

Most - Often - Needed

1962

Volume R-22

RADIO
DIAGRAMS
and Servicing Information



Compiled by
M. N. BEITMAN

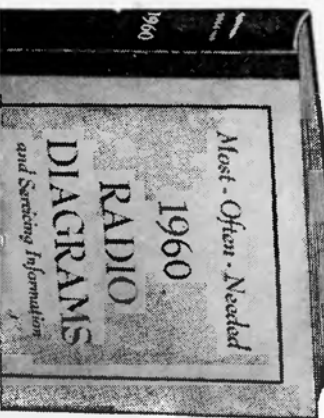
SUPREME PUBLICATIONS



SUPREME Radio & TV Manuals

20 RADIO VOLUMES

RADIO DIAGRAMS



Your best source for all needed RADIO diagrams and service material. Covers everything from most recent 1961 radios to pre-war old-timers; home radios, stereo, combinations, transistors, portables, FM, auto sets. Only \$2 for many volumes. Every manual has large schematics, all needed alignment facts, printed boards, voltages, dial stringing, trimmers, and hints. Volumes are big, 8 1/2 x 11 inches, about 190 pages. Amazing values at special low prices. See coupon below for list of these popular radio manuals.

TELEVISION SERVICING COURSE

Let this new course help you in TV servicing. Amazing bargain complete, only \$3, full price for all lessons. Giant in size, mammoth in scope, topics just like a \$200.00 correspondence course. Lessons on picture faults, circuits, adjustments, short-cuts, UHF, alignment facts, hints, antenna problems, trouble-shooting, test equipment, picture analysis. Special, only **\$3**



SIMPLIFIED RADIO SERVICING BY COMPARISON

Fix any radio easily. New, different COMPARISON method finds faults quickly. Covers every radio set—new and old models. Introductory training included. Simple picture suggestions tell you where to look for faults. No testers needed for most jobs. Explains parts, transistors, etc. Manual form, large pages, 8 1/2 x 11". Special price, only **\$1.50**

PRACTICAL RADIO COURSE

Here is your amazing bargain in radio training. For only \$3.95 (full price) you can obtain a practical radio and electronics course of 35 easy-to-follow lessons. Review fundamentals, learn new servicing tricks. Compares lesson-by-lesson with the best \$150.00 home-study-type correspondence course. Large size, 8 1/2 x 11". New 1960 edition. Answer booklet to self-test questions **\$3.95** included free. Amazing value, only...

Supreme Publications



New 1962 TV manual covers all important sets of every make. Includes all data needed for faster TV servicing. Amazing bargain. A whole year of service material for only... **\$3**

ALL NEEDED TV DATA

Use **Supreme** TV manuals for faster, easier repairs. All needed material on every popular TV set of every important make. Easy-to-use, practical, factory-prepared data simplify TV servicing and adjustment. These giant TV manuals have complete, accurate double-page schematics, needed alignment facts, printed board views, recommended changes, waveforms, voltage charts, etc. Only \$3 per large volume. The choice of 174,000 wise servicemen. Get the best and save money with **Supreme**.

AMAZING BARGAIN

Here are your error-free service instructions to help you do expert work quicker; and priced at only \$3 for a mammoth yearly manual. Greatest bargain in service data. Repair any TV model ever made by having in your shop all 15 volumes listed in coupon. Special price for all 15 only \$42. Or try the new 1962 TV manual for only \$3. See no risk coupon below.

NO-RISK TRIAL ORDER COUPON

SUPREME PUBLICATIONS, 1760 Balsam Rd., Highland Park, Ill.

☐ 1961	☐ Popular RADIO	☐ Rush RADIO and TV manuals checked ☒ in coupon.
☐ 1960	☐ Diagram Manuals	☐ New Television Servicing Course, complete... \$3.
☐ 1959	☐ at only \$2.50	☐ Simplified Radio Servicing by Comparison... \$1.50
☐ 1958	☐ each.....	☐ Practical Radio Course (all 35 lessons)... \$3.95
☐ 1957		
☐ 1956		
☐ 1955		
☐ 1954	☐ These annual	☐ New 1962 Television Servicing Manual, only... \$3.
☐ 1953	☐ RADIO volumes	☐ 1961 TV Manual, \$3. ☐ 1960 TV Manual, \$3.
☐ 1952	☐ specially priced	☐ Additional 1959 TV, \$3. ☐ Early 1959 TV, \$3.
☐ 1951	☐ at only \$2.50	☐ 1958 TV Manual, \$3. ☐ Additional 1957 TV, \$3.
☐ 1950	☐ each.....	☐ Early 1957 TV, \$3. ☐ 1956 TV Manual, \$3.
☐ 1949	☐ THIS GROUP	☐ Additional 1955 TV, \$3. ☐ Early 1955 TV, \$3.
☐ 1948	☐ ONLY	☐ 1954 TV, \$3. ☐ 1953 TV, \$3. ☐ Early 1953 TV, \$3.
☐ 1947		☐ 1951 TV, \$3. ☐ Master Index to all Manuals, 25c
☐ 1946		
☐ 1942		
☐ 1941		
☐ 1940		
☐ 1926-1938		

\$2 EACH Manual, \$2.50

Name: Send postpaid.

Address:

12AU6 CONVERTER V1

12AV6 DETECTOR-AF AMP. V2

35W4 RECTIFIER V4

50C5 OUTPUT V3

M3 COUPLATE

M5 CLOCK

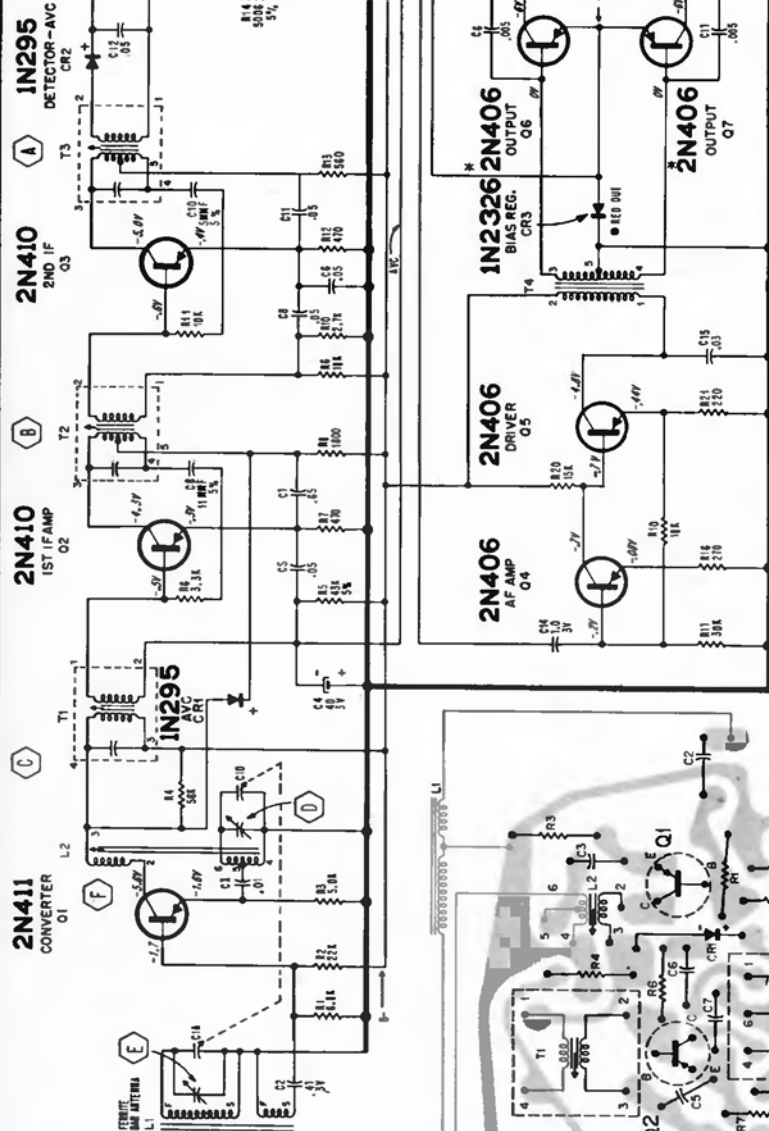
LOOP ANTENNA

COLOR DOT

T1 BOTTOM VIEW

NOTES: IF-455KC.
 — ETCHED CIRCUIT GROUND.
 ALL VOLTAGES $\pm 10\%$, TAKEN WITH RESPECT TO ETCHED CIRCUIT GROUND, WITH VTVM.
 NO SIGNAL, VOL. CONTROL MINIMUM.
 UNLESS OTHERWISE INDICATED:
 RESISTORS IN OHMS, $1/2$ WATT, 10% ;
 ALL CAPACITORS IN MF, 20% .

Step	Connection of Signal Generator	Signal Gen. Frequency	Receiver Gang Setting	Adjustment Description	Adjustment
1.	Through a .1 mf capacitor to pin 1 of the 12AU6 (Converter) tube.	455 KC	Gang fully open	IF Primary IF Secondary	Ⓐ and Ⓑ for maximum output
2	Same as "STEP 1".	1620 KC	Gang fully open	Oscillator Trimmer	Ⓒ for maximum output
3	Radiated Signal. Loop of several turns of wire, or place generator lead close to receiver loop for adequate signal pickup.	1400 KC	Tune in generator signal	Antenna Loop Gimmick	Ⓓ for maximum output (Rock gang for optimum results)



VOLTAGE DATA

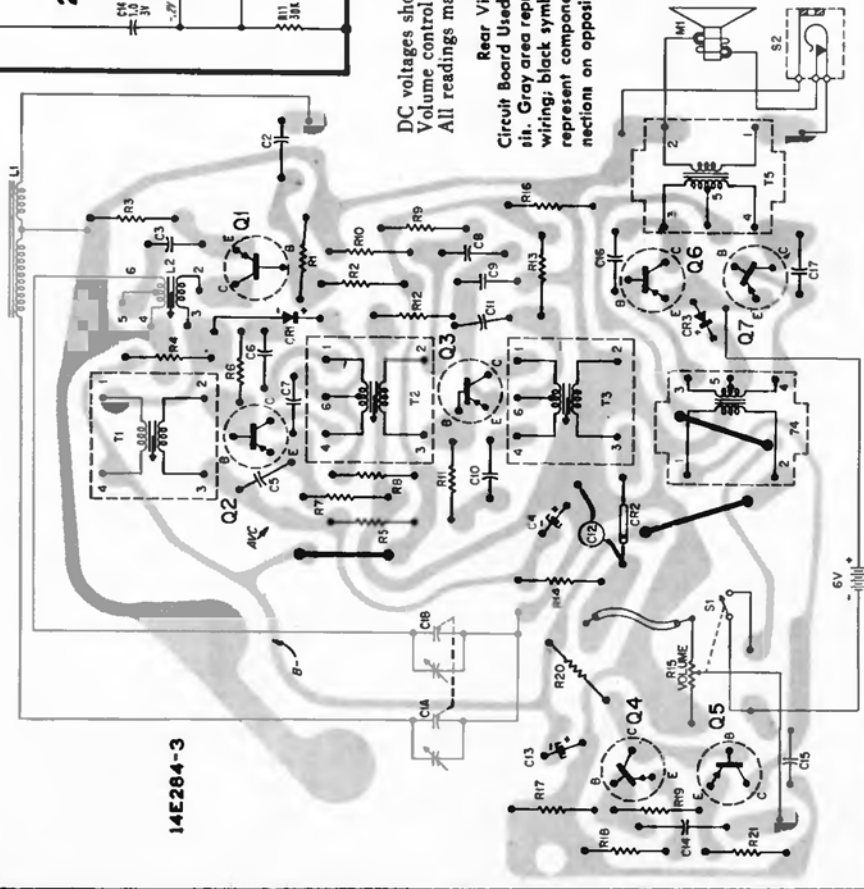
DC voltages shown measured with VTVM, no signal, using fresh batteries. Volume control at minimum; dial set to low frequency end. All readings made between transistor terminals and etched circuit ground.

Rear View of Etched Circuit Board Used in 7B2 Chassis. Gray area represents etched wiring; black symbols and lines represent components and connections on opposite side.

ADMIRAL

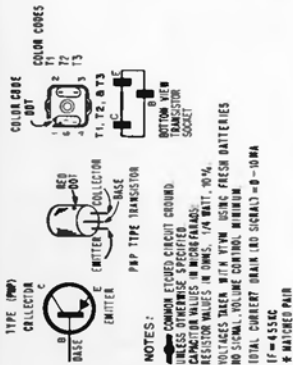
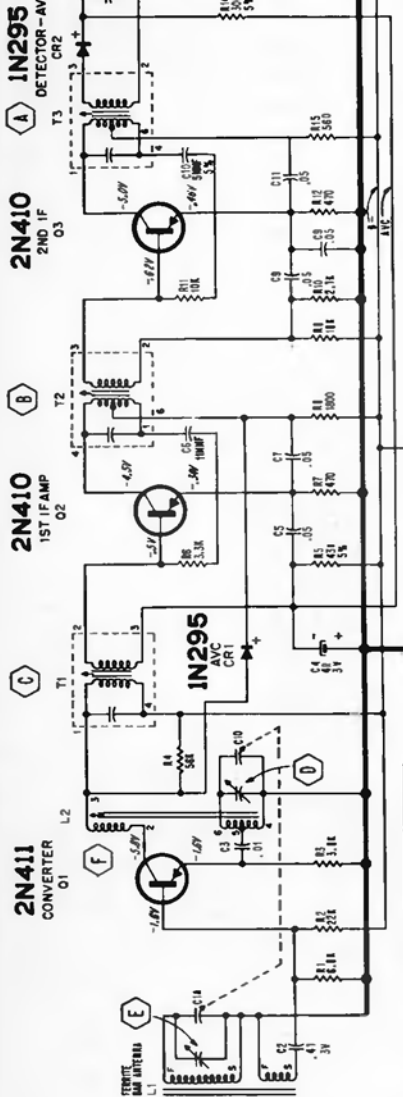
Chassis 7B2, Models Y2081, Y2082, Y2083

For top view and alignment information refer to such material for 7B2B, on page 6.

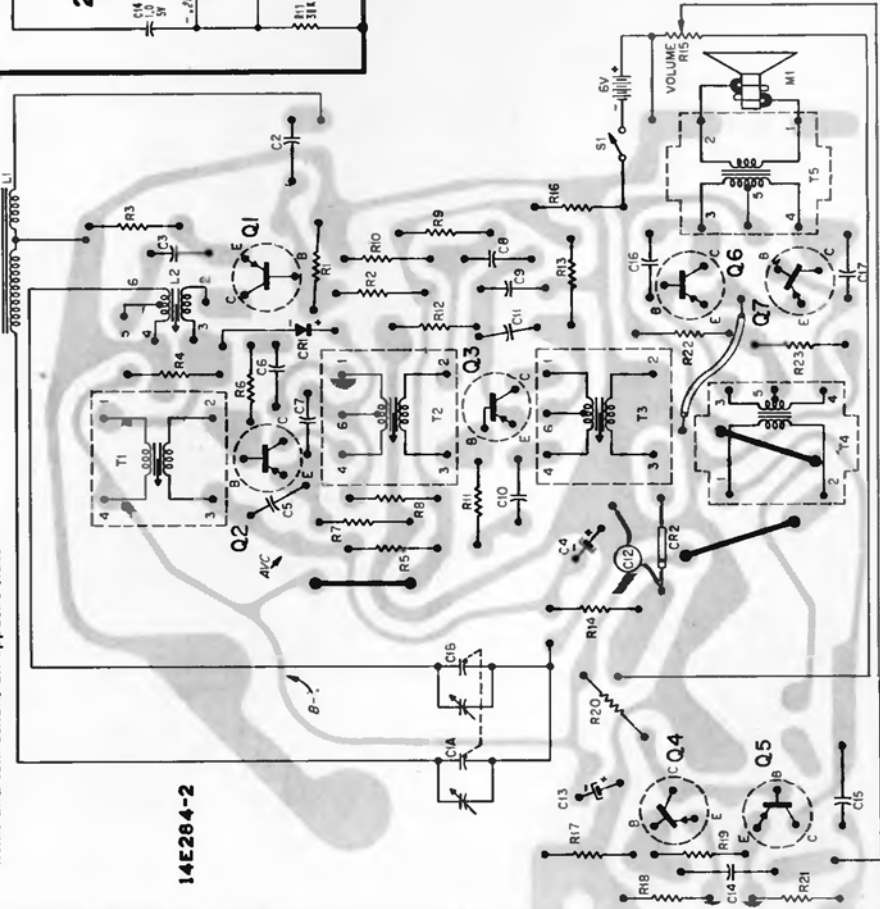


NOTES:
1. RESISTOR VALUES SPECIFIED IN OHMS, 1/4 WATT, 10%.
2. CAPACITOR VALUES IN MICROFARADS.
3. VOLUME AND CURRENT READINGS TAKEN WITH FRESH BATTERIES.
4. NO SIGNAL, VOLUME CONTROL, MINIMUM.
5. TOTAL CURRENT DRAIN (NO SIGNAL) = 8-10 MA.
6. IF = 455 KC.
7. SWITCHED PHA.

ADMIRAL Chassis 7B2B

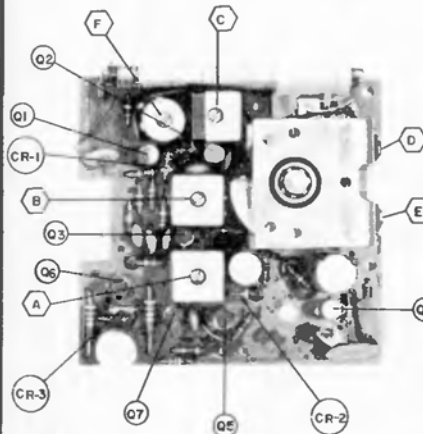
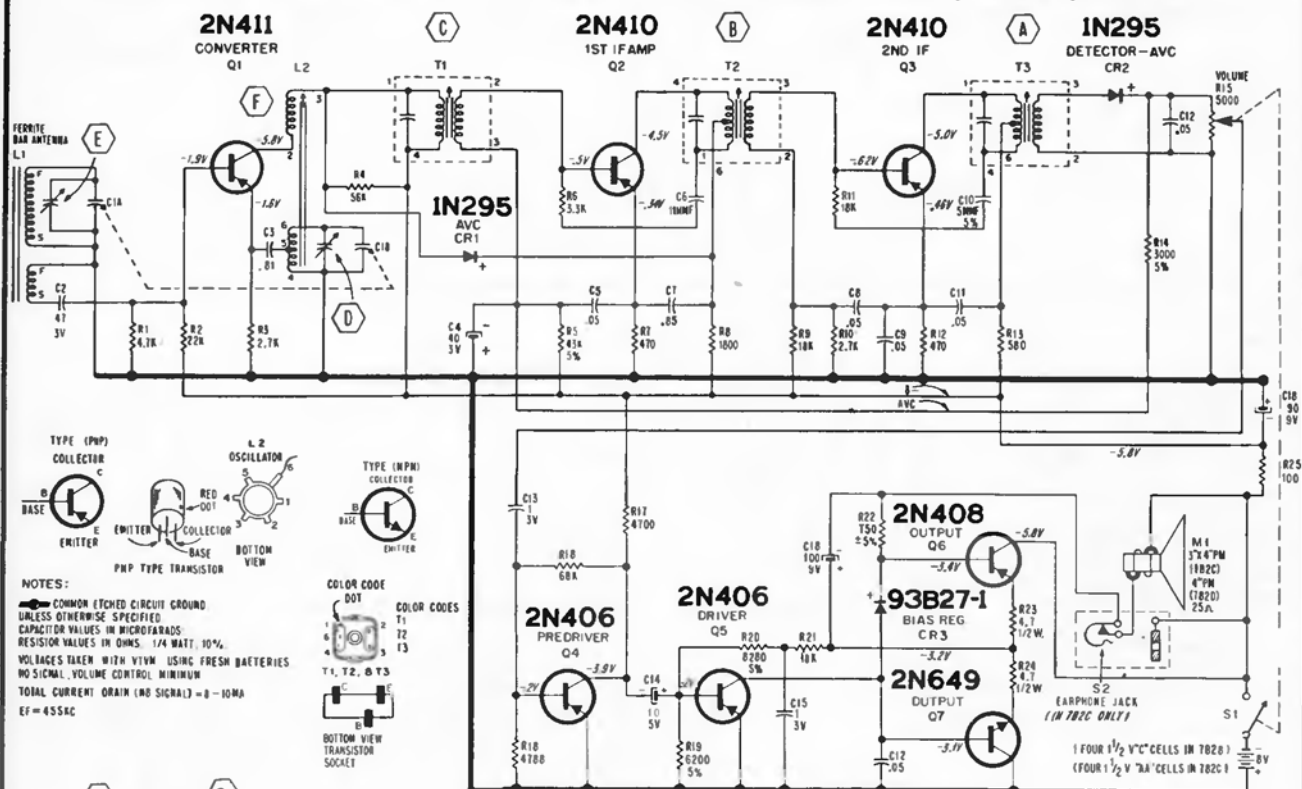
Models Y2101, Y2102,
and Y2108For voltage data see
instructions on page 5.

Rear View of Etched Circuit Board Used in 7B2B Chassis. Gray area represents etched wiring, black symbols and lines represent components and connections on opposite side.



ADMIRAL

Chassis 7B2C, Models Y2081A, Y2082A, Y2083A
Chassis 7B2D, Models Y2252, Y2253, Y2256



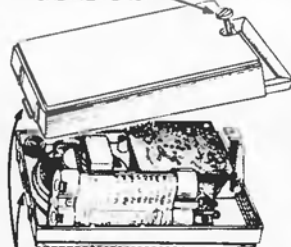
ALIGNMENT PROCEDURE

Alignment of a transistor radio is similar to alignment of an ordinary vacuum-tube radio. However, there is somewhat more interaction between the RF and IF circuits, thus requiring greater care in the setting of the adjustments as well as repetition of some of the steps. Therefore, for best results, follow the alignment procedure exactly as given below.

- Fresh batteries should be used.
- Set Volume control at maximum.
- Connect output meter across speaker voice coil. For best results, connect 25 ohm resistive load through earphone jack, if used.
- Use lowest output of signal generator that will produce adequate indication on lowest scale of output meter. **IMPORTANT:** Output level should be held at 25 mw. or less. The voltage reading at the 25 mw. level is approximately 0.8 volts across the 25 ohm load.

Step	Connection of Signal Generator	Signal Gen. Frequency	Receiver Gang Setting	Adjustment Description	Adjustment
1	Radiated Signal. † Loop of several turns of wire, or place generator lead close to receiver for adequate signal.	455 KC	Gang fully open	3rd IF 2nd IF 1st IF	* (A) (B) and (C) for maximum output.
2	Same as "Step 1".	1620 KC	Gang fully open	Oscillator Trimmer	(D) for maximum output.
3	Repeat "Step 1" several times until there is no further increase in the output.				
4	Same as "Step 1".	§ 1400 KC	Tune in generator signal	Antenna Trimmer	(E) for maximum output.
NOTE: After completing "Step 4" the tuning range should be 1620 KC to 535 KC; +5 KC. If this range cannot be obtained, continue with Steps 5, 6 and 7.					
5	Same as "Step 1".	535 KC	Gang fully closed	Oscillator Coil Core	(F) for maximum output.
6	Repeat "Step 2", then repeat Steps 5 and 2 several times until oscillator covers required range.				
7	Repeat "Step 4".				
† If signal generator does not produce sufficient output for usable reading, clip hot lead of generator to RF stator plates terminal of gang; clip ground lead to frame of gang. Adjust (A) (B) and (C) for usable output only. Then return to "Step 1".					
* If difficulty is experienced in obtaining signal output, first rotate IF slugs out several turns, then slowly adjust slugs in until output is obtained. Caution: Rotating slugs too far inward will damage ceramic capacitor contained in IF can.					
§ Antenna trimmer (E) should first be adjusted for maximum output with generator tuned to 1400 KC. Then try to increase output by rocking gang or generator slightly while readjusting trimmer.					

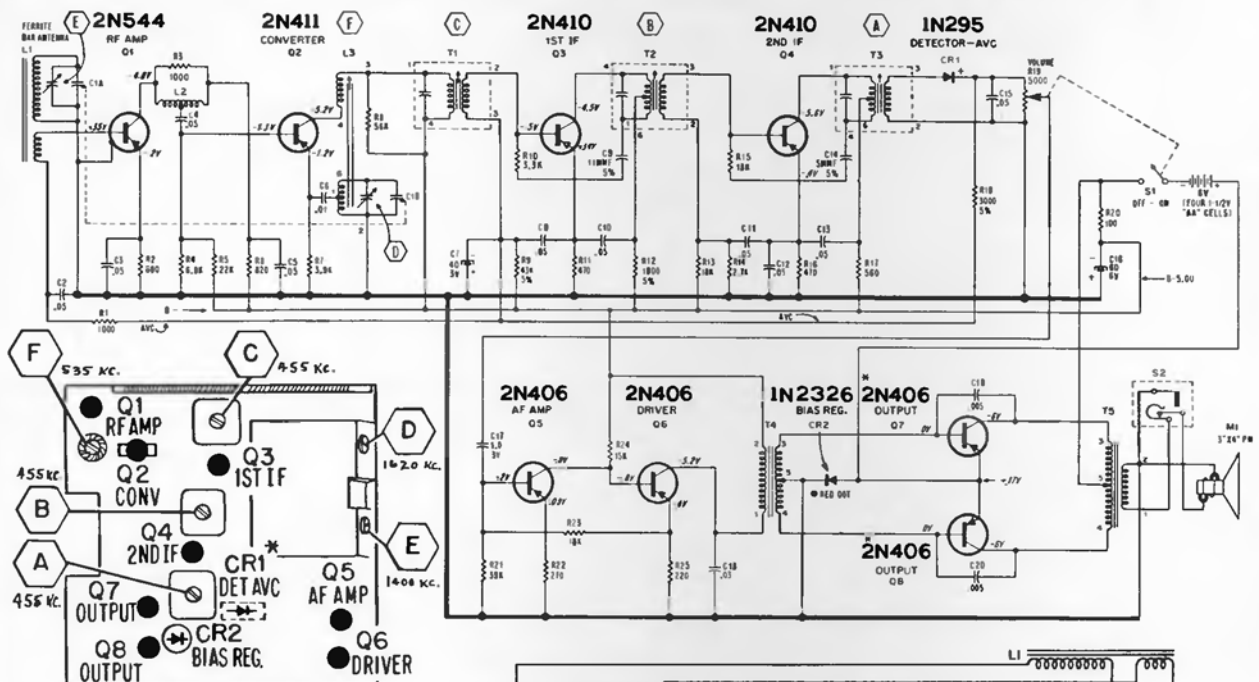
1 LOOSEN SCREW ON CABINET BACK



2 UNHOOK TAB FROM SLOT ON FRONT SECTION

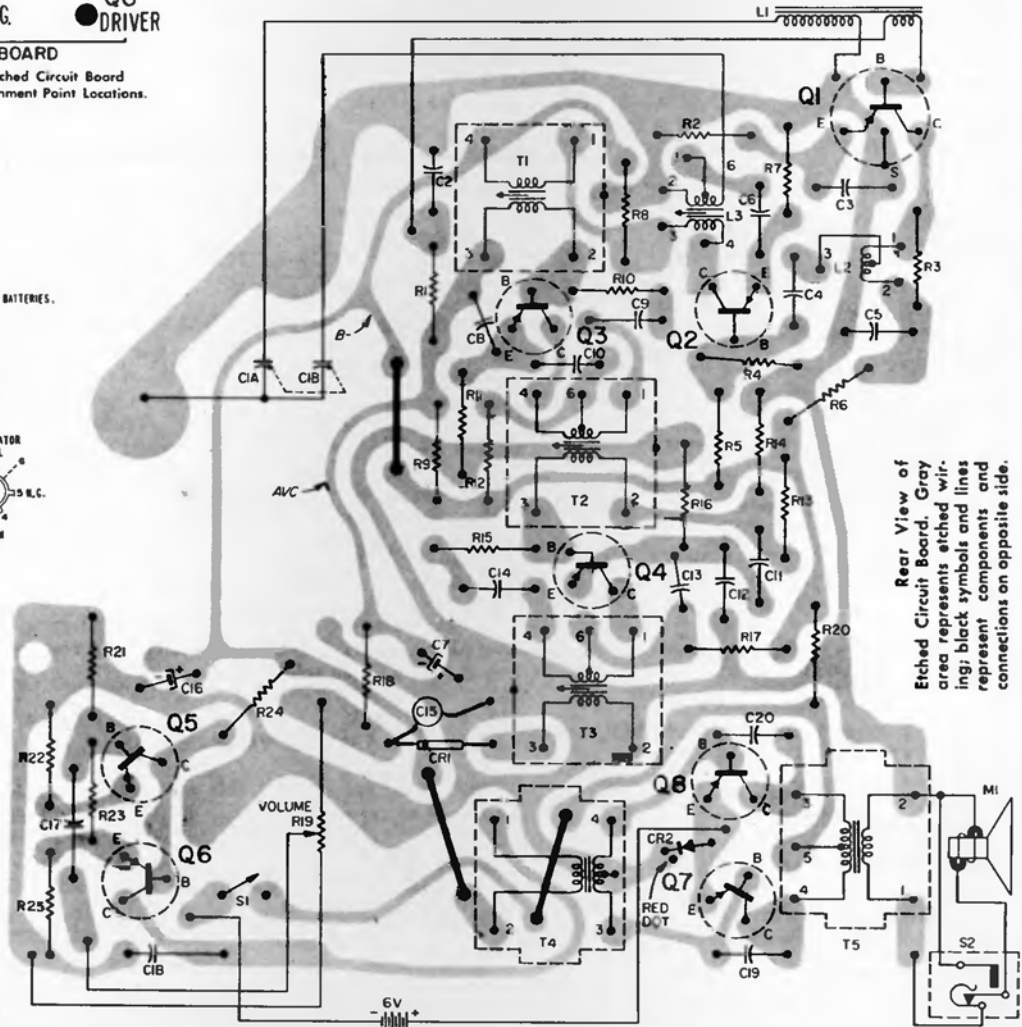
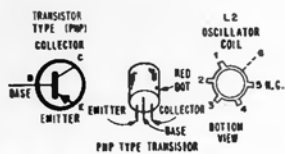
Opening the Cabinet for Battery Replacement, in Models Using the 7B2D Chassis

ADMIRAL Chassis 8A2, used in Models Y2091, Y2093, Y2098



Top View of Etched Circuit Board
Showing Transistor and Alignment Point Locations.

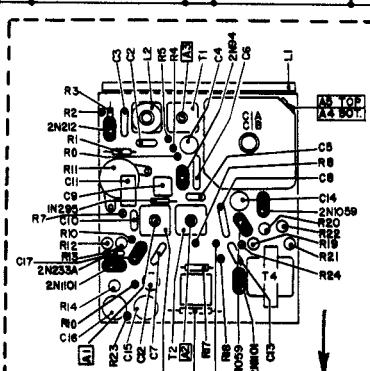
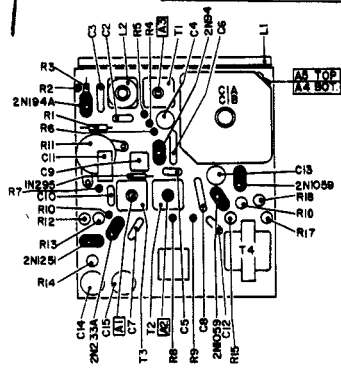
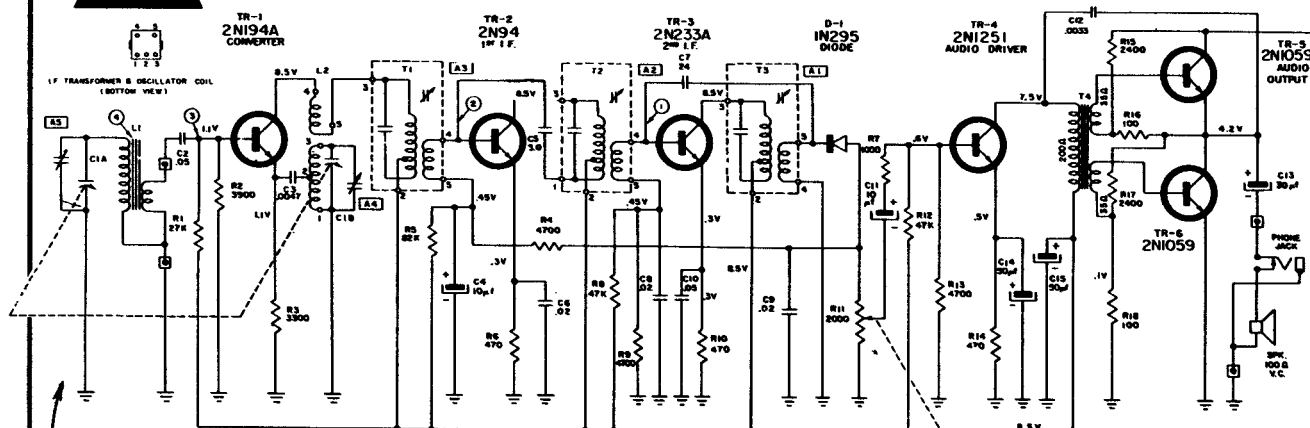
NOTES:
 - COMMON ETCHED CIRCUIT GROUND.
 - UNLESS OTHERWISE SPECIFIED:
 CAPACITOR VALUES IN MICROFARADS.
 RESISTOR VALUES IN OHMS, 1/4 WATT, 10%.
 VOLTAGE AND CURRENT READINGS TAKEN WITH FRESH BATTERIES.
 NO SIGNAL, VOLUME CONTROL MINIMUM.
 TOTAL CURRENT DRAIN (NO SIGNAL) - 8-10 MA
 0+ NOT GROUNDING
 IF - 455 KC
 * MATCHED PAIR





MODELS 61R13, 61R16, 61R19 61R23, 61R26, 61R29

CODE 1.61701



SIGNAL TEST POINTS	TEST FREQUENCY	SERIES CAPACITOR TO GENERATOR	INPUT FOR 5 W. OUTPUT (7.5 HOURS DRAIN)
①	455 Kc	.05 μ f	500 μ V
②	455 Kc	.05 μ f	50 μ V
③	455 Kc	.05 μ f	2 μ V
④	1000 Kc	STANDARD LOOP	200 μ V/m

CAPACITANCE VALUES LESS THAN 1.0 ARE IN MICROFARADS (μ f), AND VALUES GREATER THAN 1.0 ARE IN MICRO-MICROFARADS ($\mu\mu$ f) EXCEPT WHERE NOTED.

VOLTAGE READINGS TO COMMON GROUND ARE MEASURED WITH VACUUM TUBE VOLTMETER UNDER NO SIGNAL CONDITIONS WITH TUNING CAPACITOR CLOSED AND VOLUME CONTROL AT MAXIMUM COUNTERWISE ROTATION.

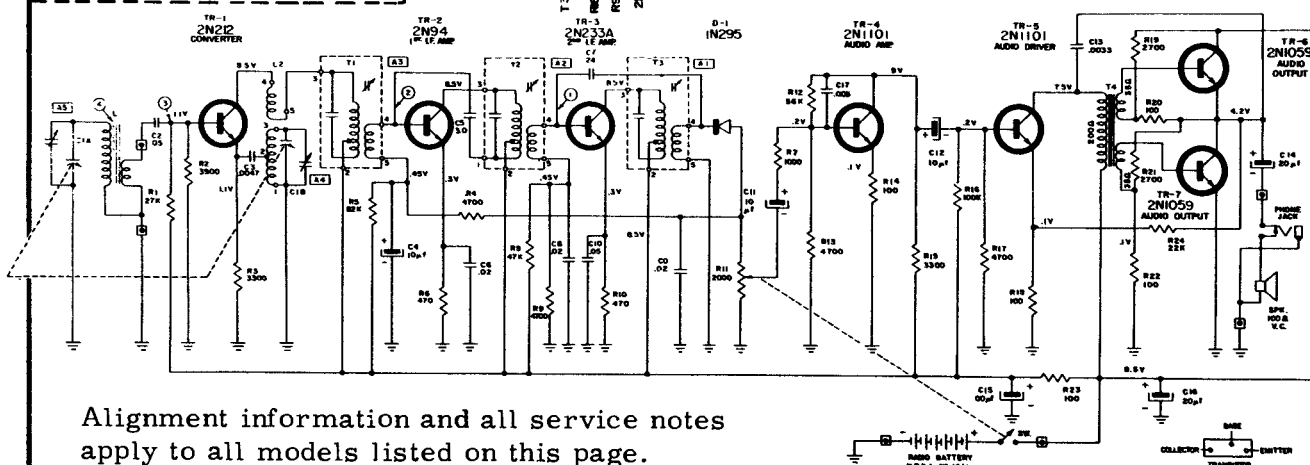
RESISTANCE VALUES ARE IN OHMS: K=1000.

+ = COMMON GROUND SYMBOL.

① = EXTERNAL CONNECTION TO PRINTED CIRCUIT.

TOTAL BATTERY CURRENT SHALL BE UNDER 40 MA SIGNAL CONDITIONS. 7 TO 10 MA.

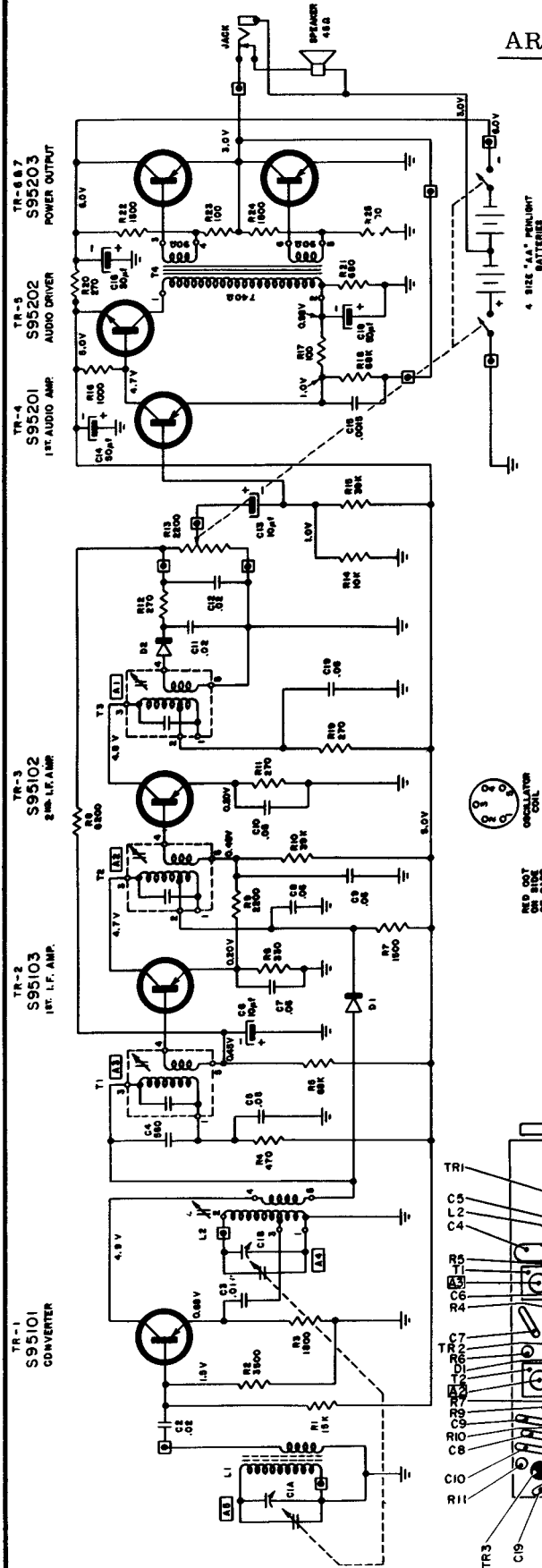
Arvin CODE 1. 61601 MODELS 61R35 & 61R39



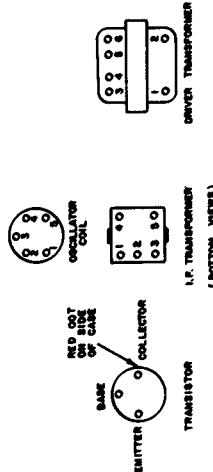
Alignment information and all service notes apply to all models listed on this page.

Position of Variable	Generator Frequency	Dummy Antenna	Generator Connections	Trimmers Adj. in order shown for Max. Output	Function of Trimmer
Open	455 Kc	.05 μ f	C1A	A1 (Top of T3) A2 (Top of T2) A3 (Top of T1)	I. F.
Open	1670 Kc		*Test Loop	A4	I. F.
1400 Kc	1400 Kc		*Test Loop	A5	I. F.
600 Kc	600 Kc		*Test Loop	Check Point	Oscillator Antenna

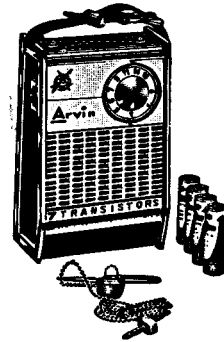
ARVIN Models 61R48, 61R49, Code 1.62201



1/2" - COMMON GROUND.
 [] - EXTERNAL CONNECTOR TO PRINTED CIRCUIT BOARD.
 RESISTANCE VALUES ARE IN OHMS; K = 1000.
 CAPACITANCE VALUES LESS THAN 1.0 ARE IN MICROFARADS (μF) AND
 VALUES GREATER THAN 1.0 ARE IN MICRO-MICROFARADS (μμF) EXCEPT
 WHERE NOTED OTHERWISE.
 VOLTAGE MEASURES TO COMMON GROUND (A) ARE MEASURED WITH
 VACUUM TUBE VOLTMETER UNDER NO SIGNAL CONDITIONS.
 TOTAL BATTERY CURRENT DRAIN UNDER NO SIGNAL CONDITIONS IS
 8 TO 12 MA.



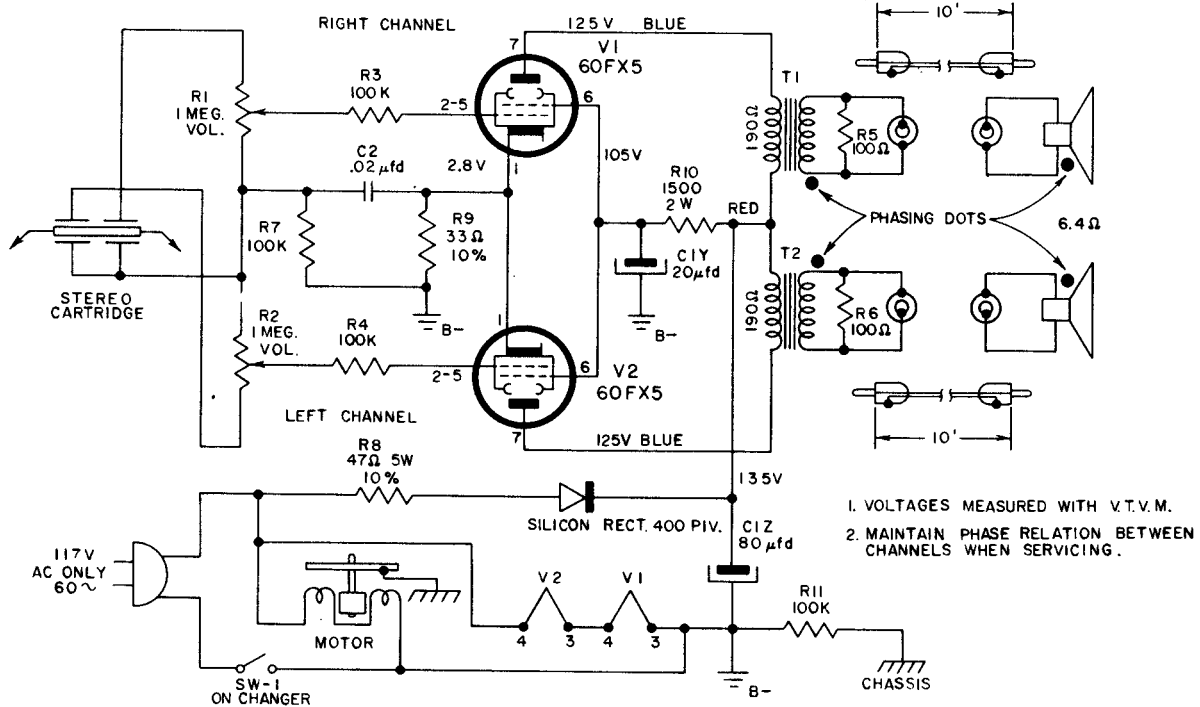
SIGNAL TEST POINTS	TEST FREQUENCY	RESISTOR TO GENERATOR (L1 TO TR-1)	INPUT FOR TR-1
TR-1 BASE	455 KC	.05 μF	450 μV
TR-2 BASE	455 KC	.05 μF	25 μV
TR-3 BASE	455 KC	.05 μF	5 μV
STANDARD LOOP	1000 KC	STANDARD LOOP	200 μV/M



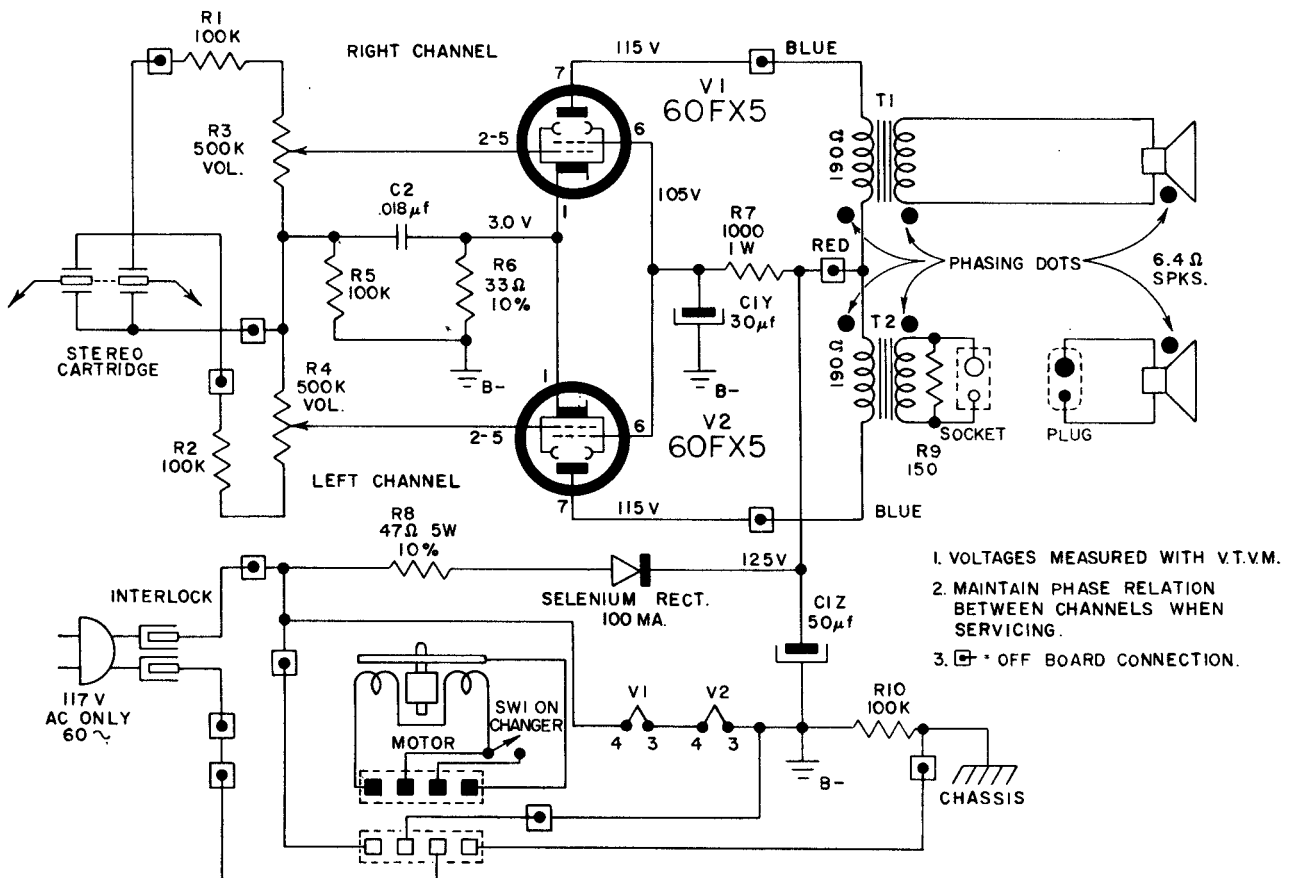
Position of Variable	Generator Frequency	Dummy Antenna	Generator Connections	Trimmers Adj. in order shown for Max. Output	Function of Trimmer
Open	455 Kc	.05 μf	C1A	A1 (Top of T3) A2 (Top of T2) A3 (Top of T1)	I. F. I. F. I. F.
Open 1400 Kc 600 Kc	1670 Kc 1400 Kc 600 Kc		*Test Loop *Test Loop *Test Loop	A4 A5 Check Point	Oscillator Antenna

*Standard Hazeltine Test Loop Model 1150 or 3 turns of wire about 6" in diameter placed about one foot from the set loop.

ARVIN PHONOGRAPH MODEL 80P78, CODE 1. 62001



ARVIN PHONOGRAPH MODEL 81P68, CODE 1. 65301

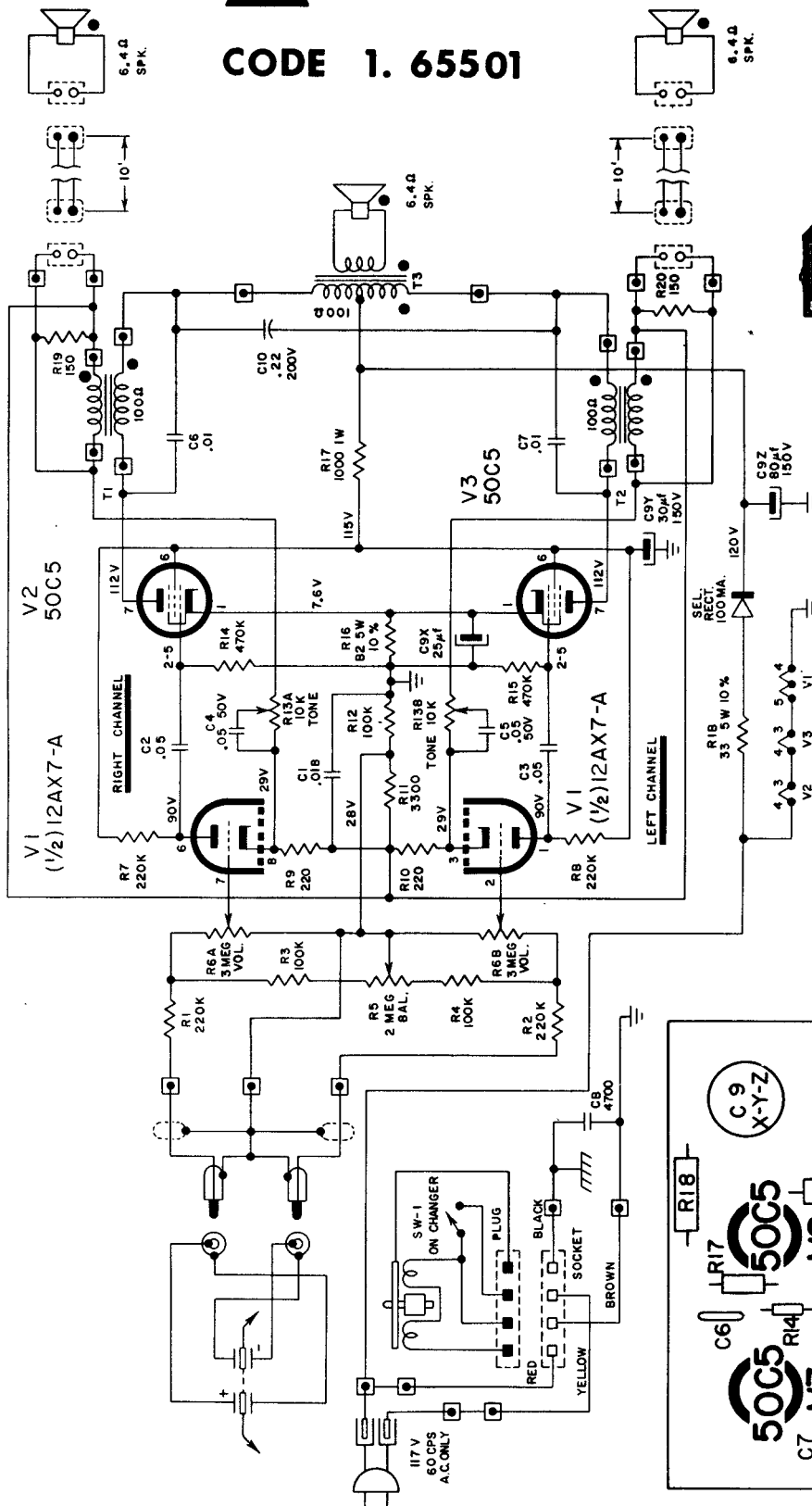
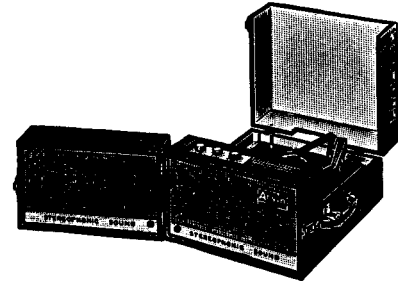


Arvin

CODE 1. 65501

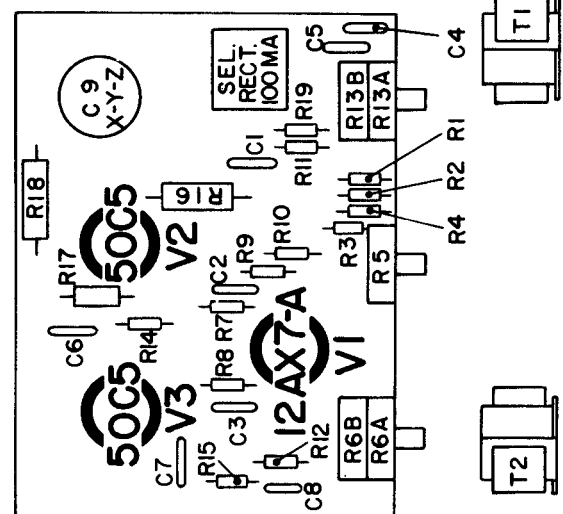
**PHONOGRAPH
MODELS**

81P75 - 81P78



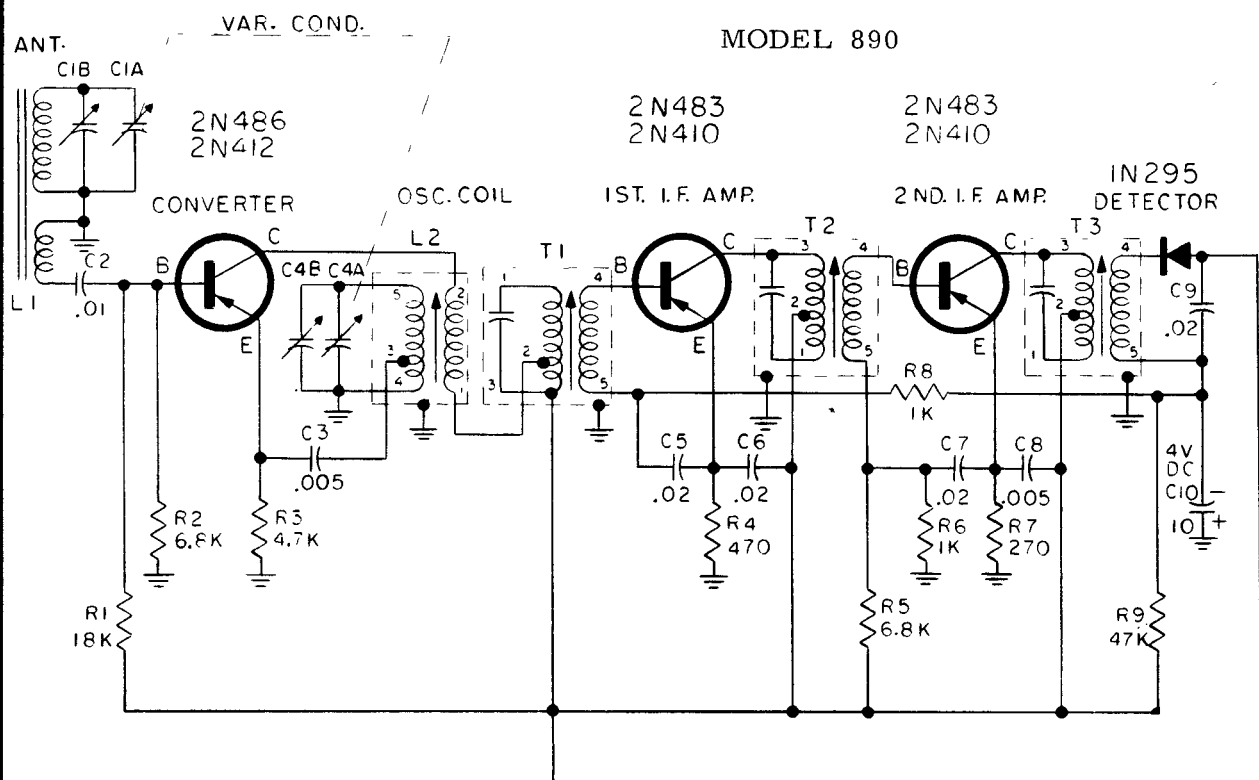
NOTES:

1. $\frac{1}{2}$ = B-
2. $\frac{1}{2}$ = CHASSIS
3. VOLTAGES MEASURED WITH V.T. V.M.
4. $\square$ = EXTERNAL CONNECTIONS TO PRINTED BOARD.
5. RESISTANCE MEASURED IN OHMS; K=1,000 MEG=1,000,000.
6. RESISTORS ARE 1/2 WATT WITH A $\pm$ 20% TOLERANCE UNLESS OTHERWISE INDICATED.
7. CAPACITANCE VALUES LESS THAN ONE (1) ARE IN MICROFARADS (μ F), AND VALUES OF ONE (1) OR GREATER ARE IN MICROFARADS (MFD) UNLESS OTHERWISE INDICATED.
8. COMPONENTS IN THIS AMPLIFIER ARE INTERCONNECTED TO RESULT IN A CONSISTENT PHASE RELATIONSHIP BETWEEN CHANNELS DO NOT DISTURB THIS PHASE RELATIONSHIP DURING SERVICING.
9. $\bullet$ = PHASING DOT.
10. T1, T2, T3 (IN PHASE TERMINALS. RED DOT IS PRIMARY; GREEN DOT IS SECONDARY).
11. SPEAKER (POSITIVE VOLTAGE MOVES VOICE COIL OUTWARD).



