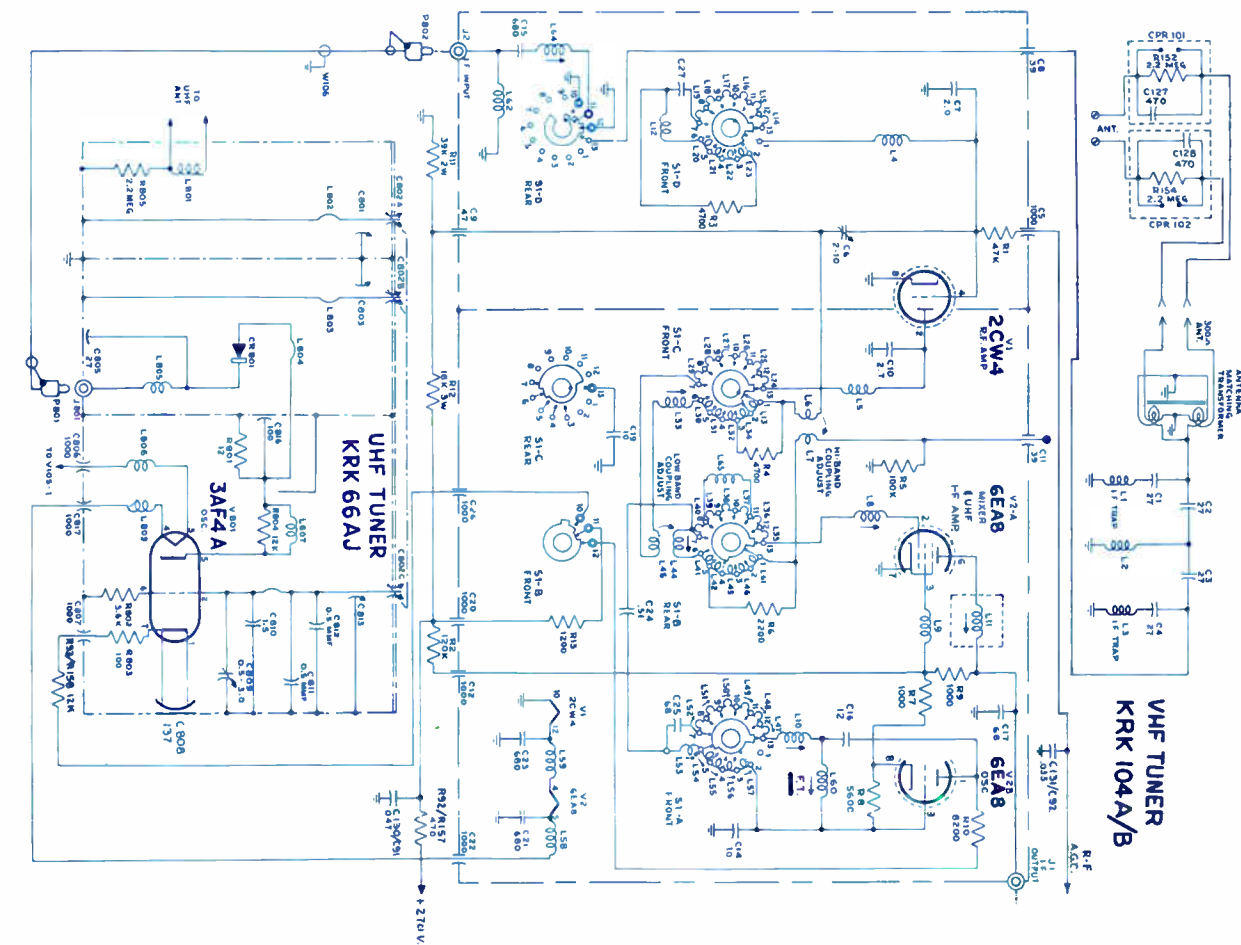
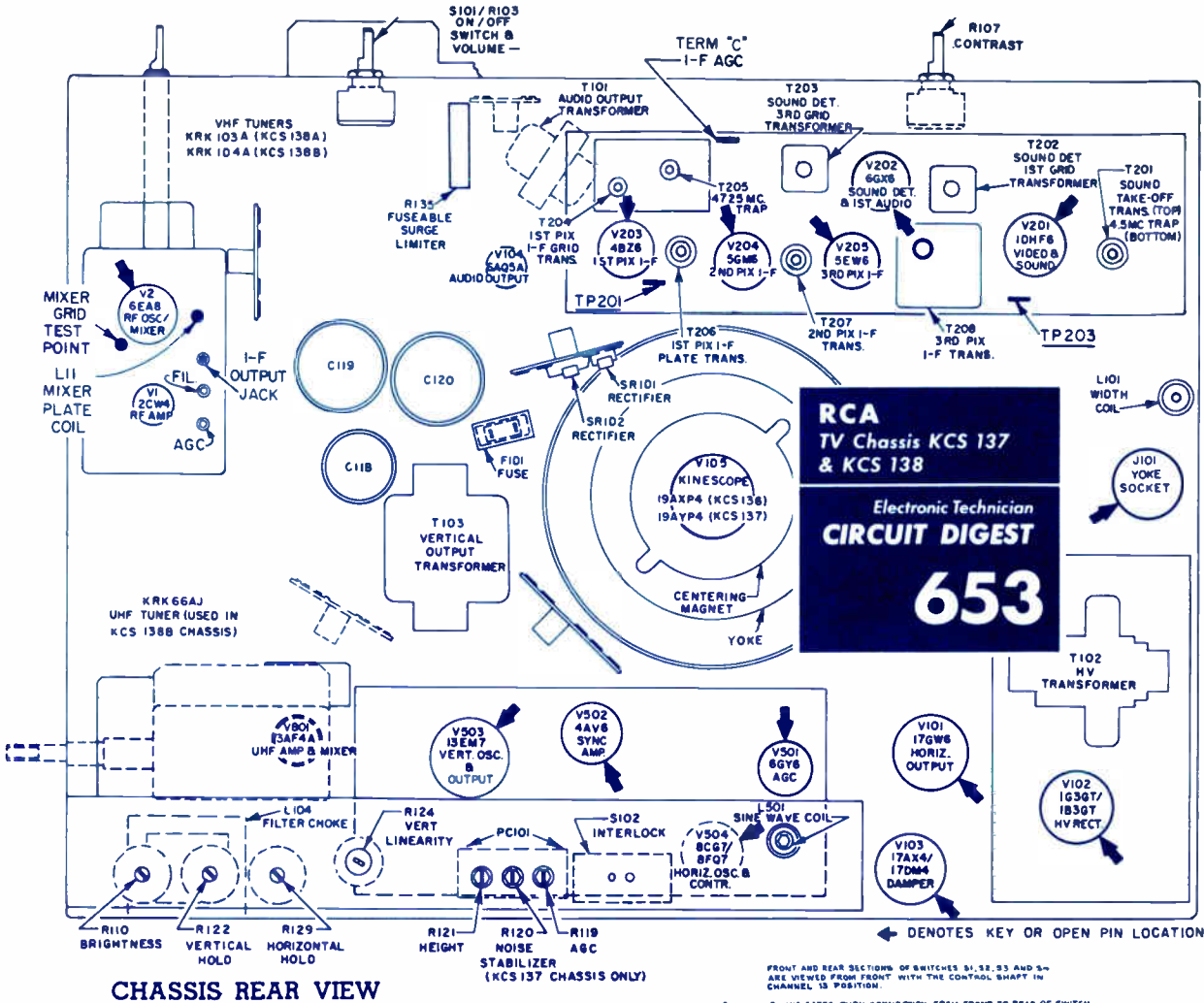
More Data on Reverse Side



August • 1961



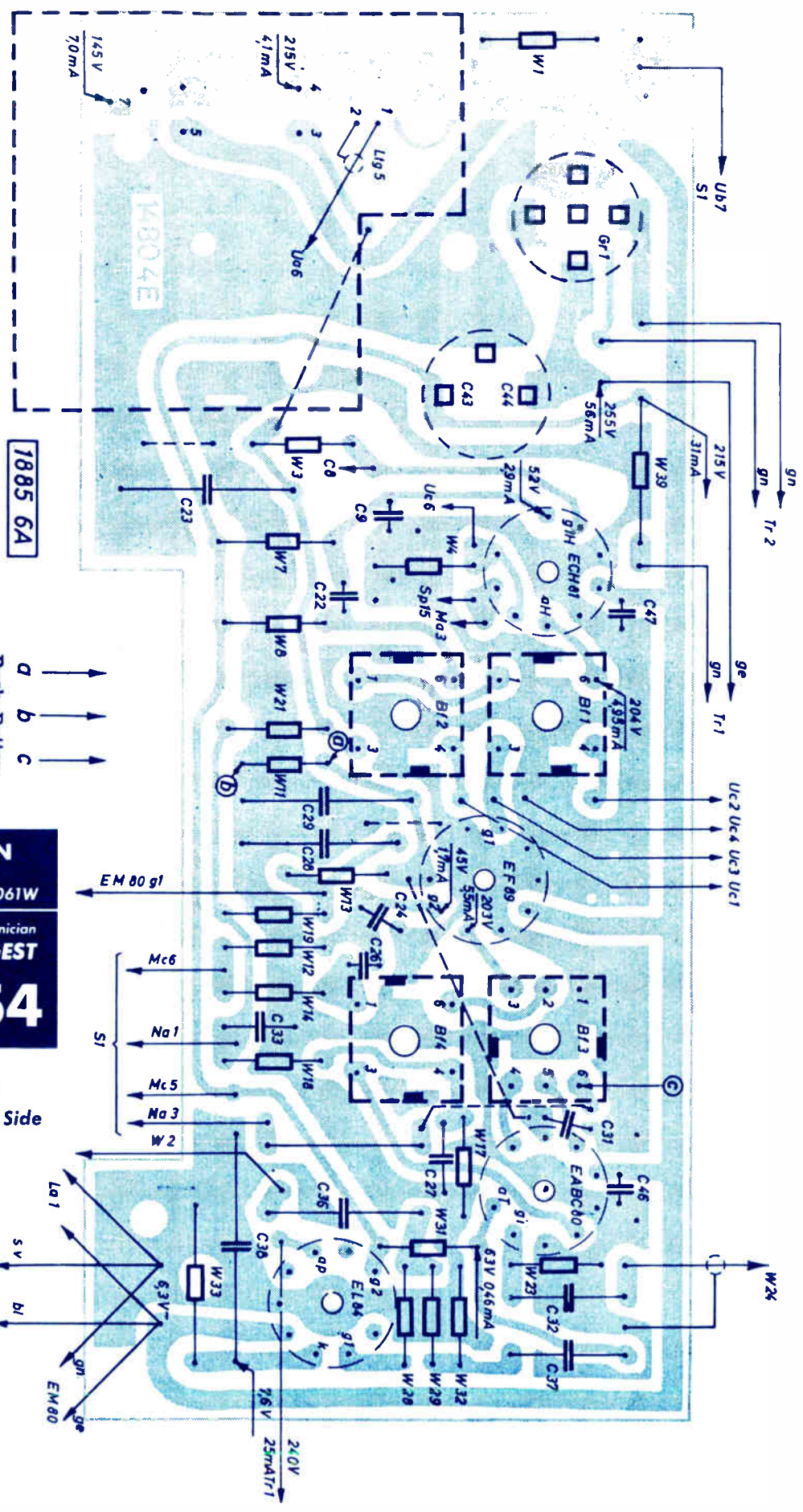
NOTE—In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes.

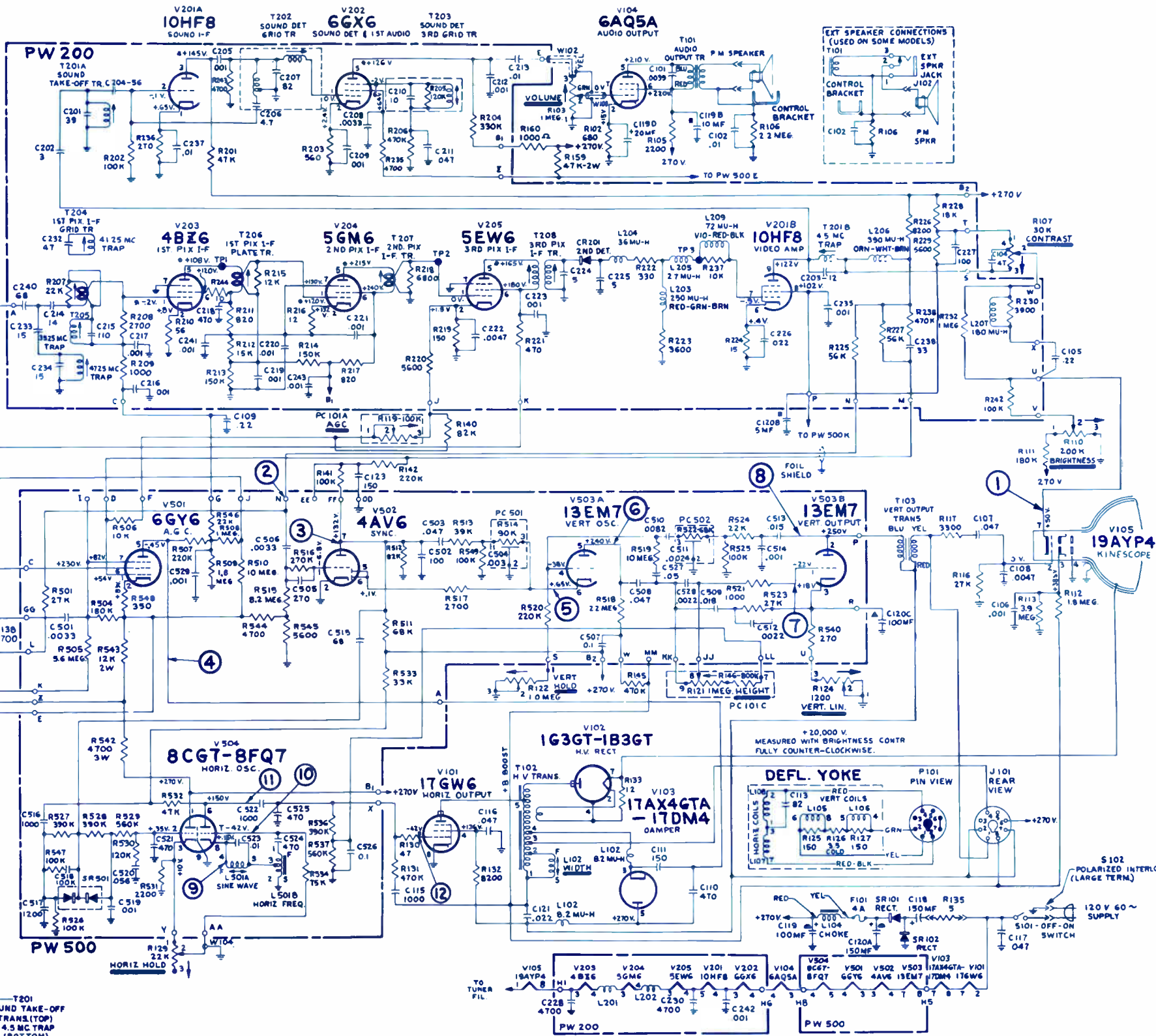
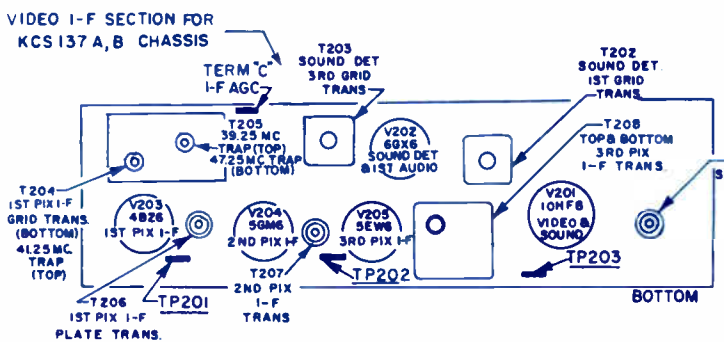
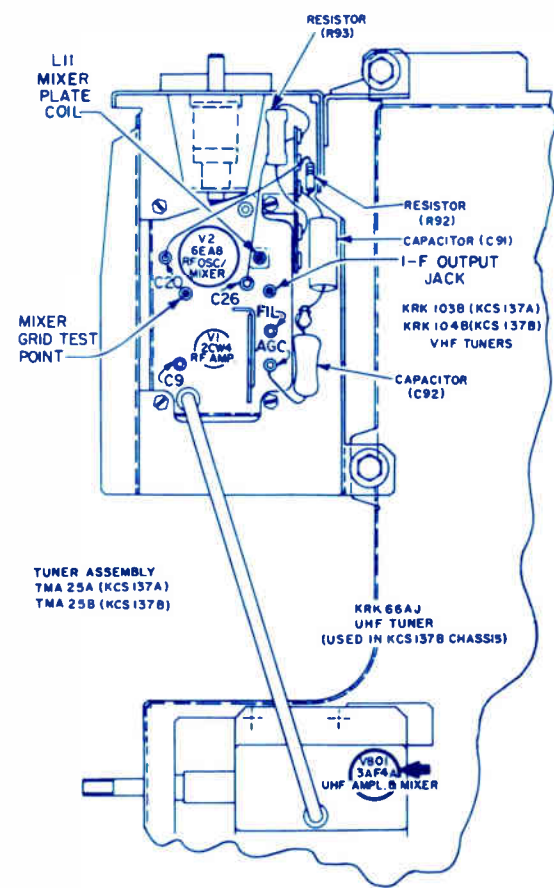
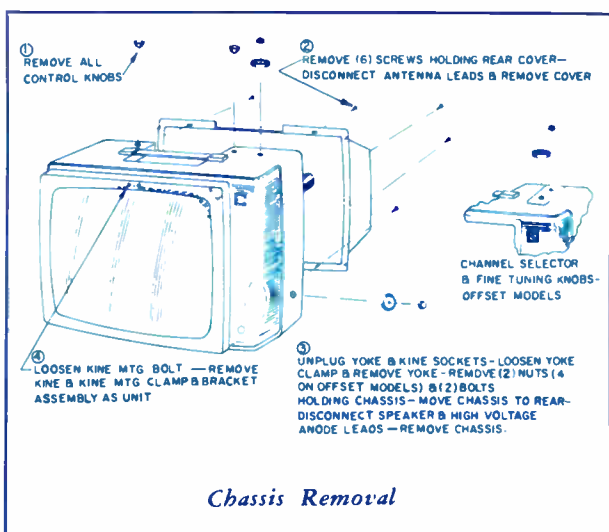


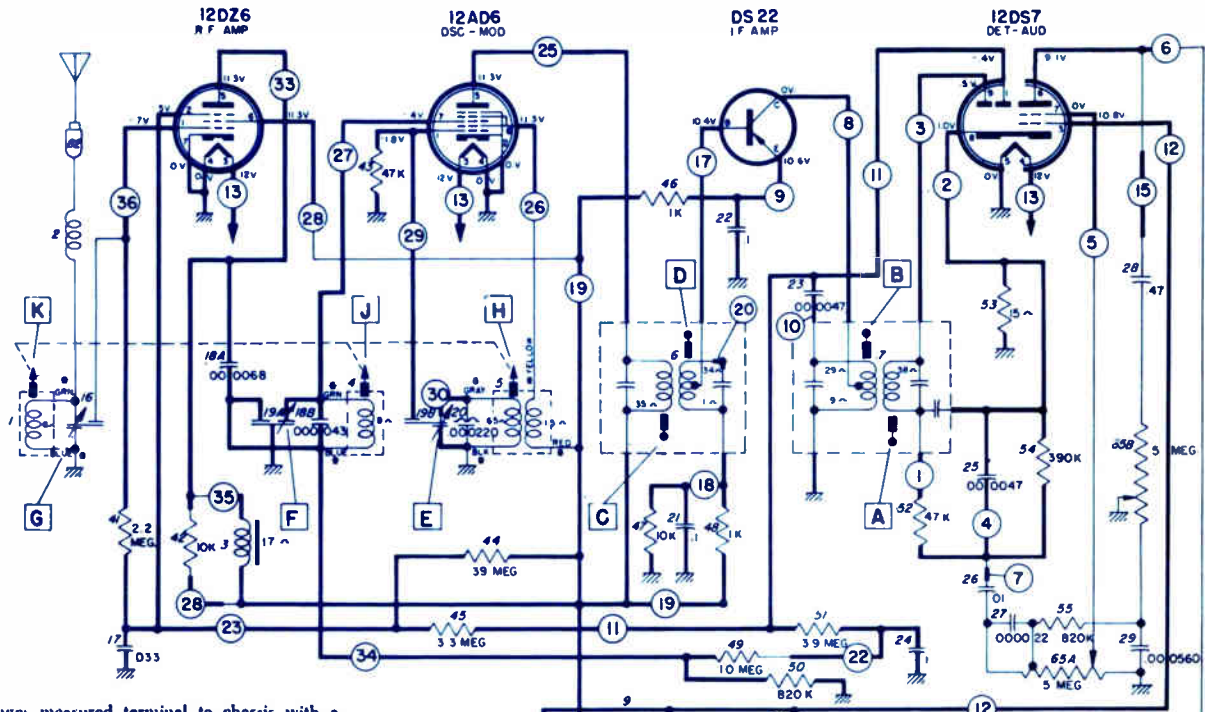
S1 = Push-Button Bank
La1 = Dial Lamp
W22 = Volume Control
TR 2 = Main (L.V.) Transformer
TR 1 = Output Transformer

TELEFUNKEN AM-FM-SW Radio Model Jubilate 5061W
Electronic Technician
CIRCUIT DIGEST 654

More Data on Reverse Side

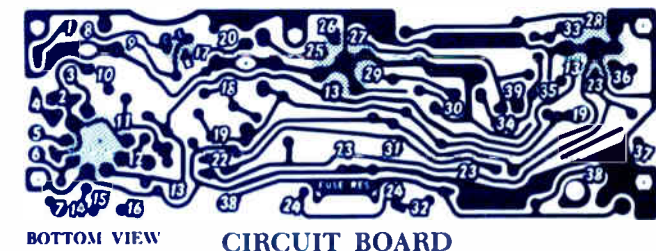
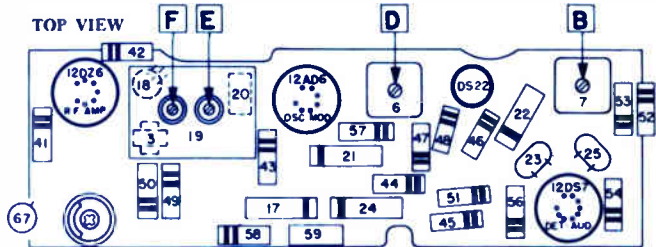
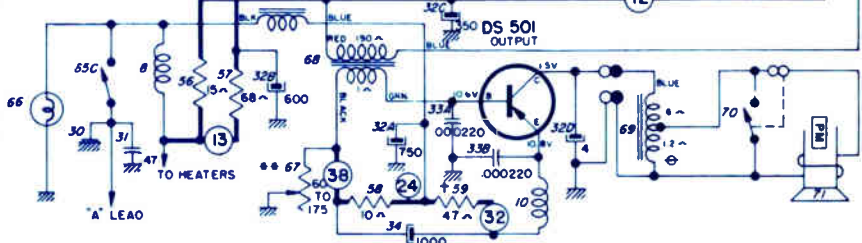




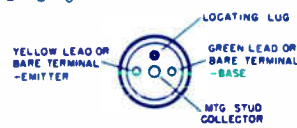


Voltages measured terminal to chassis with a VTVM—No signal and 12.0 volts at Illus. 30. Oscillator grid voltage taken with set tuned to 1000 KC. Total "A" drain at 12V. - 2.2 amps. Tolerance on voltages $\pm 10\%$.

- Indicates lead from tuner coil ass'y.
- Before measuring transistor voltages, the shorting type speaker socket must be opened and a 4 ohm speaker connected, if transistor is replaced, adjust bias potentiometer (Illus. 67) to obtain proper collector voltage with 12 volts input to radio.
- †—Illus. 59 is a fuse resistor for the transistor. Service with exact replacement.
- ⊖—Output transformer will appear shorted if shorting type speaker switch is not held open.



DS-22—Transistor Terminals
RED DOT BY COLLECTOR

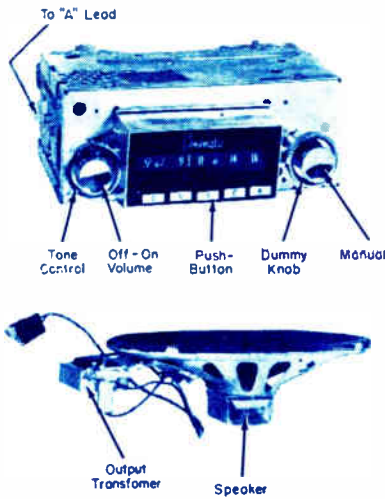


DS 501—Transistor Terminals

Resistance Readings on DS22 Transistor (mounted in circuit)

Measured Between	R X 10 Range		R X 100 Range	
	Forward	Reverse	Forward	Reverse
Base (B) & Collector (C)	20 Ω	1000 Ω	200 Ω	1000 Ω
Base (B) & Emitter (E)	20 Ω	2000 Ω	200 Ω	2000 Ω
Emitter (E) & Collector (C)	35 Ω	1000 Ω	200 Ω	1000 Ω

NOTE: Transistor defects will affect transistor voltages or resistance.



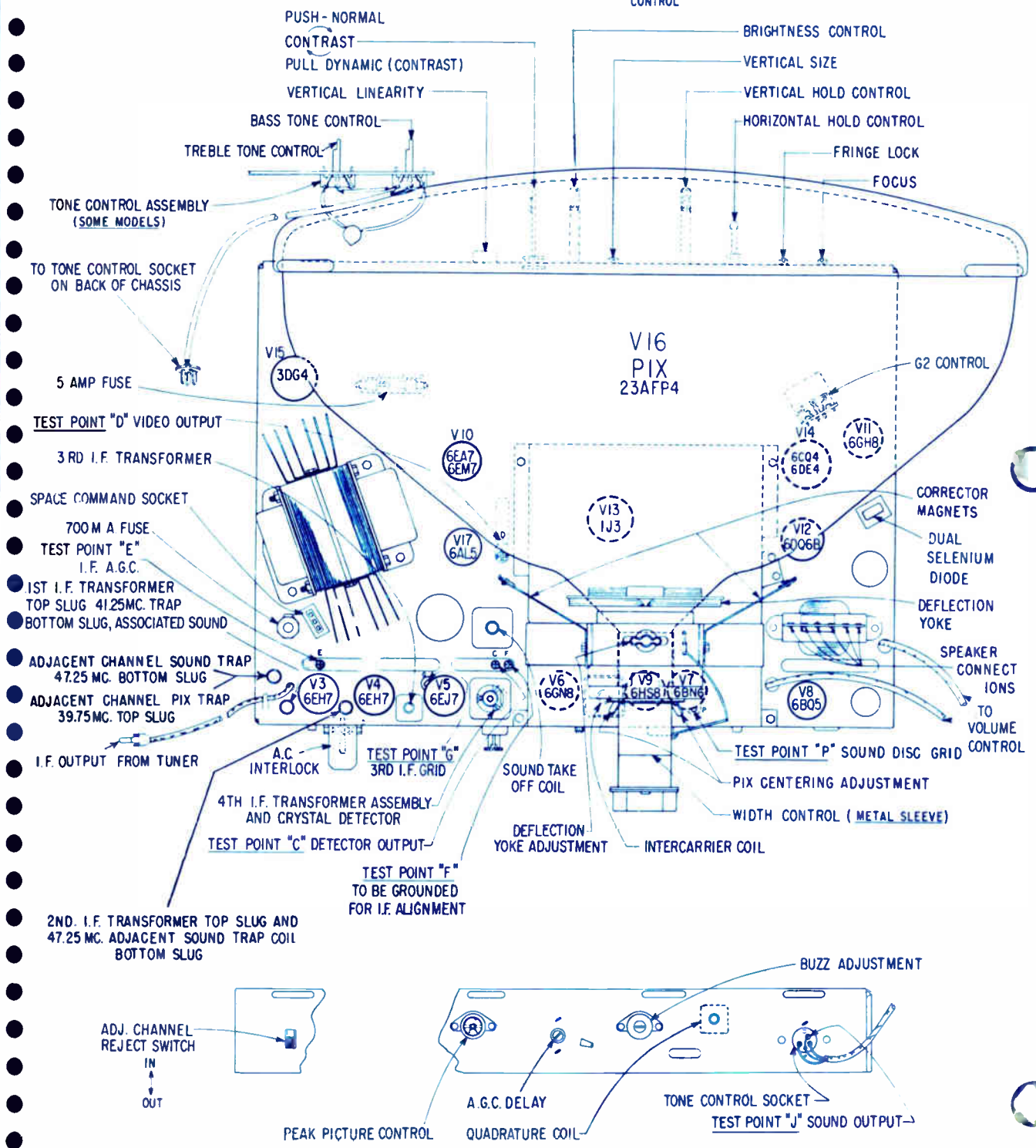
Output transformer is mounted on speaker. Do not connect leads from radio directly to a speaker only.

ZENITH

TV Chassis 17G28 & 17G28Q

Electronic Technician CIRCUIT DIGEST 651

More Data on Reverse Side



- TONE CONTROL ASSEMBLY (SOME MODELS)
- TO TONE CONTROL SOCKET ON BACK OF CHASSIS
- 5 AMP FUSE
- TEST POINT "D" VIDEO OUTPUT
- 3 RD I.F. TRANSFORMER
- SPACE COMMAND SOCKET
- 700 M A FUSE
- TEST POINT "E" I.F. A.G.C.
- 1ST I.F. TRANSFORMER TOP SLUG 41.25MC. TRAP
- BOTTOM SLUG, ASSOCIATED SOUND
- ADJACENT CHANNEL SOUND TRAP 47.25 MC. BOTTOM SLUG
- ADJACENT CHANNEL PIX TRAP 39.75MC. TOP SLUG
- I.F. OUTPUT FROM TUNER
- A.C. INTERLOCK
- TEST POINT "G" 3RD I.F. GRID
- SOUND TAKE OFF COIL
- 4TH I.F. TRANSFORMER ASSEMBLY AND CRYSTAL DETECTOR
- TEST POINT "C" DETECTOR OUTPUT
- 2ND. I.F. TRANSFORMER TOP SLUG AND 47.25 MC. ADJACENT SOUND TRAP COIL BOTTOM SLUG
- TEST POINT "F" TO BE GROUNDED FOR I.F. ALIGNMENT
- BASS TONE CONTROL
- TREBLE TONE CONTROL
- BRIGHTNESS CONTROL
- VERTICAL SIZE
- VERTICAL LINEARITY
- VERTICAL HOLD CONTROL
- HORIZONTAL HOLD CONTROL
- FRINGE LOCK
- FOCUS
- G2 CONTROL
- CORRECTOR MAGNETS
- DUAL SELENIUM DIODE
- DEFLECTION YOKE
- SPEAKER CONNECTIONS TO VOLUME CONTROL
- TEST POINT "P" SOUND DISC GRID
- PIX CENTERING ADJUSTMENT
- WIDTH CONTROL (METAL SLEEVE)
- INTERCARRIER COIL
- DEFLECTION YOKE ADJUSTMENT
- TEST POINT "J" SOUND OUTPUT
- BUZZ ADJUSTMENT
- A.G.C. DELAY
- QUADRATURE COIL
- PEAK PICTURE CONTROL
- TONE CONTROL SOCKET

ELECTRONIC TECHNICIAN

Trademark

CIRCUIT DIGESTS

In This Issue (No. 109)

Circuit Digest Schematic No.

ADMIRAL 657

TV Chassis 16A9 & 16A9U

GENERAL ELECTRIC 659

TV Chassis MW
Models M604, M605, M610, M611
R610, M614, M615

MOTOROLA 661

Auto Radio 1961 Rambler American
Model 13MAM

PHILCO 662

TV Chassis 12N50 Series

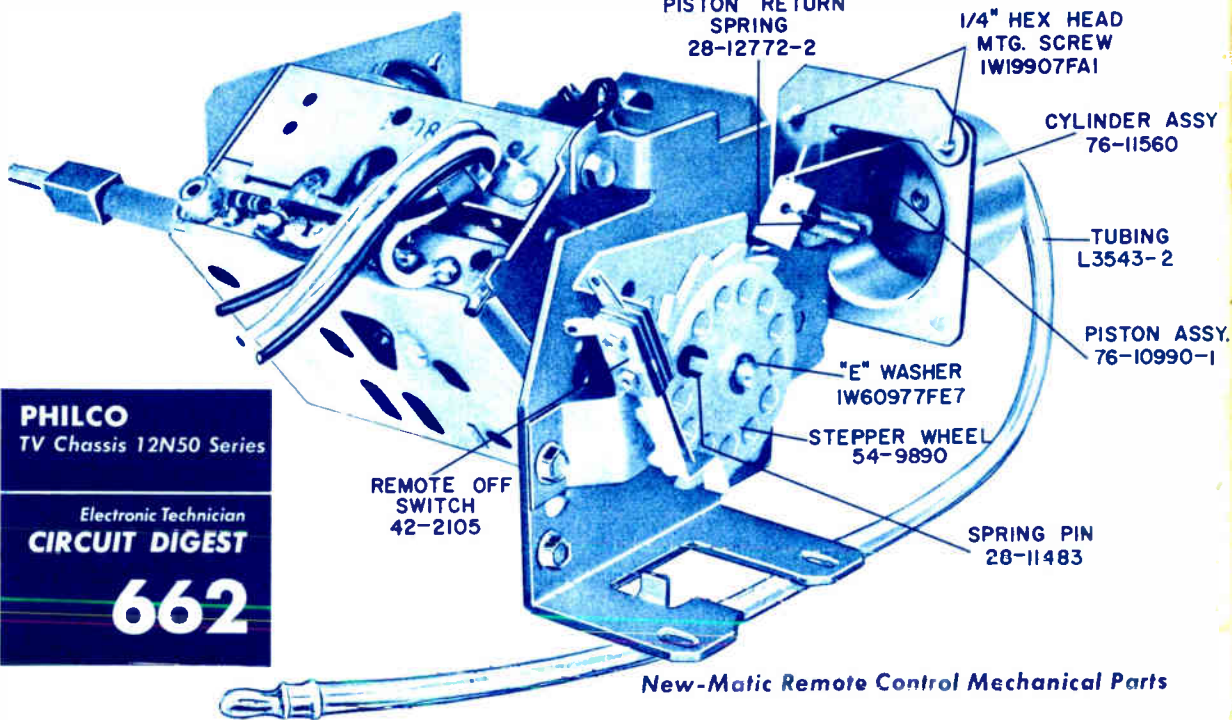
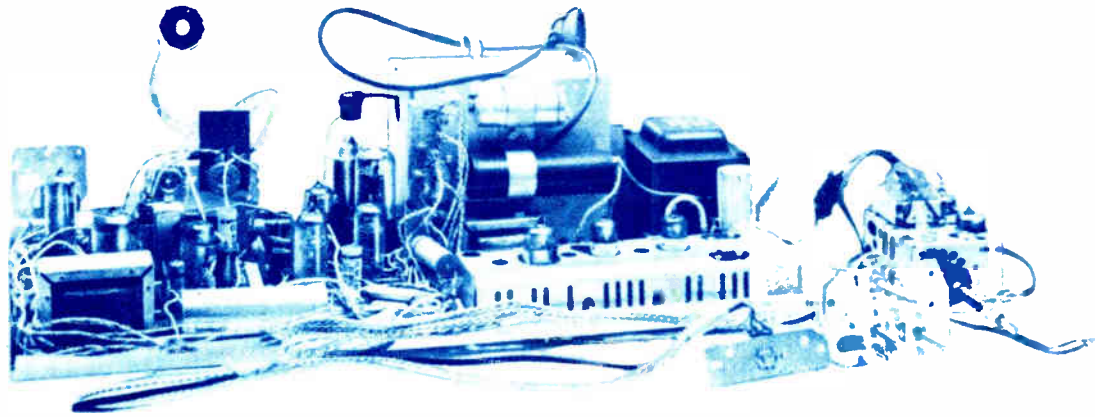
REGENCY 658

Citizens Band Radio
Model CB-27 & CBM-27

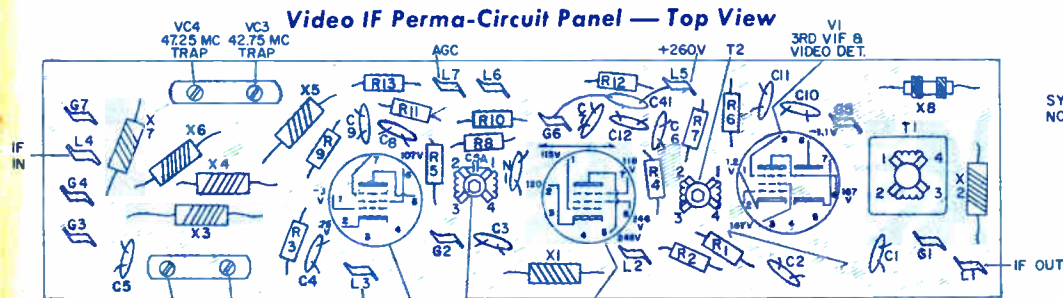
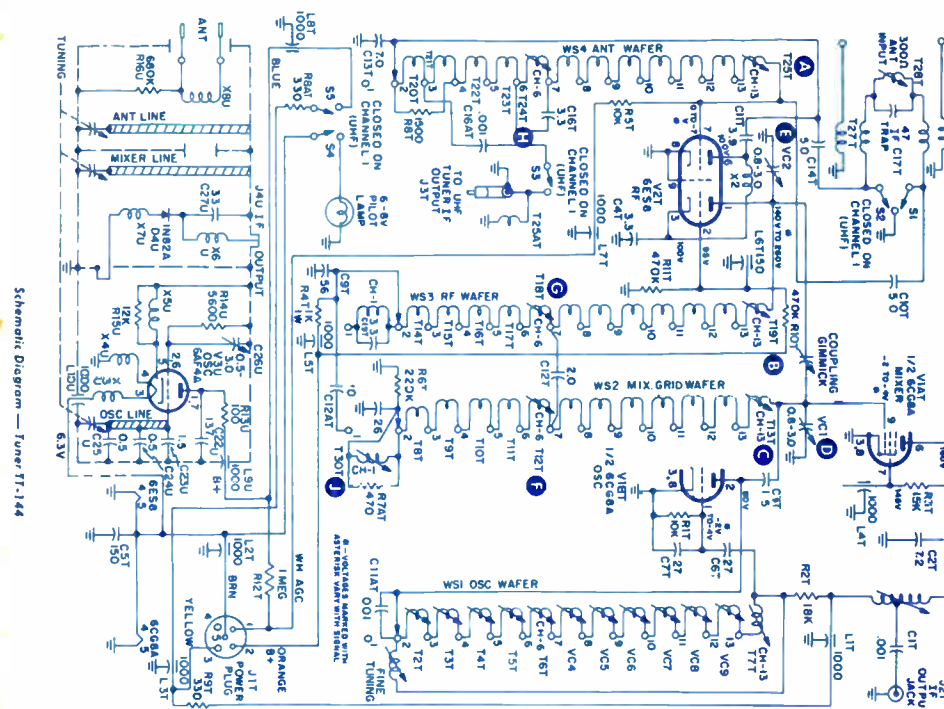
WESTINGHOUSE 660

TV Chassis V2414-1, V2414-2

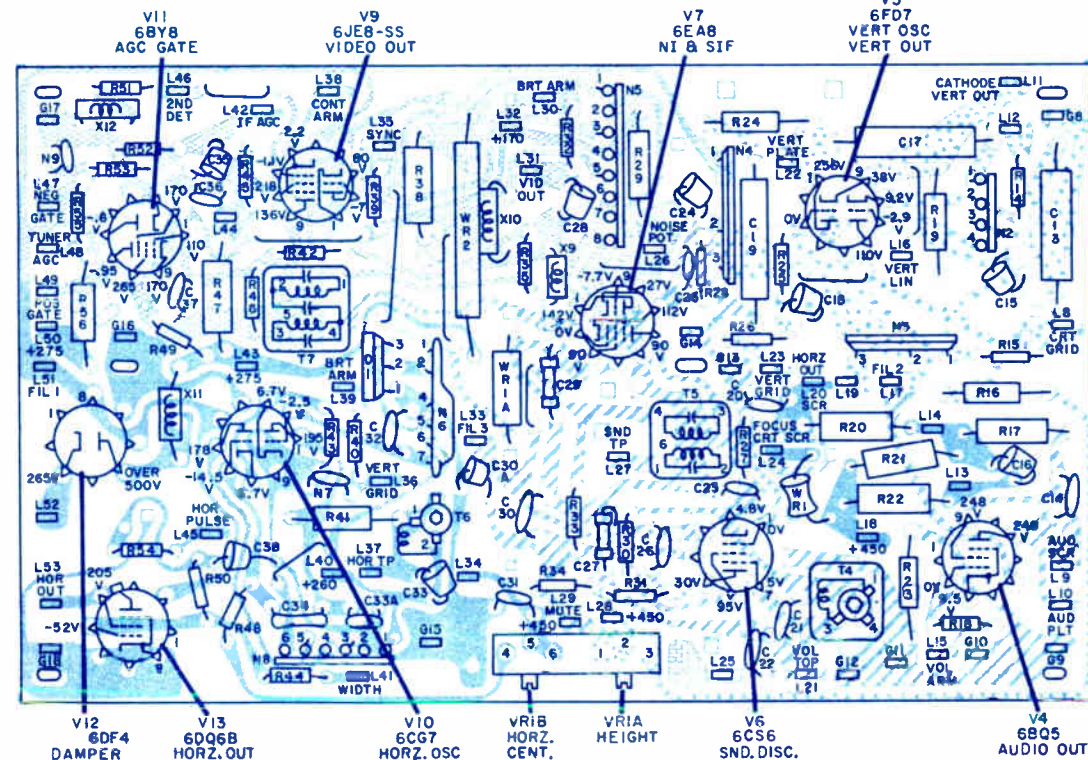
GROUP
109



New-Matic Remote Control Mechanical Parts



Video-Oscillator-Sound Perma-Circuit Panel — Top View



PHILCO
TV Chassis 12N50 Series

Electronic Technician
CIRCUIT DIGEST

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- LEGEND FOR PERMA-CIRCUIT PANELS
- HORIZONTAL CIRCUITS
 - SOUND IF DETECTOR AND AUDIO CIRCUITS
 - VIDEO AND AGC CIRCUITS
 - VERTICAL CIRCUITS
 - SYNC SEPARATOR AND NOISE INVERTER CIRCUITS

More Data on Reverse Side

More Data on Reverse Side

September • 1961

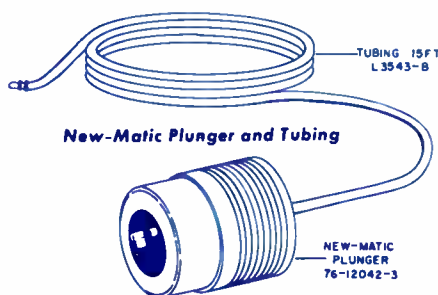
CRITICAL LEAD DRESS

To Prevent Corona:

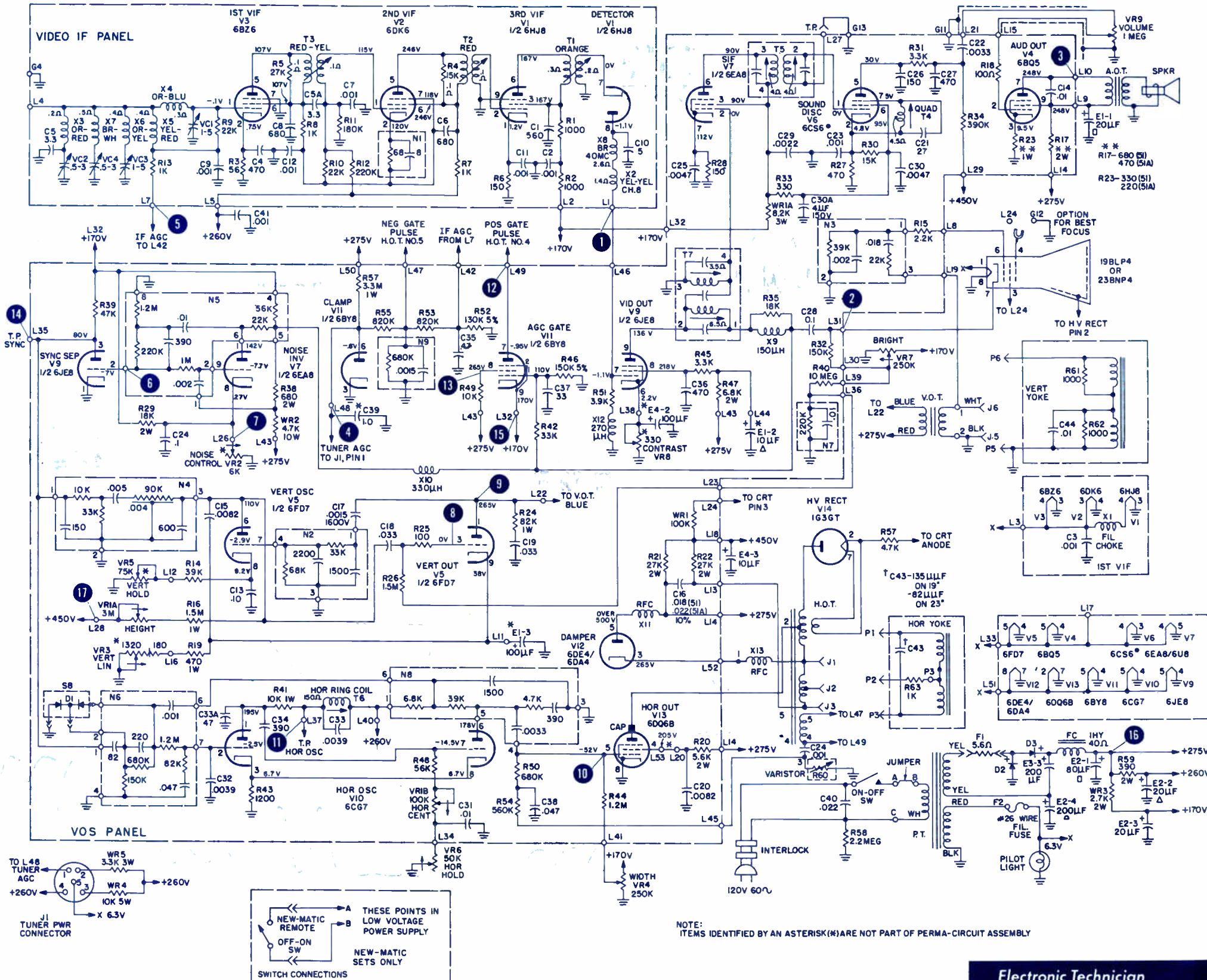
1. V-14 socket must be free of solder points and sharp wire ends.
2. Lead from V-14 cap must be at least $\frac{1}{8}$ " from any metal of H.V. Cage.
3. Filament leads from H.O.T. to V-14 must have slack (if any) dress down toward base away from glass bulb of 1G3 tube.
4. All leads from H.O.T. coil to Y.S. must be free of each other and dress away from any metal parts.
5. Lead from V-13 cap must be dressed at least $\frac{1}{8}$ " away from H.O.T. winding.
6. Leads from Y.S. 3 and 6 and brown damper lead must be dressed under lugs CL17, CL18 and CL20 away from winding of H.O.T.
7. Leads from lugs 3, 4, and 5 on H.O.T. panel must dress under CL19 and away from winding of H.O.T.
8. All leads must be dressed clear of L52 and V12-3.
9. Leads from V-13 and V-14 caps must be at least $\frac{1}{8}$ " apart.

To Prevent Pickup:

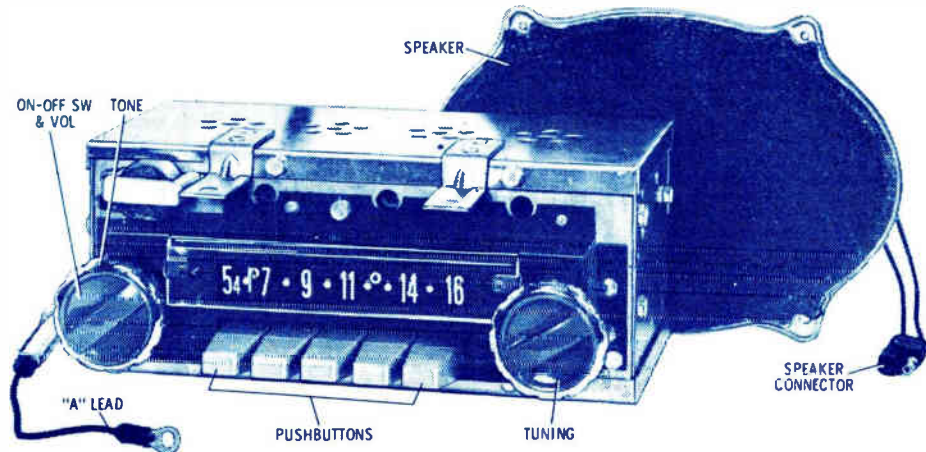
1. Tuner power cable must dress under CL8, CL9 and CL10.
2. Bare portion of I-F link to tuner must be clamped under dress lug CL13 provided at end of I-F shield.
3. Green C.W. from L1 to L46 should be free from all other leads and away from subbase.
4. Leads from VR9-4 and 5 must be twisted together for approximately 8 twists in length from VR9-4 and 5, to CL12.
5. Yellow CRTS lead should be free from all other leads.



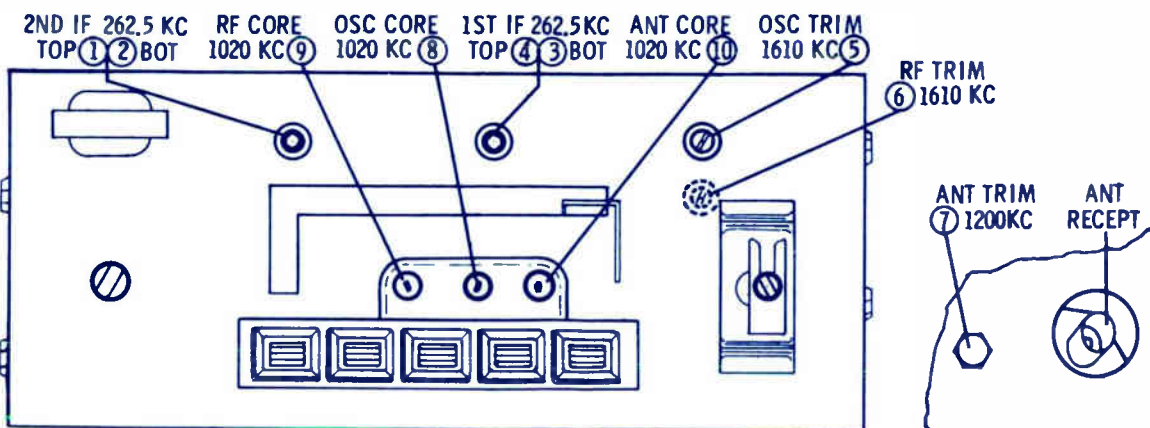
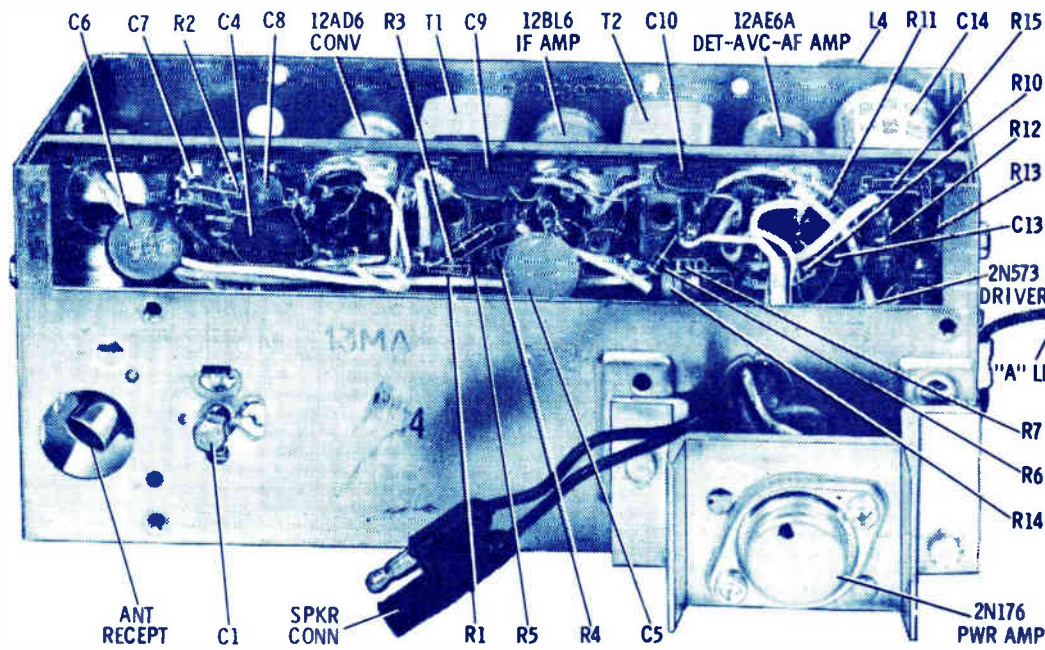
TUBE	1	2	3	4	5	6	7	8	9
V1 6X4	120K	10K	10K	PH.	PH.	10K	10K	3.9K	Grd.
V2 6DK6	95K	115K	PH.	PH.	15K	15K	120K	3.9K	Grd.
V3 6AR5	48K	47K	PH.	PH.	110K	110K	14K	14K	14K
V4 6BQ5	15K	140K	PH.	PH.	2.2M	28K	38K	59K	1.1K
V5 6Y7	33K	470K	PH.	PH.	400K	7K	470K	3K	2.2M
V6 6CS6	30	PH.	PH.	PH.	10K	10K	150K	14K	14K
V7 6BA8	33K	7K	PH.	PH.	65K	39K	39K	1K	7K
V8 6BE8	Grd.	PH.	PH.	PH.	50K	90K	320K	20K	Grd.
V9 6E8	14K	1.2M	PH.	PH.	10K	10K	20K	20K	7K
V10 6CD7	14K	1.2M	PH.	PH.	1K	PH.	PH.	PH.	PH.
V11 6AV6	32K	7K	PH.	PH.	14K	14K	60K	60K	24K
V12 6BE4	32K	7K	PH.	PH.	14K	14K	60K	60K	24K
V13 6BQ6	PH.	PH.	PH.	PH.	PH.	PH.	PH.	PH.	PH.