BULOVA WATCH COMPANY, INC.

MODEL 890

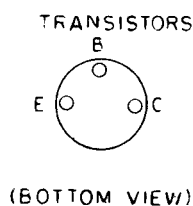
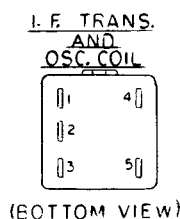
ALL RESISTORS 1/4 WATT $\pm 10\%$ UNLESS OTHERWISE NOTED.

K = 1,000 OHMS.

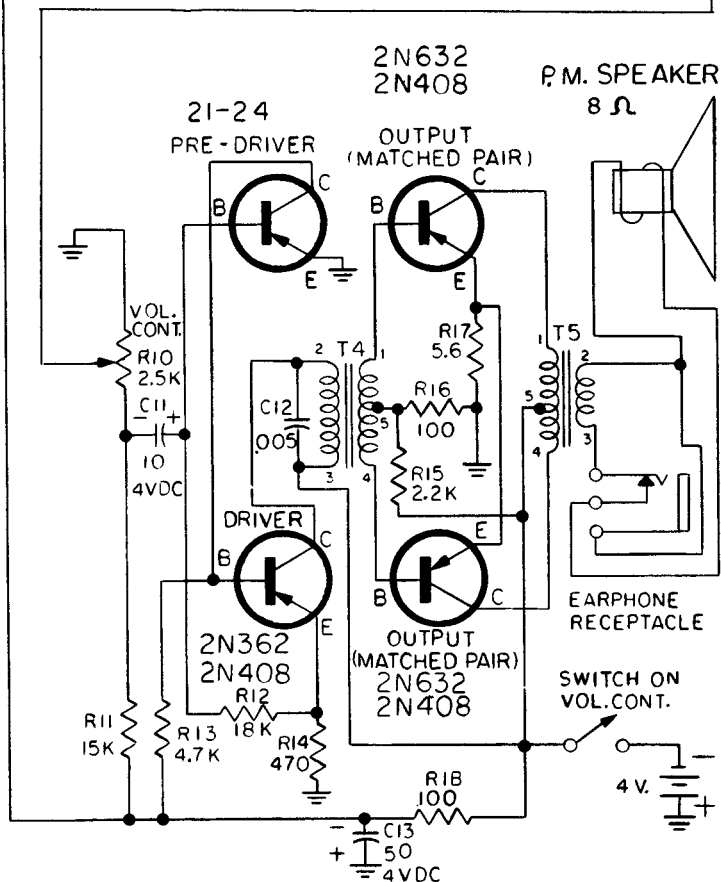
ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.

DC WORKING VOLTAGE IS 25V UNLESS OTHERWISE NOTED.

= CHASSIS GROUND.



BULOVA
MODEL # 890



12DZ6
R.F. AMP.

12DZ6
R.F. AMP.

12AD6
OSC-MOD

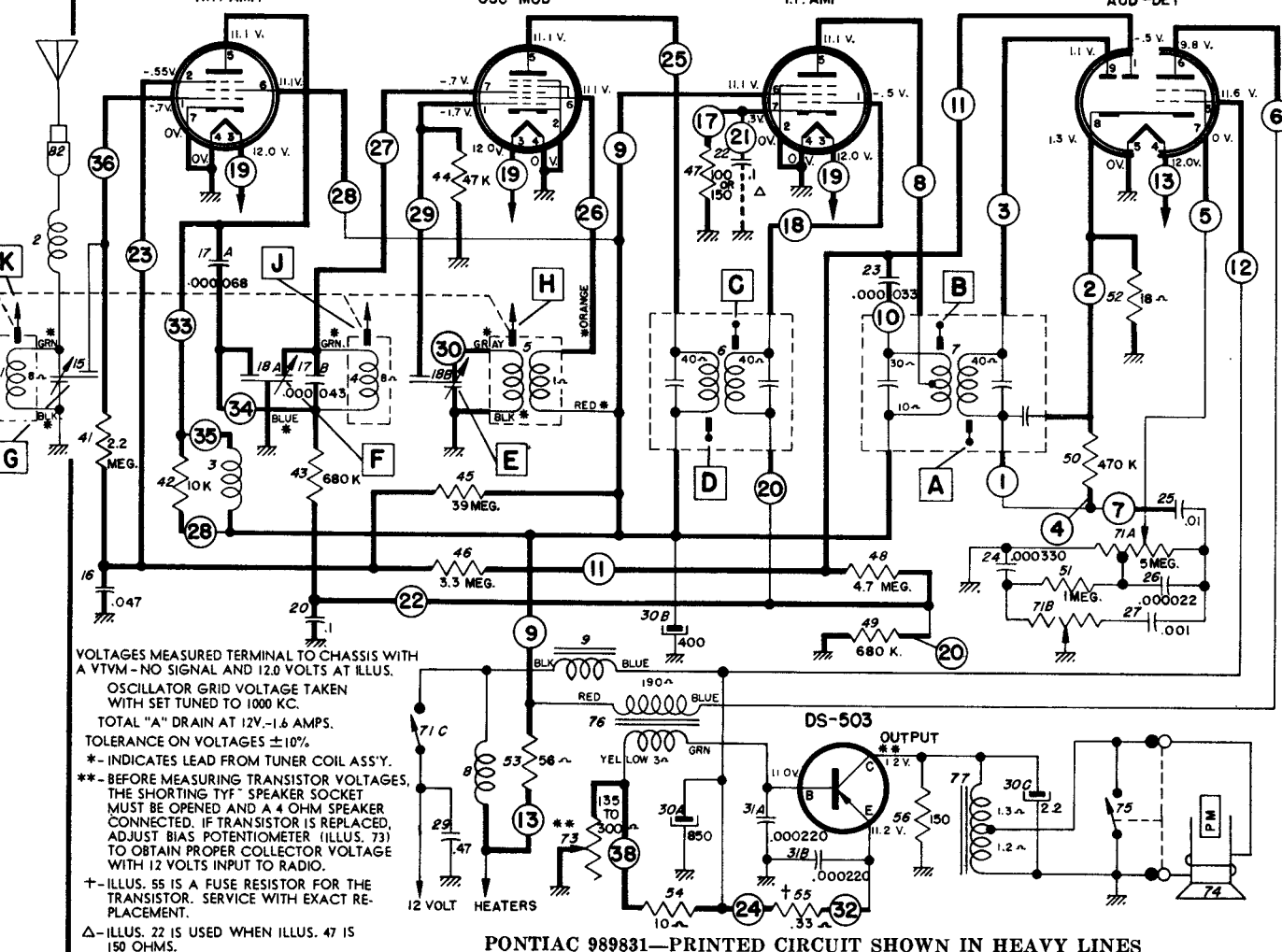
12AD6
OSC-MOD

12EK6
1.5 AMP

12EK6
1.5 AMP

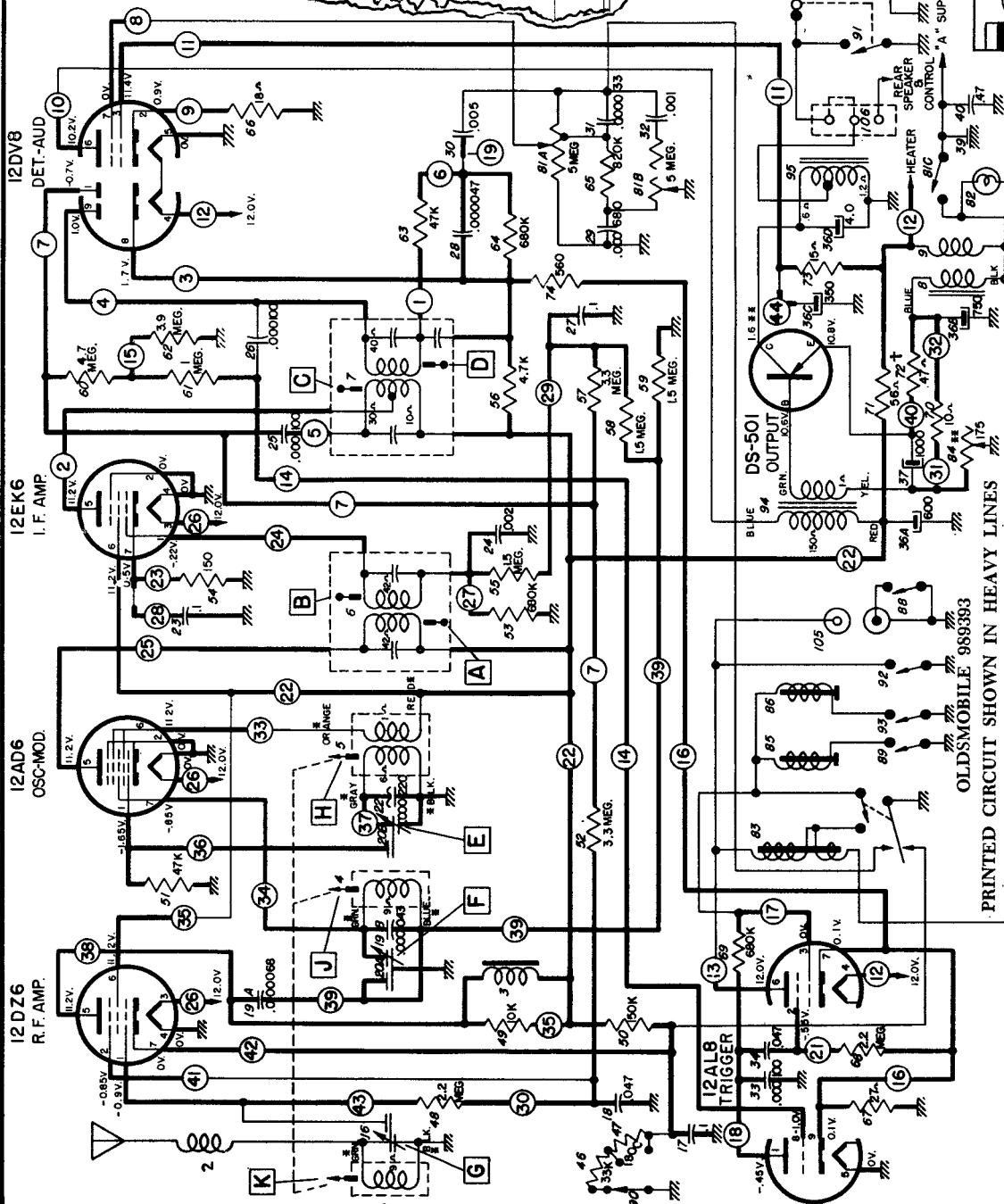
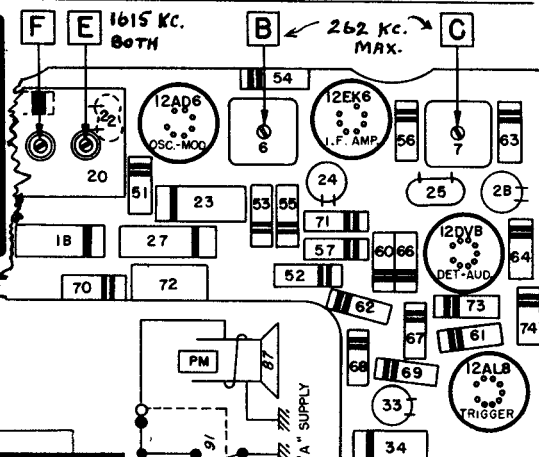
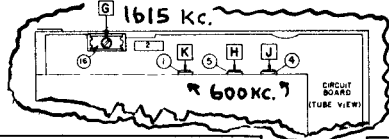
12DS7
AUD-DET

12DS7
AUD-DET



PONTIAC 989831—PRINTED CIRCUIT SHOWN IN HEAVY LINES

D	262 KC.	262 KC
	MIN.	MAX.



PRINTED CIRCUIT SHOWN IN HEAVY LINES

Voltages measured terminal to chassis with a VTVM - No signal and 12.0 volts at Illustration 39.

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 (Illustration 84) to obtain proper collector voltage with 12 volts input to radio. Speaker must be connected.

++—Illustration 72 is a fuse resistor for the transistor, voltage with 12 volts input to radio. Speaker mu-

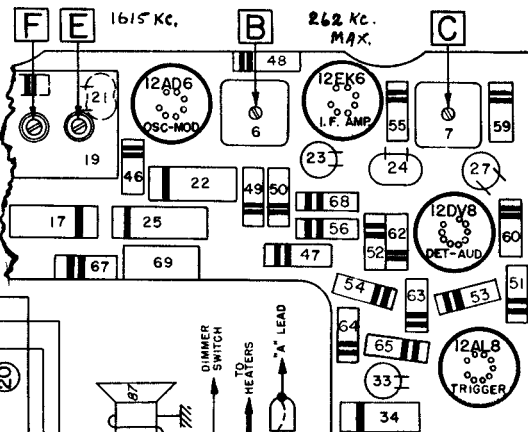
OF

1961 OLDSMOBILE MODEL 989393

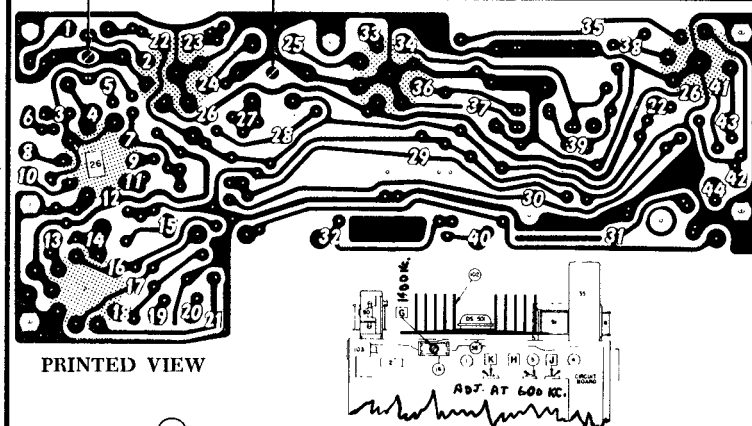
D 262 Kc. MIN. **A** 262 Kc. MAX. **A** MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

DELCO

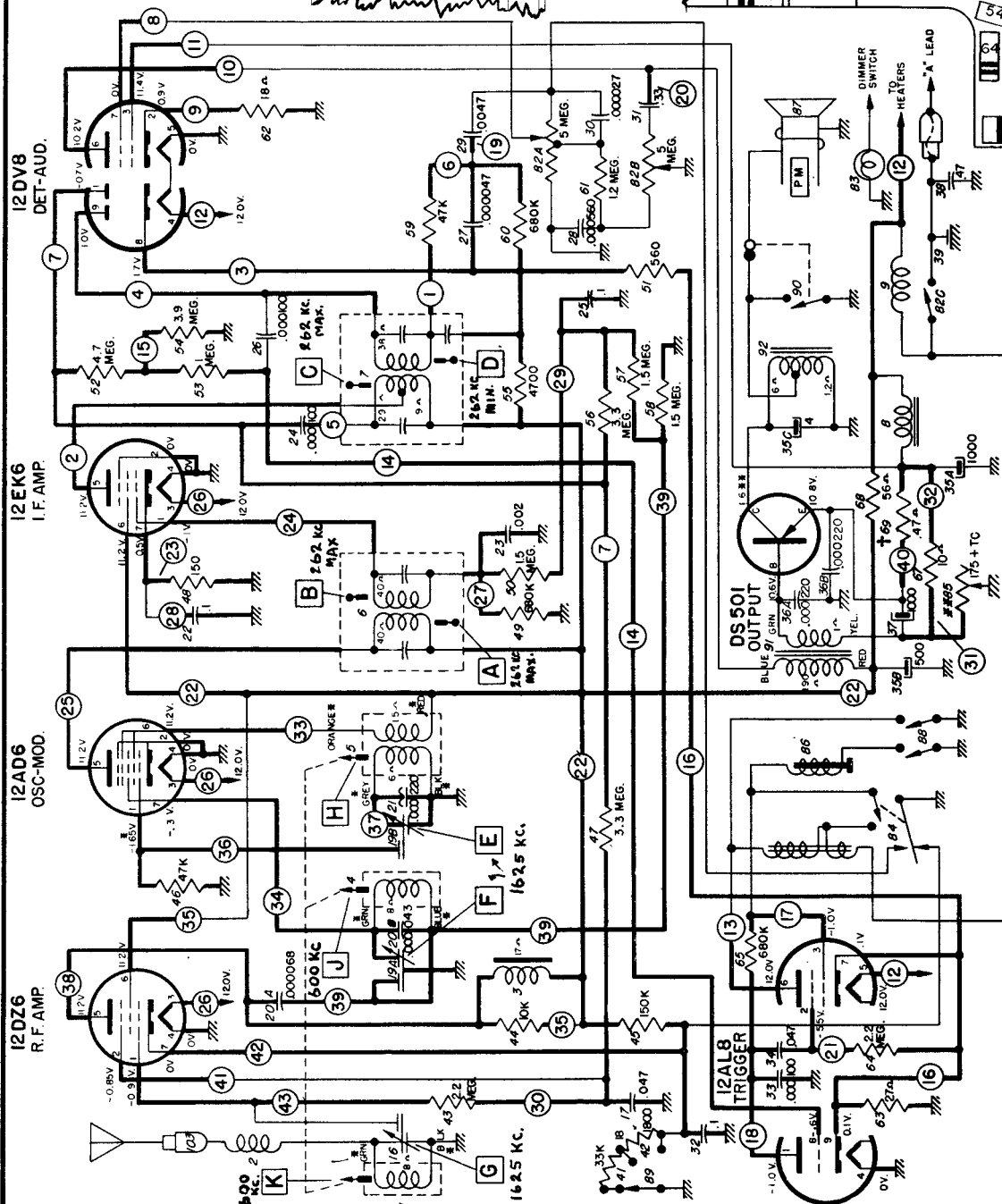
PONTIAC MODEL 989692



PARTS VIEW



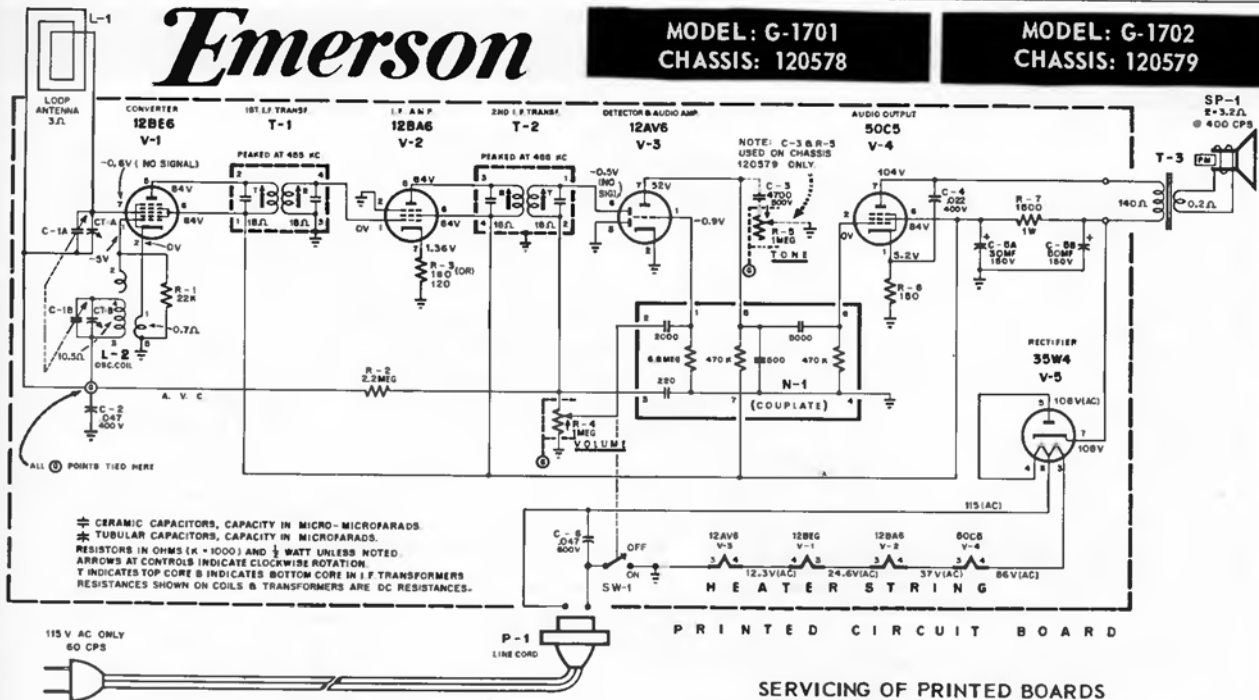
PRINTED VIEW



PONTIAC MODEL 989692

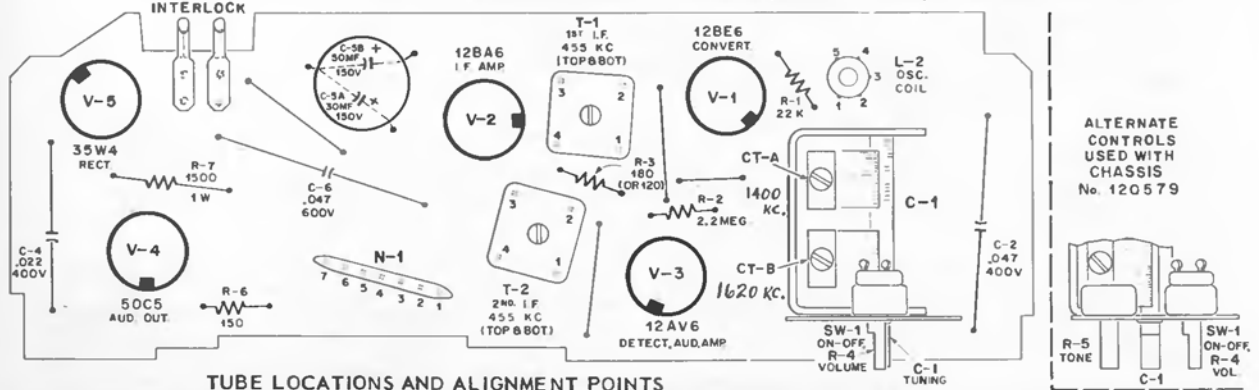
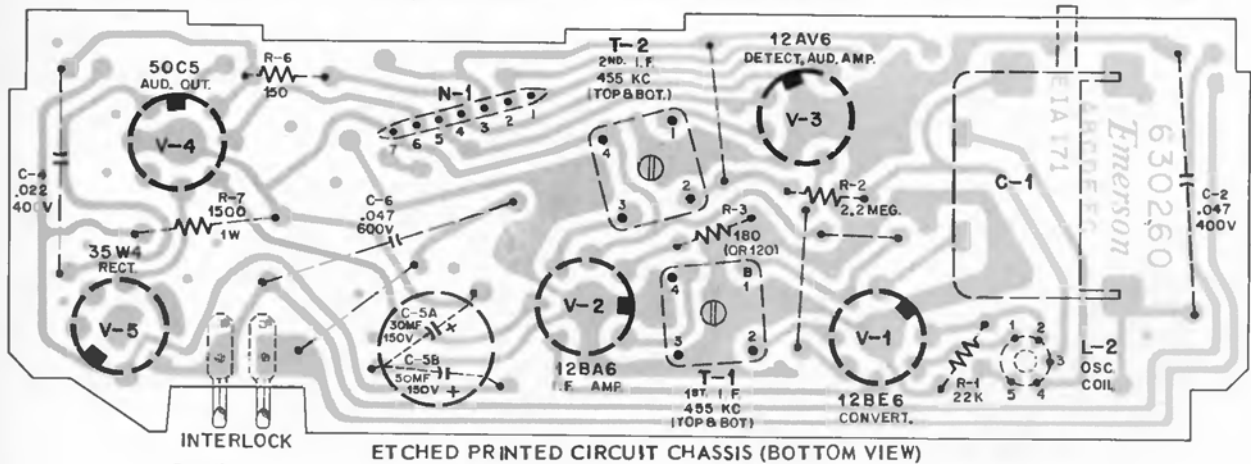
PRINTED CIRCUIT SHOWN IN HEAVY LINES
WHITE NUMBERS ON PRINTED CIRCUIT DRAWING CORRESPOND TO THE ENCIRCLED NUMBERS ON SCHEMATIC.
ILLUSTRATION #69 IS A FUSE RESISTOR. IF THIS IS OPEN, THE TRANSISTOR COLLECTOR VOLTAGE WILL BE "O."

Emerson

MODEL: G-1701
CHASSIS: 120578
MODEL: G-1702
CHASSIS: 120579


SPEAKER REPLACEMENT

- 1) Remove line cord plug from wall outlet and remove back from cabinet. Remove chassis.
- 2) Apply heat to plastic retaining studs used to secure speaker to cabinet and remove speaker.
- 3) Install new speaker in cabinet. Secure speaker by re-heating original mounting studs and pressing excess plastic down over rear of speaker frame.

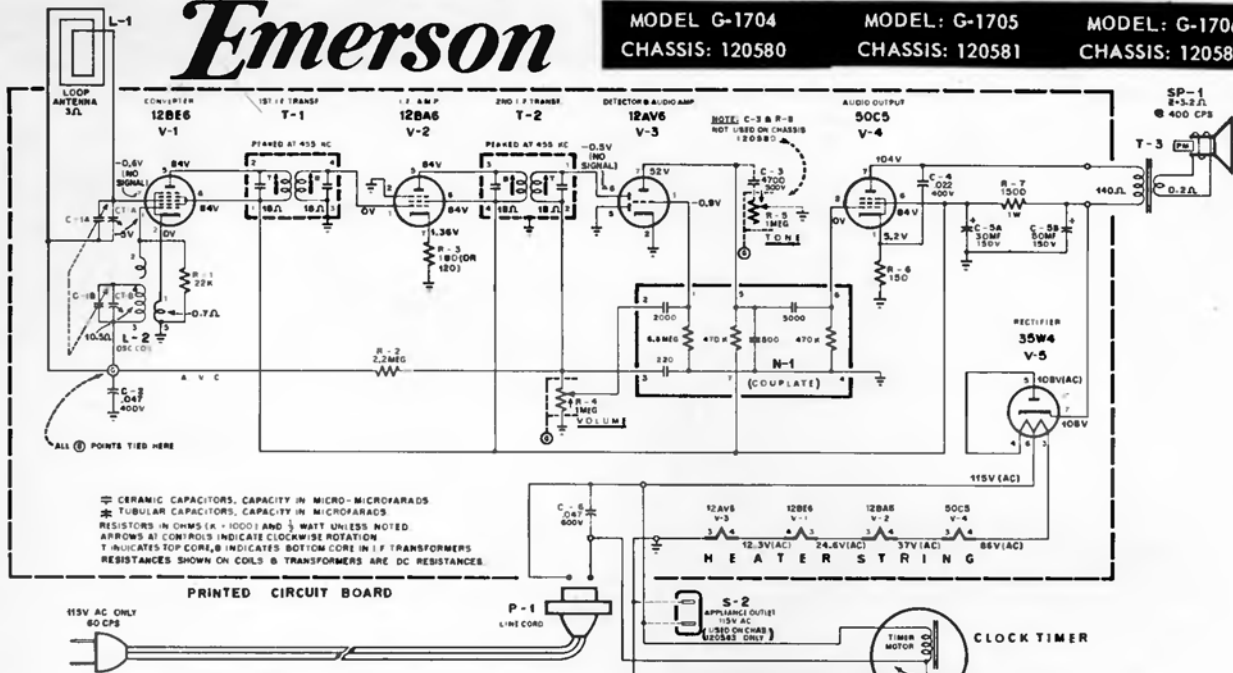


Emerson

MODEL G-1704
CHASSIS: 120580

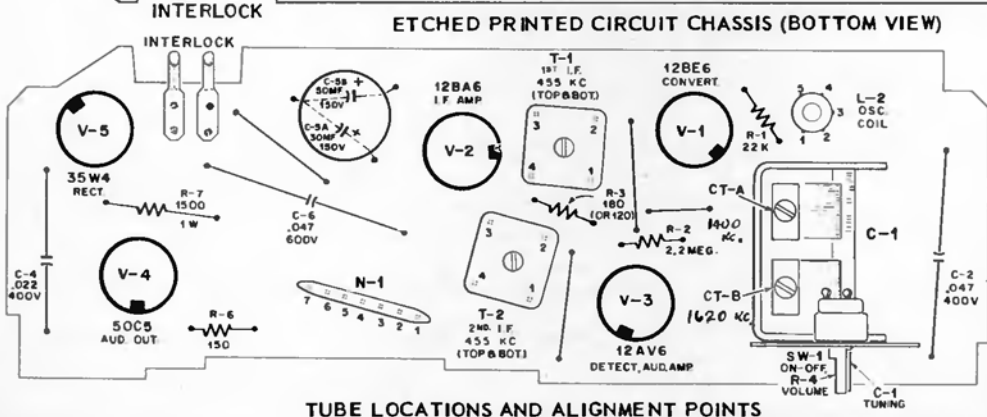
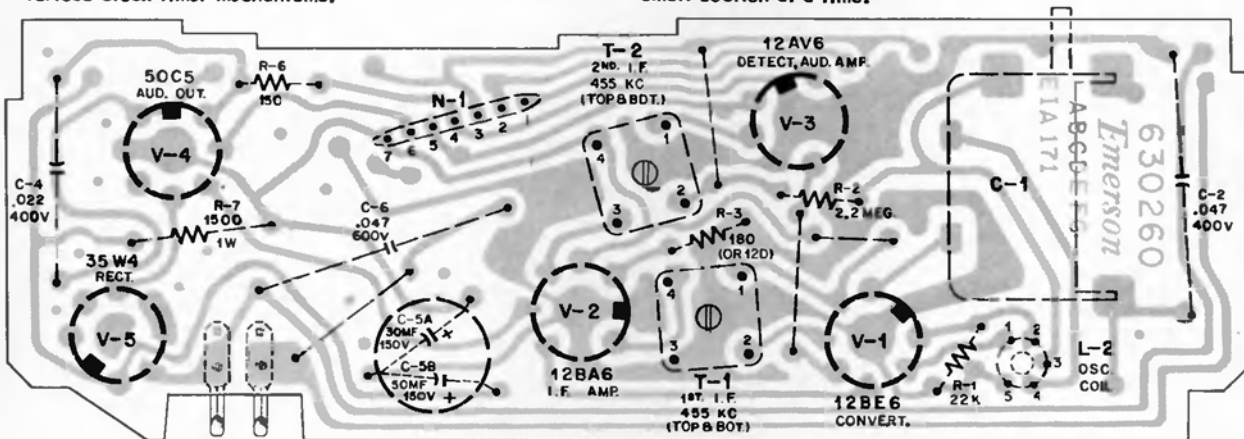
MODEL: G-1705
CHASSIS: 120581

MODEL: G-1706
CHASSIS: 120583

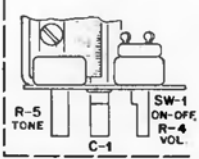


The models described in this Service Note are AC operated superheterodyne clock-radios designed for reception of programs in the AM broadcast band. They are electrically very similar; differing only in use of a tone control circuit (not used in model G-1704), automatically controlled appliance outlet (model G-1706 only) and the use of various clock-timer mechanisms.

To remove defective components one of several methods may be used. A recommended method is to cut close to the body of the defective component and solder the new part to the remaining leads. Another method is to apply heat at the junction point of the component wire lead and the printed board and lift out the component. If the wire lead is bent over, first heat and pry lead wire up. A defective component with many terminals may be removed by clipping into several parts and removing a small section at a time.

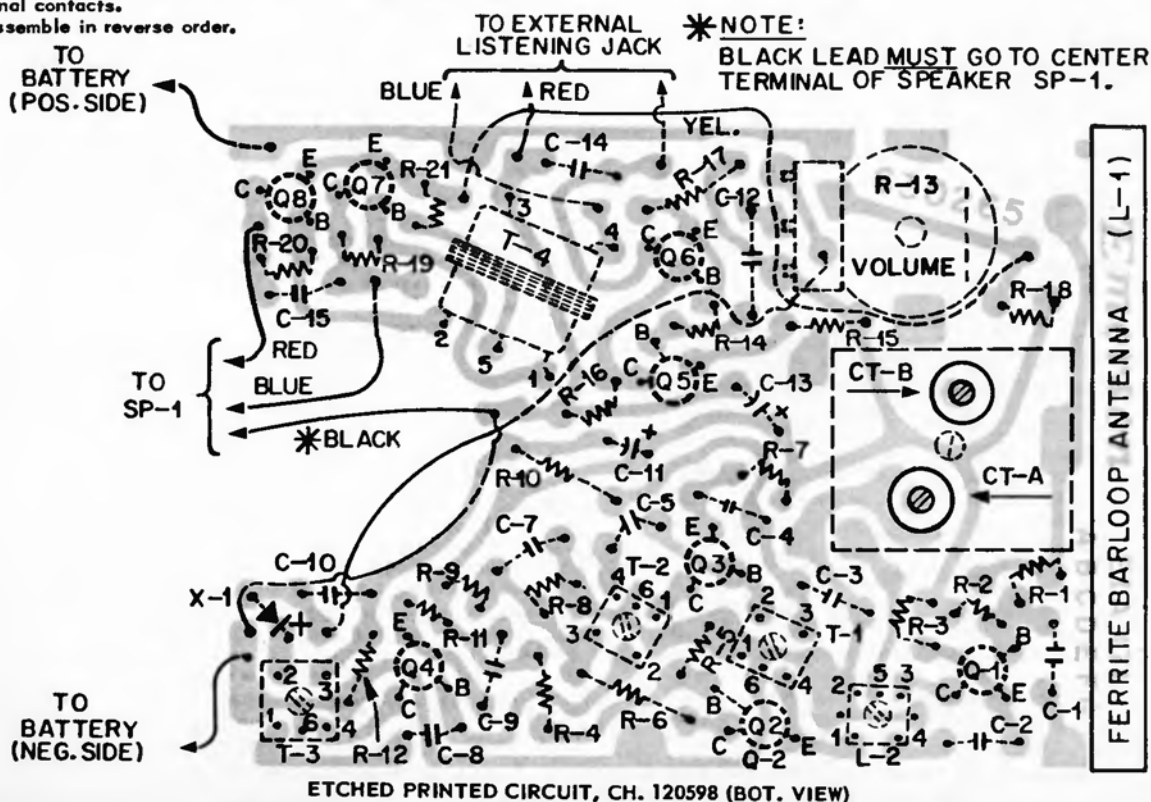
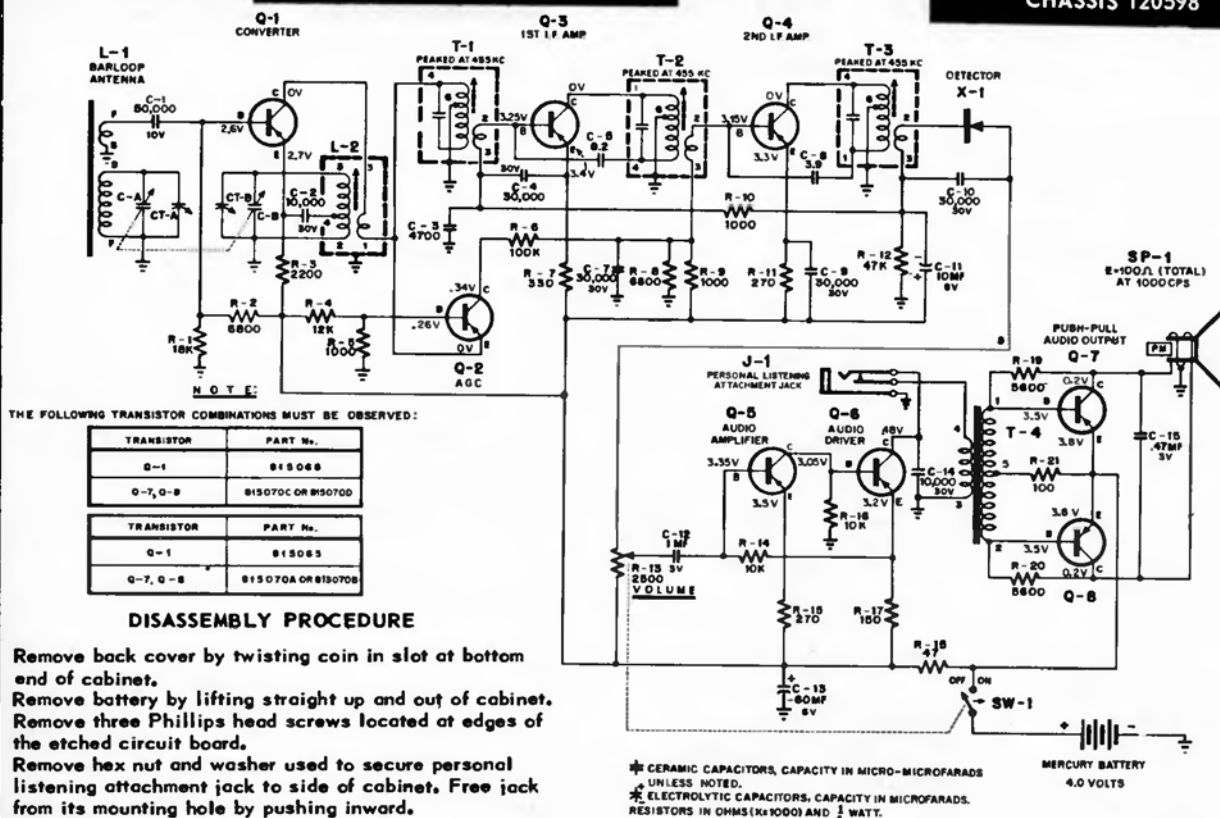


ALTERNATE CONTROLS
USED WITH
CHASSIS
No. 120581,
120583



Emerson Radio

MODEL 707
CHASSIS 120598



Emerson Radio

MODEL 941-B
CH. 120569-B

MODEL 943-B
CH. 120569-D

(For circuit diagram see next page adjacent at right)

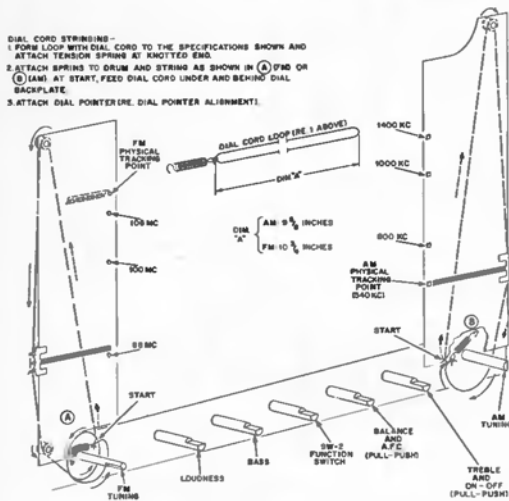


FIG. 2A, B - DIAL CORD STRINGING

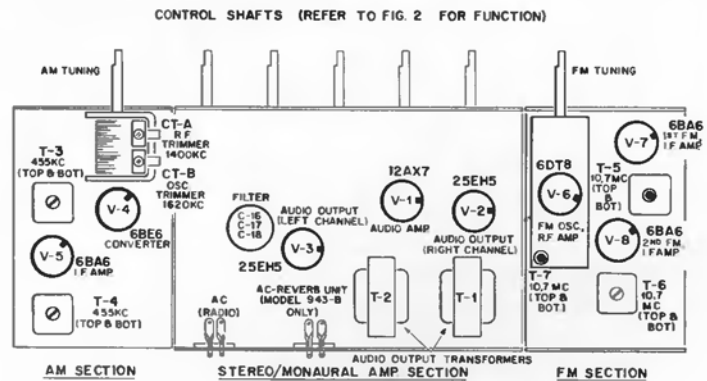
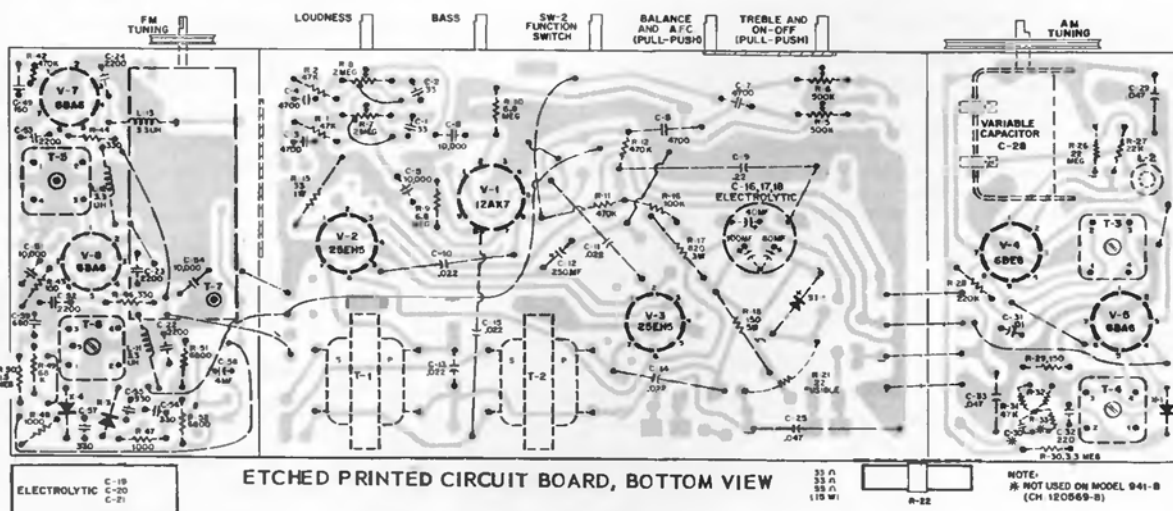


FIG. 3 - TUBE LOCATIONS AND ALIGNMENT POINTS



RESISTANCE READINGS CHART, CHASSIS 120569-B, 569-D

SYM	TUBE	SW-2	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V-1	12AX7	AM	*570K	6.8 Meg	0	0	0	*570K	6.8 Meg	0	3
		FM	*570K	6.8 Meg	0	0	0	*570K	6.8 Meg	0	3
V-2	25EH5	AM	33	470K	23	33	470K	*970	*360	—	—
		FM	33	470K	23	33	470K	*970	*360	—	—
V-3	25EH5	AM	33	470K	33	43	470K	† 1 Meg	*360	—	—
		FM	33	470K	33	43	470K	† 1 Meg	*360	—	—
V-4	6BE6	AM	22K	1	20	17	*970	*970	22Meg	—	—
		FM	22K	1	20	17	*INF	*INF	22 Meg	—	—
V-5	6BA6	AM	4 Meg	0	20	23	*970	*970	150	—	—
		FM	4 Meg	0	20	23	*INF	*INF	150	—	—
V-6	6DT8	AM	5.5 Meg	0	56	3	INF	5.5 Meg	100K	0	0
		FM	*2K	0	56	3	INF	*12K	100K	0	0
V-7	6BA6	AM	470K	0	8	11	*INF	*INF	0	—	—
		FM	470K	0	8	11	1K	1K	0	—	—
V-8	6BA6	AM	1	0	13	15	*INF	*INF	100	—	—
		FM	1	0	13	15	1K	1K	100	—	—

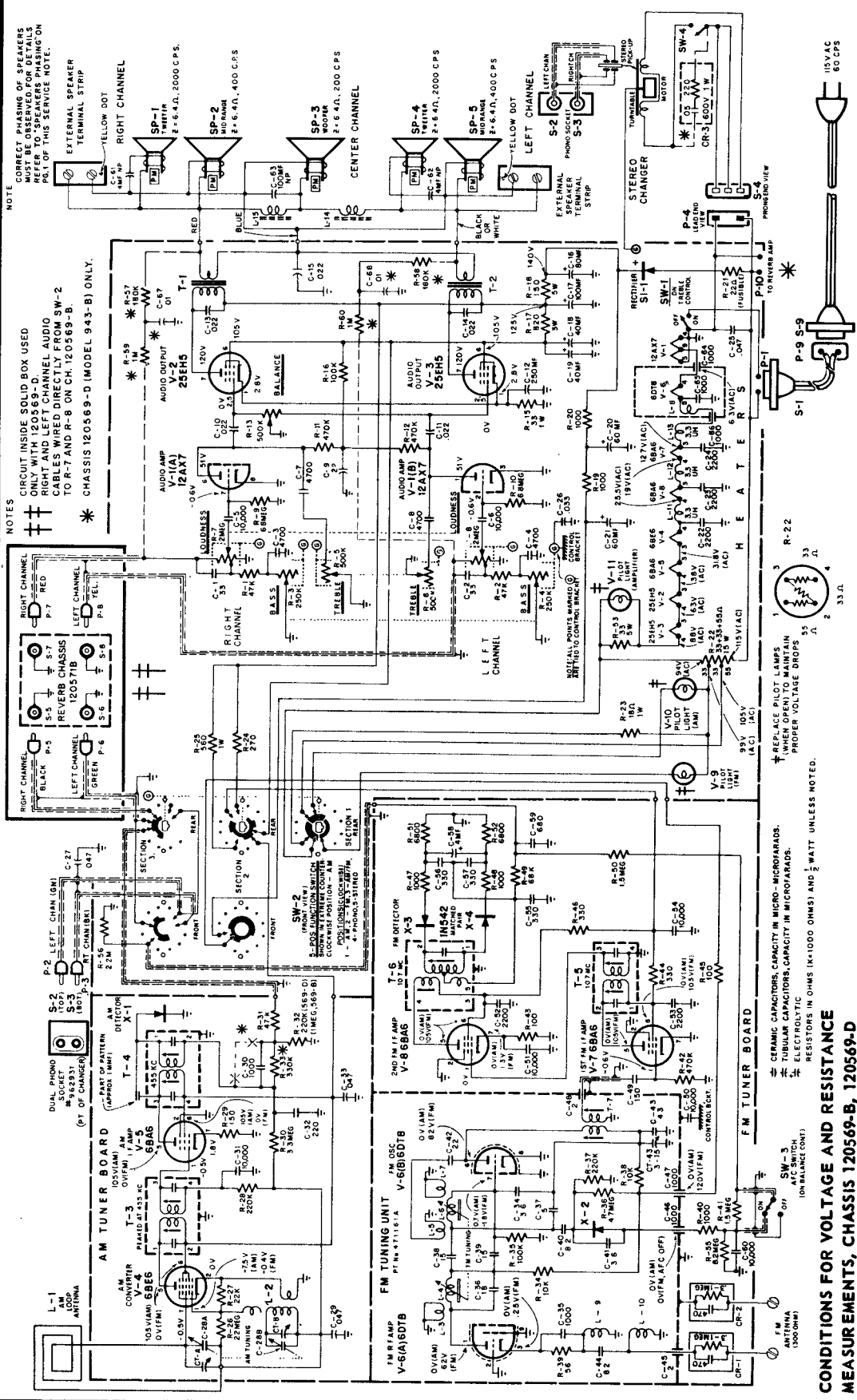
NOTES: * Measured with low side of VTVM connected to junction of R-18, C-16 (B+ point).
† Capacitor charge-wait until meter settles (about 30 seconds).

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

NOTE: CORRECT PHASING OF SPEAKERS MUST BE OBSERVED FOR DETAILS REFER TO "SPEAKERS PHASING" ON PAGE 1 OF THIS SERVICE NOTE.

CIRCUIT INSIDE SOLID BOX USED ONLY WITH 120569-D PANEL AUDIO CABLES WIRING DIRECTLY FROM SW-2 TO R-7 AND R-8 ON CH. 120569-B. CHASSIS 120569-D (MODEL 943-B) ONLY.

NOTES



CONDITIONS FOR VOLTAGE AND RESISTANCE MEASUREMENTS, CHASSIS 120569-B, 120569-D

1. Voltages are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements taken with Voltmyst or equivalent.
3. All measurements taken from tube pin to B minus (metal can of electrolytic filter) unless otherwise indicated.
4. Voltage measurements taken with:
 - (a) Line voltage maintained at 115 volts a.c.
 - (b) Loudness control set for minimum volume.
 - (c) No signal input AM or FM.
5. Resistance measurements taken with:
 - (a) Power line cord disconnected from outlet.
 - (b) Loudness control set for minimum volume.
 - (c) SW-2 selector switch in AM and FM positions.
6. AFC switch in "Off" position at all times.
7. Filament resistance values are cold readings.
8. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
9. N.C. denotes no connection, K is Kilohms, and Meg. is Megohms.