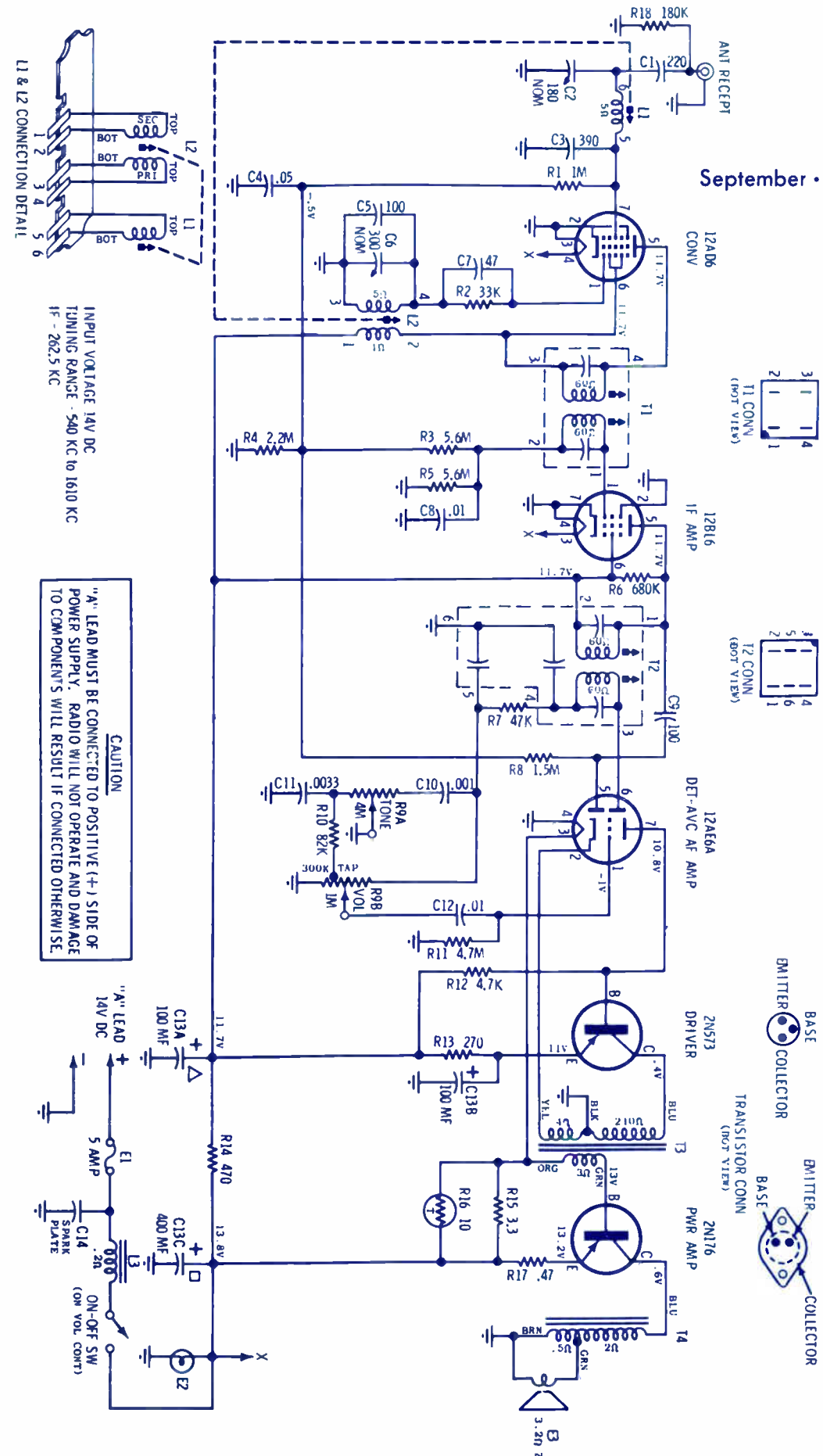
More Data on Reverse Side

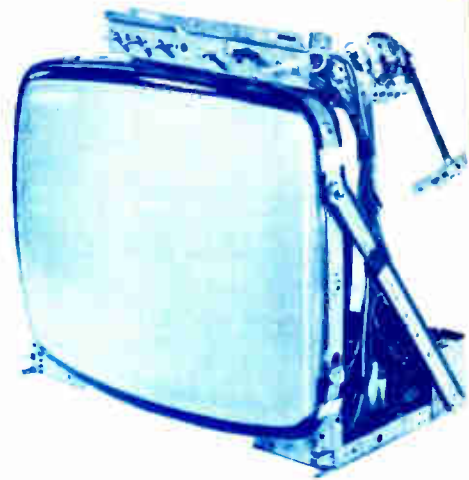
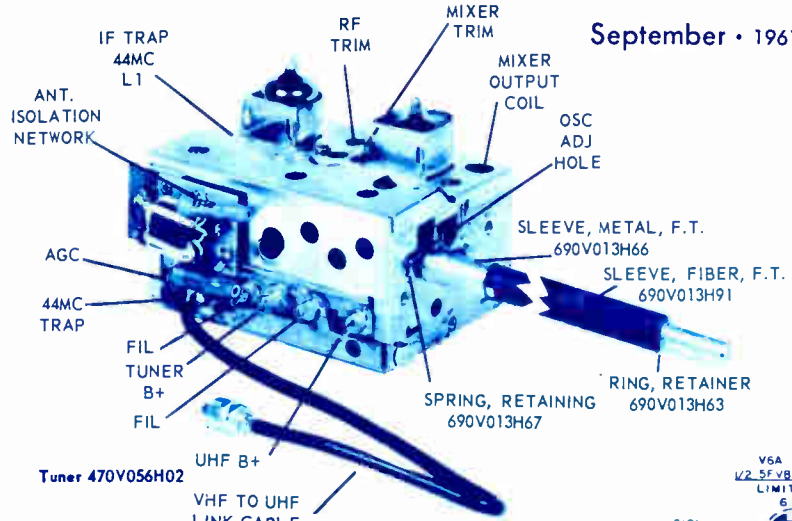


PARTS LOCATION

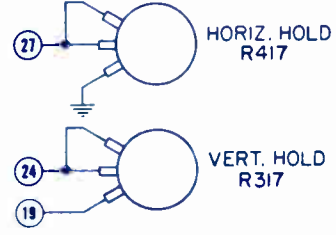


FRONT VIEW (WITH DIAL SCALE & BACKGROUND REMOVED) BACK VIEW ALIGNMENT POINTS LOCATION DETAIL

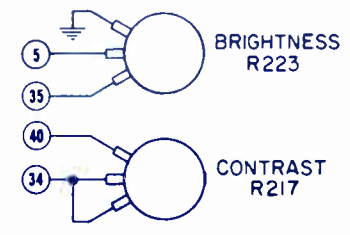




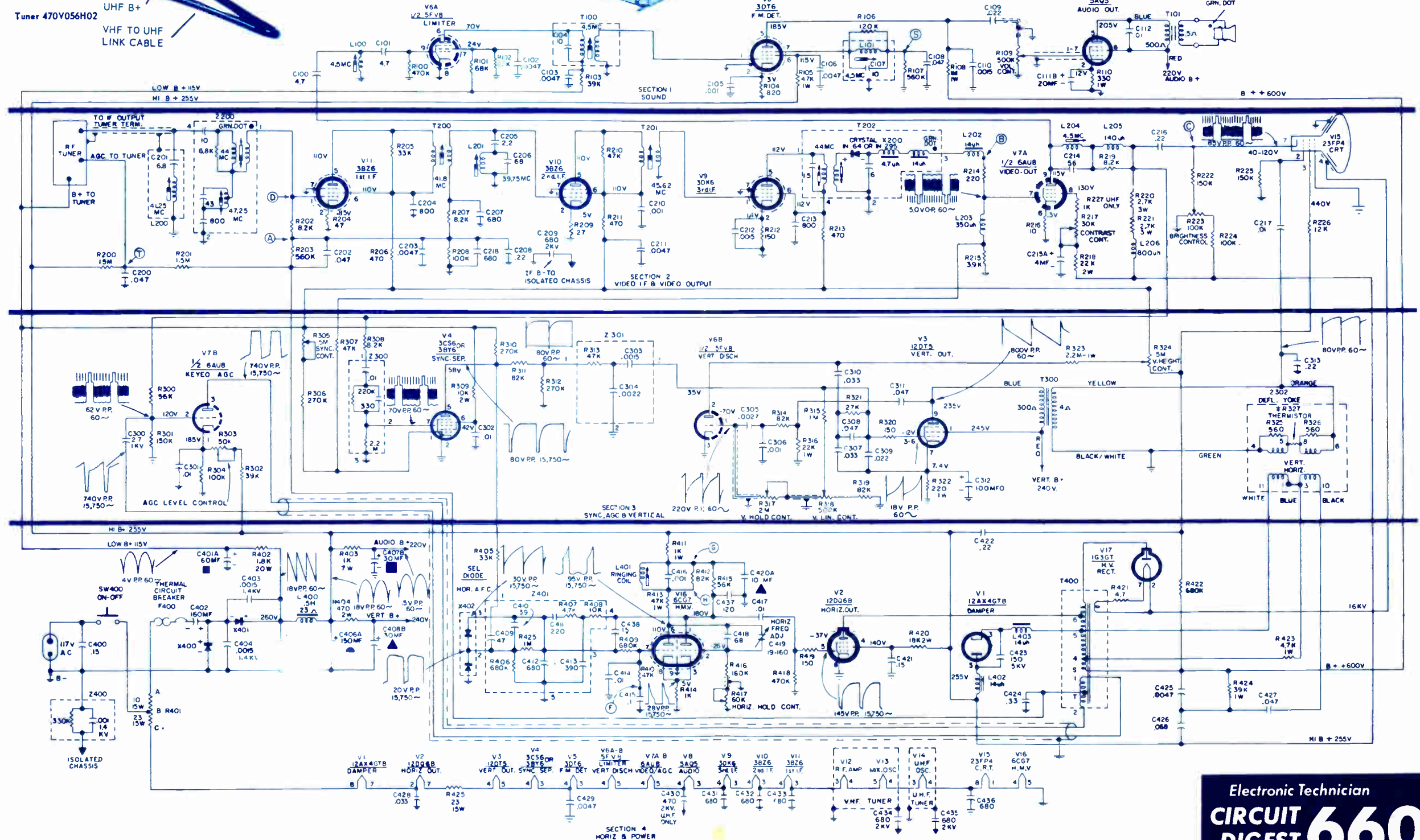
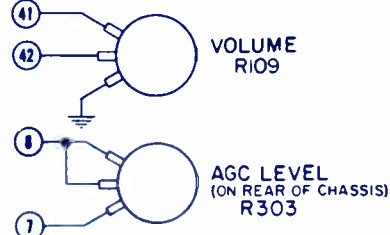
KEY TO PC BOARD LAYOUT



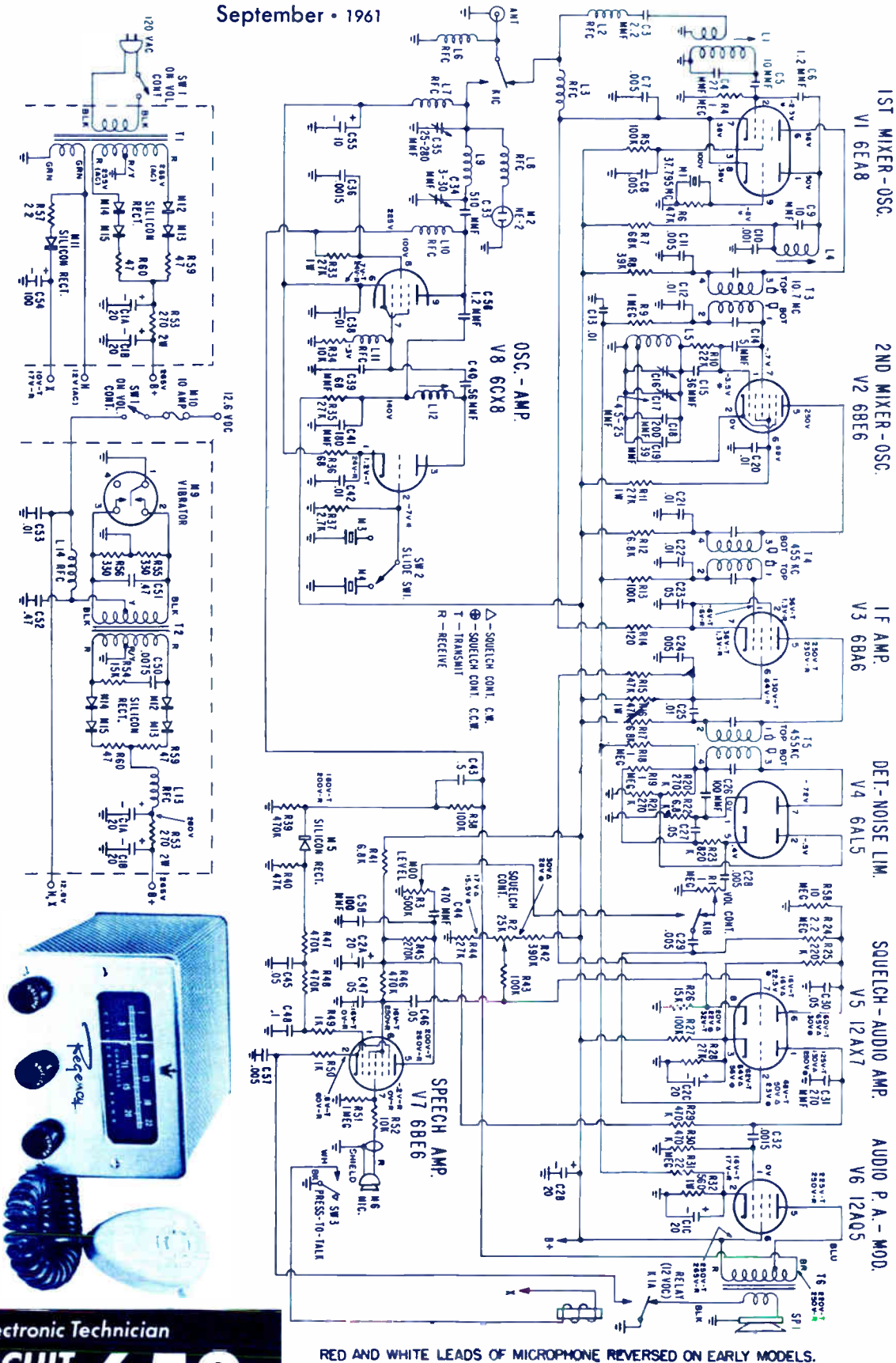
CONTROL WIRING DIAGRAM



All views seen from rear.



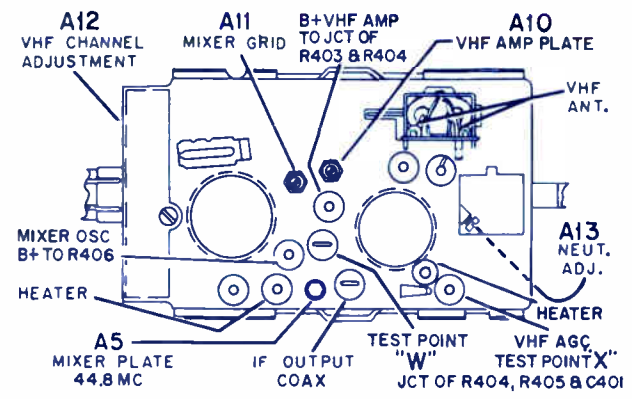
September • 1961



ADMIRAL
TV Chassis 16A9 & 16A9U

Electronic Technician
CIRCUIT DIGEST
657

More Data on Reverse Side

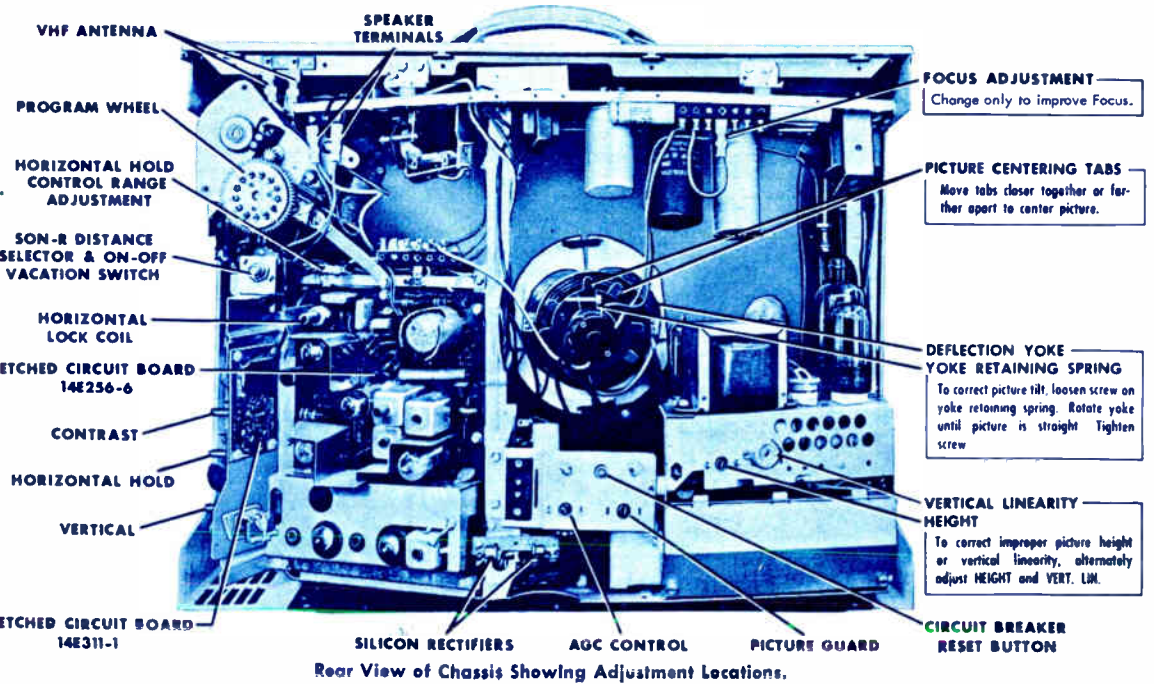
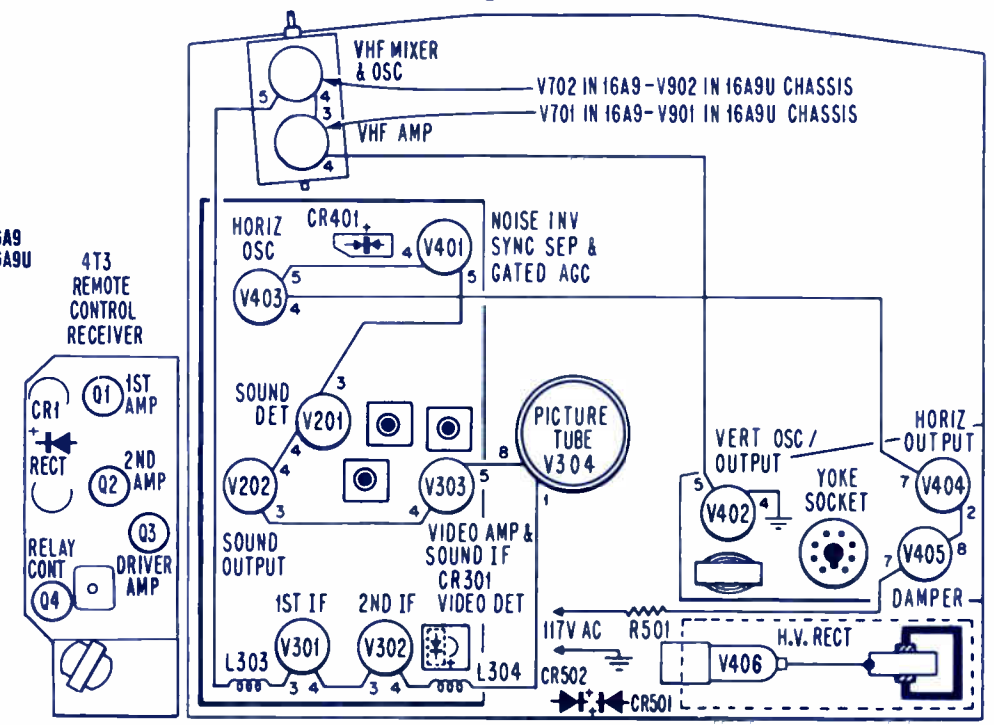


Top View of VHF Tuner

Heater String and Tube Locations

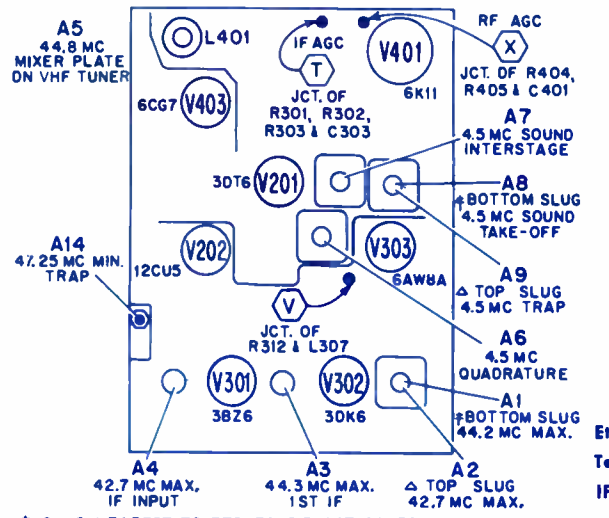
16A9, 16A9U

- V701—2GK5 in 16A9
- V901—2FQ5A in 16A9U
- V702—5CG8 or 5CG8A in 16A9
- V902—5CG8 or 5CG8A in 16A9U
- V201—3DT6
- V202—12CU5
- V301—3BZ6
- V302—3DK6
- V303—6AW8A
- V304—19XP4
- V401—6K11 or 6Q11
- V402—10DE7
- V403—6CG7 or 6FQ7
- V404—12DQ6A
- V405—12AX4GT/A/B
- V406—1G3GT or 1K3
- CR301—1N87A (Crystal Diode)
- CR401—93B5-6 (Dual Selenium Diode)
- CR501 & CR502—93B12-1 (Silicon Diode)
- CR1—93B24-1
- Q1 through Q3—57D1-69
- Q4—57D1-70

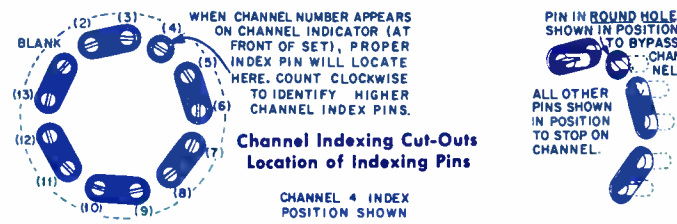


Rear View of Chassis Showing Adjustment Locations.

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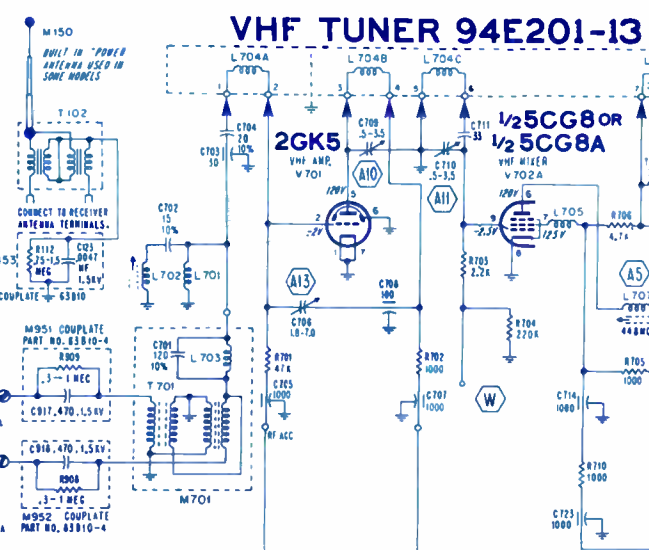


Etched Circuit Board Showing Test Point Locations and IF Alignment Data.



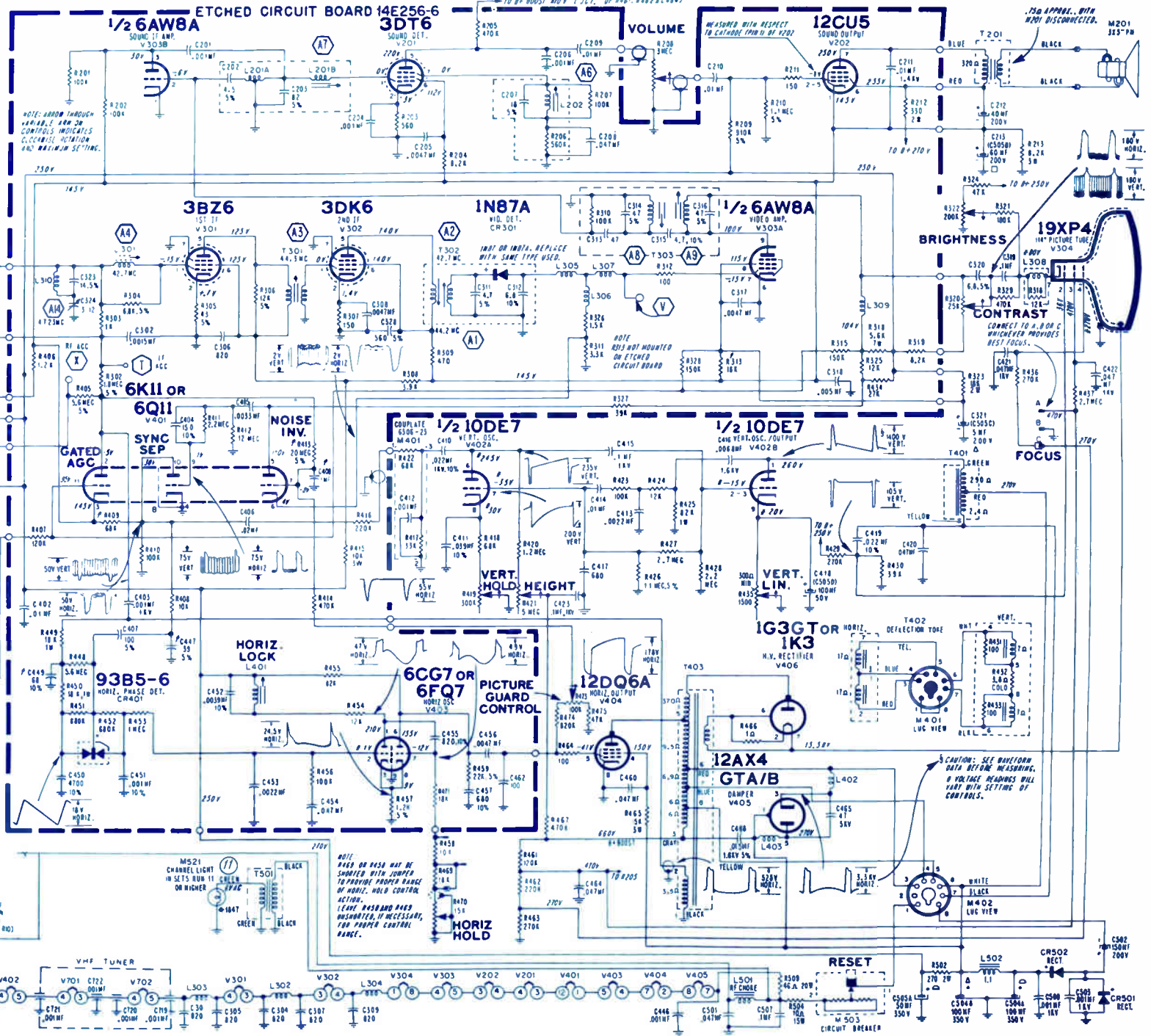
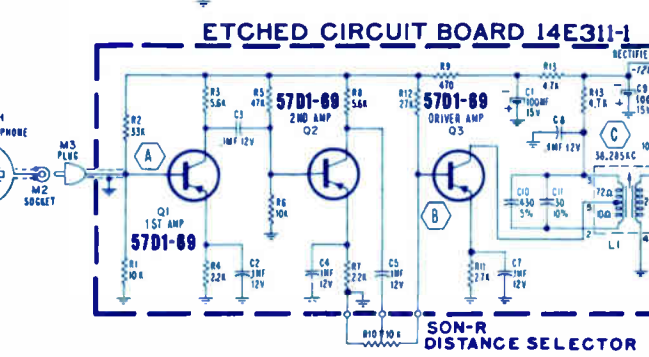
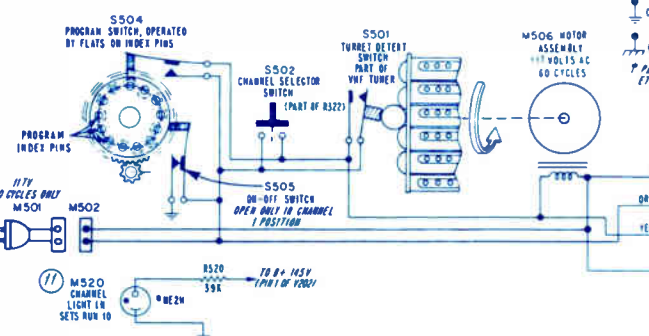
Channel Indexing Pins. Adjustment Positions Shown.

† SLUG NEAREST TO ETCHED CIRCUIT BOARD
△ SLUG FARTHEST FROM ETCHED CIRCUIT BOARD



RUN CHANGES

Start of production.
M520 (neon) channel light replaced with M521 (filament) light and T501 transformer.



More Data on Reverse Side

Special Full-Width Spring Binder Holds 24 Groups of Electronic Technician's Circuit Digests Available @ \$2.95

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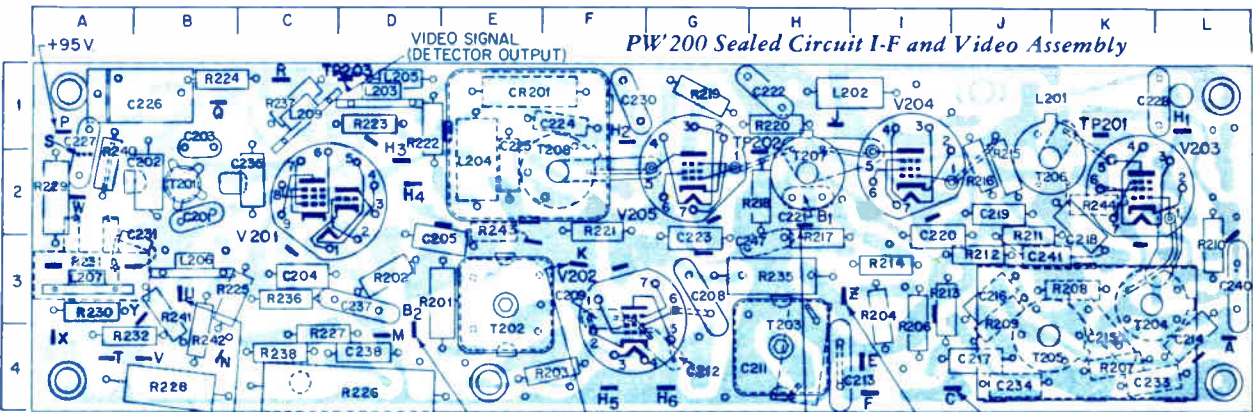
CIRCUIT DIGESTS

In This Issue (No. 110)

Circuit Digest Schematic No.

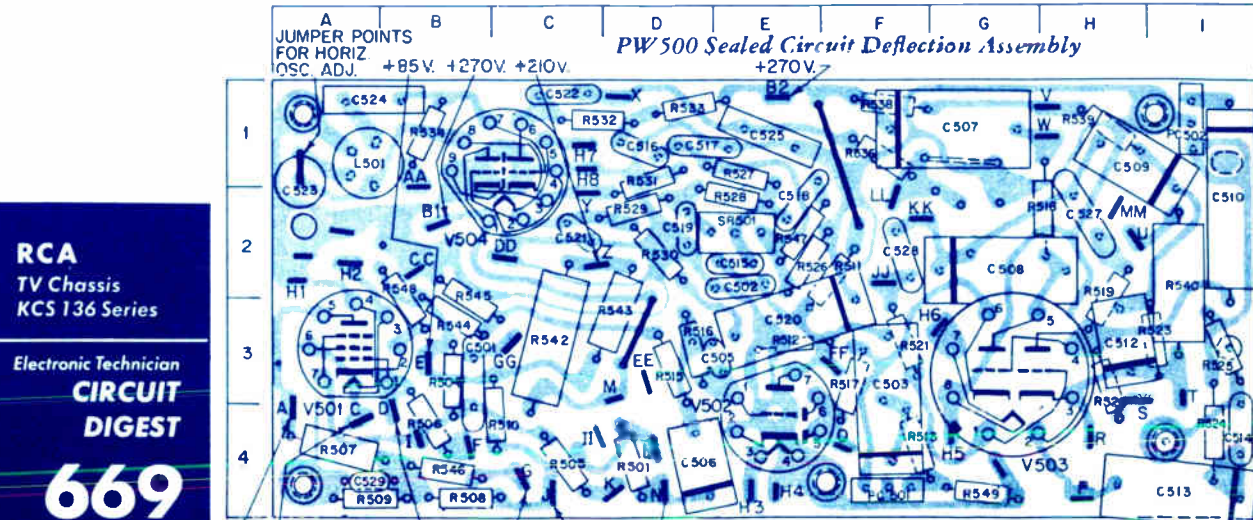
DUMONT TV Chassis 120600-A, 120601-A	663	RCA TV Chassis KCS 136 Series	669
GAMBLE-SKOGMO TV Chassis TV2-9620A	665	SONY Transistor TV Model 8-301	667
LAFAYETTE RADIO Citizens Band Radio Model HE-20A	666	SYLVANIA Transistor Radio Chassis 682-1, -2, -3 Model 4P19 Series	668
MOTOROLA Auto Radio 1961 Plymouth Model MoPar 109	664		

GROUP
110



VIDEO SIGNAL (KINE CATHODE)				+270V.				+210V.				+270V.				+85V.				-5V. AGC (NOMINAL)																																																																																																																																																																											
C201	B2	C216	J3	C228	L1	CR201	E1	R202	D3	R215	J2	R227	C4	R242	B4	C202	B2	C217	J4	C230	F1	L201	J1	R203	F4	R216	J2	R228	B4	R243	E2	C203	B1	C218	K2	C231	B3	L202	D1	R204	I3	R217	H3	R229	A2	R244	K2	C204	C3	C219	J2	C233	L4	L203	D1	R206	I3	R218	H2	R230	A3			C205	D2	C220	I2	C234	J4	L204	E2	R207	K4	R219	G1	R231	A3	T201	B2	C208	G3	C221	H2	C235	C2	L205	D1	R208	K3	R220	H1	R232	A4	T202	E3	C209	F3	C222	H1	C237	D3	L206	B3	R209	J3	R221	F2	R235	H3	T203	H4	C211	H4	C223	G2	C238	D4	L207	B3	R210	L3	R222	D1	R236	C3	T204	K3	C212	G4	C224	F1	C240	L3	L207	A3	R211	J2	R223	D1	R237	C1	T205	K4	C213	H4	C225	E2	C241	J3	L209	C1	R212	J3	R224	B1	R238	C4	T206	K2	C214	L4	C226	B1	C247	H3	L209	C1	R213	I3	R225	B3	R240	A2	T207	H2	C215	K4	C227	A1	C247	H3	R201	E3	R214	I3	R226	D4	R241	B3	T208	F2

*In TV-only models; jumpered in combination models. †In TV-only models; omitted in combination models. ‡In chassis without auto-brite; omitted in chassis with auto-brite. §In chassis with auto-brite; jumpered in chassis without auto-brite. ¶In chassis with auto-brite; omitted in chassis without auto-brite.



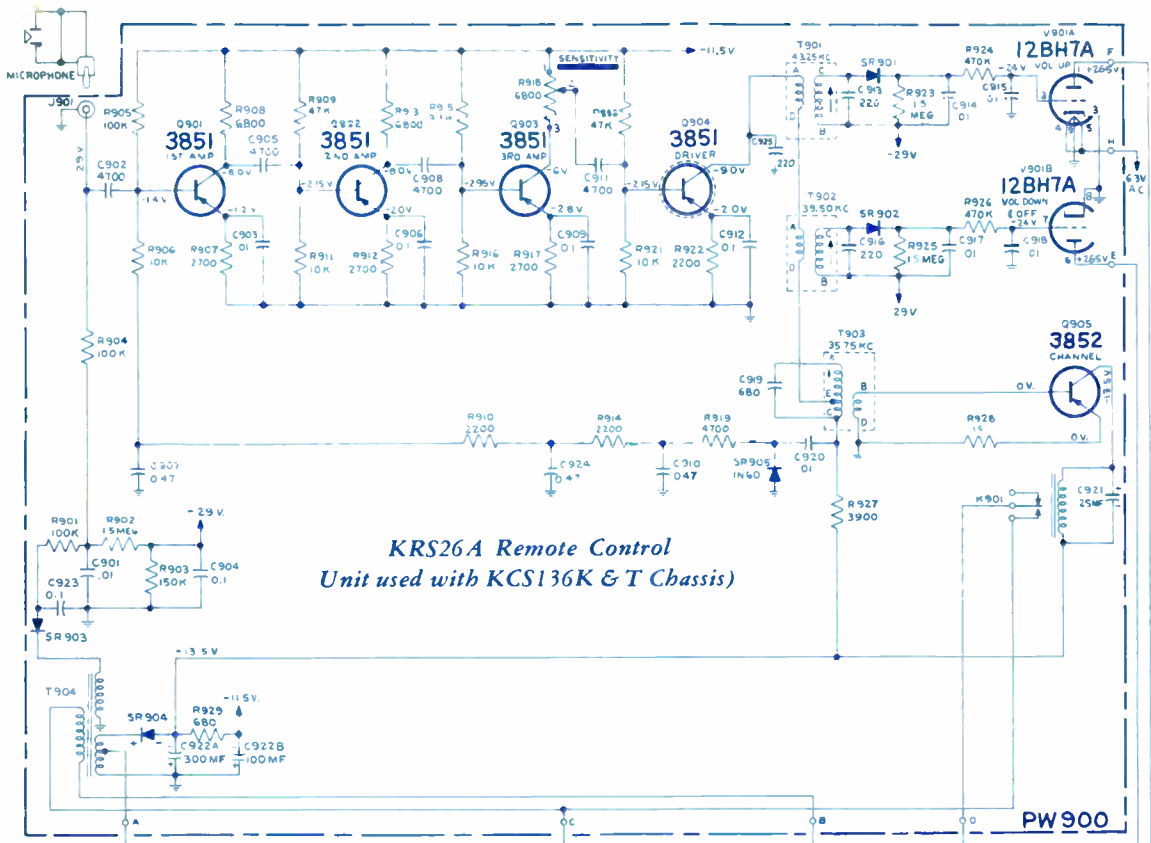
RCA
TV Chassis
KCS 136 Series

Electronic Technician
CIRCUIT DIGEST
669

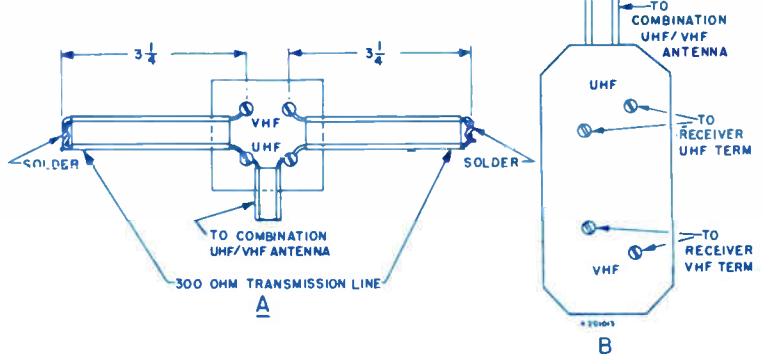
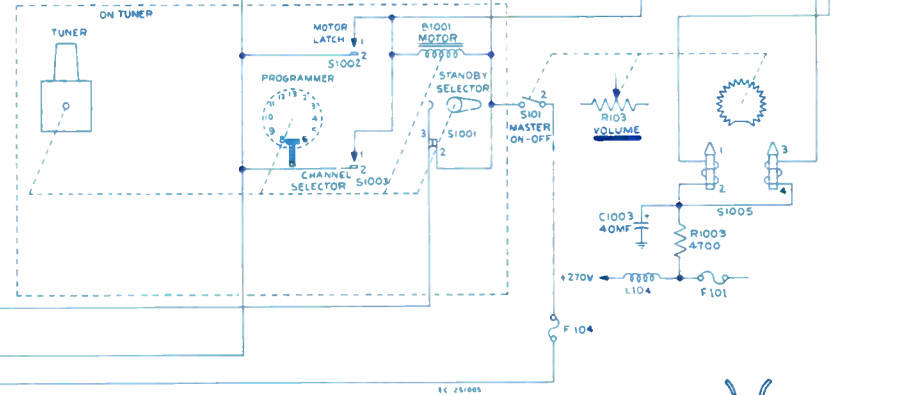
PW500 COMPONENT LOCATION GUIDE

C501	B3	C513	I4	C523	A1	PC502	I1	R511	F2	R523	I3	R533	D1	R546	B4
C502	E2	C514	I4	C524	A1	R501	D4	R512	E3	R524	I4	R534	B1	R547	E2
C503	F3	C515	E2	C525	E1	R504	B3	R513	F4	R525	I3	R536	F1	R548	B2
C505	D3	C516	D1	C527	H2	R505	C4	R515	D3	R526	E2	R538	F1	R549	G4
C506	D4	C517	D1	C528	F2	R506	B4	R516	D3	R527	E1	R539	H1		
C507	G1	C518	E2	C529	A4	R507	A4	R517	F3	R528	E2	R540	I2	SR501	E2
C508	G2	C519	D2			R508	B4	R518	H2	R529	D2	R542	C3		
C509	H1	C520	E3	L501	A1	R509	A4	R519	H2	R530	D2	R543	D3		
C510	I2	C521	C2			R510	C4	R520	H3	R531	D1	R544	B3		
C512	H3	C522	C1	PC501	F4			R521	F3	R532	C1	R545	B2		

‡In chassis without auto-brite; omitted in chassis with auto-brite.



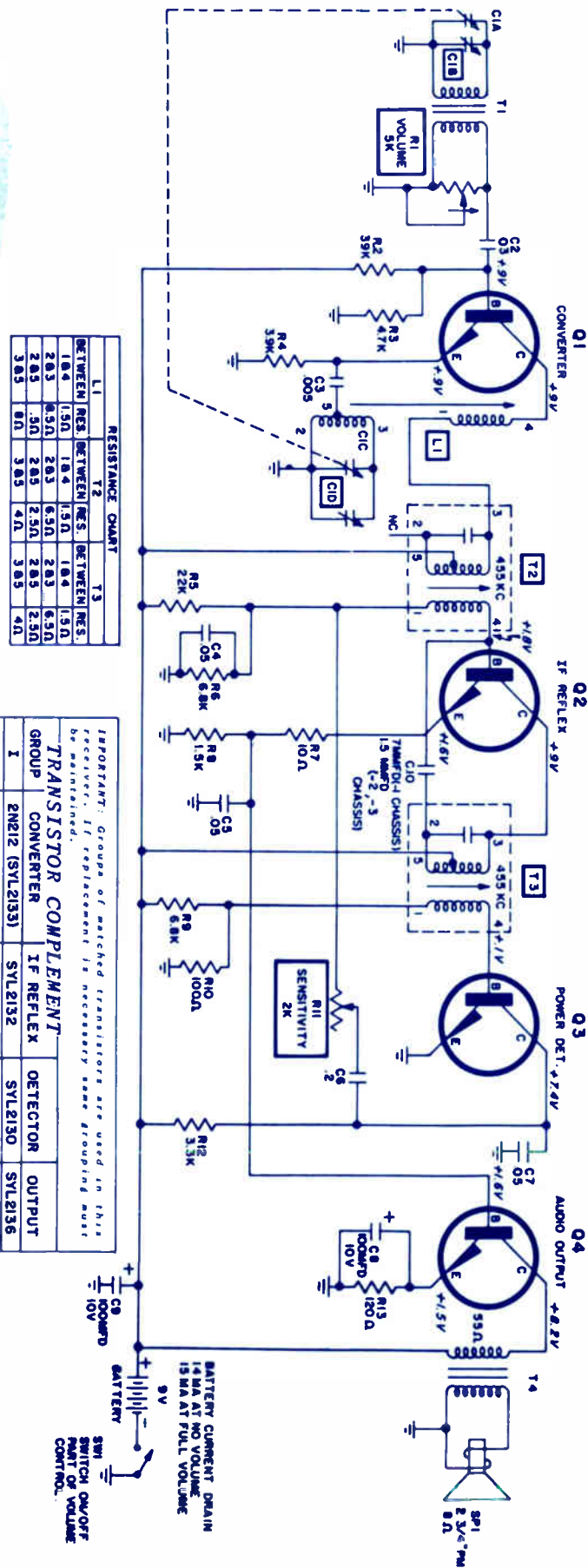
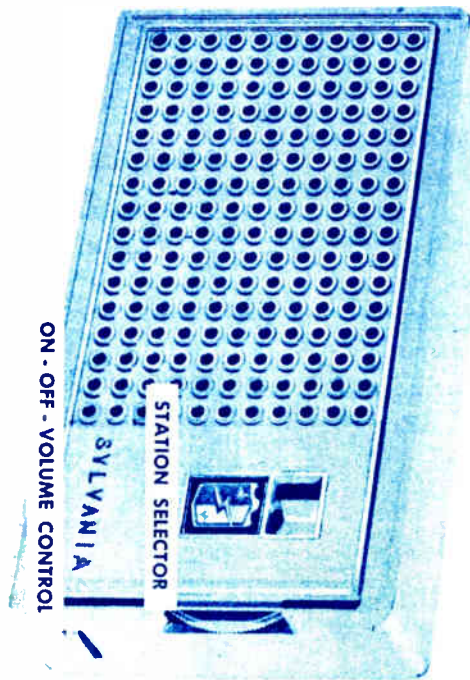
More Data on Reverse Side



RCA
TV Chassis
KCS 136 Series

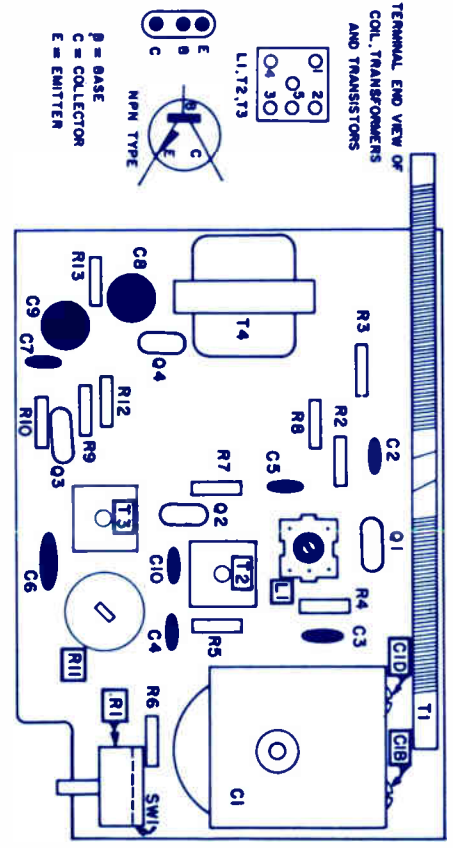
Electronic Technician
CIRCUIT DIGEST
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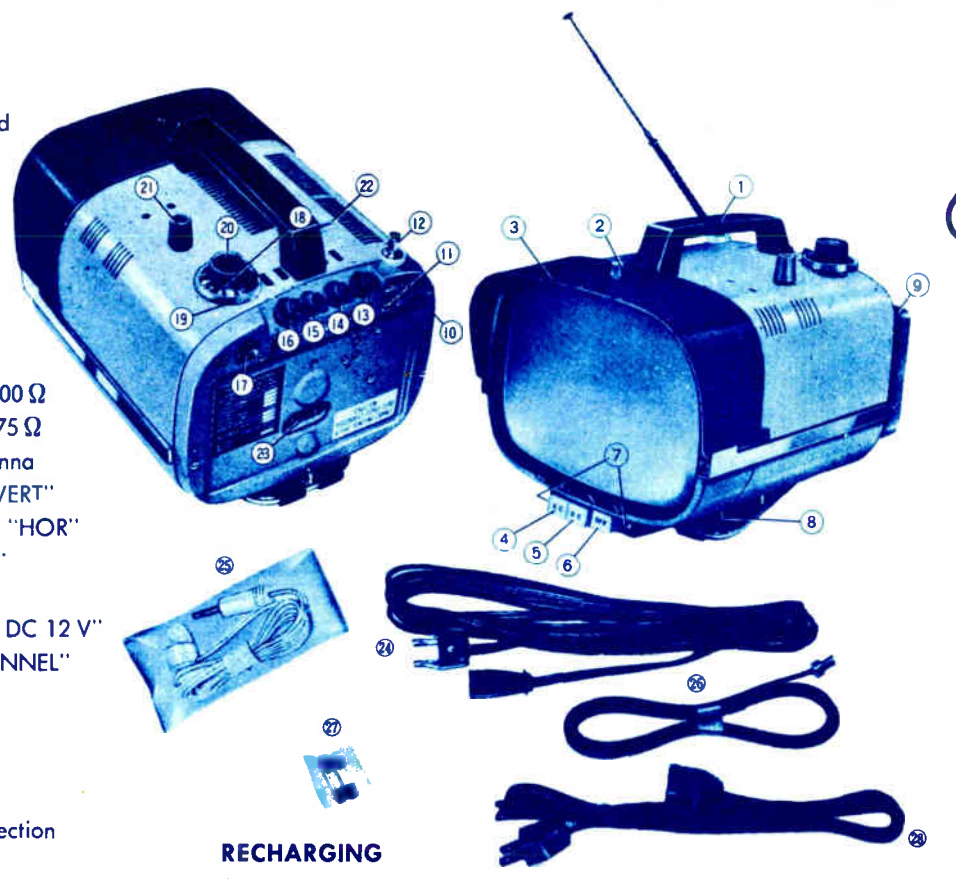


L1	T2	T3
BETWEEN RES.	BETWEEN RES.	BETWEEN RES.
10.4	1.9A	1.9A
2.03	2.03	2.03
2.05	5.0	2.5A
3.05	0.1	3.05
	4.1	4.1

GROUP	CONVERTER	IF REFLEX	DETECTOR	OUTPUT
I	2N212 (SYL2133)	SYL2132	SYL2130	SYL2136
II	2N212 (SYL2133)	SYL2132	SYL2131	SYL2134
III	2N212 (SYL2133)	SYL2131	SYL2131	SYL2135



- Carrying handle
- Securing screw for hood
- Hood
- AC button "AC"
- DC button "DC"
- Off button "OFF"
- Farphone jacks
- Speaker
- Battery case
- External antenna jack 300 Ω
- External antenna jack 75 Ω
- Built-in telescopic antenna
- Vertical hold control "VERT"
- Horizontal hold control "HOR"
- Brightness control, "BRT"
- Gain control, "GAIN"
- Connector prongs, "AC DC 12 V"
- Channel selector, "CHANNEL"
- Fine tuning control
- Pilot lamp
- Volume control, "VOL"
- Charge lamp
- Prongs for battery connection
- AC cord
- Earphone, cord, and plug
- Feeder with plug for external antenna
- Fuse (0.4 A)
- Extension cord for AC line



RECHARGING

Connect the battery to the set and insert the plug with four holes of the AC cord into the connector prongs of the set and the other plug into the AC outlet. Press the buttons "AC" (4) and "OFF" (6) simultaneously as shown in the figure.



The set can not be operated for TV reception in this condition. Required time to accomplish recharge is as follows:

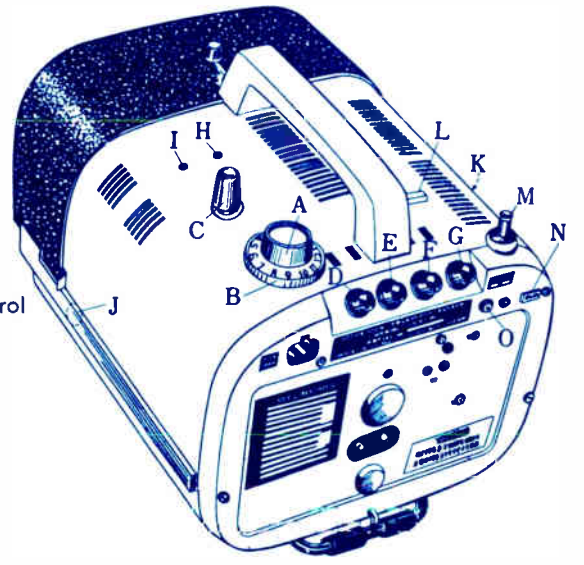
If the battery is used	Recharge time
1 hour	3.5 hours
2 hours	7 hours
3 hours	10 hours

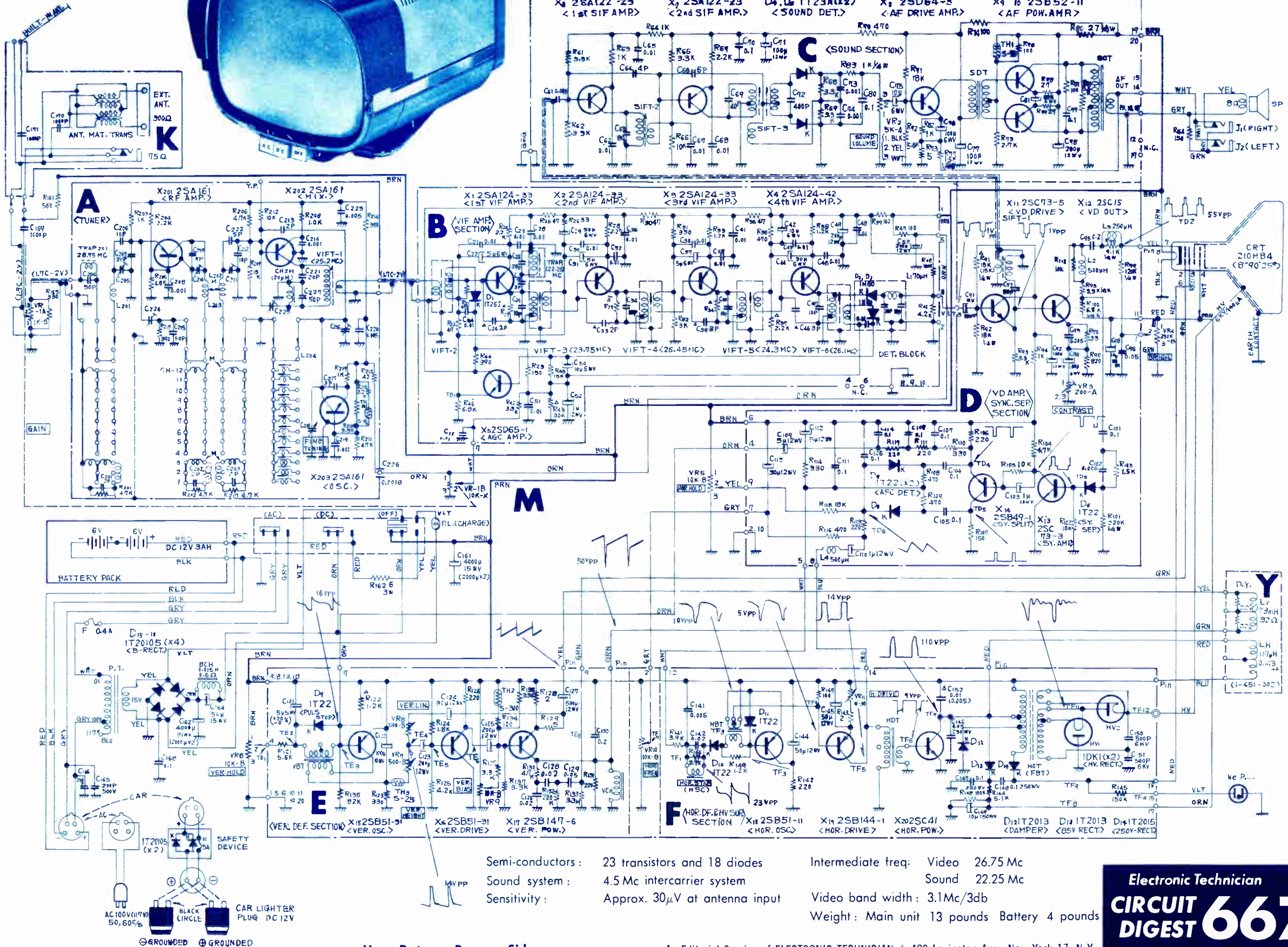
To stop recharge, press the button "OFF" (6).