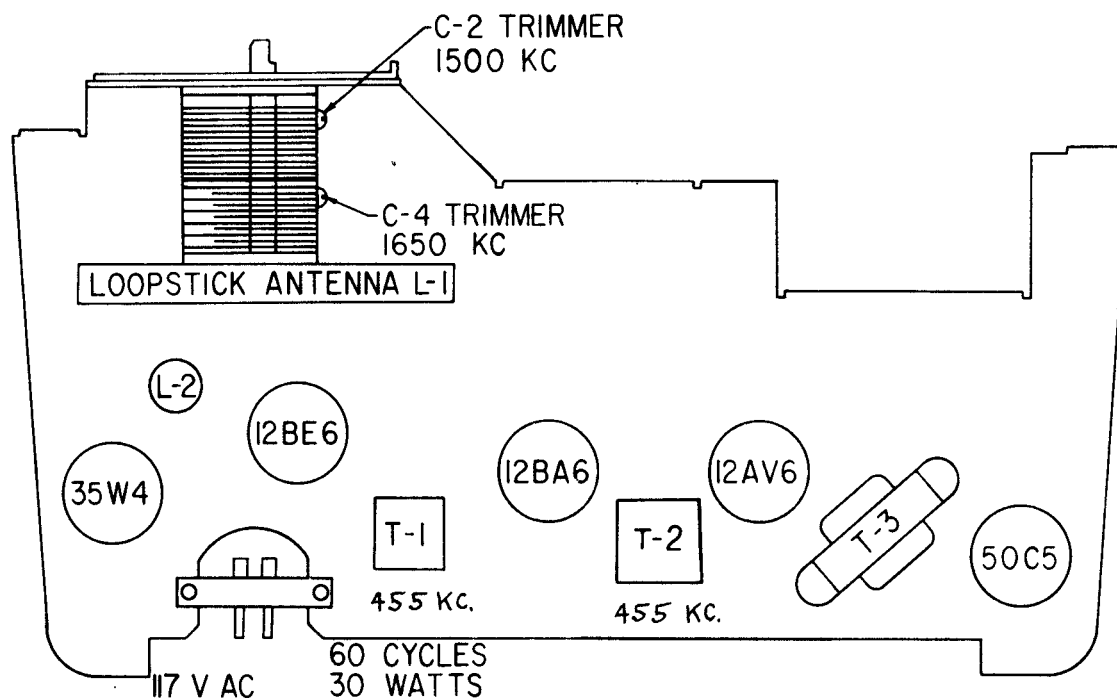
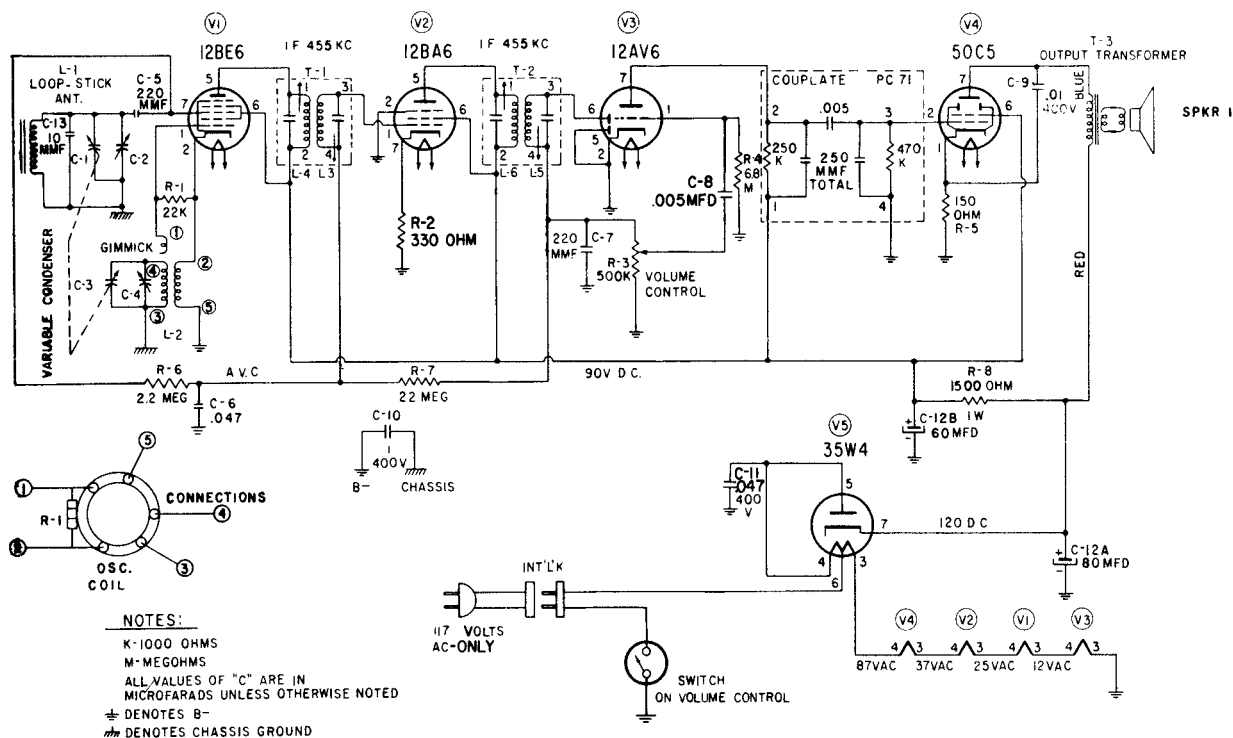
EMERSON RADIO

Model 941B, Chassis 120569B
Model 943B, Chassis 120569D

(Continued from preceding page)

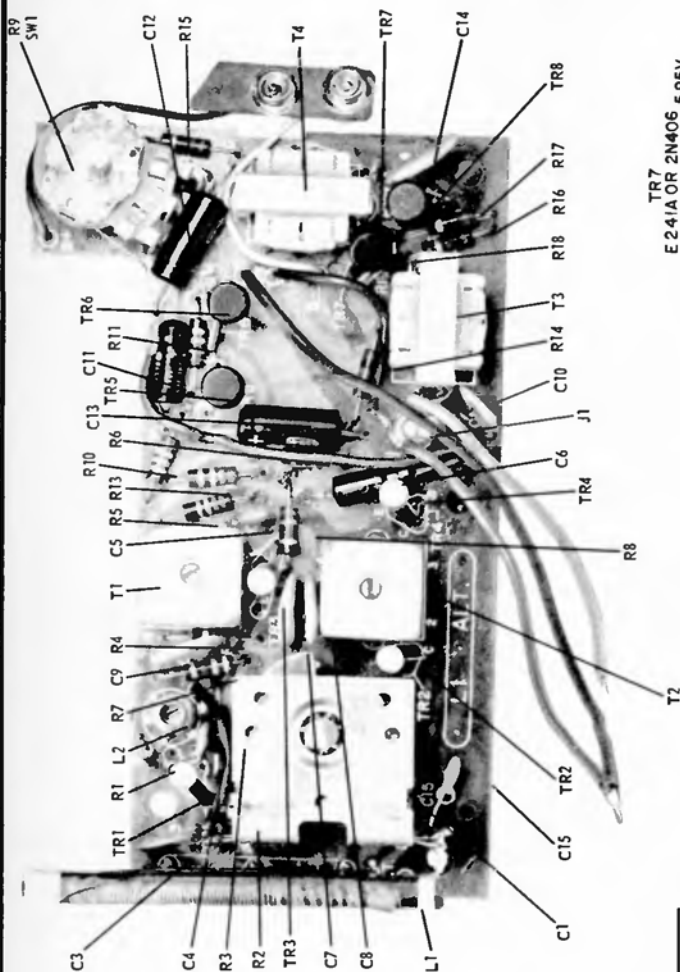
Gamble-Skogmo, Inc.

This is exact service material for Model RA48-8260A. Model RA48-8261A is practically identical. Model RA48-8266A is similar but uses clock with switching network and has somewhat different parts placement.



Gamble-Skogmo, Inc.

MODELS RA50-9908A, RA50-9909A



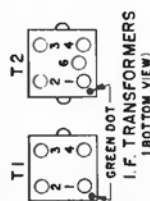
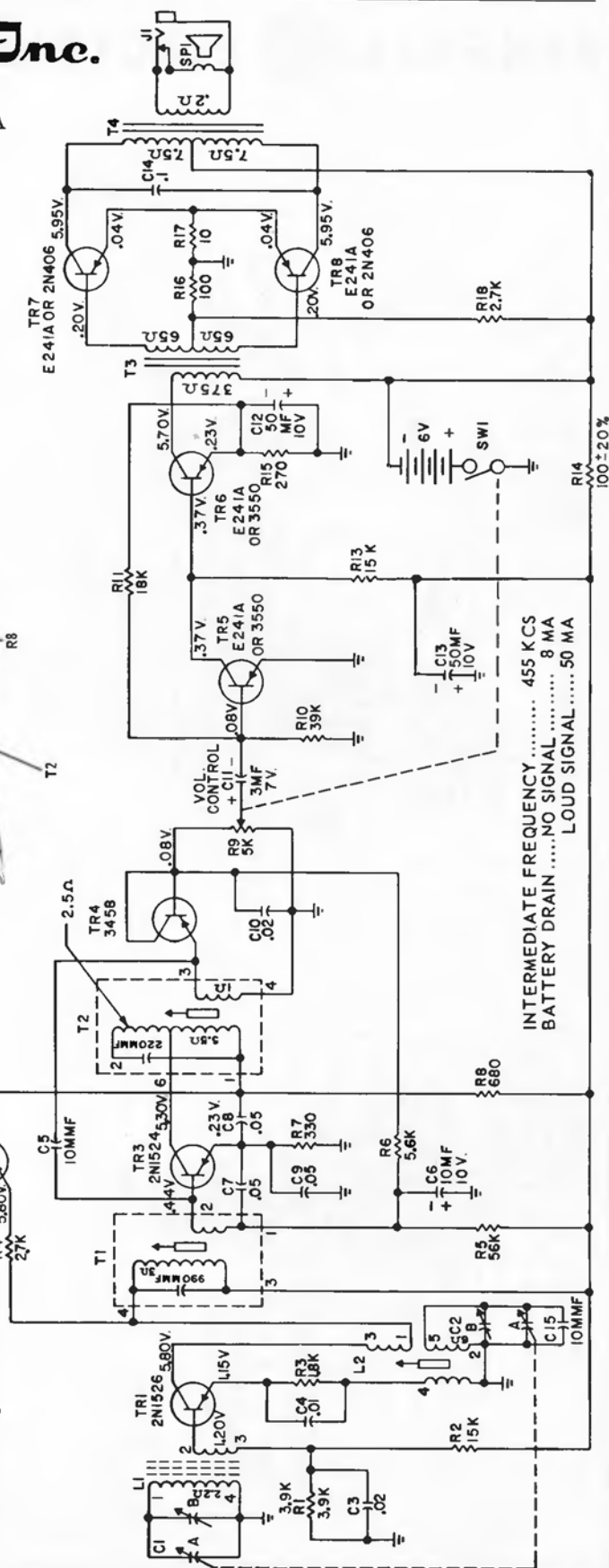
NOTES:

1. ALL CAPACITANCE VALUES ARE IN MICROFARADS UNLESS OTHERWISE INDICATED.
2. ALL RESISTANCE VALUES ARE IN OHMS, $1/2W. \pm 10\%$ UNLESS OTHERWISE INDICATED.
3. VOLTAGES SHOWN AT EACH TRANSISTOR ELECTRODE ($\pm 20\%$) MEASURED TO COMMON GROUND WITH A VTVM WITH NO INPUT SIGNAL AND VOLUME CONTROL SET AT MAXIMUM.

TO SERVICE RADIO

The chassis may be removed for servicing by:

1. Removing volume and tuning knobs.
2. Removing battery compartment cover and battery holder.
3. Removing the two screws in the bottom of the battery compartment and inserting a thin screwdriver into the hole of one of these two screws to push off the face of cabinet.
4. Speaker is assembled to face and the chassis is assembled to cabinet by means of speed clips. Rotate speed clips 90° and lift them off the "D" shaped bosses to remove speaker or chassis. R4

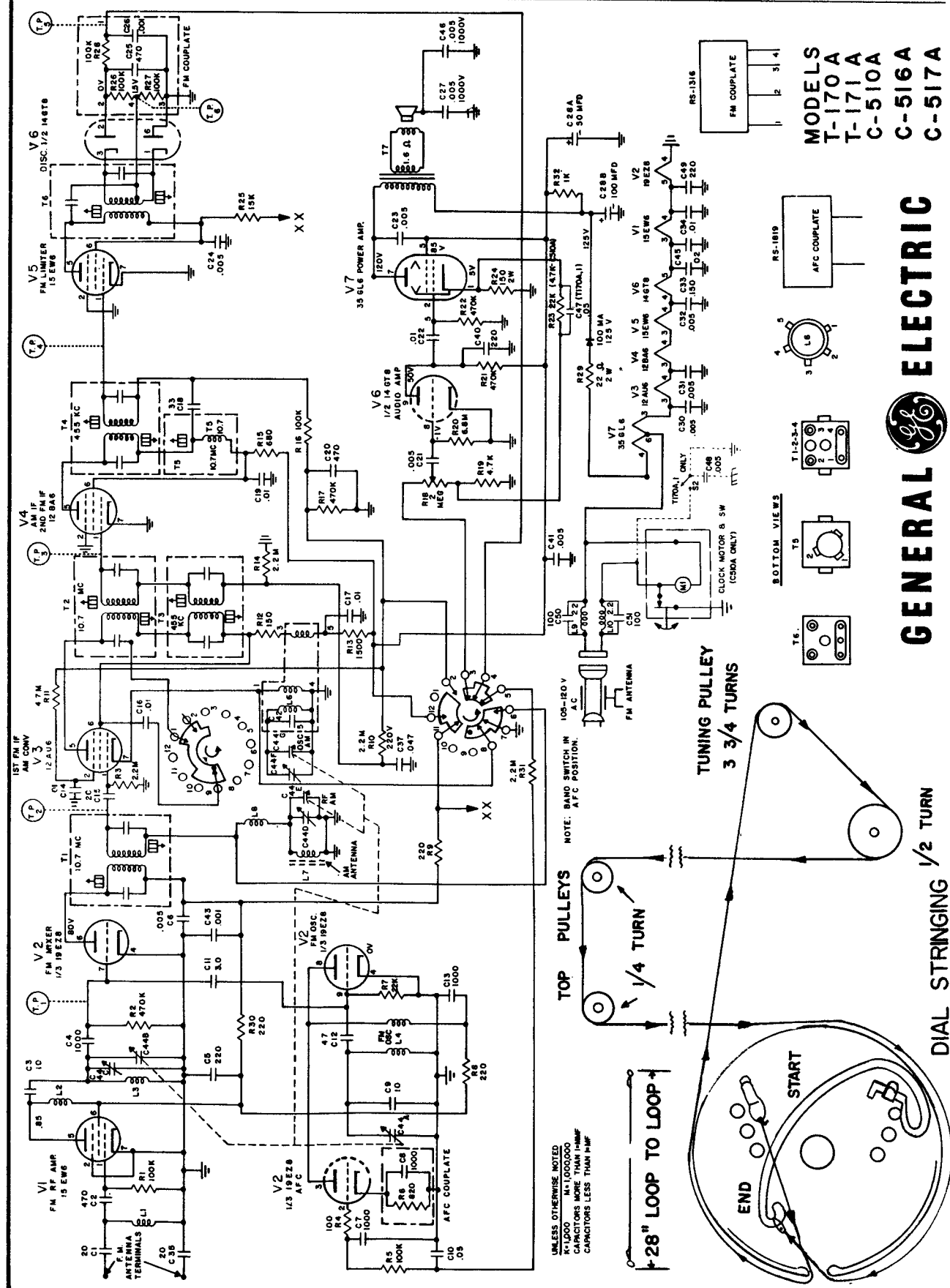
OSCILLATOR COIL
(BOTTOM VIEW)

INTERMEDIATE FREQUENCY 455 KCS
BATTERY DRAIN NO SIGNAL 8 MA
LOUD SIGNAL 50 MA

C496A
C500A

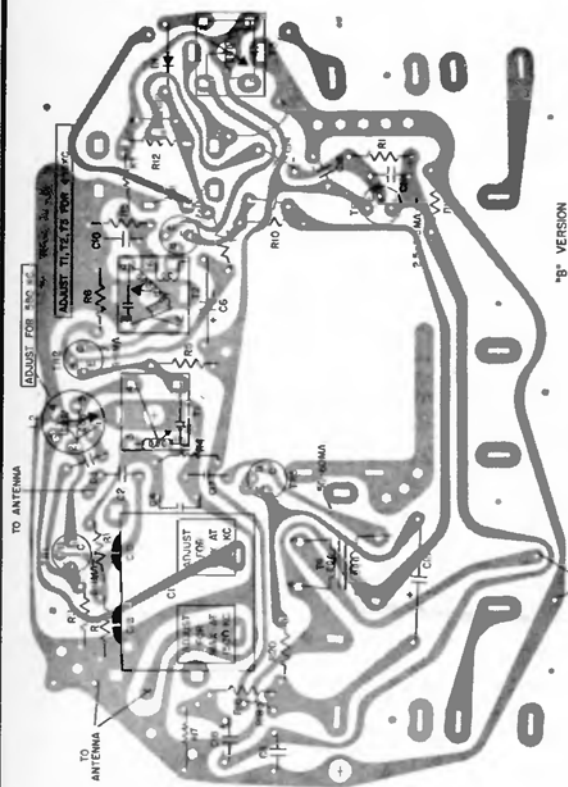
DIAL STRINGING

[illegible]

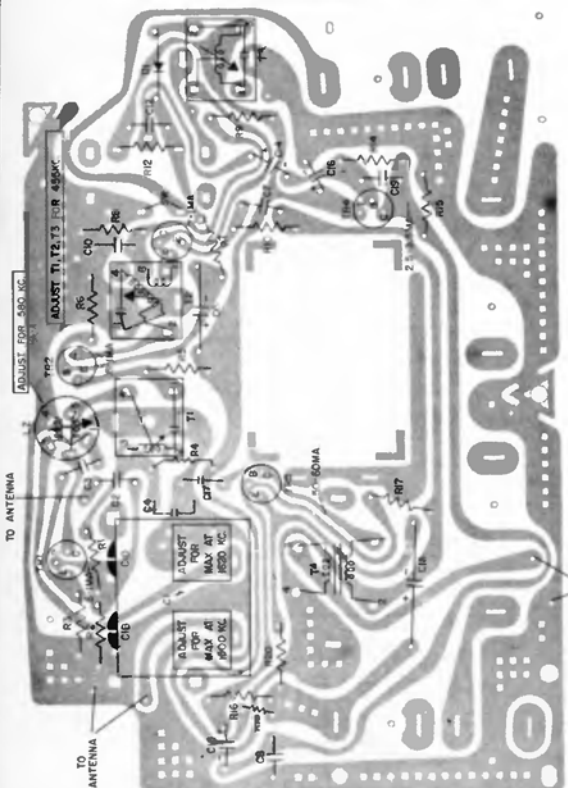


GENERAL ELECTRIC

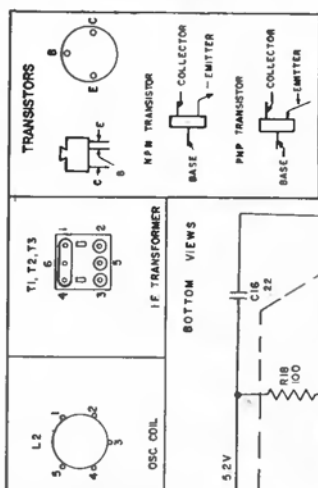
MODELS
P795A,B
P796A,B
P797A,B



"B" VERSION



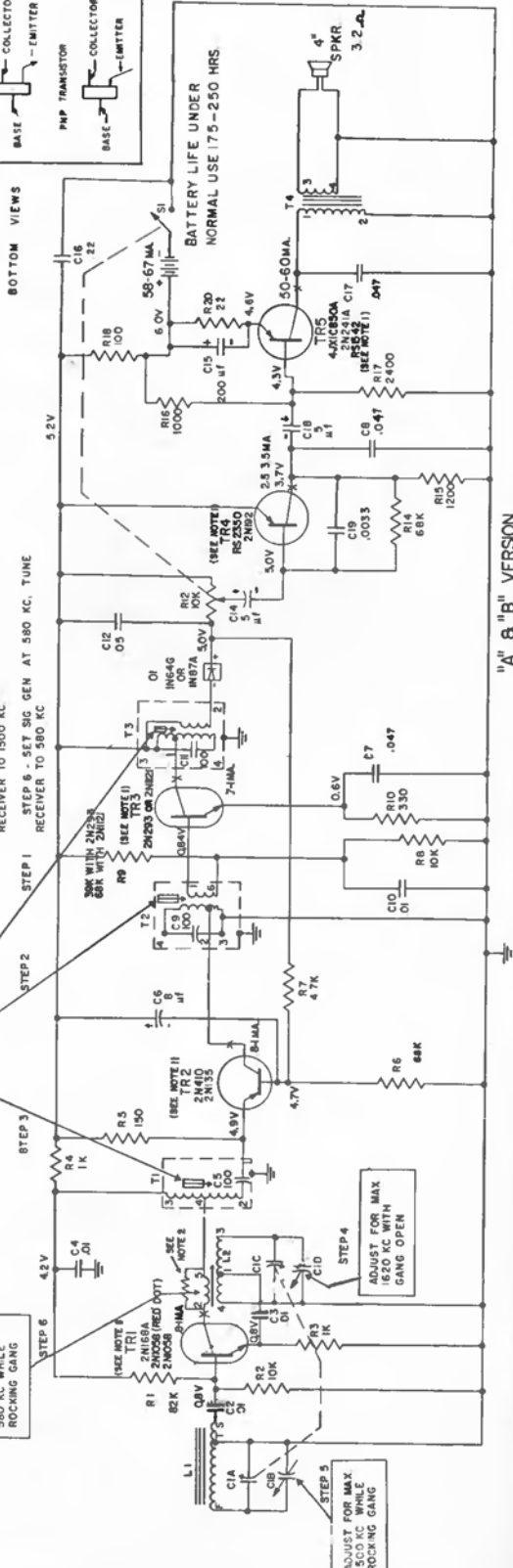
"A" VERSION



ALIGNMENT
 SET VOLUME CONTROL AT MAXIMUM
 CONNECT OUTPUT METER OR SCOPE ACROSS
 VOICE COIL
 INDUCTIVELY COUPLE SIGNAL GENERATOR TO
 RECEIVER
 STEP 1, 2 & 3 - SET SIG. GEN. AT 455 KC. WITH
 RECEIVER TUNING GANG OPEN
 STEP 4 - SET SIG. GEN. AT 1620 KC. WITH
 RECEIVER TUNING GANG OPEN
 STEP 5 - SET SIG. GEN. AT 1500 KC. TUNE
 RECEIVER TO 1500 KC.
 STEP 6 - SET SIG. GEN. AT 580 KC. TUNE
 RECEIVER TO 580 KC.

UNLESS OTHERWISE NOTED
 K = 1000
 CAPACITORS MORE THAN 1-MF
 CAPACITORS LESS THAN 1-MF
 RESISTORS 1/2 W. CARBON
 VOLTAGES ARE POSITIVE WITH
 RESPECT TO GROUND

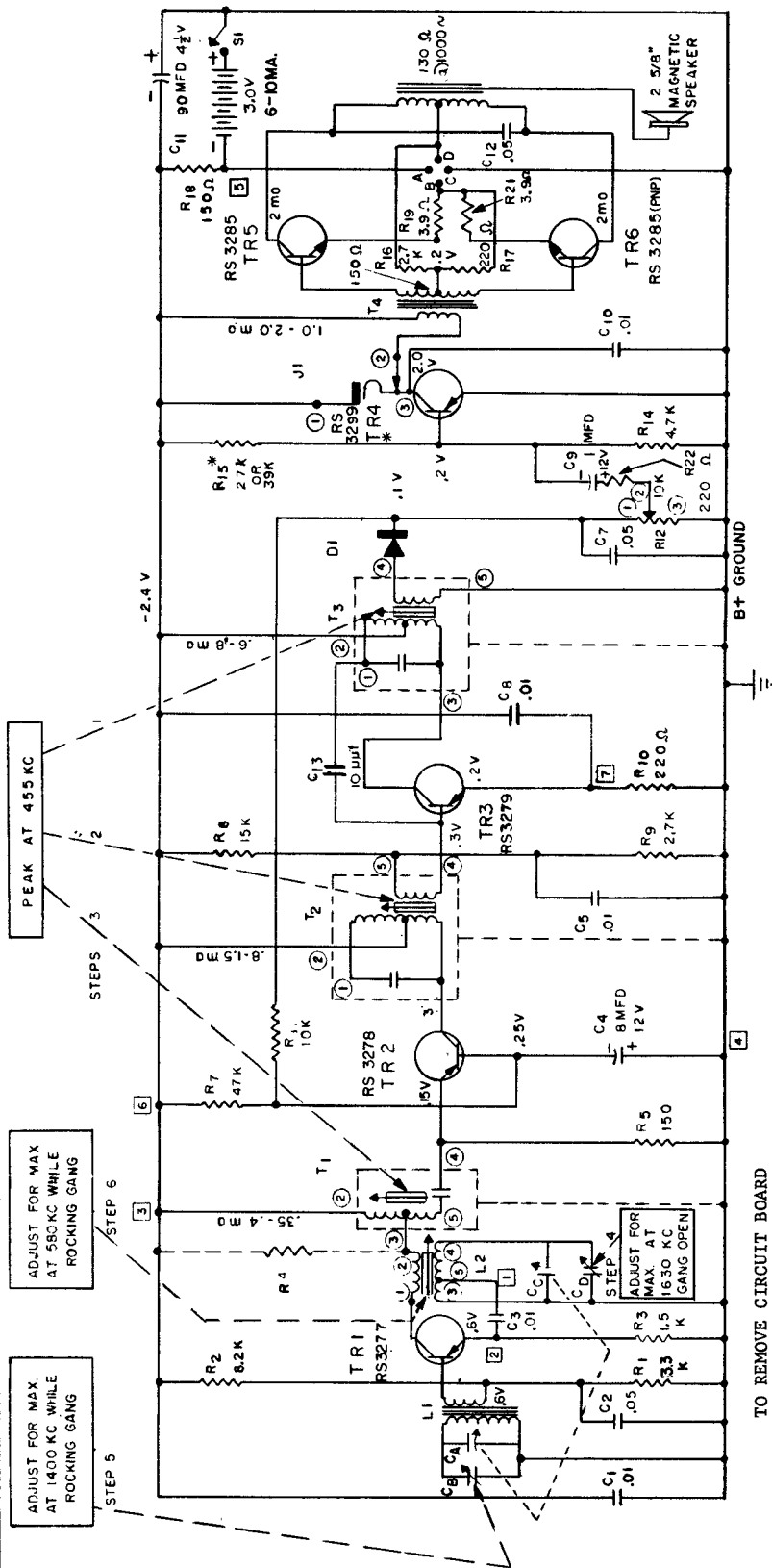
NOTES—
 1- REPLACE WITH TRANSISTOR TYPES SHOWN
 2- 3900 OHMS, USE ONLY WITH
 2N058 (RED DOT)



"A" & "B" VERSION

GENERAL ELECTRIC

MODELS
P820A
P821A



TO REMOVE CIRCUIT BOARD

1. Remove cabinet back.
2. Remove screw that is mounted next to volume control.
3. Place finger nail under phone jack and lift chassis up, then slide slightly in direction of cabinet bottom.

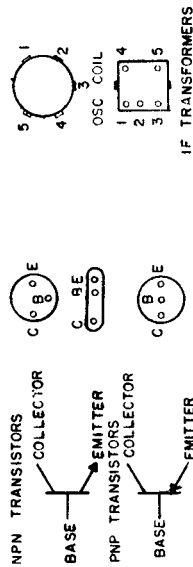
When replacing chassis, carefully tilt chassis so that tuning knob fits into knob opening, then slide chassis up towards cabinet top. Chassis mounting screw hole must line up with hole in mounting boss on cabinet.

TO REMOVE VOLUME CONTROL

1. Remove tuning knob.
2. Remove two screws mounted under tuning knob.
3. Remove control.

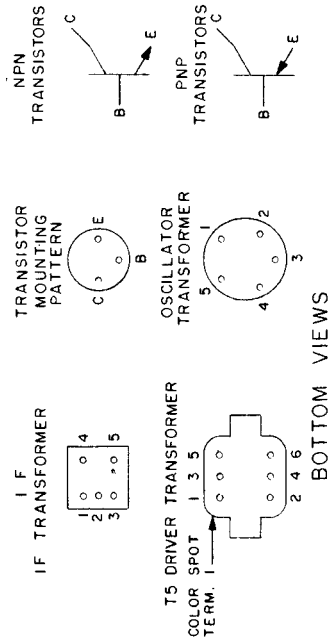
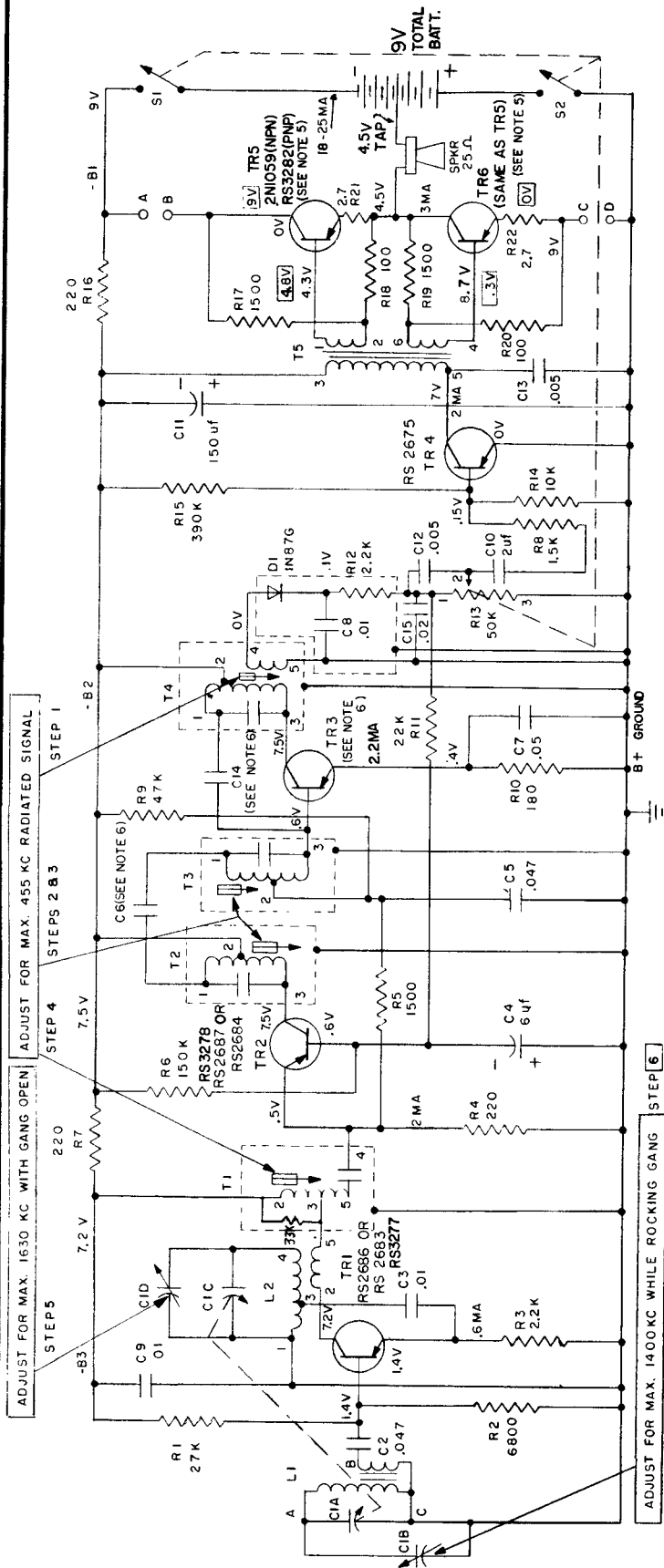
TO REMOVE TUNING CAPACITOR

1. Remove pulley from gang shaft.
2. Remove two mounting screws.
3. Unsolder the three gang connection lugs on dip-solder side of board.



GENERAL ELECTRIC

MODEL P835A



- CHASSIS REMOVAL**
1. Remove knobs.
 2. Remove battery compartment.
 3. Remove 4 1/4" hex-head screws from circuit board (with 1/4" spintite).
 4. Remove 1/4" hex-head screws from tuning, capacitor and volume control brackets (with 1/4" spintite).
 5. Carefully lift chassis out of cabinet.
- TROUBLESHOOTING**
- A check of battery condition and total current drain of the receiver should be made first. All current measurements are made at quiescence with the receiver turned on, volume control at maximum, tuning gang closed, and with no signal conditions.
- The total receiver current drain is 18 to 25 mls. This is measured by disconnecting one of the leads to the battery and inserting a milliammeter in series with the lead and battery.
- If an excessive total current drain is recorded, the individual collector currents of each transistor should be checked. An excessive current reading may mean a shorted transistor; no current will indicate that a transistor or associated circuit component is defective.

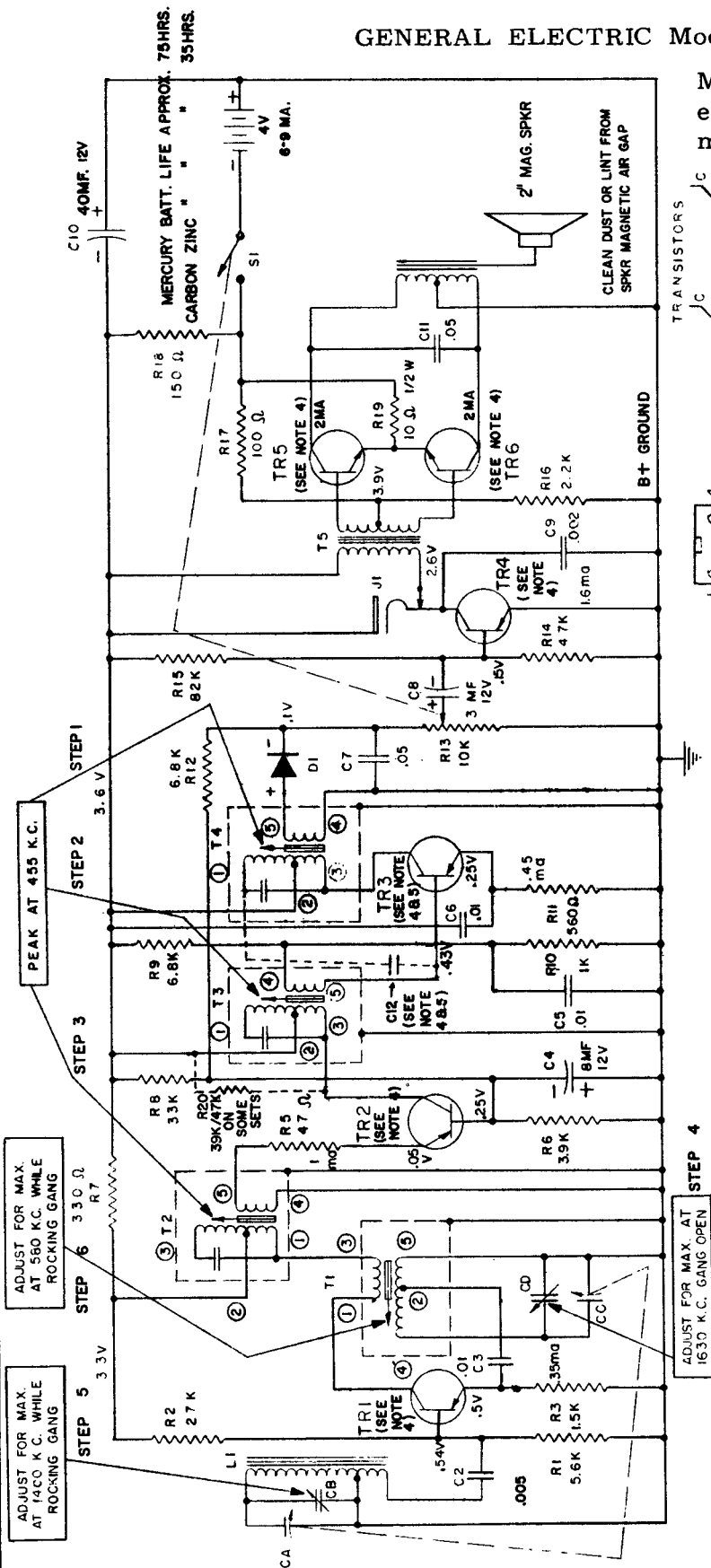
ALIGNMENT

SET VOLUME CONTROL AT MAXIMUM.
CONNECT OUTPUT METER OR SCOPE
ACROSS VOICE COIL.
INDUCTIVELY COUPLE SIGNAL GENERATOR
TO RECEIVER.

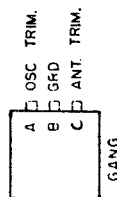
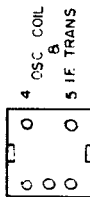
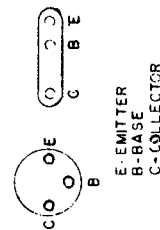
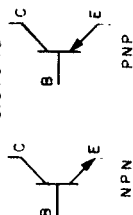
- NOTES:**
1. UNLESS OTHERWISE NOTED—CAPACITORS MORE THAN 1=MMF CAPACITORS LESS THAN 1=MF RESISTORS ARE 1/2 WATT
 2. VOLTAGES ARE NEGATIVE WITH RESPECT TO GROUND UNDER NO SIGNAL CONDITIONS AND VOLUME CONTROL MINIMUM.
 3. REPLACE TRANSISTORS WITH TYPES SHOWN
 4. VOLTAGES SHOWN IN ARE WITH TR5 & TR6 PNP.
 5. WHEN TR5 & TR6 ARE PNP, JUMPER B TO D & A TO C. WHEN TR5 & TR6 ARE PNP, JUMPER A TO B & C TO D.
 6. WHEN TR3 IS RS 2686, C6 IS 2.0 & C14 IS 3. WHEN TR3 IS RS 2685, C6 IS 1.5 & C14 IS 5.6

GENERAL ELECTRIC Models P850B, C, P851C

Models P825A, P826A, are electrically the same as the models covered on this page.



TRANSISTORS



BOTTOM VIEWS

- NOTES:
1. UNLESS OTHERWISE NOTED: CAPACITORS MORE THAN 1 - MF CAPACITORS LESS THAN 1 - MF RESISTORS ARE 1/4 WATT VOLTAGES ARE NEGATIVE WITH RESPECT TO GROUND.
 2. VOLTAGES CURRENT READINGS ARE AVERAGE UNDER NO SIGNAL CONDITIONS.
 3. REPLACE WITH TRANSISTOR TYPES SHOWN

4. TRANSISTOR COMPLEMENT

TRANSISTOR	TYPE	RESISTOR	TYPE	RESISTOR
TR1	TR3	RS 2694	TR5,6	RS 1549
TR2	TR4	RS 2695	TR6	RS 2697

5. C12 IS 6MMF WHEN TR3 IS COLOR CODED.
C12 IS 7.5MMF WHEN TR3 IS NOT COLOR CODED.

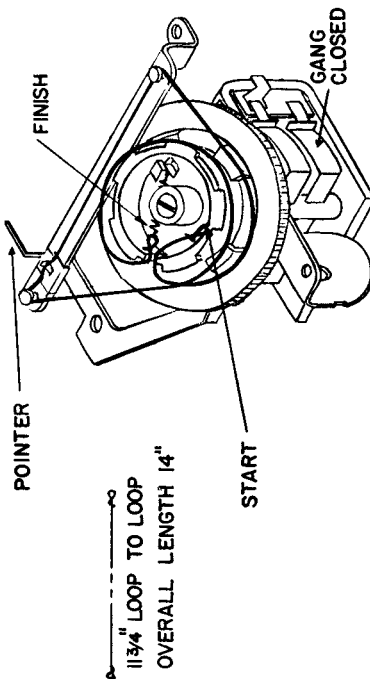
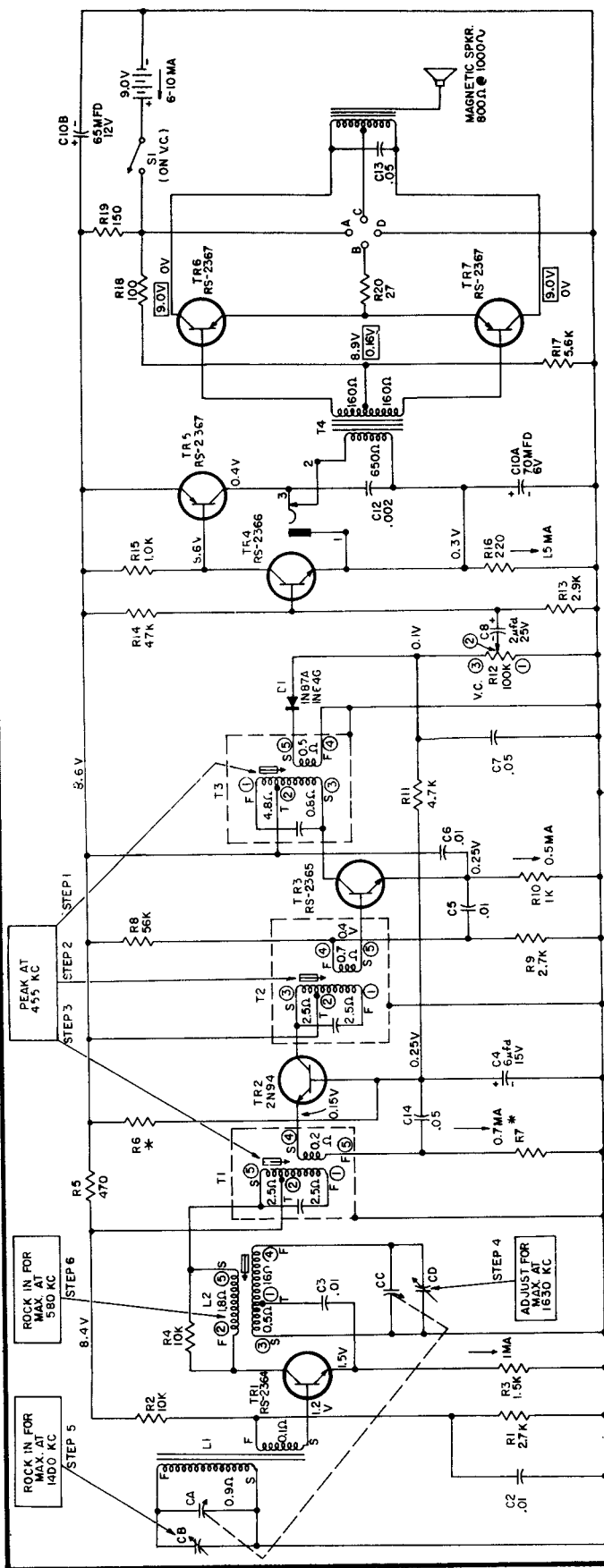
ALIGNMENT

SET VOLUME CONTROL AT MAXIMUM.
CONNECT OUTPUT METER OR SCOPE
ACROSS VOICE COIL.
INDUCTIVELY COUPLE SIGNAL
GENERATOR TO RECEIVER.

CHASSIS REMOVAL

1. Remove cabinet back (with 1/8" tip screwdriver).
2. Remove two hex-head screws holding circuit board to cabinet front (with 1/8" Xcelite P4 spintite or equivalent).
3. Remove earphone jack by unscrewing knurled nut counterclockwise on cabinet top (with needle nose pliers).
4. Tilt up volume control side of chassis board and lift out of cabinet front.

NOTE: Earphone jack must be inserted through fishpaper insulator and bushings before mounting jack to cabinet.

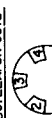


DIAL STRINGING

GENERAL ELECTRIC

MODELS P9001A P901A

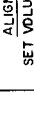
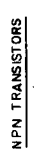
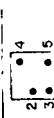
OSCILLATOR COIL



FIRST I.F. TRANSFORMER



SECOND I.F. & THIRD I.F. TRANSFORMERS



BOTTOM VIEWS

COILS AND TRANSFORMERS

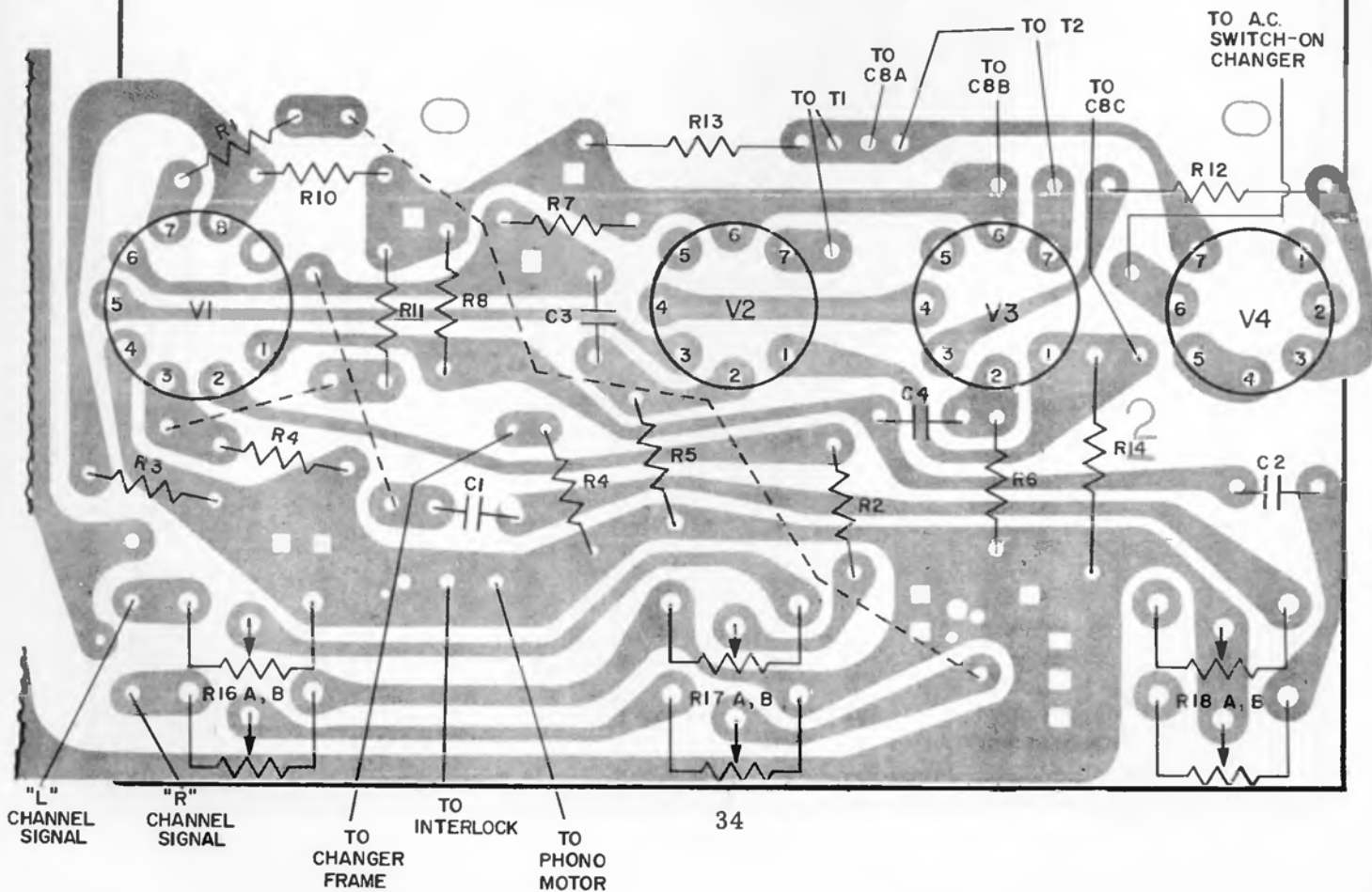
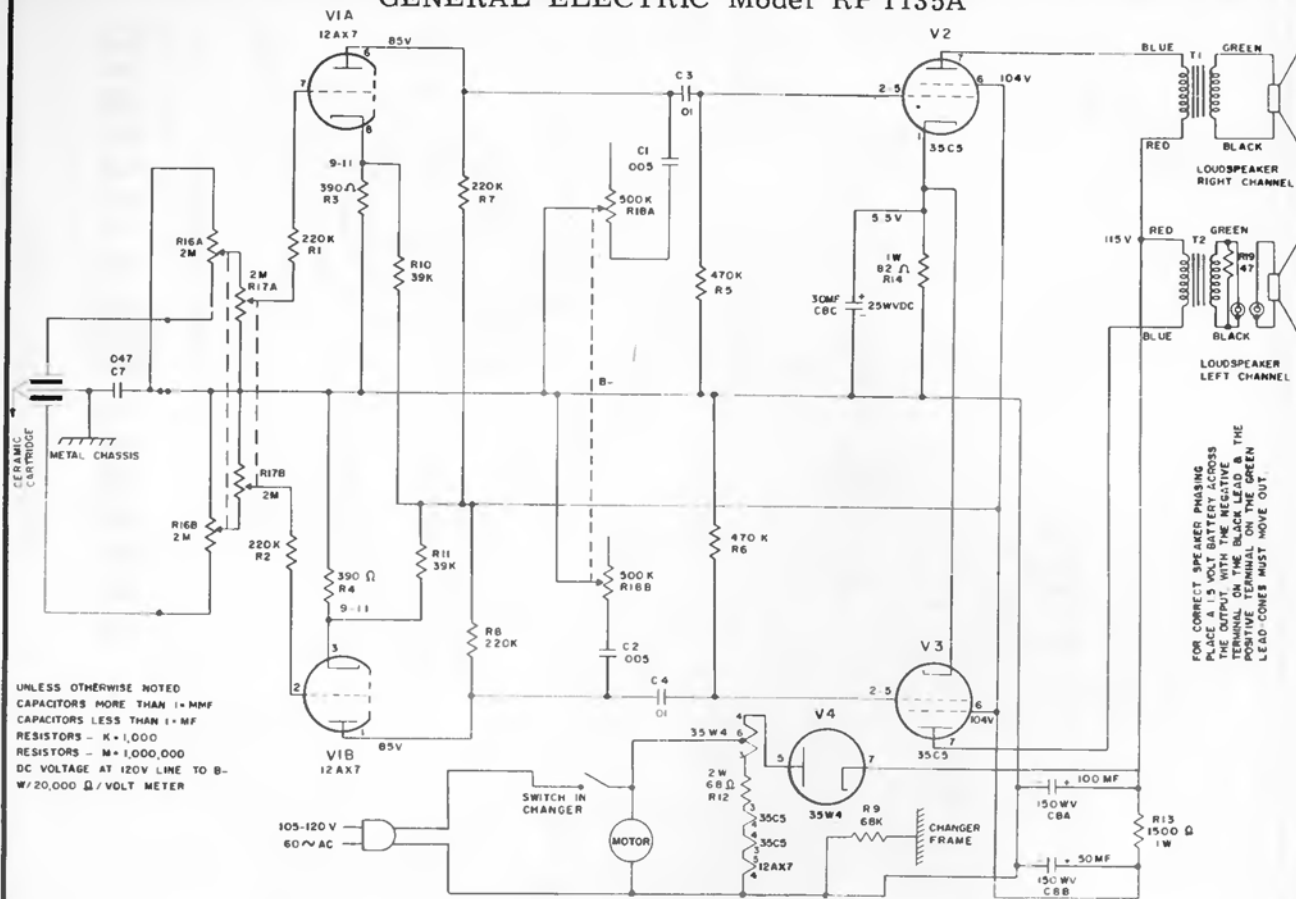
TRANSFORMER	RESISTANCE
Driver Transformer.....	1.60
1st I.F.....	2.10
2nd I.F.....	2.10
3rd I.F.....	2.10
Oscillator Coil.....	1.10
Antenna.....	1.90

- NOTES**
- UNLESS OTHERWISE NOTED, CAPACITORS MORE THAN 10 MMF CAPACITORS LESS THAN 10 MMF CAPACITORS ARE 1/2 WATT & K=1000
 - VOLTAGE & CURRENT READINGS ARE AVERAGE UNDER NO SIGNAL CONDITIONS. VOLTAGES ARE POSITIVE WITH RESPECT TO GROUND UNLESS OTHERWISE NOTED
 - SIMILAR APPROVED TRANSISTORS MAY BE USED
 - VOLTAGE SCALING IN C-1 ARE FOR NPN TRANSISTORS IN TR6 & TR7
 - FOR PNP TRANSISTORS IN TR6 & TR7
 - A- JUMPER A TO B
 - B- JUMPER C TO D
 - C- R18 = 100K
 - D- R18 = 3.6K
 - FOR NPN TRANSISTORS IN TR6 & TR7
 - A- JUMPER A TO C
 - B- JUMPER B TO D
 - C- R18 = 100K
 - D- R18 = 100K

TRANSISTOR	RESISTANCE
TR1	2.20
TR2	2.20
TR3	2.20
TR4	2.20
TR5	2.20
TR6	2.20
TR7	2.20

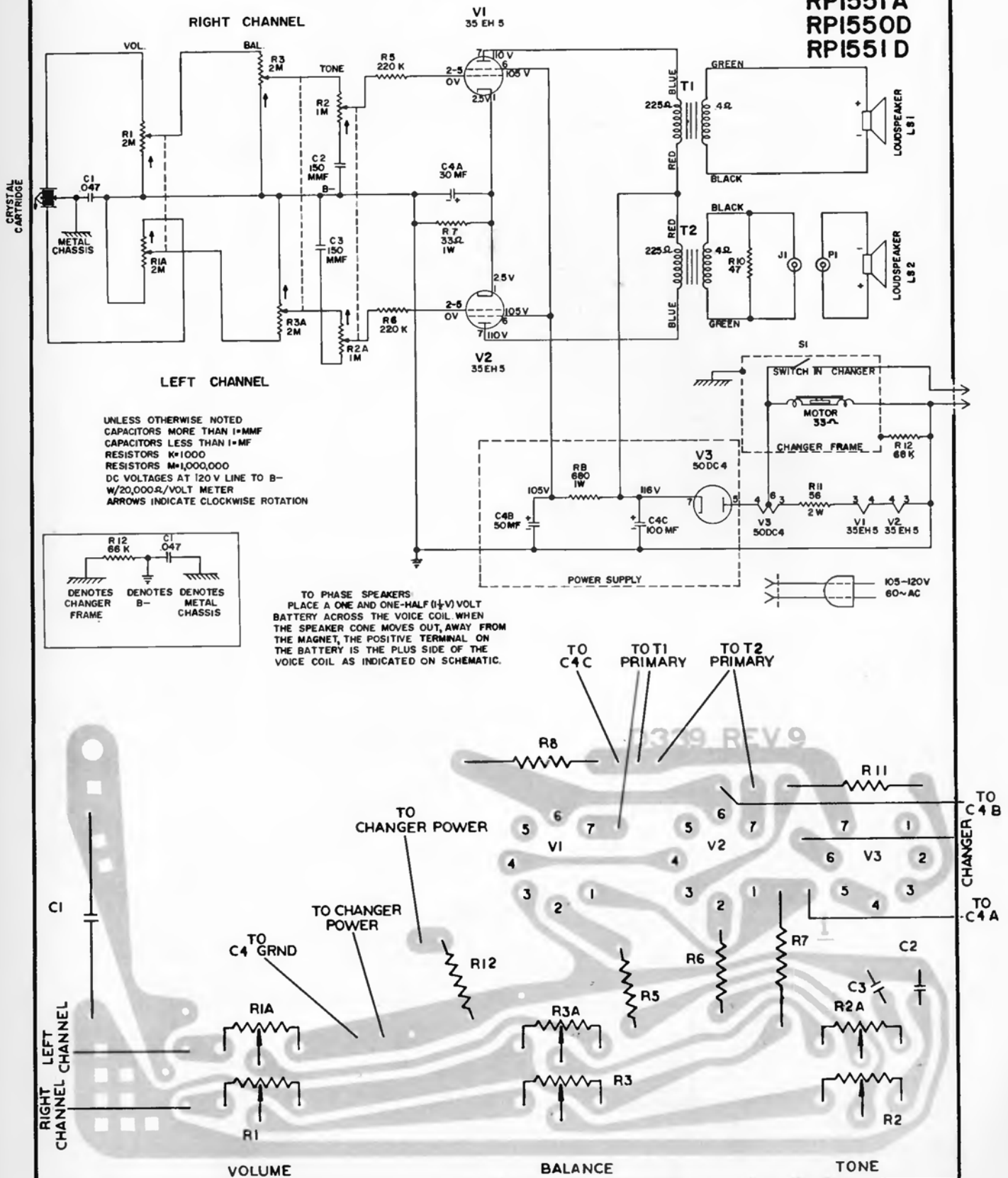
VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