SONY
Transistor TV
Model 8-301

Electronic Technician
CIRCUIT DIGEST
667

- A "CHANNEL" Channel selector
- B Fine tuning control
- C "VOL" Volume control
- D "GAIN" Gain control
- E "BRT" Brightness control
- F "HOR" Horizontal hold control
- G "VER" Vertical hold control
- H Vertical linearity control
- I Height control
- J Horizontal sweep frequency control
- K Horizontal drive control
- L Charge lamp
- M Built-in telescopic antenna
- N External antenna jack 300 Ω
- O External antenna jack 75 Ω

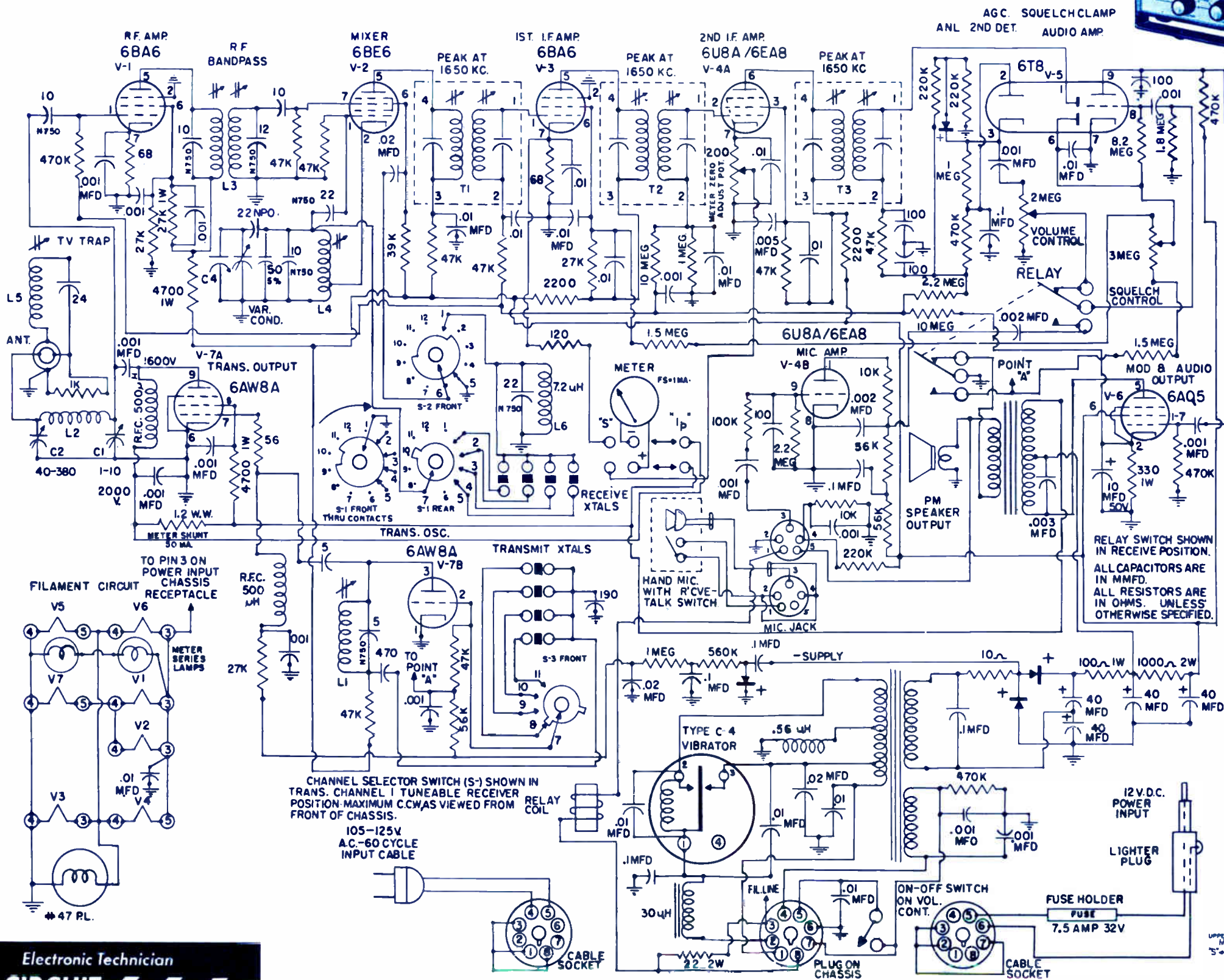
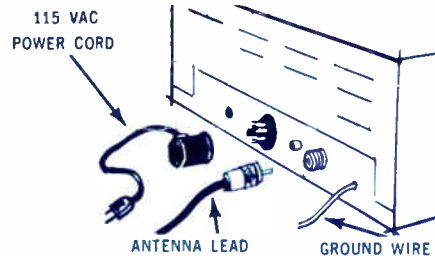




Semi-conductors : 23 transistors and 18 diodes
 Sound system : 4.5 Mc intercarrier system
 Sensitivity : Approx. 30 μ V at antenna input
 Intermediate freq: Video 26.75 Mc
 Sound 22.25 Mc
 Video band width : 3.1Mc/3db
 Weight : Main unit 13 pounds Battery 4 pounds

More Data on Reverse Side

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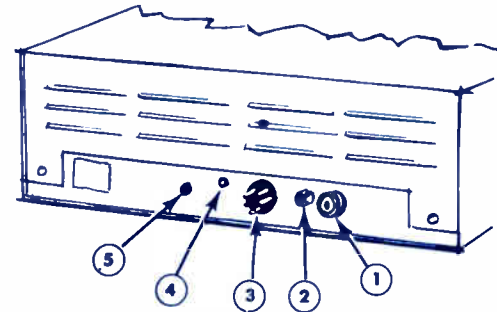


RECEIVER

Sensitivity—1 μ volt
Image Rejection—45db
Selectivity \pm 3 kc a 6 db
IF Frequency 1650 KC
Noise Limiter—Series Gate
Audio Output—3 watts

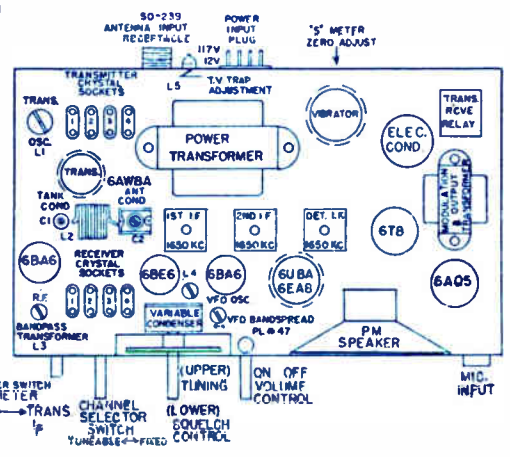
TRANSMITTER

Oscillator using 3rd Overtone crystal control.
Input Power—5 watts,
Amplitude Modulation
Pi-Network Output



REAR APRON

- 1 ANTENNA CONNECTOR—For insertion of antenna cable terminated in a PL-259 connector as described in the section on antennas.
- 2 T. V. INTERFERENCE TRAP—For suppression of Television Interference. If this trouble occurs, see the section on TV Interference.
- 3 POWER JACK—An Octal Jack to mate with the octal plugs on the ends of the power cables.
- 4 SELF-TAPPING SCREW—For attaching a metal strap to obtain additional support in mobile operation.
- 5 "S" METER ADJUST—To adjust the "S" Meter for 0 reading with the meter switch in "S" position and no antenna connected

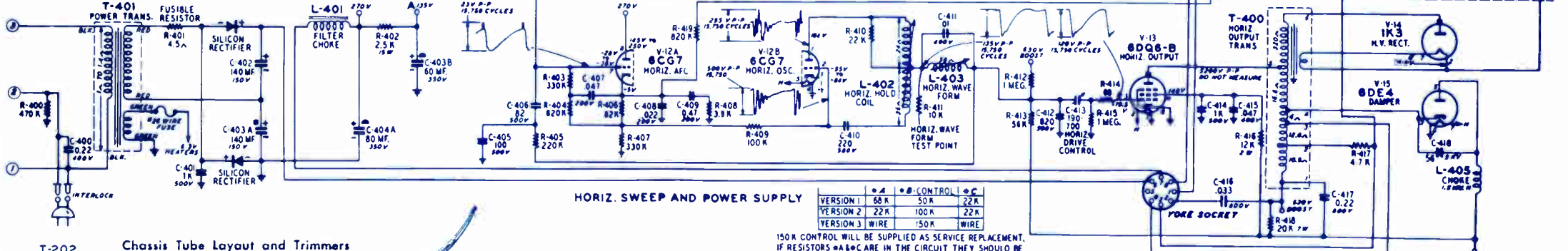
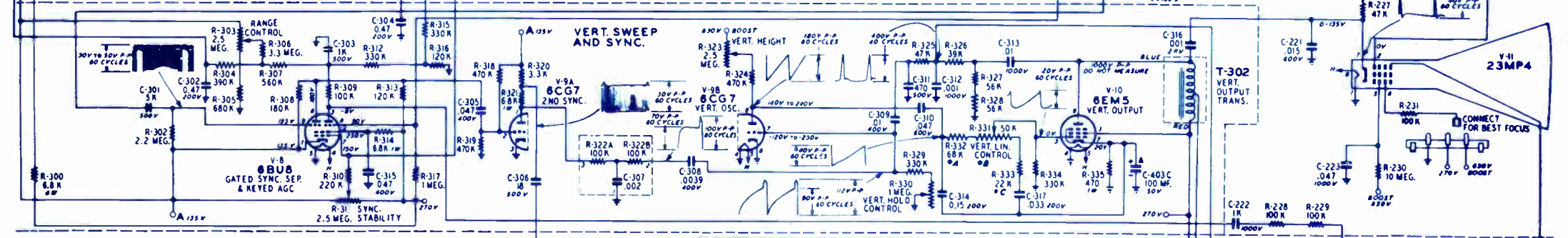
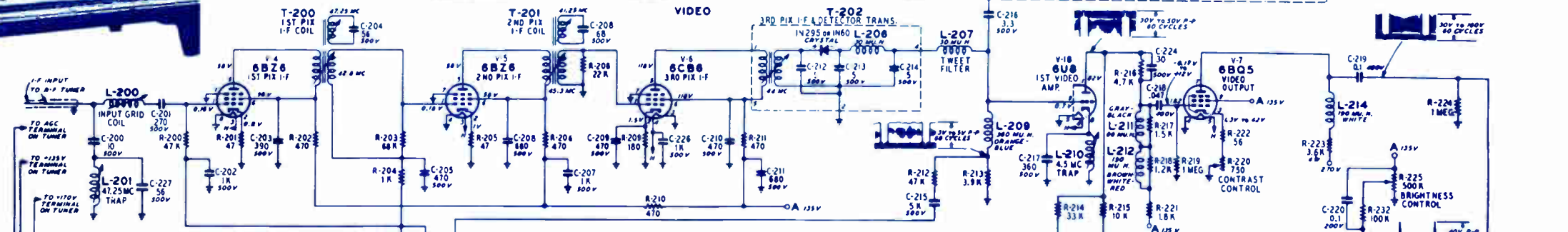
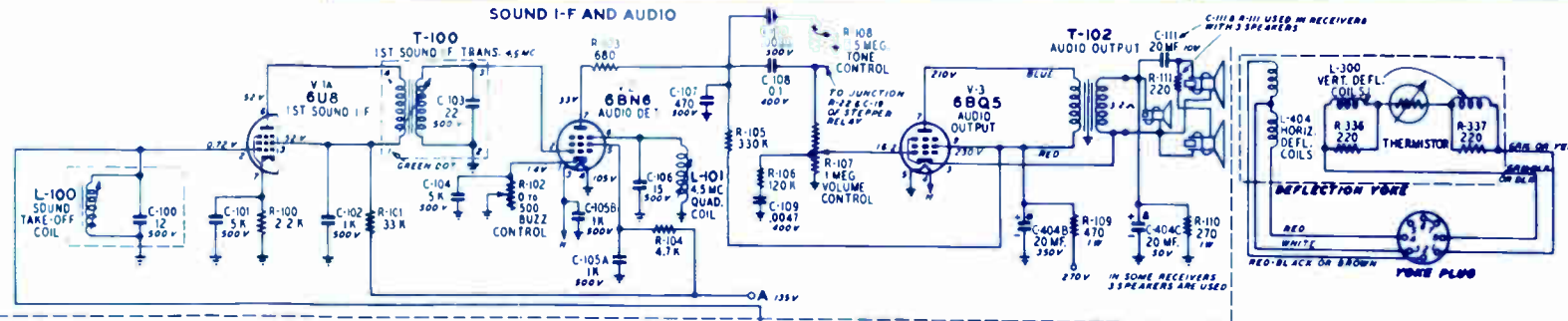


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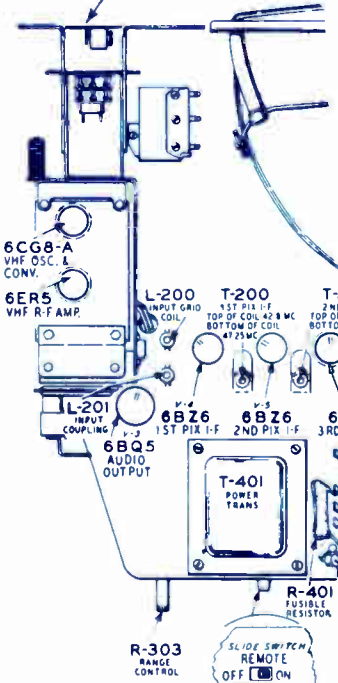
CIRCUIT DIGEST

GAMBLE-SKOGMO
TV Chassis TV2-9620A

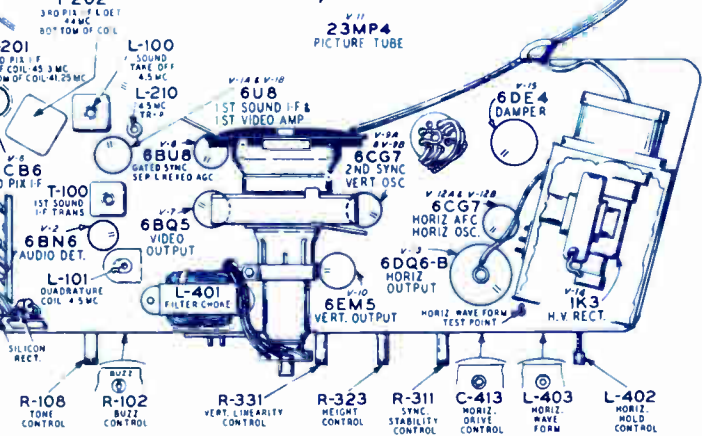
October • 1961



- 2N481 1ST AMP.
- 2N363 EMITTER FOLLOWER
- 2N481 2ND AMP.
- 2N363 EMITTER FOLLOWER
- 2N481 DRIVER AMP.
- 2N632 RELAY CONTROL



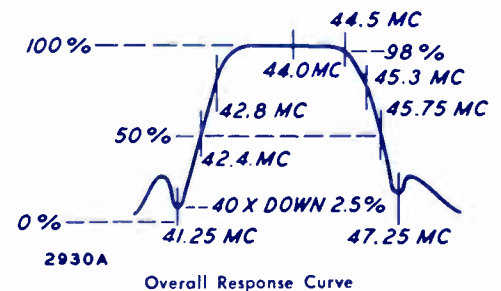
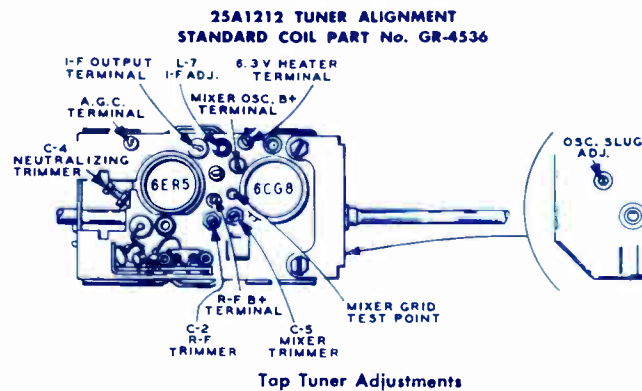
Chassis Tube Layout and Trimmers



HORIZ. SWEEP AND POWER SUPPLY

	A	B	CONTROL	C
VERSION 1	68K	50K	22K	
VERSION 2	22K	100K	22K	
VERSION 3	WIRE	150K	WIRE	

150K CONTROL WILL BE SUPPLIED AS SERVICE REPLACEMENT. IF RESISTORS A, B & C ARE IN THE CIRCUIT THEY SHOULD BE SHORTED OUT WHEN THIS CONTROL IS REPLACED.



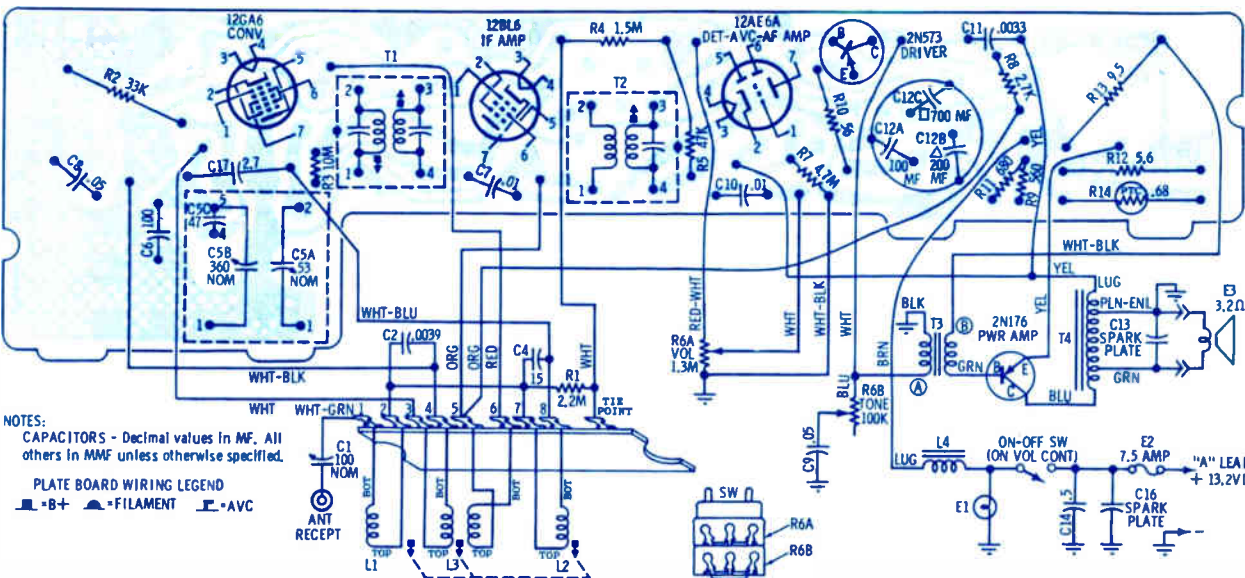
ELECTRONIC TECHNICIAN 664

CIRCUIT DIGEST

MOTOROLA
Auto Radio
1961 Plymouth
Model MoPar 109

More Data on
Reverse Side

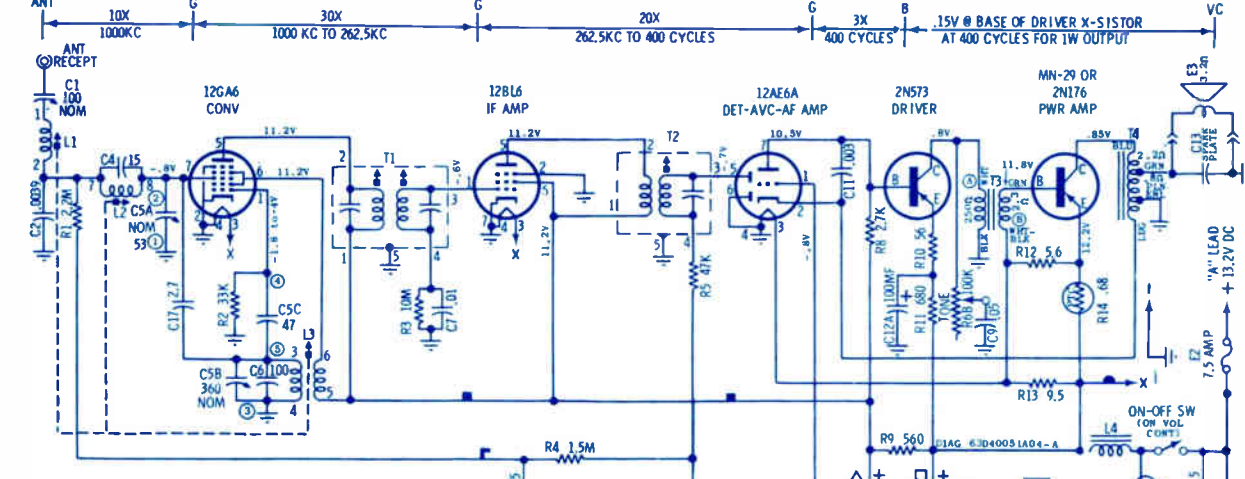
TUBE LOCATION AND
ALIGNMENT POINTS
LEFT - MAIN CHASSIS SECTION
BELOW - POWER SUPPLY CHASSIS



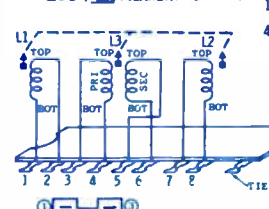
NOTES:
CAPACITORS - Decimal values in MF. All others in MMF unless otherwise specified.

PLATE BOARD WIRING LEGEND
B+ FILAMENT AVC

PLATED CHASSIS BOARD WIRING AS VIEWED FROM BOTTOM SIDE (COMPONENTS SHOWN ARE ON OPPOSITE SIDE).

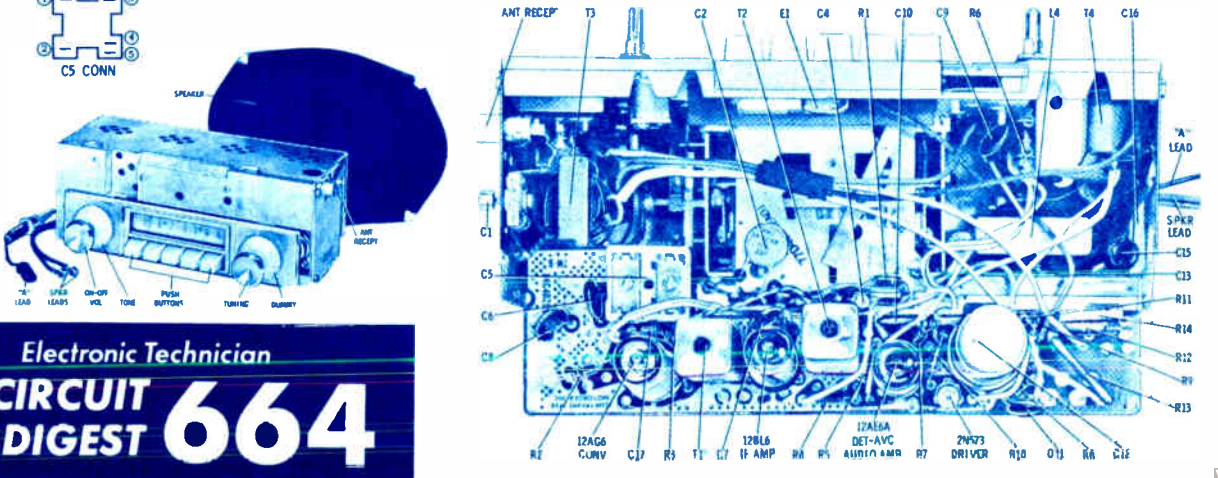


PLATED PANEL WIRING LEGEND
B+ FILAMENT AVC



CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

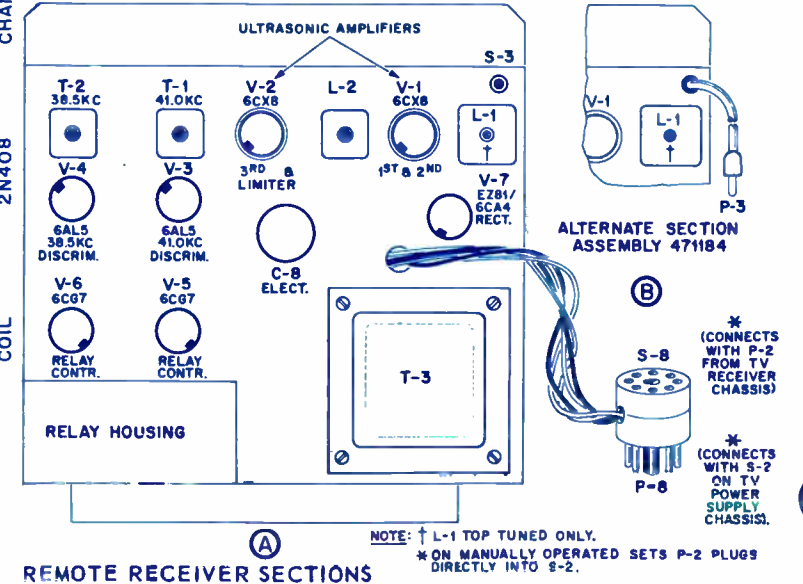
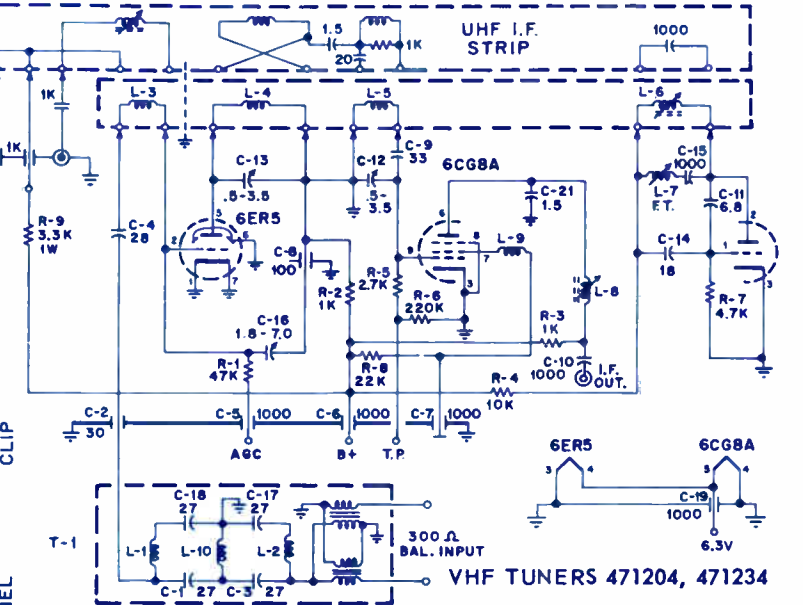
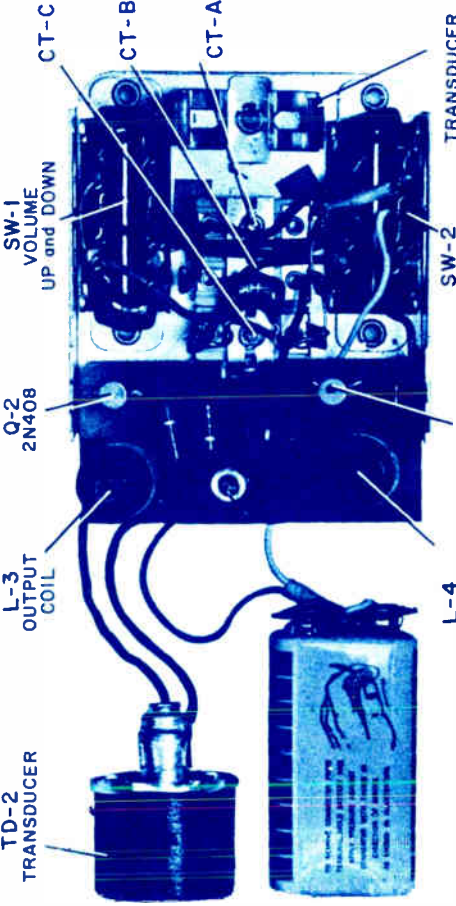
TRANSISTOR CONNECTIONS (LUG VIEW)
2N573 DRIVER, MN-29 OR 2N176 PWR AMP

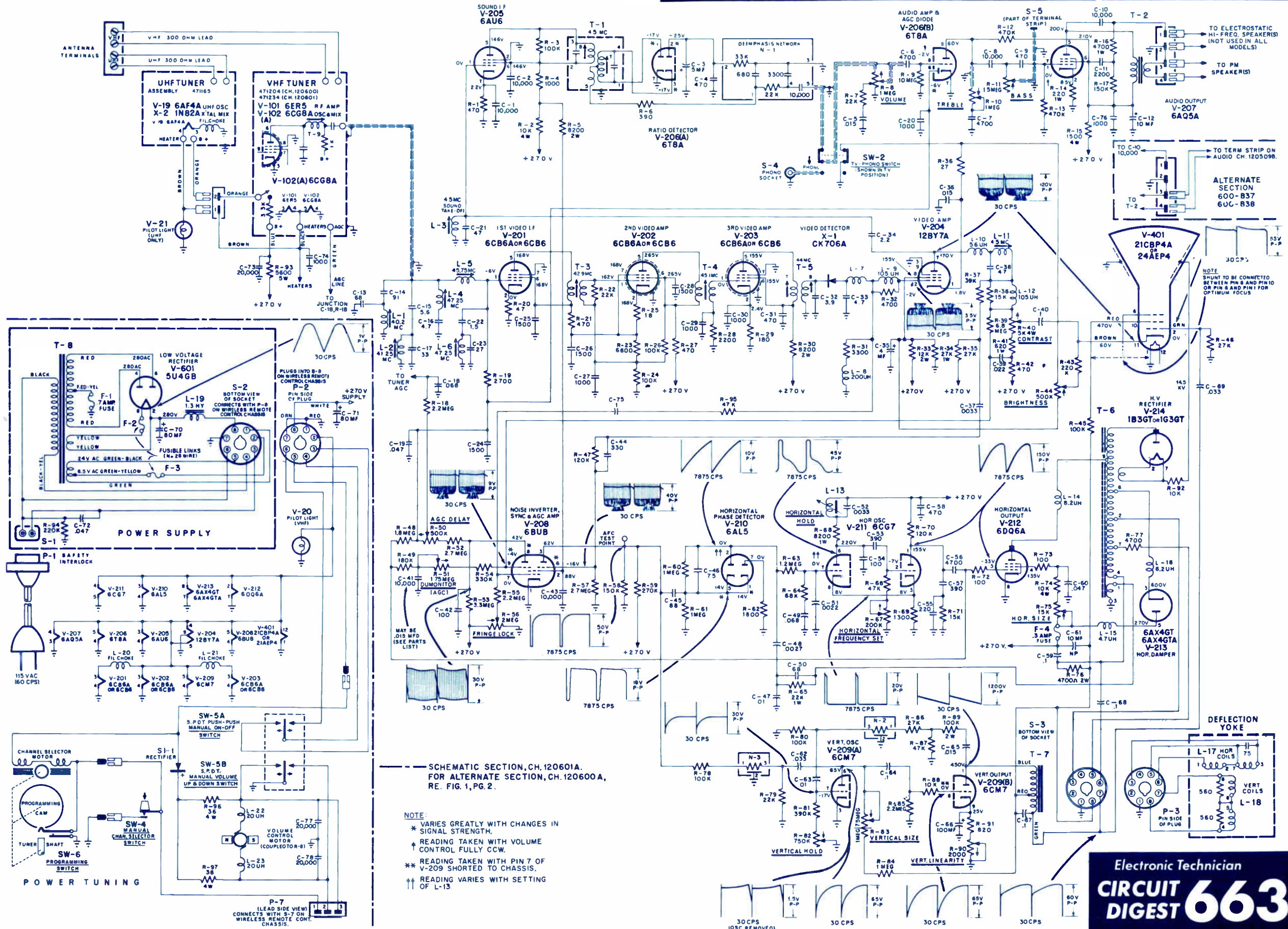


DUMONT TV Chassis 120600-A, 120601-A

Electronic Technician
CIRCUIT DIGEST
663

REMOTE TRANSMITTER ASSEMBLY
COMPONENT LOCATIONS





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CIRCUIT DIGESTS

In This Issue (No. 112)

Circuit Digest Schematic No.

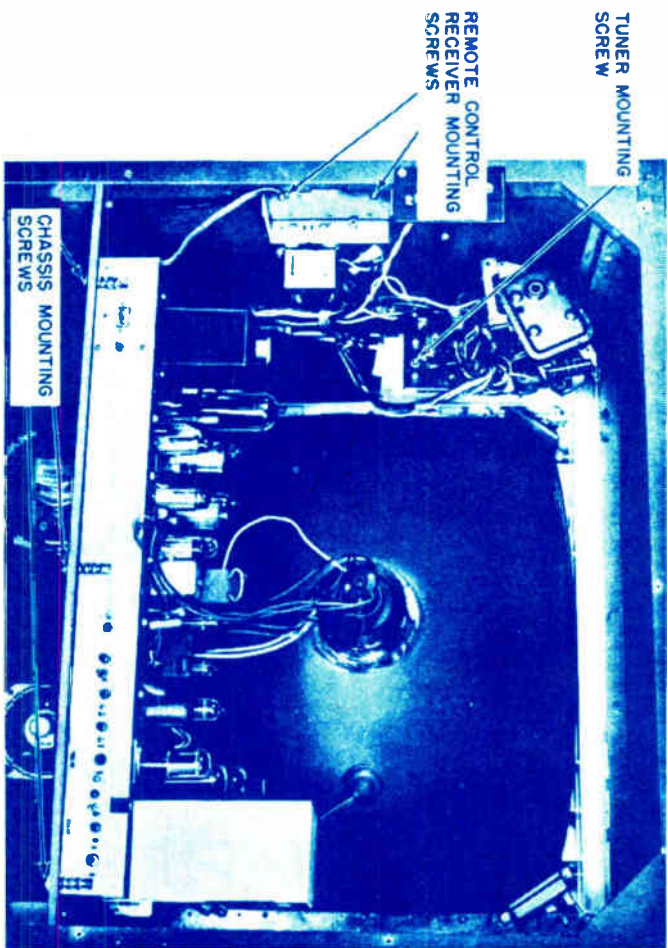
Packard Bell TV Chassis 98D14 & 98D14C 677

Philco TV Chassis 12J27 676

Sylvania TV Chassis 551-1, -2, -3, -5, -6, -7 680

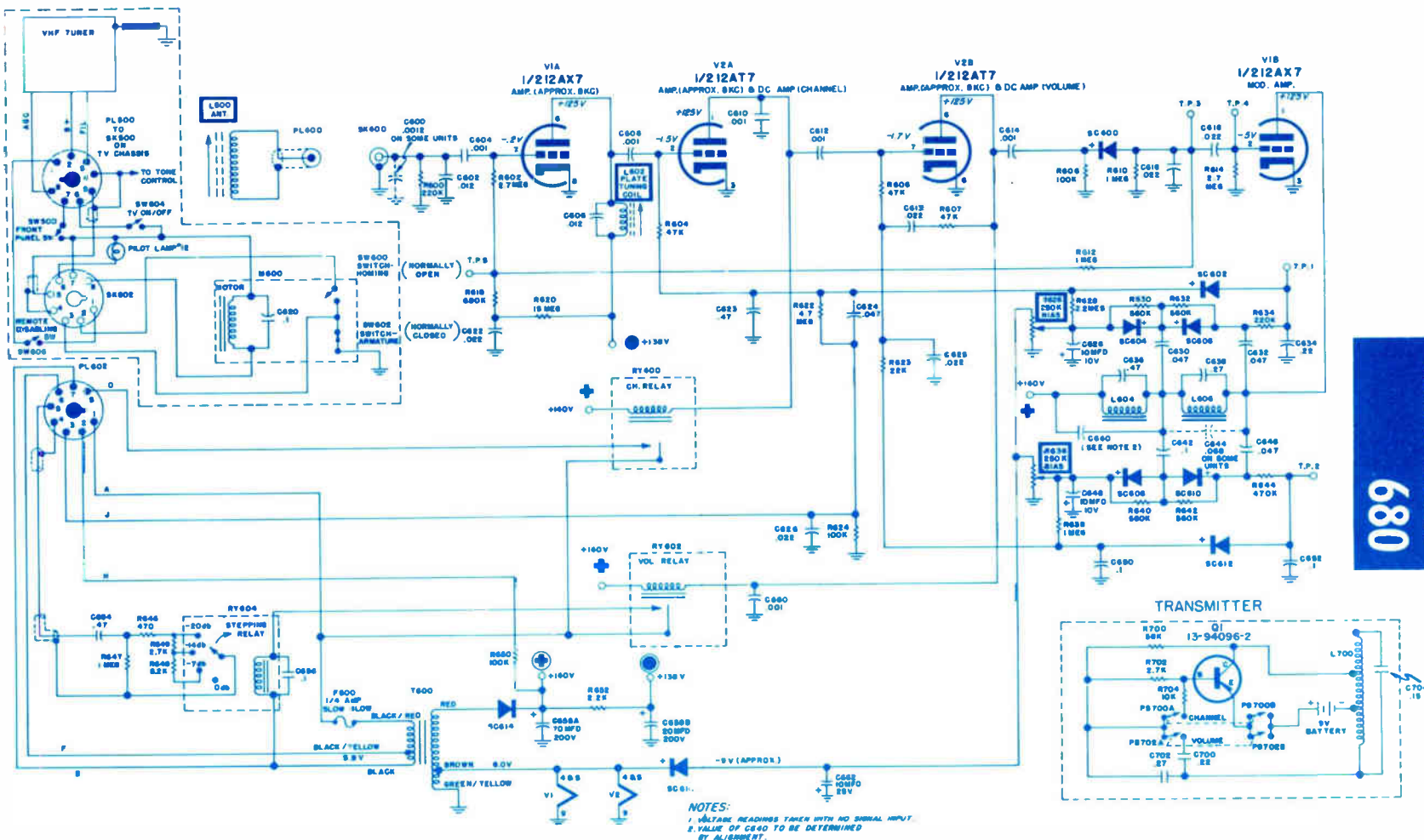
Webcor Tape Recorder Model 2207 678

Westinghouse Transistor Portable Radio Chassis V-2393-4 Models H-790P6 & H-791P6 679



More Data on Reverse Side

REMOTE RECEIVER AND TRANSMITTER



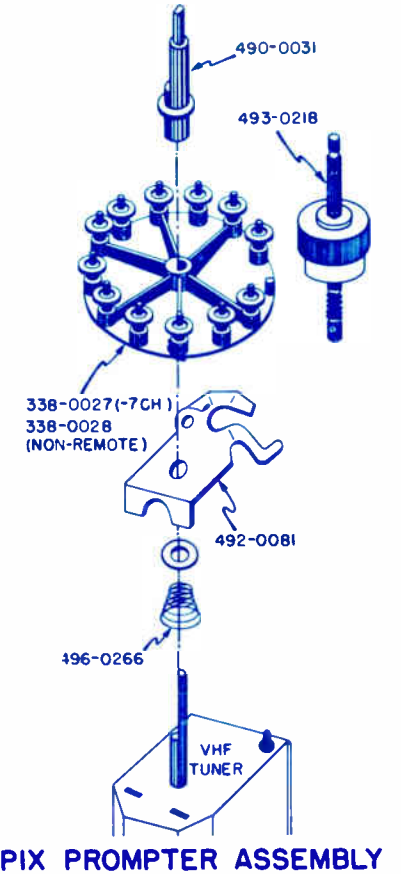
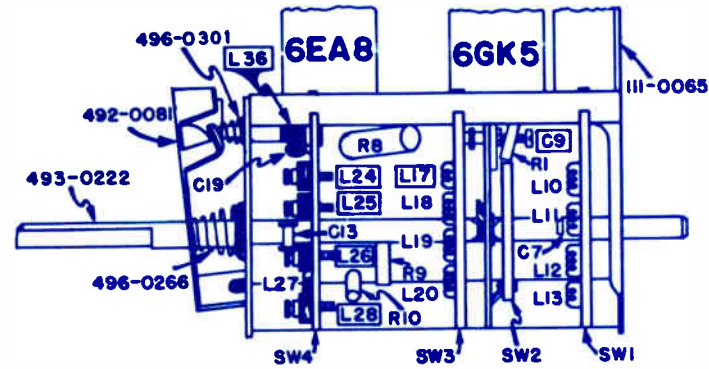
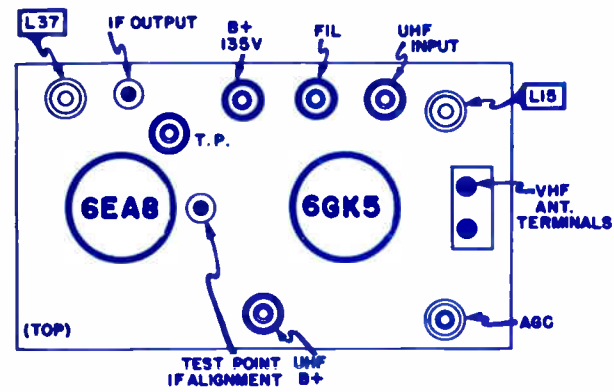
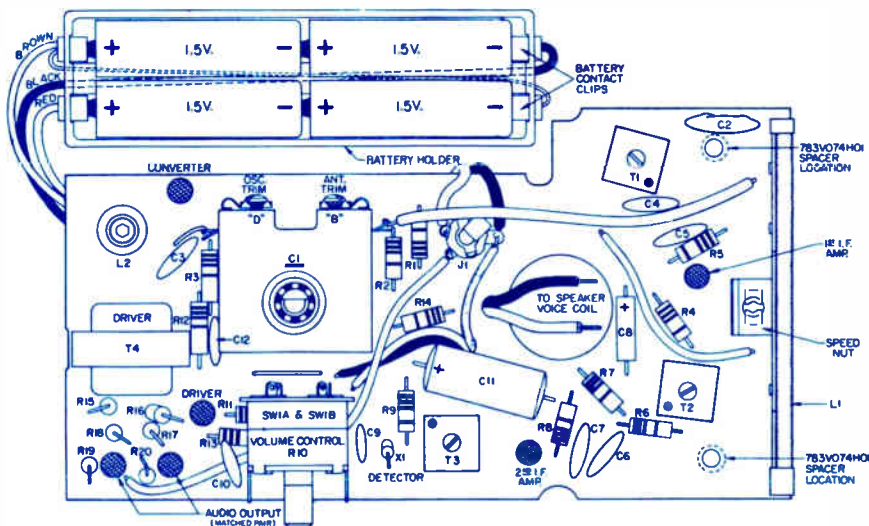
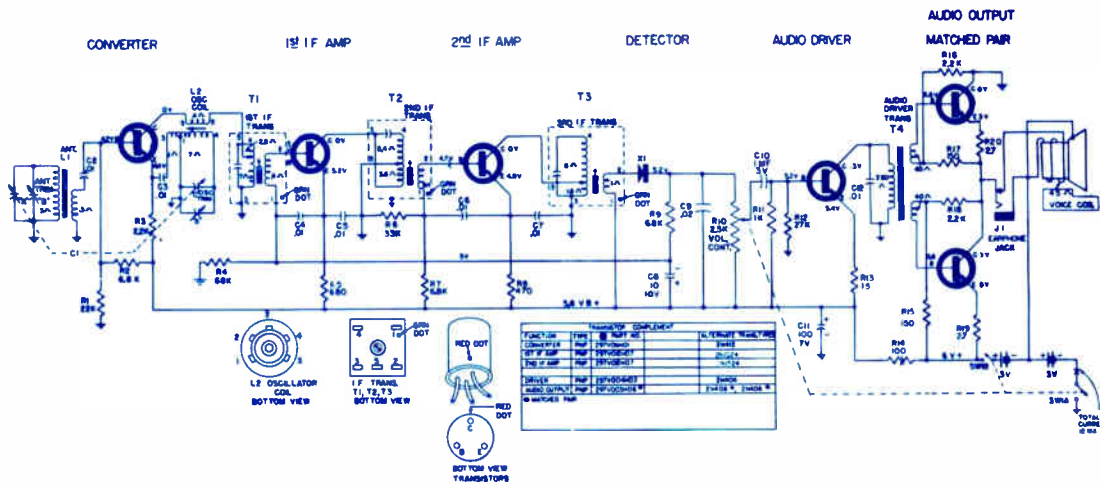
SYLVANIA
 TV Chassis 551-1, -2, -3, -5, -6, -7
 Electronic Technician
CIRCUIT DIGEST
680

More Data on Reverse Side



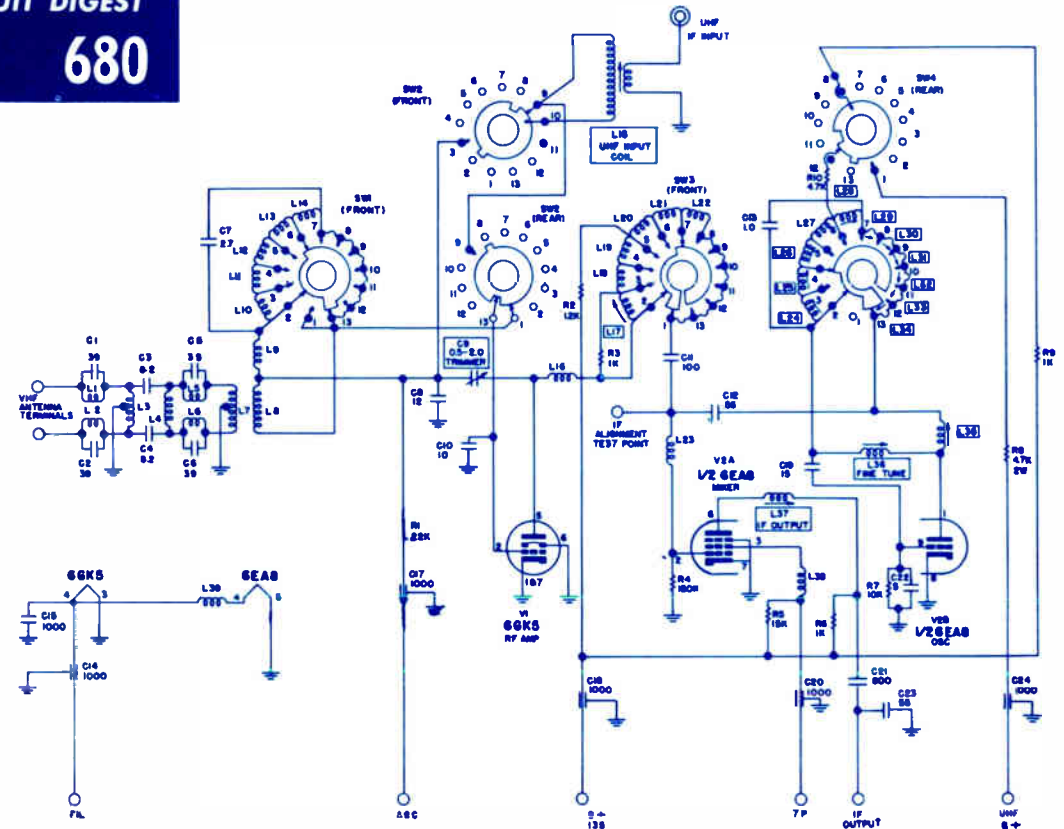
Power Supply: Flashlight Batteries Eveready 915 or 1015 Ray-O-Vac 7LP or 7R Burgess Mallory M15
Mercury Batteries Mallory ZM-9 Eveready E9

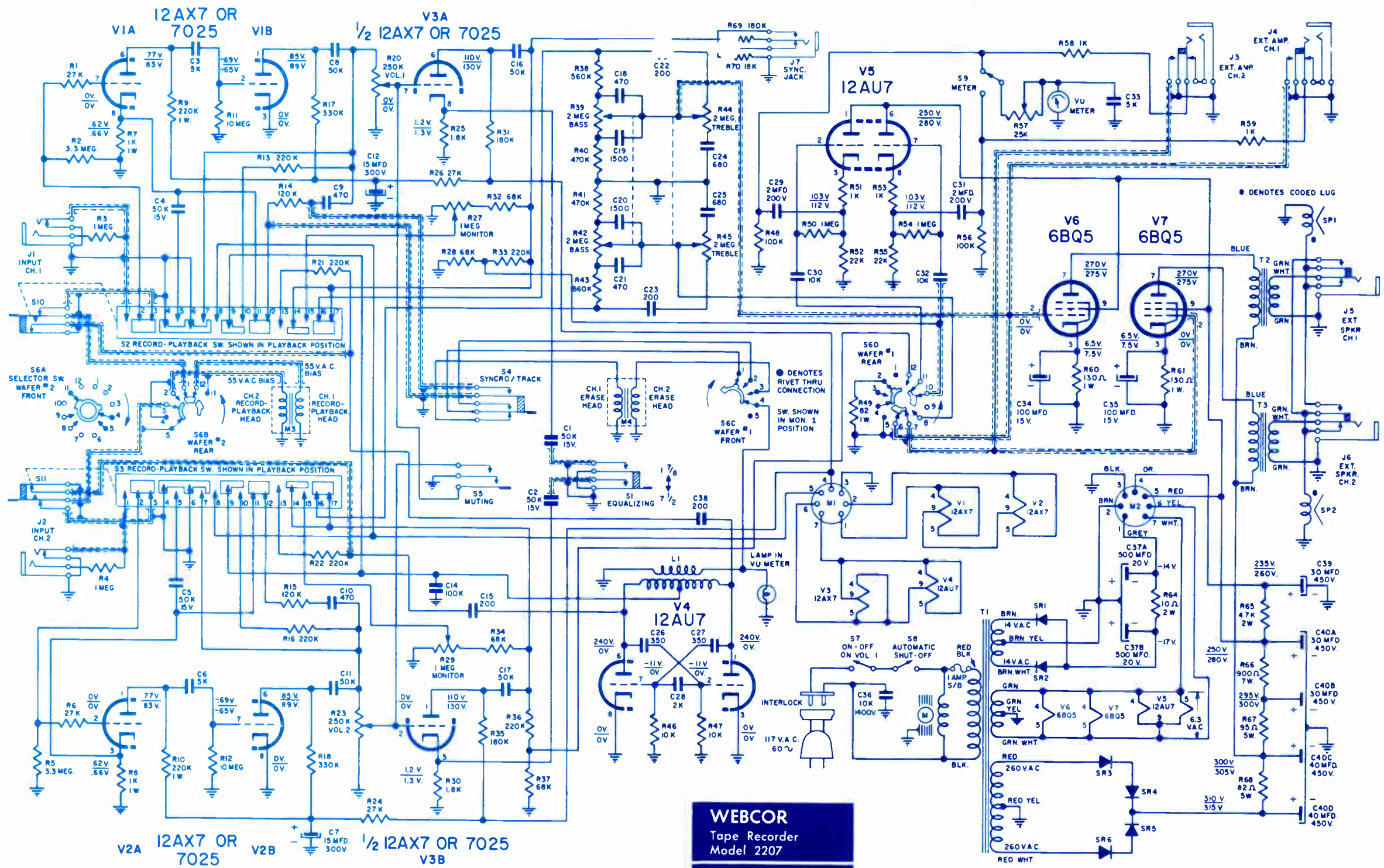
No Signal Current Drain 12 MA



SYLVANIA
TV Chassis
551-1,-2,-3,-5,-6,-7

Electronic Technician
CIRCUIT DIGEST
680

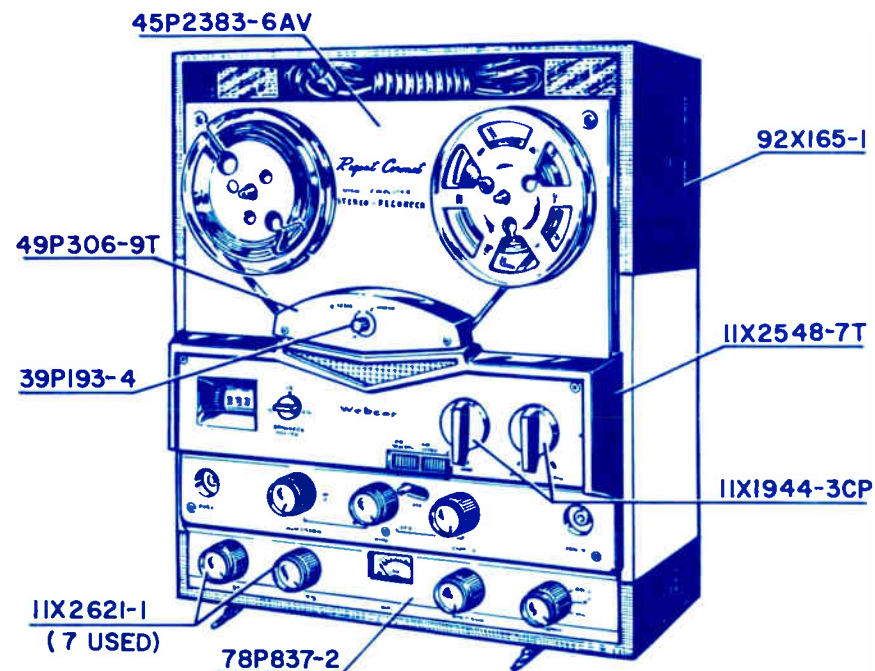




WEBCOR
Tape Recorder
Model 2207

Electronic Technician
CIRCUIT DIGEST
678

CABINET PARTS

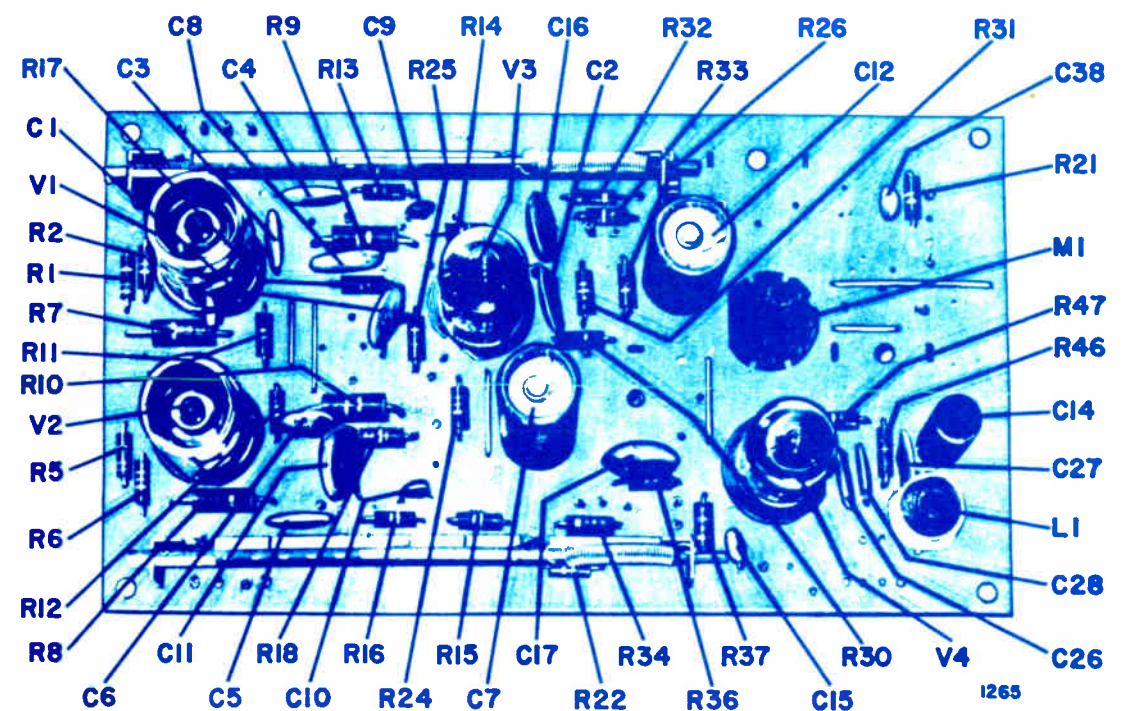
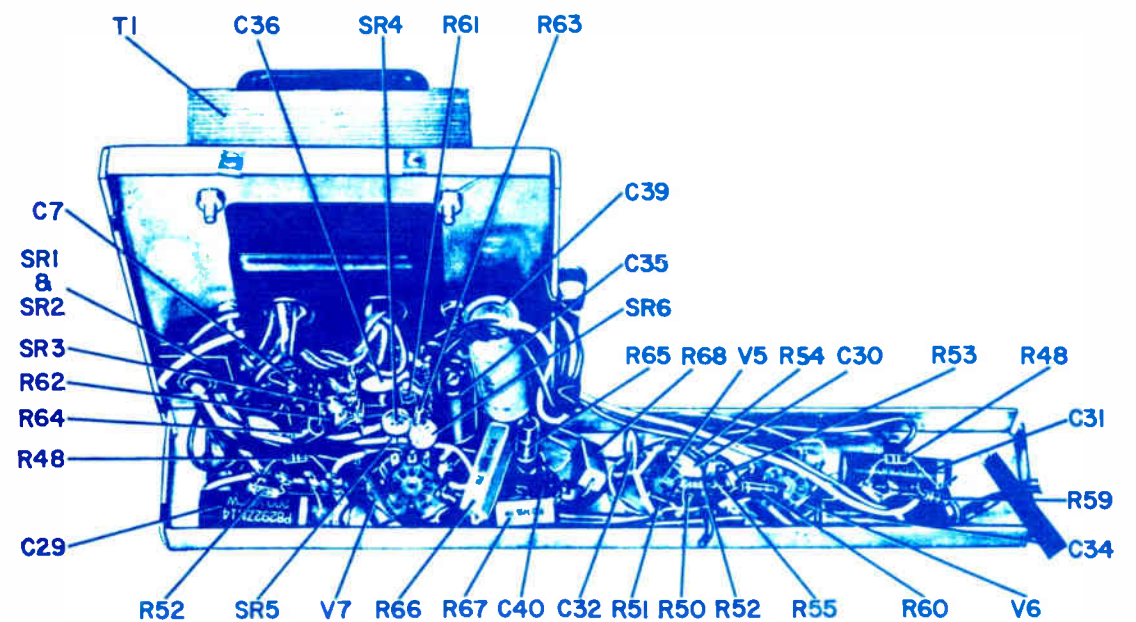