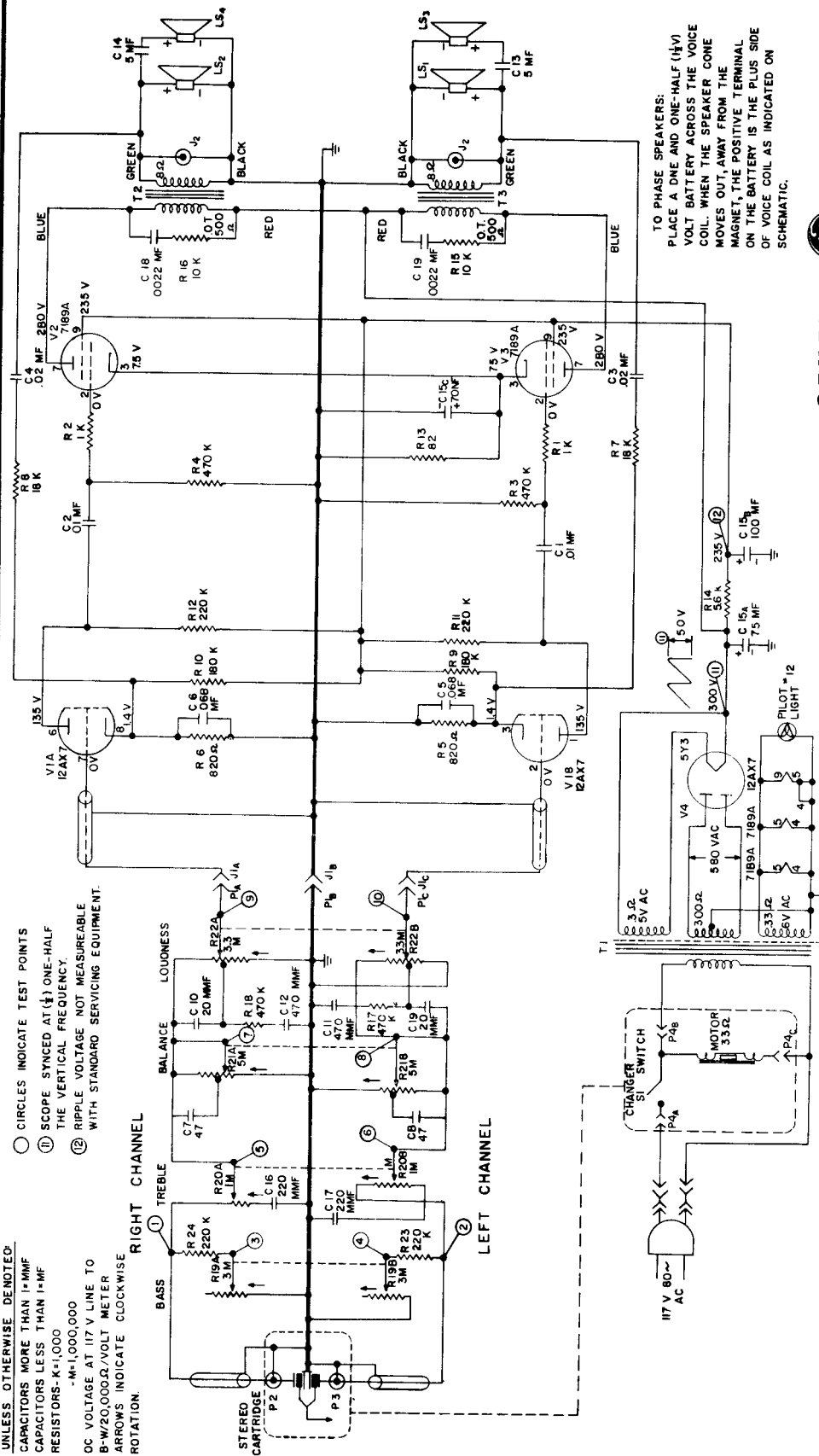
GENERAL ELECTRIC Model RP 1135A



GENERAL ELECTRIC

MODELS
RPI550A
RPI551A
RPI550D
RPI551D



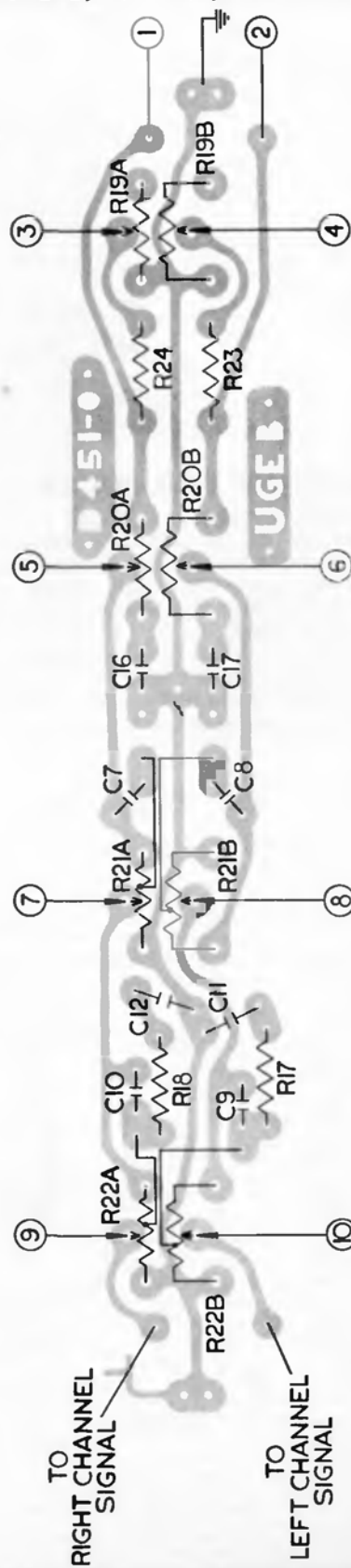
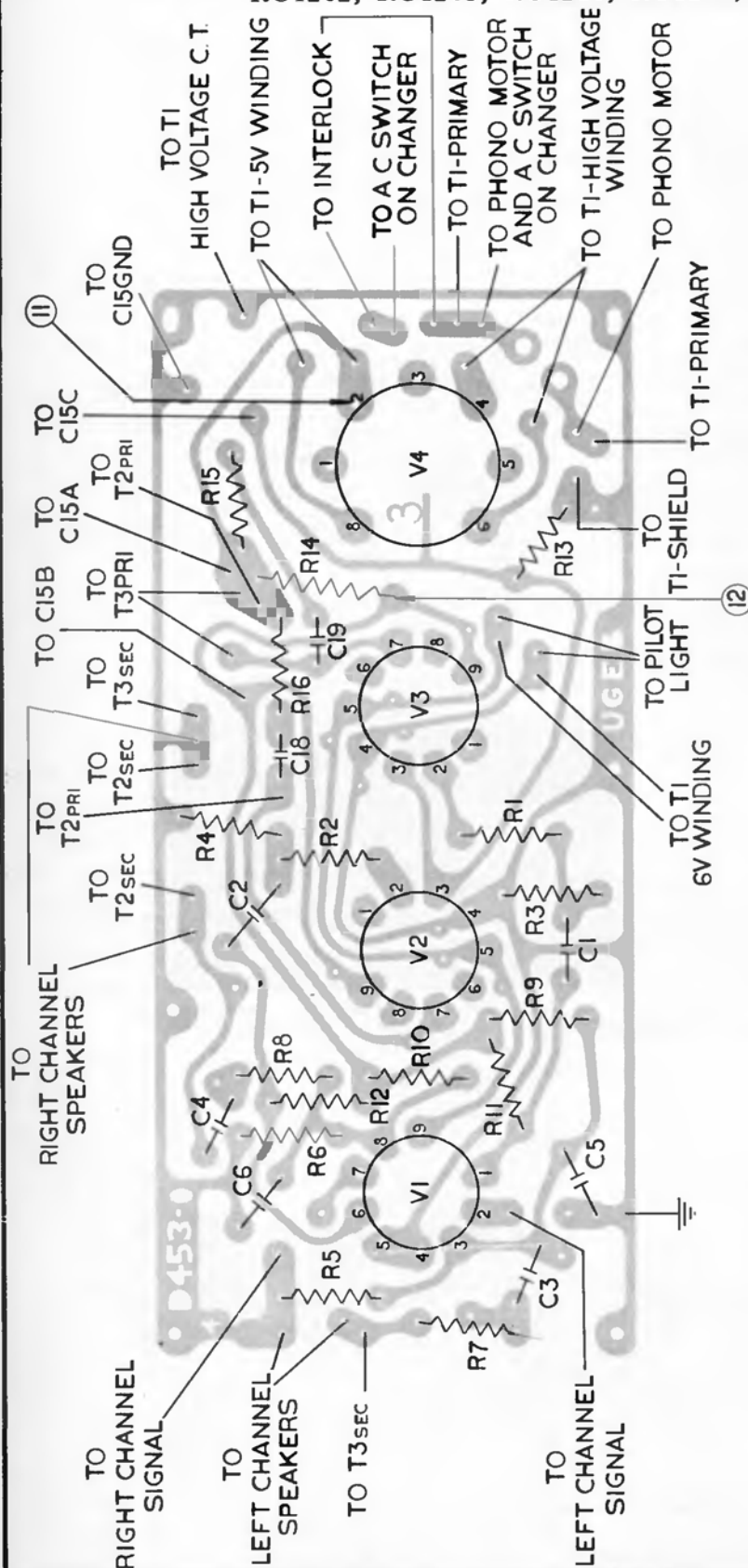


GENERAL ELECTRIC

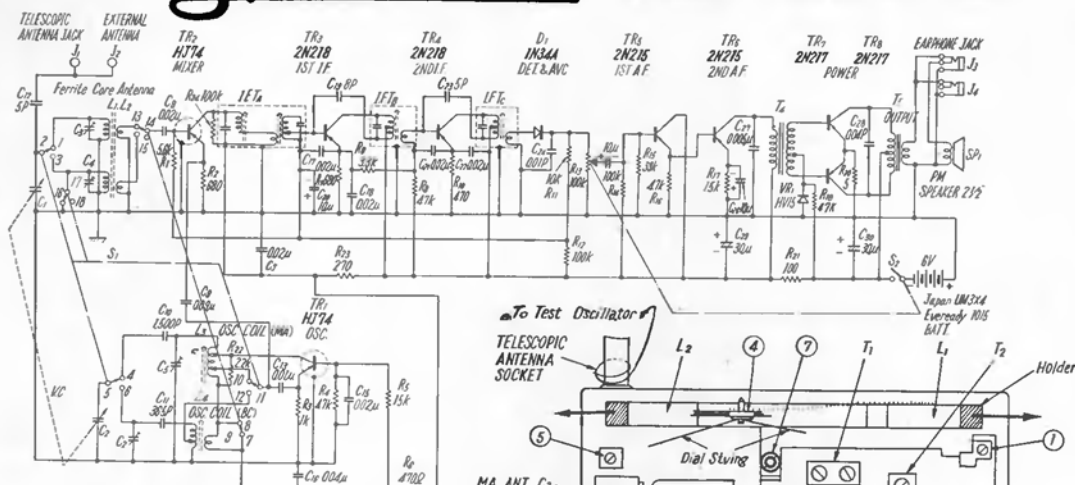
- Remove the screws holding the back cover to the cabinet and remove the back cover.
 - Remove (pull down) the plastic power plug (AC2) and signal plugs from the changer.
 - Flip the two shipping screw clips on the changer to a vertical position.
 - Remove the changer.
- TO REMOVE RECORD CHANGER
- Remove the knobs.
 - Follow step one as described in "To Remove Record Changer."
 - Remove the signal plugs from the changer and remove the lead dresser clamp holding the plugs.
- TO REMOVE CONTROL CHASSIS
- Follow step one as described in "To Remove Record Changer."
 - Unsolder and label all leads on the speakers to assure proper phasing of the speakers when reassembling.
 - Remove the 5/16 inch nuts holding the speaker and crossover capacitors.
- TO REMOVE SPEAKERS
- Follow step one as described in "To Remove Record Changer."
 - Unsolder and label all leads on the speakers to assure proper phasing of the speakers when reassembling.
 - Remove the 5/16 inch nuts holding the speaker and crossover capacitors.

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

GENERAL ELECTRIC Boards for Models RP1155A, -C, RP1170, RC1200, RC-1201, RC1202, RC1203, RC1210, RC1211, RC1212, RC1213, RP1590A



Hitachi, Ltd. model WH-822M



ALIGNMENT PROCEDURE

Turn volume control to maximum.

Modulate the test oscillator at 400 c/s or 1,000 c/s. Connect it with the rod antenna through 10 pF and connect oscillator ground wire to radio chassis.

Take out output from earphone jack and measure it using an AC voltmeter of the tester or V.T.V.M. at the range below 3 volts. As the output voltage increases as the adjustment proceeds, restrict the output of the oscillator so that the pointer swing is kept within 0.5 volt.

Adjustment of the intermediate frequency

Preparation	Adjust the band switch at BC.		
Adjustment Order	Division on Dial	Oscillator Frequency	Adjustment Place
1	Max. BC Division	455 kc	T3
2	Max. BC Division	455 kc	T2
3	Max. BC Division	455 kc	T1 (Right)
4	Max. BC Division	455 kc	T1 (Left)
5	Max. BC Division	455 kc	Repeat 1-4

Adjustment of high frequency circuit (BC)

Preparation	Adjust the band switch at BC		
Adjustment Order	Division on Dial	Oscillator Frequency	Adjustment Place
6	Max. BC Division	1,650 kc	C6
7	Min. BC Division	525 kc	L4
8	Repeat 6 & 7		Repeat 6 & 7
9	Receive 600 kc	600 kc	L2
10	Receive 1,400 kc	1,400 kc	C4
11	Repeat 9 & 10		Repeat 9 & 10

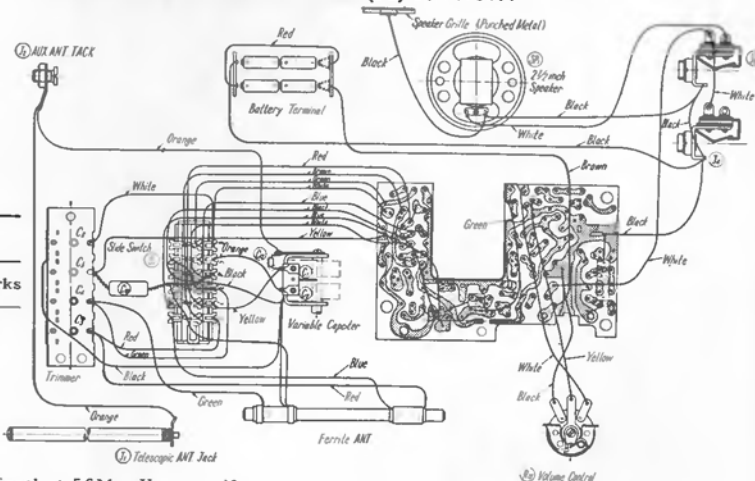
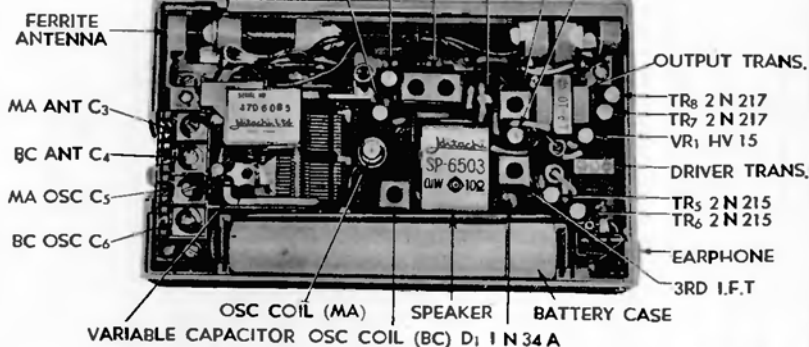
Adjustment of high frequency circuit (MA)

Preparation	Adjust the band switch at MA			
Adjustment Order	Division on Dial	Oscillator Frequency	Adjustment Place	Remarks
12	Max. MA Division	4.7 Mc	C5	*1
13	Min. MA Division	1.55 Mc	L3	
14	Repeat 12 & 13		Repeat 12 & 13	
15	Receive MA 11 Mc	4 Mc	C3	*2
16	Receive MA 4 Mc	1.65 Mc	L1	
17	Repeat 15 & 16		Repeat 15 & 16	

*1. When you adjust 12 & 15, watch image.

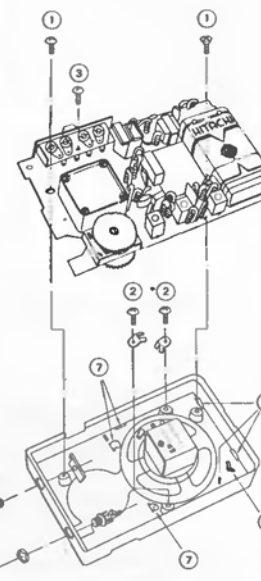
When you turn oscillator at 12, it must receive another signal at 5.6 Mc. However, if you receive the signal at 3.8 Mc, you must readjust the oscillator, as it is possible that the signal is tuned with the image. The same applies to 15.

*2. When you adjust 15, the receiving frequency will slip out if you move C3. Move the frequency of the oscillator & try to adjust, keeping it always at the maximum.



Hitachi, Ltd.

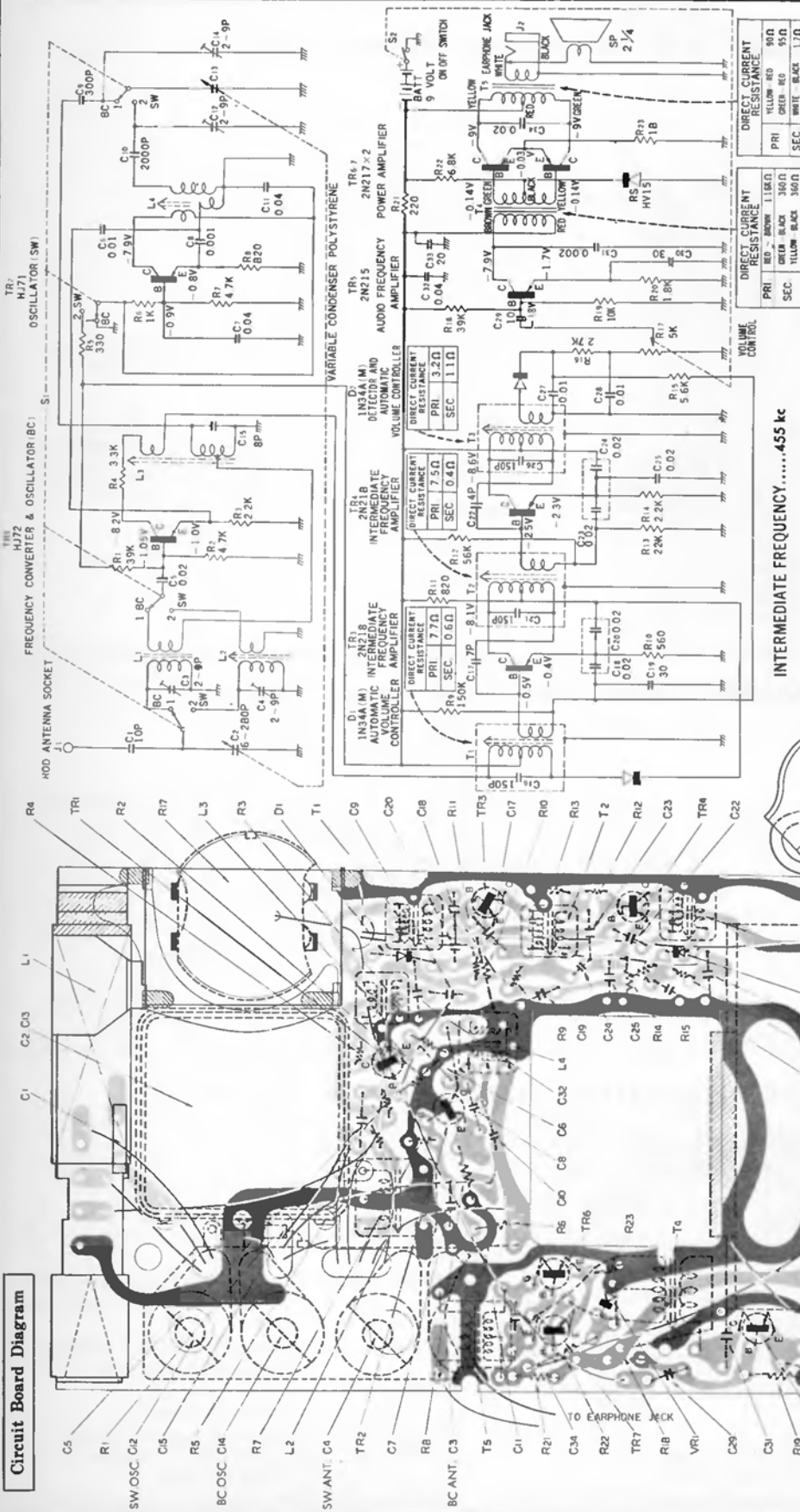
MODEL WH-761



Receiver Assembly

BATTERY CONNECTOR

INTERMEDIATE FREQUENCY.....455 kc



DIRECT CURRENT RESISTANCE	
PRI	RED - BROWN 1.0K Ω
SEC	YELLOW - BLACK 350 Ω

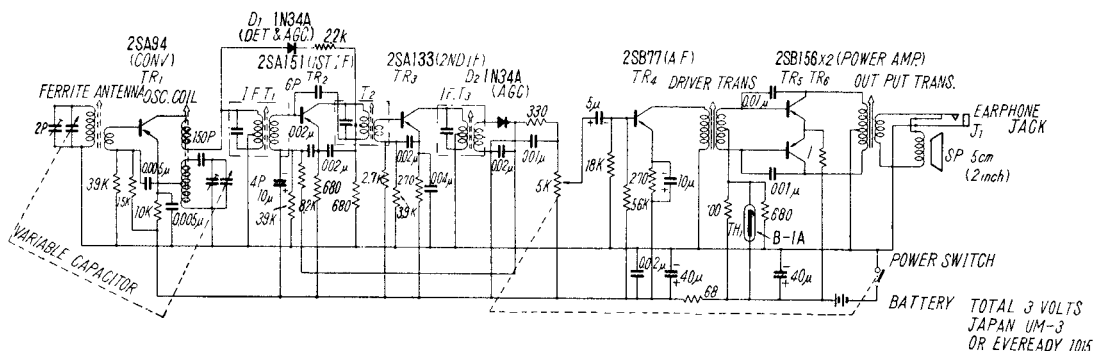
DIRECT CURRENT RESISTANCE	
PRI	RED - BROWN 1.0K Ω
SEC	YELLOW - BLACK 350 Ω

Hitachi, Ltd.

MODEL WH-761

Denote earth wiring

Hitachi, Ltd. Model TH-660 Circuit Schematic Diagram

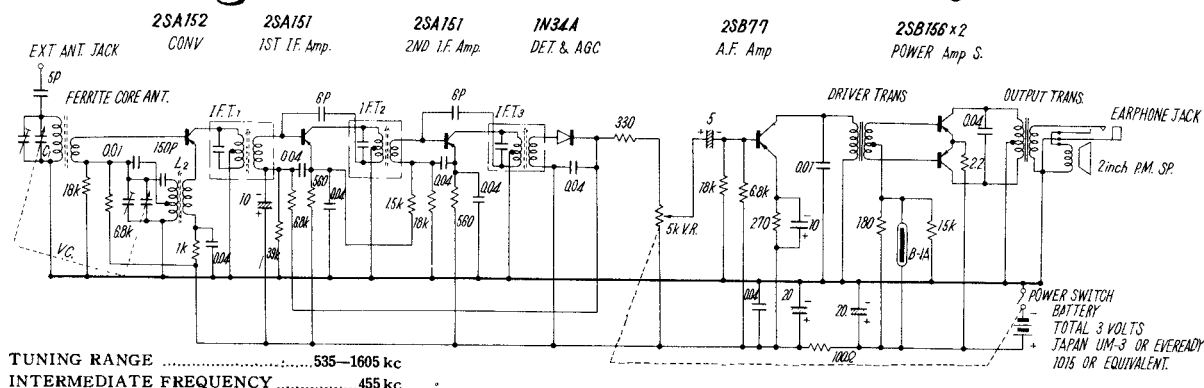


SPECIFICATIONS :

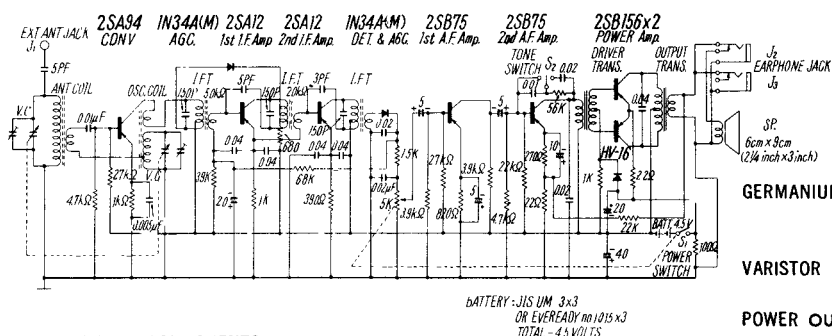
DIMENSIONS 2 3/4" W x 3 3/8" H x 1 1/8" D
 WEIGHT 7 ozs, Including batteries
 TUNING RANGE 535-1605 kc
 INTERMEDIATE FREQUENCY 455 kc
TRANSISTOR COMPONENTS:
 Hitachi Transistor, 2SA94 (Converter)
 Hitachi Transistor, 2SA151 (I. F. Amp., 1st. stages)
 Hitachi Transistor, 2SA133 (2nd stages)
 Hitachi Transistor, 2SB77 (A. F. Amp.)
 Hitachi Transistor, 2SB156 x 2 (Push-pull Power Amp.)

GERMANIUM DIODE Hitachi Crystal Diode. 1N34A (2nd Detector, and Automatic Volume Controller)
 THERMISTOR Hitachi Thermistor, B-1A (Temperature Compensator)
 POWER OUTPUT 100 mW (Undistorted)
 150mW (Maximum)
 LOUD SPEAKER 2inch P. M. Speaker
 EL-214 can be plugged in.
RECOMMENDED BATTERIES EVEREADY 1015 or its equivalent

Hitachi, Ltd. Model TH-661 Circuit Schematic Diagram



HITACHI 7-Transistor Portable Radio TH-759



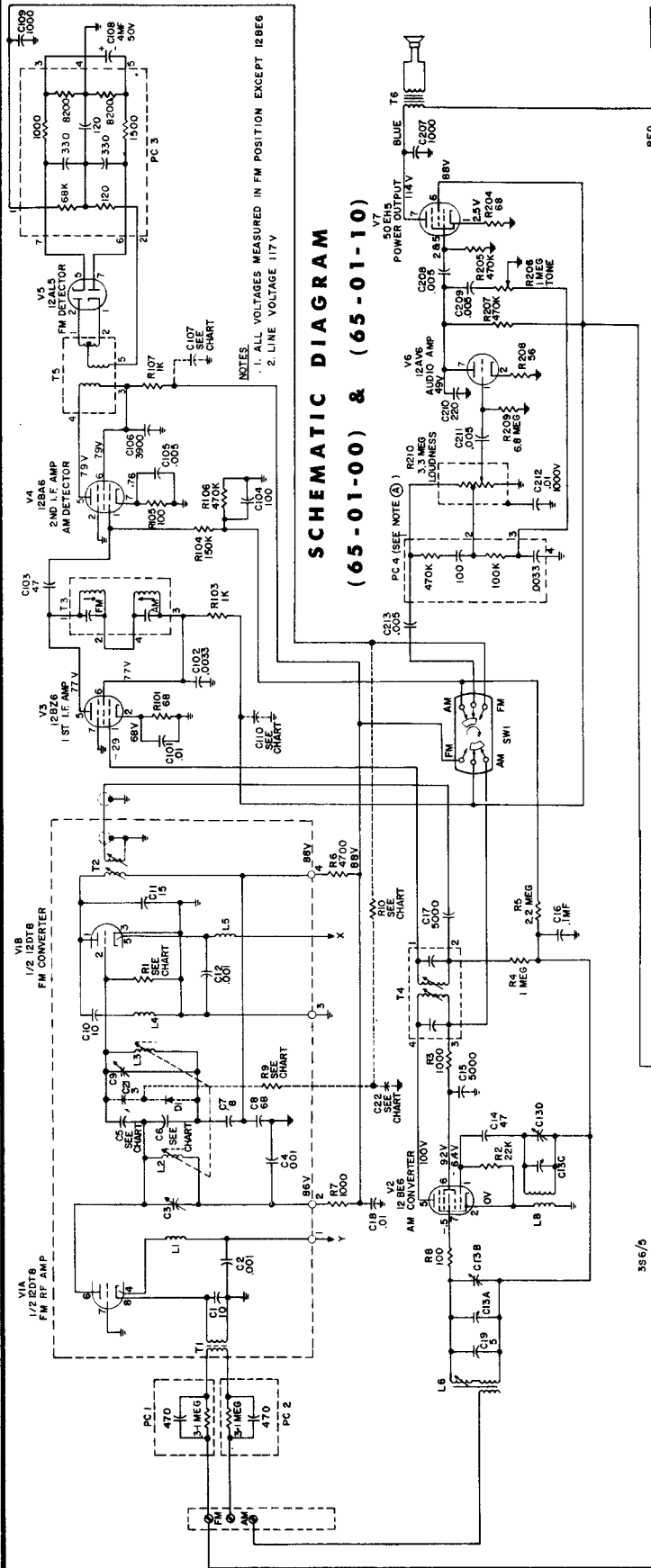
TRANSISTOR COMPONENTS:

Hitachi Transistor, 2SA 94 (MIX.)
 Hitachi Transistor, 2SA12 x 2, (I.F. Amp., 2-stage)
 Hitachi Transistor, 2SB75 x 2, (A.F. Amp., 2-stage)
 Hitachi Transistor, 2SB156 x 2, (Push-pull Power Amp.)

GERMANIUM DIODE Hitachi Crystal Diode, 1N34A (M) x 2 (Detector and Automatic Volume Controller)
 VARISTOR Hitachi Varistor, HV 16 (Temperature and Voltage Compensator)
 POWER OUTPUT 150 mW (Undistorted)
 180 mW (Maximum)
 LOUD SPEAKER 3 inch x 2 1/4 inch P.M. Speaker.
 EARPHONE JACK Hitachi Magnetic Earphone, EL-213, can be plugged in.
RECOMMENDED BATTERY EVEREADY 1015 or its equivalent.

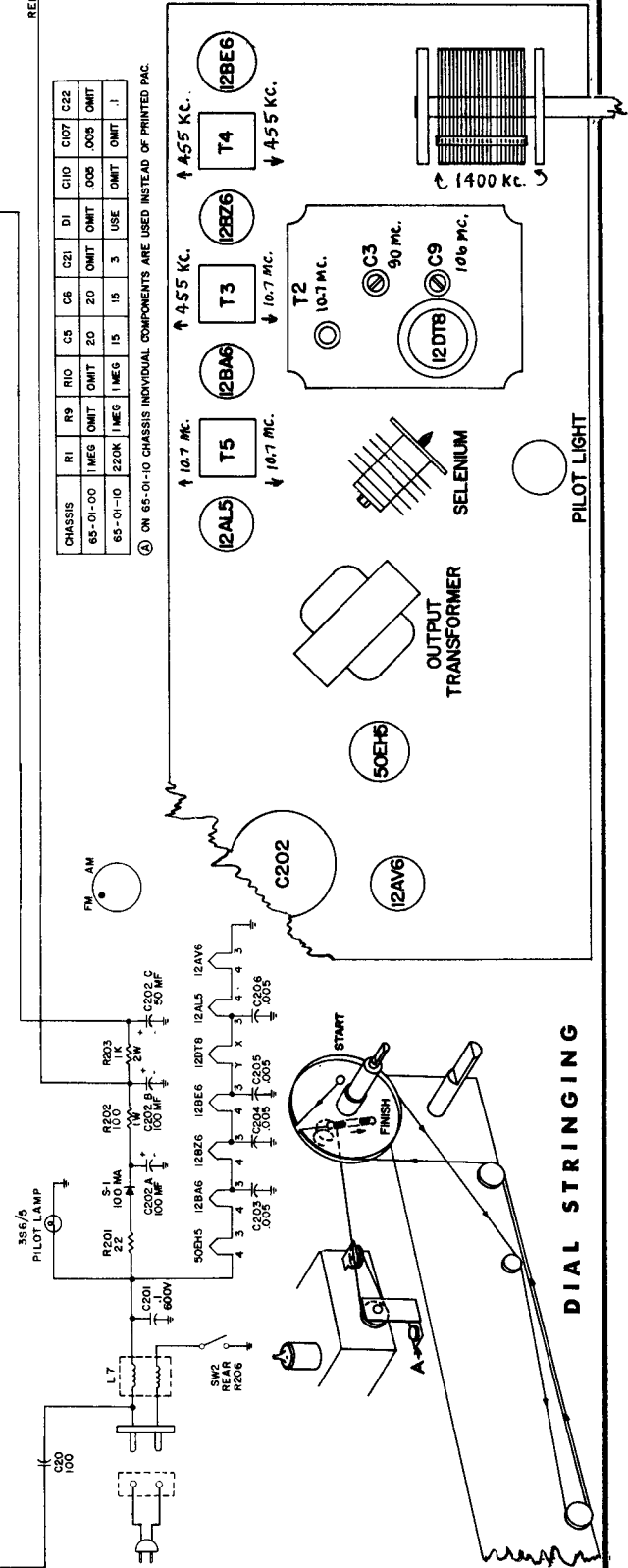
Magnavox

65 SERIES RADIO CHASSIS



CHASSIS	R1	R9	R10	C5	C6	C21	D1	C107	C22
65-01-00	1MEG	OMIT	20	20	20	OMIT	OMIT	.005	OMIT
65-01-10	220K	1MEG	15	15	15	3	USE	OMIT	.1

② ON 65-01-10 CHASSIS INDIVIDUAL COMPONENTS ARE USED INSTEAD OF PRINTED PAC.



Magnavox

71 SERIES RADIO CHASSIS

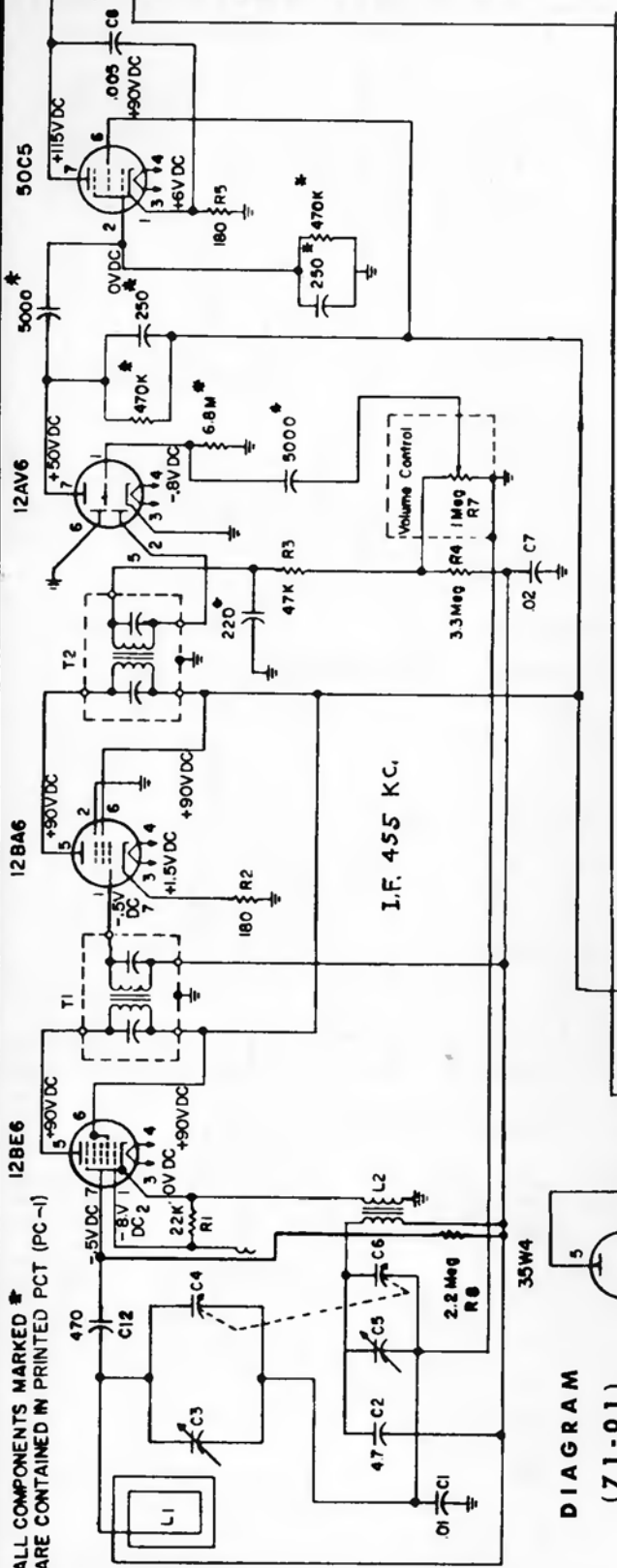


DIAGRAM
(71-01)

(VIEWED FROM WIRING SIDE OF BOARD)

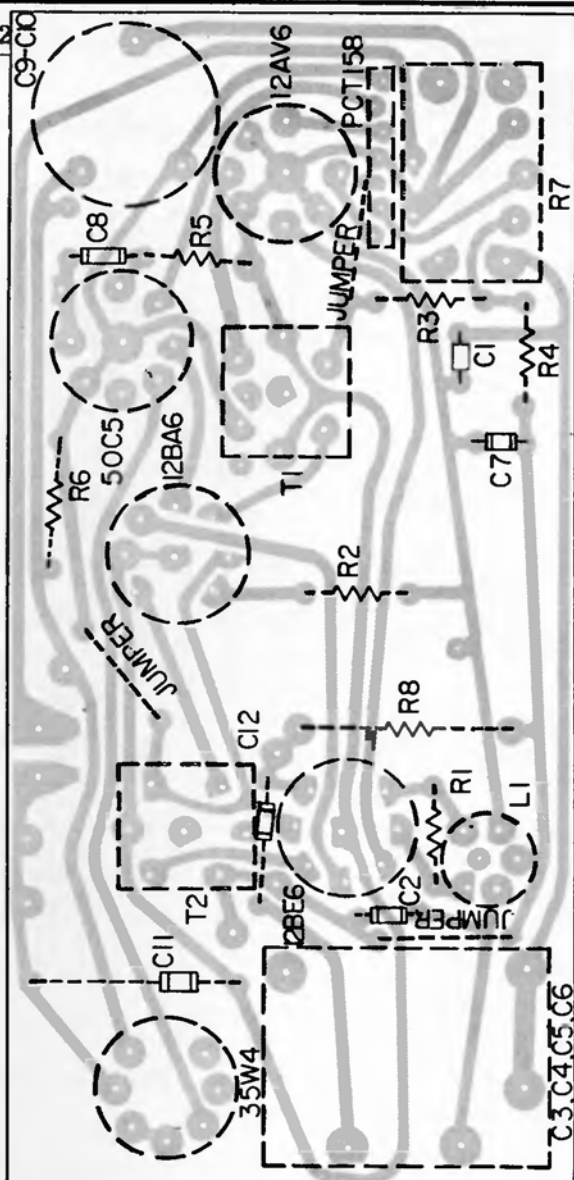
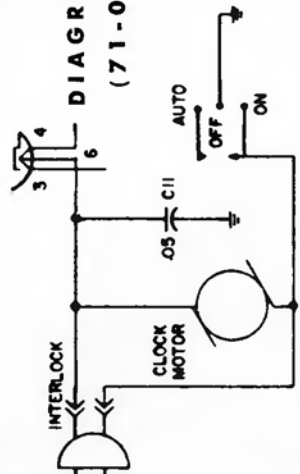
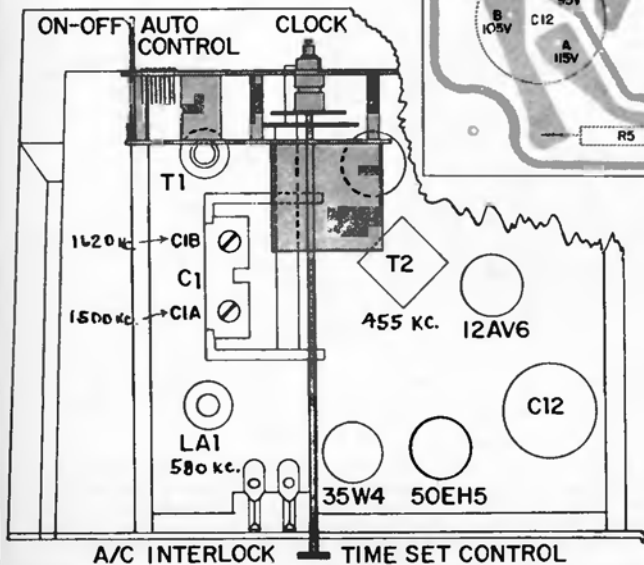
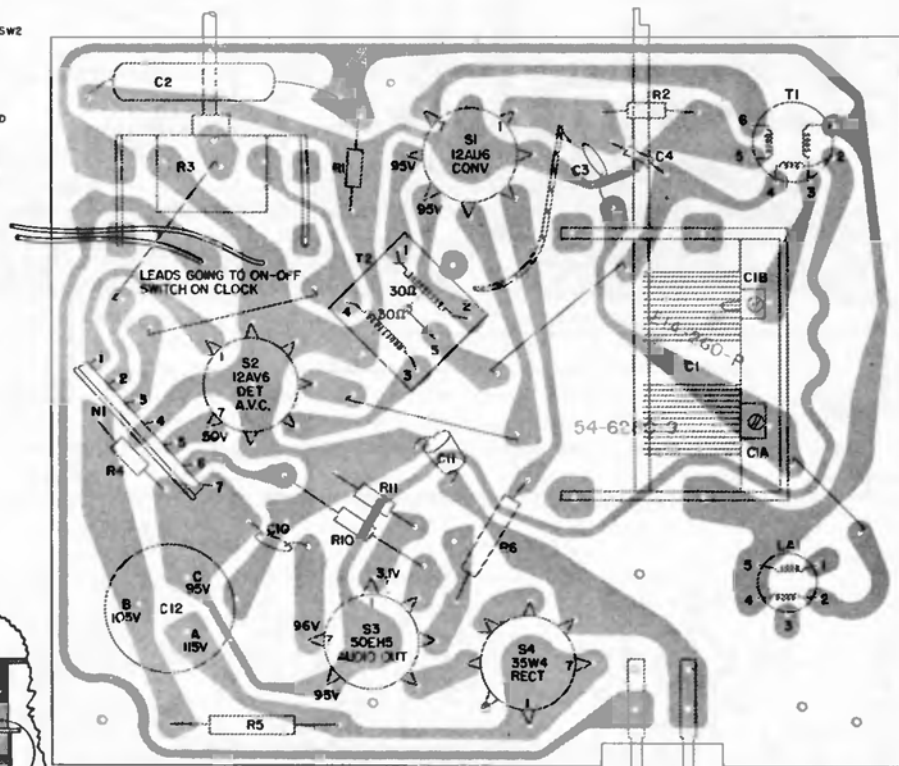
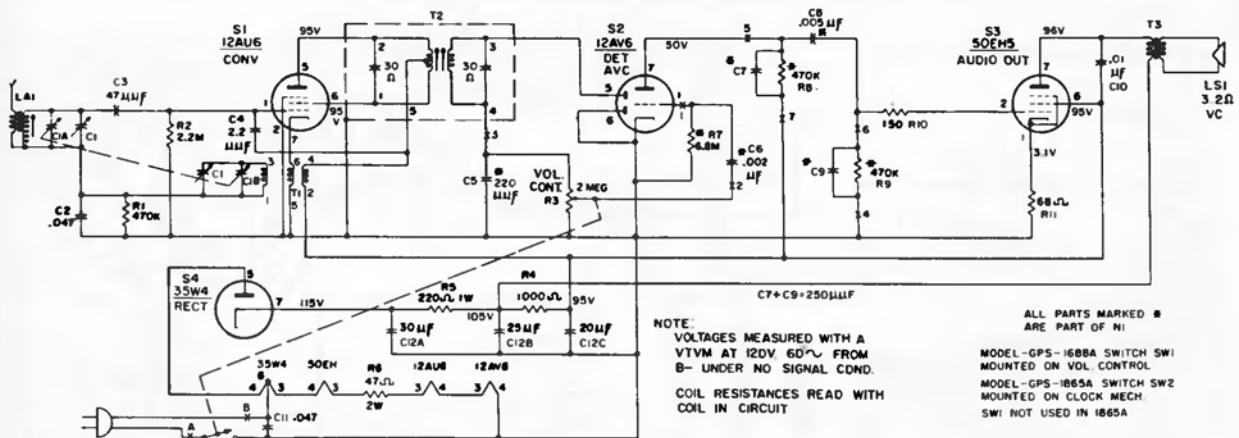


DIAGRAM
(71-02)



M O N T G O M E R Y W A R D

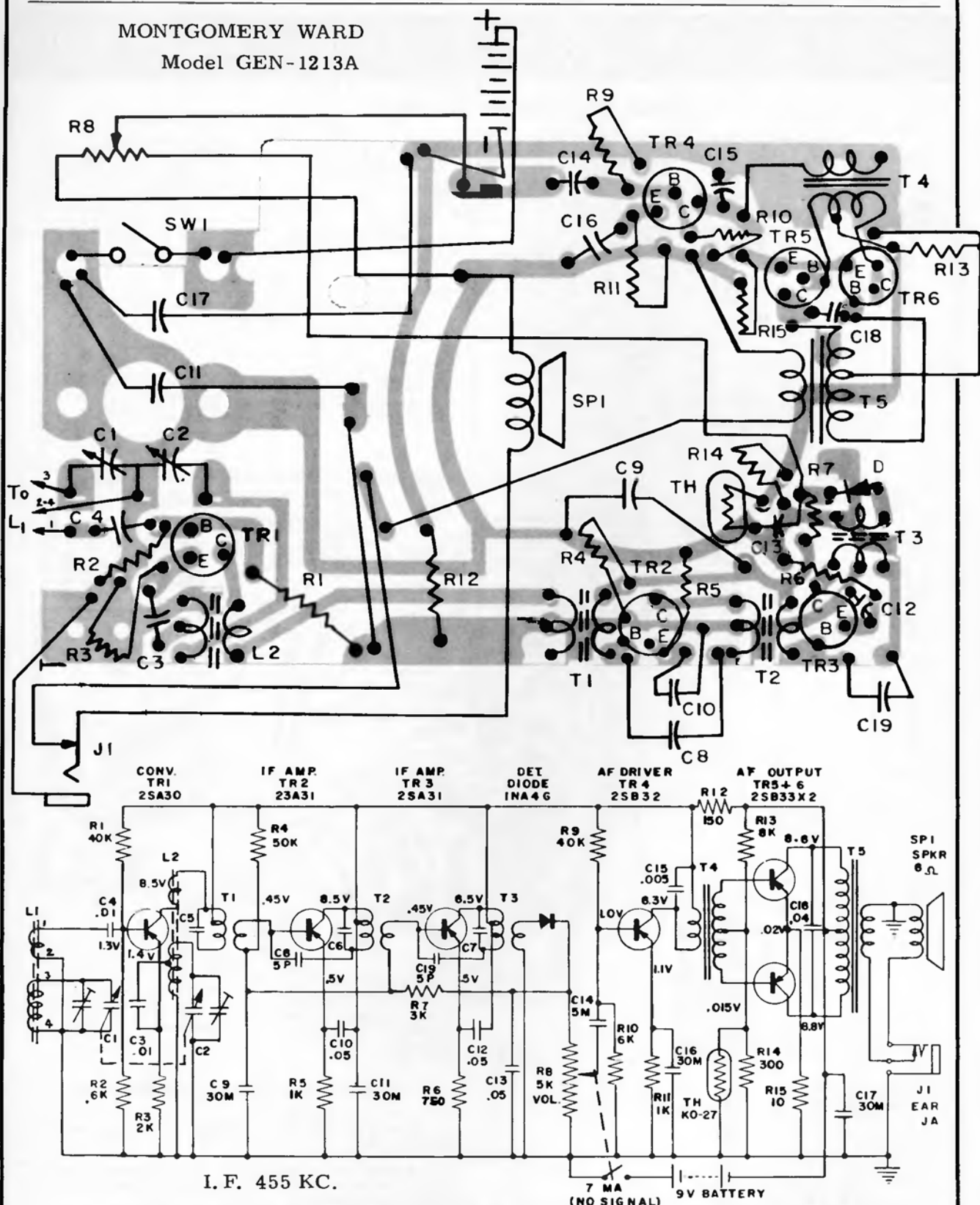
MODELS GPS-1688A AND GPS-1865A



CHASSIS-PANEL REMOVAL INFORMATION

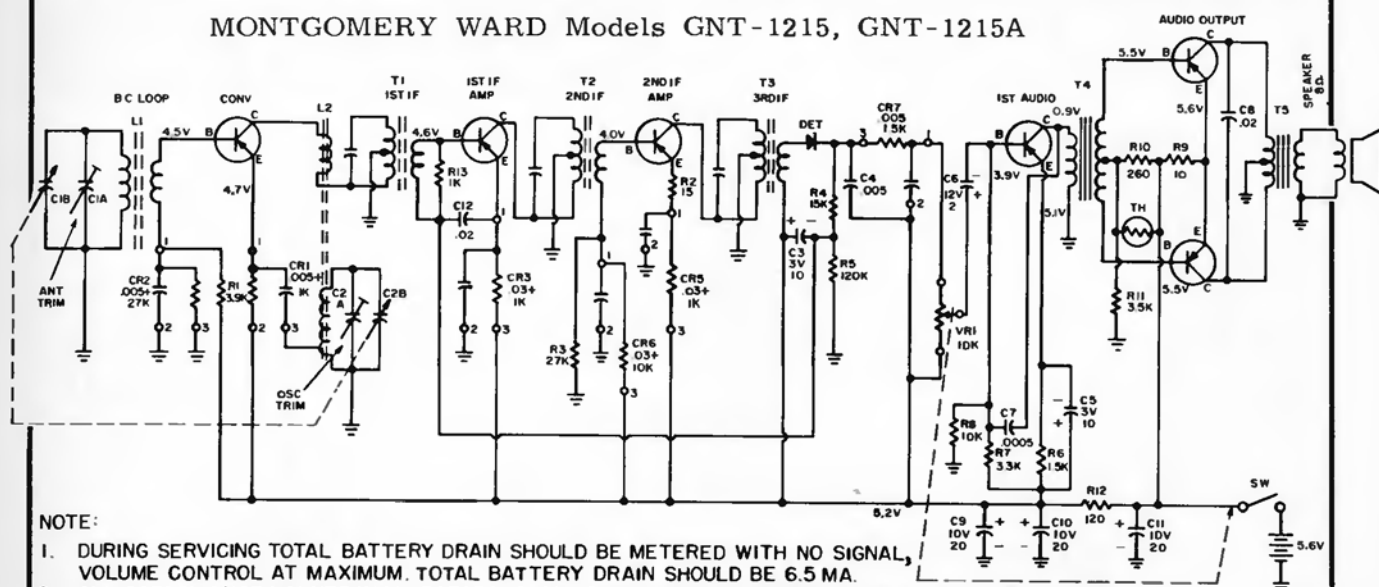
1. Remove the two screws holding on the back, and remove the back.
2. Remove the screw holding the perma-circuit panel (screw located through the volume control frame into the boss of the cabinet).
3. Remove knobs -- (leads going to the output transformer do not have to be unsoldered, as they are long enough to permit panel removal).
4. Remove Perma-Circuit Panel.

MONTGOMERY WARD
Model GEN-1213A



It is possible to damage a transistor when testing circuit continuity. Since a transistor needs only a low voltage applied to its terminals for conduction, use of an ohmmeter having an internal battery voltage of more than 7.5 volts, will damage the transistor. Testing continuity of a circuit which includes a transistor can result in misleading indications, as the resistance of a transistor in the conduction direction is low in comparison to the resistance in the non-conduction direction. It is more reliable to make voltage measurements and check whether voltages shown on the schematic are present. Reference to the schematic diagram and to the printed circuit board artwork will permit tracing the circuit and locating components on the printed board.