VU METER ADJUSTMENT

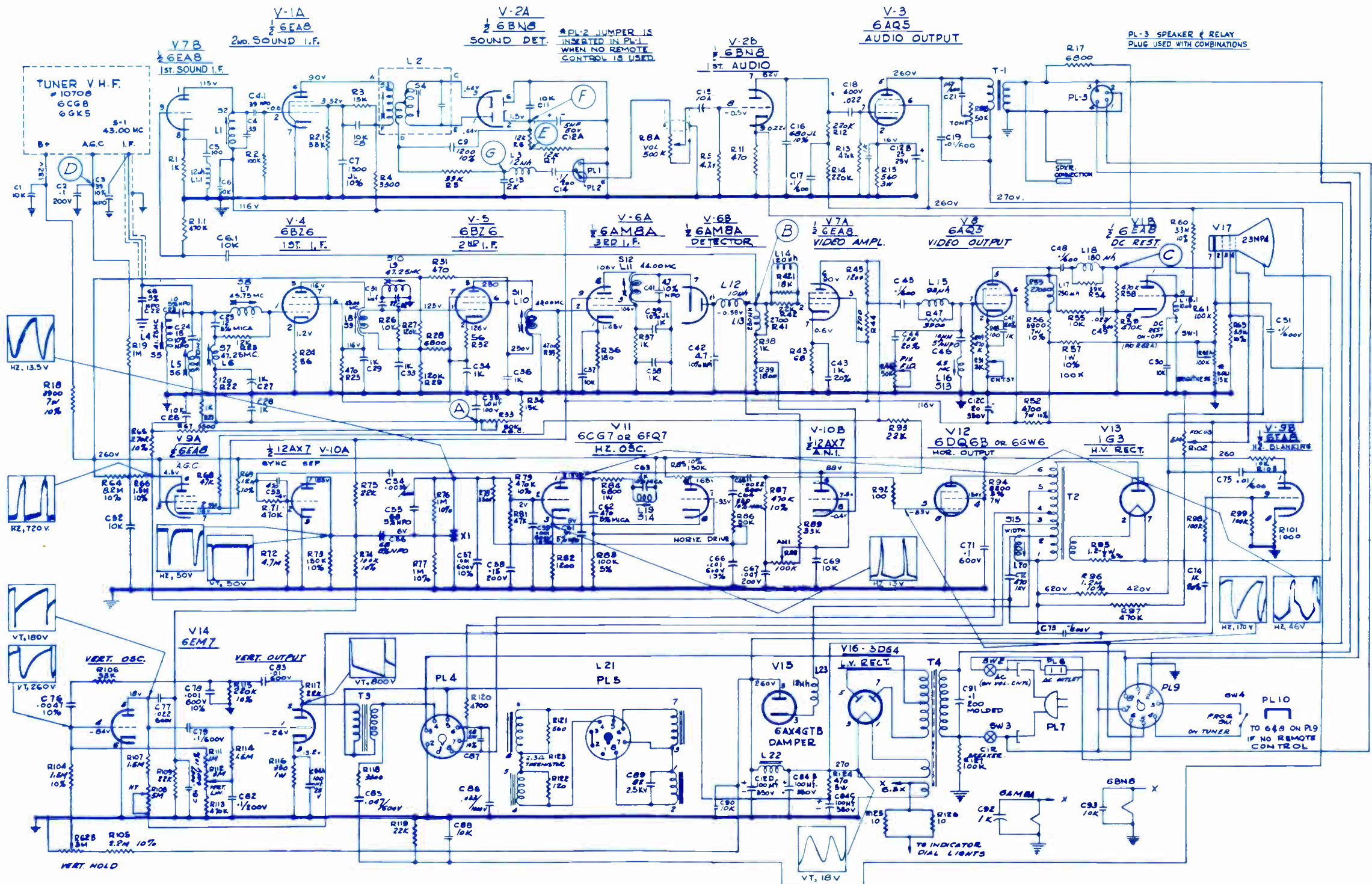
Proceed to adjust the VU meter in the following manner:

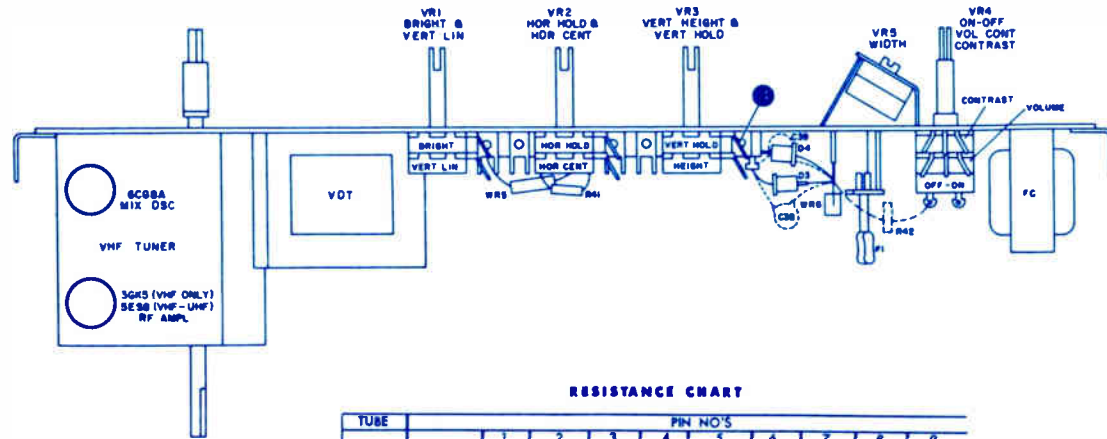
1. Remove control knobs and control escutcheon assembly.
2. Connect audio signal generator to "Mic Input Ch. 1" jack (J1).
3. Turn Tape Recorder "ON" and adjust "VOL. 1" control to 3/4 of full volume or greater.
4. Depress "RIGHT RECORD SAFETY LOCK" and move slightly to right to lock in place.
5. Rotate "MONITOR" control fully clockwise.
6. Connect AC VTVM of at least 11 megohms input resistance to "EXT. AMP. CH. 1" jack (J4).
7. Turn "METER SELECTOR" control to "CH. 1".
8. Adjust signal generator for approximately 2 volts at 1000 cps on the VTVM.
9. Adjust "METER LEVEL" control (R57), on mechanism chassis, until the VU meter reads 100% (0 db).
10. Replace control escutcheon assembly and control knobs.

BOTTOM VIEW OF MODEL 2207 POWER KMP



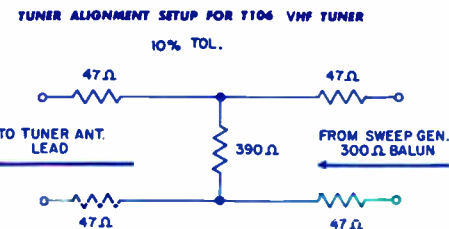
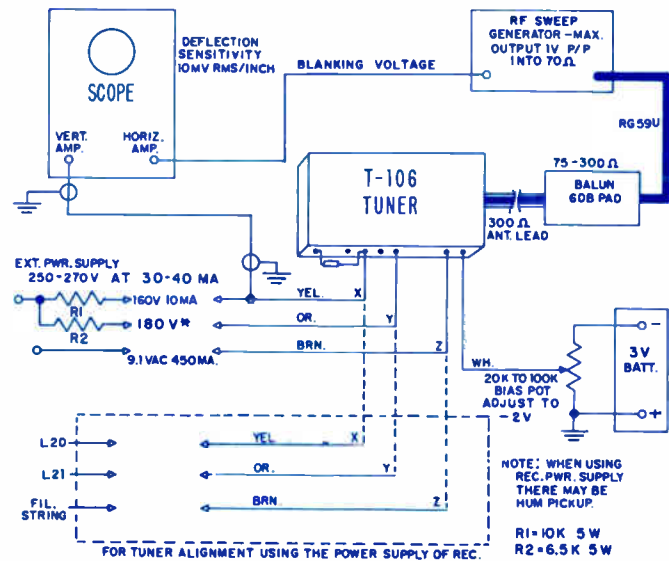
TOP VIEW OF MODEL 2207 PRE-AMP





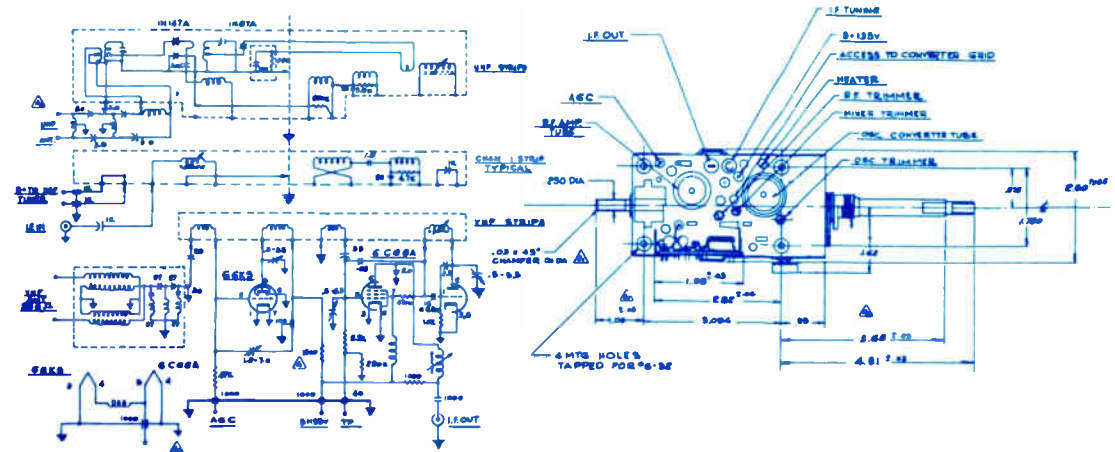
RESISTANCE CHART

TUBE		1	2	3	PIN NO'S					
V1 6EAB	Sync Sep. Sound I-F	40KΩ	5Ω	10KΩ	FIL.	FIL.	10KΩ	150Ω	3KΩ	2.4M
V2 4CS6	Sound Det.	5Ω	470Ω	FIL.	FIL.	400K	20KΩ	470Ω		
V3 11JE8	Audio Out. and Gate	14KΩ	3.5Ω	220K	FIL.	FIL.	1.50Ω	100Ω	15KΩ	15KΩ
V4 6AW8A	Video and Noise Inv.		1.4MΩ	45KΩ	FIL.	FIL.		3.9K	50KΩ	20KΩ
V5 4EJ7	2nd V.I.F.	100Ω	.2Ω	100Ω	FIL.	FIL.		14KΩ	14KΩ	
V6 4EH7	1st V.I.F.	27Ω	75KΩ	27Ω	FIL.	FIL.		14KΩ	30KΩ	
V8 17D4	Damper			14KΩ		110KΩ		FIL.	FIL.	
V9 13FD7	Vert. Osc. Vert. Out.	14KΩ		1.3MΩ	FIL.	FIL.	2.8MΩ	400KΩ		550Ω
V10 8CG7	Hor. Osc.	25KΩ	1.3MΩ	1KΩ	FIL.	FIL.	50KΩ	70KΩ	1KΩ	
V11 17DQ6B	Hor. Out.		FIL.		25KΩ	700KΩ		FIL.		

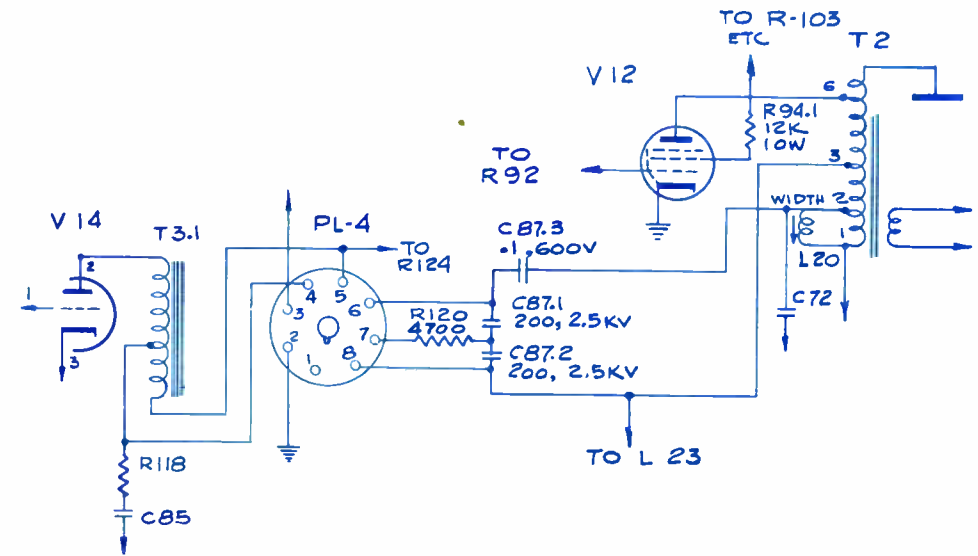


An H pad connected between the tuner antenna lead and the 300Ω generator balun is desirable, if a resistance pad of some type is not already incorporated in the generator cable. The "H" pad should be connected as shown.

The cover must be in place on the tuner when R-F or oscillator alignment is being made.



TUNER 1078



REVISED SWEEP CIRCUITRY OF 98D14C (27 INCH MODEL)

LAST MINUTE CHANGES, ADDITIONS, ETC:

- In chassis 98D15, the cord remote control model, resistor R-57 was changed from 100,000 ohms, one watt, to 82,000 ohms, two watts (PB-73448).
- Horizontal sweep circuitry of chassis 98D14C (27-inch model) was changed from that in the 23-inch sets.

DELETED ARE:

C-87, 68 mfd, 5 kv.

CHANGED ARE:

R-94, from 8200 ohms, 7 w, to 12,000 ohms, 10 w (73705), R-94.1.

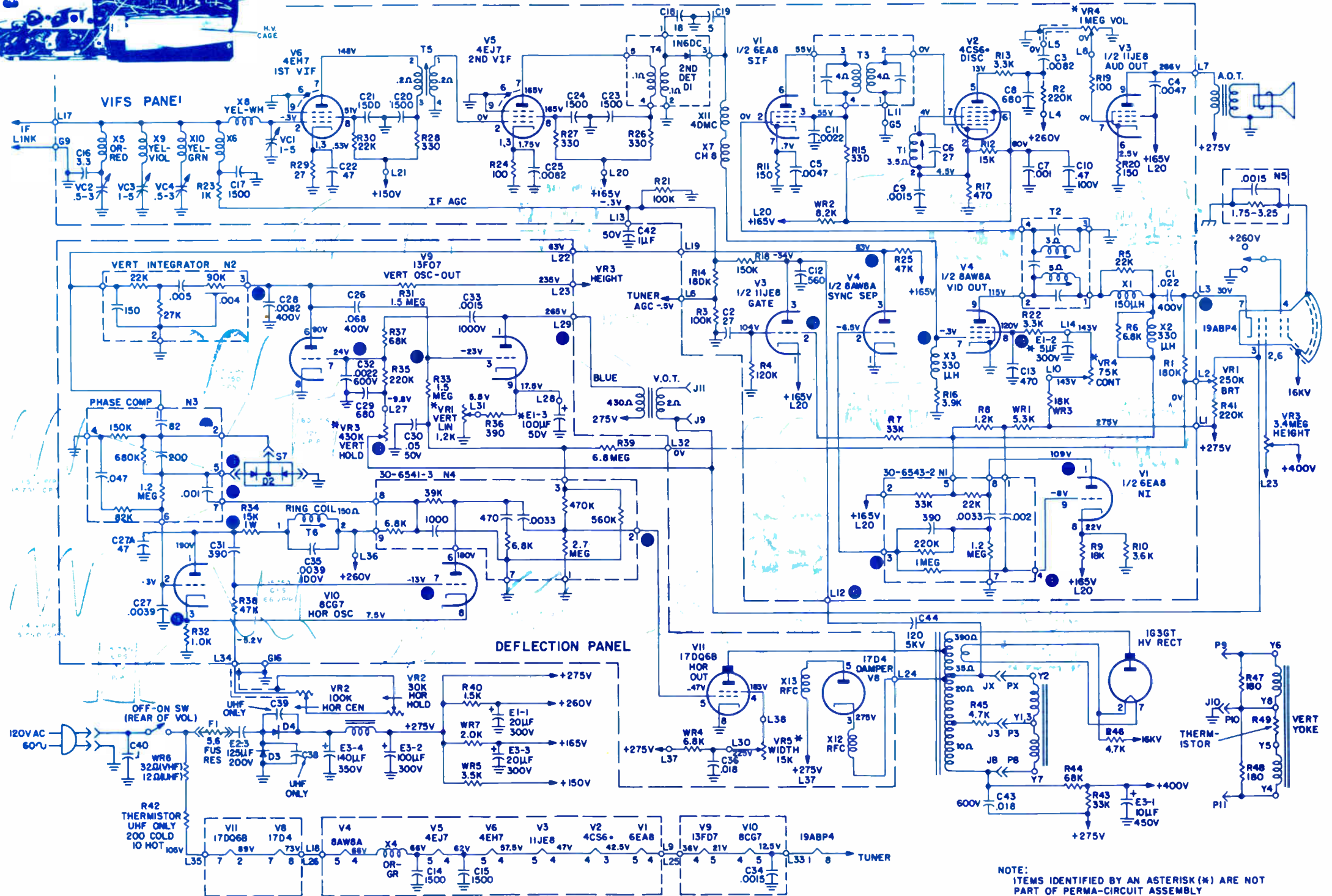
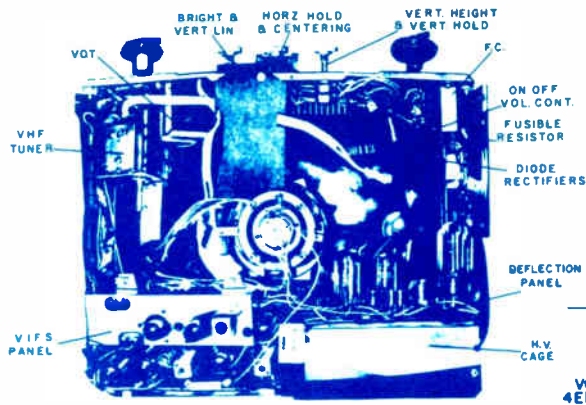
T-3, the VERTICAL output transformer, from part 89543 to part 89529, T-3.1.

ADDED ARE:

C-87.1 & C-87.2, both 200 mfd, 2500 v (23958)

C-87.3, .1 mfd/600 v (24739, alt: 23145 or 23745)

- Capacitor, 1000 mfd, added across R-15 in both 98D14 & 98D15 Also R-104 changes from 20% to 10% tolerance. In 98D15 only, R-5 changes to 10,000 ohms.



NOTE:
ITEMS IDENTIFIED BY AN ASTERISK (*) ARE NOT PART OF PERMA-CIRCUIT ASSEMBLY

More Data on Reverse Side

JANUARY • 1962

ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

In This Issue (No. 113)

Circuit Digest Schematic No.	DEICO	684
MOTOROLA	Model 7276605	
TV Chassis TS-576	Auto Radio 1961 Cadillac	
GRANCO	TOSHIRA	685
AM/FM Radio Model 704	Transistor Radio Model 9TL-3655	
TRUETONE	ADMIRAL	686
TV Models 2DC1270A, -2A, -4A	TV Chassis 1988B, 19UB8B, 18D8B & 19UD8B	

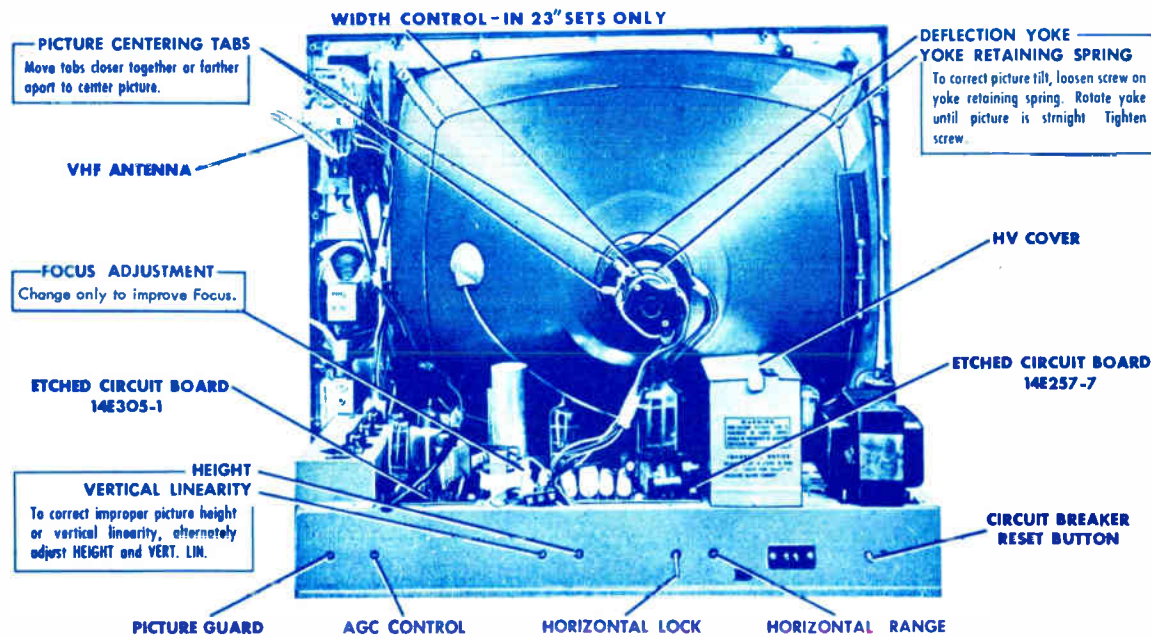
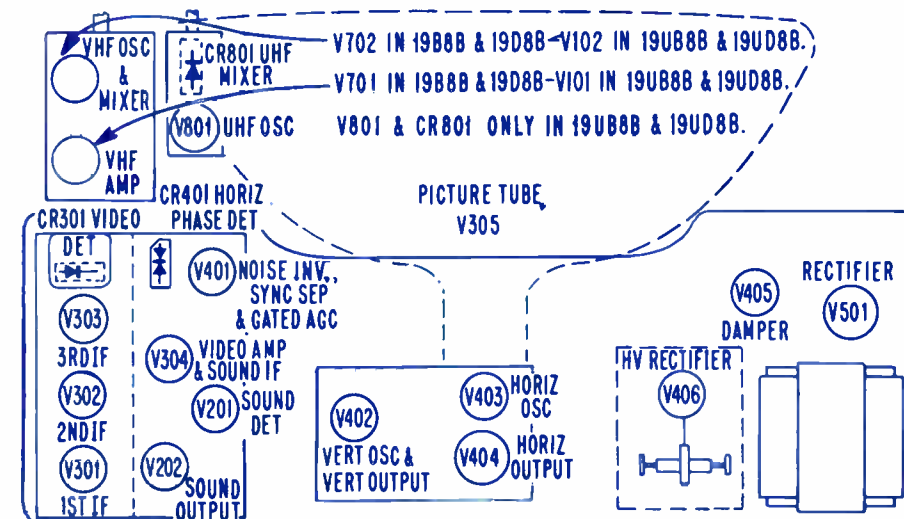
GROUP
113

ADMIRAL
TV Chassis
1988B, 19UB8B,
18D8B & 19UD8B

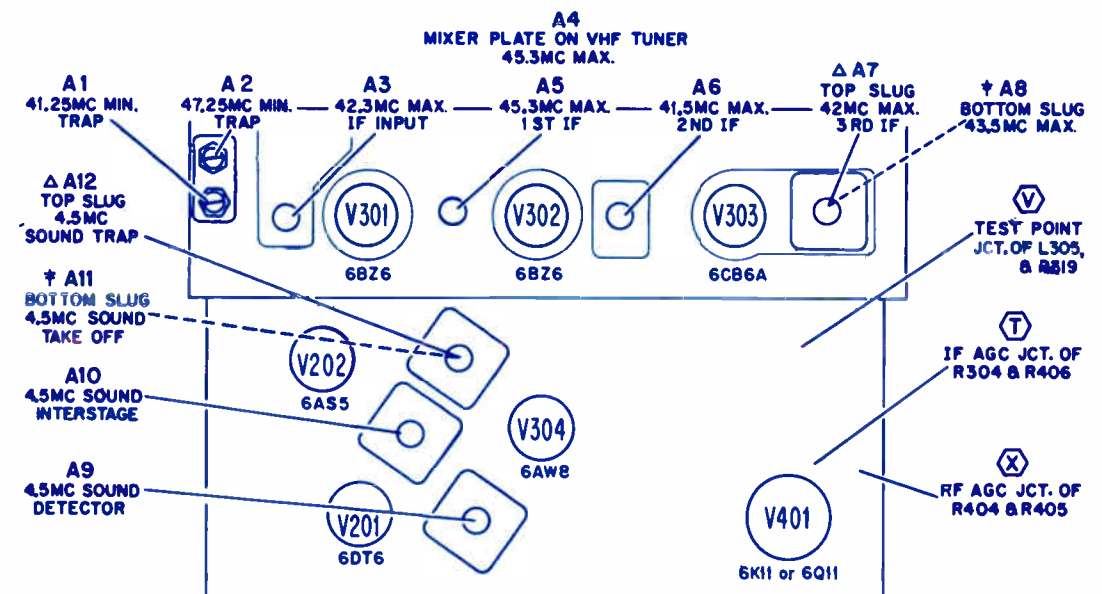
Electronic Technician
CIRCUIT DIGEST
686

More Data on Reverse Side

TUBE LOCATIONS



Rear View of Chassis Showing Adjustment Locations (UHF Tuner in 19UB8B Chassis).



† SLUG NEAREST TO ETCHED CIRCUIT BOARD
Δ SLUG FARTHEST FROM ETCHED CIRCUIT BOARD

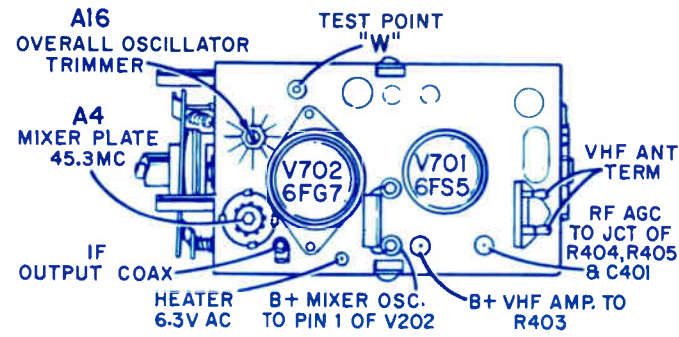
View of Etched Circuit Board Showing Test Point Locations and IF Alignment Data.

ADMIRAL
TV Chassis
1988B, 19UB8B,
18D8B & 19UD8B

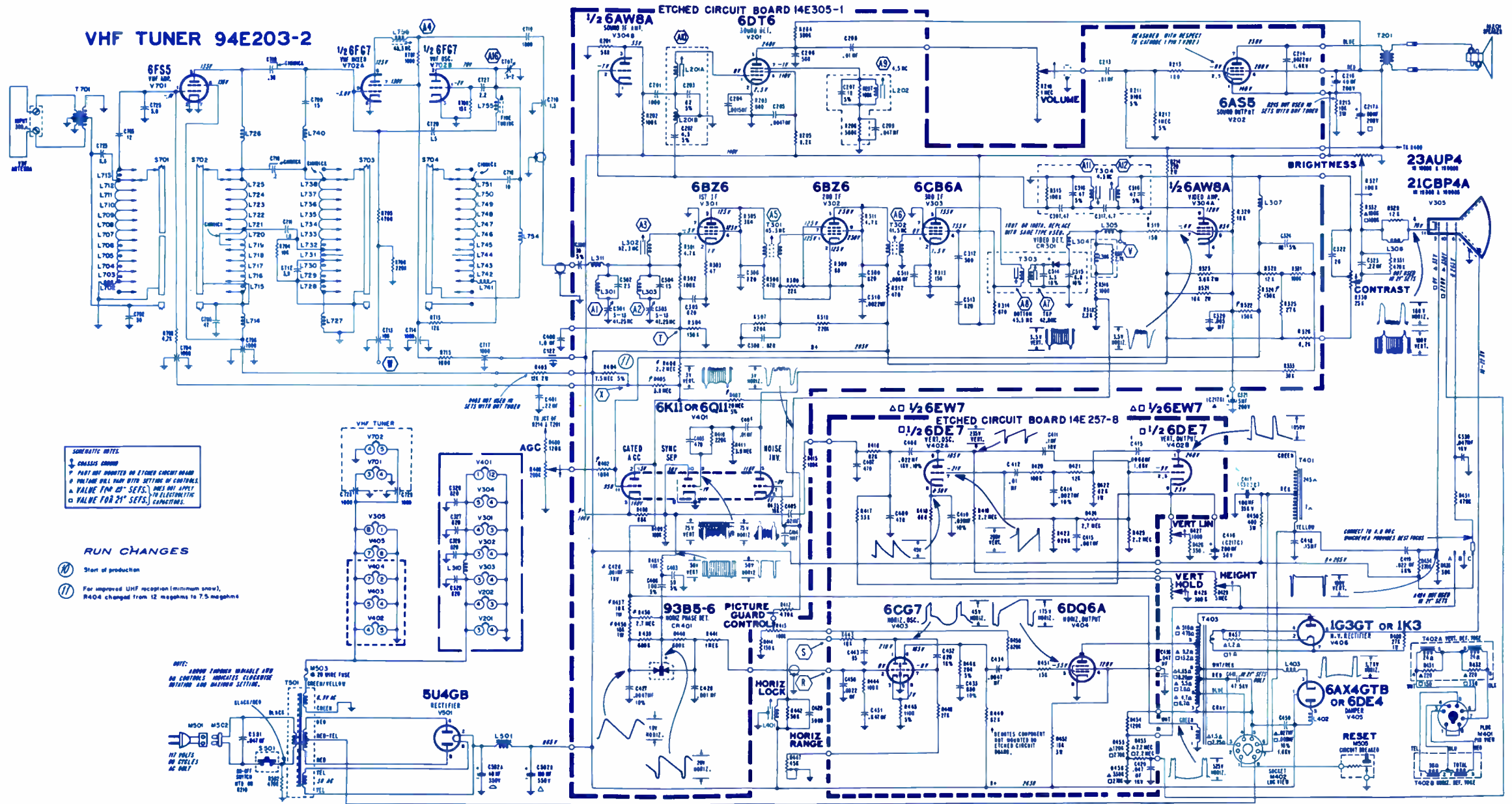
Electronic Technician
CIRCUIT DIGEST
686

More Data on Reverse Side

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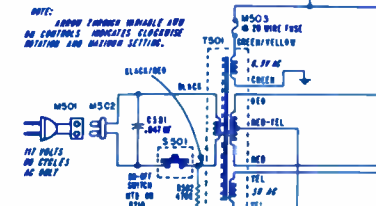


Top View of VHF Tuner 94E203-2.



SCHEMATIC NOTES:
 ↓ CHASSIS GROUND
 * PART NOT SHOWN ON ETCHED CIRCUIT BOARD
 @ PARTS NOT SHOWN WITH SETTINGS OF CONTROLS
 ▲ VALUE FOR 21" SETS. USE ONLY WHEN
 □ VALUE FOR 21" SETS. TO ELECTRONIC
 ○ VALUE FOR 21" SETS. CAPACITORS.

RUN CHANGES
 (I) Start of production
 (II) For improved UHF reception (minimum snow),
 R404 changed from 12 megohms to 7.5 megohms



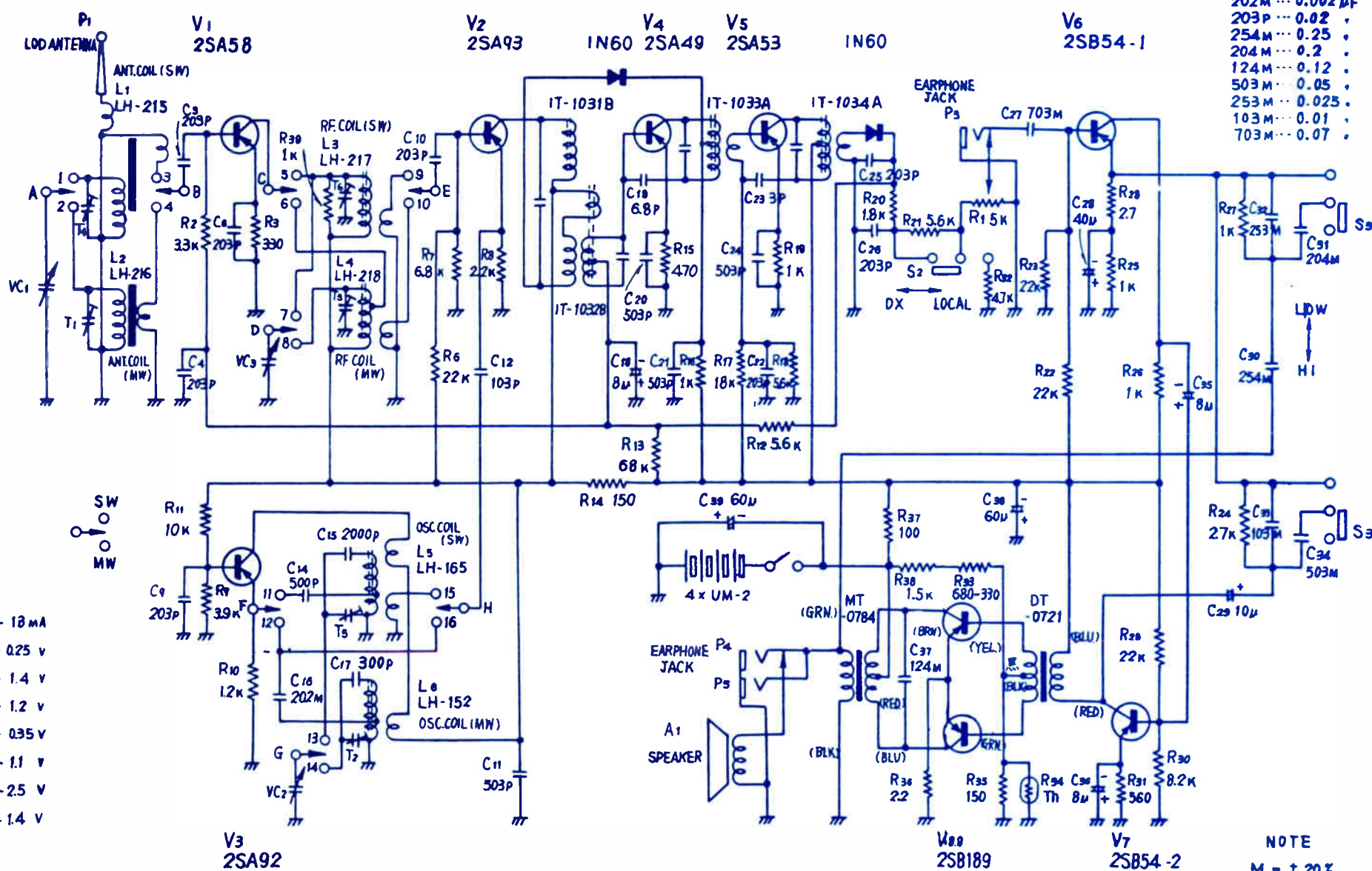
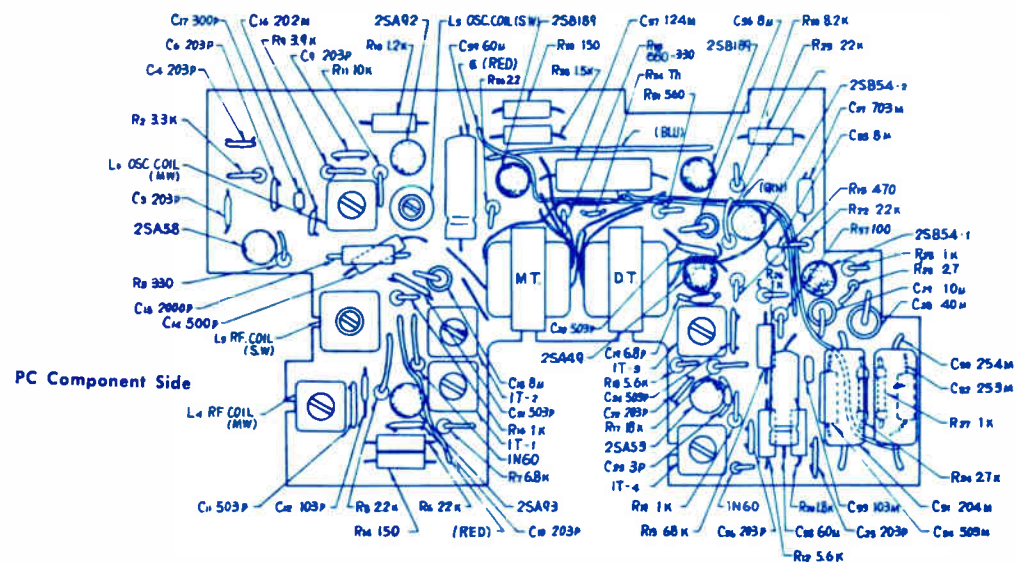
More Data on Reverse Side

ELECTRONIC TECHNICIAN 685

CIRCUIT DIGEST

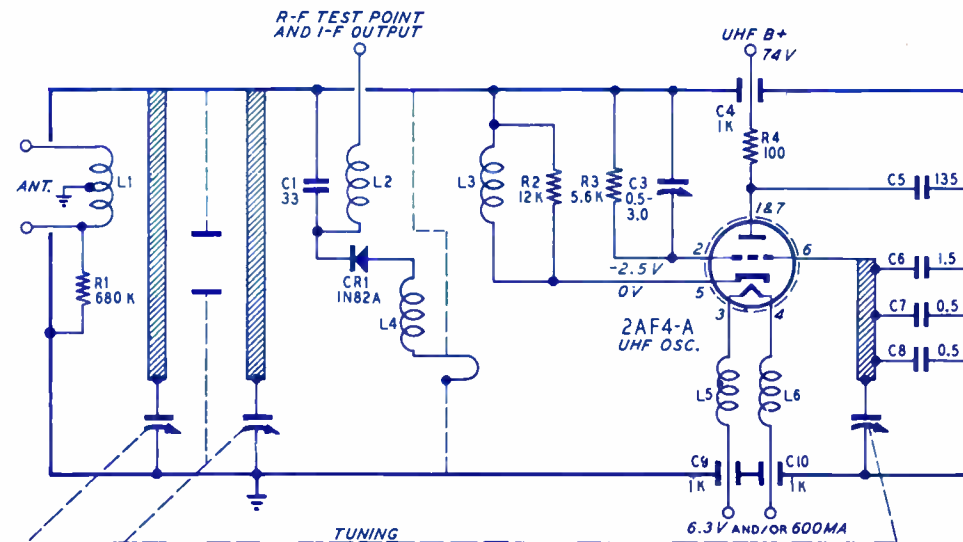
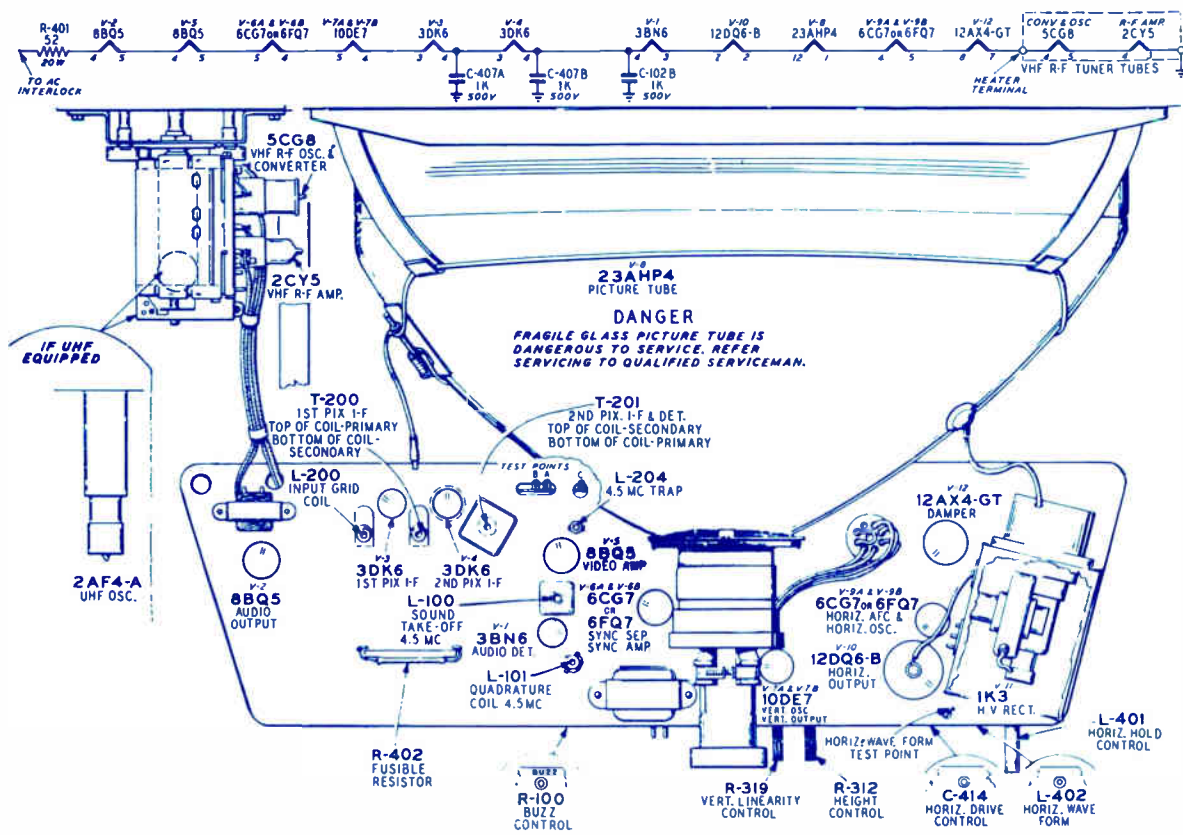
TOSHIBA
Transistor Radio
Model 9TL-365S

January • 1962



I TOTAL	14 - 18 mA
Ve 2SA58	0.15 - 0.25 v
Ve 2SA93	0.1 - 1.4 v
Ve 2SA92	0.8 - 1.2 v
Ve 2SA49	0.25 - 0.35 v
Ve 2SA53	0.8 - 1.1 v
Ve 2SB54-1	2.0 - 2.5 v
Ve 2SB54-2	1.0 - 1.4 v

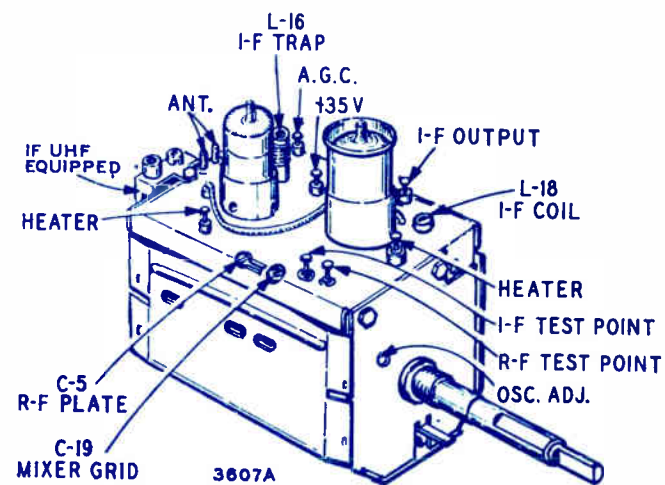
NOTE
M = ± 20%
P = ± 100%



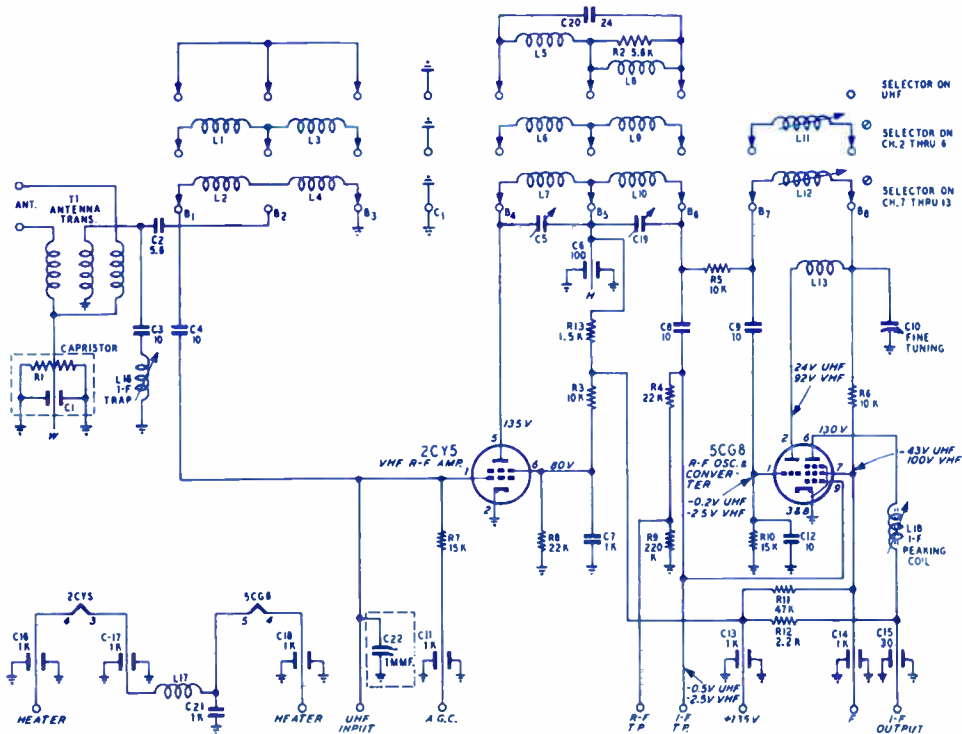
25A1221-2 UHF TUNER SCHEMATIC (IF UHF EQUIPPED)

January • 1962

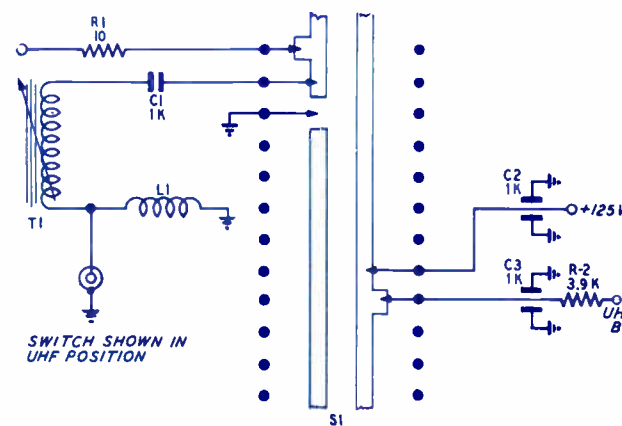
TRUETONE
TV Models 2DC1270A, -2A, -4A
Electronic Technician
CIRCUIT DIGEST
683



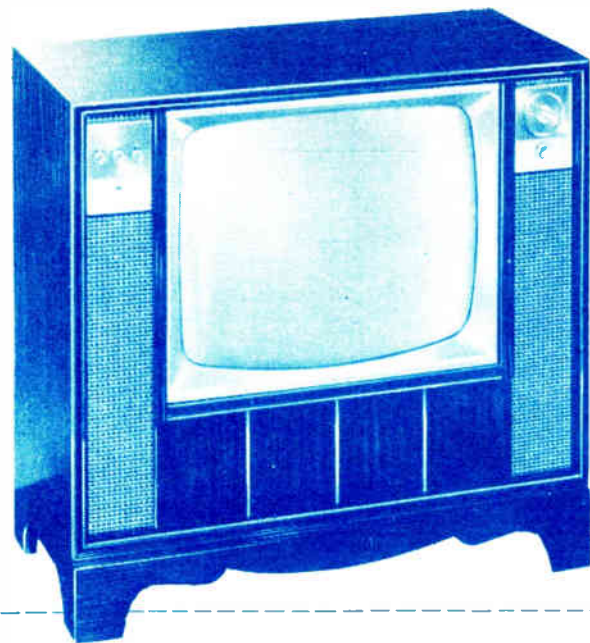
Top Tuner Adjustments



More Data on Reverse Side



25A23 UHF IF INPUT (IF UHF EQUIPPED)



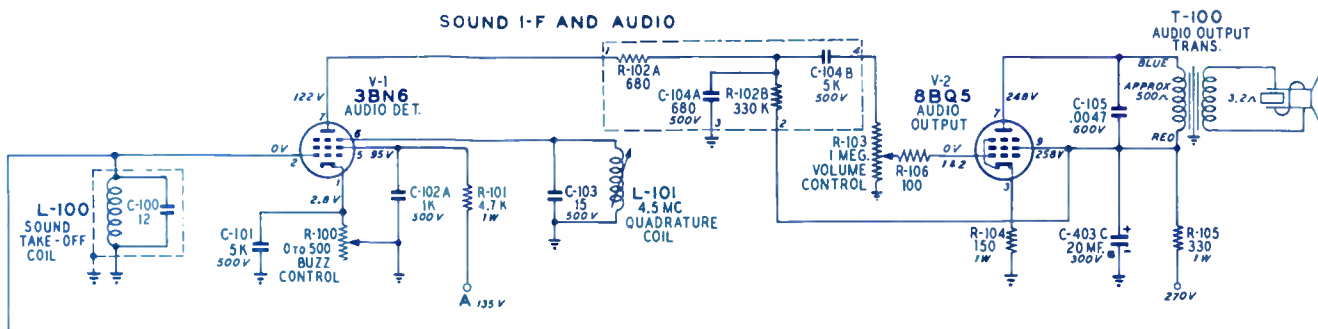
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ELECTRONIC TECHNICIAN 683

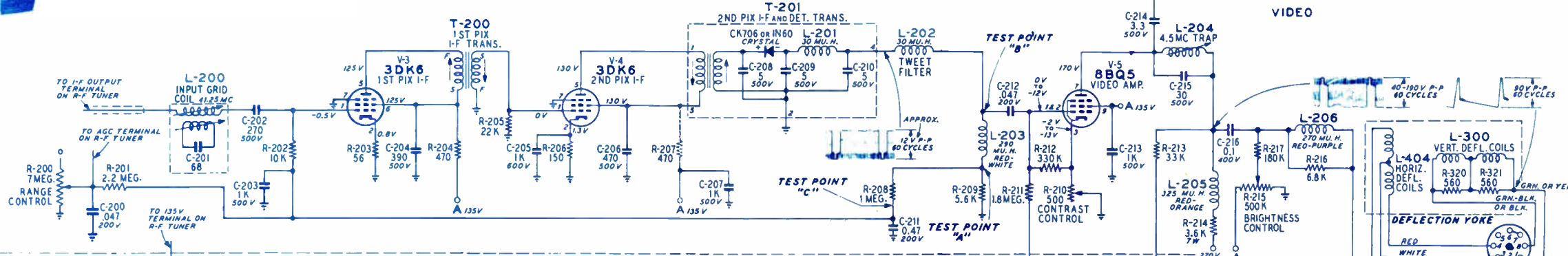
CIRCUIT DIGEST

TRUETONE
TV Models 2DC1270A,
-2A, -4A

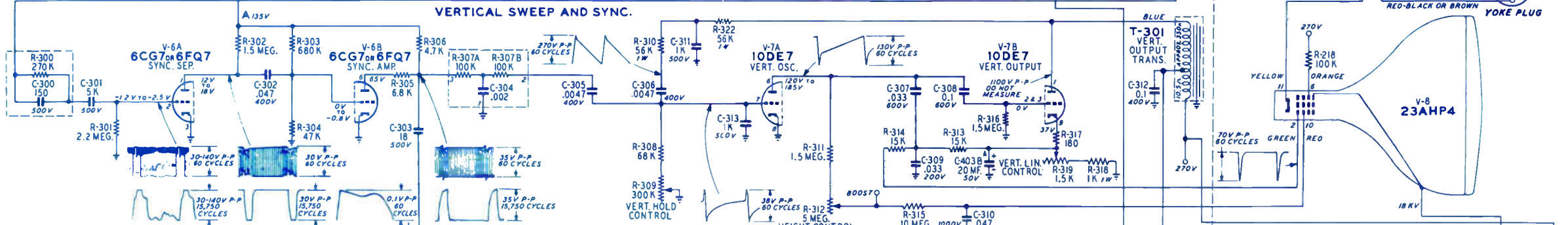
SOUND I-F AND AUDIO



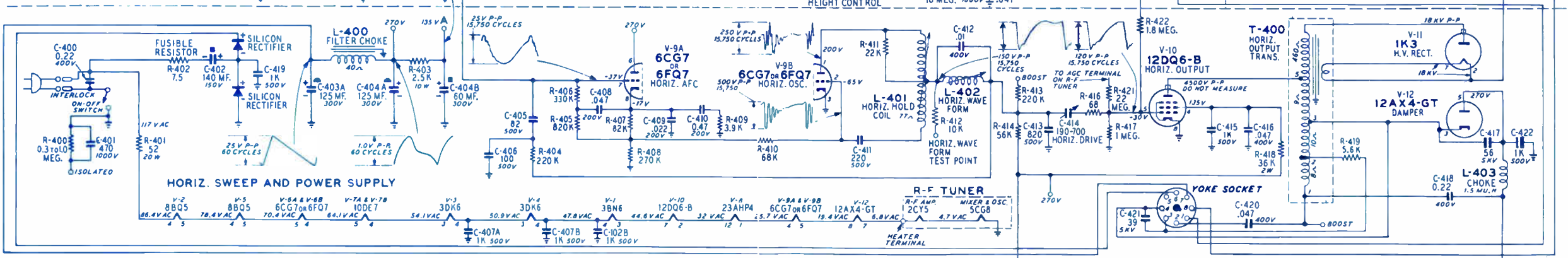
VIDEO



VERTICAL SWEEP AND SYNC.