MONTGOMERY WARD Models GNT-1215, GNT-1215A



NOTE:

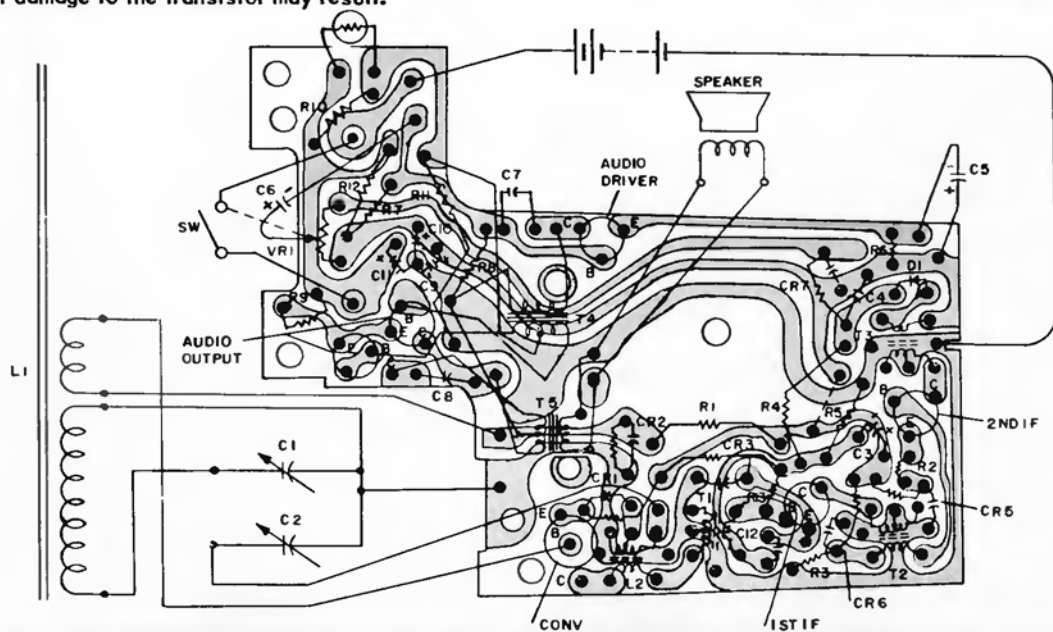
1. DURING SERVICING TOTAL BATTERY DRAIN SHOULD BE METERED WITH NO SIGNAL, VOLUME CONTROL AT MAXIMUM. TOTAL BATTERY DRAIN SHOULD BE 6.5 MA.
2. ALL CAPACITANCE VALUES IN MICROFARADS. ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE MEASUREMENTS MADE WITH A V.T.V.M FROM POINTS INDICATED TO GROUND WITH TUNING CAPACITOR AT MAXIMUM, VOLUME CONTROL AT MAXIMUM, BATTERY SOURCE AT 5.6 VOLTS.

I. F. 455 KC.

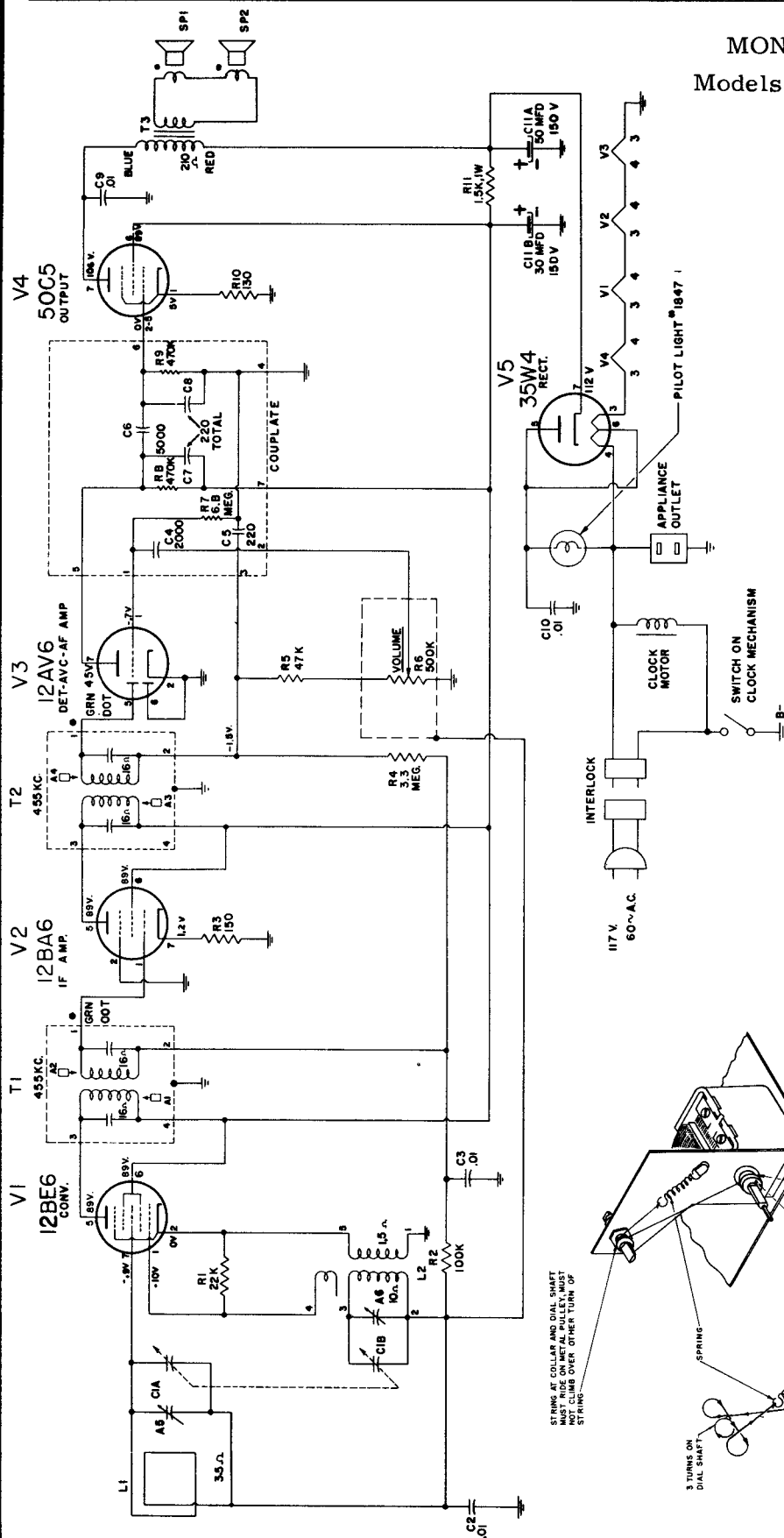
To check for a circuit defect which would cause excessive battery drain, an overall current measurement and supplementary voltage measurement should be made.

Signal tracing by injection of a signal from a signal generator is done on transistor radios in exactly the same manner as has been done for many years with the conventional vacuum tube radios. The signal generator should be connected in series with a capacitor to avoid shorting out bias voltages. The base of a transistor is the signal input terminal (Corresponding to the signal grid of a tube). The collector is the signal output terminal (Corresponding to the plate of a tube). The emitter is the common terminal (Corresponding to the cathode of a tube). Oscillator performance can not be judged by measurement of a DC voltage developed across a resistor. Measurement of oscillator signal strength with an AC VTVM at the emitter will give an indication of oscillator performance. In class "B" output, used in the receiver, the battery current increases greatly with increased signal input (over 30 MA with volume control set at maximum). If all other circuit components have been checked and a faulty transistor is suspected, replacement of the transistor is the surest check. Transistors should not be soldered or unsoldered in the circuit when voltage is applied to the circuit. In some cases replacement of an IF transistor will effect IF alignment.

Do not short across the base and collector terminals of the transistors while the radio is operating, as permanent damage to the transistor may result.

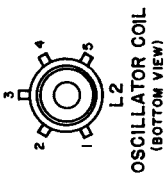
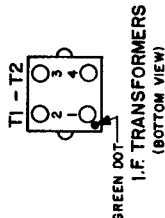


MONTGOMERY WARD
Models GEN-1691A, GEN-1869A



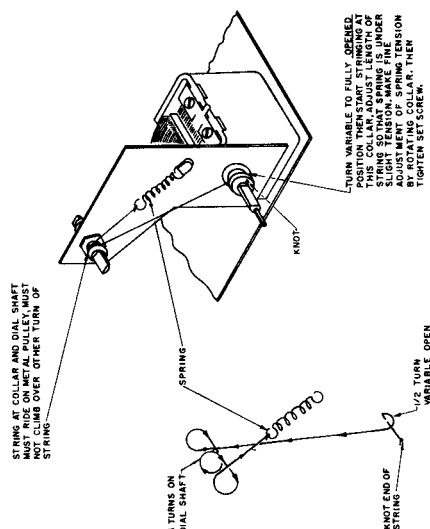
NOTES:

1. ALL VOLTAGES MEASURED WITH VTVM, REFERENCED TO B-, WITH VOLUME CONTROL AT MAXIMUM, NO SIGNAL APPLIED.
2. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
3. ALL RESISTORS ARE IN OHMS, $\pm 20\%$, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
4. DC COIL RESISTANCE VALUES UNDER 1 OHM NOT SHOWN.
5. CAPACITANCE VALUES UNDER 1 ARE IN MICROFARADS, MORE THAN 1 ARE IN MICROMICROFARADS UNLESS OTHERWISE INDICATED.
6. TOLERANCE $\pm 5\%$, VOLTAGE RATING, 1847 UNLESS OTHERWISE SPECIFIED.



CHASSIS REMOVAL INFORMATION

1. Remove 4 screws holding the back and front sections of cabinet together, rear section may now be removed.
2. Remove volume and tuning knobs.
3. Remove 2 screws and flat washers at either side of chassis board and 1 screw on dial bracket.
4. Unsolder output transformer leads at speaker terminals.
5. Chassis may now be removed from cabinet.
6. To reassemble the chassis, proceed with the above steps in reverse sequence.



2N176
PWR AMP

4450, MN53, OR 2N652
DRIVER

12F8
DET-AVC-AF AMP

12B16
IF AMP

12AD6
CONV

NOTES:

CAPACITORS - Unless otherwise specified, values less than one in MF, all others in MMF.

VOLTAGES - Measured from point indicated to chassis with a VTVM, $\pm 10\%$ No signal input.

INPUT VOLTAGE - 14V DC.

TUNING RANGE - 540KC TO 1610KC.

IF FREQ - 262.5KC

1. RADIO POLARITY
ER, THE "A" LEAD M
ITIVE SIDE OF THE
OTHERWISE, RECEIV
AGE TO COMPONENT

2. POWER SUPPLY
use a storage battery
a battery eliminator.
be well regulated and

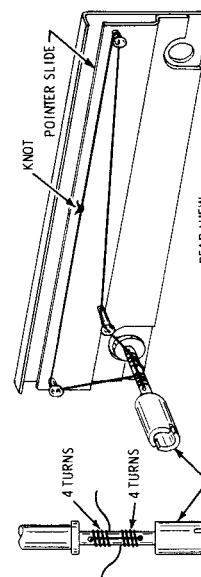
3. POWER TRANSIST
a power transistor, b
and well greased and
and evenly tightened.
Replacement Parts L

4. POWER TRANSIST
power transistor or
coat both sides of in
Part No. 11M490487

5. DRIVER TRANSIST
a driver transistor, g
transistor body and i
pliers to prevent exce
soldering operation.

6. POWER TRANSIST
a power transistor has
should be checked

a. Insert a low ra
the primary ground
er (T4). Connect the
CAUTION: Be sure
in common with the
tive meter termin
b. Turn the radio
minutes.
c. Adjust R18 for
put to the radio "A"
NOTE: Two value
convenience to ser
different power so
Schematic Diagram
lead.



1. Thread a sufficient length of dial cord through two holes in shaft,
2. Wind 4 turns from each hole toward center of shaft as shown in detail.
3. Thread over guides and tie knot as shown

1. RADIO POLARITY - WHEN SERVICING THIS RECEIVER, THE "A" LEAD MUST BE CONNECTED TO THE POSITIVE SIDE OF THE POWER SOURCE, IF CONNECTED OTHERWISE, RECEIVER WILL NOT OPERATE AND DAMAGE TO COMPONENTS MAY RESULT.

- 2. 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.

- 3. POWER TRANSISTOR REPLACEMENT** - When replacing a power transistor, be sure transistor insulator is in place and well greased and that the mounting screws are securely and evenly tightened. Use only the transistor specified in the Replacement Parts List for replacement. See Notes 4 & 6.

4. POWER TRANSISTOR INSULATOR - When replacing a power transistor or power transistor insulator, be sure to coat both sides of insulator with DC-4 grease (Motorola Part No. 11M490487) to insure proper heat dissipation.

5. DRIVER TRANSISTOR REPLACEMENT - When replacing a driver transistor, grasp the transistor leads (between the transistor body and soldering lug) with a pair of long nose pliers to prevent excessive heating of transistor body during soldering operation.

- 6. POWER TRANSISTOR CURRENT ADJUSTMENT** - After a power transistor has been replaced, the collector current should be checked and adjusted for proper operation.

- a. Insert a low range (0-1 or 0-2 amp) DC ammeter in the primary ground return lead of the output transformer (T4). Connect the negative post of the meter to ground. CAUTION: Be sure the speaker ground lead is connected in common with the transformer ground lead to the positive meter terminal (see schematic).

- b. Turn the radio on and allow it to heat up for about 15 minutes.

- c. Adjust R18 for a reading of 360 ma with 12.6 volts input to the radio "A" lead.

NOTE: Two values of radio input voltage are given as a convenience to service personnel in order to accommodate different power sources. The current value stated on the Schematic Diagram is for 14 volts input to the radio "A" lead.

NOTES

CAPACITORS - Unless otherwise specified, values

less than one in MF, all others in MMF.

VOLTAGES - Measured from point indicated

with a VTVM $\pm 10\%$ No signal input

WITH A 10% $\pm$ NO SIG.

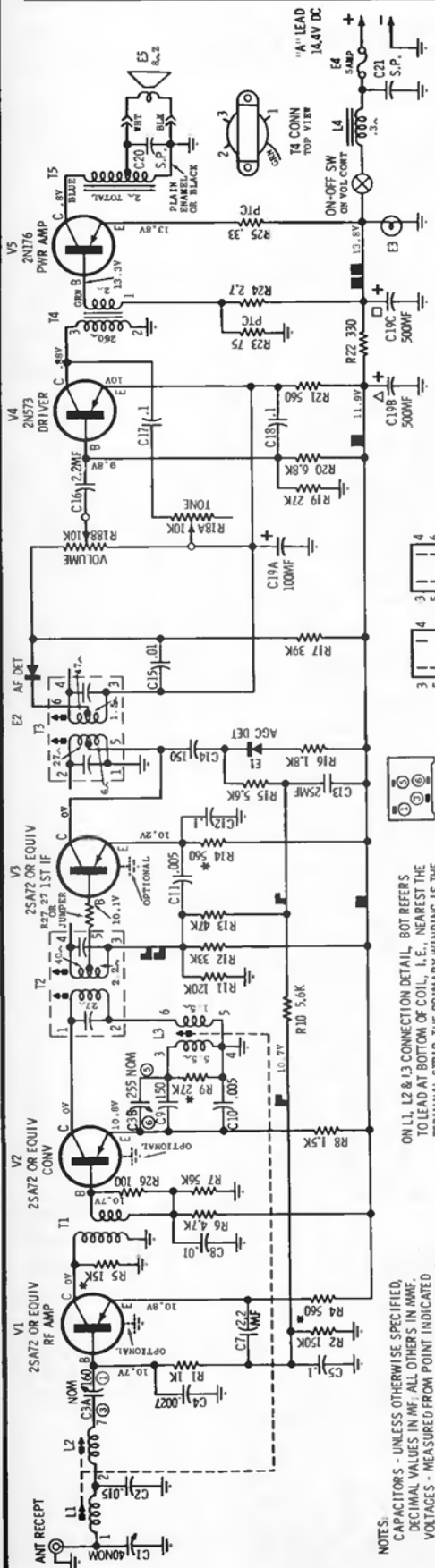
INPUT VOLTAGE - 14V DC.

TUNING RANGE - 540KC TO 1610KC.

IF FREQ - 262.5KC

MOTOROLA

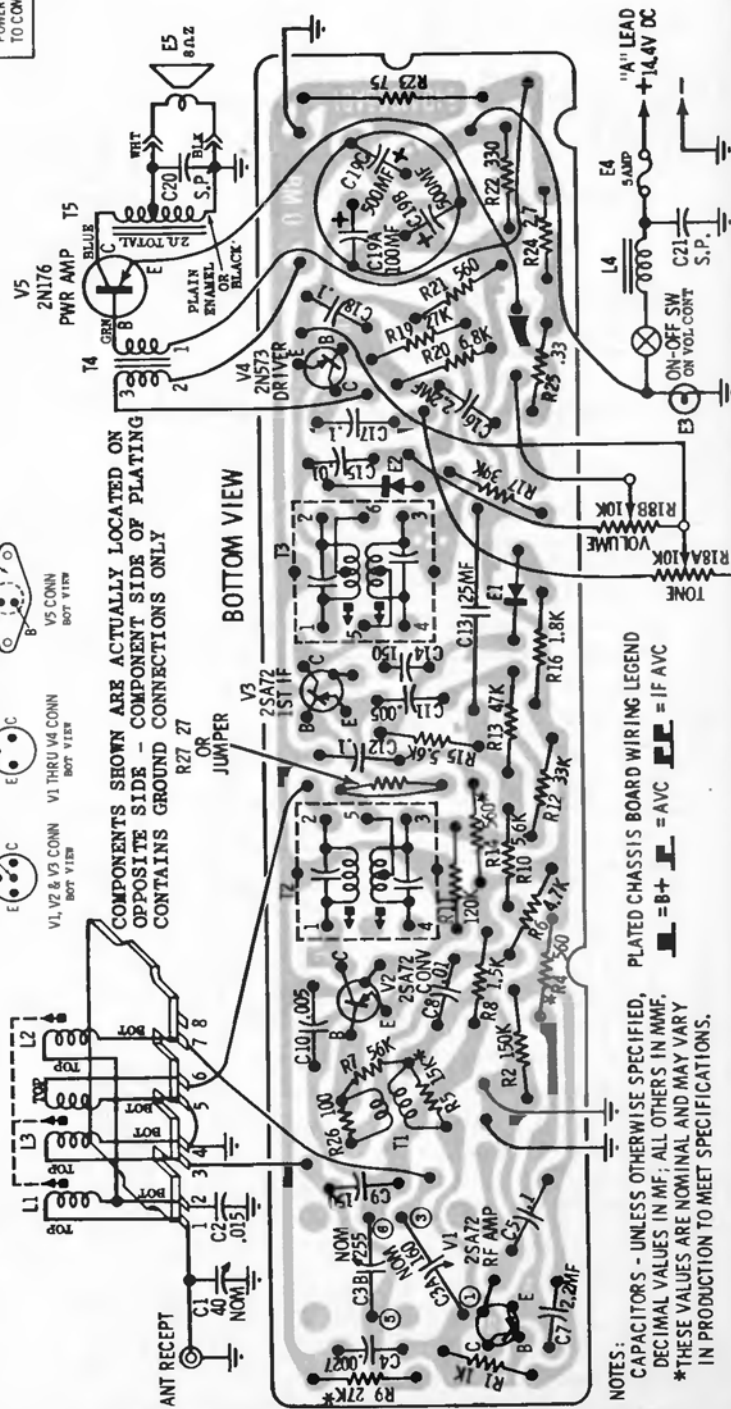
auto radio
MOTOROLA 2TMXD
RENAULT 55555



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.

ON L1, L2 & L3 CONNECTION DETAIL, BOT REEFERS TO LEAD AT BOTTOM OF COIL, I.E., NEAREST THE TERMINAL STRIP. THE PRIMARY WINDING IS THE OUTERMOST WINDING.

NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, $\pm 10\%$, NO SIGNAL IN.
INPUT VOLTAGE - 14.4V DC
TUNING RANGE - 540 KC TO 1610 KC.
IF FREQ. - 262.5 KC.



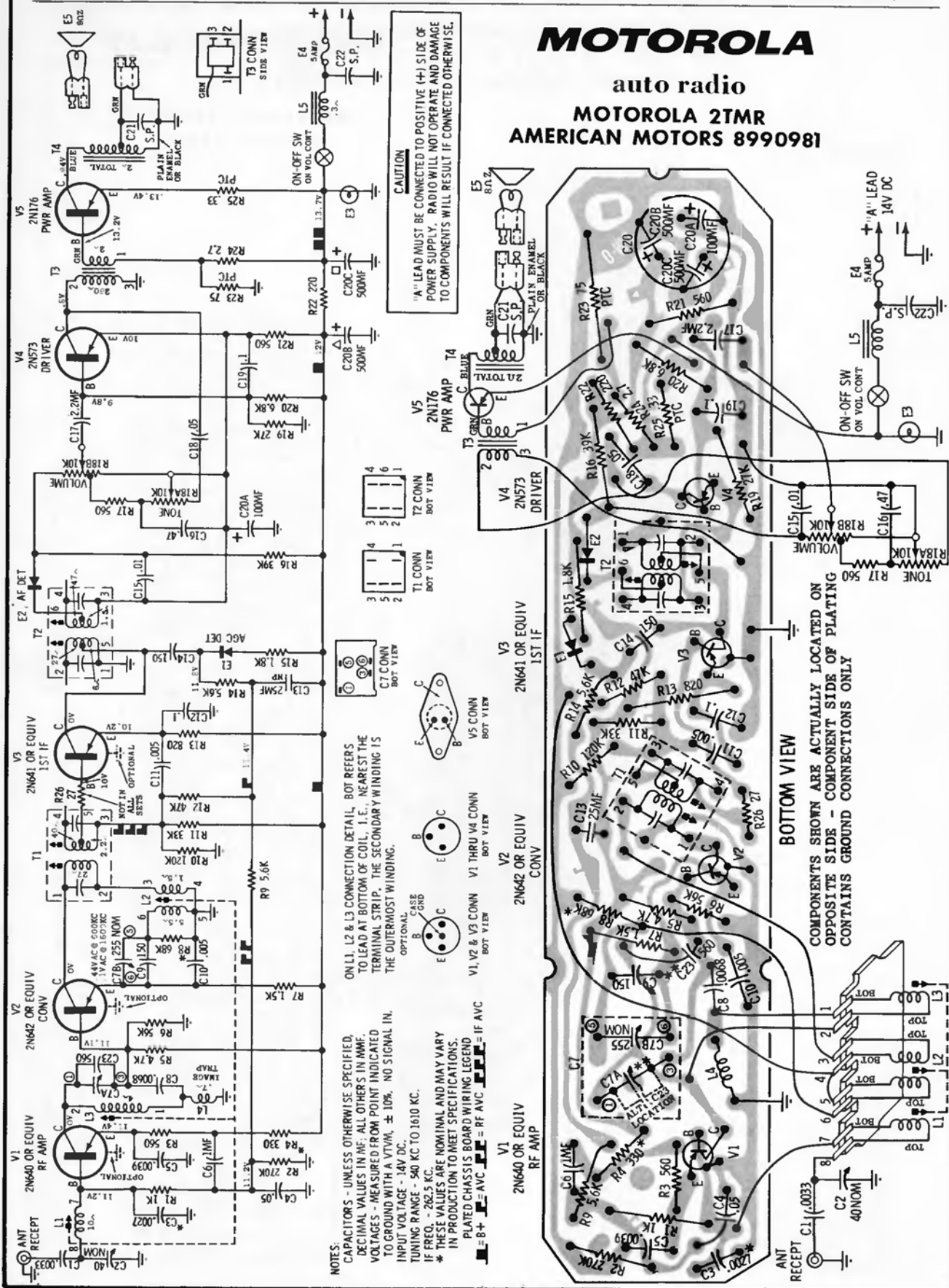
COMPONENTS SHOWN ARE ACTUALLY LOCATED ON OPPOSITE SIDE - COMPONENT SIDE OF PLATING CONTAINS GROUND CONNECTIONS ONLY

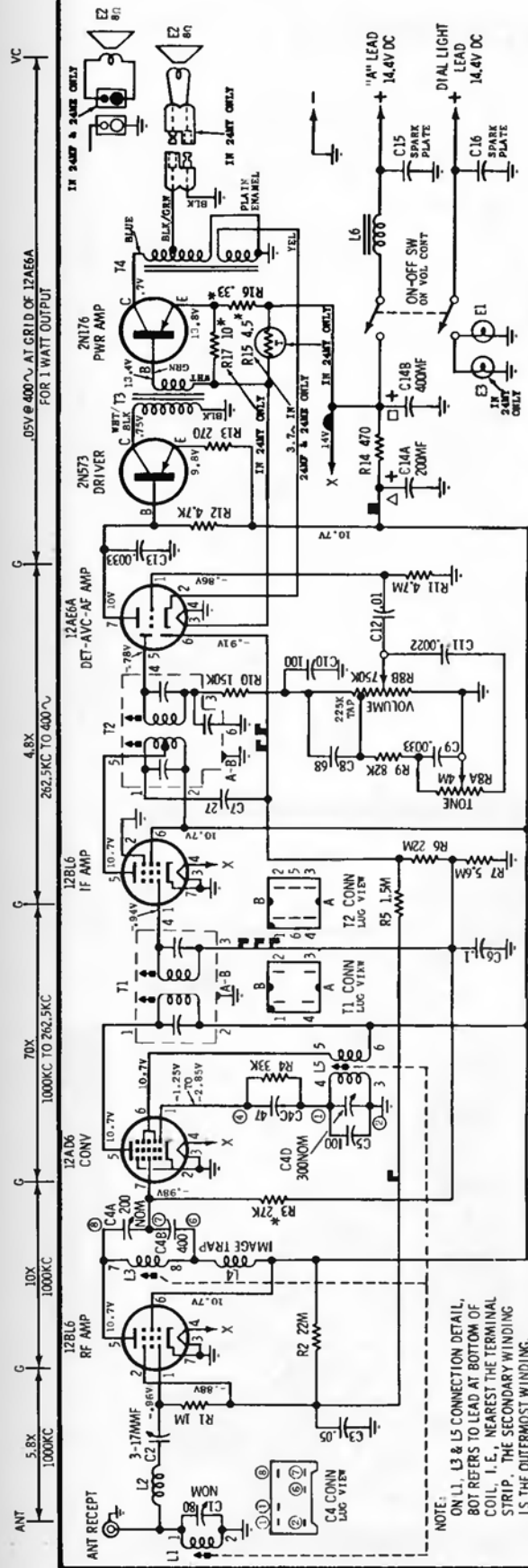
NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
*THESE VALUES ARE NOMINAL AND MAY VARY IN PRODUCTION TO MEET SPECIFICATIONS.

PLATED CHASSIS BOARD WIRING LEGEND
■ = B + ■ = AVC

MOTOROLA

auto radio
MOTOROLA 2TMR
AMERICAN MOTORS 8990981





MODELS 24ME, 24MF & 24MY SCHEMATIC DIAGRAM

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

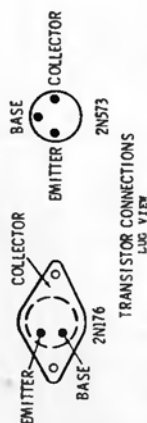
NOTES:

CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF. VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, $\pm 10\%$. NO SIGNAL IN.

INPUT VOLTAGE - 14.4V DC

TUNING RANGE - 540KC TO 1610KC. IF - 262.5KC

*THE EXACT VALUE TO BE DETERMINED BY PRODUCTION PROCESS. REPLACE WITH THE SAME VALUE OF THE ORIGINAL PART.



MOTOROLA

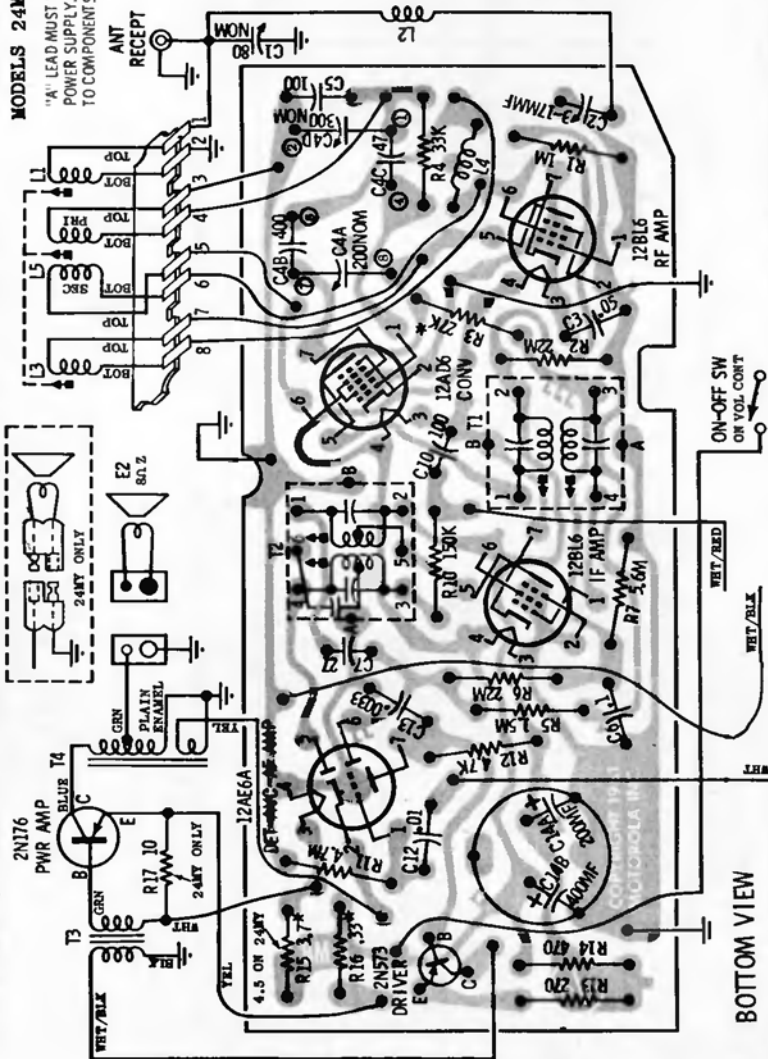
auto radio

MOTOROLA

FORD

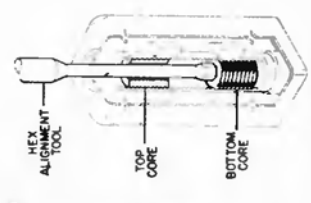
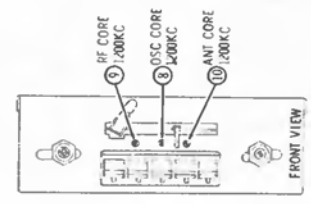
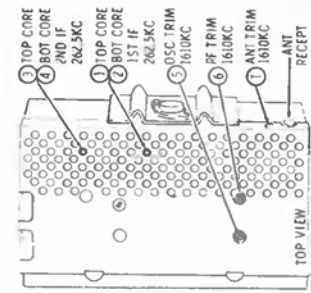
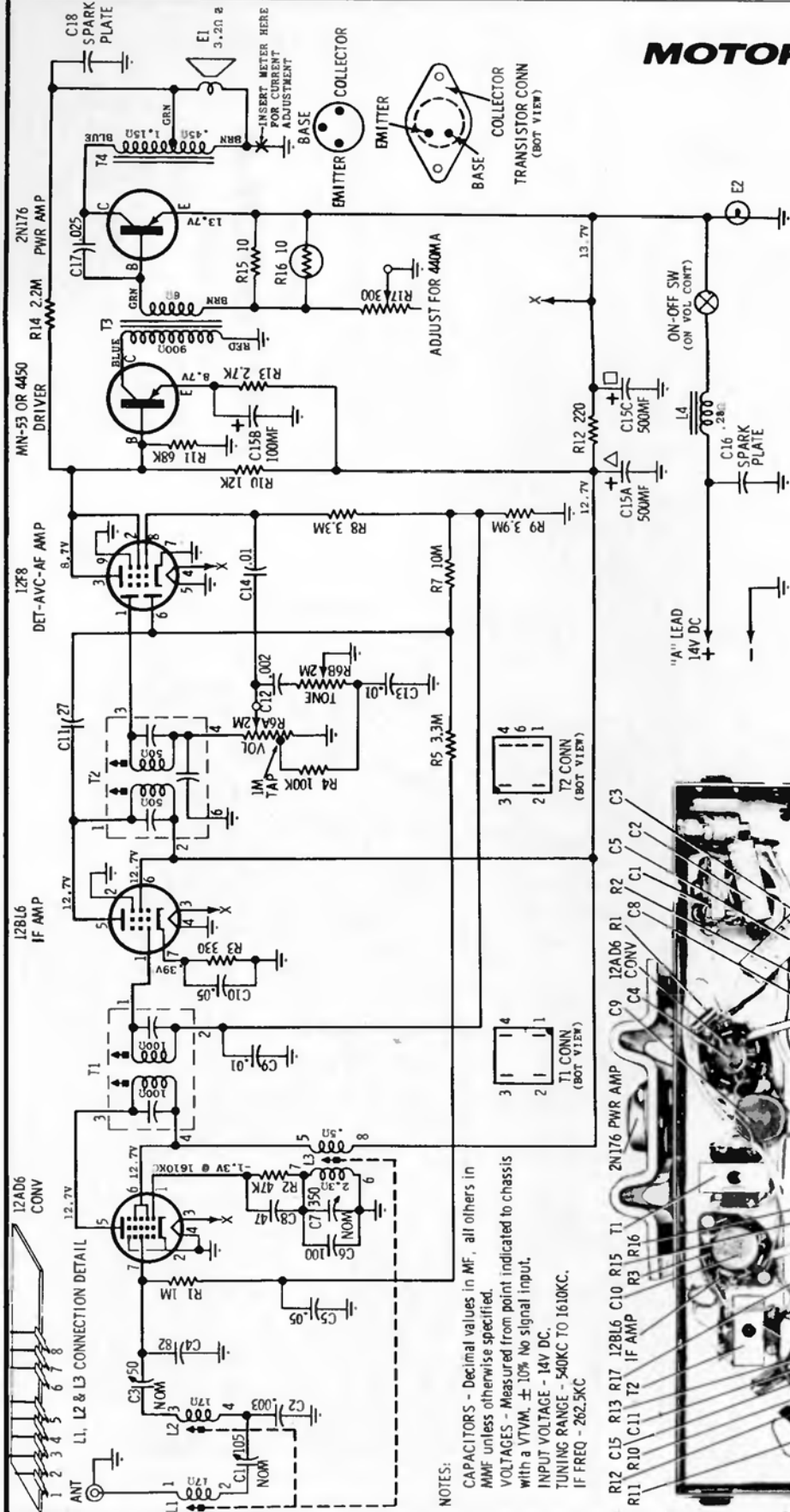
24ME.....C2GY-18805-A
 24MF.....C2AZ-18805-A
 24MY.....C2YY-18805-A2

Model 24ME is for the 1962 Comet.
 Model 24MF is for the 1962 Ford.
 Model 24MY is for the 1962 Meteor.

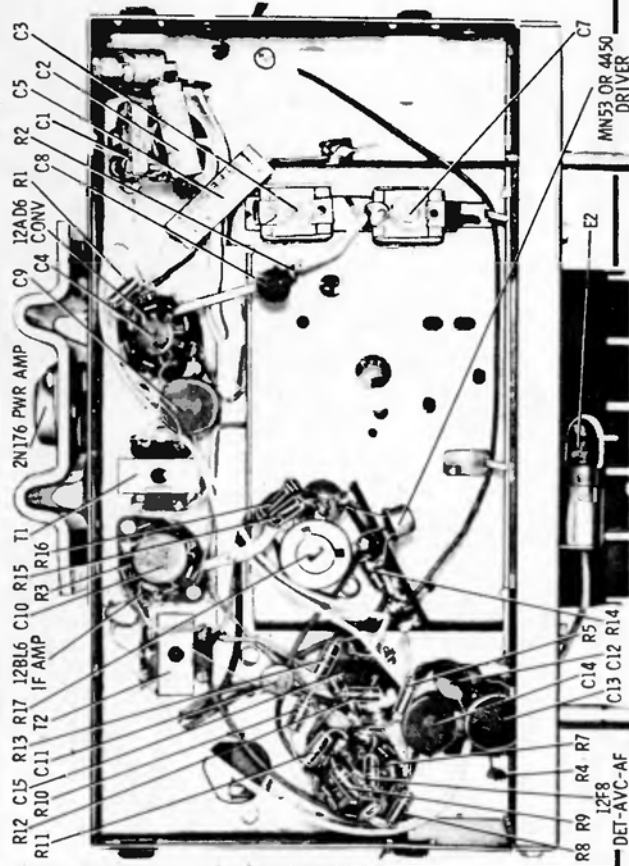


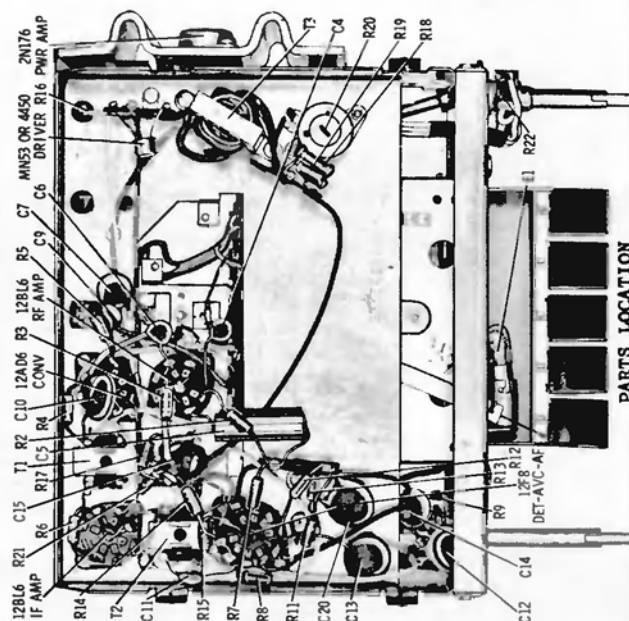
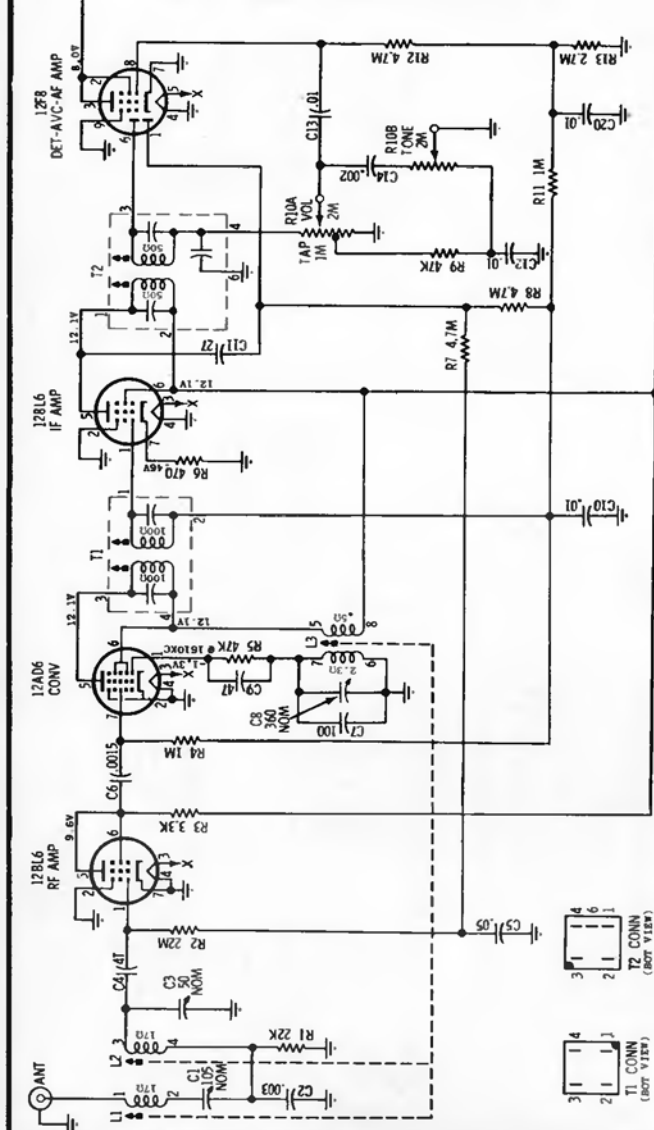
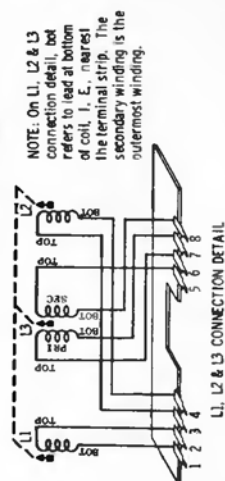
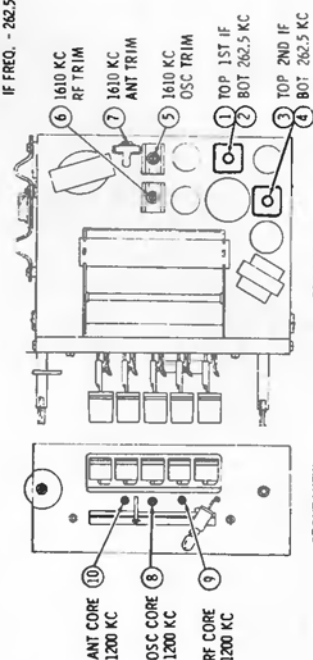
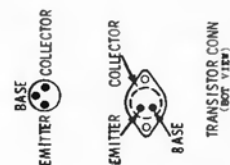
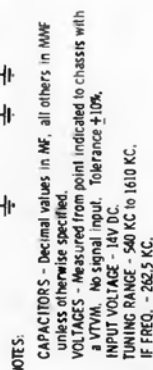
MOTOROLA

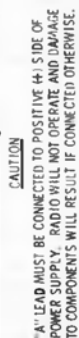
MODEL
CA61X



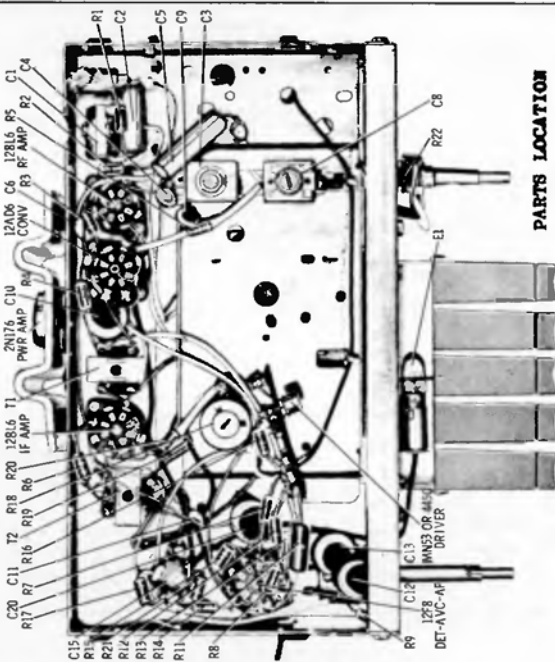
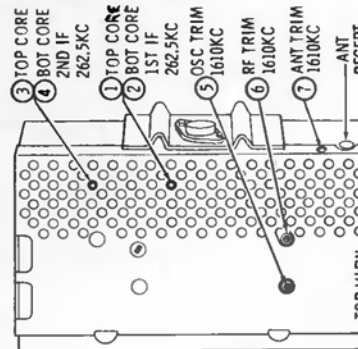
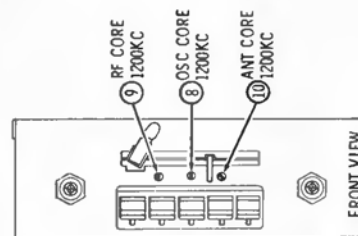
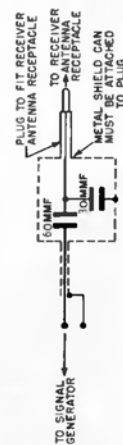
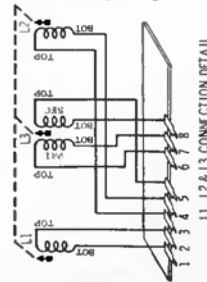
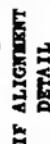
NOTES:
CAPACITORS - decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM, $\pm 10\%$ No signal input.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540KC TO 1610KC.
IF FREQ - 262.5KC







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 KC to 1610 KC.
IF FREQ. - 262.5 KC.



PARTS LOCATION

MOTOROLA Auto Radio Model PCA61X

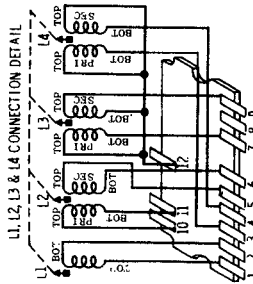
ALIGNMENT LOCATION DETAIL

DUMMY ANTENNA DETAIL

MOTOROLA auto radio

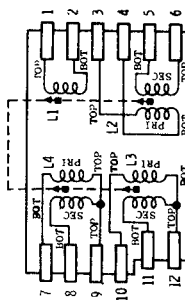
CTA62 CTM62

Automotive all transistor super-heterodyne receivers designed for custom installation in all 1962 Chevrolet automobiles except the Chevy II & Corvair series.

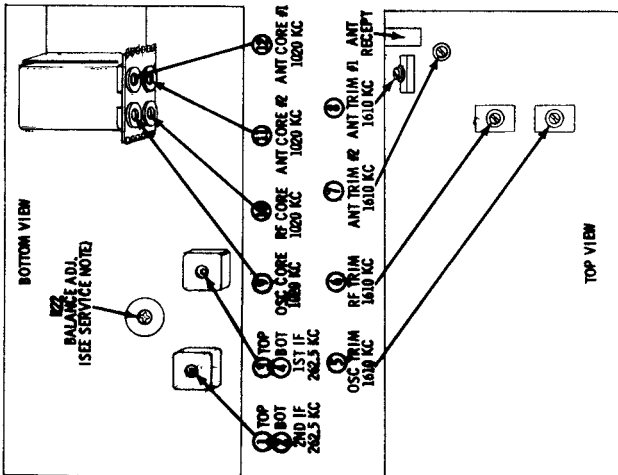


CTA62 DIAGRAM

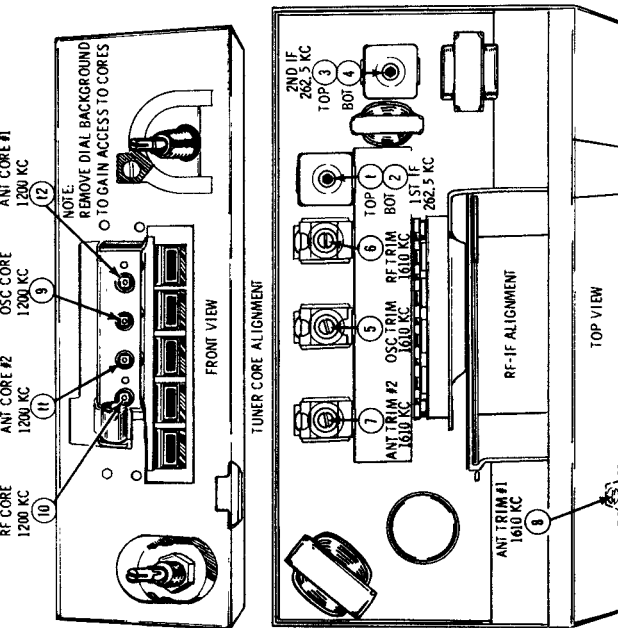
NOTE: ON L1, L2, L3 & L4 CONNECTION DETAIL, BOT REFERS TO LEAD AT BOTTOM OF COIL, I.E., NEAREST THE TERMINAL STRIP. THE SECONDARY WINDING IS THE OUTERMOST WINDING.



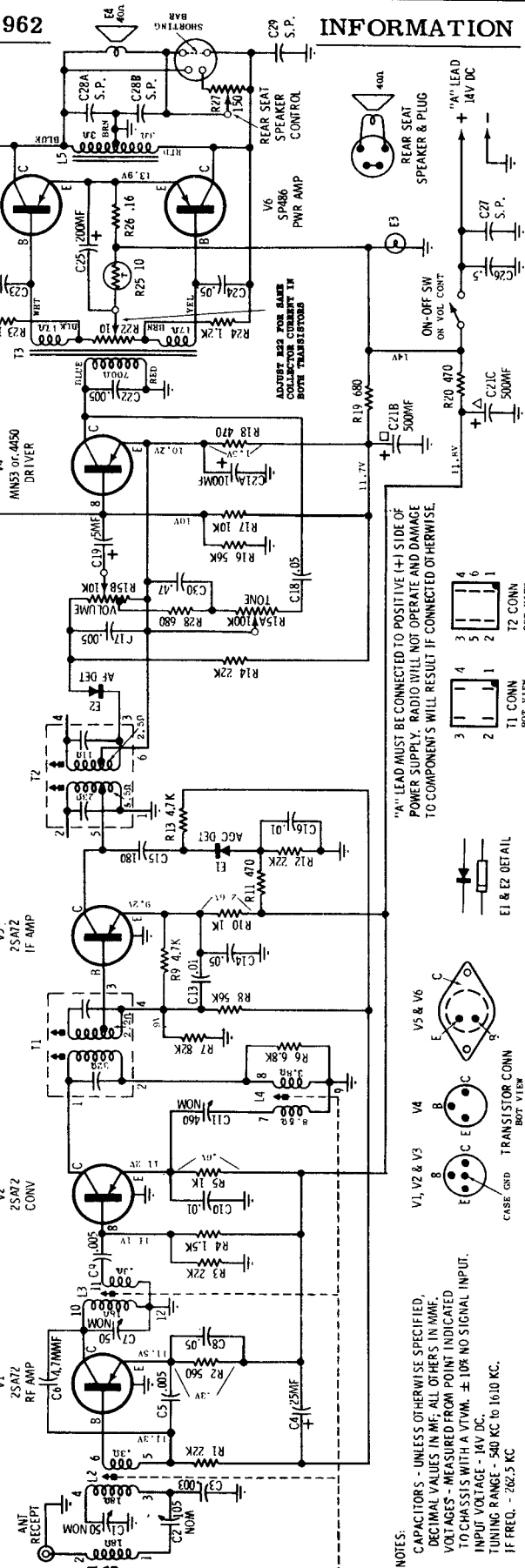
CTM62 DIAGRAM



CTA62 ALIGNMENT LOCATION DETAIL



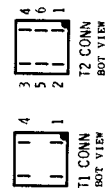
CTM62 ALIGNMENT LOCATION DETAIL



NOTES:

CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF. VOLTAGES - MEASURED FROM POINT INDICATED TO CHASSIS WITH A VTVM. $\pm 10\%$ NO SIGNAL INPUT. TUNING RANGE - 540 KC TO 1610 KC. IF FREQ. - 262.5 KC.

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



E1 & E2 DETAIL

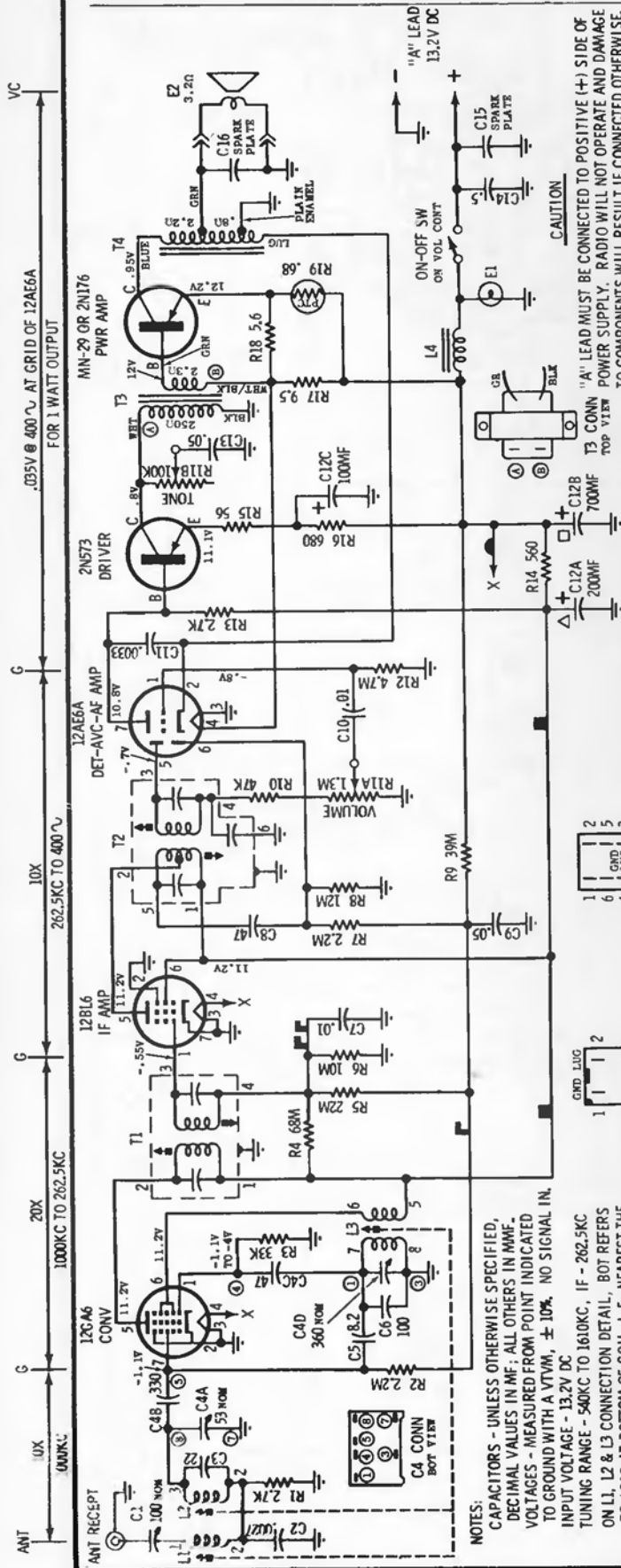
TRANSISTOR CONN

BOT VIEW

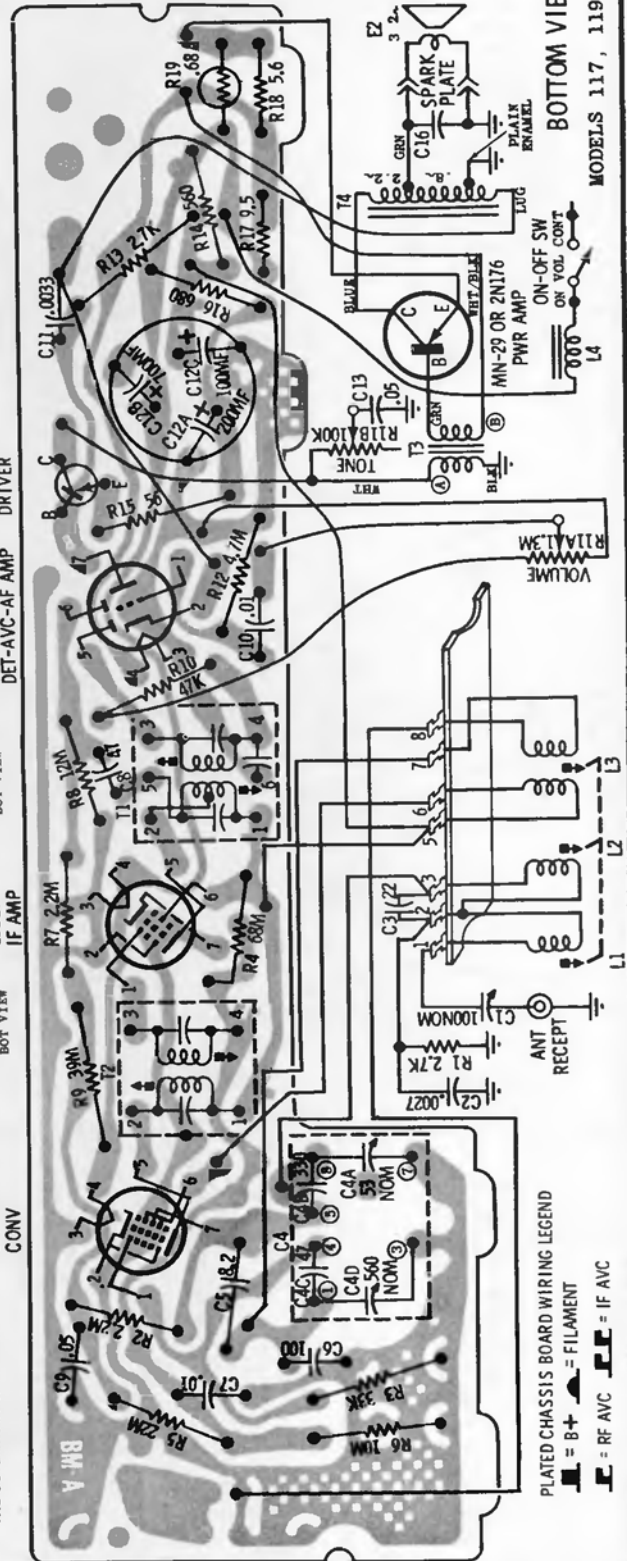
MOTOROLA

auto radio
MOPAR 117, 119, 120

MODELS 117, 119, 120
BOTTOM VIEW



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.



PLATED CHASSIS BOARD WIRING LEGEND

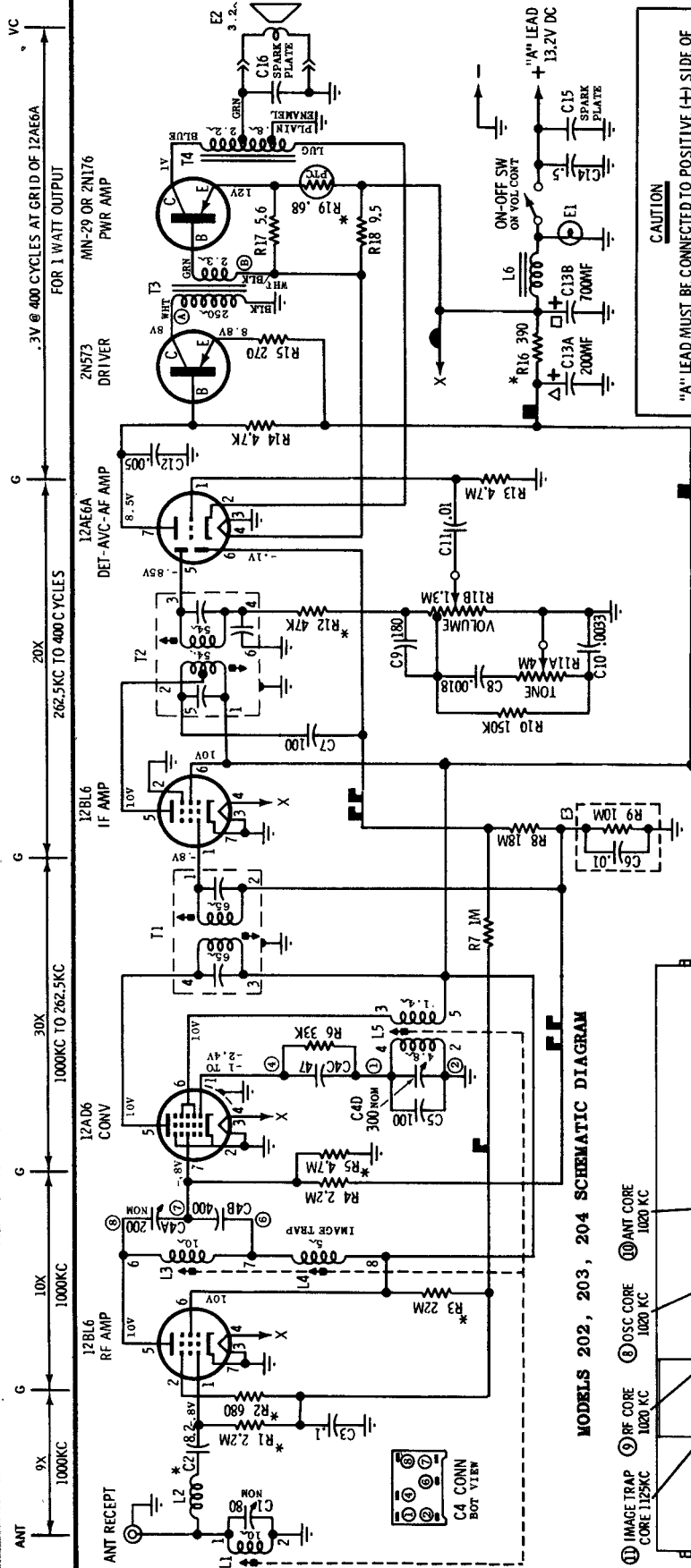
■ = B+ ■ = FILAMENT

■ = RF AVC ■ = IF AVC

MOTOROLA

auto radio

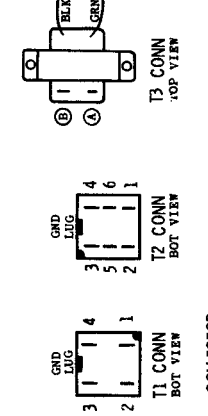
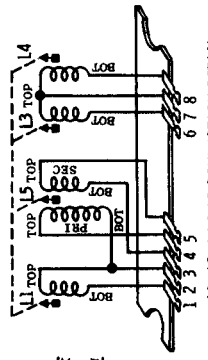
MOPAR 202, 203, 204



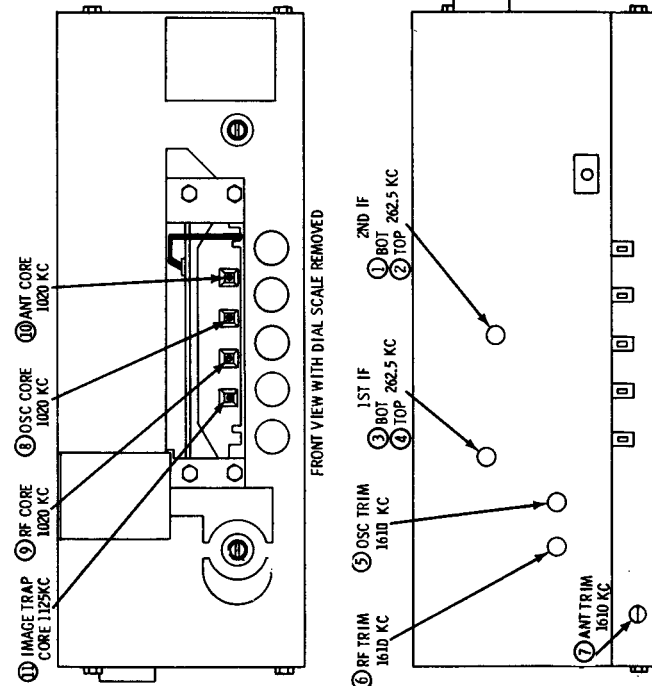
CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

PLATED CHASSIS BOARD WIRING LEGEND

■ = B+ ■ = FIL ■ = RF AVC ■ = IF & CONV AVC

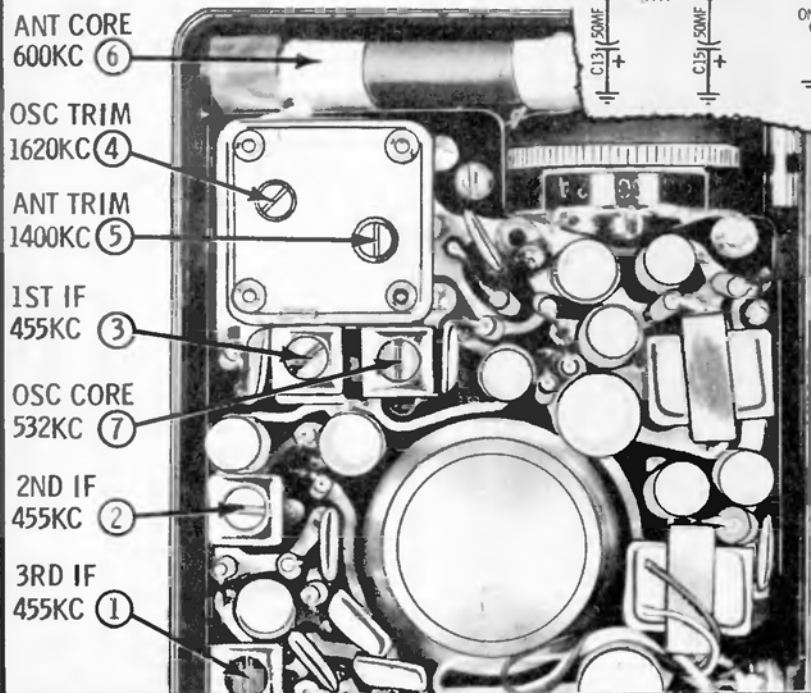
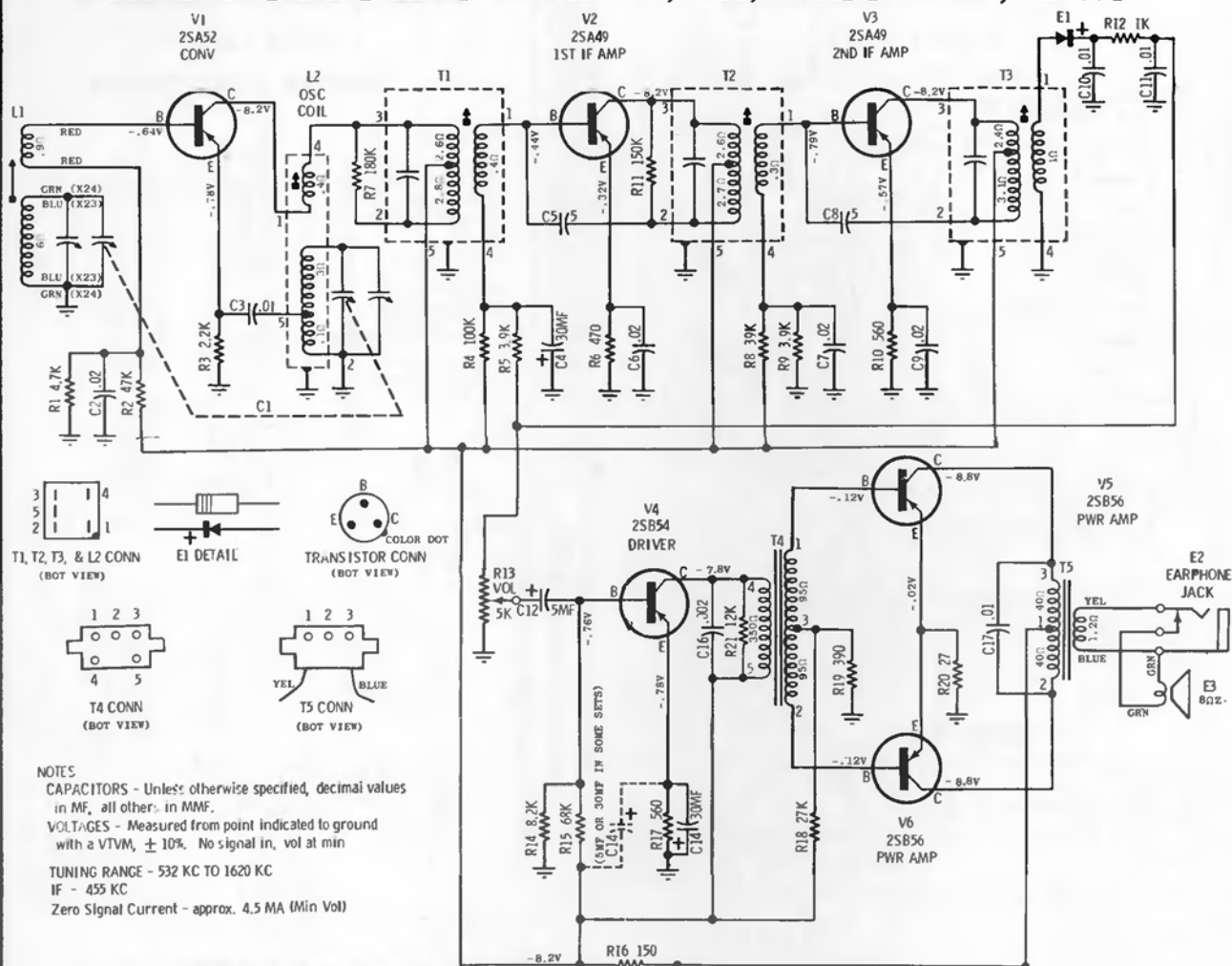


MODELS 202, 203, 204 SCHEMATIC DIAGRAM



MODELS 202, 203, 204 ALIGNMENT LOCATION DETAIL

MOTOROLA Models X 23, X 24, Chassis HS-880, HS-881



CHASSIS REMOVAL

1. Remove tuning knob mounting screw (from front of radio), remove cabinet back & 1 chassis mtg screw located next to tuning gang.
2. Spread cabinet slightly at sides until chassis is free from its 4 chassis retainers (part of cabinet). Lift chassis up until it clears the retainers.
3. If necessary, unsolder all chassis connecting leads. If it becomes necessary to remove the earphone jack, unscrew the earphone jack mtg nut (a special tool is available - order Part No. 66A64621).

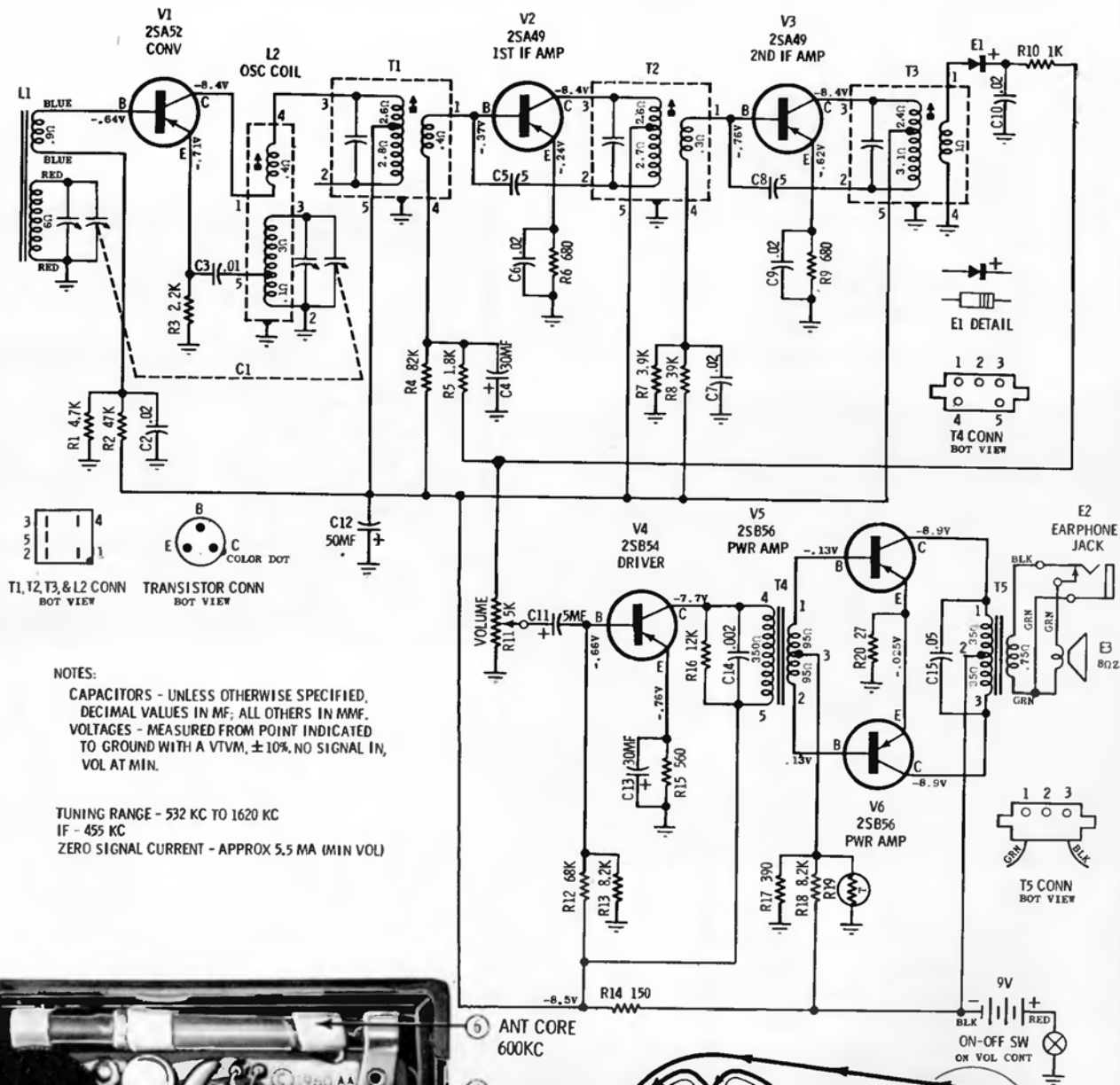
POWER SUPPLY

Operates from one 9-volt battery; use Eveready 206 or equivalent. Battery Drain - 3.5 to 5.5 ma with no input signal and volume at minimum level. To measure battery drain, turn radio off & connect a milliammeter across the terminals of the on-off switch; the meter should read 3.5 to 5.5 ma.

MOTOROLA

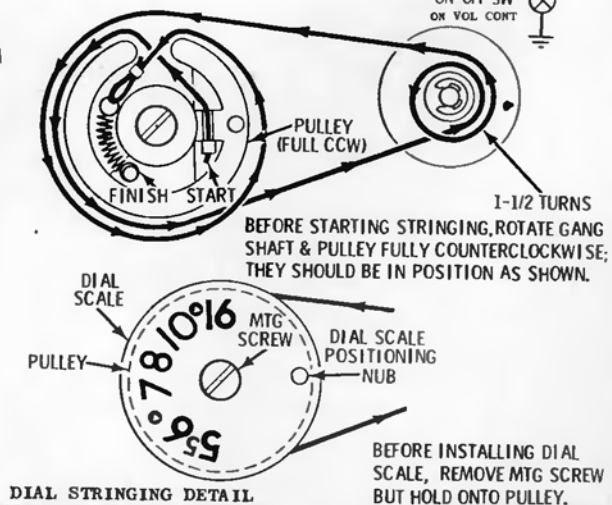
MODEL
X 25

CHASSIS
HS-882



ALIGNMENT POINT LOCATIONS

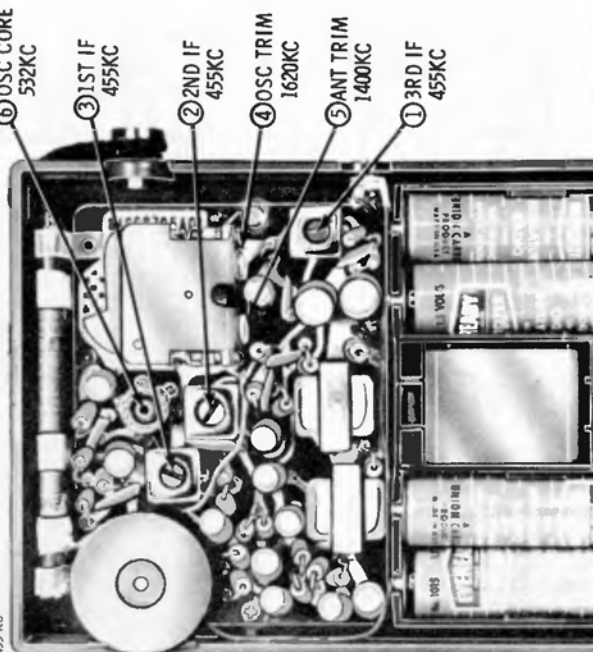
- 8 ANT CORE 600KC
- 4 OSC TRIM 1620KC
- 5 ANT TRIM 1620KC
- 7 OSC CORE 532KC
- 3 1ST IF 455KC
- 2 2ND IF 455KC
- 1 3RD IF 455KC



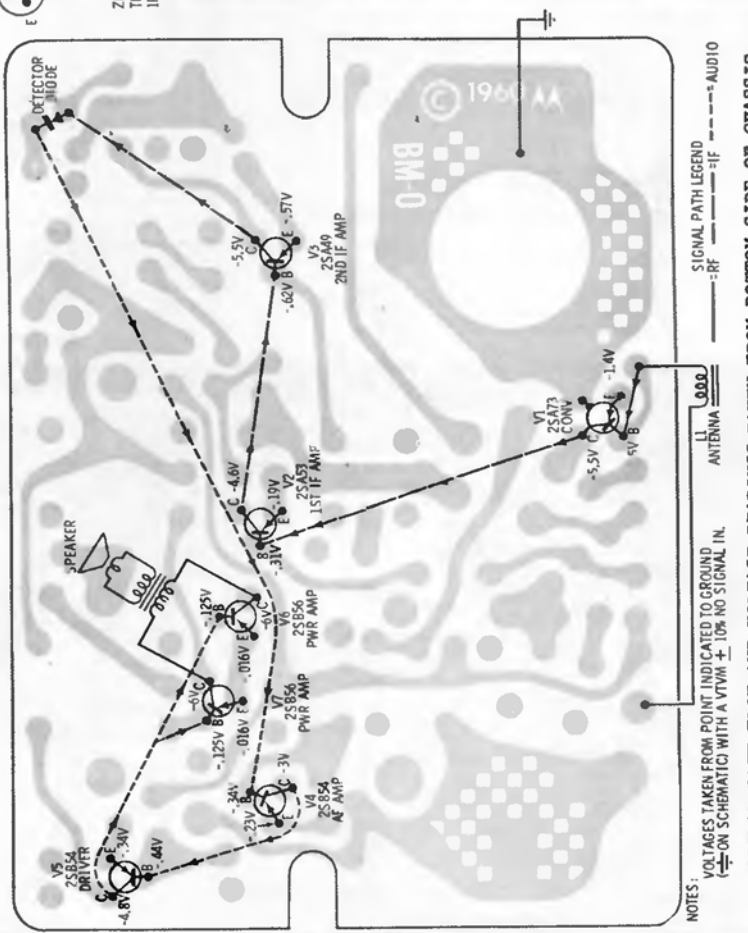
MOTOROLA

TRANSISTOR CONN. BOOT V12R
T4 & T5 CONN. BOOT V12R

NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN M μ F, ALL OTHERS IN M μ F.
VOLTAGES - MEASURED FROM POT INDICATED TO GROUND WITH A VTVM $\pm$ 10% NO SIGNAL IN VOL AT MIN.



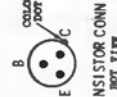
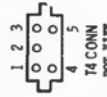
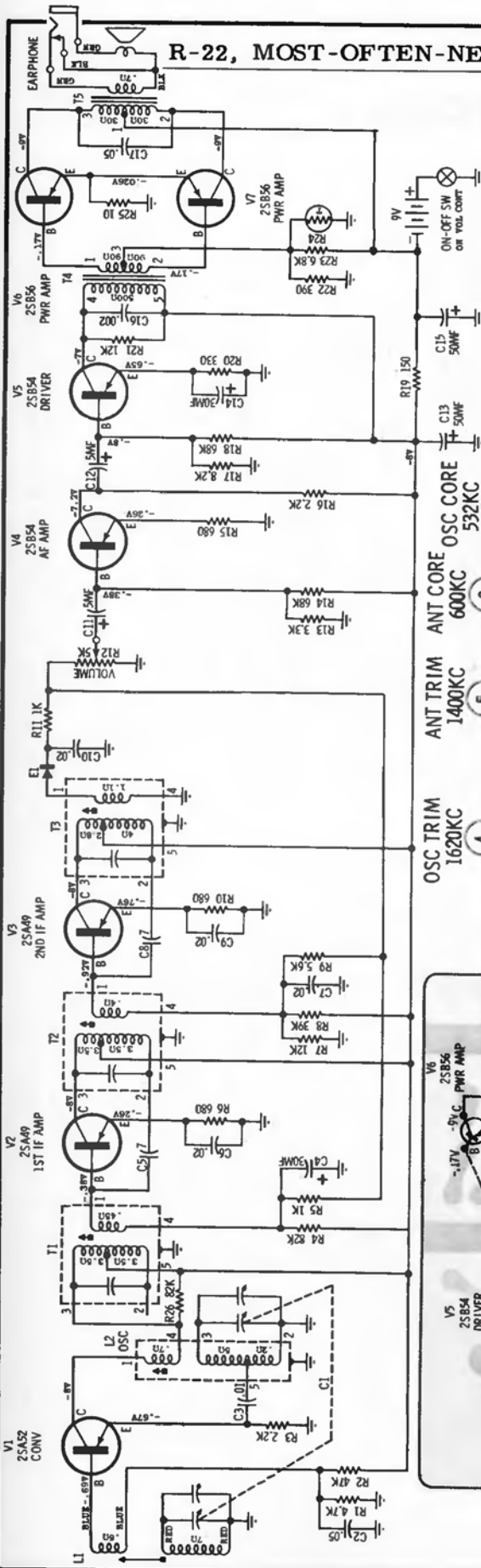
ALIGNMENT POINT LOCATIONS



R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

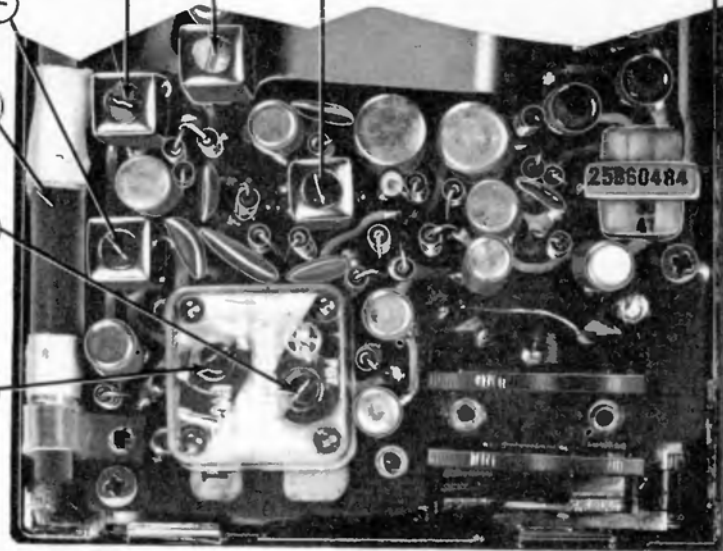
MOTOROLA

MODEL CHASSIS
X27 HS-915

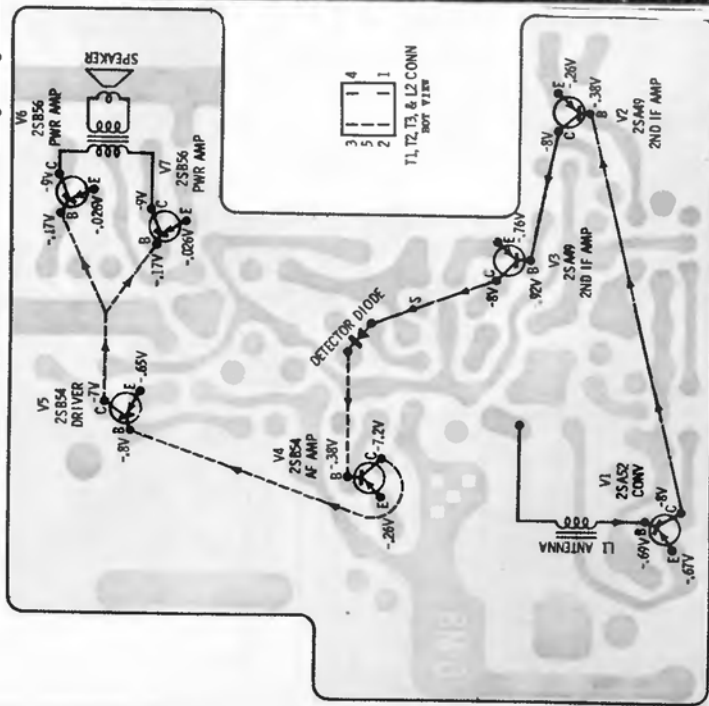


NOTES:
CAPACITORS - Unless otherwise specified, decimal values in MF, all others in MMF.
VOLTAGES - Measured from point indicated to ground with a VTVM, $\pm 10\%$. No signal in, vol at min.
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC
Zero Signal Current - approx. 8.5 MA (Min Vol)

OSC TRIM 1620KC
ANT TRIM 1400KC
ANT CORE 600KC
OSC CORE 532KC
1ST IF 455KC
2ND IF 455KC
3RD IF 455KC

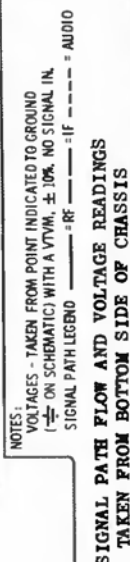
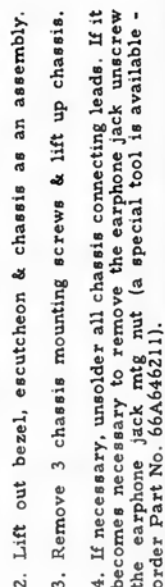


ALIGNMENT POINT LOCATIONS



NOTES:
VOLTAGES - TAKEN FROM POINT INDICATED TO GROUND
($\frac{1}{2}$ ON SCHEMATIC) WITH A VTVM, $\pm 10\%$, NO SIGNAL IN.
SIGNAL PATH LEGEND: — RF — IF — AUDIO

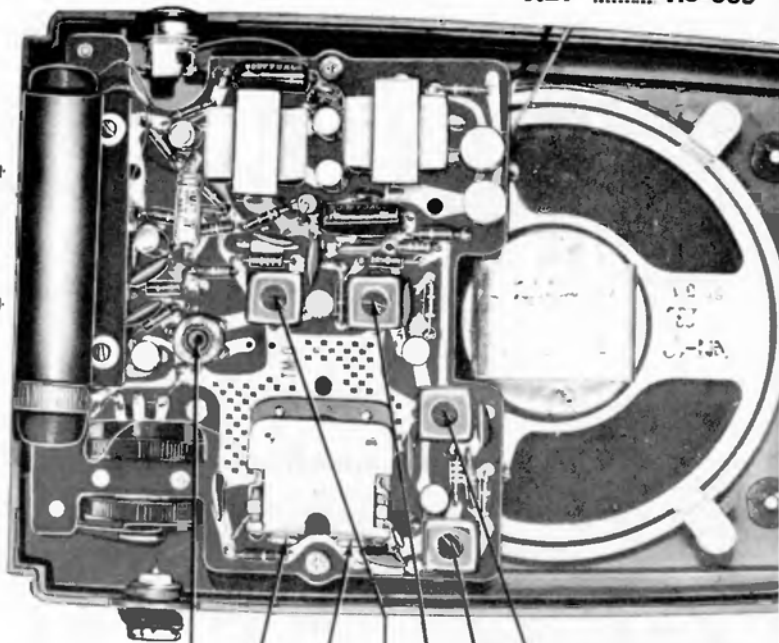
SIGNAL PATH FLOW AND VOLTAGE READINGS TAKEN FROM BOTTOM



R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

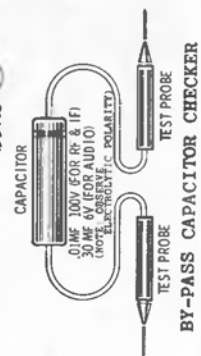
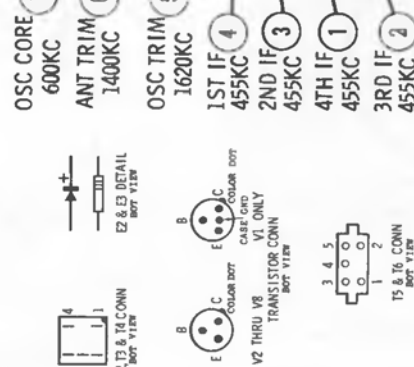
MOTOROLA

MODEL CHASSIS
X29 HS-885



ALIGNMENT POINT LOCATIONS

NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, NOMINAL VALUES IN MICROFARADS.
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, $\pm 10\%$, NO SIGNAL IN, VOL. AT MIN.
ZERO SIGNAL CURRENT - APPROX 10.5MA (MIN VOL)
* PUSHBUTTON SWITCH (BATTERY LIFE INDICATOR) IS LOCATED ON FRONT OF RADIO - PUSH TO CLOSE.
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC



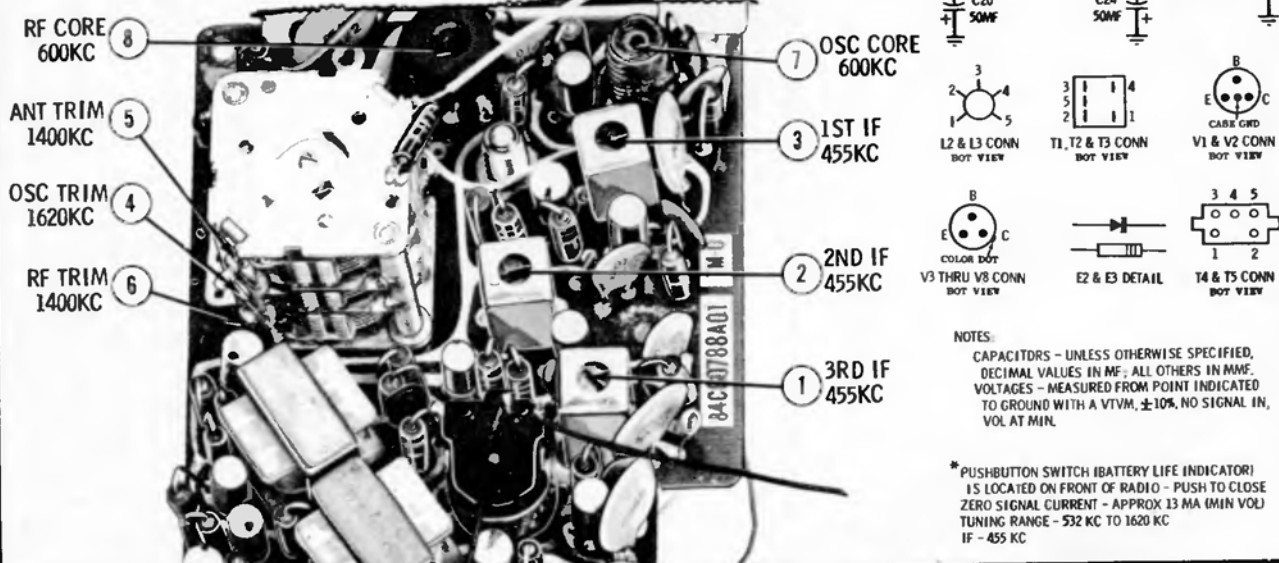
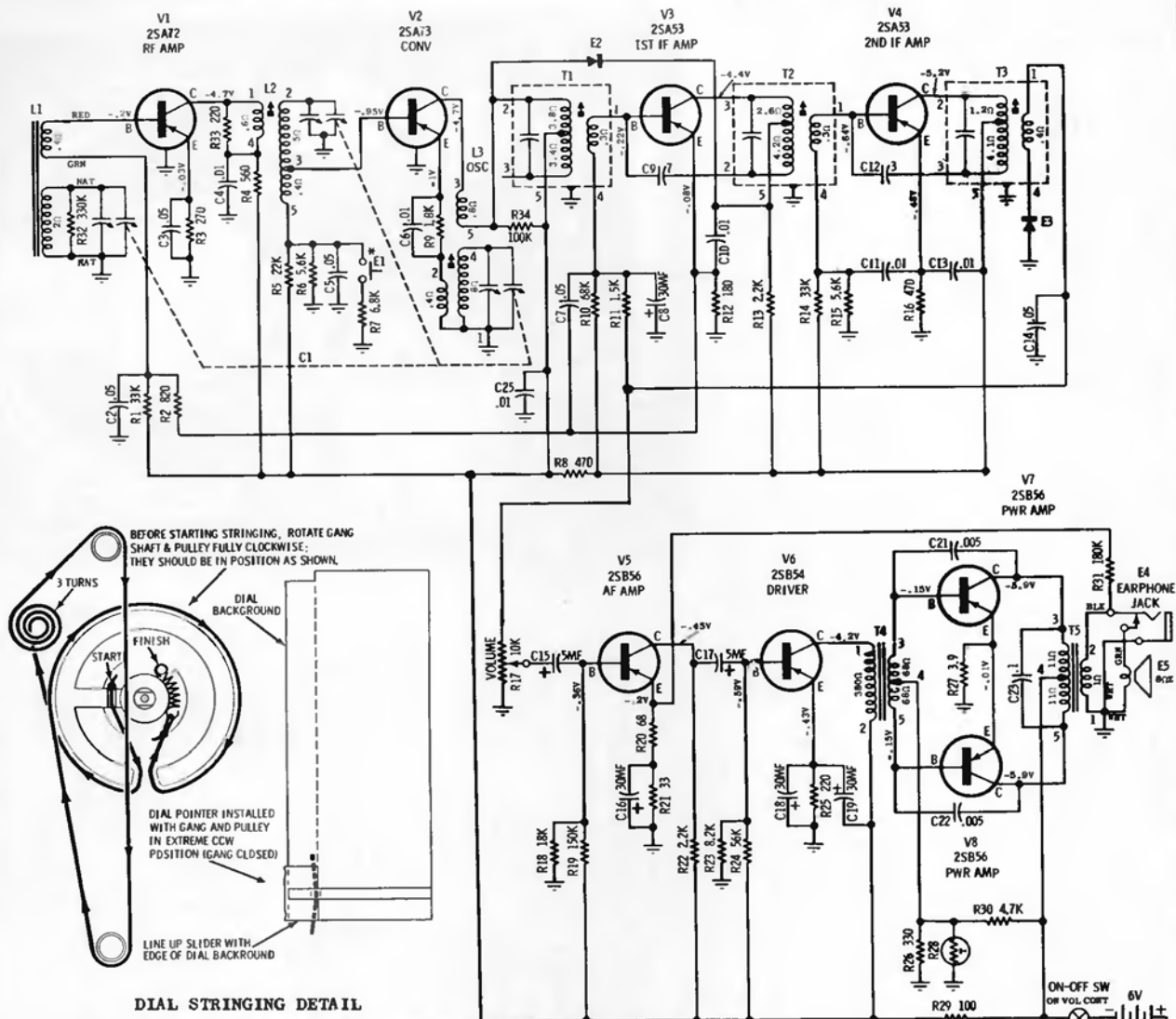
BY-PASS CAPACITOR CHECKER

CHASSIS REMOVAL

1. Rotate cabinet stand (on bottom of cabinet) out of way, then insert coin into slot on cabinet bottom & twist in either direction, lift off battery compartment cover.
2. Remove 1 cabinet back mounting screw (at bottom of battery compartment) & lift up cabinet back.
3. Remove 2 chassis mounting screws & lift up chassis.
4. If necessary, unsolder all chassis connecting leads. If it becomes necessary to remove the earphone jack, unscrew the earphone jack mtg nut (a special tool is available - order Part No. 66A64211).

MOTOROLA

MODEL CHASSIS
X31 HS-894



ALIGNMENT POINT LOCATIONS

MOTOROLA

12BE6
CONV

12BA6
IF AMP

12AV6
T-AVC-AF AMP

50C5
PWR AMP



MODEL A15, A16

1. Remove cabinet back - 2 screws hold it in place.
2. Remove chassis mtg. screw at base of chassis.
3. Pull off volume knob ONLY (Do not pull captivated tuning knob).
4. From front, unscrew palnut under volume control knob.
5. Unsolder appropriate leads to slide chassis out of tuning knob & cabinet.

MODEL A17, C15, C16, C17

1. Remove cabinet back - 2 screws hold it in place.
2. Pull off volume & tuning knobs.
3. From rear, remove chassis mtg. screw located on volume control mounting bracket.
4. Unsolder appropriate leads to slide chassis from cabinet.

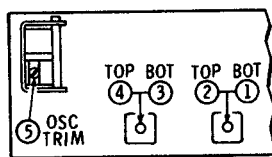
MODEL C18

1. Remove cabinet back - 2 screws hold it in place.
2. Pull off volume & tuning knobs.
3. From front, unscrew palnut under volume control knob.
4. Unsolder antenna leads.
5. Remove 3 chassis mtg. screws.
6. Unsolder appropriate leads to slide chassis from cabinet.

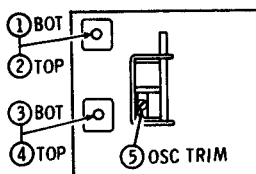
ALIGNMENT

Use an isolation transformer between the power line and the receiver. If not available, connect low side of generator to B- through a .1 mf capacitor. Connect a low range output meter across speaker voice coil and set volume control to max. Attenuate generator output to maintain 50 milliwatts on output meter to prevent overloading. (50 milliwatts is 40 volts across 3.2 ohm output (A15-A16) or .64 volts across 8 ohm output (A17, C15 to C19)).

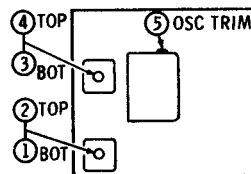
STEP	GENERATOR CONNECTION	GENERATOR FREQ. (400 cycle mod)	GANG SETTING	ADJUST	REMARKS
A15 to A17 C15 to C19					
IF ALIGNMENT					
1	Grid of conv (Pin 7 12BE6) thru .1 mf & B-	455 Kc	Fully opened	1, 2, 3 & 4	Adjust for max.
RF ALIGNMENT					
2	"	1620 Kc	Fully opened	5	Adjust for max.



MODELS A15 & 16

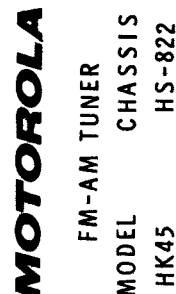


MODELS A17, C15, 16, 17 8 19



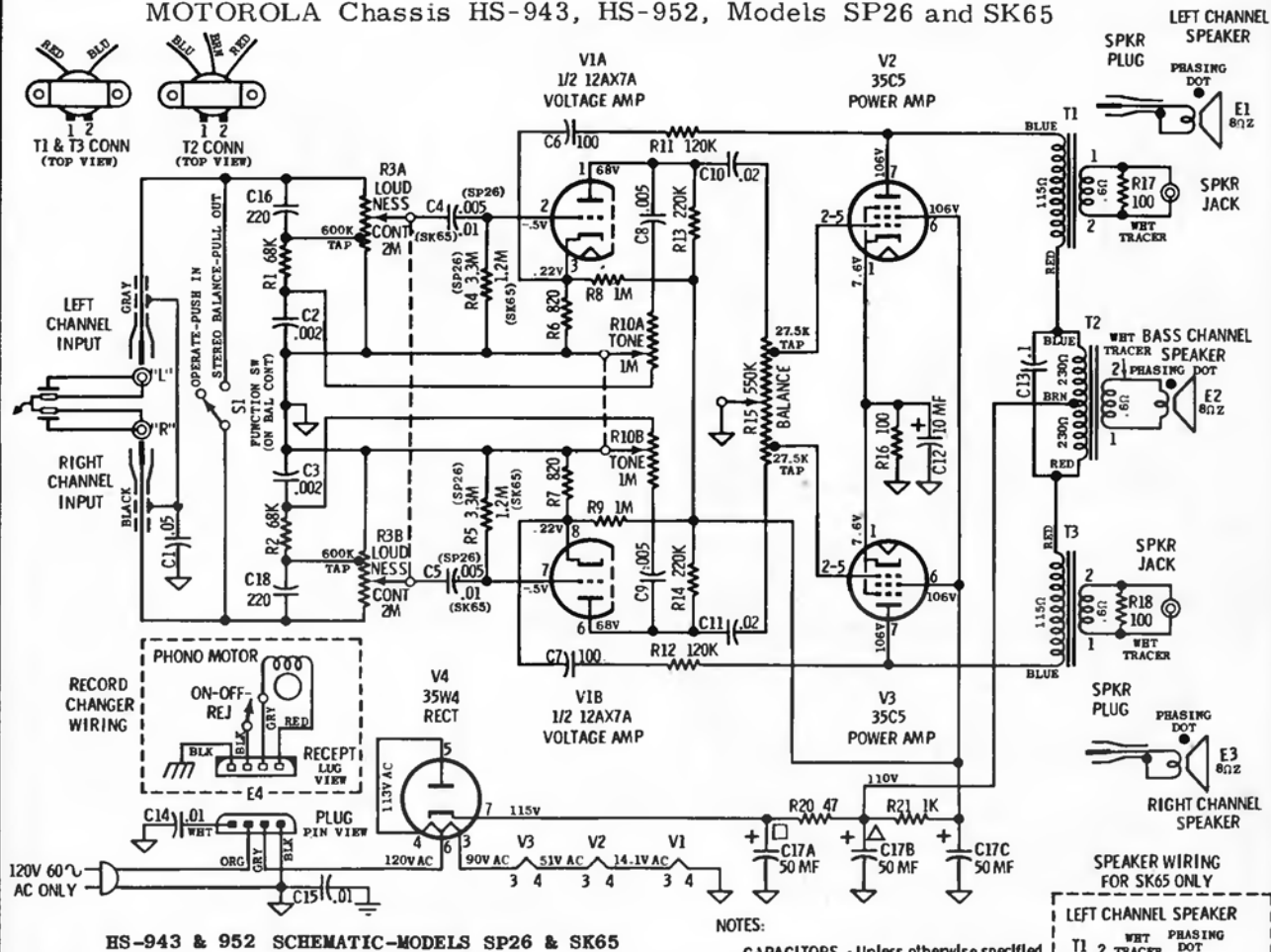
MODEL C18

MOTOROLA FM-AM Tuner, Model HK45, Chassis HS-822

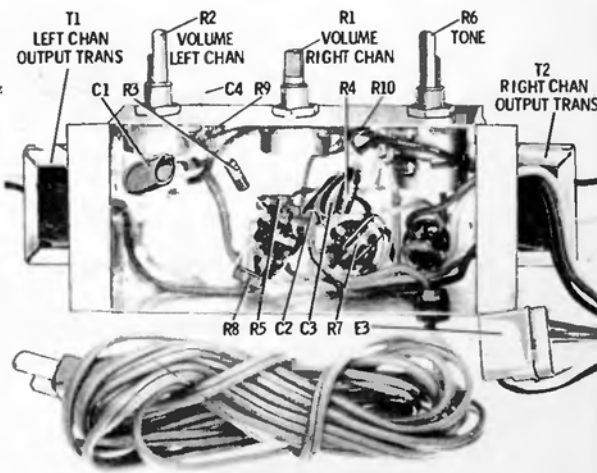
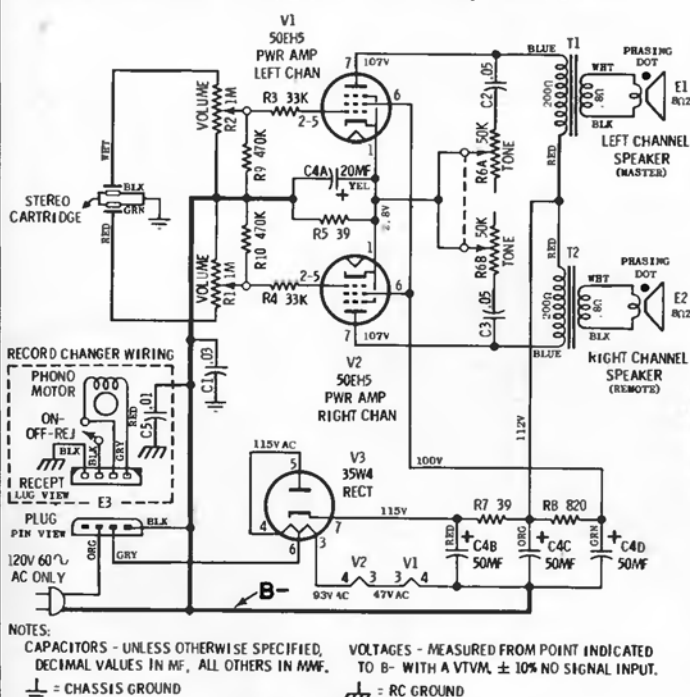


VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

MOTOROLA Chassis HS-943, HS-952, Models SP26 and SK65

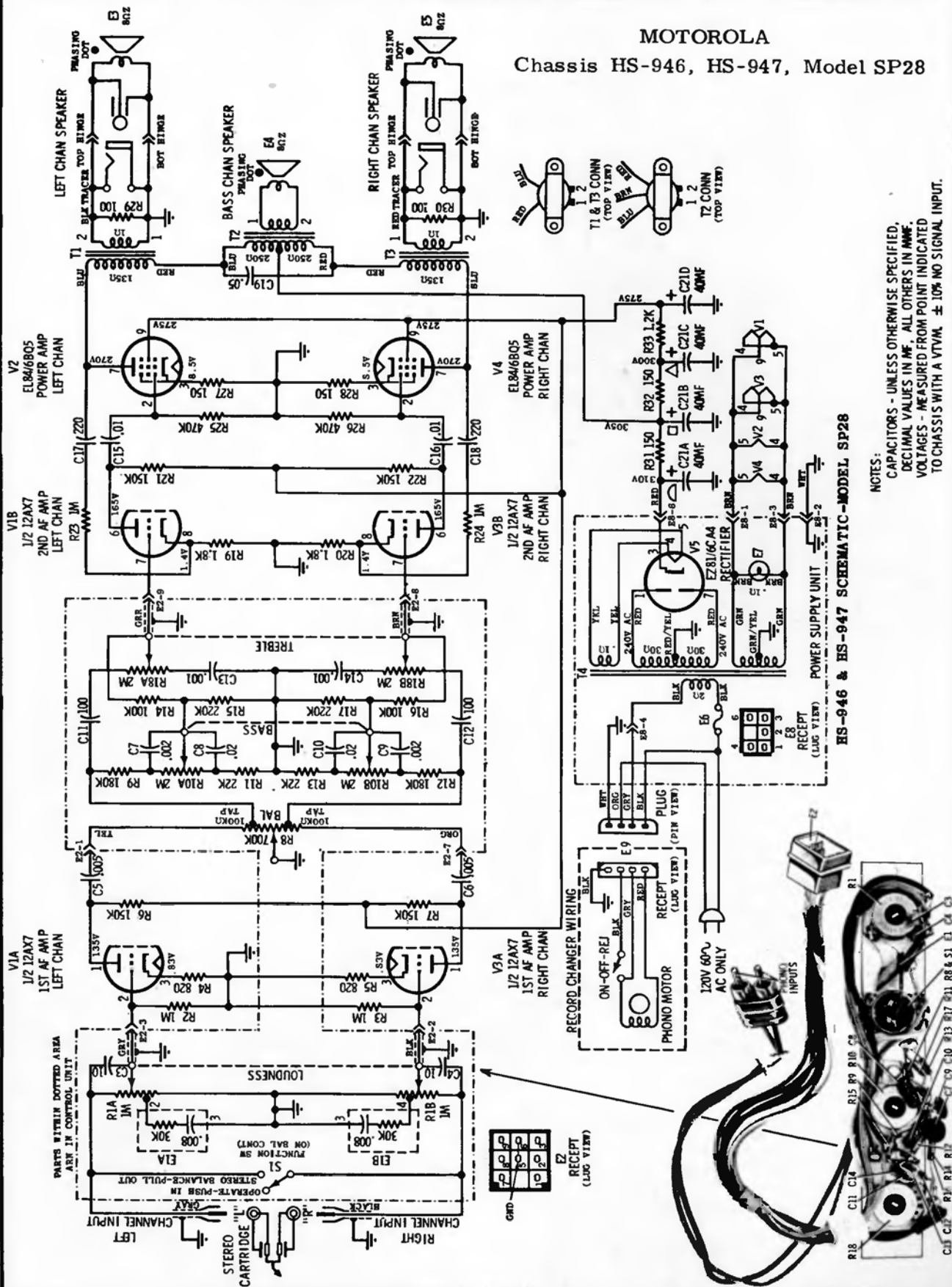


MOTOROLA Chassis HS-942, Model SP25





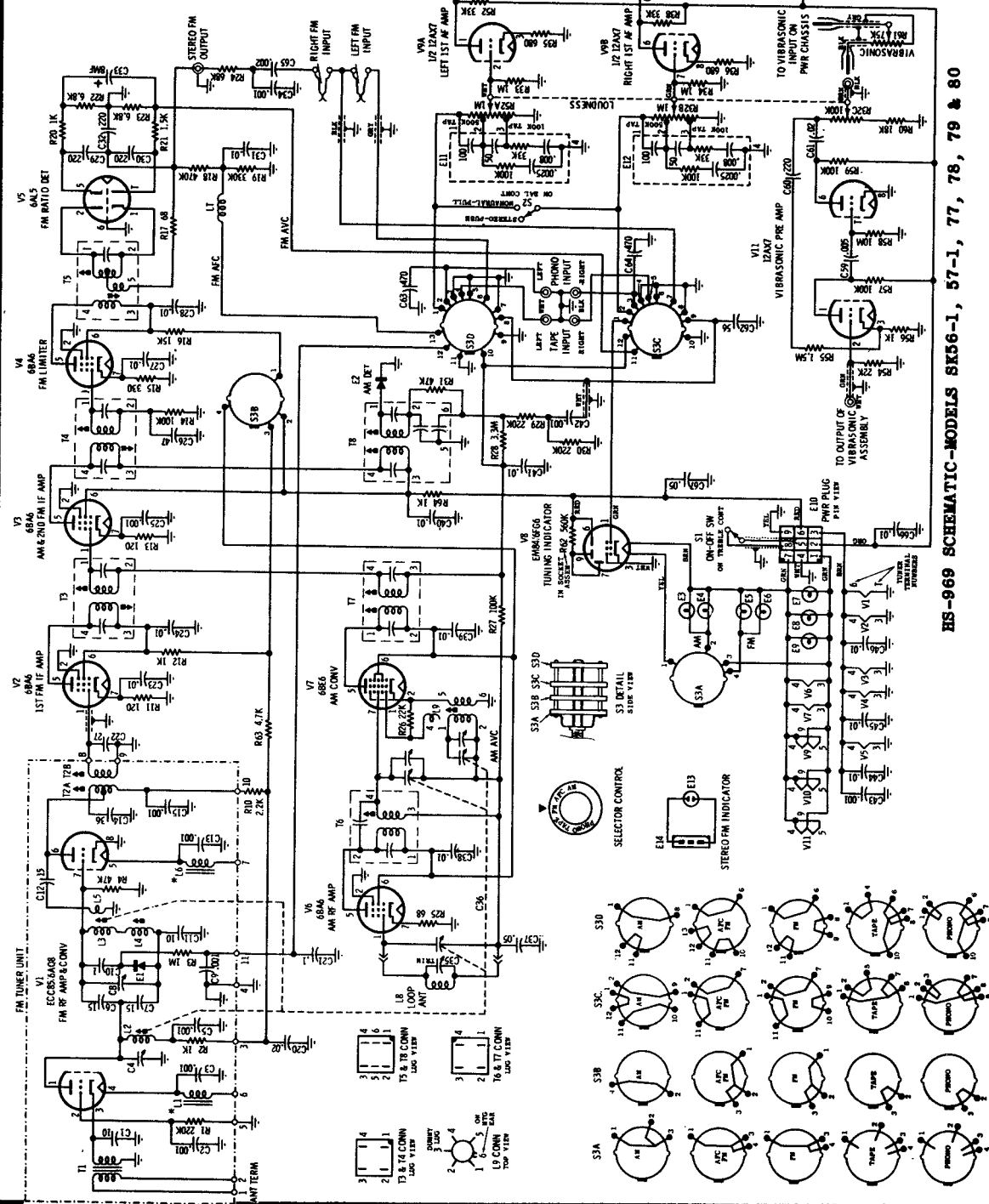
MOTOROLA
Chassis HS-946, HS-947, Model SP28