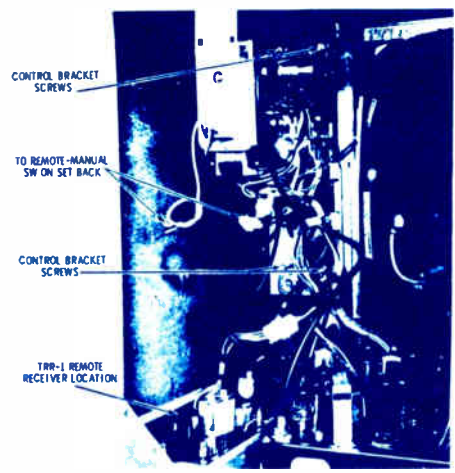
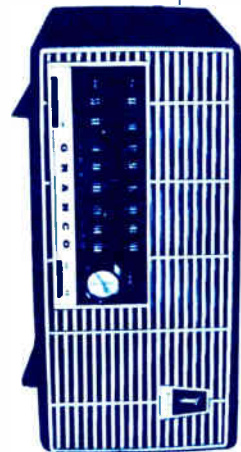
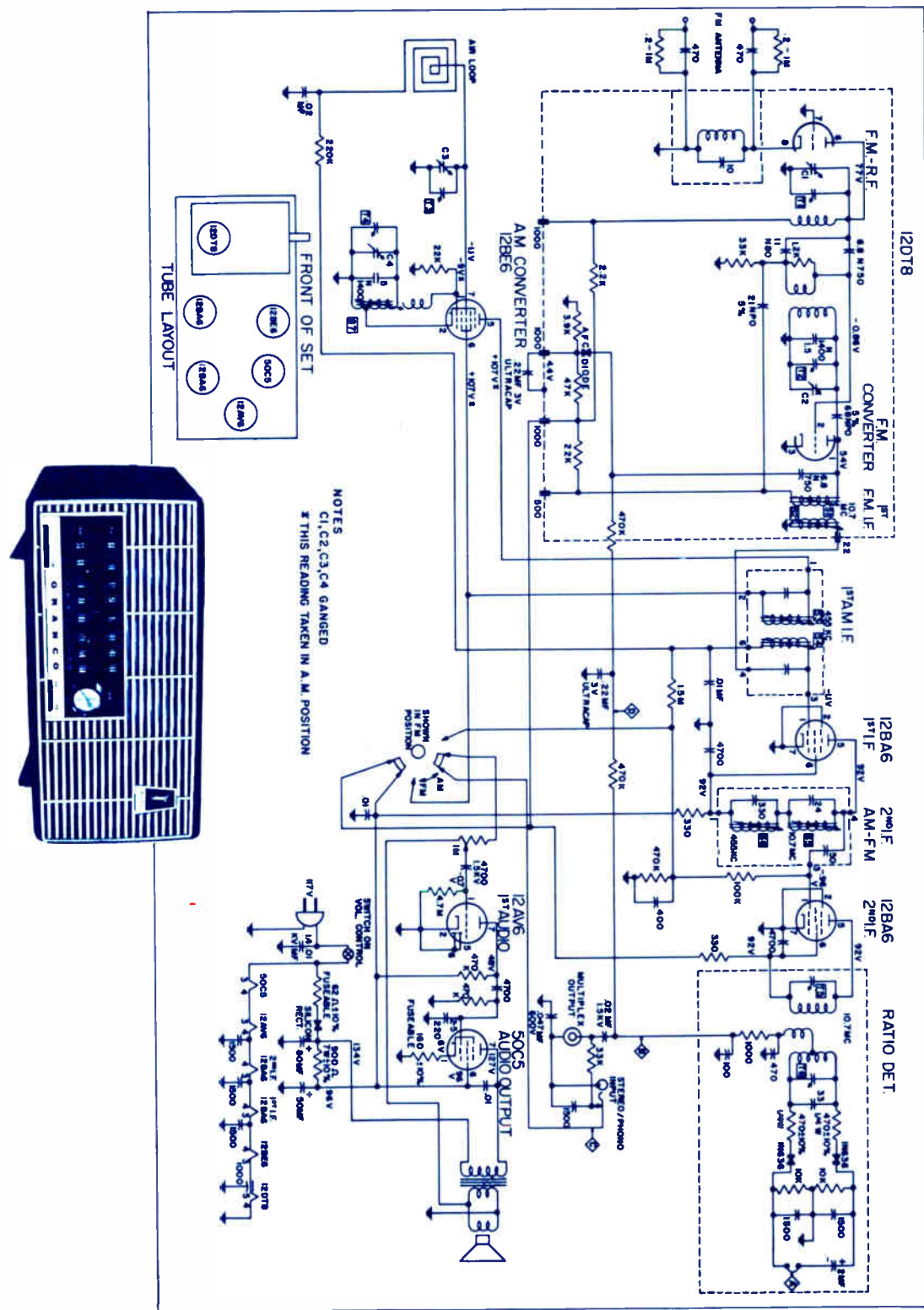


HORIZ. SWEEP AND POWER SUPPLY



More Data on Reverse Side

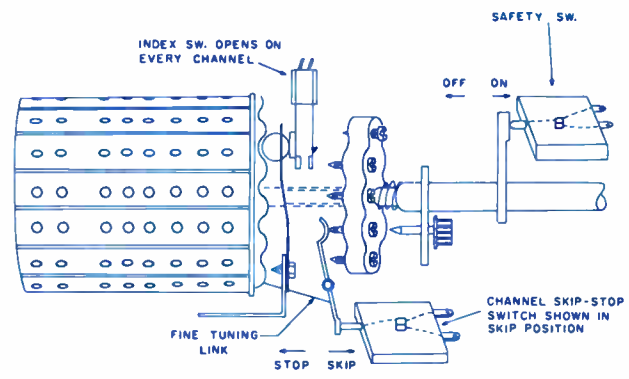
January • 1962



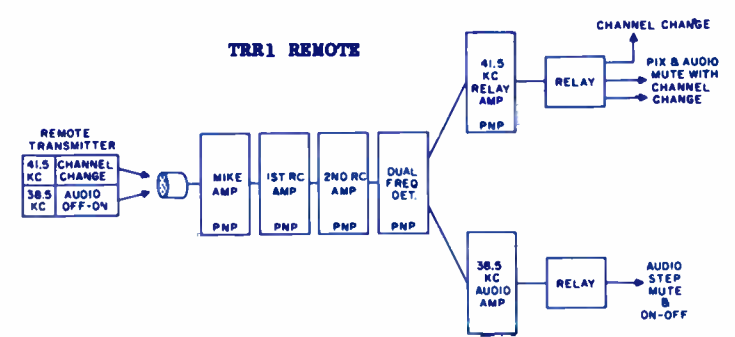
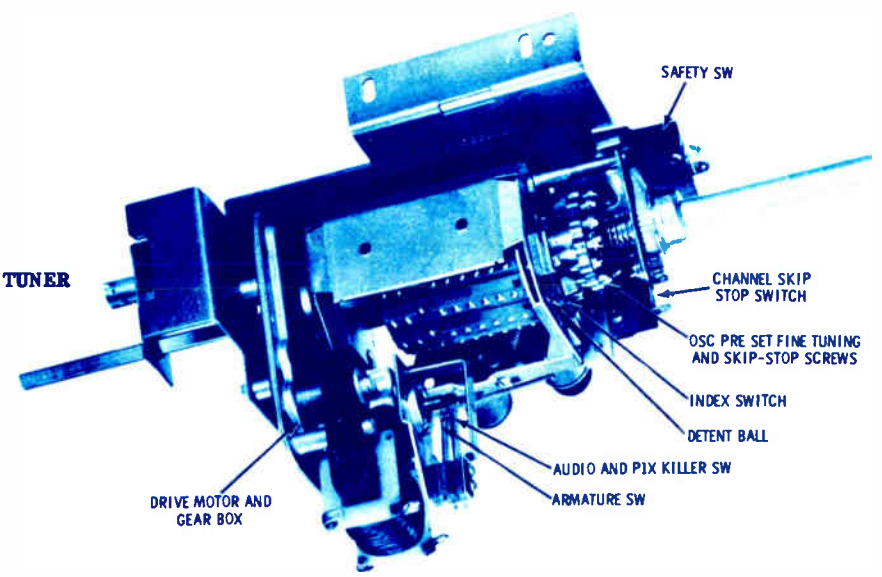
MOTOROLA
TV Chassis TS-576

Electronic Technician
CIRCUIT DIGEST
681

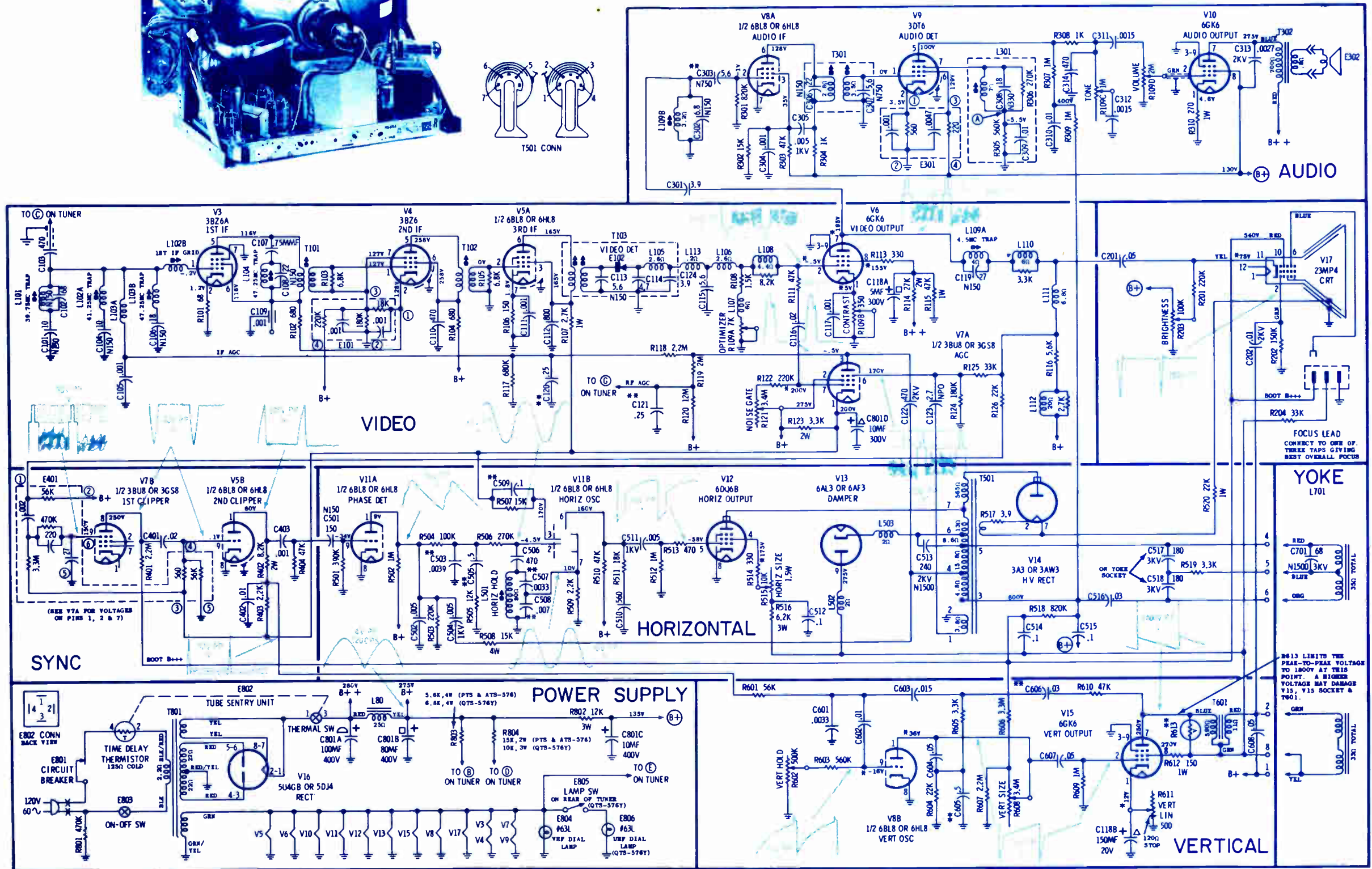
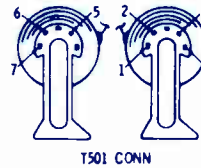
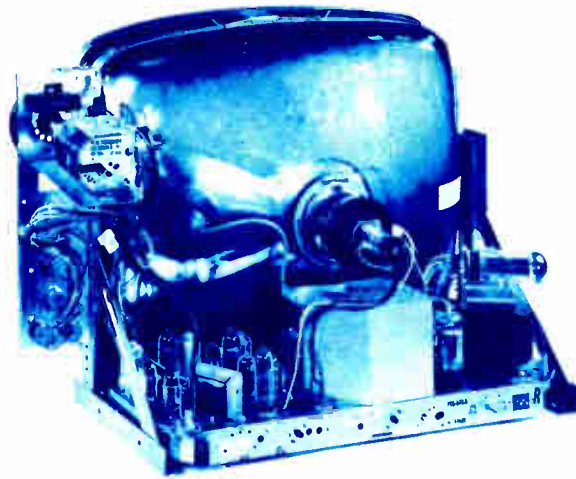
More Data on Reverse Side



APTT310 TUNER

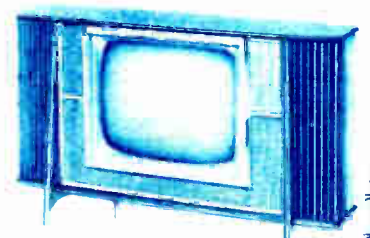


January • 1962

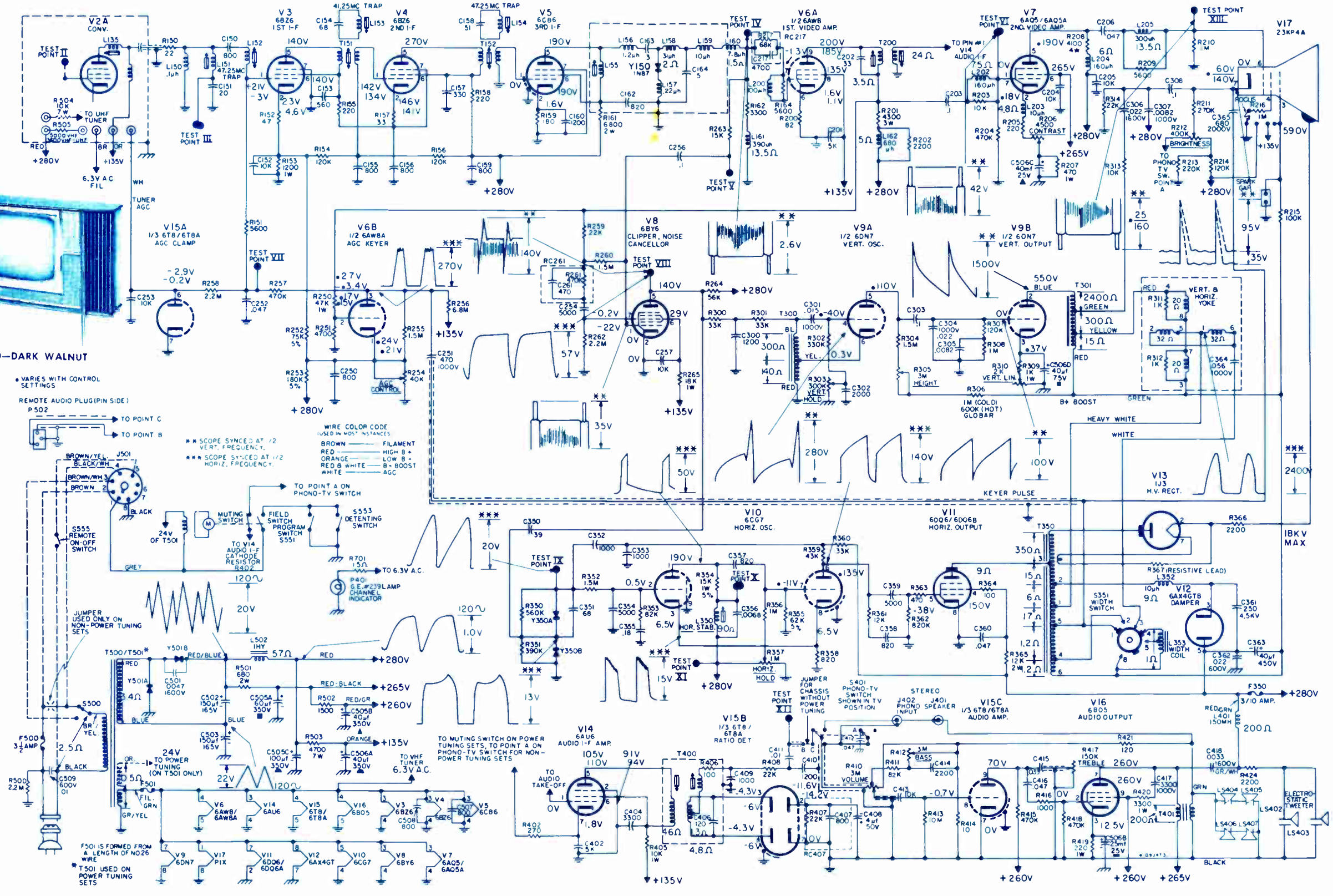


***INDICATES SPECIAL COMPONENTS.

February • 1962



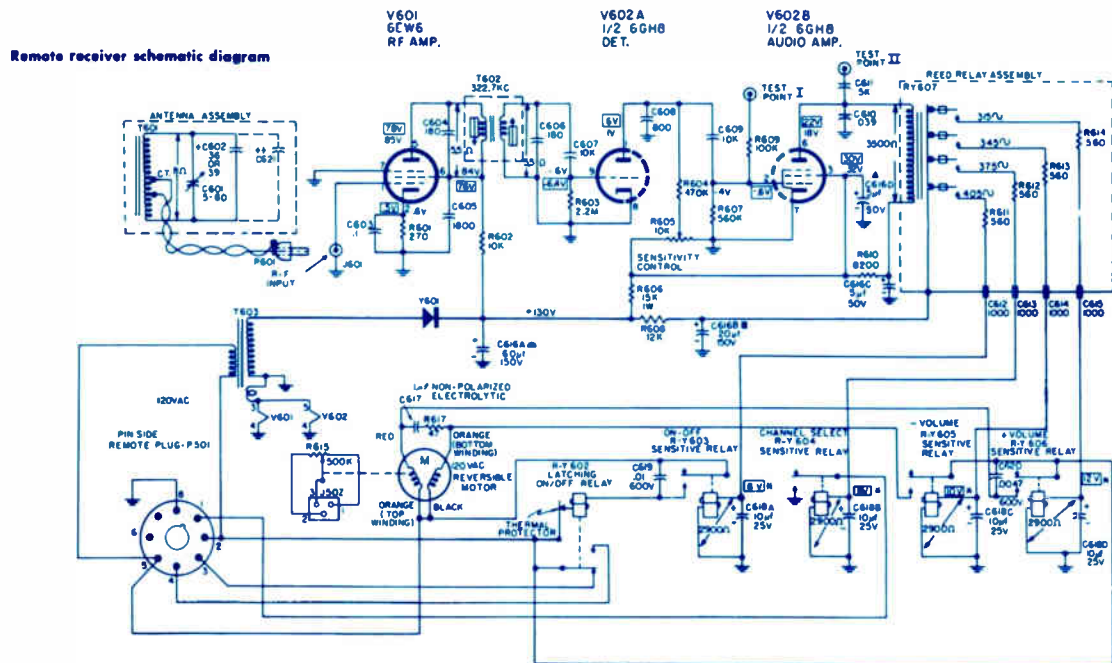
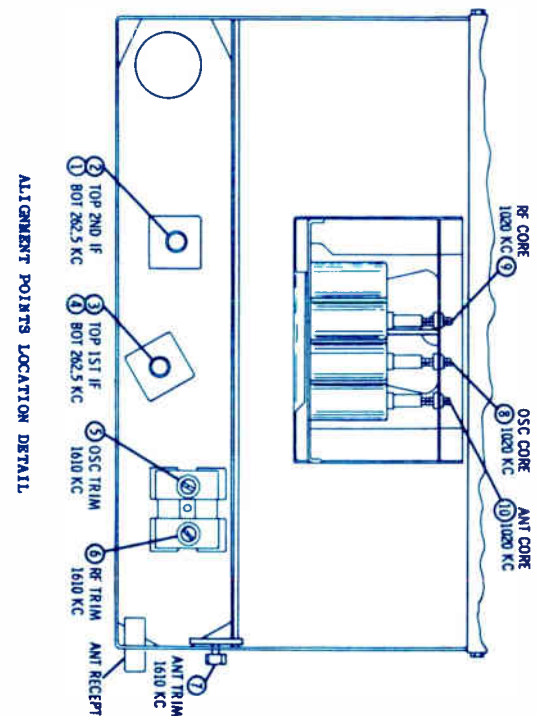
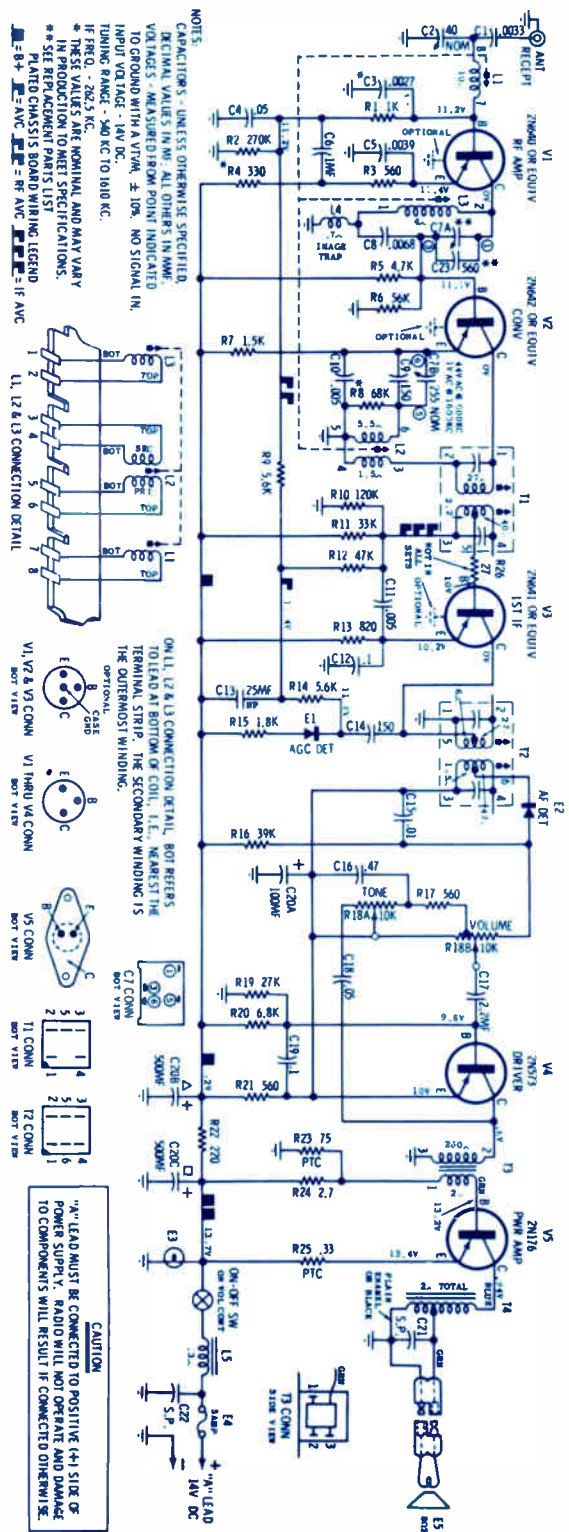
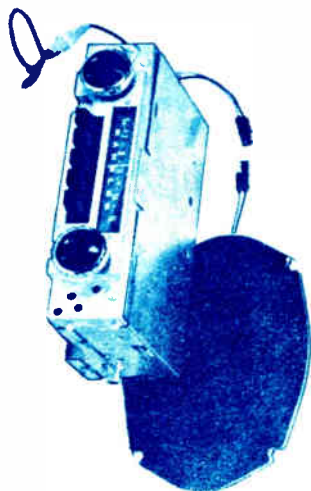
M870VWD-DARK WALNUT



VARIES WITH CONTROL SETTINGS
REMOTE AUDIO PLUG (PIN SIDE) P 502
TO POINT C
TO POINT B
BROWN/YEL. BLACK/WH.
BROWN/WH. BROWN 2
BLACK
GREY
S555 REMOTE ON-OFF SWITCH
OF T501
TO V14 AUDIO I-F CATHODE RESISTOR R402
MUTING SWITCH
FIELD SWITCH PROGRAM SWITCH S551
S553 DETENTING SWITCH
R701 1.5Ω TO 6.3V A.C.
P401 6.6Ω PLAMP CHANNEL INDICATOR
TO 6.3V A.C.
J501
J402 PHONO SWITCH SHOWN IN TV POSITION
S401 PHONO-TV SWITCH FOR NON-POWER TUNING SETS
J401 PHONO SPEAKER INPUT
S351 WIDTH SWITCH
V12 6AX4GTB DAMPER
C361 250 4.5KV
C362 40μf 450V
C363 40μf 450V
C364 0.22 600V
C365 0.22 600V
C366 0.22 600V
C367 0.22 600V
C368 0.22 600V
C369 0.22 600V
C370 0.22 600V
C371 0.22 600V
C372 0.22 600V
C373 0.22 600V
C374 0.22 600V
C375 0.22 600V
C376 0.22 600V
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C390 0.22 600V
C391 0.22 600V
C392 0.22 600V
C393 0.22 600V
C394 0.22 600V
C395 0.22 600V
C396 0.22 600V
C397 0.22 600V
C398 0.22 600V
C399 0.22 600V
C400 0.22 600V

WIRE COLOR CODE USED IN MOST INSTANCES
BROWN FILAMENT
RED HIGH B+
ORANGE LOW B+
RED & WHITE B- BOOST
WHITE AGC
*** SCOPE SYNCED AT 1/2 VERT. FREQUENCY.
*** SCOPE SYNCED AT 1/2 HORIZ. FREQUENCY.
T500/T501*
Y501B RED/BLUE
R501 680 2W
C501 150μf 165V
C502 150μf 165V
C503 150μf 165V
C504 150μf 165V
C505 150μf 165V
C506 150μf 165V
C507 150μf 165V
C508 150μf 165V
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C594 150μf 165V
C595 150μf 165V
C596 150μf 165V
C597 150μf 165V
C598 150μf 165V
C599 150μf 165V
C600 150μf 165V
R501 680 2W
R502 1500
R503 4700 7W
R504 1500
R505 4700 7W
R506 1500
R507 4700 7W
R508 1500
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R694 1500
R695 4700 7W
R696 1500
R697 4700 7W
R698 1500
R699 4700 7W
R700 1500
R701

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VOLTAGE MEASUREMENTS SHOWN IN SQUARES [] WERE TAKEN WITH TRANSMITTER UNIT HELD WITHIN 12 INCHES OF RECEIVER ANTENNA. ONE OF THE FUNCTION BUTTONS OF THE TRANSMITTER UNIT IS DEPRESSED.
VOLTAGE MEASUREMENTS NOT IN SQUARES WERE TAKEN WITH PIN 1 OF V601 SHORTED TO GROUND.
DENOTES VOLTAGE WILL VARY.

* 36 USED WITH FIBER BOX ANTENNA W783F24
39 USED WITH WHITE PLASTIC CASE
+ VALUE OF CAPACITOR MAY BE 22, 10, 7, OR 5

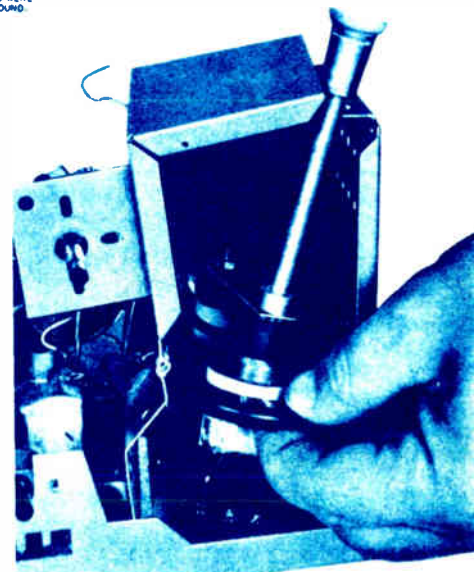
GENERAL ELECTRIC
TV Chassis U5
Models M870VWD, M871VWD, R870VML, R870VWD

Electronic Technician
CIRCUIT DIGEST
692

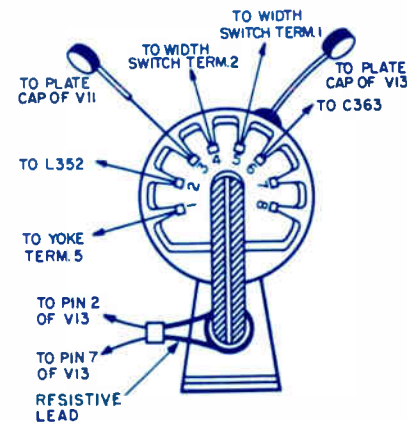
REPLACING HORIZONTAL SWEEP TRANSFORMER

Replacing the horizontal sweep transformer on U5 receivers can be simplified by using the following procedure. This method requires separating the two halves of the transformer core to permit sliding the high-voltage rectifier filament winding off the core. **CAUTION:** Do not remove the two pieces of tape which are applied to the ends of one of the core halves. The tape determines the gap between the core halves.

- Carefully unsolder all wires connected to the terminals on the horizontal sweep transformer.
- Remove the two 1/4-inch screws holding the small chassis to the top of the sweep transformer enclosure.
- Remove two 1/4-inch screws from the top and two from the lower right side of the transformer enclosure.
- Remove one screw holding the trap door and remove the door by springing out the side of the enclosure, lifting the door and disengaging the hinges.
- Remove the 1J3GT rectifier tube.
- Remove two 5/16-inch hex nuts securing the transformer to the side of the enclosure.
- Spring the side of the enclosure, tilt the transformer and remove two 5/16-inch nuts and the metal plate from the end of the transformer, Fig. 23.
- Remove half of the iron core from the side opposite the transformer wiring leads and slide the filament winding off the core. Remove the transformer from the enclosure.
- Remove half of the iron core from the new transformer, slide the filament winding onto the core and reassemble in the reverse order of disassembly, being careful not to remove the tape on the ends of the core which determine the core gap.



Horizontal sweep transformer replacement



Horizontal output transformer

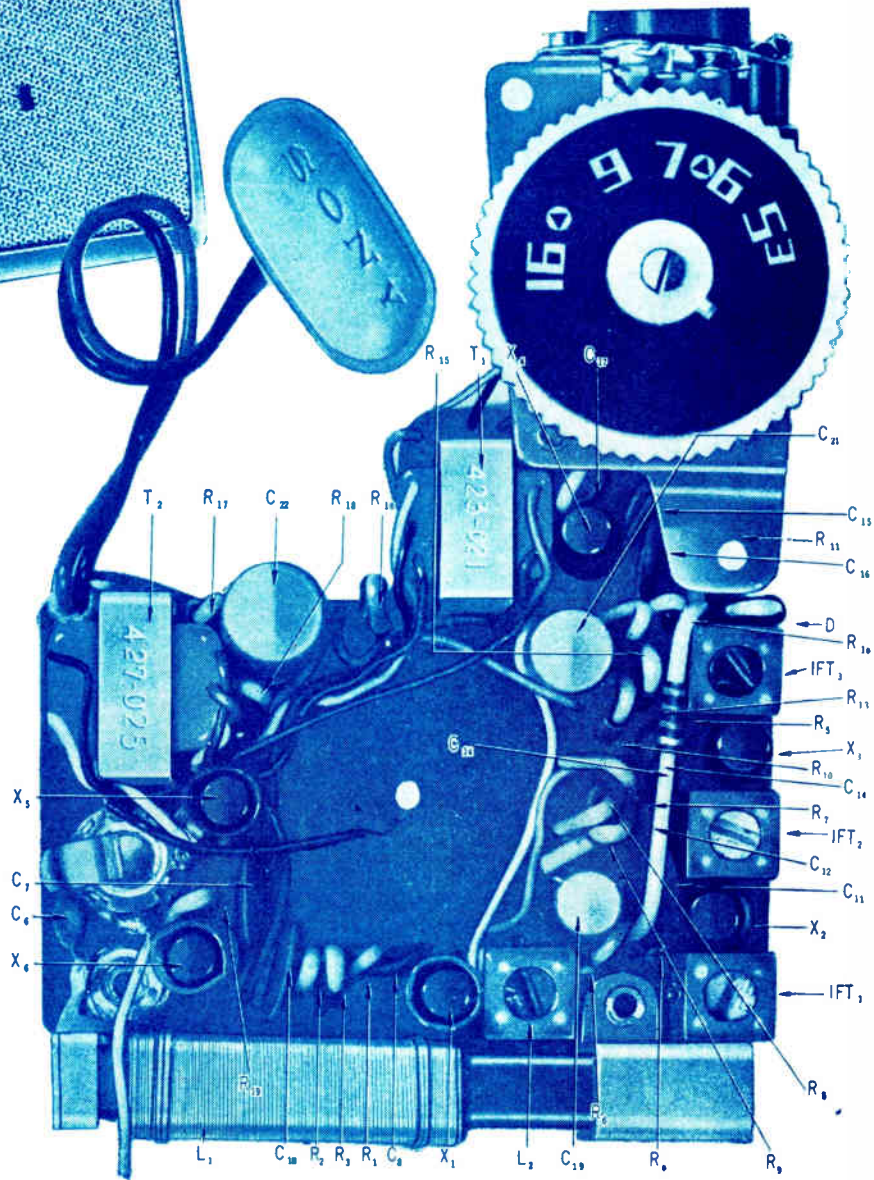
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Speaker : 2 1/2" PM dynamic, 8 Ω
Battery : Eveready 216 or BL-006P or equivalent (9 volts)
Current drain : 6 mA at zero signal, 30 mA at 120 mW output

Electronic parts list

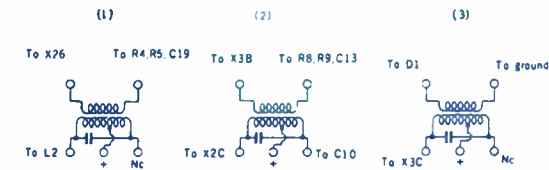
L ₁	Ferrite bar antenna coil	R ₁	10 k Ω	C ₁	Tuning condenser
L ₂	Oscillator coil	R ₂	100 k Ω	C ₂	Trimmers
IFT ₁	IFT	R ₃	15 k Ω	C ₃	150 PF built in IFT
IFT ₂	"	R ₄	150 k Ω	C ₄	150 PF " " "
IFT ₃	"	R ₅	5.6 k Ω	C ₅	150 PF " " "
T ₁	Interstage transformer	R ₆	470 Ω	C ₆	5 PF
T ₂	Output transformer	R ₇	10 k Ω	C ₇	0.005 μ F ceramic
J	Earphone jack	R ₈	39 k Ω	C ₈	0.005 μ F "
SP	Speaker, 8 Ω	R ₉	3.3 k Ω	C ₉	130 PF styrol
SW ₁	Power switch	R ₁₀	470 Ω	C ₁₀	1 PF ceramic
SW ₂	Automatic/manual switch	R ₁₁	220 Ω	C ₁₁	0.02 μ F "
SW ₃	Time switch (built in the watch)	R ₁₂	Potentiometer 5 k Ω	C ₁₂	0.01 μ F "
X ₁	2SC-73	R ₁₃	27 k Ω	C ₁₃	0.01 μ F "
X ₂	2SC-76	R ₁₄	10 k Ω	C ₁₄	0.01 μ F "
X ₃	2SC-76	R ₁₅	1.5 k Ω	C ₁₅	0.01 μ F "
X ₄	2SD-64	R ₁₆	220 Ω	C ₁₆	0.02 μ F "
X ₅ , X ₆	2SD-65	R ₁₇	7.5 k Ω	C ₁₇	100 PF styrol
D ₁	1T23G	R ₁₈	220 Ω	C ₁₈	0.04 μ F ceramic
Th	S 250	R ₁₉	10 Ω	C ₁₉	10 μ F 3 V electrolytic
				C ₂₀	0.3 μ F
				C ₂₁	30 μ F 3 V electrolytic
				C ₂₂	30 μ F 10 V electrolytic



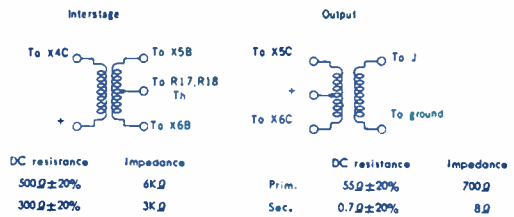
Oscillator coil (L₂)



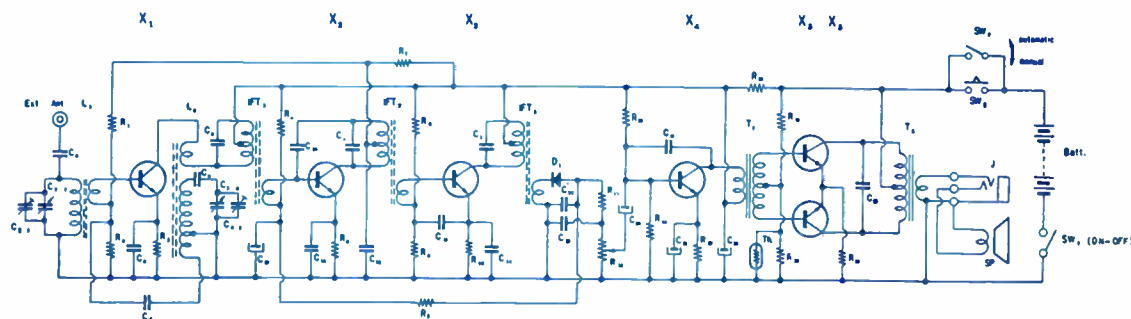
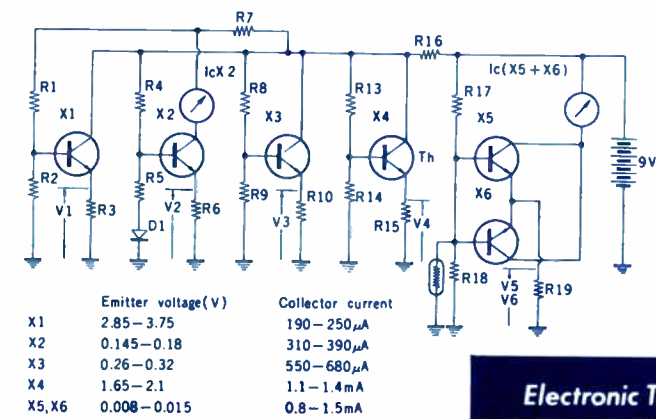
IFT

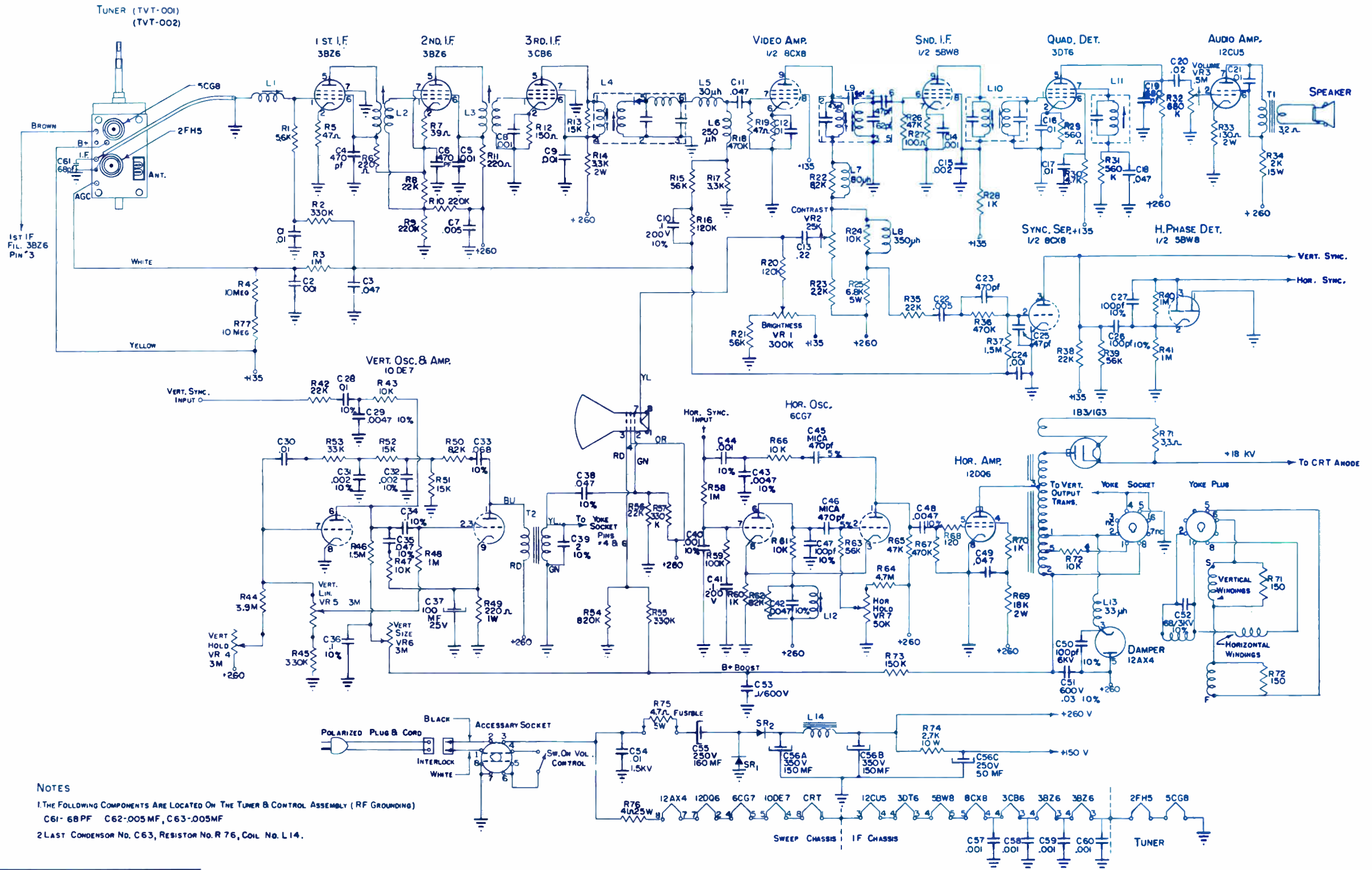


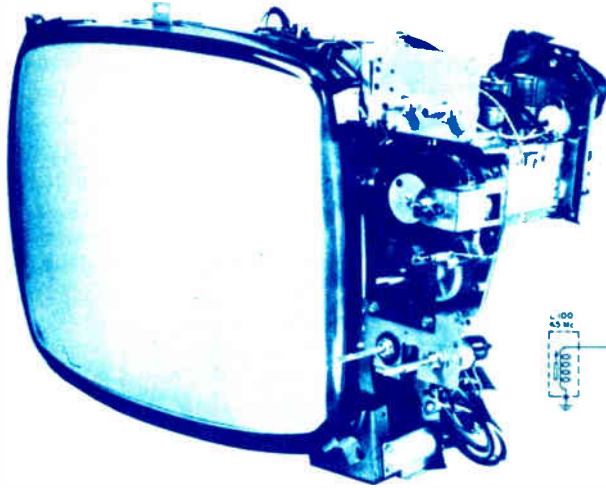
Audio transformer



Voltage and current distribution at zero signal





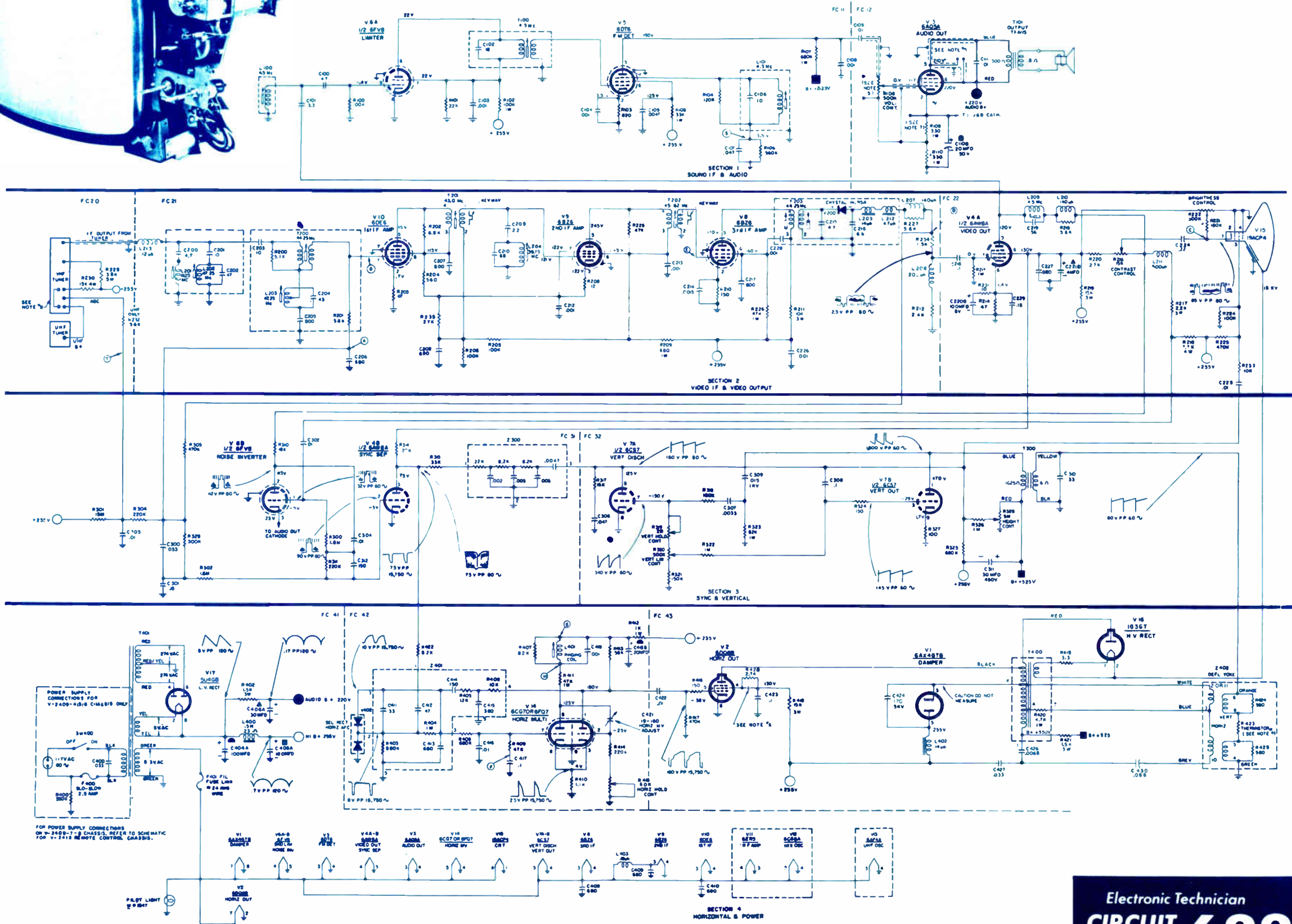


ELECTRONIC TECHNICIAN 688

CIRCUIT DIGEST

WESTINGHOUSE
TV Chassis
V-2409-4, -5, -6, -7, -8

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ELECTRONIC TECHNICIAN 687

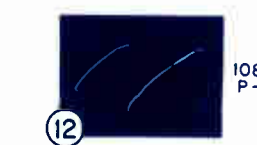
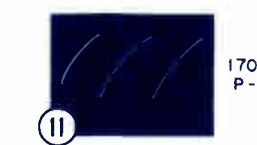
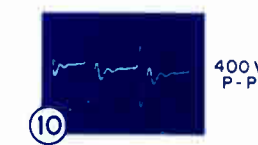
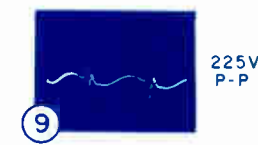
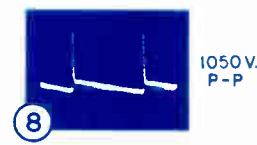
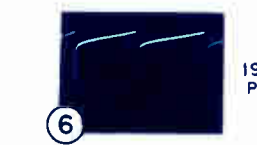
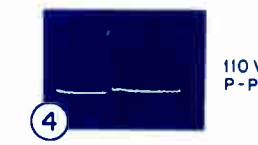
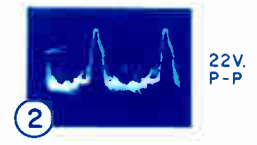
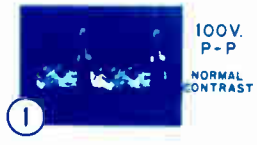
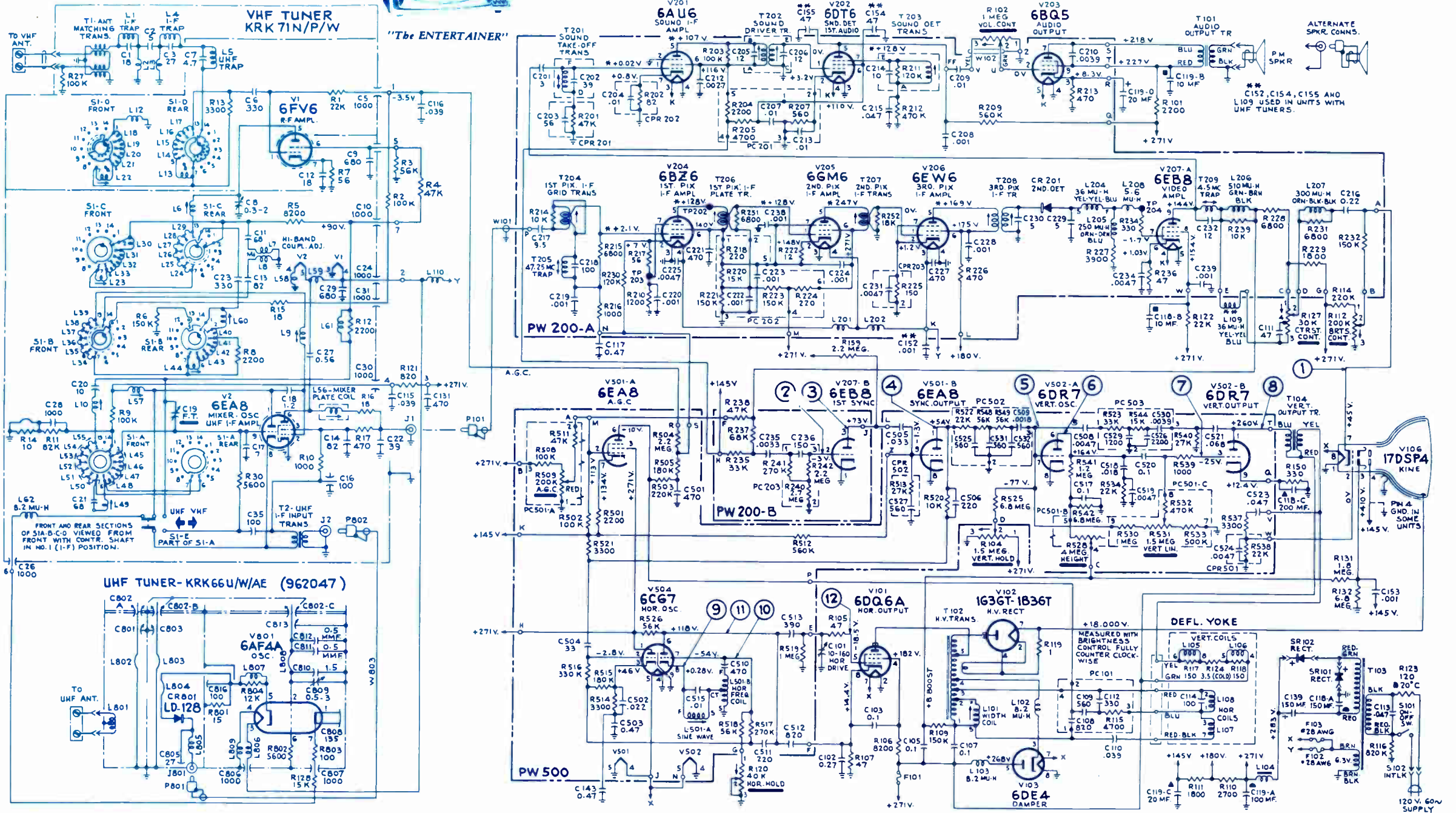
CIRCUIT DIGEST

RCA
TV Chassis
KCS130F, H, K, M

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"The ENTERTAINER"



Direction of arrows at controls indicates clockwise rotation.