Chassis HS-948, HS-949, HS-950, HS-951,
Models SP29 and SP30

NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED,
DECIMAL VALUES IN NF: ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED
TO CHASSIS WITH A VTVM $\pm 10\%$ NO SIGNAL INPUT.
TUNING RANGE - AM 535KC TO 1620KC (IF - 455KC).
FM 88MC TO 108MC (IF - 10.7MC)
* DENOTES FERRITE BEAD

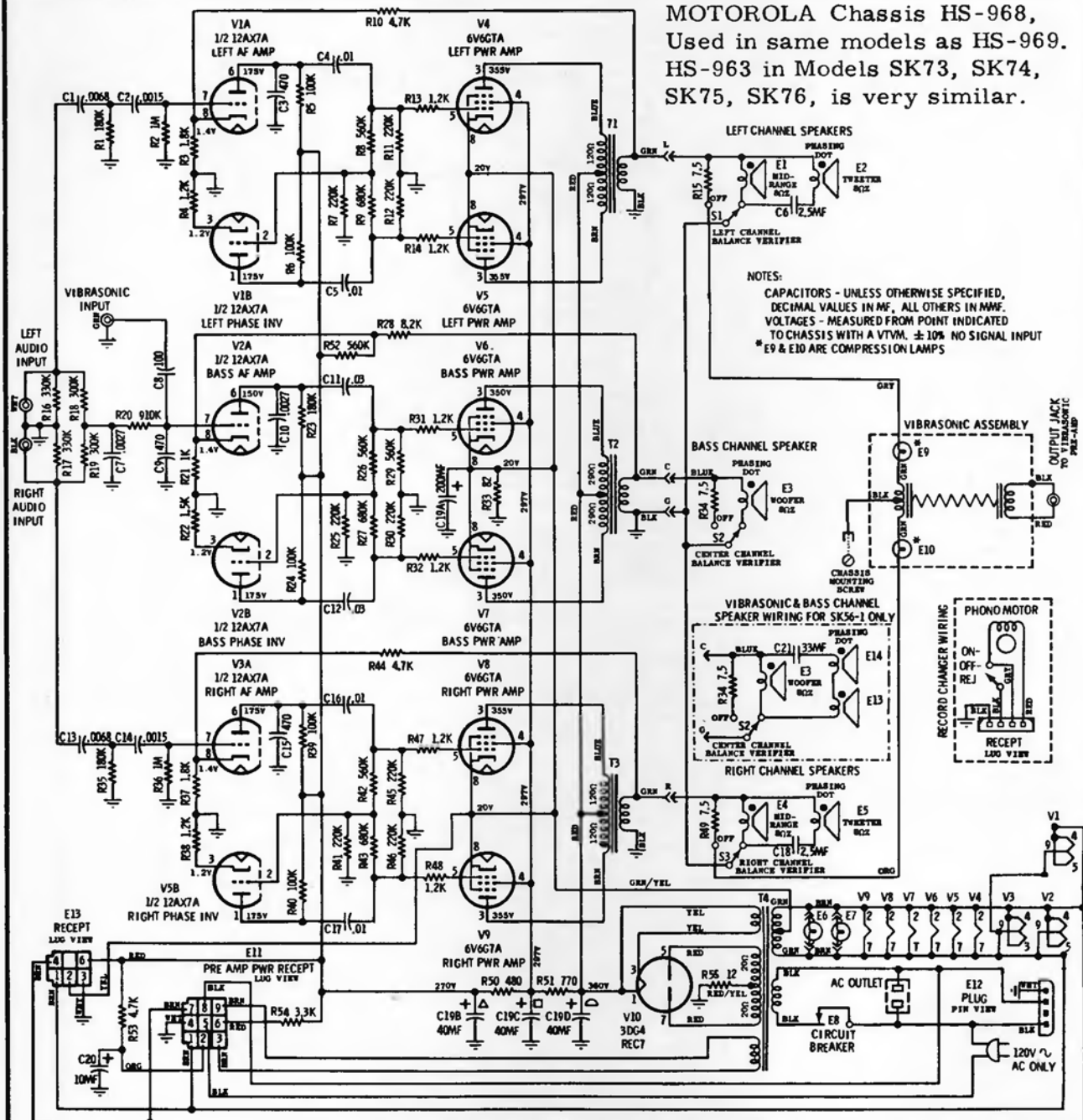


HS-969 SCHEMATIC-MODELS SK56-1, 57-1, 77, 78, 79 & 80

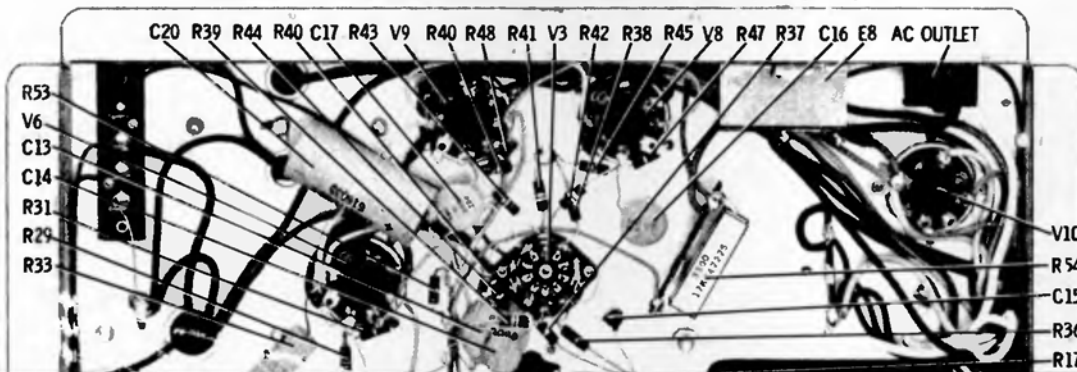
MOTOROLA Chassis HS-969, Models SK56-1, SK57-1, SK77, SK78, SK79, SK80

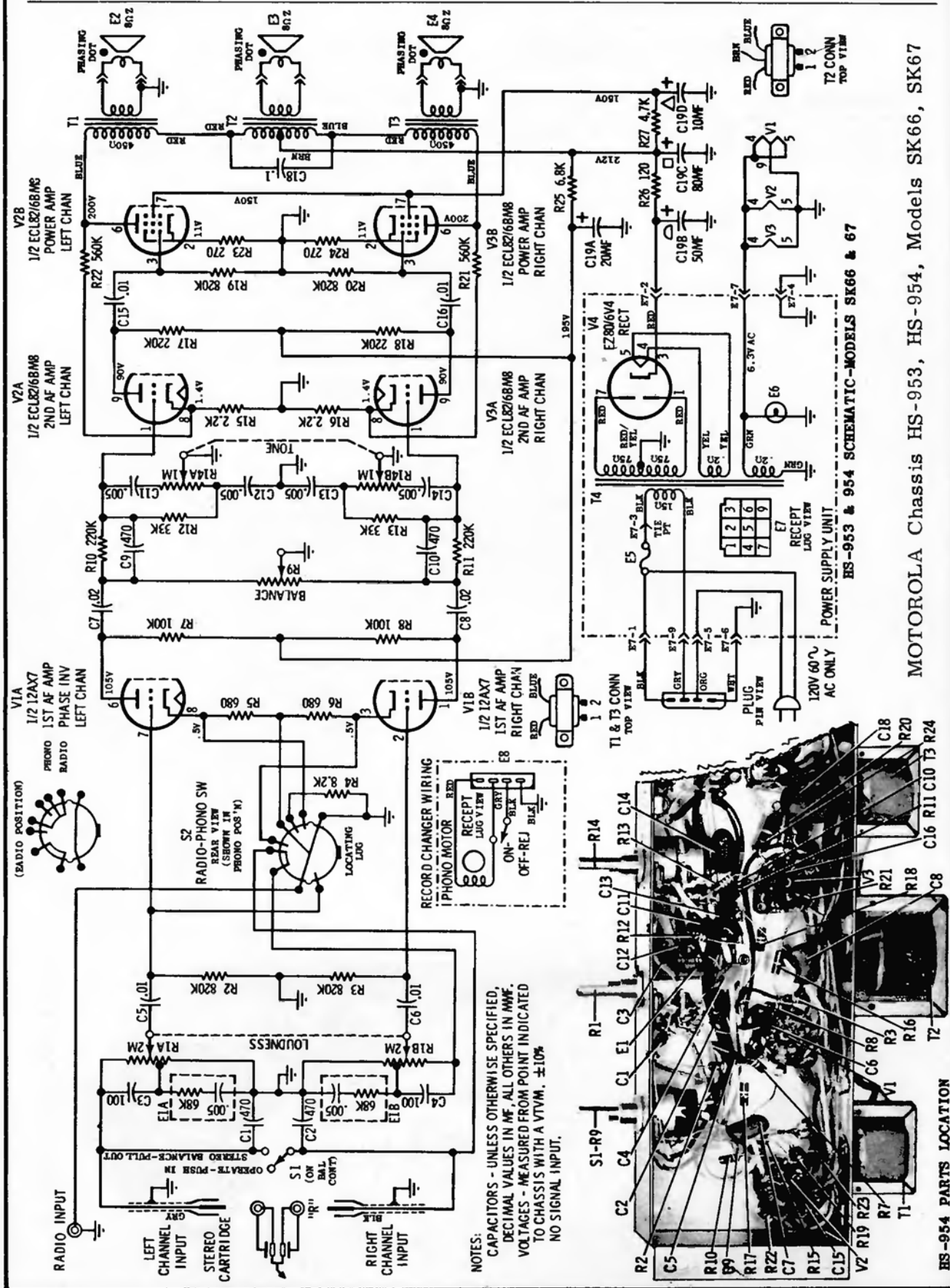
VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

MOTOROLA Chassis HS-968, Used in same models as HS-969. HS-963 in Models SK73, SK74, SK75, SK76, is very similar.



CHASSIS HS-968 SCHEMATIC-MODELS SK56-1, 57-1, 77, 7S, 79 & 80





MOTOROLA Chassis HS-953, HS-954, Models SK66, SK67

Packard Bell

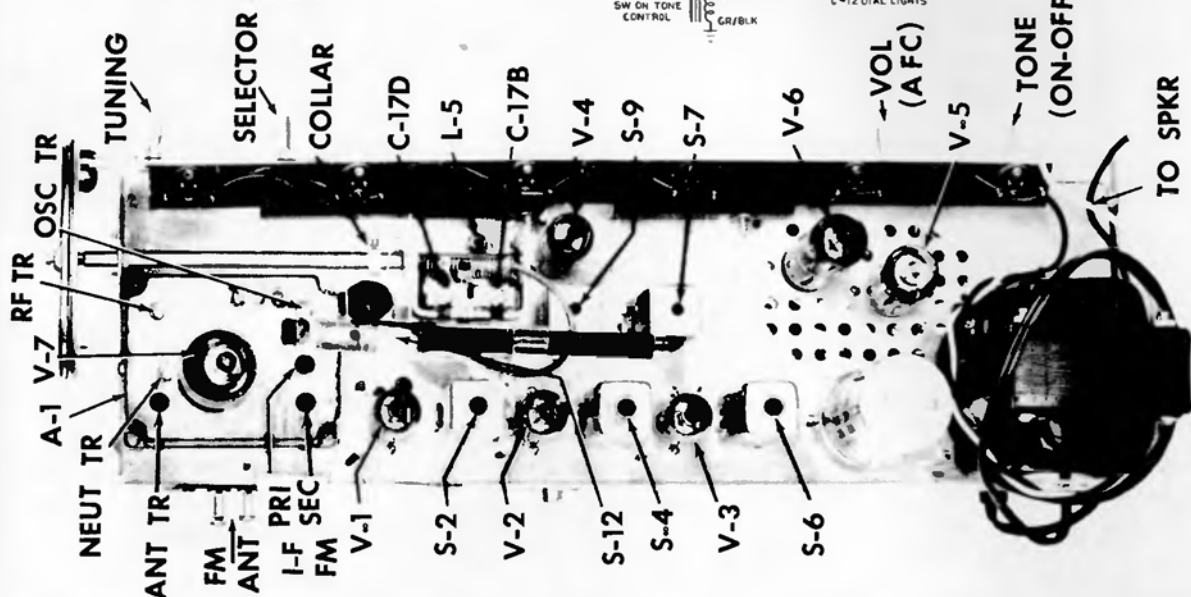
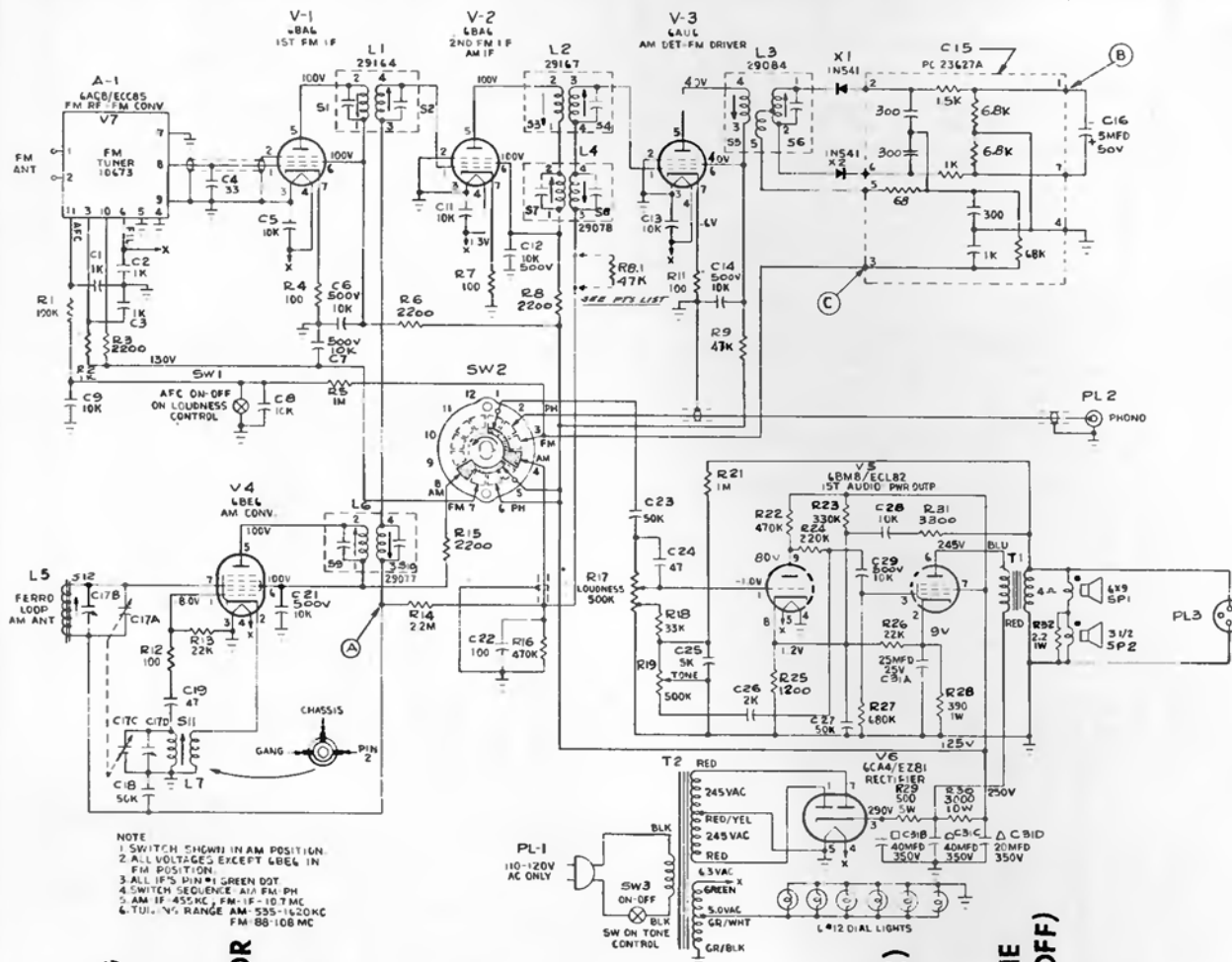
Model 7R4 is an AM-FM radio receiver containing seven electron tubes and three crystal diodes. The FM section contains AFC circuitry. A phono input socket is provided at the rear of the set.

MODEL 7R4 RADIO

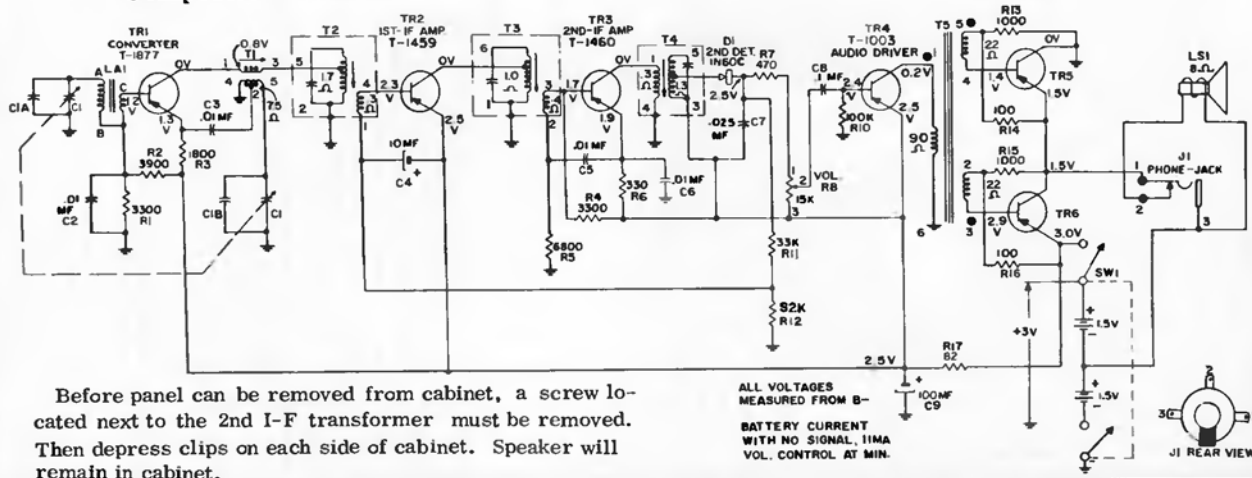
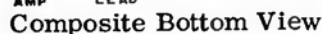
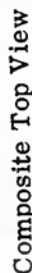
Frequencies

AM radio: 530 kc to 1620 kc; I-F 455 kc

FM radio: 87.5 mc to 108.5 mc; I-F 10.70 mc



MODEL T-61, CODE 124



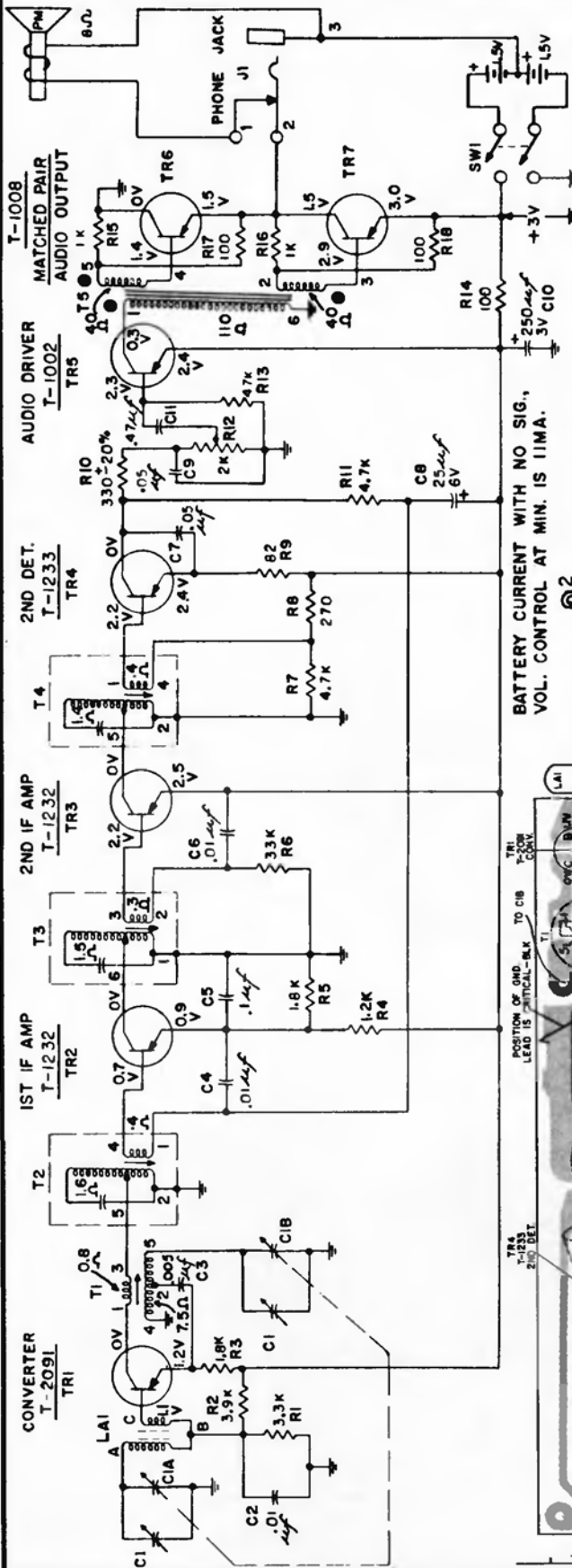
Before panel can be removed from cabinet, a screw located next to the 2nd I-F transformer must be removed. Then depress clips on each side of cabinet. Speaker will remain in cabinet.

STEP	SIGNAL GENERATOR	RADIO			ADJUST
		CONNECTION TO RADIO	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Connect signal generator through a .1-uf. condenser to ant. section of gang.	455 kc.	Tuning gang fully open.	Adjust for maximum output in order given.	T4—3rd I.F. T3—2nd I.F. T2—1st I.F.
2	Use radiating loop. (See NOTE 1 below)	600 kc.	600 kc.	Adjust for maximum output. Rock tuning gang while making this adjustment.	T1—osc. core
3	Same as step 2.	1620 kc.	1620 kc. (Tuning gang fully open)	Adjust for maximum output.	C1B—osc. trimmer
4	Same as step 2.	1400 kc.	1400 kc.	Adjust for maximum output.	C1A—antenna trimmer
5	Repeat steps 2, 3 and 4 until no further improvement is obtained. Always stop on step 4.				

NOTE 1. Use a 6-to-8-turn, 6-inch-diameter loop made up of insulated wire. Connect to generator terminals, and place about one foot from radio loop.

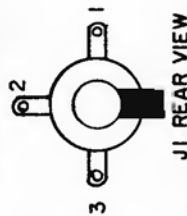
PHILCO

MODEL T-77, CODE 124



FREQUENCY COVERAGE—535 to 1620 KC.
INTERMEDIATE FREQUENCY—455 KC.

BATTERY CURRENT WITH NO SIG.,
VOL. CONTROL AT MIN. IS 11MA.



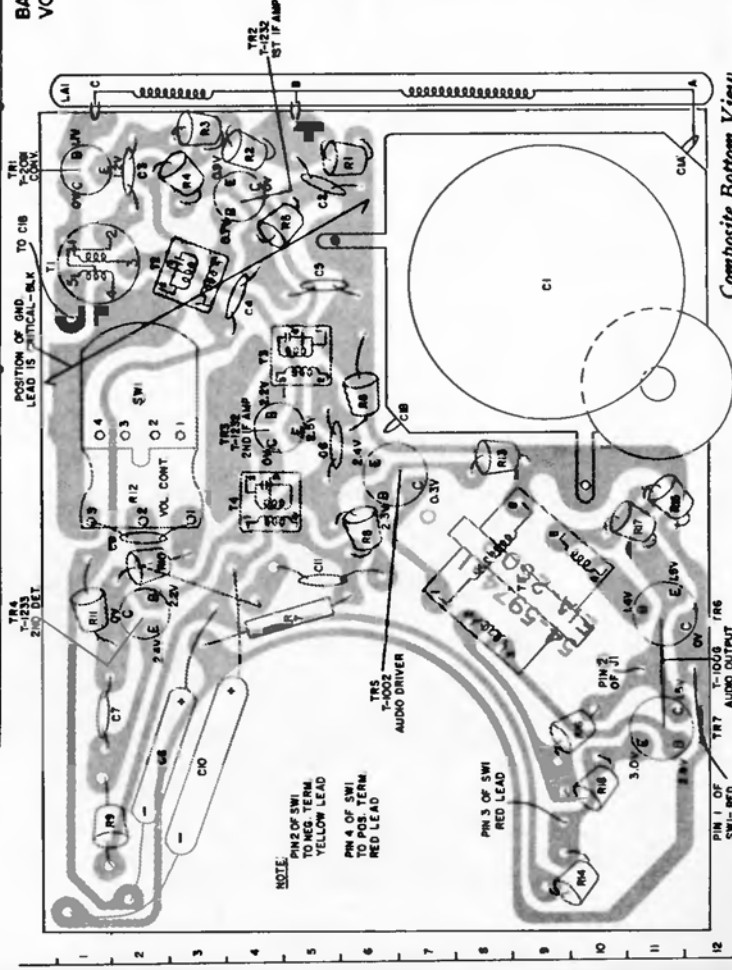
SERVICE NOTES

When signal tracing, inject signal at transistor collector and limit input to keep signal across speaker below .6 volt.

Normally, the transistors should be the last item suspected. If C10 opens serious audio oscillation will result.

NOTE: Panel Removal

A screw located close to the 2nd i-f transformer (C5 graph location) must be removed. Then spread side of cabinet at volume control and pull panel outward. If volume knob fails to clear cabinet, it may be released from the volume control shaft. To do this, insert a thin blade between the volume control knob and the plastic cabinet and pull the panel out.



NOTE:

PIN 2 OF SW1
TO NEG. TERM.
YELLOW LEAD

PIN 4 OF SW1
TO POS. TERM.
RED LEAD

PIN 3 OF SW1
RED LEAD

PIN 1 OF
SW1-RED
LEAD

PIN 1 OF
TR7
AUDIO OUTPUT
(MATCHED PAIR)

Composite Bottom View

PHILCO TRANSISTOR RADIO

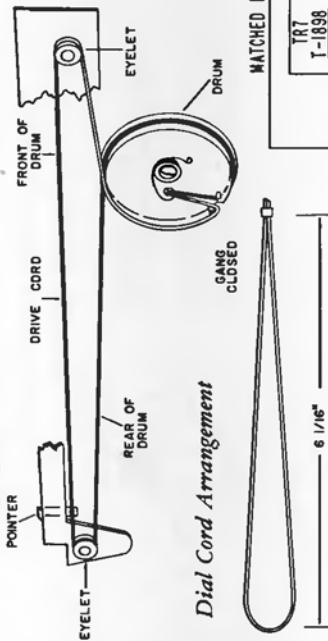
MODEL T-88, CODE 124

NOTES:
ALL RESISTOR VALUES EXPRESSED IN OHMS AND ALL CAPACITOR VALUES EXPRESSED IN MICROFARADS UNLESS OTHERWISE NOTED.
WHEN CHECKING DC RESISTANCES POSITIVE LEAD GOES TO BASE OF TRANSISTORS WITH NO SIGNAL, VOLUME CONTROL AT MINIMUM, CURRENT = 9 MILLIAMPS

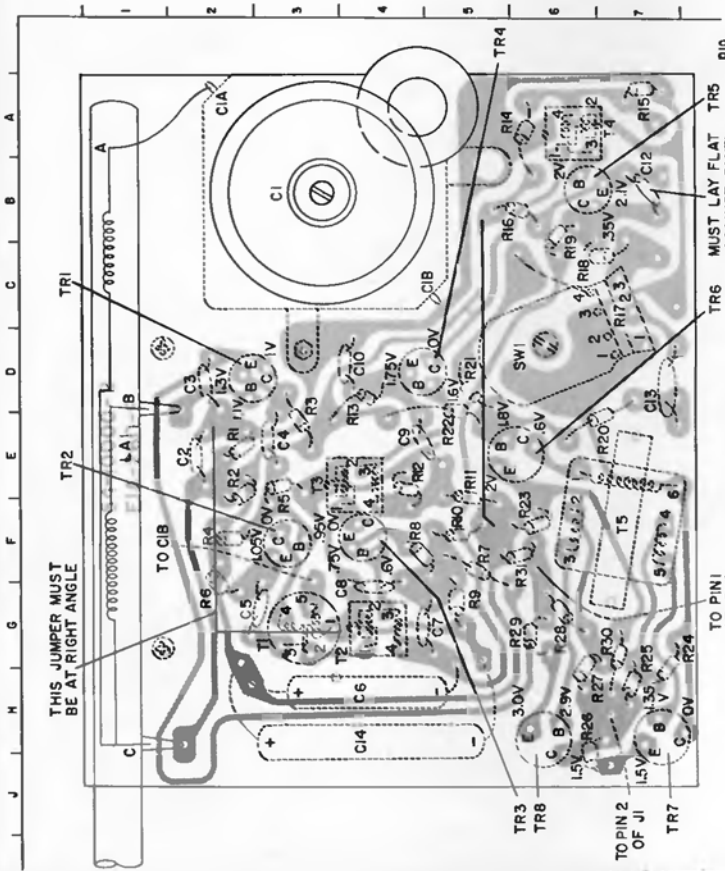


FREQUENCY COVERAGE—535 to 1620 KC.
INTERMEDIATE FREQUENCY—455 KC.

When replacing driver transistor TR6, current limiting resistor R22 must be of proper value to provide 2.1 ma collector current with the transistor employed. Refer to parts list for the replacement transistor which is shipped with the proper resistor.

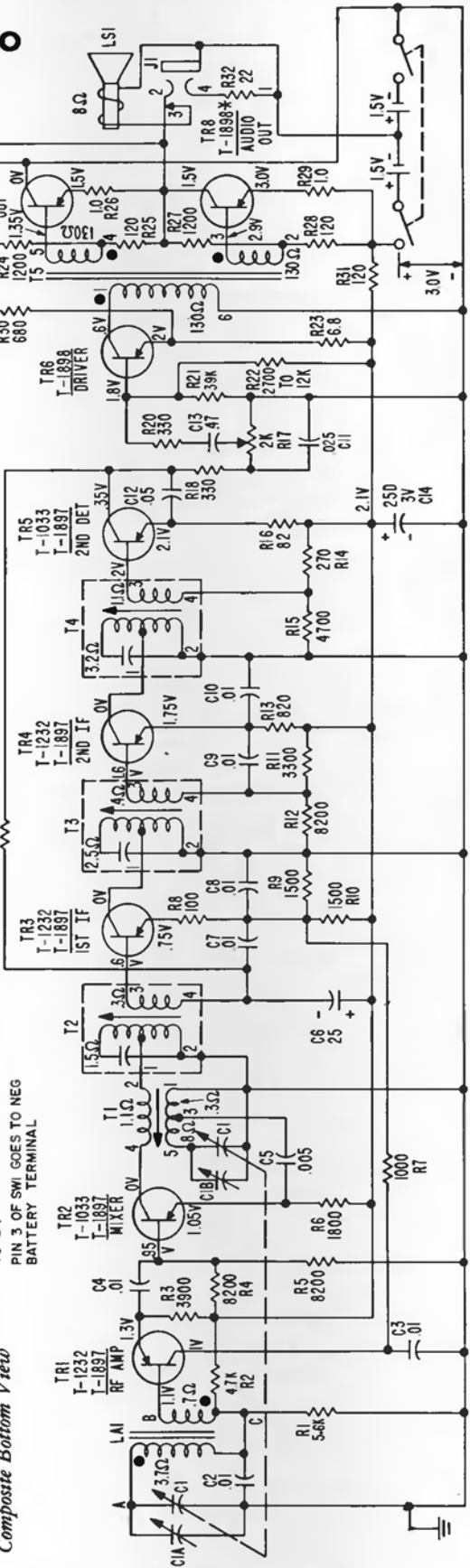


Dial Cord Arrangement



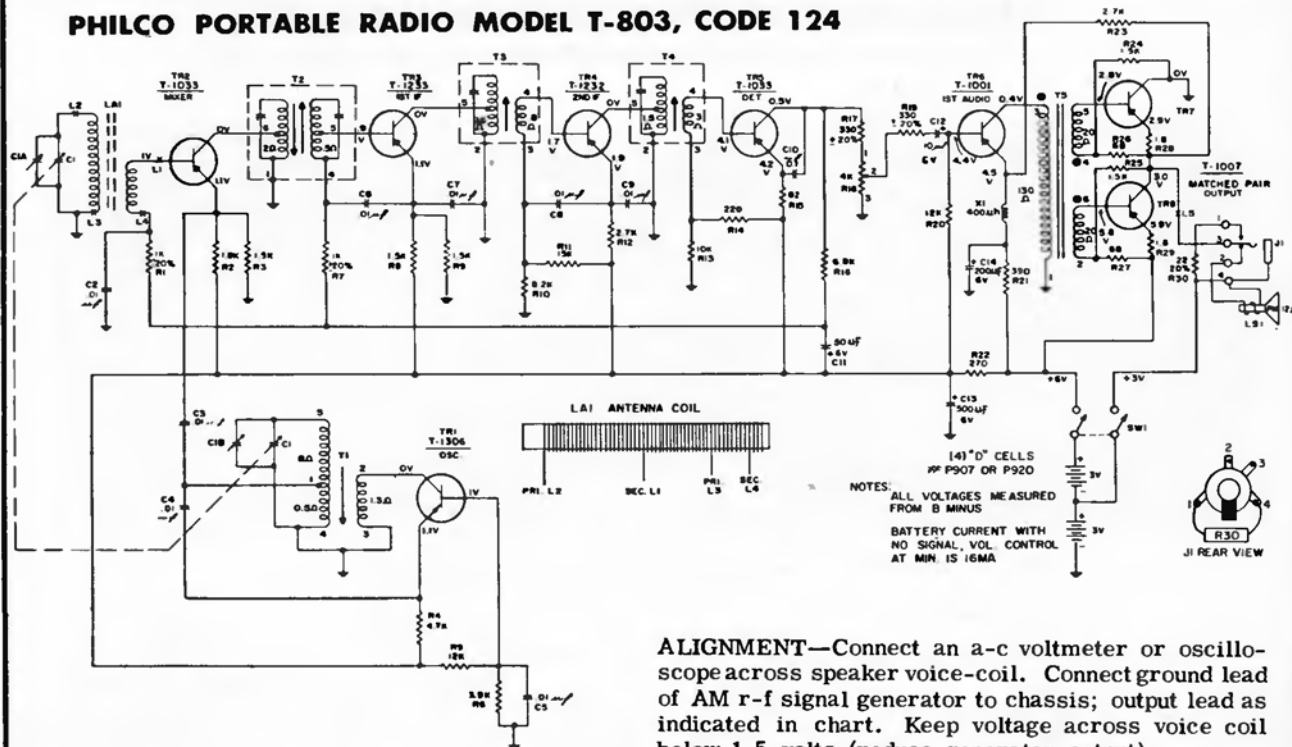
PIN 2 OF SW1 GOES TO B+
PIN 3 OF SW1 GOES TO NEG BATTERY TERMINAL

Composite Bottom View



PHILCO PORTABLE RADIO TRANSISTOR MODEL T-88, CODE 124

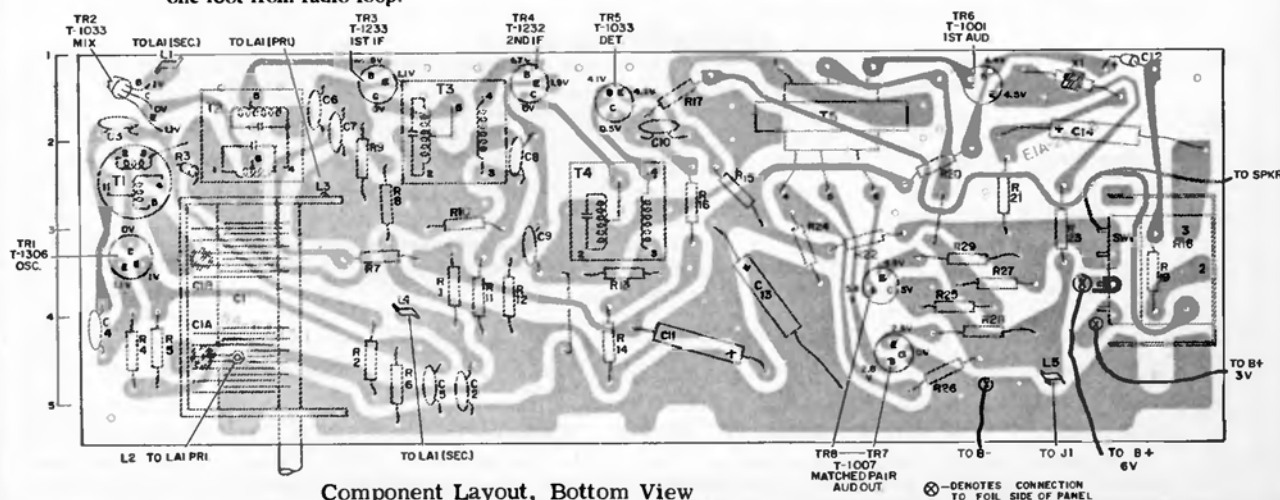
PHILCO PORTABLE RADIO MODEL T-803, CODE 124



ALIGNMENT—Connect an a-c voltmeter or oscilloscope across speaker voice-coil. Connect ground lead of AM r-f signal generator to chassis; output lead as indicated in chart. Keep voltage across voice coil below 1.5 volts (reduce generator output).

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Connect signal generator through a .1-uf. condenser to ant. section of gang.	455 kc.	Tuning gang fully open.	Adjust for maximum output in order given.	T4—3rd i-f pri. T3—2nd i-f pri. T2—bot. core T2—top core
2	Use radiating loop. (See NOTE 1 below).	600 kc.	600 kc.	Adj. for maximum output. Rock tuning gang while making adj.	T1—osc. core
3	Same as step 2.	1620 kc.	1620 kc. (Tuning gang fully open)	Adjust for maximum output.	C1B—osc. trim.
4	Same as step 2.	1400 kc.	1400 kc.	Adjust for maximum output.	C1A—ant. trim.
5	Repeat steps 2, 3 and 4 until no further improvement is obtained. Always stop on step 4.				

NOTE 1. Use a 6-to-8-turn, 6-inch diameter loop made up of insulated wire. Connect to generator terminals, and place about one foot from radio loop.



PHILCO MODELS K-777, K-778, K-849 AND K-850

(Service material below and on page 81, at right)

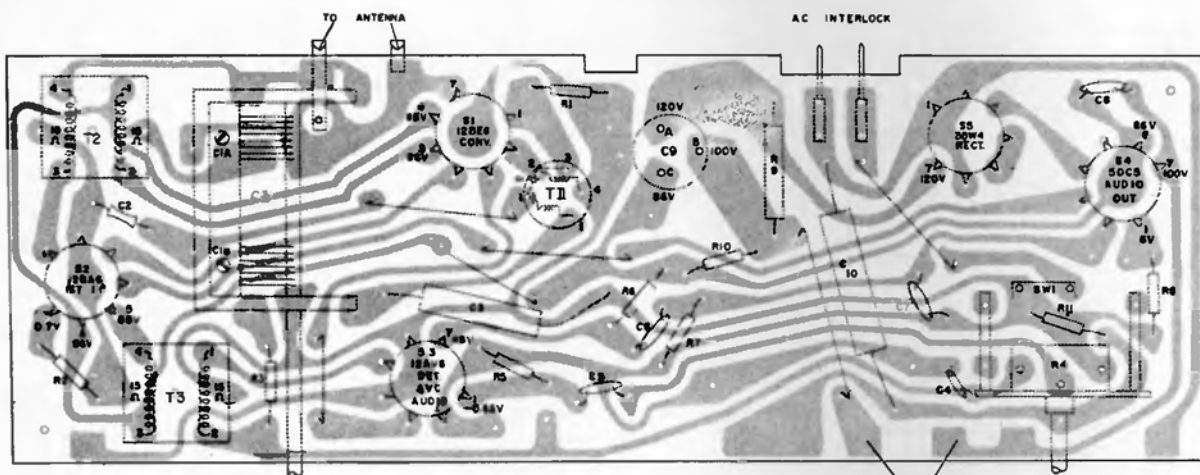


Figure 1. Bottom View of Perma Circuit Panel Component Layout Models K-849, K-850

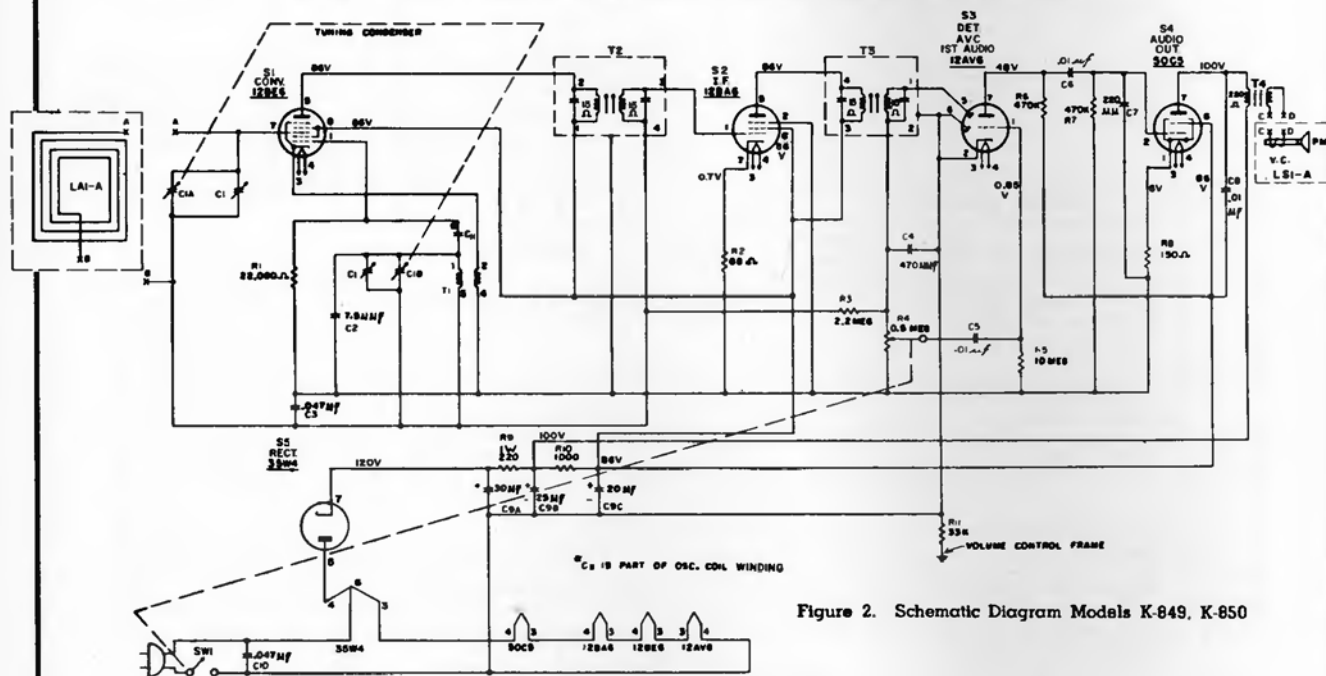


Figure 2. Schematic Diagram Models K-849, K-850

ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1.	Ground lead to B—; output lead through a .1 mf condenser to grid (pin 7) of 12BE6 or top of r-f tuning condenser.	455 kc.	Tuning gang fully open.	Adjust tuning cores, in order given, for maximum output.	T3—top T3—bottom T2—bottom T2—top
2.	Radiating loop (See Note below).	1620 kc.	1620 kc.	Adjust for maximum output.	C1-B—osc.
3.	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum output.	C1-A—aerial

NOTE: Make up a 6-8 turn, 6 inch diameter loop from insulated wire, connect to signal-generator leads, and place near radio loop.

PHILCO HOME RADIO MODELS K-777, K-778, K-849 AND K-850

(For alignment and other service data see page 80, at left)

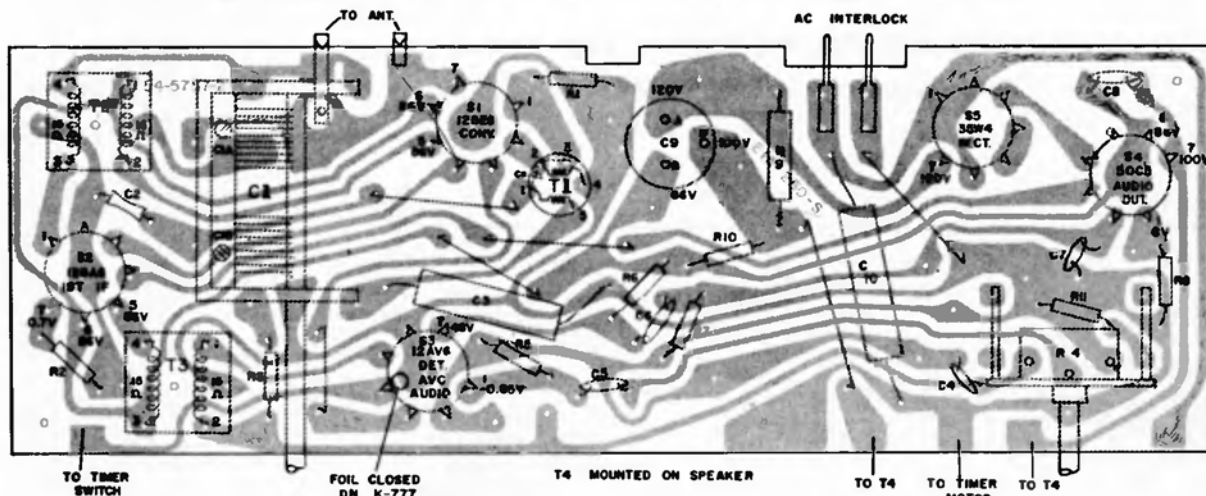


Figure 3. Bottom View of Perma Circuit Panel Component Layout Model K-778

SLEEP SWITCH—Model K-778 employs a "sleep" switch which is set to turn the radio off after a desired length of time (up to 60 minutes).

LULLAWAY—All clock radio models except K-777 have the on-off switch in the filament return line. When the switch is opened, the set fades out rather than cuts off. Model K-777 has a conventional switching arrangement located in the B—line.

MODELS K-777 and K-778 have similar circuitry with slight variations as shown.

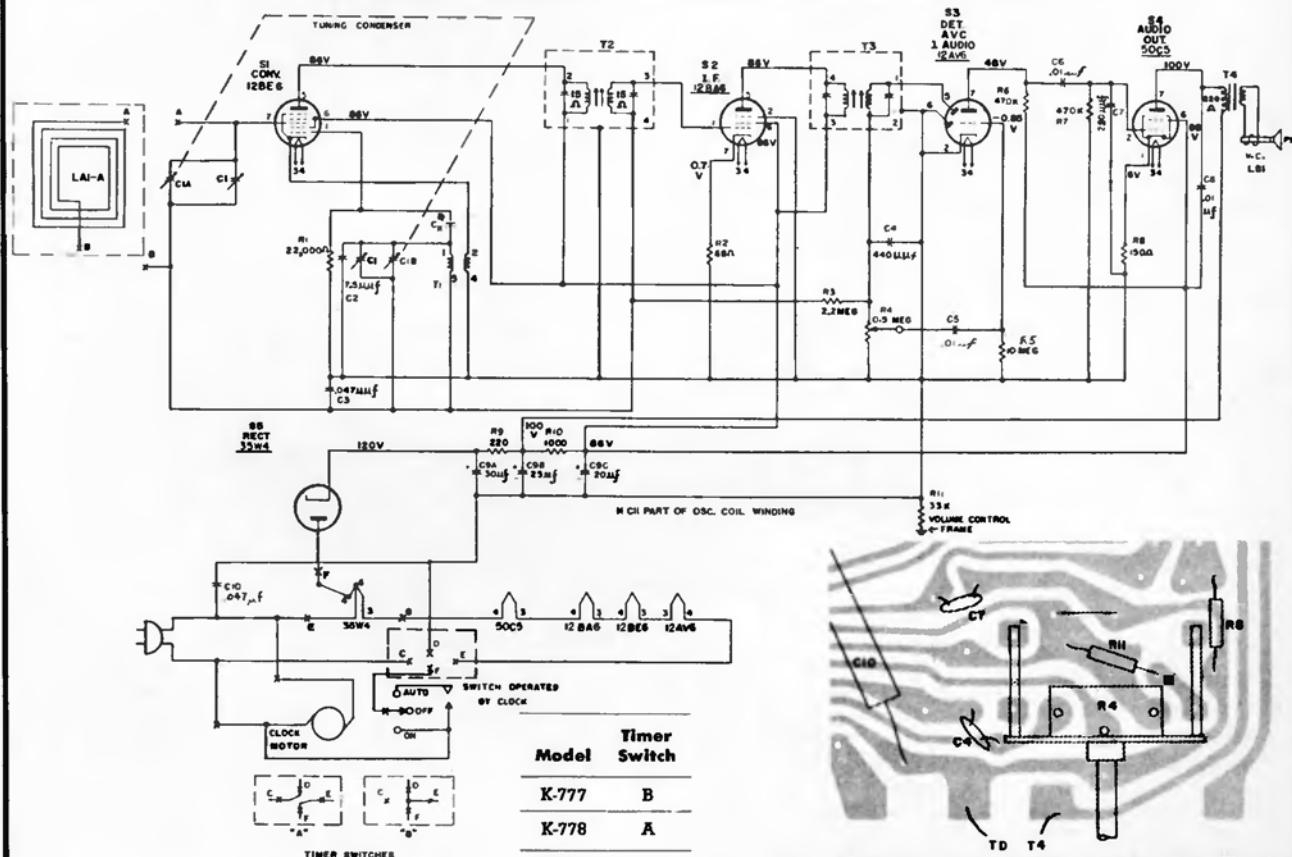


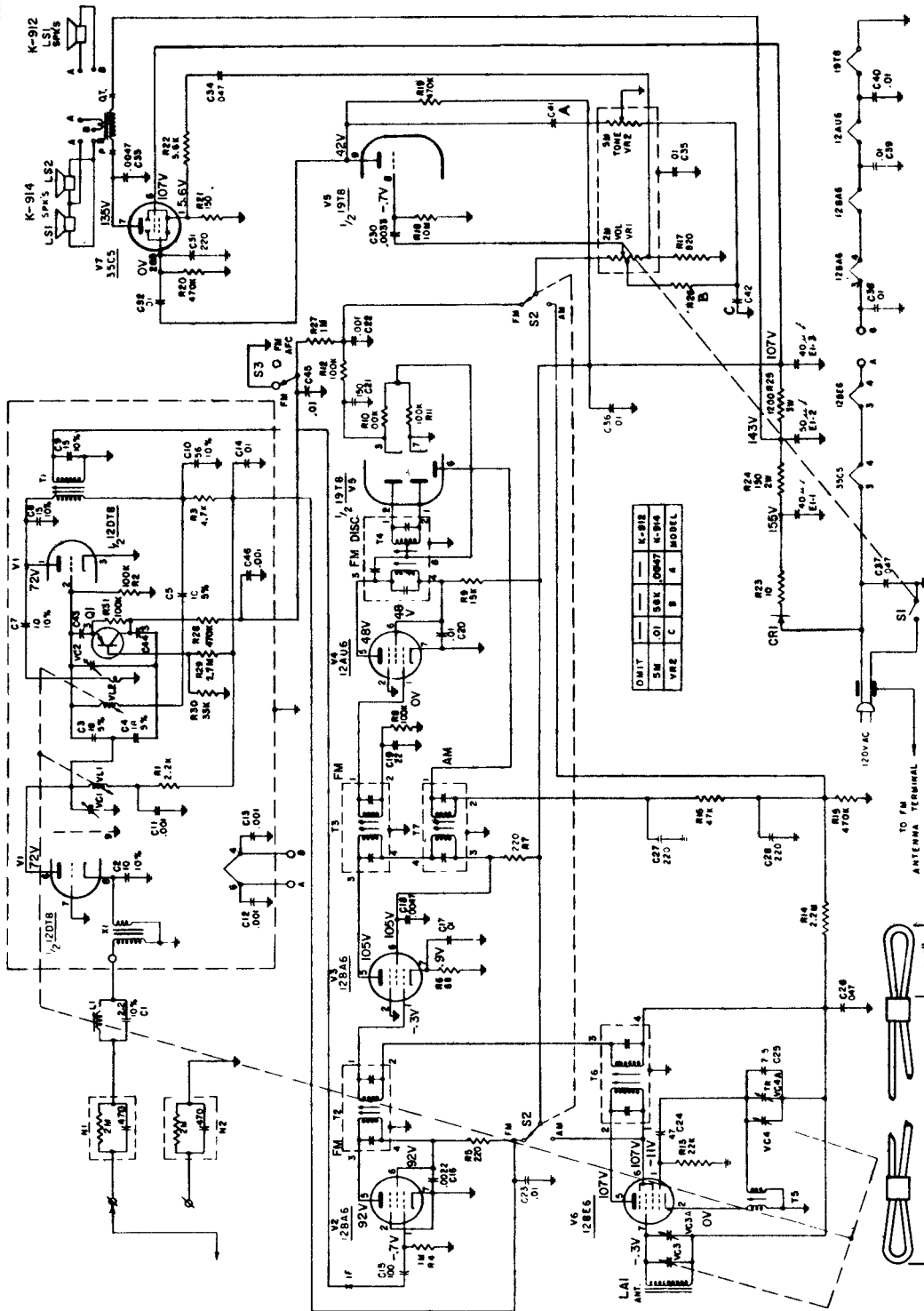
Figure 4. Schematic Diagram Models K-777, K-778

Figure 5. Bottom View, Partial Printed Panel Showing Model K-777, Foil Difference in B-Circuit (Figure 3)

PHILCO

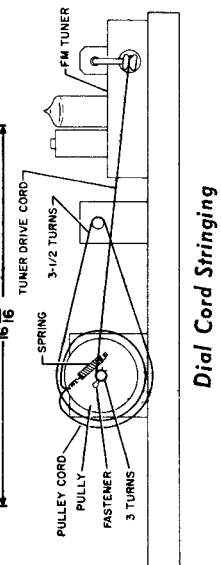
PHILCO AM/FM MODELS K-912, K-914

(Continued on the next page at right)



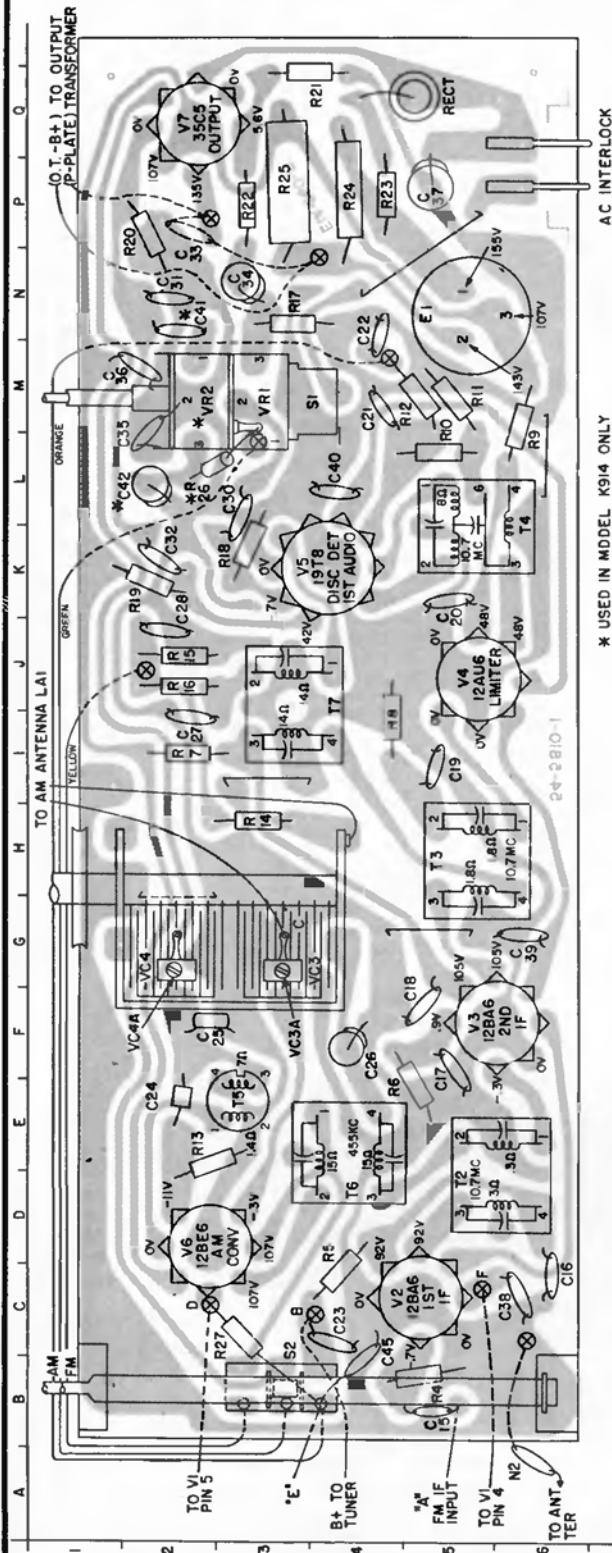
Tuner Installation - (after removal for servicing) should be done with special care. Be sure that all wires are dressed through the proper cut-outs. Note that the wires exit from the tuner as follows: Center slot, 2 brown, 1 white; cabinet front slot, single green; cabinet rear slot, red and green. In addition, be sure that no wire gets caught between the edge of the tuner chassis and the mounting frame.