*Measured with 1 megohm, 1/2 watt resistor in series with meter probe.

Balloons ① ② etc., shown on schematic indicate points of observation of the waveforms shown

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CIRCUIT DIGESTS

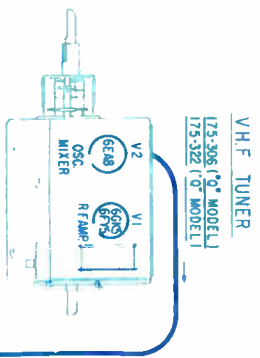
In This Issue (No. 115)

Circuit Digest Schematic No.

- ELECTROHOME 697
- TV Chassis CH-213-611
- EMERSON 695
- TV Chassis 120507A-88, 120515C-160, 120541C-42D
- FISHER 693
- Model 800 AM-FM Stereo Receiver
- MONTGOMERY-WARD 694
- TV Models WG-4234A, WG-4334A
- TRAVLER 696
- TV Chassis 1156-89
- ZENITH 698
- TV Chassis 16128QS

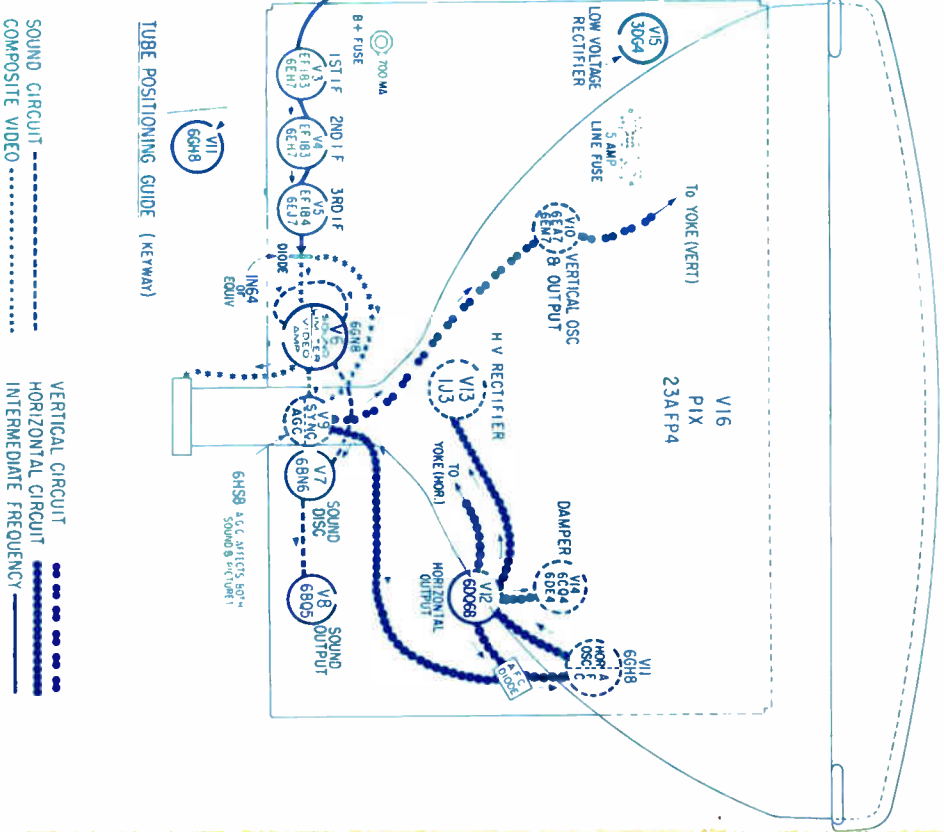


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ZENITH
TV Chassis 16128QS

Electronic Technician
CIRCUIT DIGEST
698

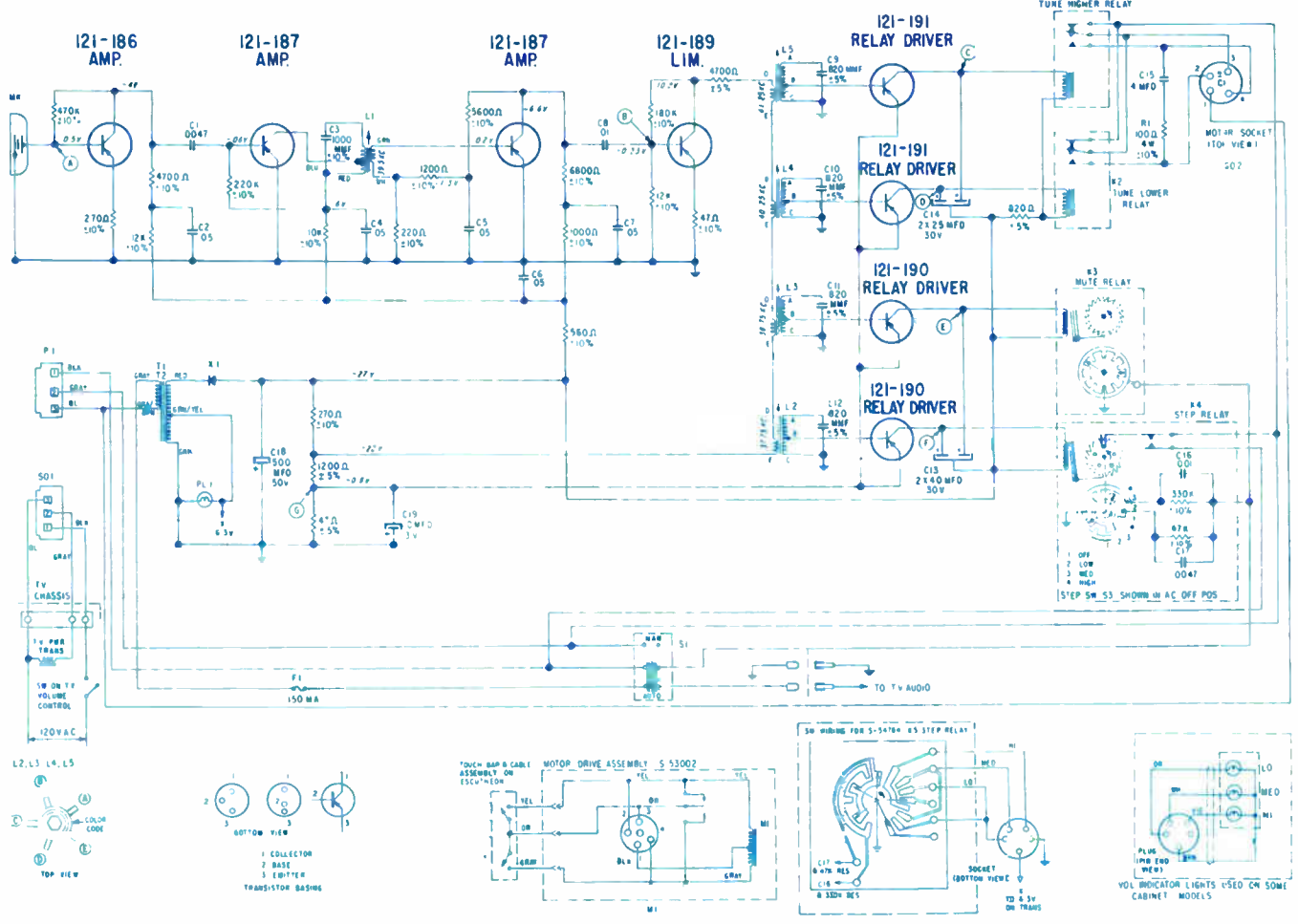


VERTICAL CIRCUIT
HORIZONTAL CIRCUIT
INTERMEDIATE FREQUENCY
TUBE POSITIONING GUIDE (KEYWAY)
SOUND CIRCUIT
COMPOSITE VIDEO

More Data on Reverse Side

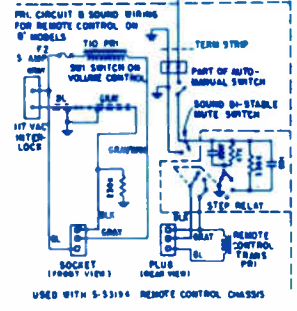
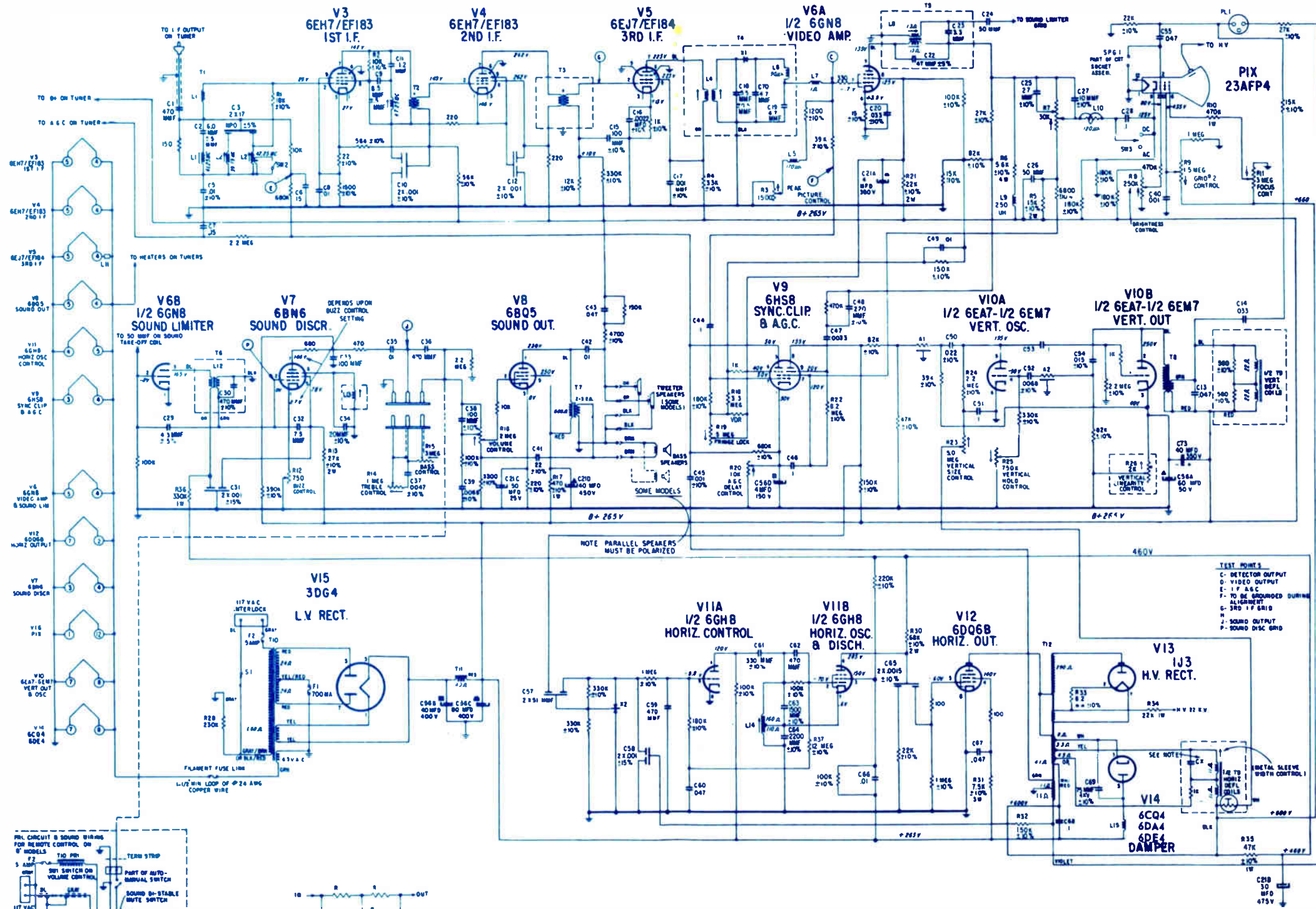
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ITEM NO.	PART NO.	DESCRIPTION
C1	22-14	.0047 MFD Disc Capacitor 500V
C2	22-3034	.05 MFD Disc Capacitor 25V
C3	22-3645	1000 MMFD Mica Capacitor ±10% 100V
C4	22-3034	.05 MFD Disc Capacitor 25V
C5	22-3034	.05 MFD Disc Capacitor 25V
C6	22-3661	.05 MFD Disc Capacitor 100V
C7	22-3034	.05 MFD Disc Capacitor 25V
C8	22-3	.01 MFD Disc Capacitor 500V
C9	22-3644	820 MMFD Mica Capacitor ±5% 100V
C10	22-3644	820 MMFD Mica Capacitor ±5% 100V
C11	22-3644	820 MMFD Mica Capacitor ±5% 100V
C12	22-3644	820 MMFD Mica Capacitor ±5% 100V
C13	22-3643	2 x 40 MFD Electrolytic Capacitor 30V
C14	22-3642	2 x 25 MFD Electrolytic Capacitor 30V
C15	22-2893	4 MFD Electrolytic 60 Cycle Non Polarized 200V
C16	22-17	.001 MFD Disc Capacitor 1000V
C17	22-14	.0047 MFD Disc Capacitor 500V
C18	22-3640	500 MFD Electrolytic Capacitor 50V
C19	22-2984	10 MFD Electrolytic Capacitor 3V
R1	63-3210	100 Ohm ±10% 4W
L1	S-54580	Interstage Coil Winding Assembly
L2	S-54575	Detector Coil Assembly (37.75KC)
L3	S-54576	Detector Coil Assembly (38.75KC)
L4	S-54577	Detector Coil Assembly (40.25KC)
L5	S-54578	Detector Coil Assembly (41.25KC)
K1	195-11	Relay
K2	195-11	Relay
K3	S-54536	Sound B1-Stable Relay Assembly
K4	S-54538	Step Volume Relay Assembly (on S-52494)
K5	S-54784	Step Volume Relay Assembly (on S-55014)
S1	85-645	Auto-Manual Switch
P1	S-52948	Housing, Wire, & Terminal Assy.
PL1	100-249	Pilot Light Bulb
SO1	S-52356	Socket Assembly on TV Set
SO2	78-1036	Motor Socket
X1	212-35	Selenium Rectifier
T1	95-1927	Power Transformer (on S-52494)
T2	95-1950	Power Transformer (on S-55014)
MK	S-54591	Microphone
F1	136-52	150 MA Slo-Blo Type 3AG Drive Motor
M1	S-53002	Drive Motor



ZENITH Space Command "1400"

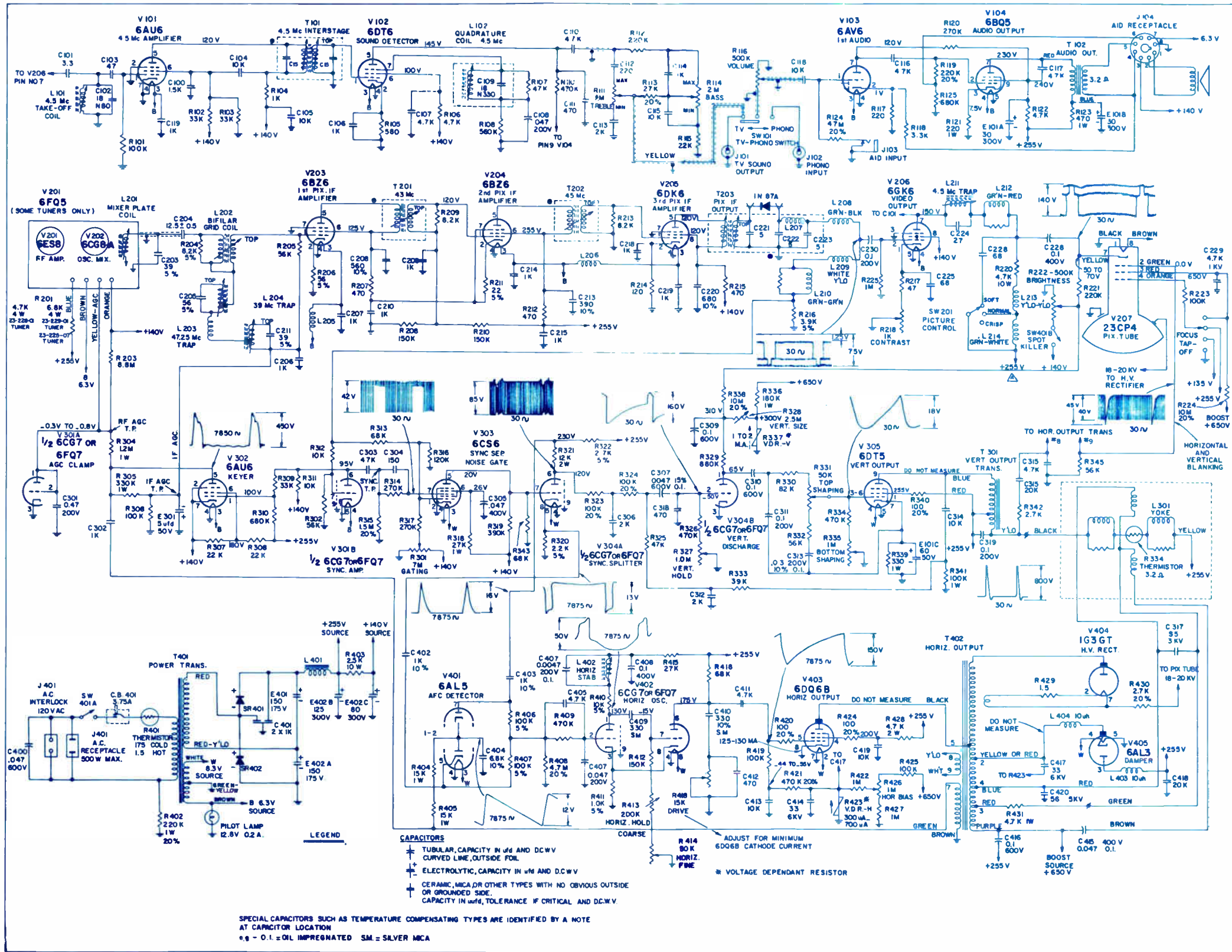
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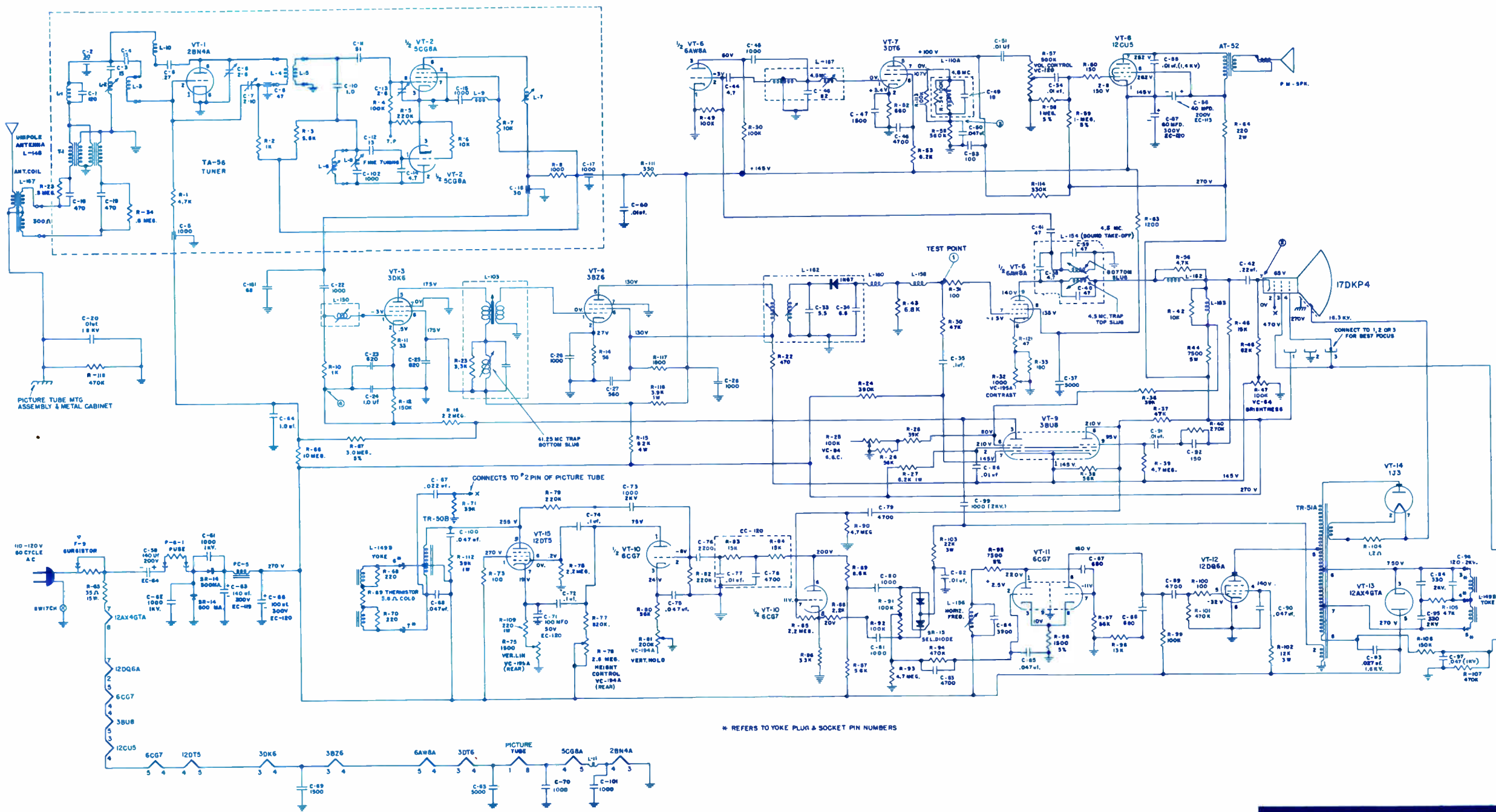
EQUIVALENT CIRCUIT A-1 and A-2 INTEGRATORS

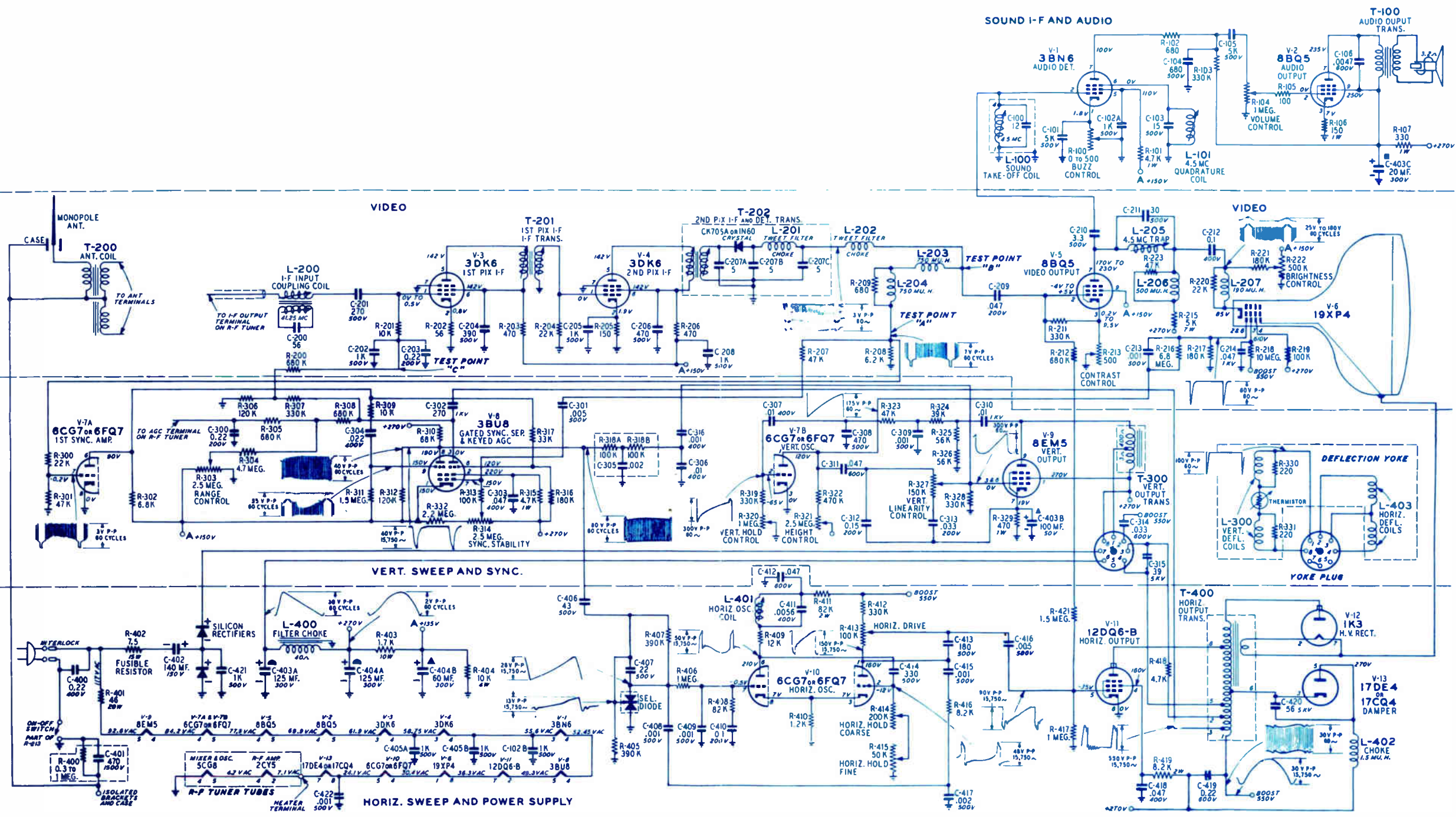
87-7 R is 68K
87-8 R is 82K

More Data on Reverse Side



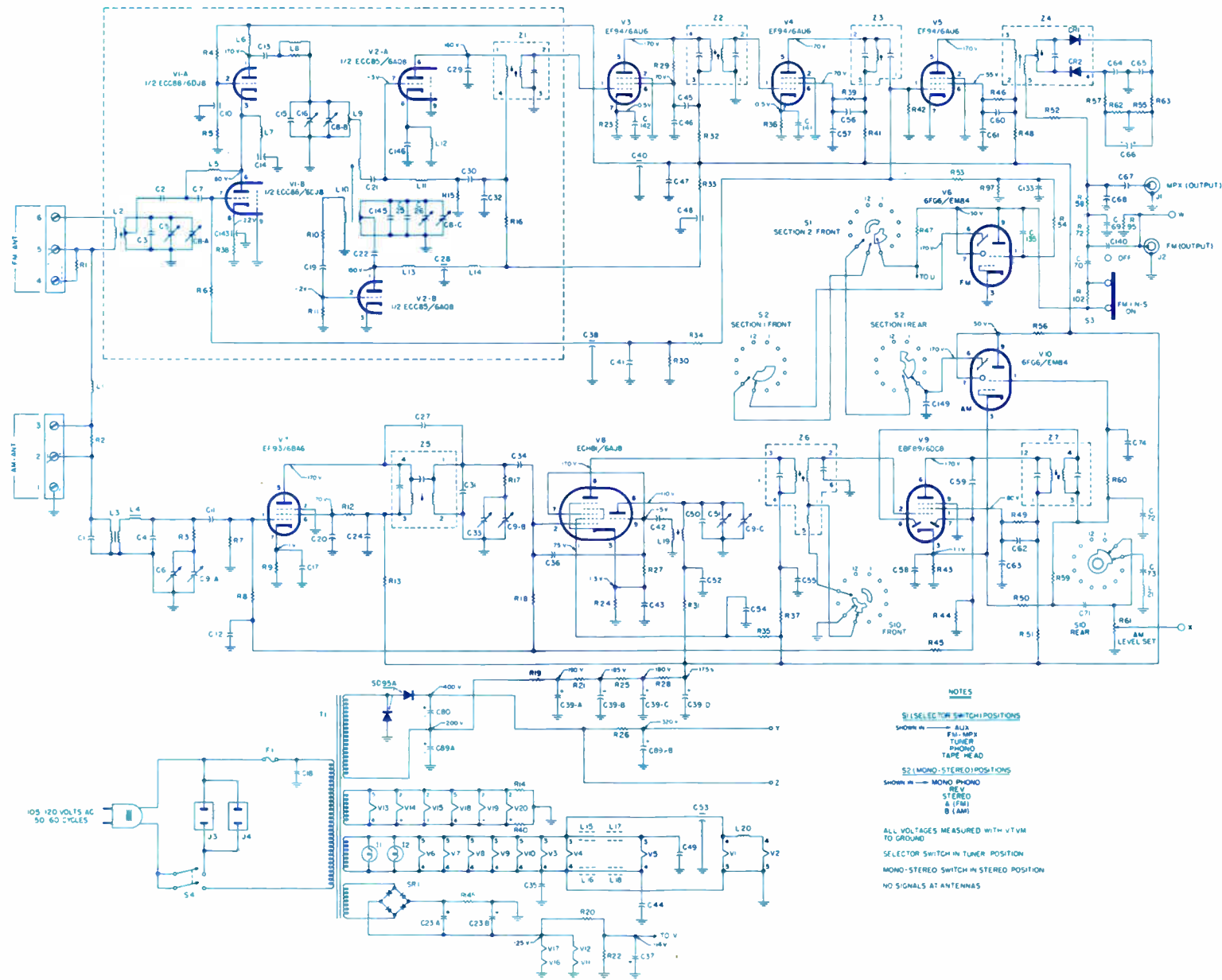
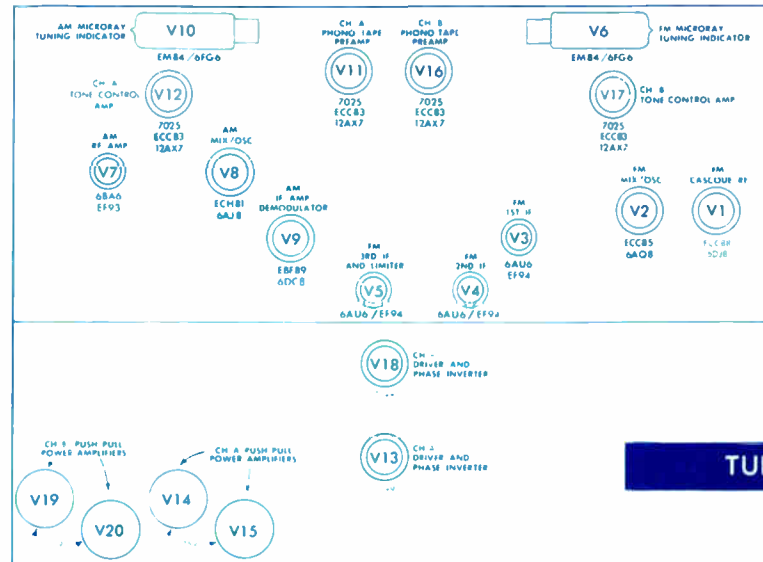
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NOTE—In UHF receivers the filament voltages in the tuner and above the tuner in the heater string will be slightly greater because of the filament voltages of the tuner tubes.

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ELECTRONIC TECHNICIAN

CIRCUIT DIGESTS

Trademark

In This Issue (No. 116)

Circuit Digest Schematic No.

DELCO CHEVROLET 701

Auto Radio Model 985332

GENERAL ELECTRIC 699

TV Chassis LX

HOFFMAN 703

Transistor Radio
Chassis BP318—Model P708

MAGNAVOX 702

Chassis 70-01

F-M Multiplex Adaptor

MOTOROLA 700

TV Chassis TS 440

Models 19P7-1,-2,-3

RCA 705

TV Chassis KCS130YAB-YAC

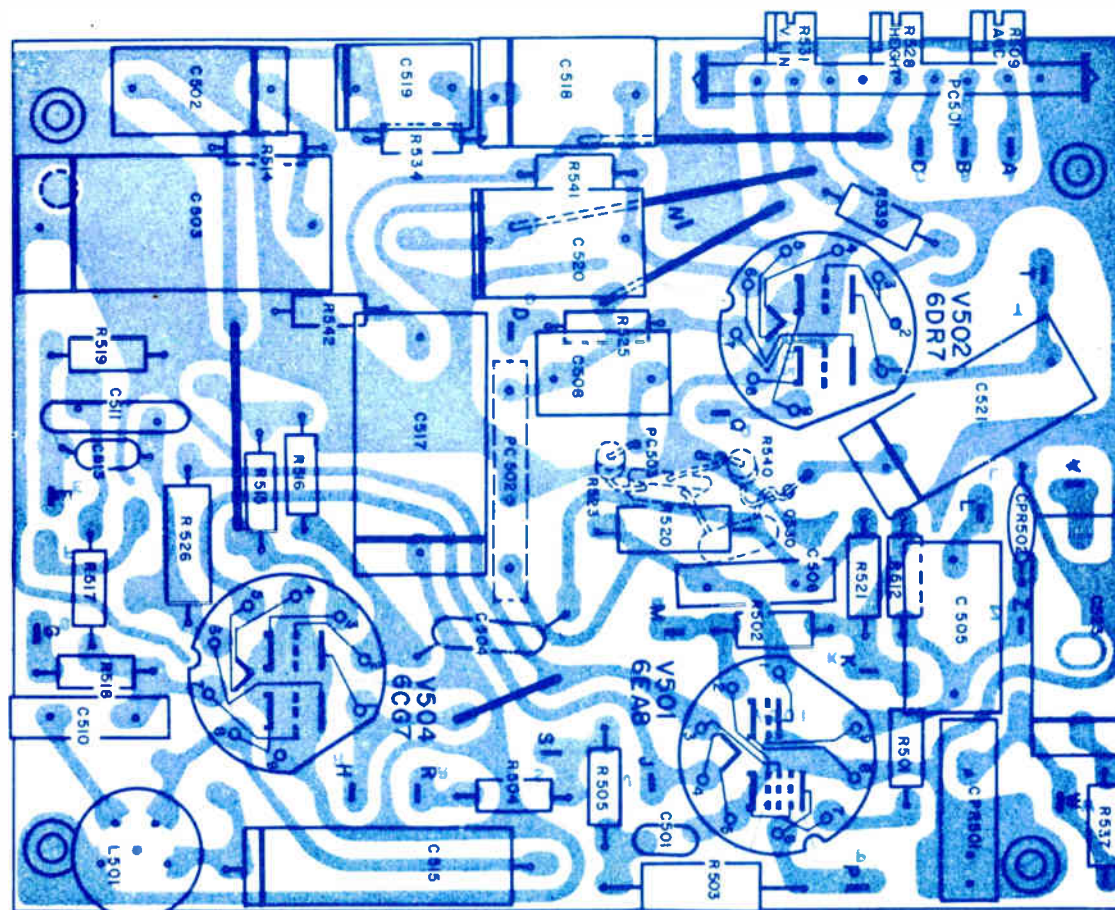
SYLVANIA 704

TV Chassis 558-1,-2

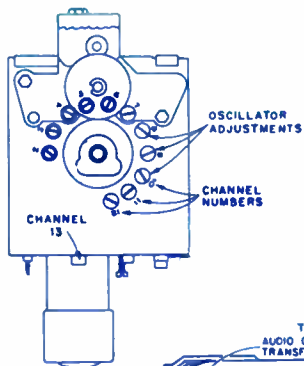
Model 19L17 Series

GROUP
116

More Data on Reverse Side



PW500 Sealed Circuit Deflection Assembly
Composite Diagram

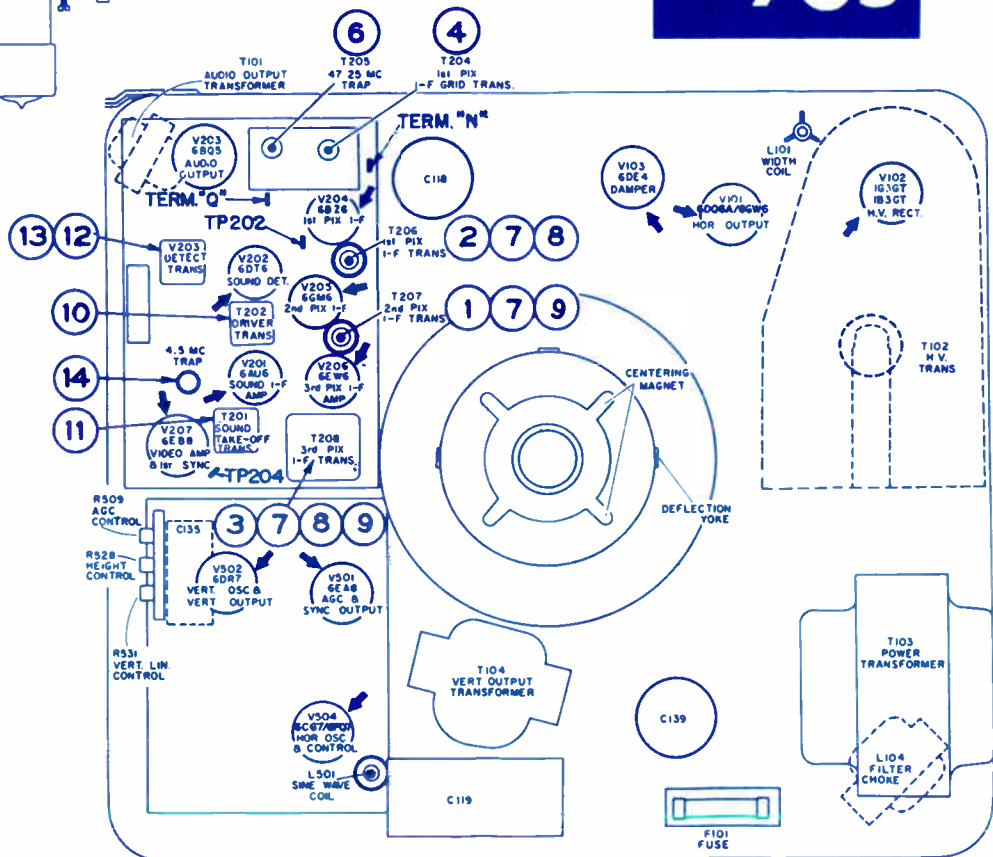


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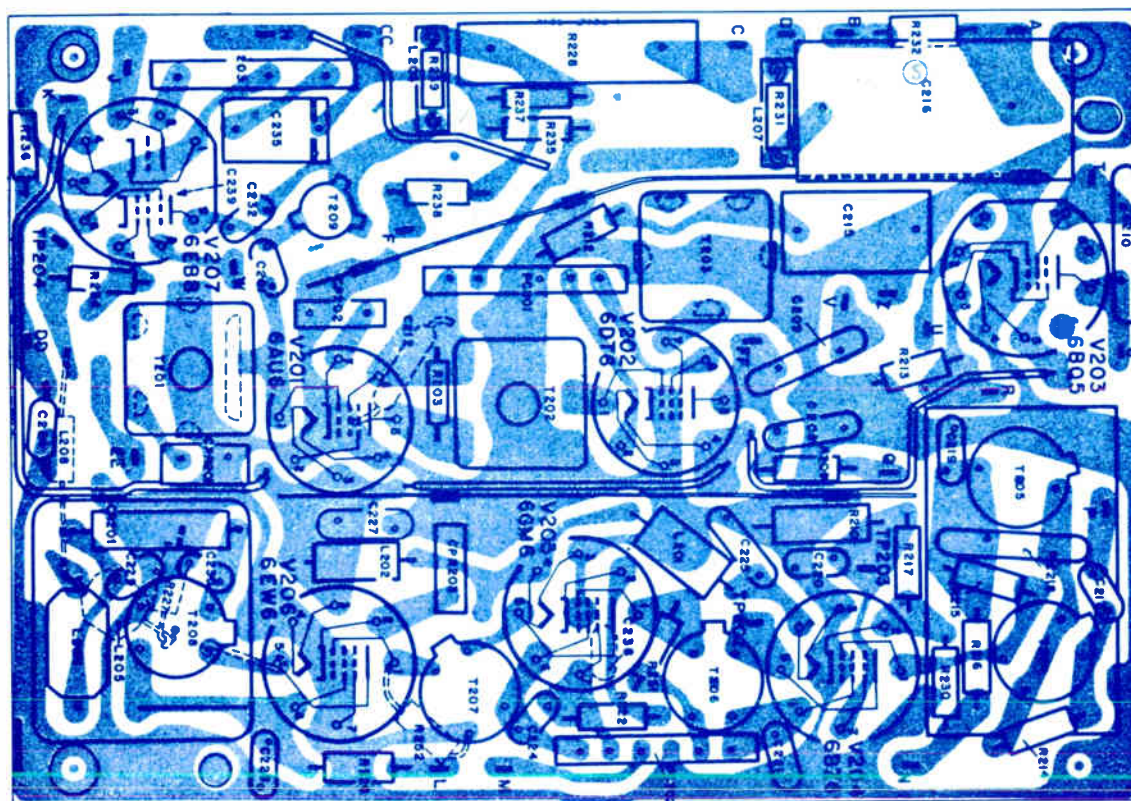
RCA
TV Chassis
KCS130YAB-YAC

Electronic Technician
CIRCUIT DIGEST

705



Chassis Rear View



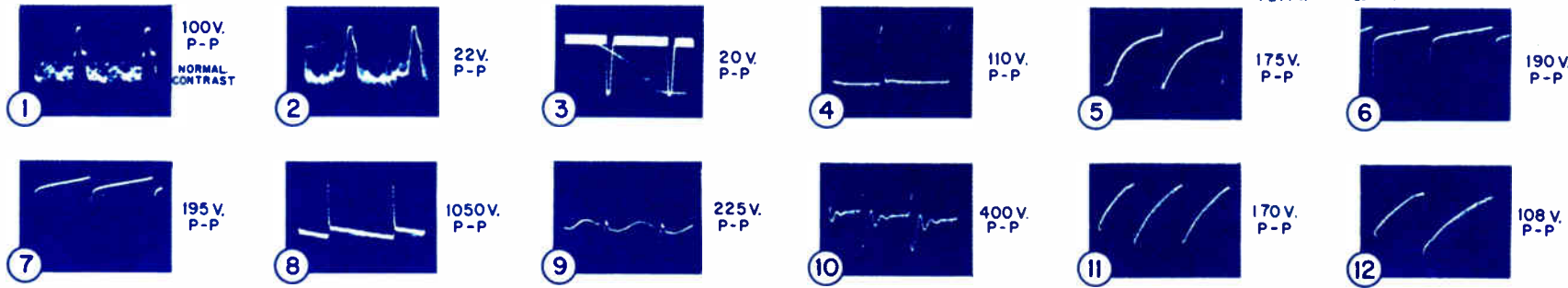
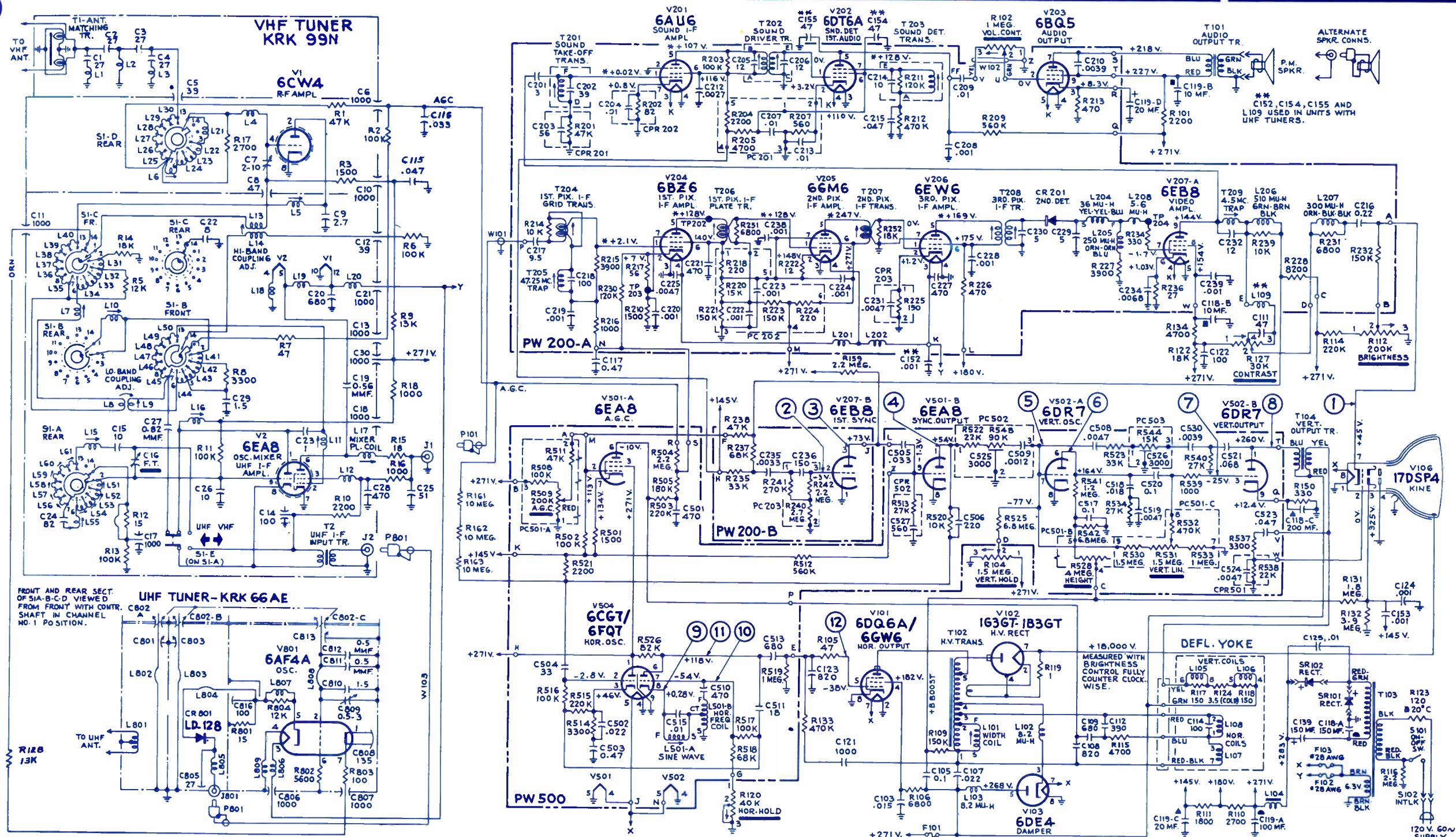
PW200 Sealed Circuit I-F and Video Assembly
Composite Diagram

ELECTRONIC TECHNICIAN 705

CIRCUIT DIGEST

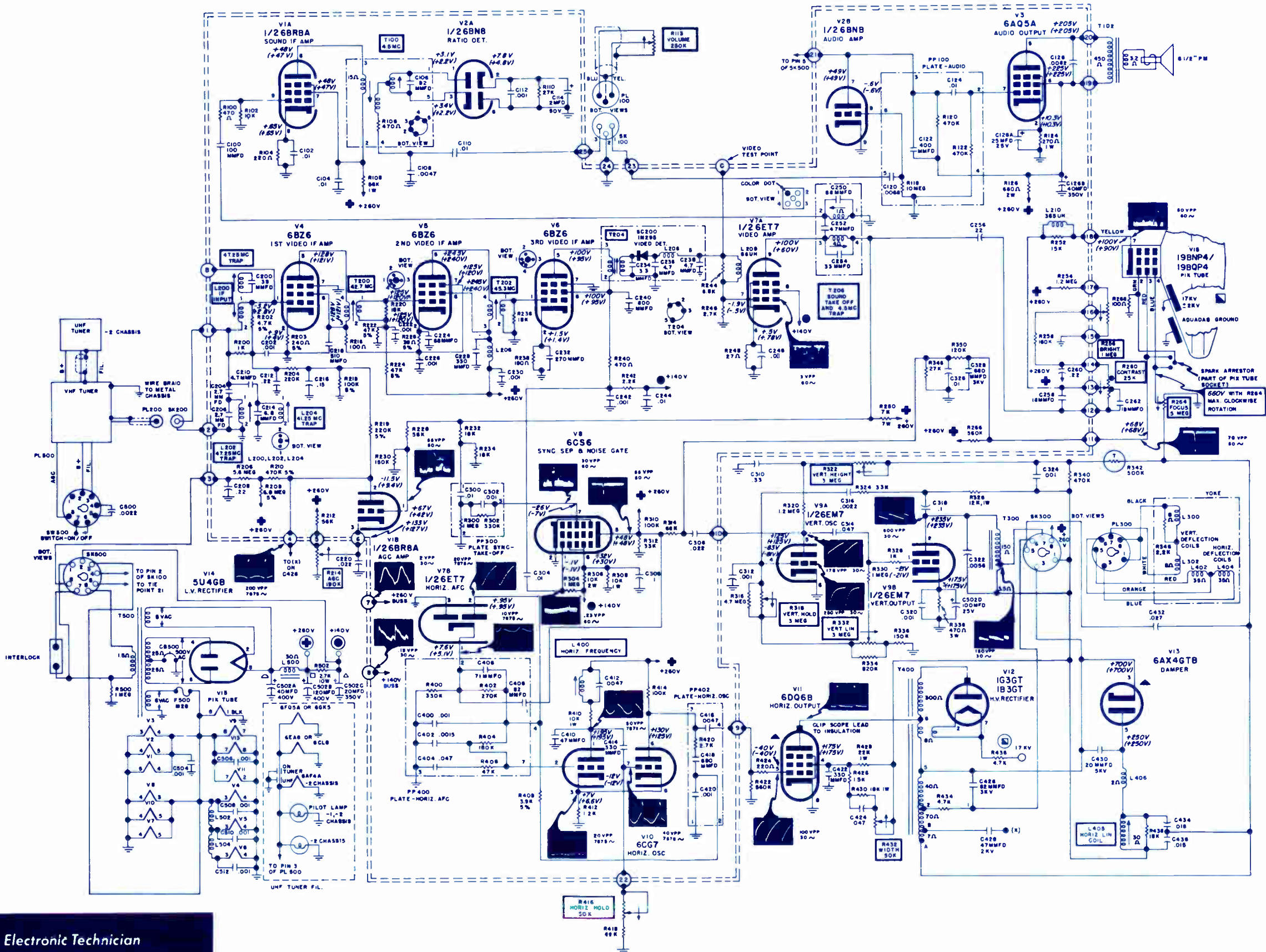
RCA
TV Chassis
KCS130YAB-YAC

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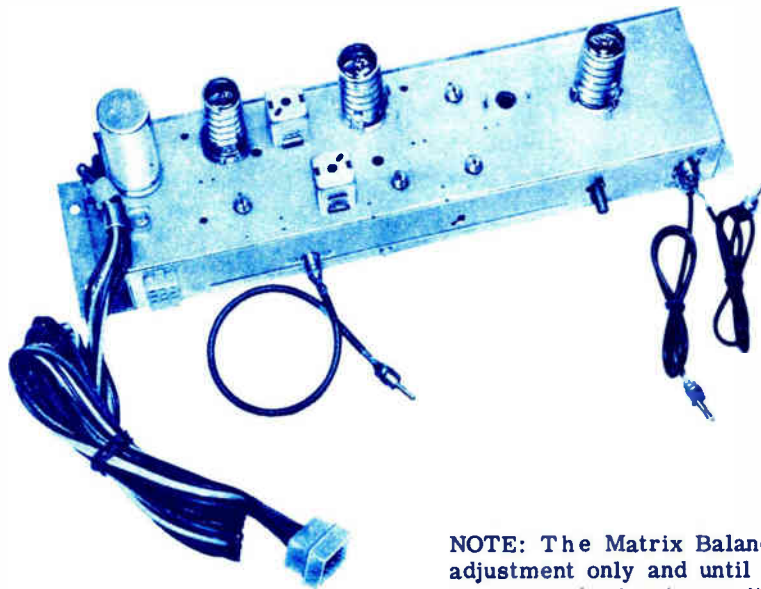


More Data on Reverse Side

Electronic Technician
CIRCUIT DIGEST 705

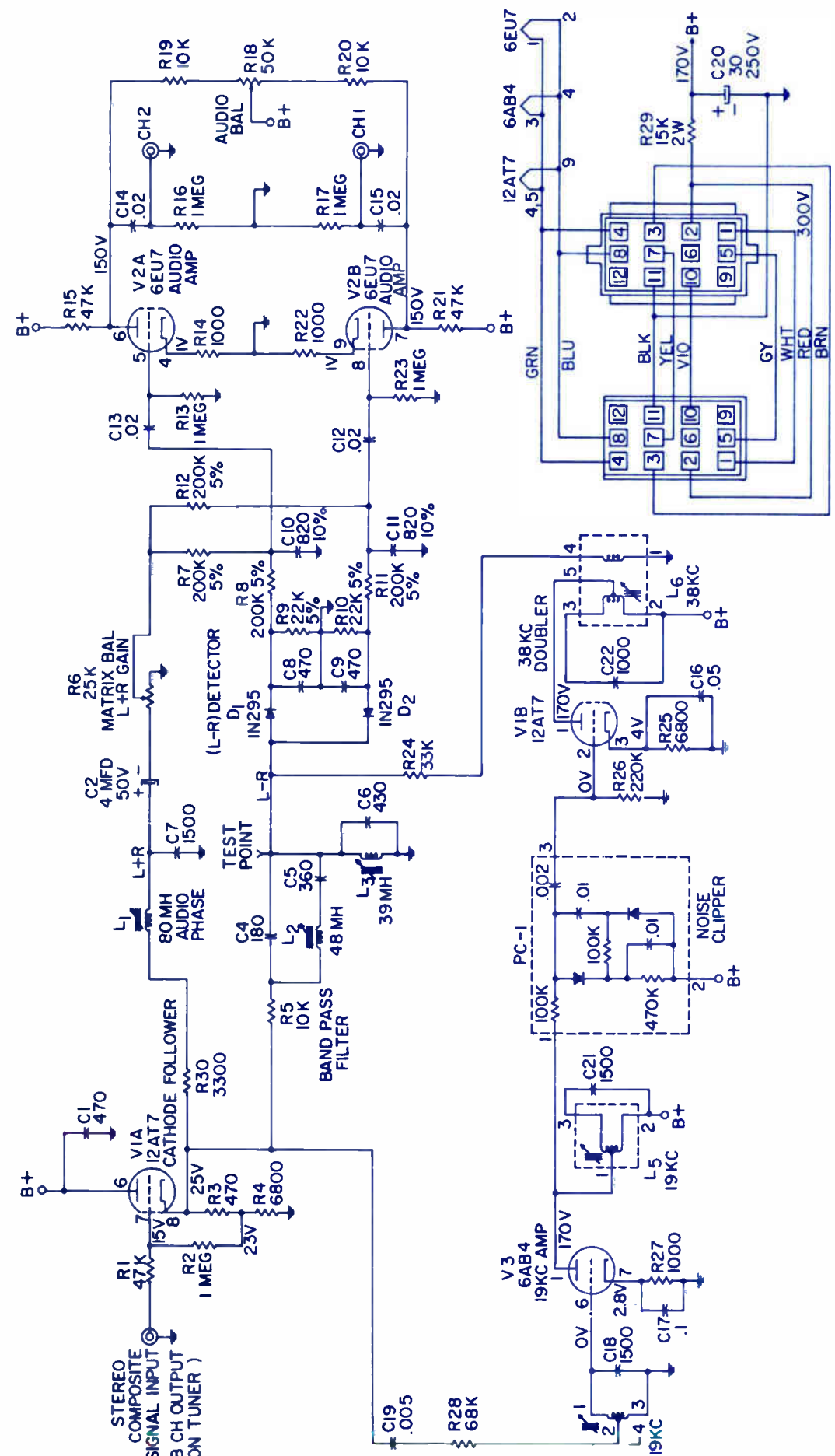
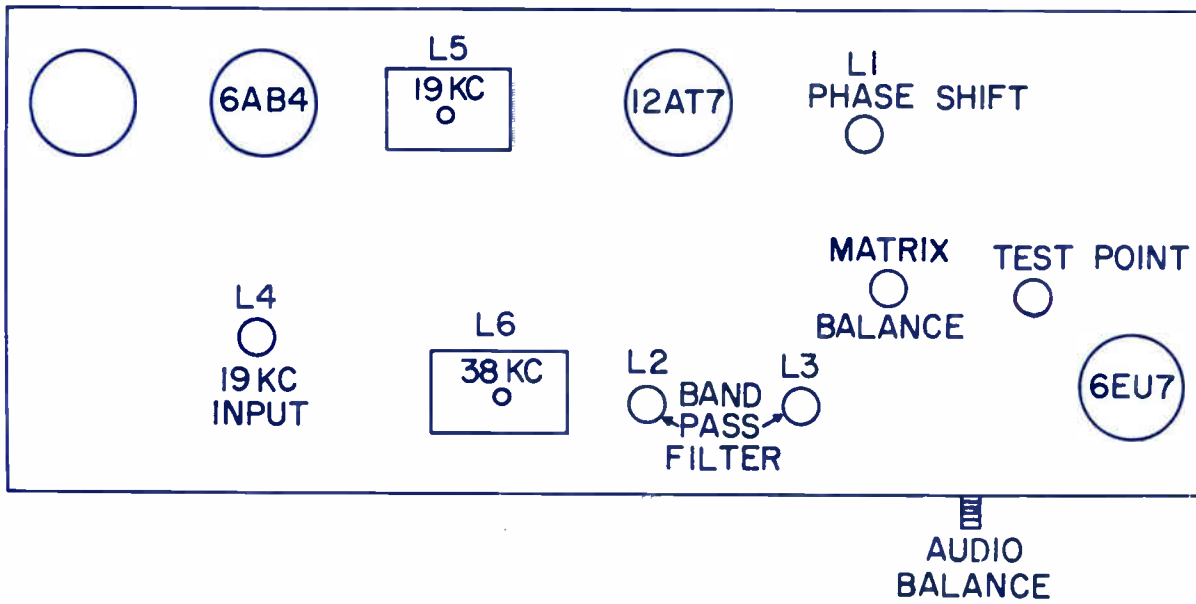


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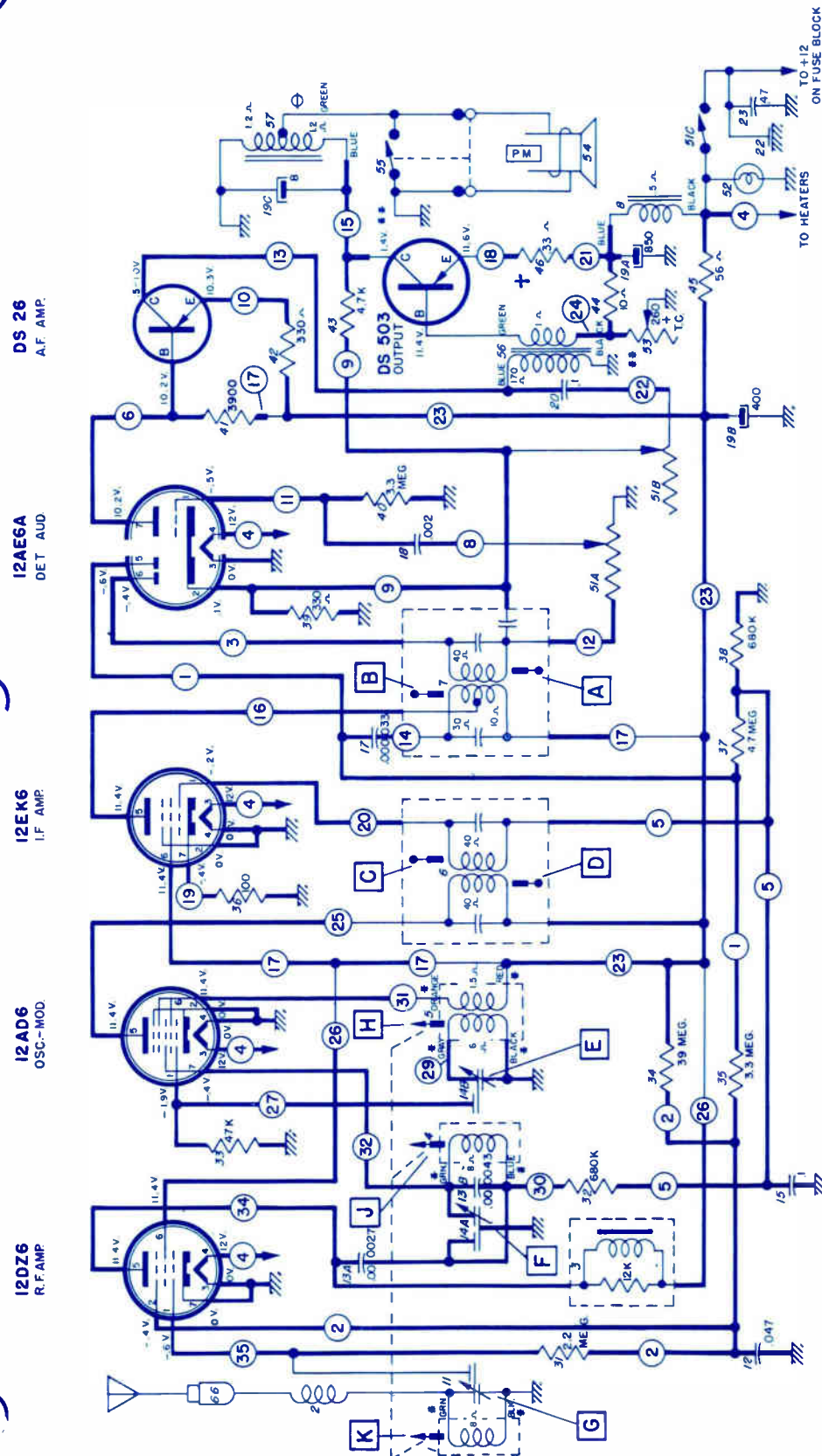


NOTE: The Matrix Balance Control is for factory adjustment only and until such time as the station in your area begins transmitting a continuous tone test signal, or until adequate Multiplex test equipment is available, should not be adjusted. If, however, due to changing of a control or by accident, the setting of this control is disturbed, set the control for a resistance value of approximately 3500 ohms from center arm to ground. This will provide an optimum setting until such time as it can be properly adjusted.

CHASSIS LAYOUT



CAUTION: COLLECTOR VOLTAGE OF DS-503 TRANSISTOR MUST BE MEASURED AT TRANSISTOR CASE (NOT HEAT RADIATOR).



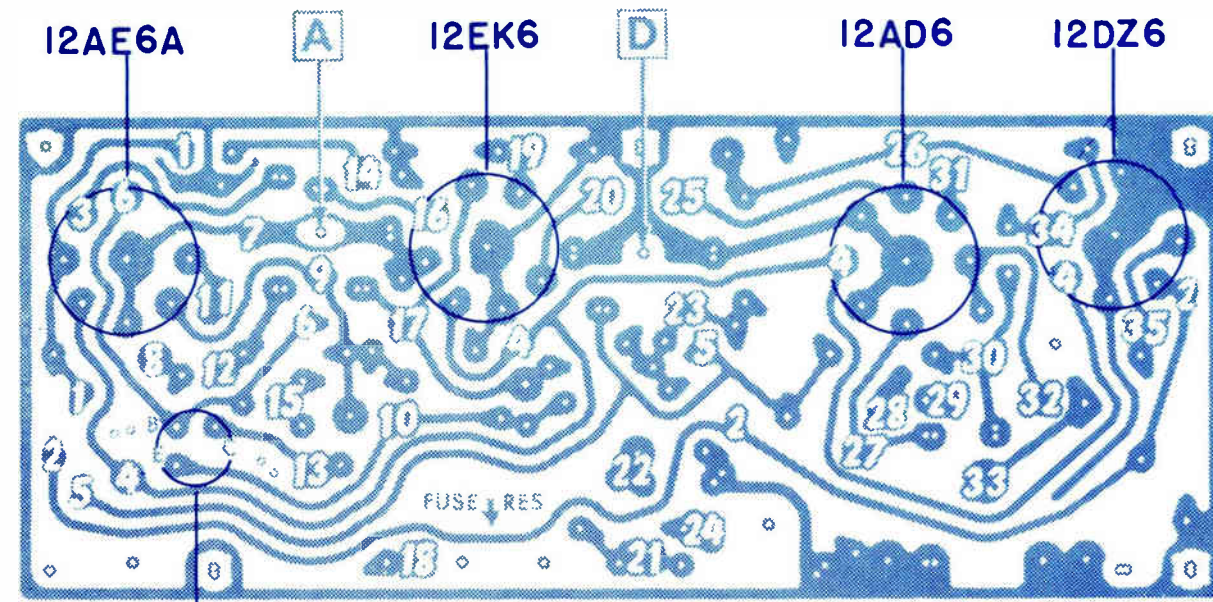
CHEVROLET 985332—PRINTED CIRCUIT SHOWN IN HEAVY LINES. VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM—NO SIGNAL AND 12.0 VOLTS AT ILLUS. 22.

OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC. TOTAL "A" DRAIN AT 12V.—1.4 AMPS. TOLERANCE ON VOLTAGES ± 10%.

*—INDICATES LEAD FROM TUNER COIL ASSY.

**—BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 53) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.

+—ILLUS. 46 IS A FUSE RESISTOR FOR THE TRANSISTOR.



DS-26

CIRCUIT BOARD (PRINTED VIEW)

**SUPPLEMENT TO BULLETIN 6D-884
CHEVROLET RADIO MODEL 985332**

There has been a circuit design change in subject model radio which reduces the minimum volume output. To effect this change, the values of two resistors were reduced. Should you elect to make this change on early production sets, BOTH resistors must be changed as follows:

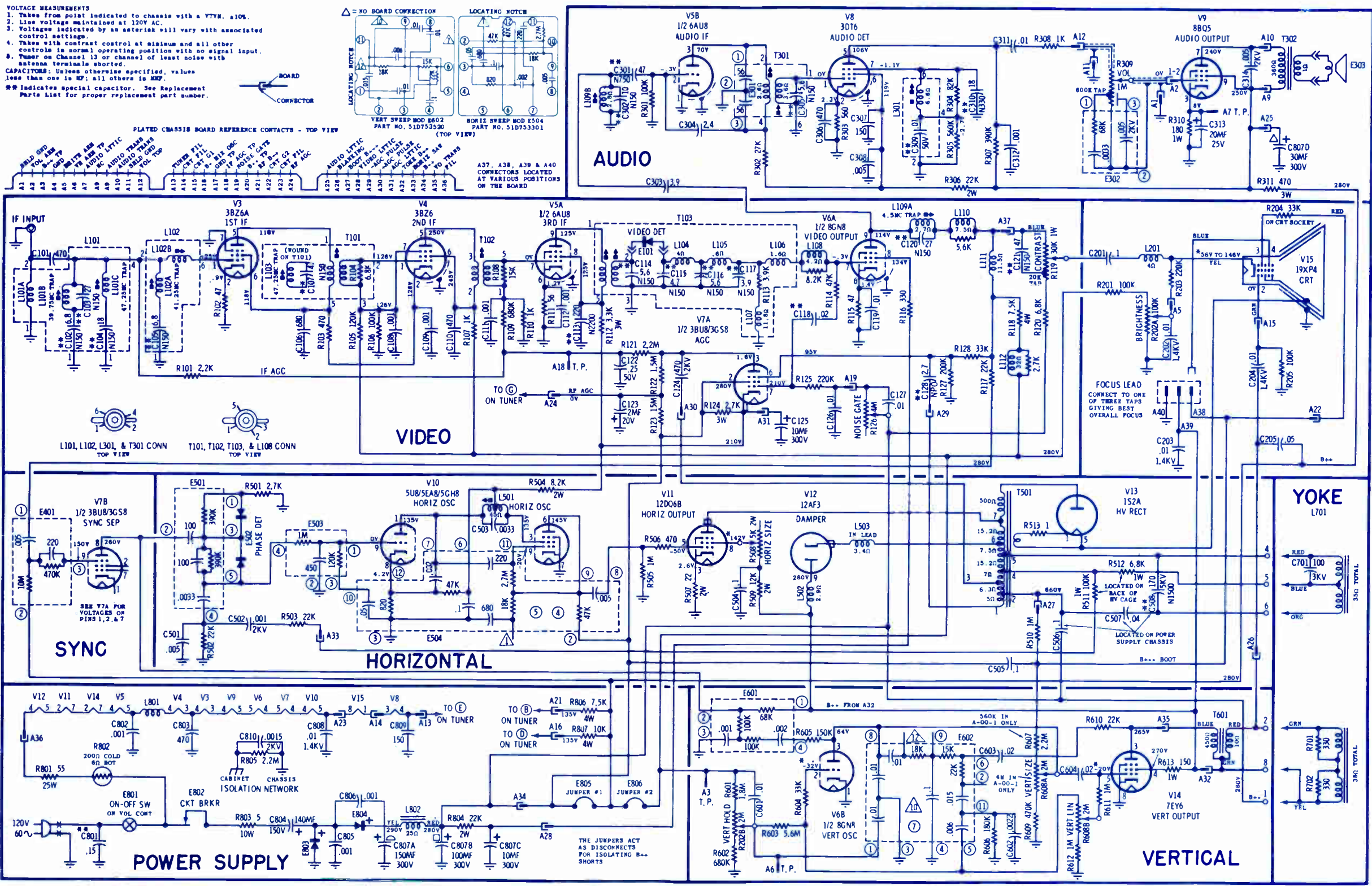
Early Production:

ILLUS. NO.	SERVICE PART NO.	DESCRIPTION
39	1213224	Res., 330 ohm, 1/2 watt
43	7280230	Res., 4700 ohm, 1/2 watt

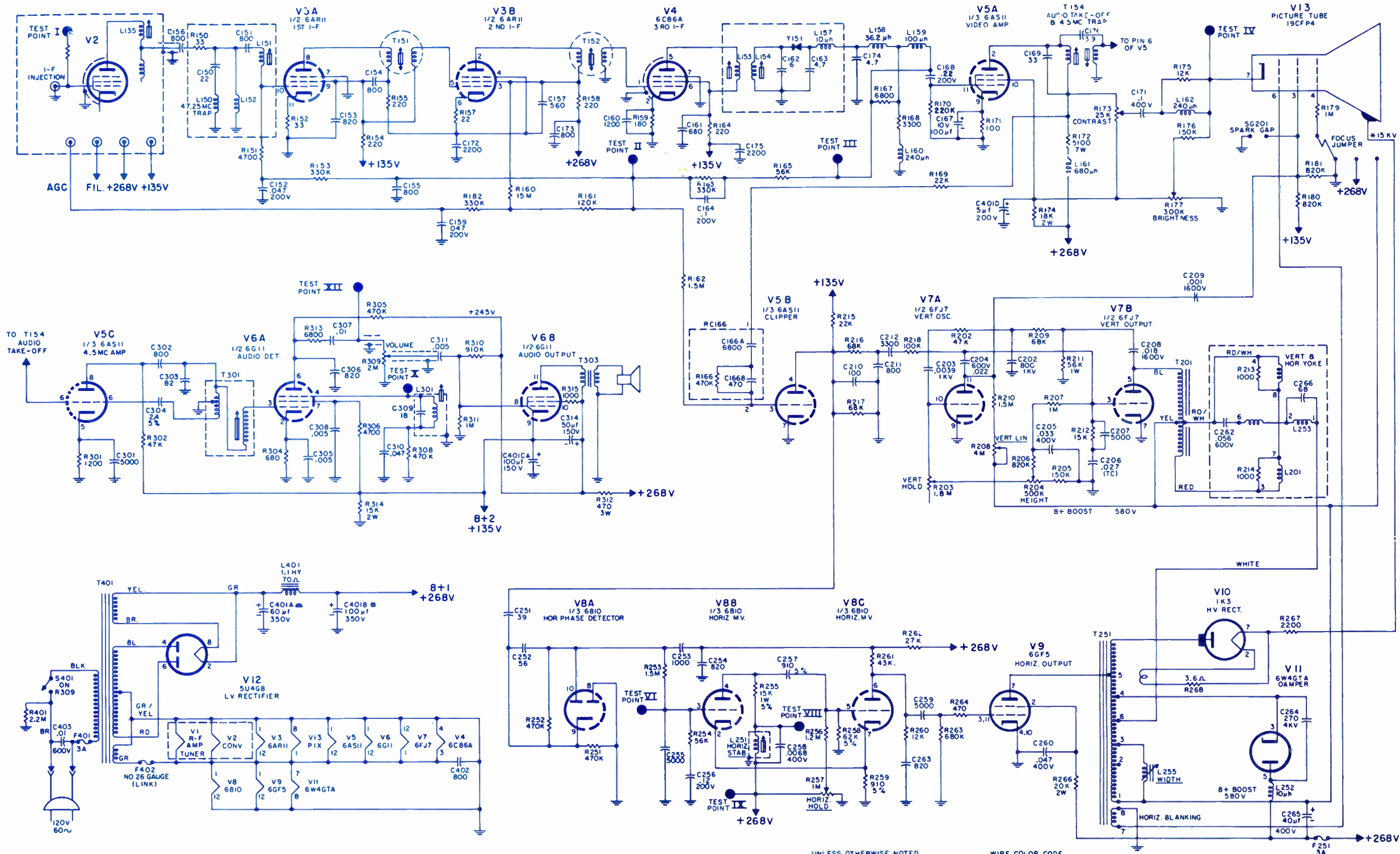
Late Production Change:

39	1214538	Res., 33 ohm, 1/2 watt
43	1213486	Res., 470 ohm, 1/2 watt

- VOLTAGE MEASUREMENTS**
1. Taken from point indicated to chassis with a VTVM, a10%.
 2. Line voltage maintained at 120V AC.
 3. Voltages indicated by an asterisk will vary with associated control settings.
 4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
 5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
- CAPACITORS:** Unless otherwise specified, values less than one in 10⁶ all others in 100⁰.
- ** indicates special capacitor. See Replacement Parts List for proper replacement part number.



April • 1962



PRODUCTION CHANGE IDENTIFICATION

On chassis with code numbers below 149LX, C168 was .047 μ f and R170 was 1 Meg. When changing either component, both components should be checked to agree with production code.

UNLESS OTHERWISE NOTED
K=1000 M=1,000,000
CAPACITORS MORE THAN 1 μ f
CAPACITORS LESS THAN 1 μ f
RESISTORS ARE 1/2 WATT

WIRE COLOR CODE
(USED IN MOST INSTANCES)
BROWN—FILAMENT
RED—HIGH B+
ORANGE—LOW B+
RED & WHITE—B+ BOOST
WHITE—AGC

ELECTRONIC TECHNICIAN

May • 1962

CIRCUIT DIGESTS

Trademark



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Philco 708

Transistor Radio
Model T-63

RCA 706

Color TV CTC11

complete Index of ALL "CIRCUIT DIGESTS" TO DATE

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All Units are TV Receivers
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Auto Radio 1959, 1960 Chevrolet 631

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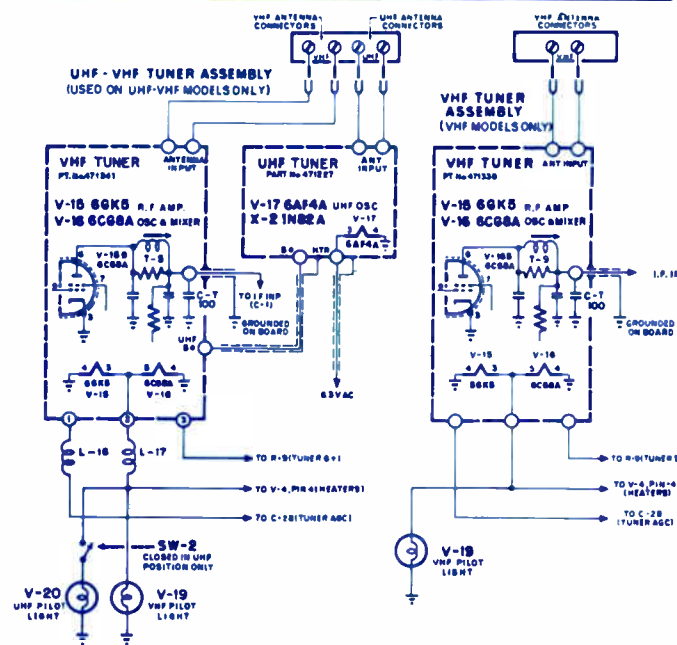
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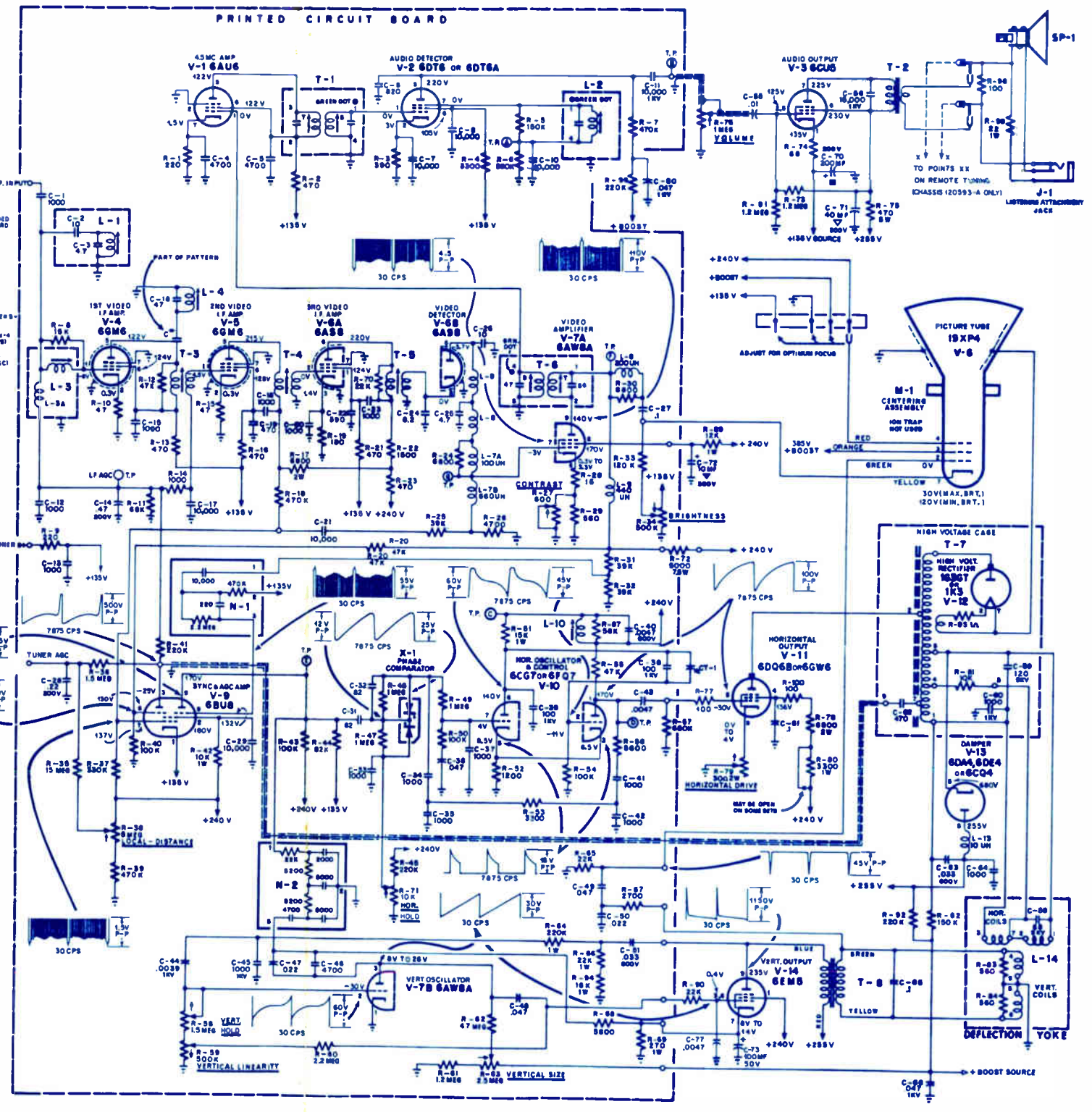
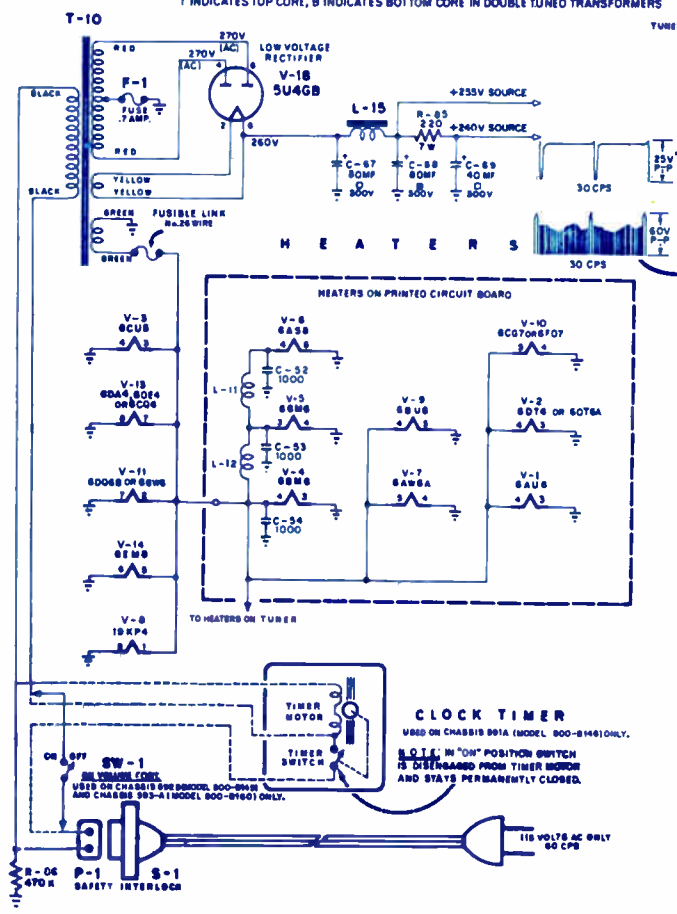
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 (Portable Radio) Chassis V-2237-2: Models H-511P4, H-512P4 210
 FM Radio Chassis V-2400-1: Models H-715T5, H-716T5 557
 Transistor Portable Radio Chassis V-2278-1: Models H-587P7, H-588P7, H-589P7 296
 Transistor Radio: Chassis V-2278-2: Models H 610P5, H 611P5, H 612P5, H 613P5 326
 Transistor Radio Chassis V-2393-1: Model H655P5, H656P5 418
 Transistor Portable Radio Chassis V-2393-4: Models H-790P6 & H-791P6 679
 Transistor Portable Radio Chassis V2397-4: Model H-771P6, H-772P6, H-773P6, H-7716GP, H-772P6GP, H-773P6GP 594
Hi-Fi
 Model H-803 all channel UHF Tuner 56
 Hi-Fi Tuner Pre-Amp V-2511-1 Amp & Power Supply V-2510-1 Models H-M 1300, 1301, 1302, 1303 597
 Stereo Phonograph Console w/AM Radio, Chassis V-2509-2: Models H-R1200 to H-R1204 Incl. 546
ZENITH
 Chassis 5R60T: Models R532TR, TF, TV & TW 166
 Chassis 16C21, 16C21Q, 16C21Z, 16C22Q, 16C23, 16C24: Models B221Z, YZ, B222EZ, RZ, YZ, B2245E21, RZ1, W 1, C221RY, C2223E, R, Y, C2225E, R, W, C2245E, R, W, C2246E, R, W, C2247E, R, W, C2249H, R, W, C2254E, H, R, W, C2282E, R, W, C2284H&R, C2673E, R, W, C3000E, R, C3001E, R, W, C3004E, R, W, C3006E, R, W, C3007E, R, W, C3008R, C3009E, W, Y, 481
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 Chassis 16F23, 16F23Q 616
 Chassis 17G28 & 17G28Q 651
 Chassis 17Y20, 17Y22 273
 Chassis 17Z21, 17Z22: Models Z2222C, E, R, Y; Z2247E, H, R; Z2258E, H, R; Z2282E, R; Z3000E, R; Z3004E, R; Z3006E, R; Z3008E, R 303
 Chassis 18E20, 18E20Q, 18R20, 18D20Q 562

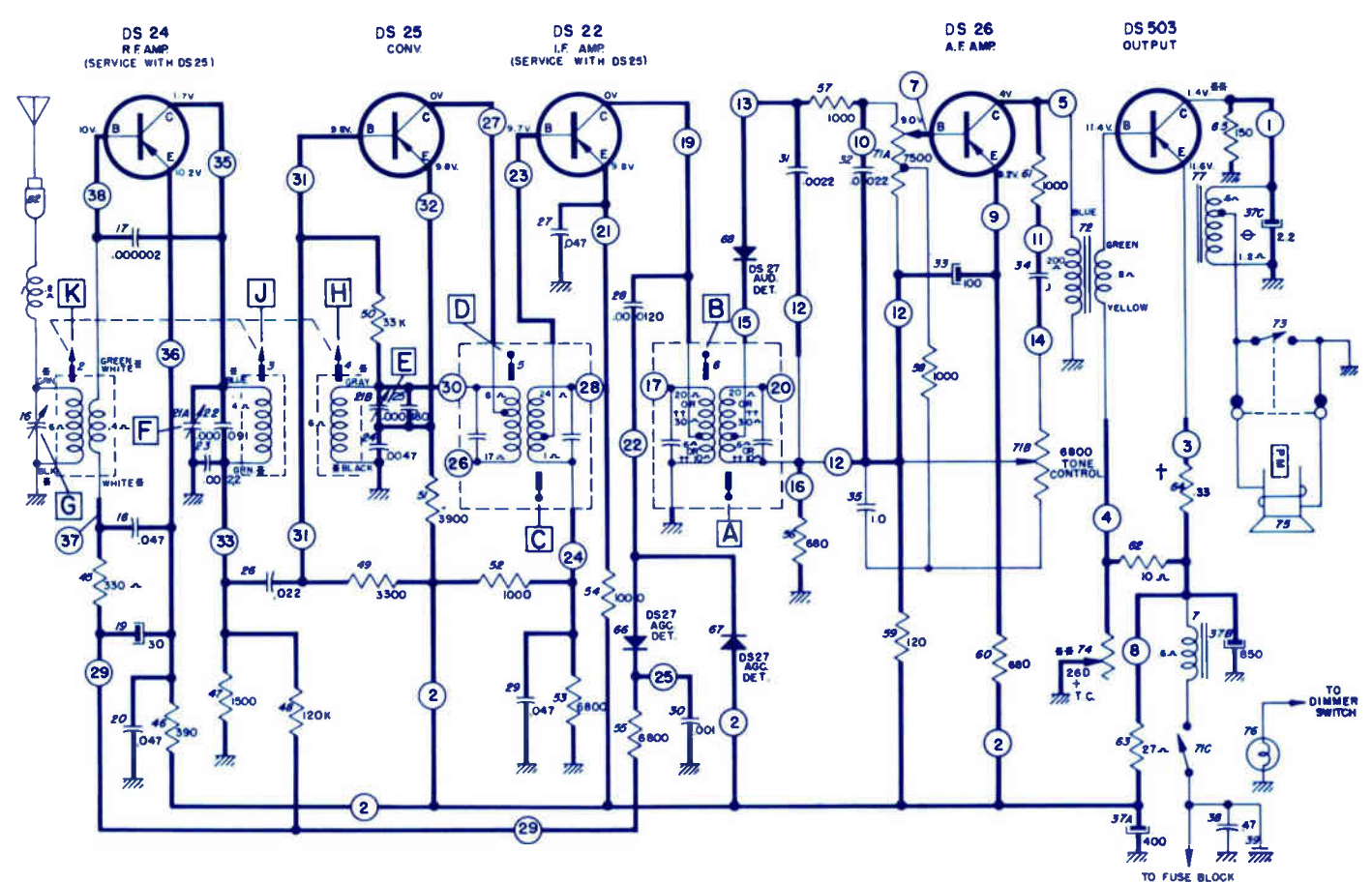
Circuit Digest
Schematic No.

Chassis 19A20: Models A2329J, A2330E, H, R, A2358E & R, A2359E, H, R, A2362M & R. Chassis 19A20Q: Models A3010E, H, R, A-3011E & Y, A3012H & R, A3013H, A3014H & R, A4007E & R 375
 Chassis 19A30, 19A30Q: Models A2260 M & R, A2329R, A2330 E & R, A3010 E & R, A3011 E & Y, A3012 H & R, A3013H, A3014 H & R, A4007 E & R, A4012 H & R 402
 Chassis 19K22: Models K1812E, K1812R, Chassis 19K20: Models K1815E, K1815R, K1820E, K1820R, K1846E, K1846R, K1850E, K1850R, K1880R. Chassis 19K23: Models K229R, K22-58R, K2286R, K2288E. Chassis 21K20: Models K2230E, K2230R, K2240R, K2240E, K2260R, K2263E, K2266, K2266R, K2267E, K2268R, K2270H, K2270R, K2287R, K2290R, K2291E 7
 Chassis 19L26: Models L1820E or R, L1812E or R. Chassis 19L28: Models L1846E or R, L2229E or R, L2235E or R, L2236E or R, L2237E or R, L2250E or R, L2258E or R, L2262C, L2262R, L2281 or E, L2281R, L2285-R. Chassis 19L30: Models L2237EU or RU. Chassis 19L33: Models L2228R. Chassis 19L34: Models L1800R 122
 Chassis 19R20: Models R1800E & R, R1812E & R. Chassis 19R21: Models R2229E & R, R2230E & R, R2249E & R, R2250E & R, R2253M, R2258E & R 155
 Chassis 19X21: Models X2229R, X2230E, X2256E, R. Chassis 19X22: Models X2254M, X2257E, R, X2258E, R. Chassis 19X22Q: Model X2264EQ, RQ 221
 Chassis 20M20, 20M20U: Models M2237R, M-2260R, M2261E, M2267Y 133
 Chassis 22L20: Models L2571R, L2572R, L-2573E, L2574R, L2575E, L2592R, L2593H, L-2876E, L2876R, L2878R, L2879E, L2894HU 88
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 (AM-FM Radio) Chassis 8Y02: Models Y832R, Y8832E 260
 Transistor Transoceanic Radio Model Royal 1000 412
 Transistor Radio Chassis 8AT41Z2 Model Royal 750L 420
 Transistor Portable Radio: Model Royal 150: Chassis 6GT4272 635
Hi-Fi
 High Fidelity AM/FM Radio & Amplifier Chassis 11Z20, 12Z20: Models HF1180R, HF-1182E, HF1284, HF1284E 343
 Tuner Chassis 9B25 Amplifier Chassis 7B31 447
 VHF-UHF Turret Tuner 57
 Record Changer Model S-1409A 524
 Transistor Radio Chassis 6ET4272: Model Royal 100 575
 Chassis 16F25, 16F26, 16F25T, 16F26T, 16F-25Q, 16F26Q 593
 "Gold Video Guard" Tuner 623



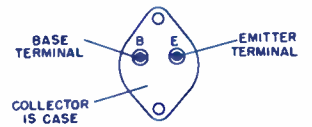
ALL CERAMICS 500V, ALL TUBULARS 400V UNLESS NOTED.
* CERAMIC OR MICA CAPACITORS, CAPACITY IN MICRO-MICROFARADS
* TUBULAR CAPACITORS, CAPACITY IN MICROFARADS
* RESISTORS IN OHMS (K=1000) AND 1/2 WATT UNLESS NOTED.
ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION.
T INDICATES TOP CORE, B INDICATES BOTTOM CORE IN DOUBLE TUNED TRANSFORMERS



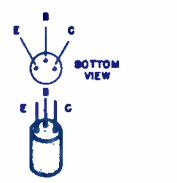


PONTIAC 983687 PRINTED CIRCUIT SHOWN IN HEAVY LINES

VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VOM—NO SIGNAL AND 12.0 VOLTS AT ILLUS. 39.
TOTAL "A" DRAIN AT 12V.—1.2 AMPS.
TOLERANCE ON VOLTAGES ± 10%
*—INDICATES LEAD FROM TUNER COIL ASS'Y.
**—BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 74) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.
†—ILLUS. 64 IS A FUSE RESISTOR FOR THE TRANSISTOR. SERVICE WITH EXACT REPLACEMENT.
⊕—OUTPUT TRANSFORMER WILL APPEAR SHORTED IF SHORTING TYPE SPEAKER SWITCH IS NOT HELD OPEN.
††—WIRE SIZE CHANGED IN LATER PRODUCTION—COILS INTERCHANGEABLE.

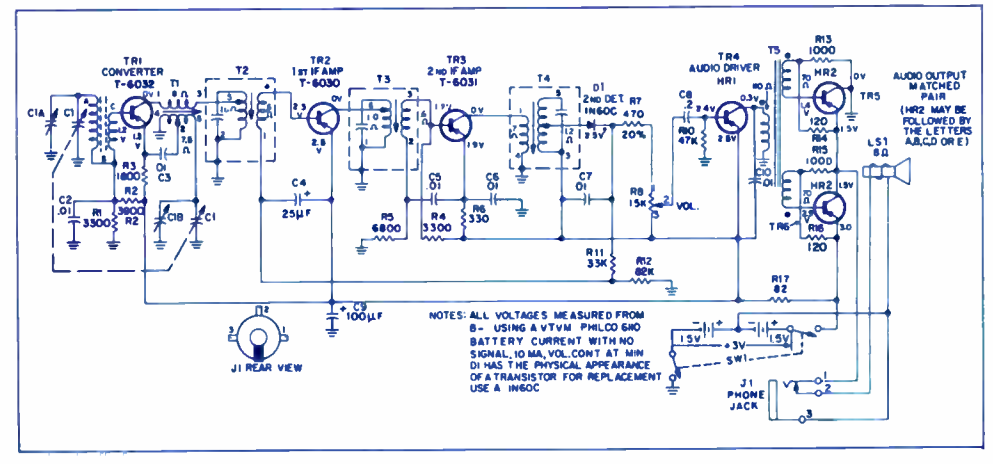


DS-503—Transistor Terminals
Note: Mtg. Insulators #1221643 not packaged with DS-503. These insulators are not required if radiator is insulated from case.

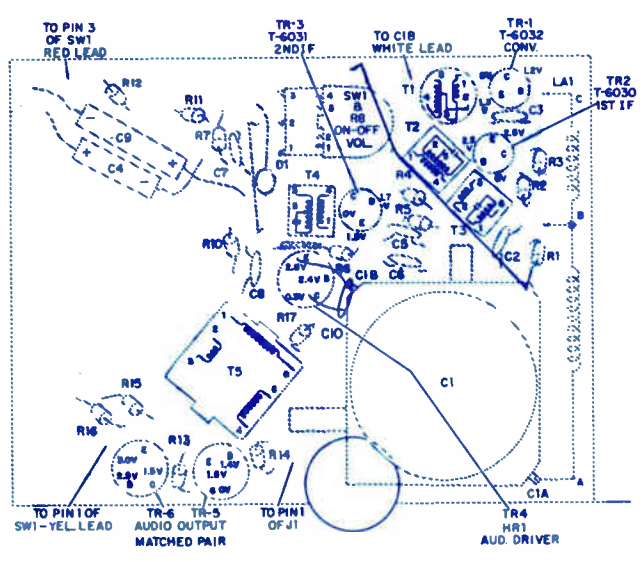


DS22, 24, 25 and 26 Transistor Terminals

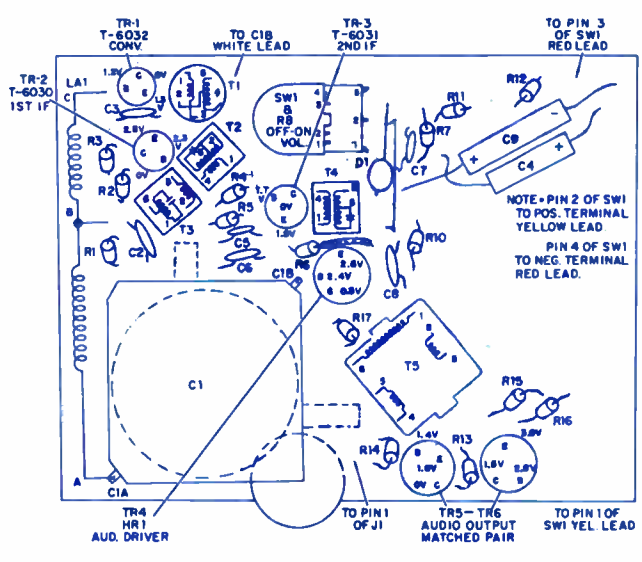
CAUTION: COLLECTOR VOLTAGE OF DS-503 TRANSISTOR MUST BE MEASURED AT TRANSISTOR CASE (NOT AT THE HEAT RADIATOR)



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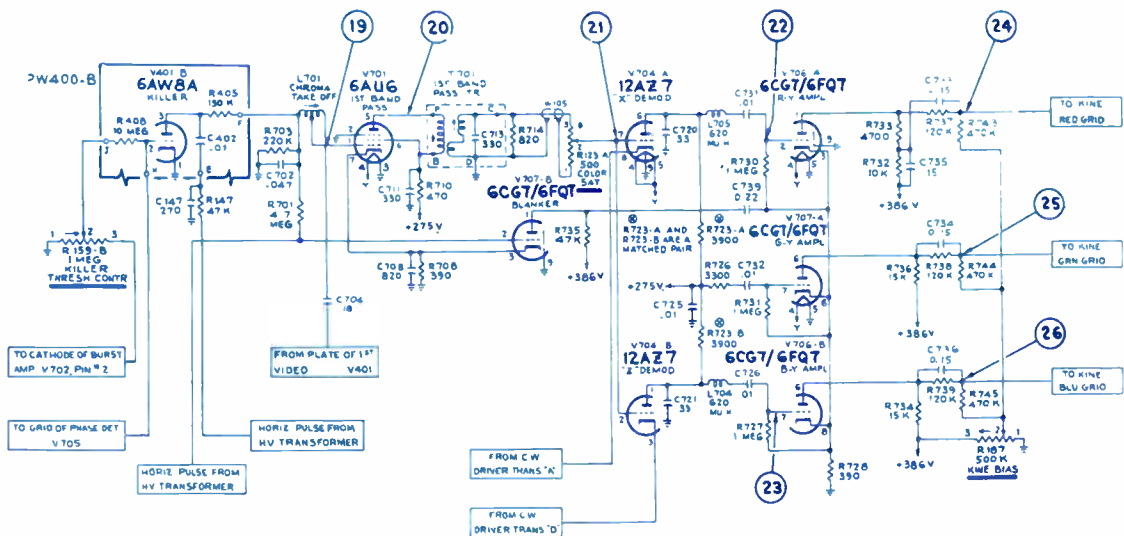


COMPOSITE BOTTOM VIEW

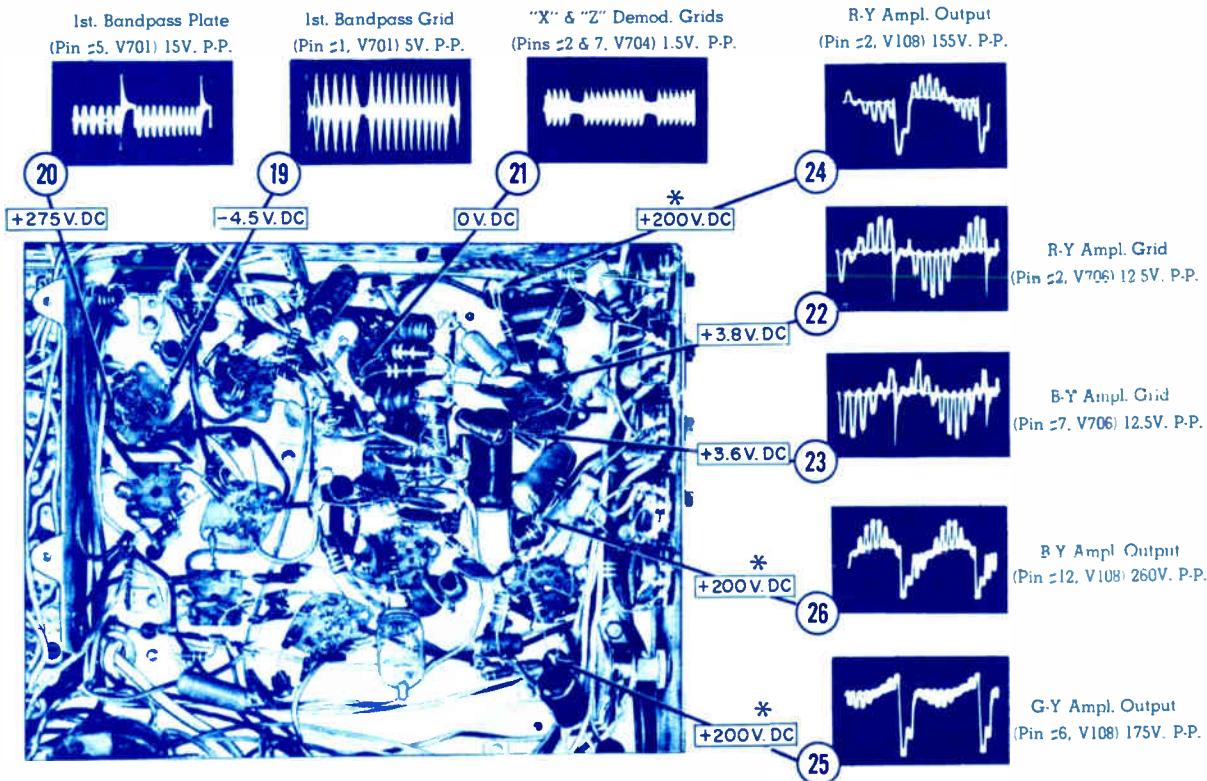


COMPOSITE TOP VIEW

CHROMA CIRCUITRY WAVEFORMS

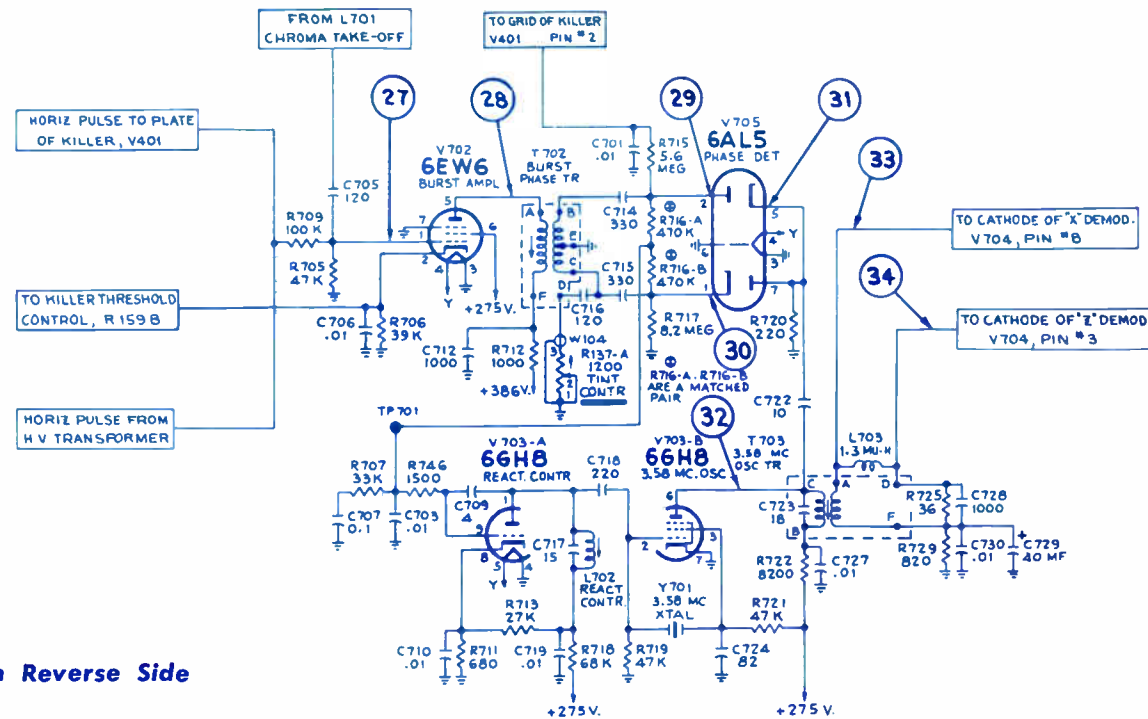


Partial Schematic Showing Color Bandpass Demodulator and Matrix Circuits. Circled Numbers Refer to Waveforms Shown Below

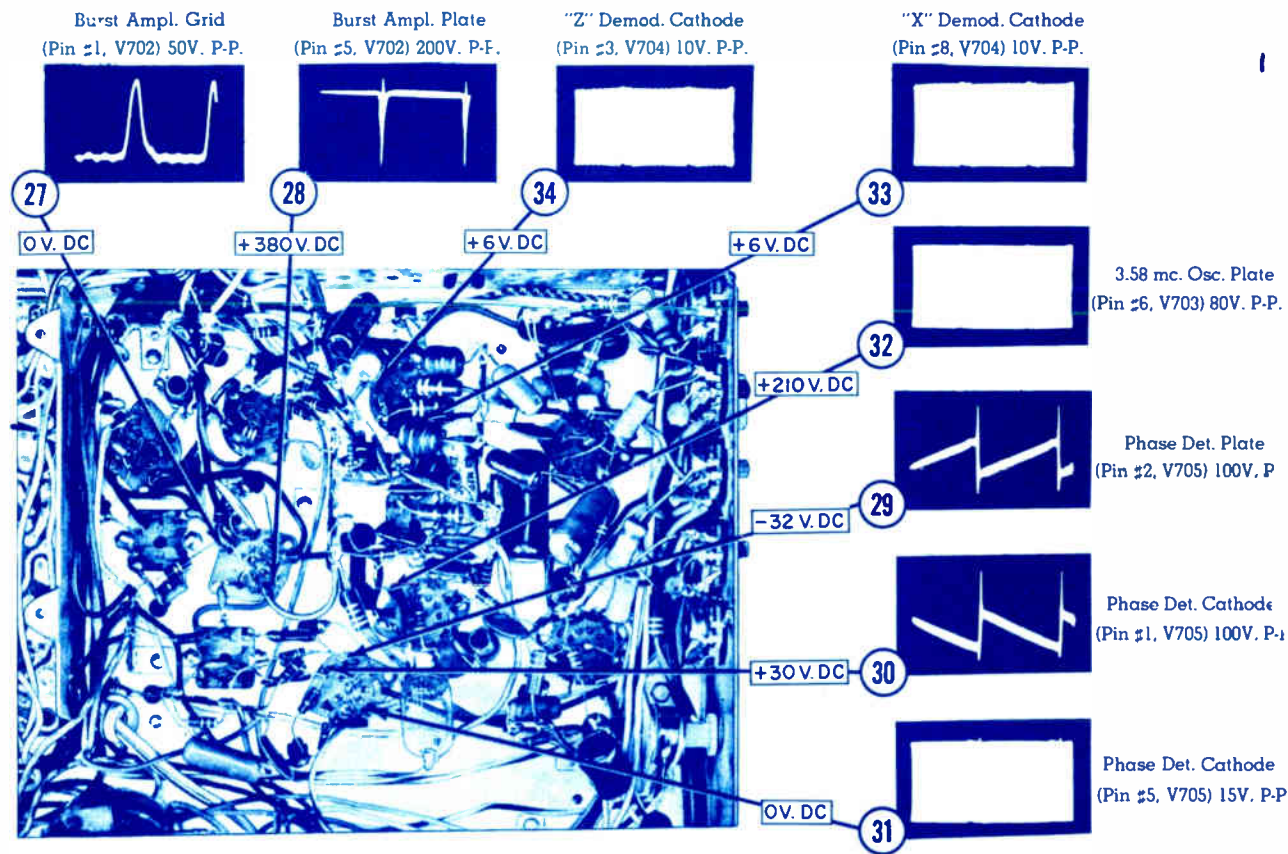


* NOMINAL - VARIES WITH KINE BIAS SETTING
NOTE: PEAK TO PEAK VOLTAGES ARE VARIABLE (DEPENDENT UPON INPUT SIGNAL LEVEL AND CIRCUIT ADJUSTMENT.)

Waveform and Voltage Checkpoints in the Color Bandpass, Demodulator, and Matrix Circuits



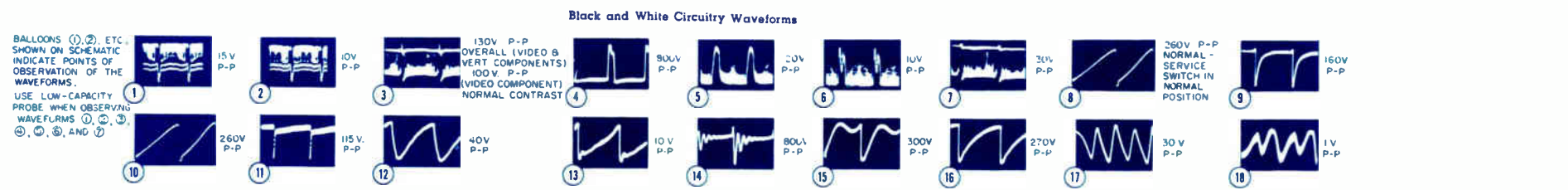
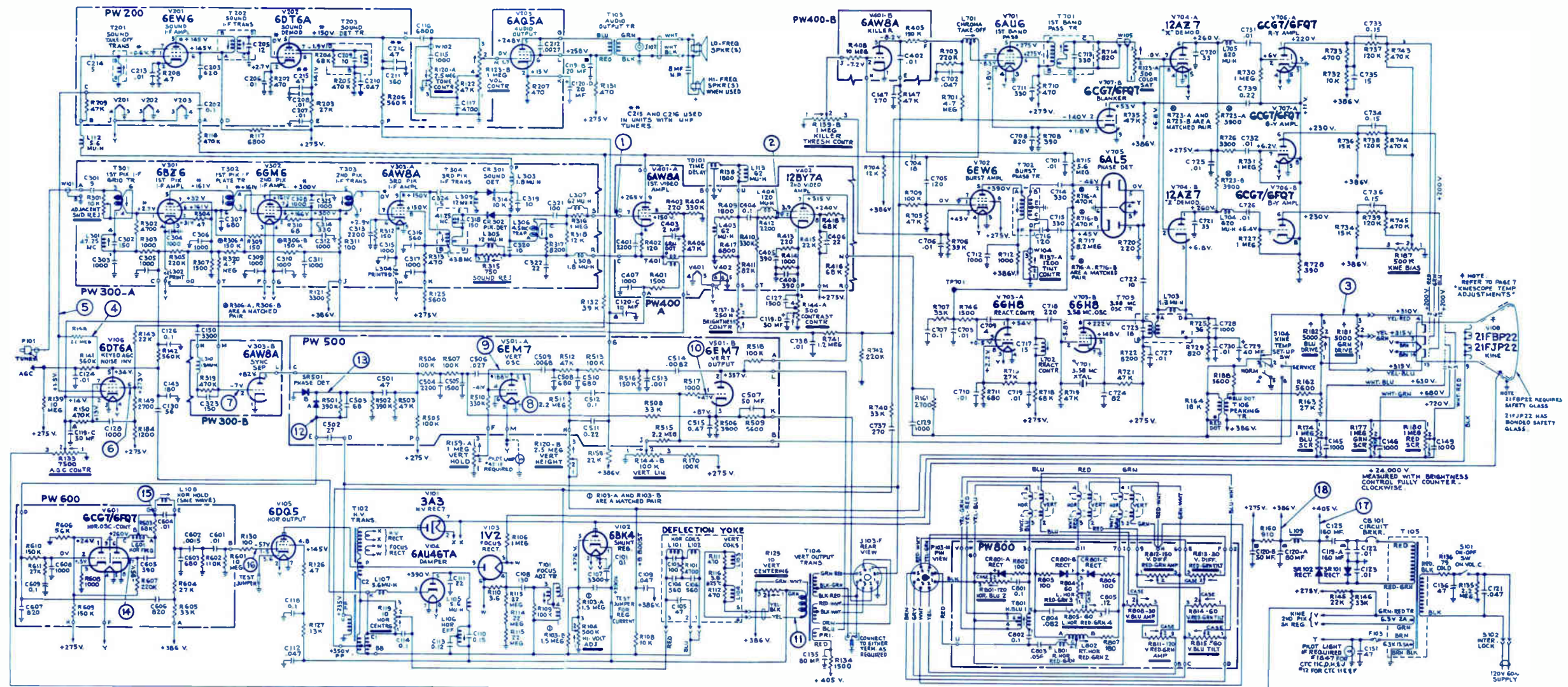
Partial Schematic Showing Color Synchronization Circuits. Circled Numbers Refer to Waveforms Shown Below



Waveform and Voltage Checkpoints in the Color Synchronization Circuits

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More Data on Reverse Side



More Data on Reverse Side

ELECTRONIC TECHNICIAN

JUNE • 1962

CIRCUIT DIGESTS

GROUP
118

In This Issue (No. 118)

Circuit Digest Schematic No.

AIRLINE713

TV Chassis
Models WG-6050B, 6051B, 6052-B, 6150B, and 6152B

OLYMPIC710

TV Chassis JU-JCU

PACKARD-BELL716

Stereo Adaptor
Model MPX-1-1

SPARTON714

TV Chassis
Model 23K2

TELEFUNKEN715

Stereo Tape Recorder
Model 77

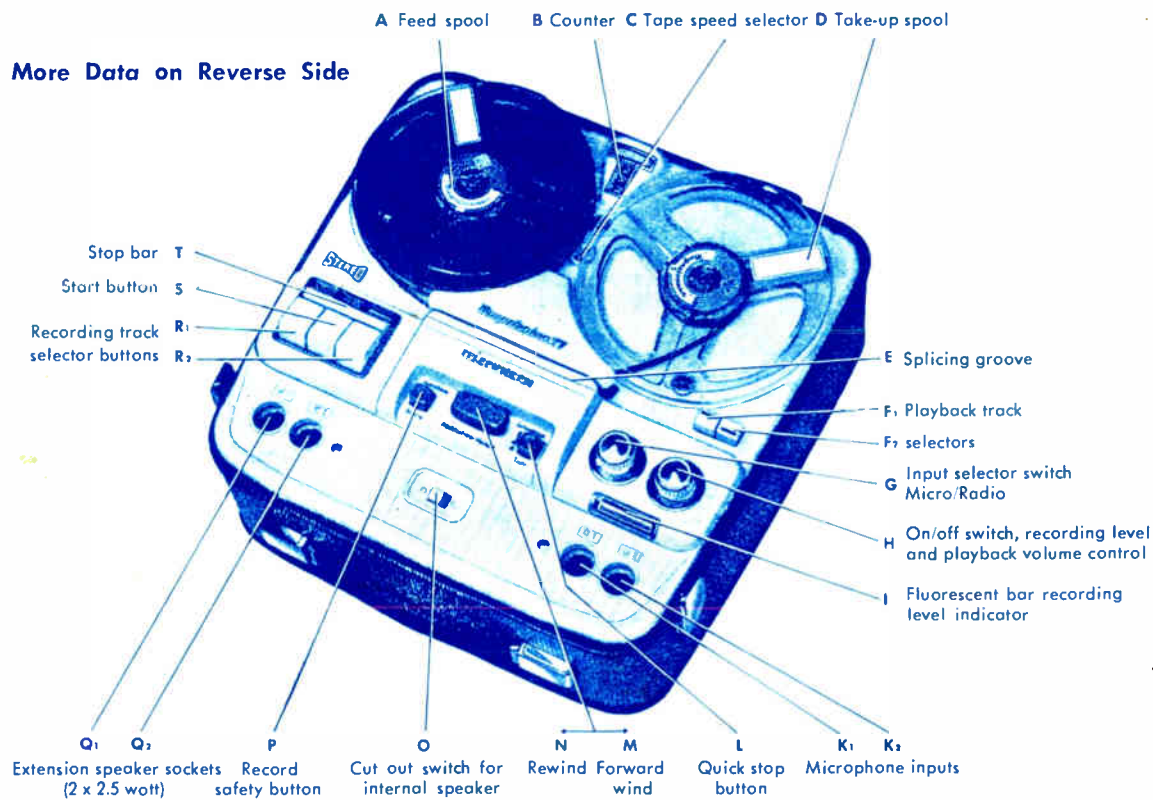
TOSHIBA712

TV Portable Chassis
Model 10PG

WESTINGHOUSE711

TV Chassis V-2417-1, -2, -3, -4, -5, -6

More Data on Reverse Side



TELEFUNKEN
Stereo Tape Recorder
Model 77

Electronic Technician
CIRCUIT DIGEST

715



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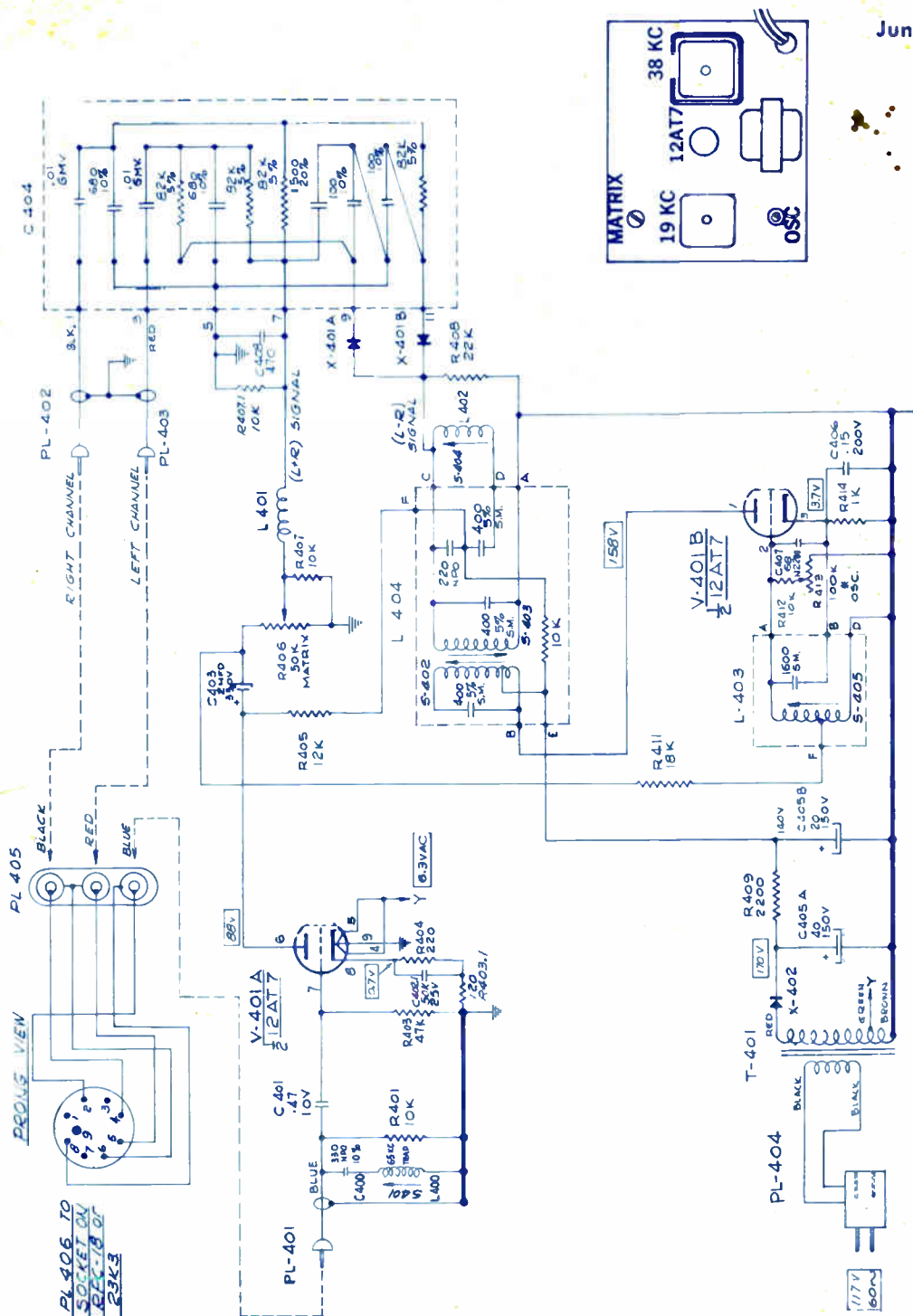
ELECTRONIC TECHNICIAN 716

CIRCUIT DIGEST

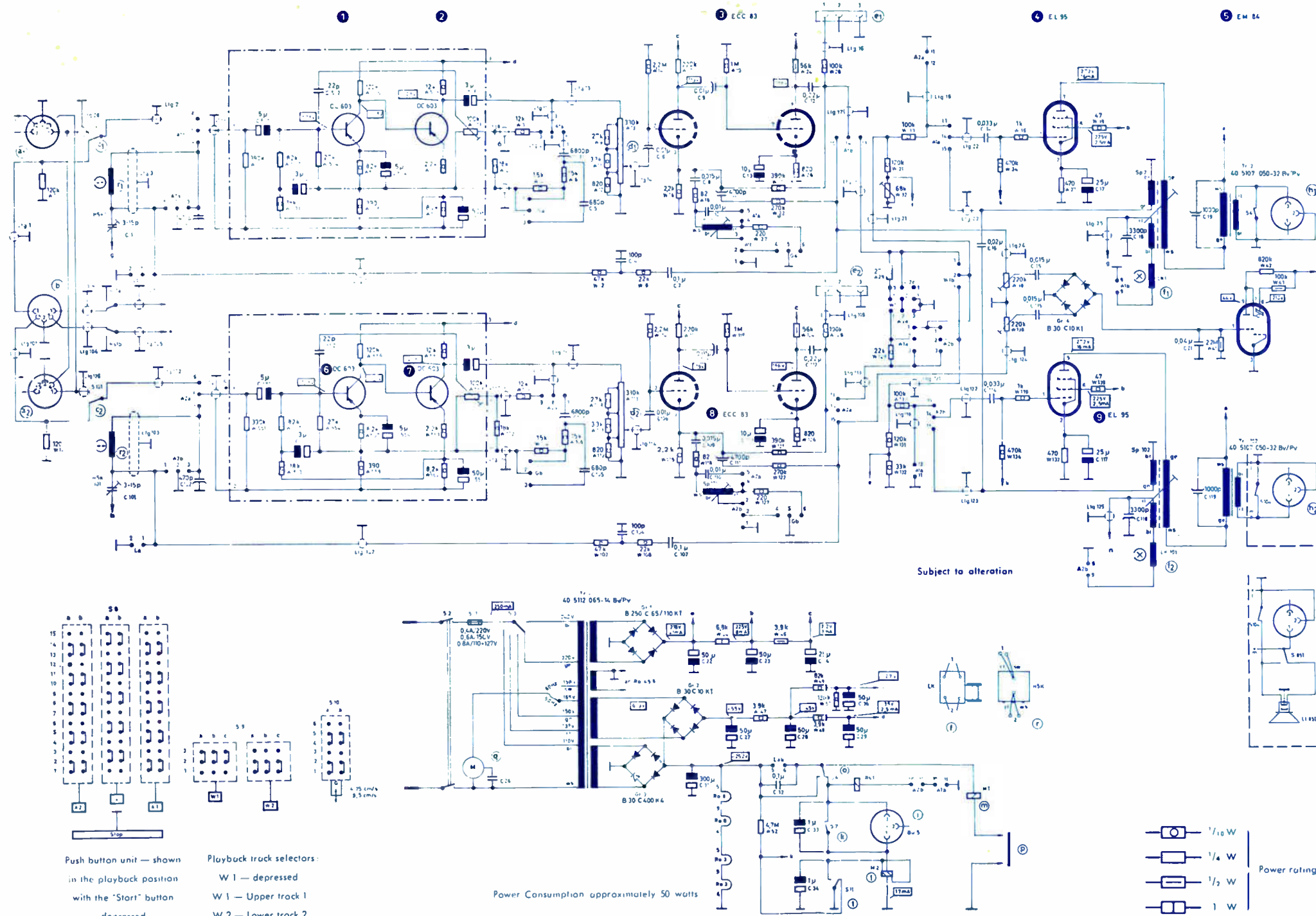
PACKARD-BELL

Stereo Adaptor
Model MPX-1-1

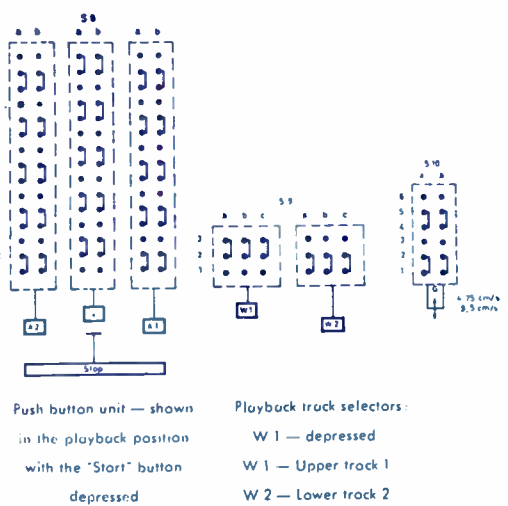
June • 1962



June • 1962



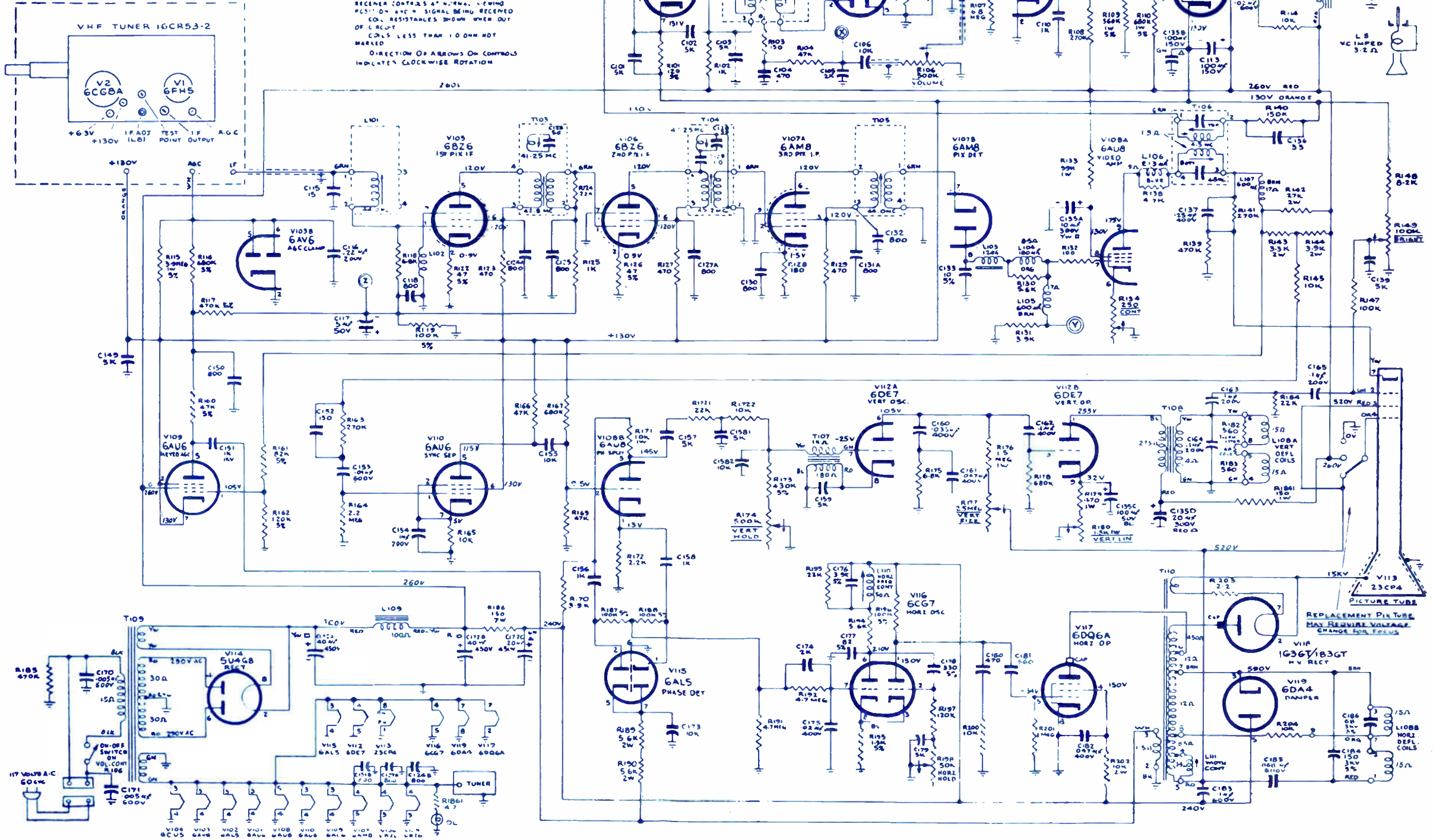
- a 1: Microphone — Upper track 1
- a 2: Microphone — Lower track 2
- b: Radio
- c 1-2: S 1 101 Input selector for radio microphone
- d 1-2: W 13 113 Recording level and playback volume control
- e 1: Earphone — Upper track 1
- e 2: Earphone — Lower track 2
- f: Erase head f 1: Upper track 1 f 2: Lower track 2
- g: Portable case
- h 1: Extension speaker, 3—6 Ω Upper track 1
- h 2: Extension speaker, 3—6 Ω Lower track 2
- i: Remote control
- k: S 7 Quick stop contacts
- l: M 2 Capstan idler solenoid
- m: M 1 Tape end stop solenoid
- a: S 6 Contacts for tape end stop solenoid
- p: Tape end stop contacts
- q: C 26 Motor condenser:
 - 50 c. p. s. 60 c. p. s.
 - 1 μF 0.7 μF
- r: Record Playback head
 - r 1: Upper track 1
 - r 2: Lower track 2
- t: S 11 Input contact for capstan idler solenoid



Power Consumption approximately 50 watts

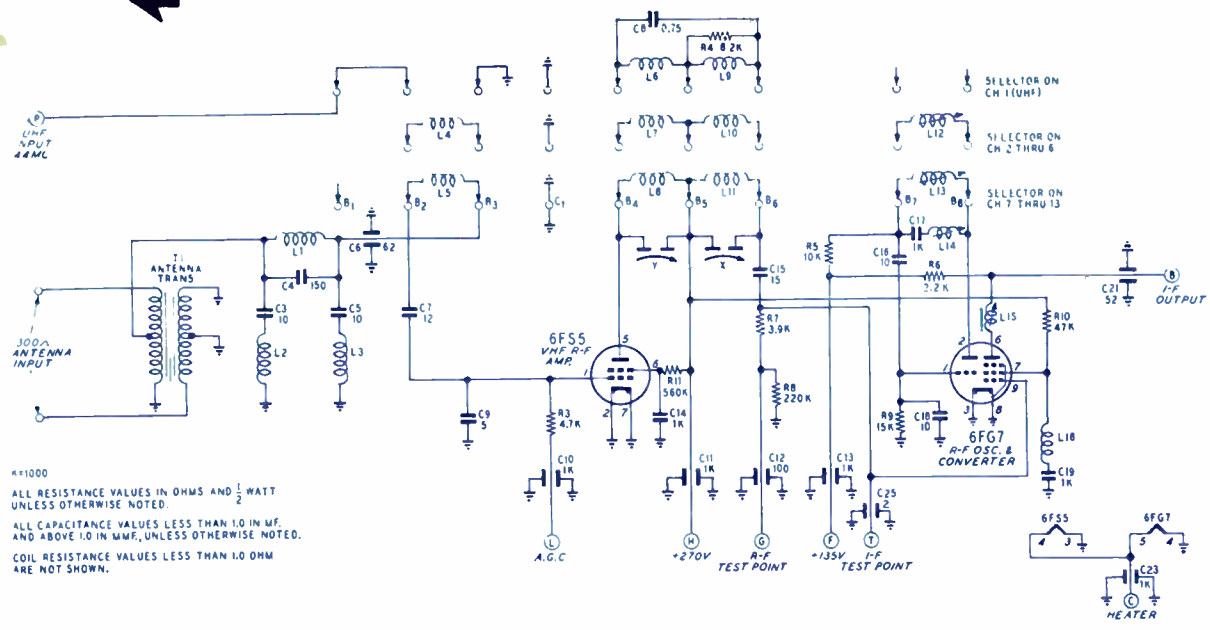
More Data on Reverse Side

SPARTON TELEVISION RECEIVER CHASSIS TYPES 23K2, 23K4



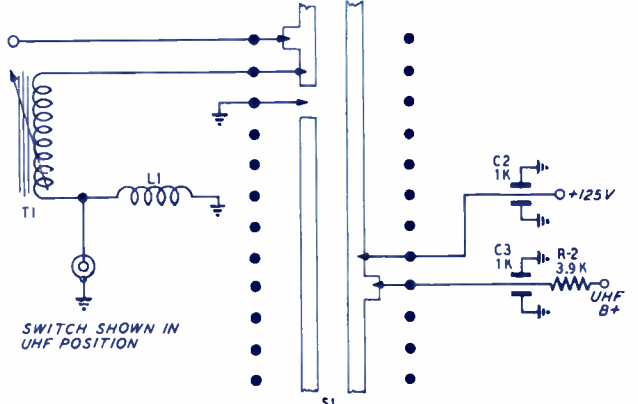
More Data on Reverse Side

More Data on Opposite Page

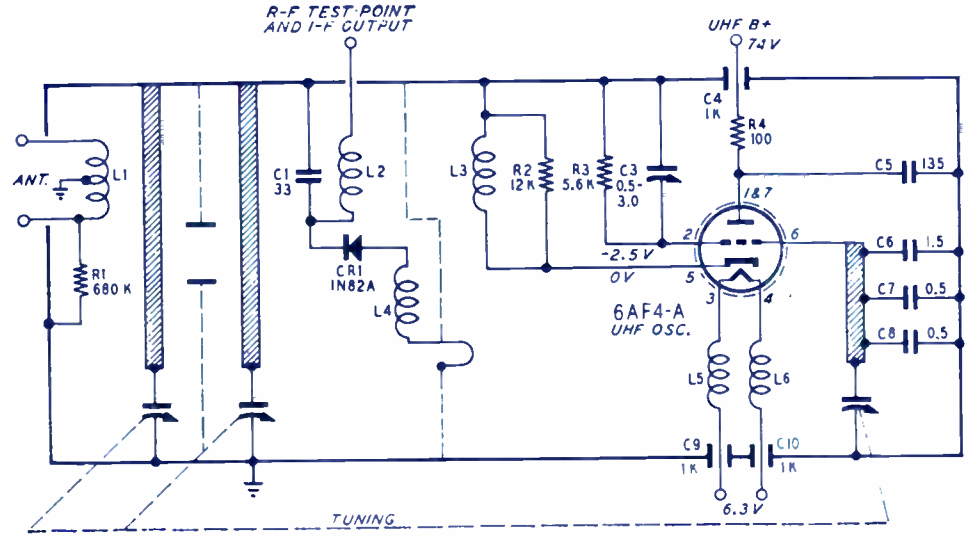


4x1000
ALL RESISTANCE VALUES IN OHMS AND 1/2 WATT UNLESS OTHERWISE NOTED.
ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF, UNLESS OTHERWISE NOTED.
COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.

2A553 UHF IF INPUT
SARKES TARZIAN PART NO. 3067-517
(IF UHF EQUIPPED)



25A1193-4 UHF TUNER SCHEMATIC
(IF UHF EQUIPPED)



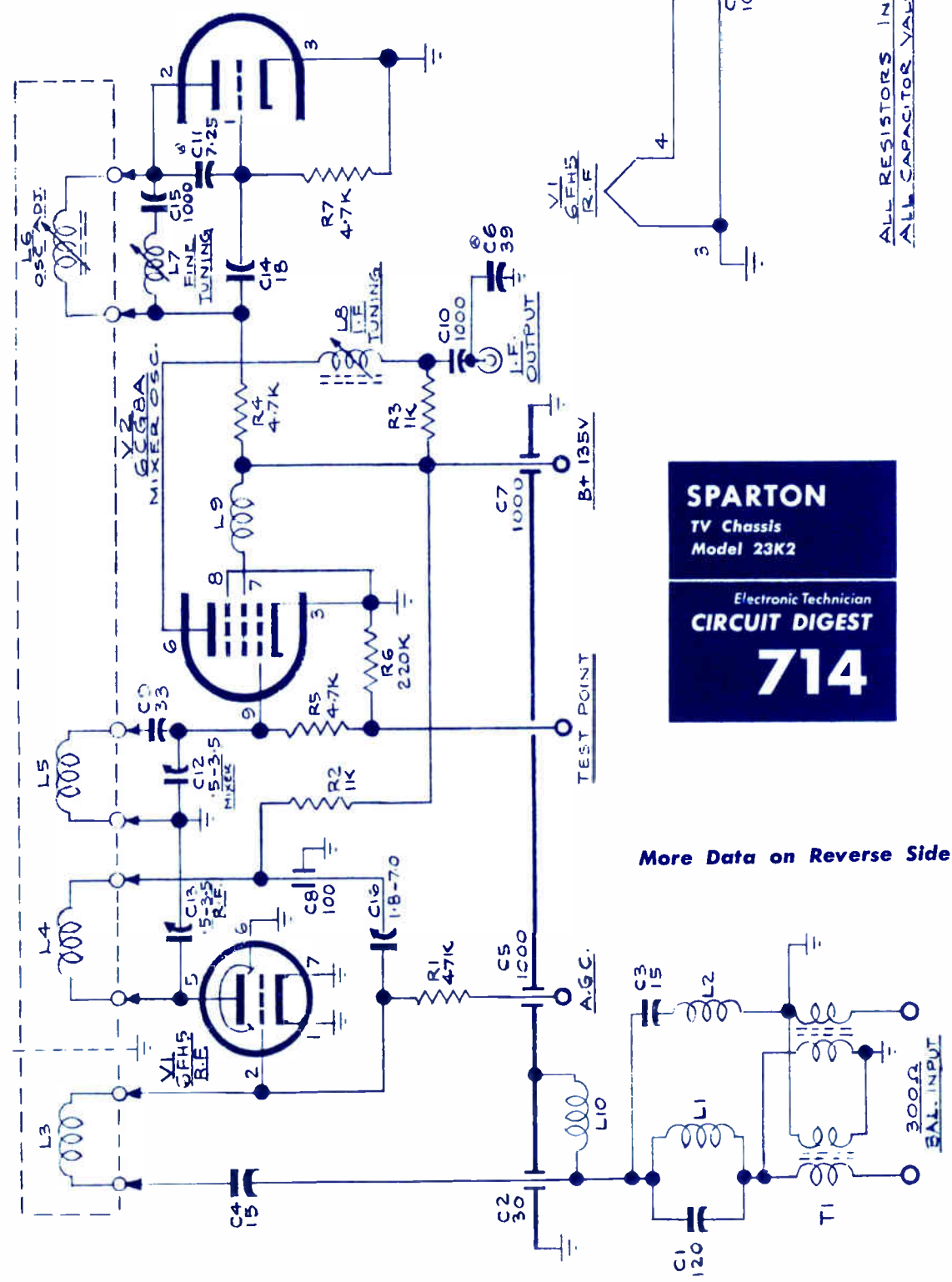
AIRLINE
TV Chassis
Models WG-6050B, 6051B
6052B, 6150B, and 6152B

Electronic Technician
CIRCUIT DIGEST
713

SPARTON
TV Chassis
Model 23K2

Electronic Technician
CIRCUIT DIGEST
714

More Data on Reverse Side



More Data on Reverse Side

ALL RESISTORS IN OHMS (K=1000)
ALL CAPACITOR VALUES IN PF

OSCILLOSCOPE WAVEFORM PATTERNS

The waveforms shown on the schematic diagram are as observed on a Tektronix type 524D wide band television oscilloscope with the receiver tuned to a reasonably strong signal and a normal picture. The voltages shown on each waveform are the approximate peak to peak amplitudes. The frequency accompanying each waveform indicates the repetition rate of the waveform not the sweep rate of the oscilloscope. If the waveforms are observed on the oscilloscope with a poor high frequency response, the corners of the pulses will tend to be more rounded than those shown on the schematic diagram and the amplitude of any high frequency pulse will tend to be less.

DC SOCKET VOLTAGES

All DC socket voltages shown on the schematic are measured with a high impedance VTVM and under zero signal conditions.

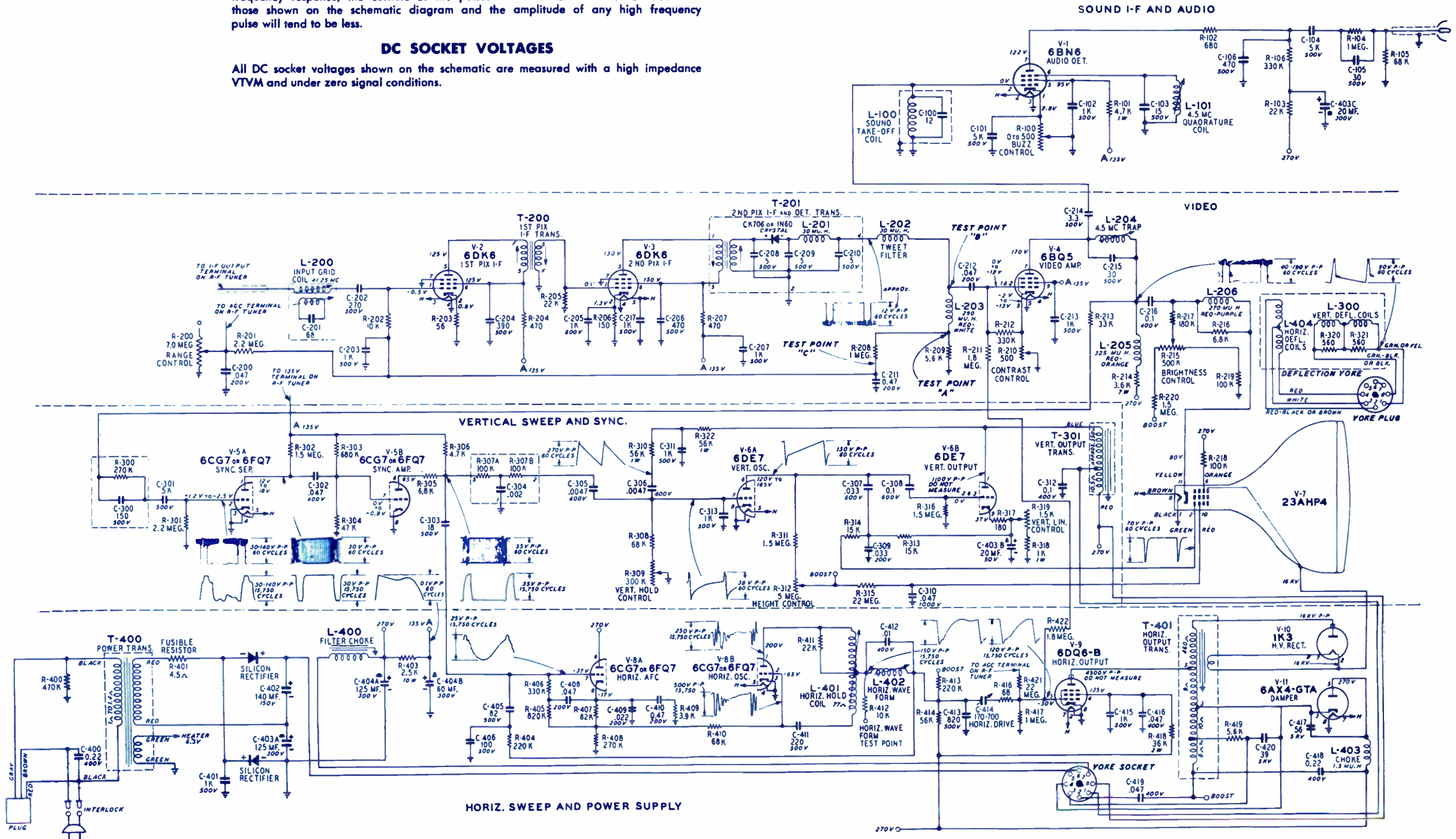
SCHEMATIC IS DIVIDED INTO FOUR SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS.

ALL RESISTANCE VALUES IN OHMS AND 1/2 WATT UNLESS OTHERWISE SPECIFIED.

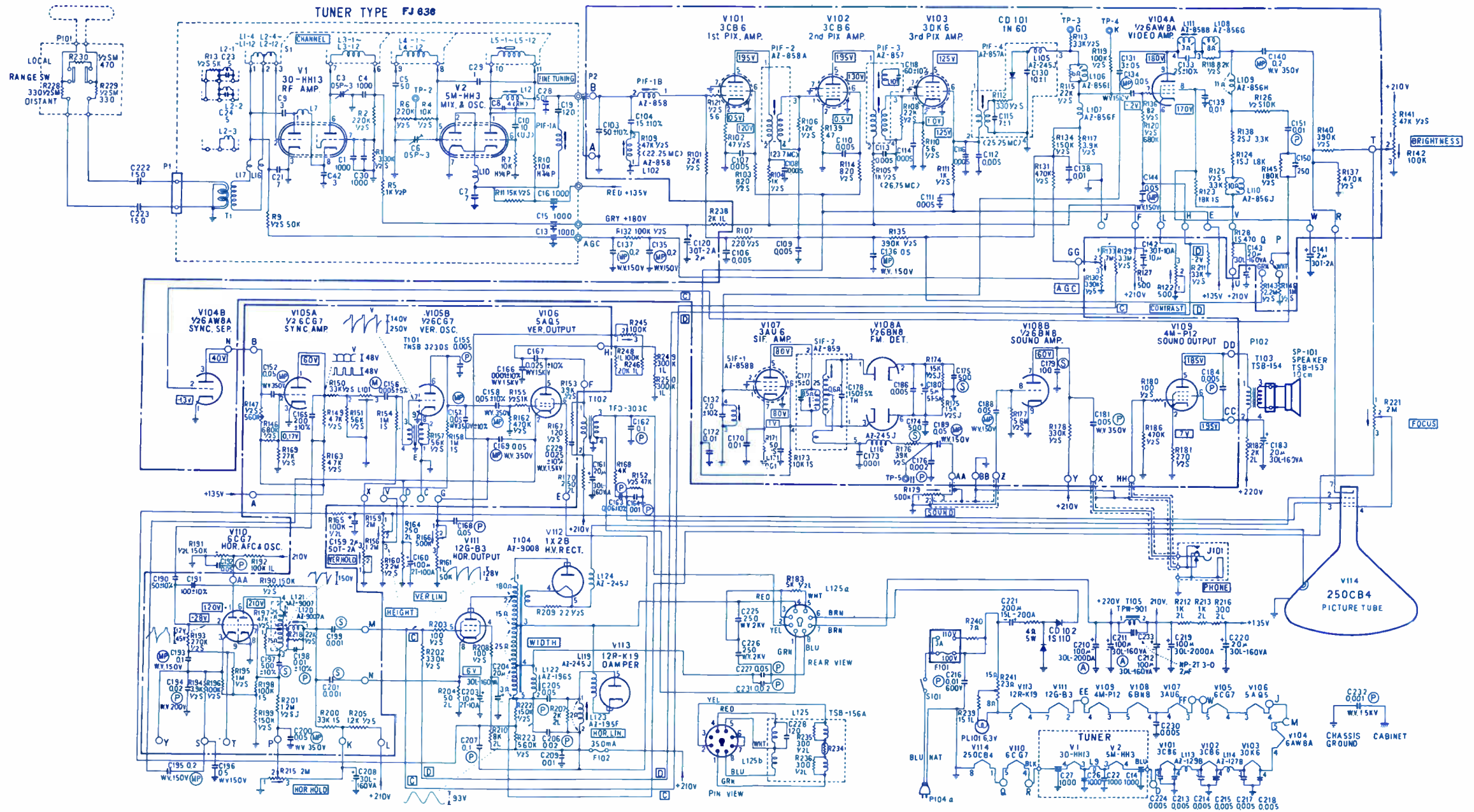
ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MF. UNLESS OTHERWISE NOTED.

COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.

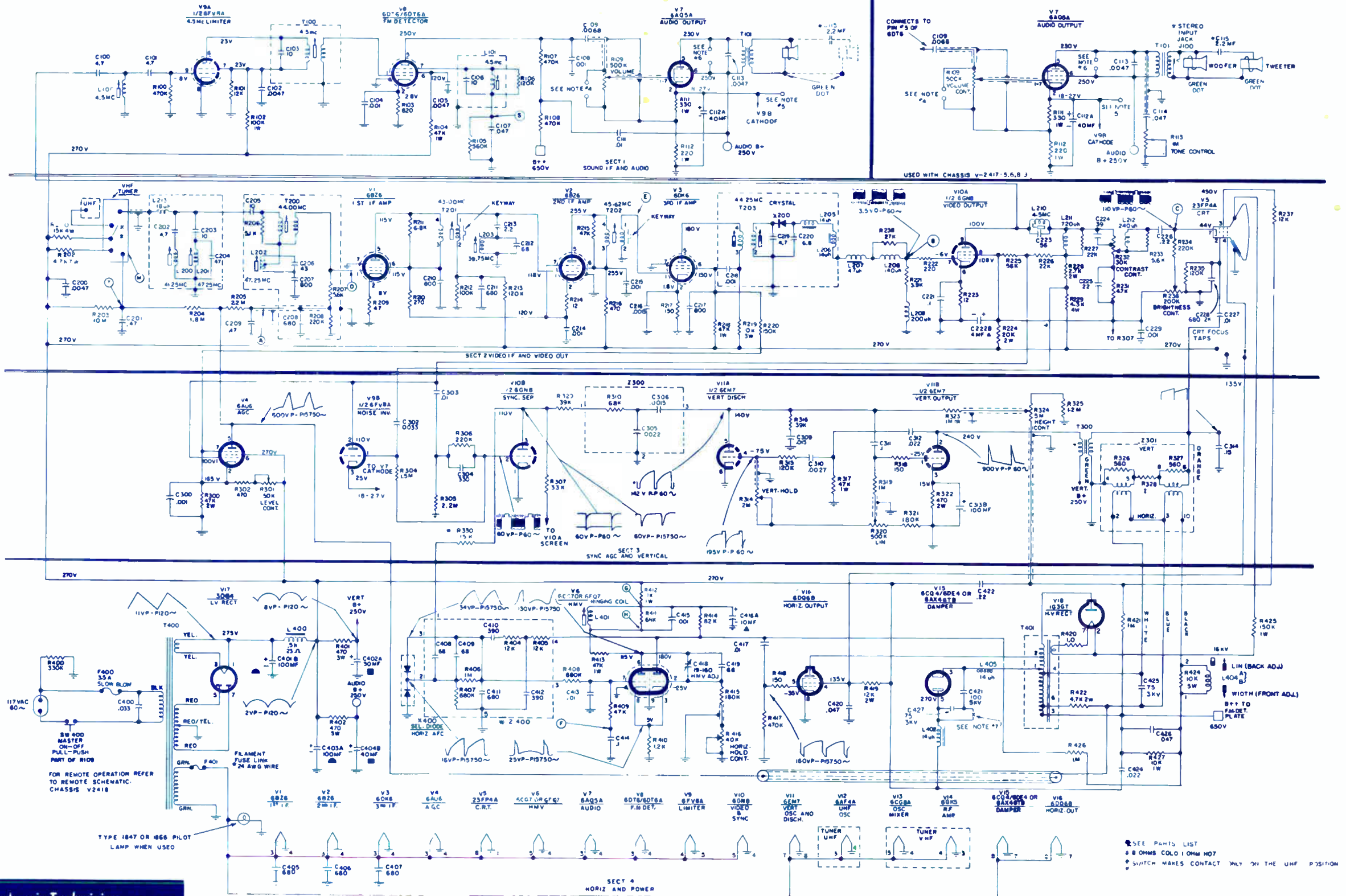
R=100C



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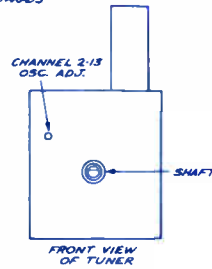
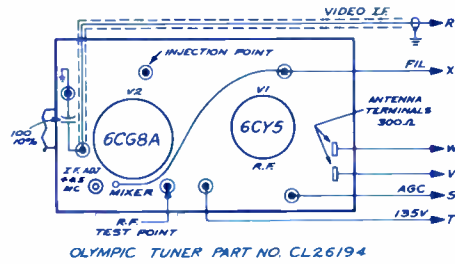
- NOTES:
1. D.C. VOLTAGES MEASURED FROM CHASSIS GROUND, NO APPLIED SIGNAL USING A V.T.M. LINE VOLTAGE 117 A.C.
 2. ALL PEAK TO PEAK WAVEFORMS AND D.C. VOLTAGES TAKEN WITH ALL CONTROLS SET FOR NORMAL PICTURE, WITH LEVEL CONTROL SET FOR 1/2 O-P AT Y.P.
 3. ALL CAPACITANCE VALUES LESS THAN 1 ARE IN PFD, AND VALUES GREATER THAN 1 ARE MFD. ALL RESISTANCE VALUES ARE IN OHMS UNLESS OTHERWISE INDICATED.
 4. TO REMOTE CONTROL STEPPING RELAY, CHASSIS V-2417-3-5.
 5. SUPPLY VOLTAGE, FOR SILENCE SOUND OSCILLATOR, CHASSIS V-2430.
 6. TO REMOTE CONTROL STEPPING, HFLAY CHASSIS V-2417-9.
 7. SERVICE & FACTORY ADJ. UPPER IN. GIVES MAX. WIDTH.



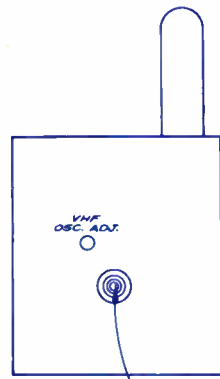
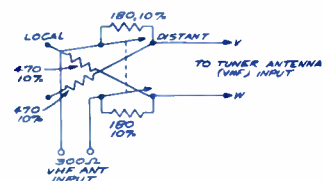
SEE PARTS LIST
 0 OHMS COLO 1 OHM NOT
 SWITCH MAKES CONTACT ONLY IN THE UHF POSITION

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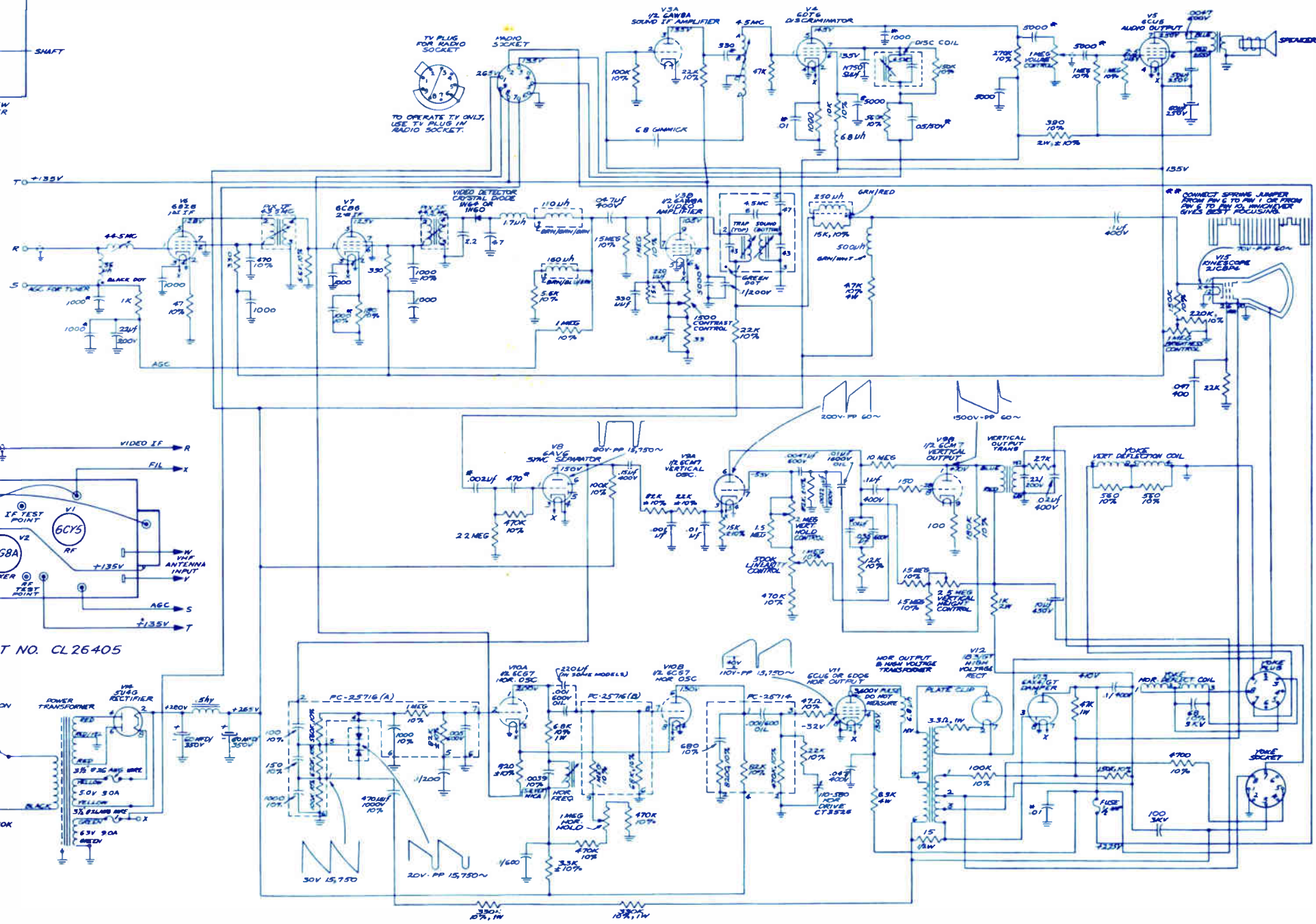
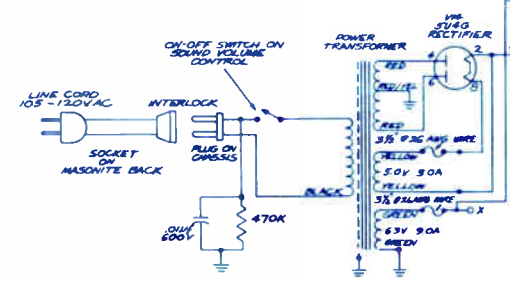
- NOTES:**
1. ALL RESISTOR VALUES IN OHMS ±20% TOLERANCE, 1/8 WATT UNLESS OTHERWISE NOTED.
 2. ALL mica and ceramic condensers ±20% TOLERANCE UNLESS OTHERWISE NOTED.
 3. ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS, USING AN ELECTRONIC VOLTMETER. ALL VOLTAGE READINGS ±1% MEASURED WITH AN INPUT VOLTAGE OF 117 VOLTS, 60 CYCLES, A.C. WITH INCOMING SIGNAL AND WITH CONTRAST CONTROL SET TO PRODUCE 50 VOLTS PEAK TO PEAK AT KINESCOPE.
 4. CERAMIC CONDENSERS DISC TYPE.
 5. ALL CAPACITOR VALUES IN MICRO-MICROFARADS UNLESS OTHERWISE NOTED.



LOCAL DISTANCE SWITCH



OLYMPIC TUNER (VHF-UHF) PART NO. CL26405



TELEVISION

1960 T-V Manuals

Now is the time to insure receiving service manuals covering G.E. Television Receivers in 1960. Both preliminary data and complete service manuals are offered in a yearly subscription plan. The most accurate and timely information is direct factory information.

In addition, General Electric offers up-to-date parts information periodically; new chapters of "Television Servicing Techniques" (an informative series relating to general television service problems); monthly mailing of tips and information in a new form, "Service Talk."

A brand new reference, (listing frequently used parts on all models) will be included in the 1960 mailing. See your General Electric distributor soon and ask him about subscribing to Plan "D" mailing or fill out the coupon at

the bottom of this page and mail it to: Editor, **TECHNI-TALK**, General Electric Company, Owensboro, Ky. Material is mailed direct from the factory and is always available when you need it. No rise in price, just \$5.00 for a year of complete and timely information.

U2 Chassis

Vertical Sync Buzz Trouble

Vertical sync buzz may occur in early production receivers if the high impedance grid circuit of the 6T8 (VI14) 1st audio amplifier is subjected to the influence of the blue plate lead from the vertical output transformer. Beginning on 1-17-58, the factory included a special check to insure that the blue plate lead from the vertical output transformer was pushed down and bundled with the other leads at the bottom of the board, next to the chassis.

RADIO

Radio and Phonograph Service Guides and 1960 Manuals

The all new 1957-59 G.E. Radio/Phono Service Guide containing schematics, parts lists, and photos of every model manufactured from 1957 thru 1959 is now available.

Also available is the 1946-56 Radio Service Guide and Subscription Plan for forthcoming G. E. Radio/Phono Service Manuals. See your General Electric distributor or fill out the coupon at the bottom of this page and mail to: Editor, **TECHNI-TALK**, General Electric Company, Owensboro, Ky.

Models T120, T210, Speaker Buzz and Rattle

Vibrations caused by loose grille and speaker mounting screws will cause speaker buzz and rattle when radio is in operation.

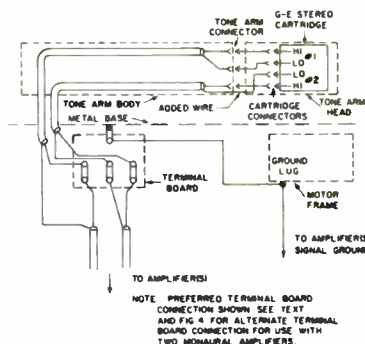
The first step in troubleshooting is to firmly tighten all grille and speaker mounting screws, then assemble cabinet, turn receiver on, and recheck for the buzz and rattle.

This procedure will eliminate the replacement of many speakers which may be suspected of originally causing this buzz and rattle.

THE STEREO HUM PROBLEM VI

In the last issue wiring modifications which might be required to minimize hum in stereo changers were described. In this issue additional wiring changes will be discussed.

FIGURE 1 FOUR WIRE CONVERSION CHANGER A



Modification required for four-wire cartridge connection:

1. Make the "minimum" modification suggested in Sept.-Oct. issue.
2. Separate the connection between the braided shields of the small signal wires at the tone arm head connector.
3. Shorten the length of braid from one of the small signal wires separated above and reconnect the other length of braid at the same connector terminal from which it was removed in Step 2 above.
4. Connect a short length of fine insulated wire to the shortened length of braid, and solder a cartridge pin connector to the other end.
5. Expose the braid of the small signal wire not previously connected from the tone arm, at the terminal board end.
6. Separate the shield braid of the two amplifier leads at the terminal board and reconnect the braid of that amplifier lead which is common with the tone arm wire whose shield is connected.
7. Connect the newly exposed shield braid of the small signal wire to the unconnected amplifier lead shield.
8. Remove the ground strap from between the lo-side terminals of the cartridge and use the fourth pin connector installed above as one of the lo-side connections to the cartridge.

Wiring changes which may be required to minimize hum in another type record changer will be described in the next issue.

Techni-talk SUGGESTION AND INQUIRY COUPON

If you would like to receive additional information on some specific G-E Electronic Component, just clip out this coupon, write in the material desired, and send it to the Editor. Information, if available, will be sent to you by return mail.

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Subscription expires December 31, 1960.
-Copies of 1957-59 Radio/Phono Service Guide..... \$1.00 ea.
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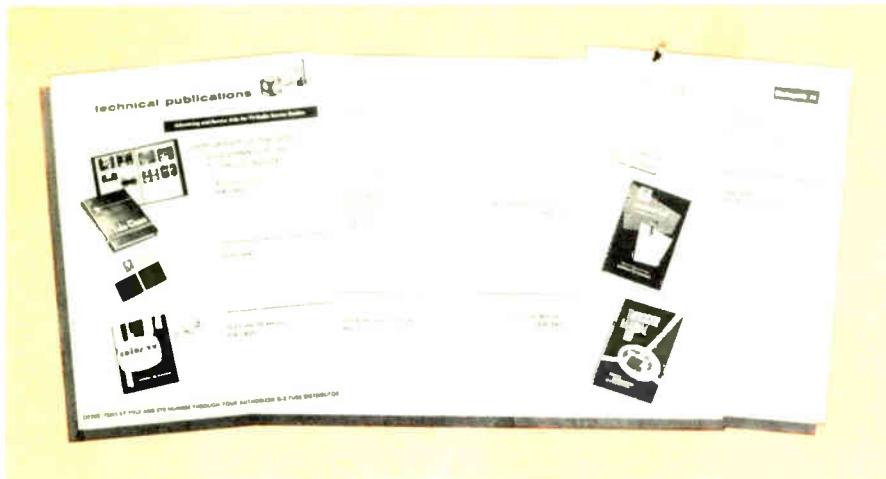
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Radio Service Guide ETR-1984
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