TV Trap Adjustment - This trap, factory adjusted for maximum attenuation at 203mc, will reduce interference from channel 9 through channel 13 television stations. If severe interference occurs on one particular channel, it may be minimized by tuning this trap to that particular channel. To do this, connect a VTVM to the junction of C19 and R8, tune the receiver for maximum interference and adjust T1 for minimum meter indication.



PHILCO AM/FM TABLE RADIOS MODELS K-912, K-914

(Continued from preceding page)



PARTS LIST

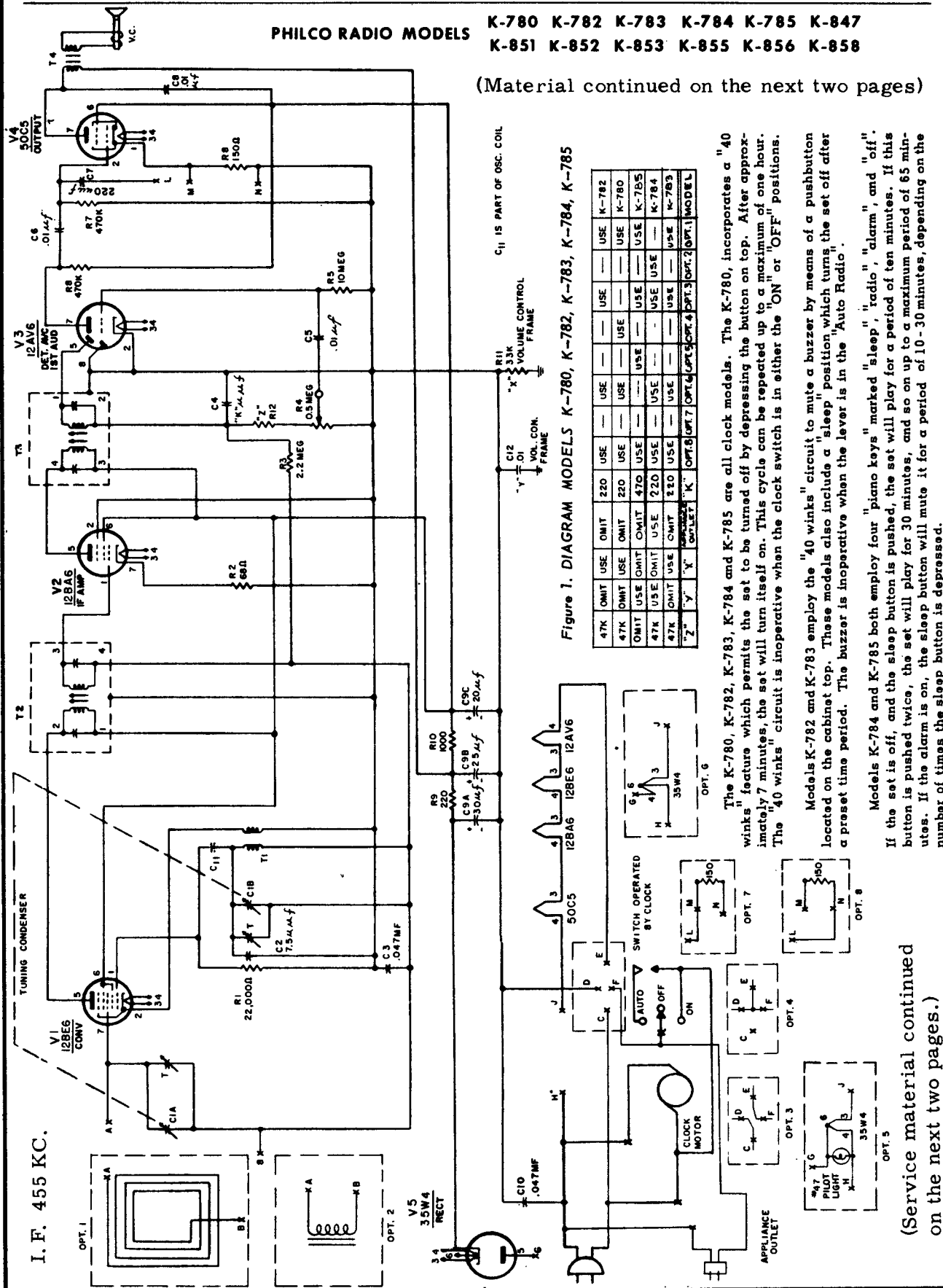
Sym- bol	Loca- tion	Description	Service Part No.
C1	A3 ¹	Capacitor, 2.2 mmf, ant. trap	30-1221-6
C2	*	Capacitor, 10 mmf FM Ant. trans. secondary	30-1251-35
C3	A2 ¹	Capacitor, 18 mmf, 5%, FM Os- cillator grid circuit	30-1251-48
C4	A3 ¹	Capacitor, 18 mmf, 5%, FM Os- cillator grid circuit	30-1251-48
C5	B3 ¹	Capacitor, 10 mmf, 5%, Oscilla- tor tank circuit	30-1251-44
C7	A2 ²	Capacitor, 10 mmf, 10%, Disc., Oscillator feedback	30-1251-35
C8	A2 ¹	Capacitor, 15 mmf, ceramic Disc, Plate by-pass	30-1251-36
C9	B3 ¹	Capacitor, 15 mmf, Ceramic Disc, T1 Secondary	30-1251-36
C10	B3 ¹	Capacitor, 56 mmf, 10%, neutralizing	30-1251-37
C11	A3 ¹	Capacitor, .001 mfd, FM r-f by-pass	30-1238-13
C12	B3 ¹	Capacitor, .001 mfd, 12DT8 Filament by-pass	30-1238-13
C13	B2 ¹	Capacitor, .001 mfd, 12DT8 filament by-pass	30-1238-13
C14	C4 ¹	Capacitor, .01 mfd, B+ by-pass	30-1238-33
C15	B5	Capacitor, 100 mmf, FM i-f coupling	30-1251-38
C16	C6	Capacitor, .0022 mfd, FM i-f screen	30-1262-7
C17	F5	Capacitor, .01 mfd, V3 cath- ode by-pass	30-1262
C18	F5	Capacitor, .0047 mfd, V3 i-f screen by-pass	30-1262-3
C19	I5	Capacitor, 22 mmf, V4 i-f grid	30-1263-19
C20	K5	Capacitor, .01 mfd, V4 screen by-pass	30-1262
C21	B4	Capacitor, 150 mmf, 19T8 (V5) cathode by-pass	30-1262-28
C22	N4	Capacitor, .001 mfd, 19T8 (V5) cathode by-pass	30-1262-12
C23	C4	Capacitor, .01 mfd, FM B+ by-pass	30-1262
C24	E2	Capacitor, 47 mmf, AM Os- cillator grid	30-1230-4
C25	F2	Capacitor, 7.5 mmf, AM Os- cillator compensation	30-1224-83
C26	F4	Capacitor, .047 mfd, AVC by-pass	30-4650-45
C27	I2	Capacitor, 220 mmf, AM Diode Det. Output	30-1262-41
C28	J2	Capacitor, 220 mmf, AM Det. Filter	30-1262-41
C30	K3	Capacitor, .0033 mfd, Audio Grid Coupling	30-1262-42
C31	N2	Capacitor, 220 mmf, Output Grid by-pass	30-1262-41
C32	K2	Capacitor, .01 mfd, Output Grid coupling	30-1262

Panel Removal - First remove knobs, and cabinet back (note that three screws must be extracted - one in handle depression and two on set bottom). Next, remove the two panel mounting screws located at the bottom left corner, and 2-1/4" in from bottom right corner. Panel will now slide out of its end holders, (tuning dial will pull free as panel is removed).

PHILCO RADIO MODELS

K-780 K-782 K-783 K-784 K-785 K-847
K-851 K-852 K-853 K-855 K-856 K-858

(Material continued on the next two pages)



PHILCO MODELS K-780, K-782, K-783, K-784, K-785, K-847
K-851, K-852, K-853, K-855, K-856, K-858 (Continued)

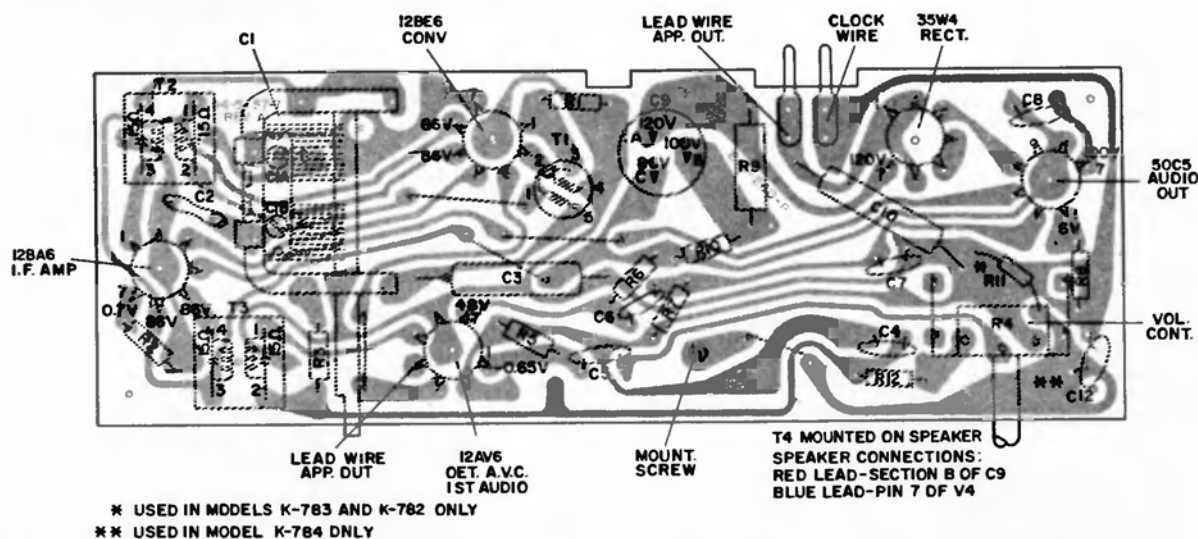


Figure 2. Bottom View of Perma Circuit Panel Component Layout Models K-782, K-783, K-784

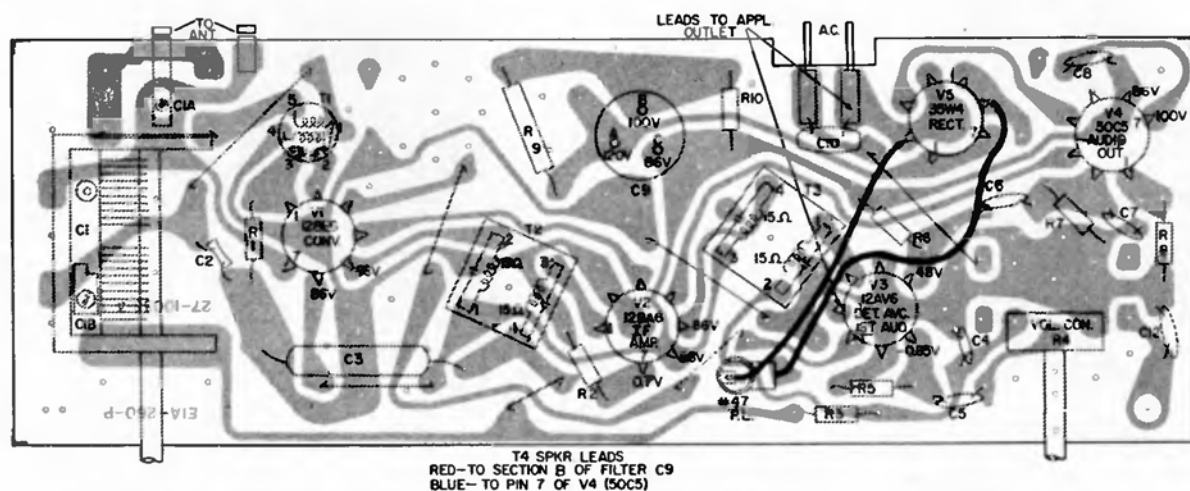


Figure 3. Bottom View of Perma Circuit Component Layout Model K-785 (Layout Model K-858 is similar.)

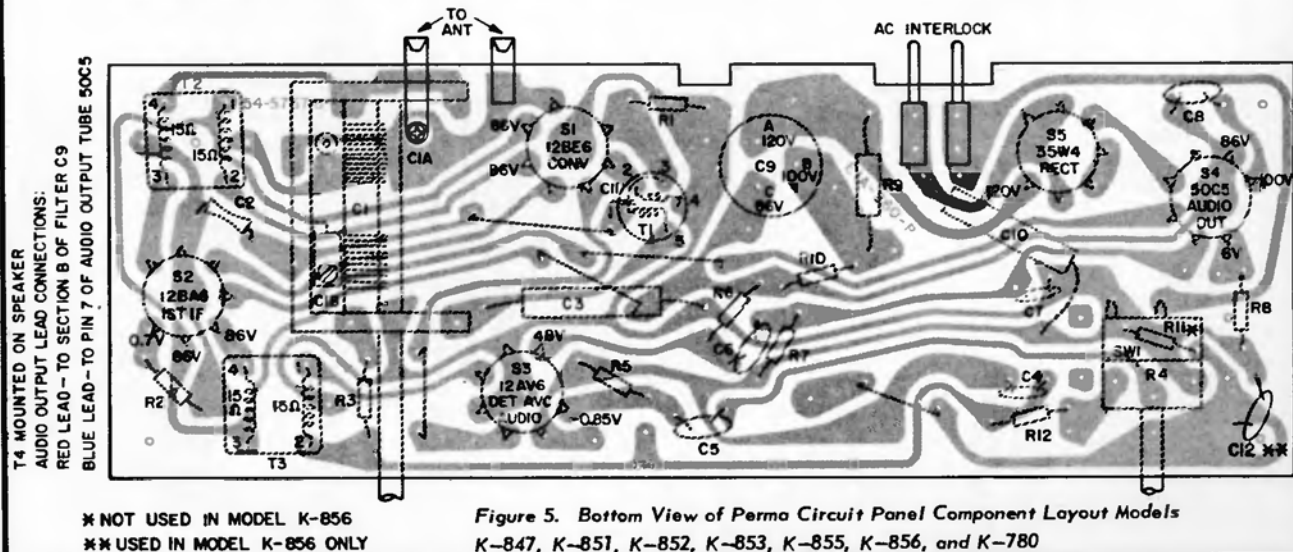
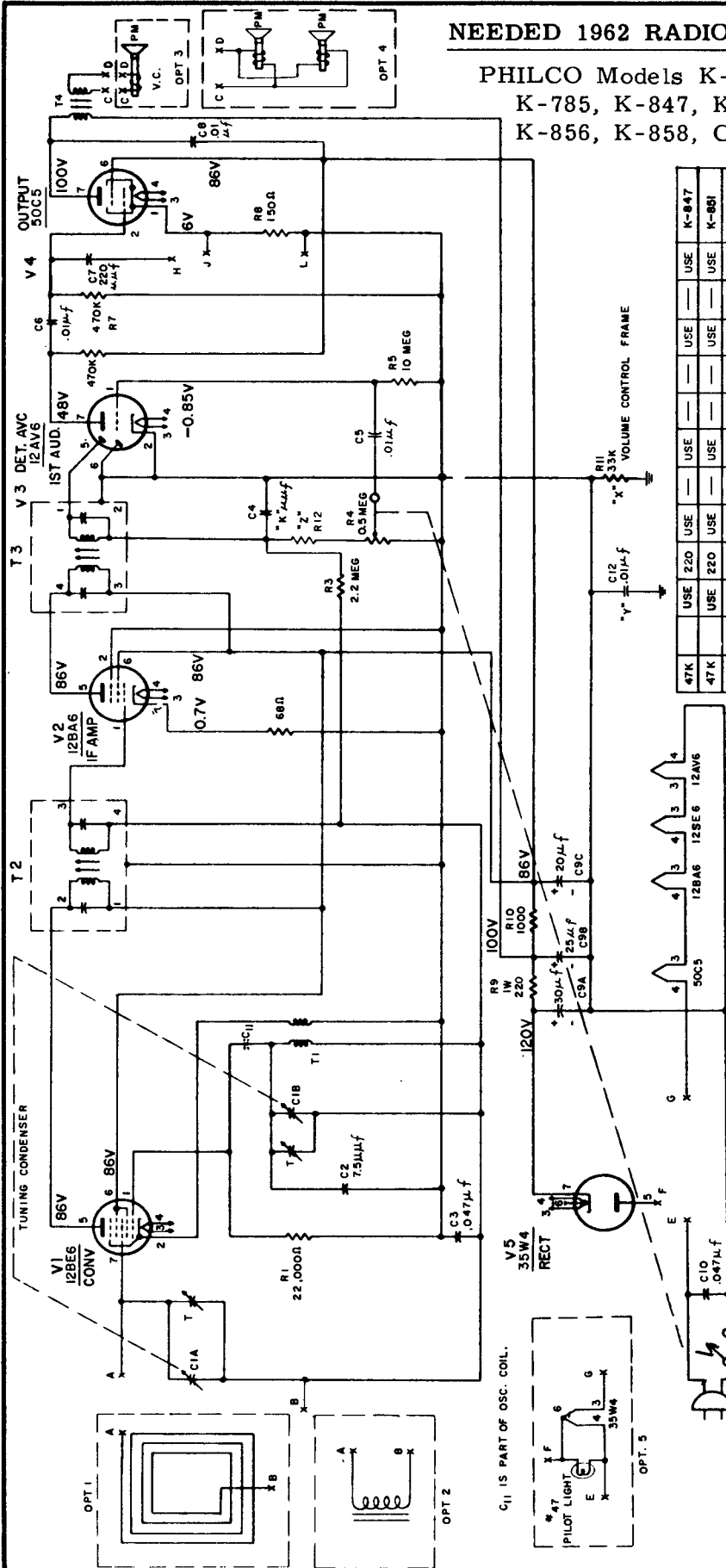


Figure 5. Bottom View of Perma Circuit Panel Component Layout Models K-847, K-851, K-852, K-853, K-855, K-856, and K-780

NEEDED 1962 RADIO SERVICING INFORMATION

PHILCO Models K-780, K-782, K-783, K-784, K-785, K-847, K-851, K-852, K-853, K-855, K-856, K-858, Continued from preceding pages



Model	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
K-780	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-782	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-783	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-784	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-785	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-847	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-851	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-852	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-853	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-855	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-856	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE
K-858	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE

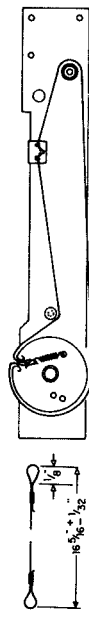


Figure 8. Dial Card Installation - Models K-856 and K-784

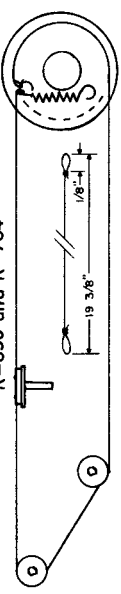


Figure 9. Dial Card Installation - Models K-783 and K-855

Figure 4. Schematic Diagram Models K-847, K-851, K-852, K-853, K-855, K-856, K-858

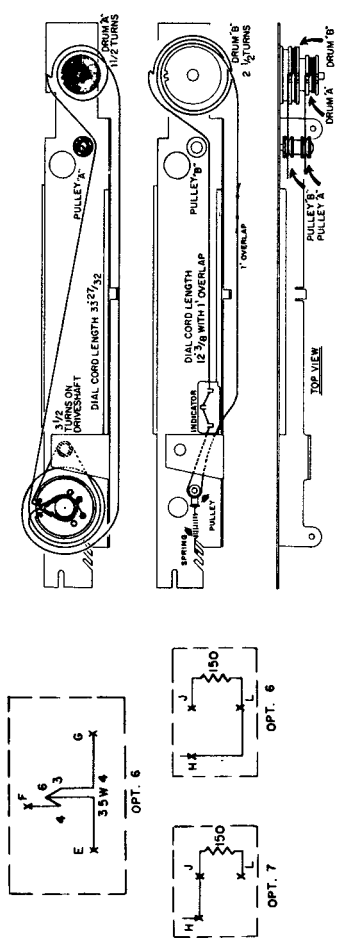


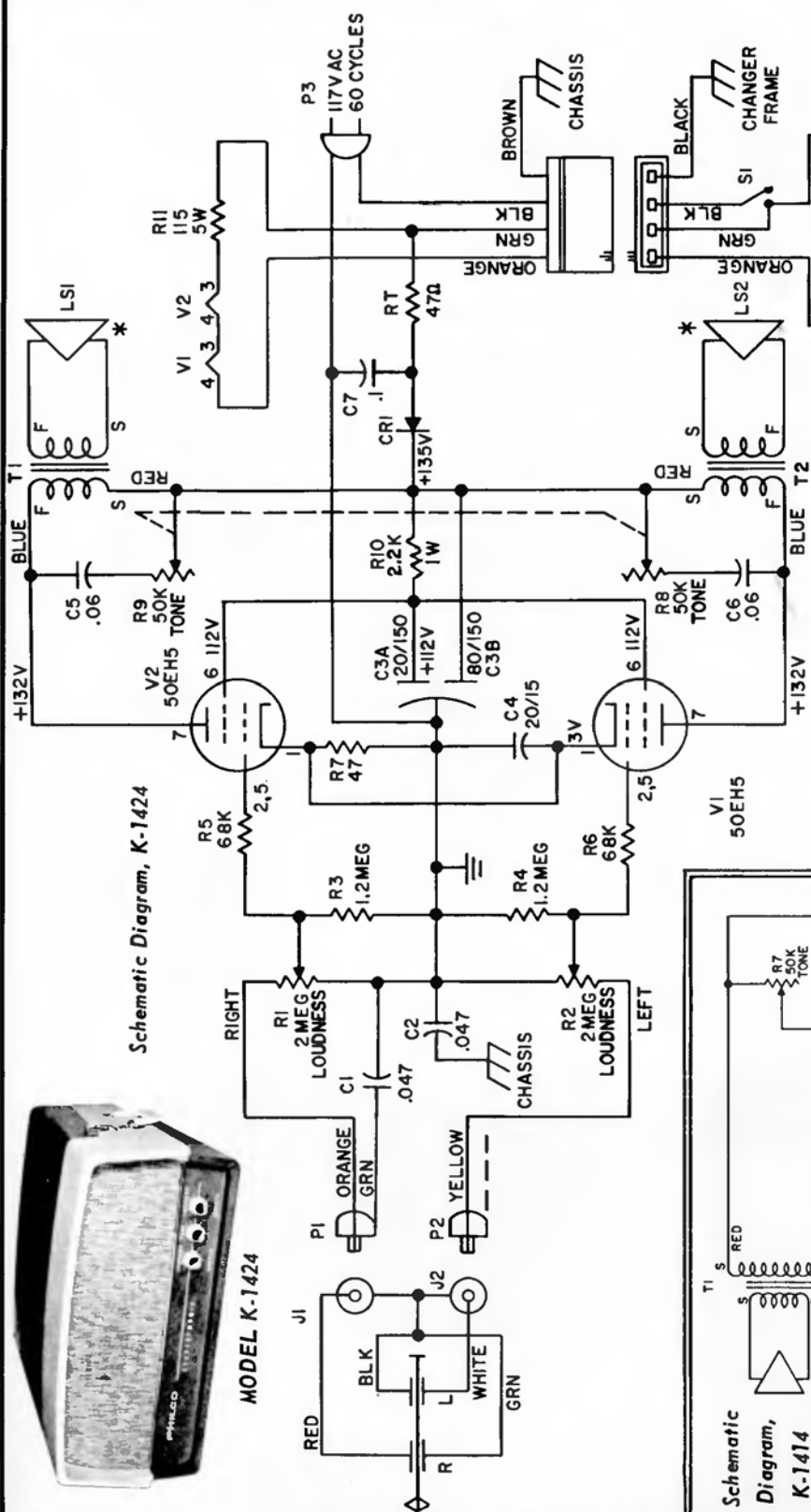
Figure 7. Dial Card Installation - Models K-785, K-784 K-856 and K-858

I. F. 455 KC.

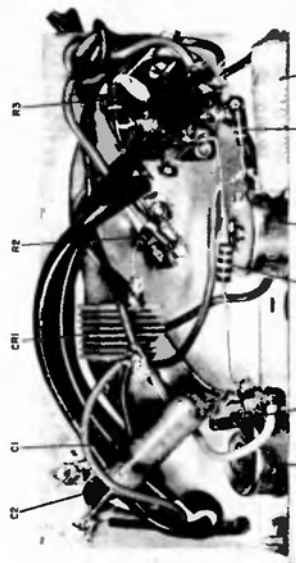
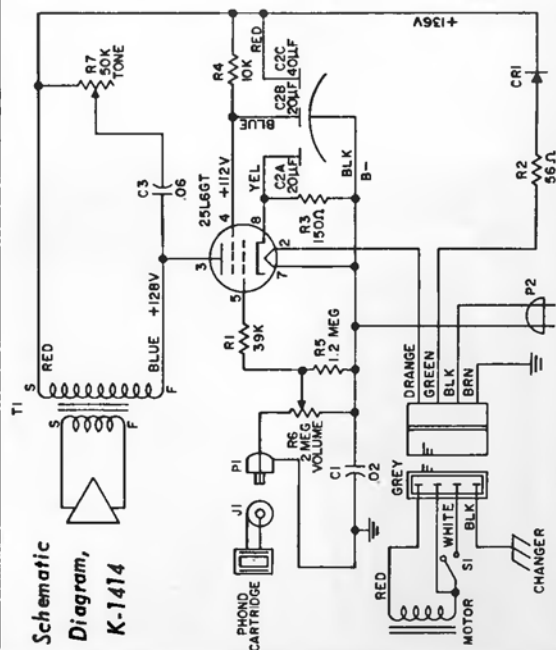
PHILCO

PHONO MODELS K-1414, K-1424

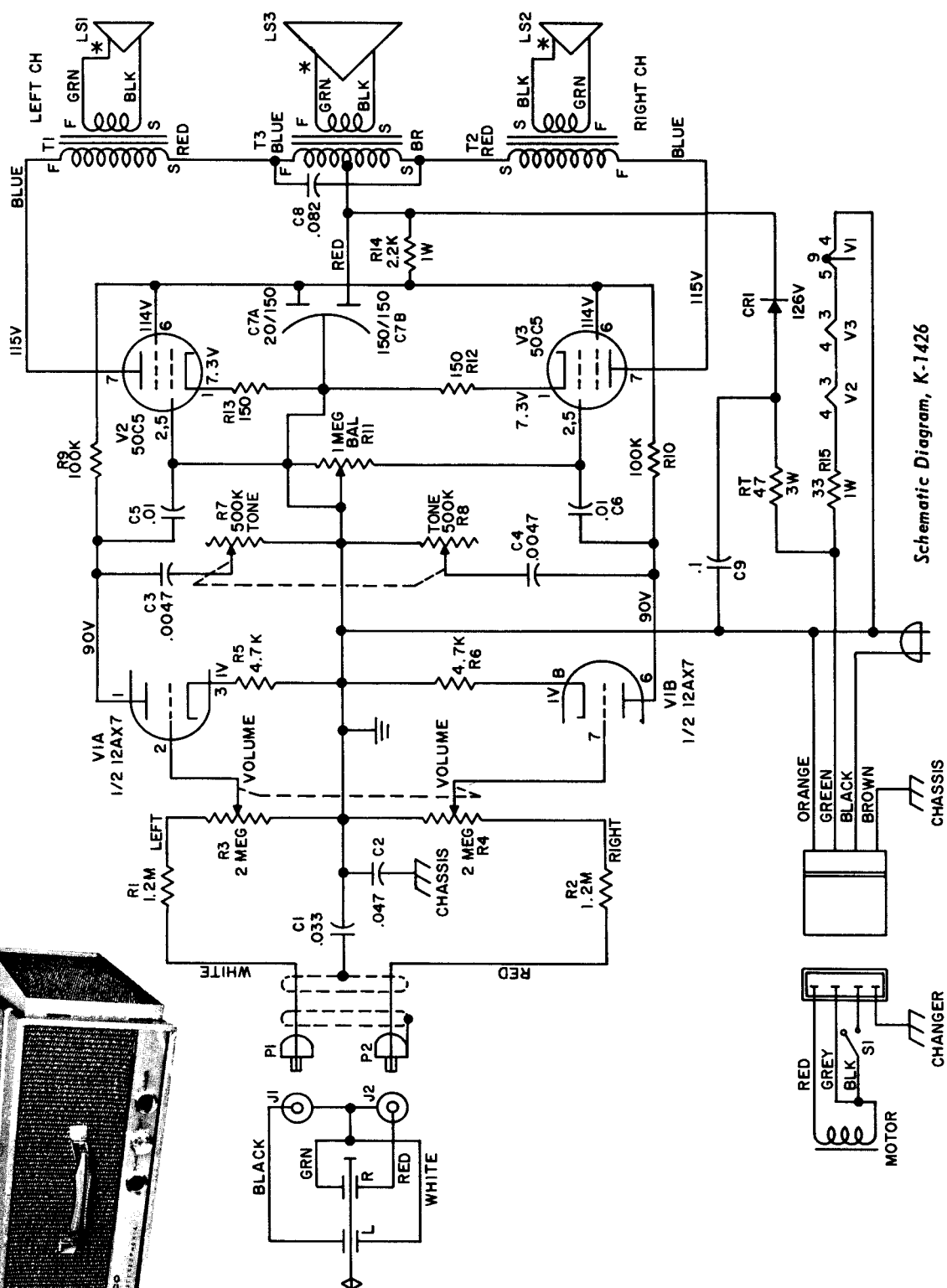
Schematic Diagram, K-1424



Schematic Diagram, K-1414

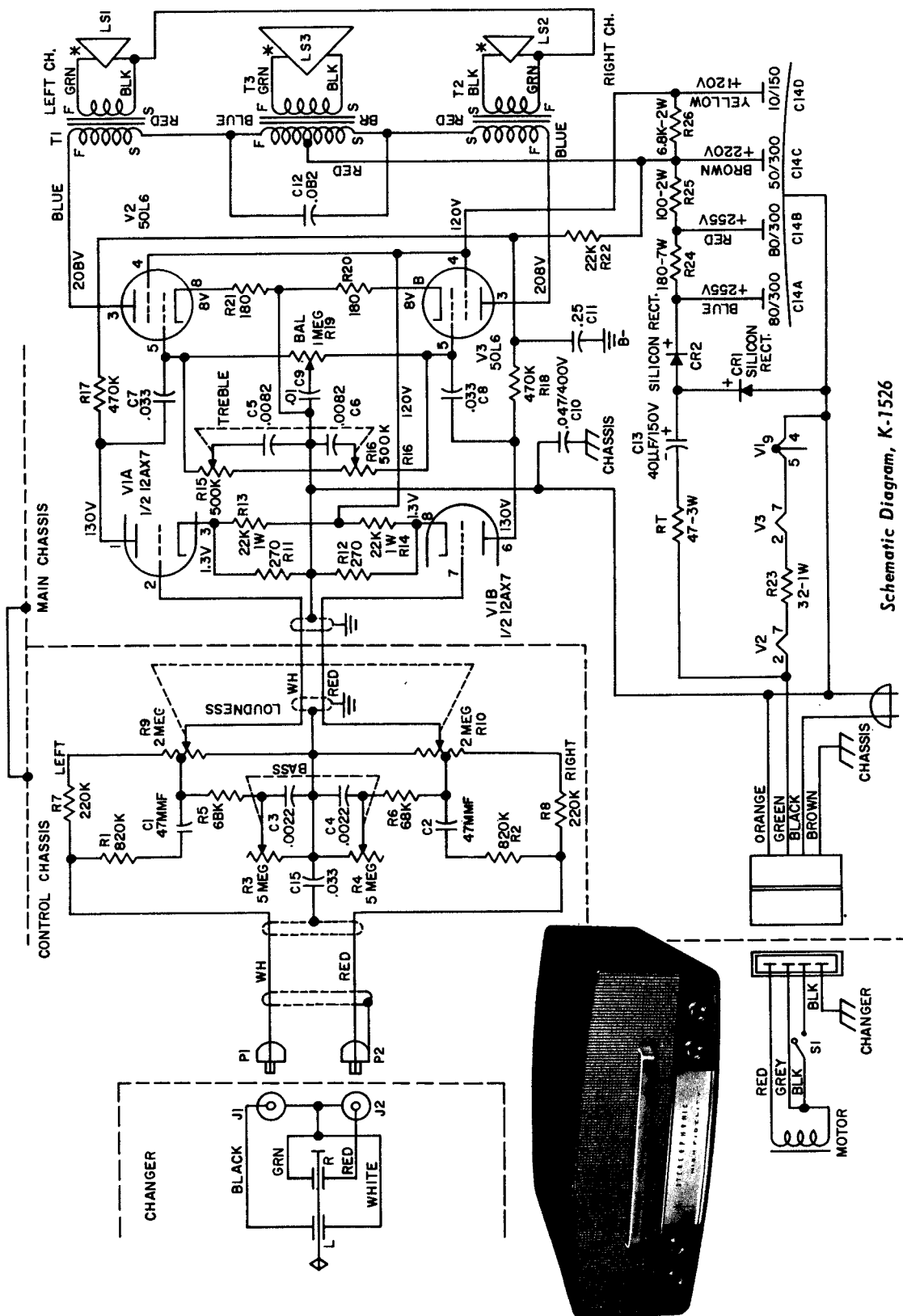


Chassis Bottom View, K-1414



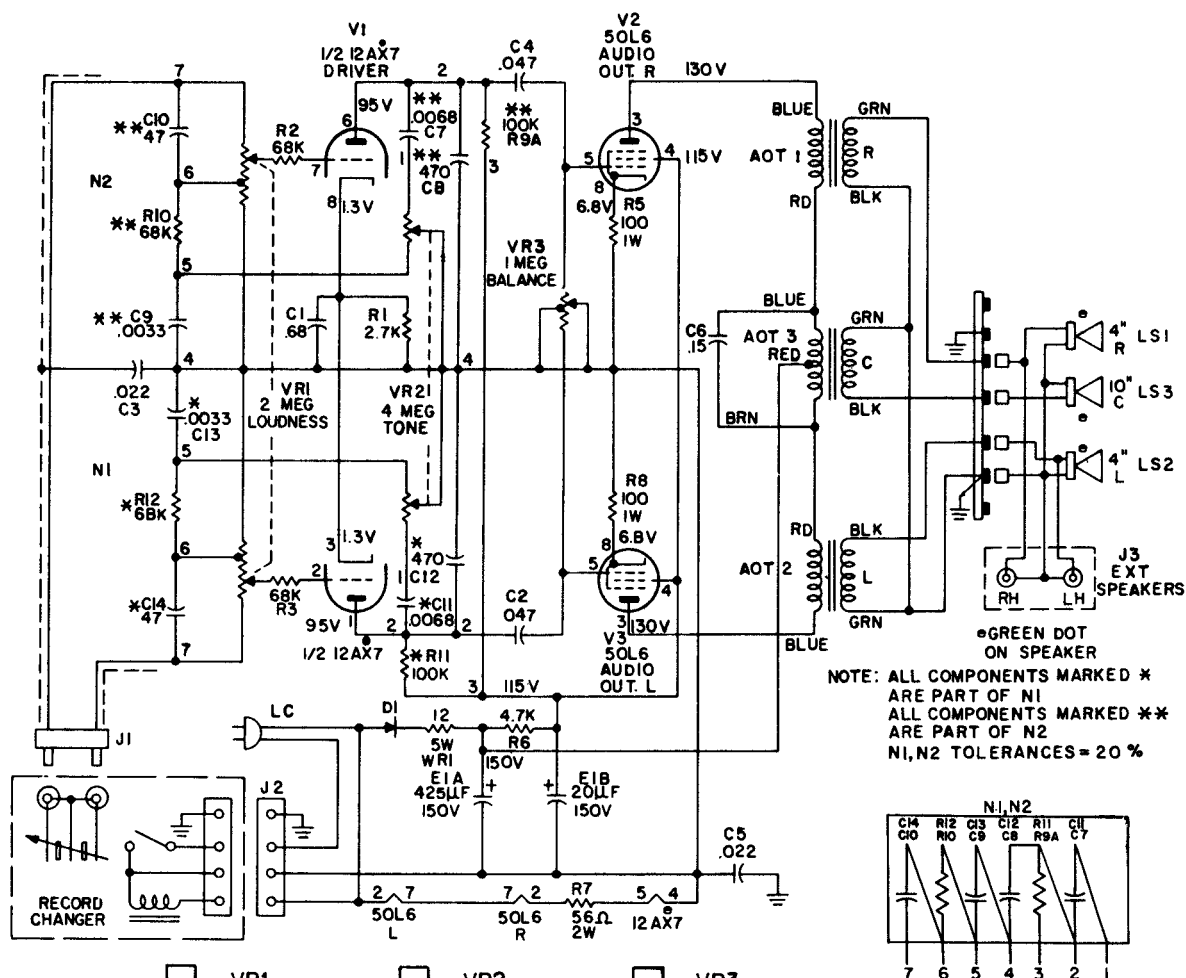
Schematic Diagram, K-1426

PHILCO MODEL K-1526



Schematic Diagram, K-1526

PHILCO AMPLIFIER—MODEL K-1628



Bottom View, Model K-1628 Showing Component Locations

AUDIO OUTPUT: Model K-1628 has a peak power of 8 watts, 2 watts at 10% for each side channel.

POWER CONSUMPTION: Model K-1628 — 55 watts.

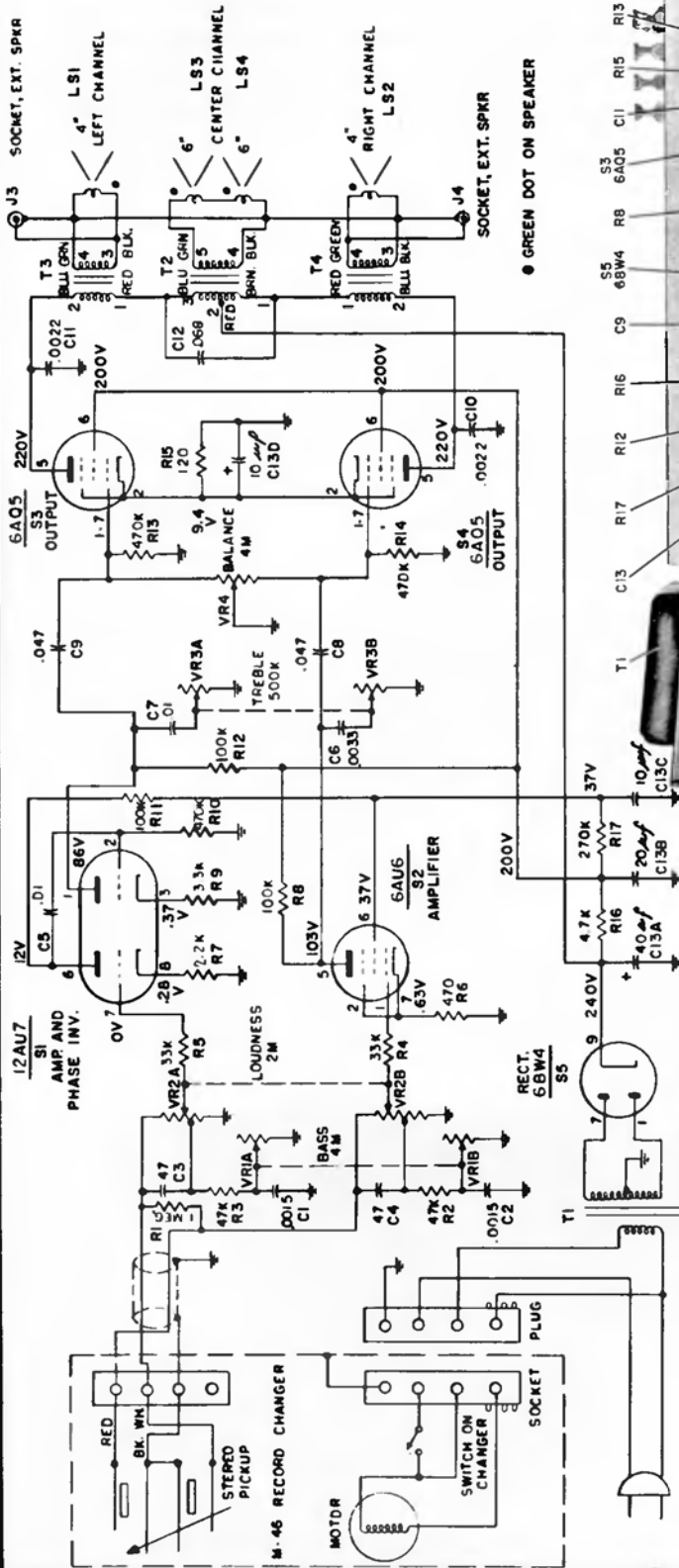
OPERATING VOLTAGE: 105-120 volts, 60 cycles AC.

SPEAKERS: Model K-1628 contains two 4" speakers for left and right channel information. Their impedance is 8Ω and magnet weight is .68 ounces. This model employs a 10", 16Ω woofer, for central bass listening.

SS43BE AUXILIARY SPEAKER SYSTEM: Model K-1628 uses, as auxiliary equipment, two 4" external speakers. Voice coil impedance is 8Ω and magnet weight is 2.15 ounces. The speaker units are available in beige, part number 43-9439.

PHILCO

AMPLIFIER — MODEL K-1632

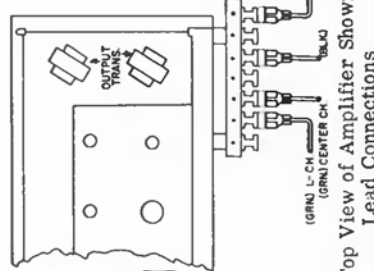
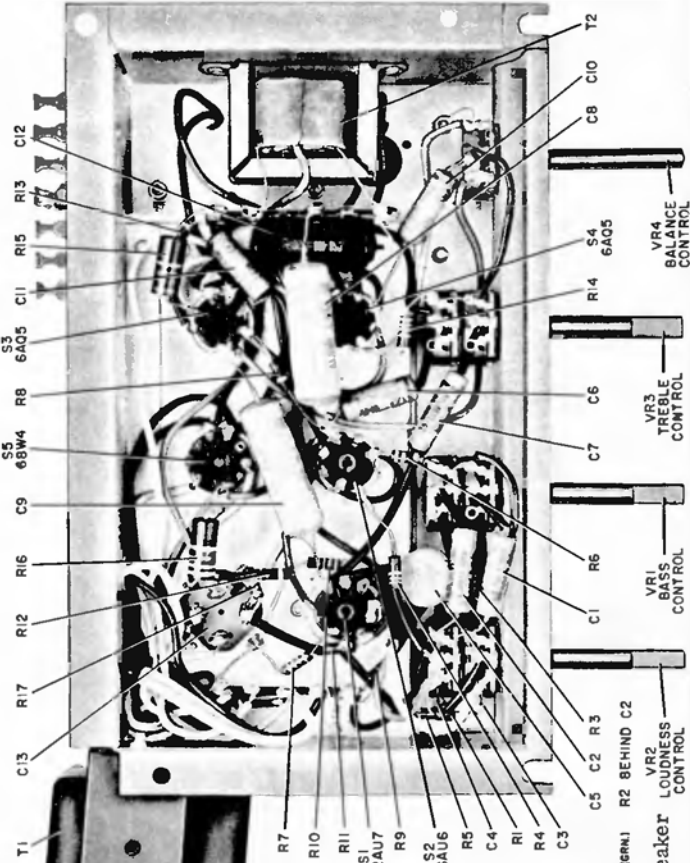


RESISTANCE READINGS

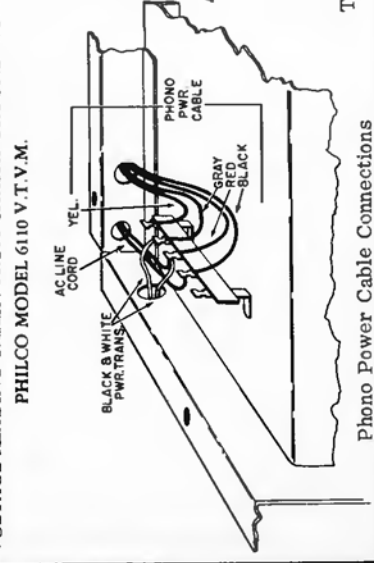
COMPONENT	PRIMARY	SECONDARY
T2	800Ω with C.T.	1.5Ω
T3	260Ω	.6Ω
T4	260Ω	.6Ω

NOTE: All resistance readings made with component in circuit.

VOLTAGE READING TAKEN FROM CHASSIS GROUND WITH
PHILCO MODEL 6110 V.T.V.M.



Top View of Amplifier Showing Speaker
Lead Connections



Phono Power Cable Connections

RCA VICTOR

Models

1-RH-10, 1-RH-11,
1-RH-12, 1-RH-13,

1-TP-1E, HE, JE (Late Prod.)

Model 1-RJ-19

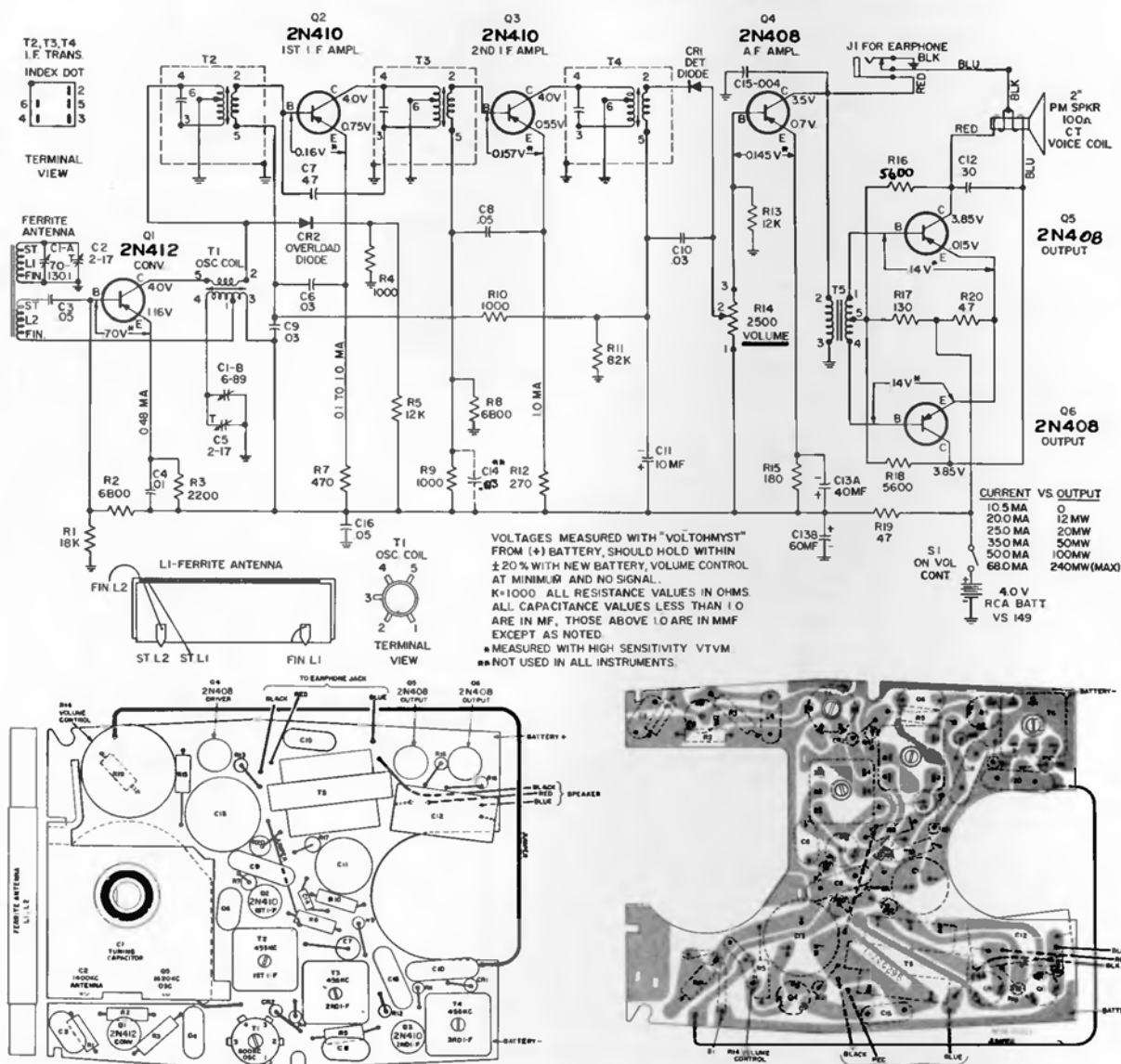
Chassis No. RC-1199D

CHASSIS REMOVAL

1. Unsolder the battery spring contacts from the circuit board. DO NOT ATTEMPT TO REMOVE CONTACTS FROM CASE. The battery contacts are heat sealed to the plastic case front.
2. Pull the dial knob off of tuning condenser shaft.
3. Remove the knurled nut holding the earphone jack to the case.
4. Remove the two screws holding the circuit board to the case and lift chassis from the case.
5. If necessary to separate chassis and speaker, unsolder speaker leads from wiring side of board. AVOID UNSOLDERING LEADS AT SPEAKER TERMINALS SINCE EXCESSIVE HEAT WILL DAMAGE VOICE COIL LEADS.

CRITICAL LEAD DRESS

1. Dress lead from diode to volume control between speaker magnet and top of battery.
2. Keep leads to earphone jack as short as possible.
3. Dress leads from output transistors to speaker towards the edge of the board (away from speaker pot) so as to provide sufficient room for 0.3 mfd capacitor.

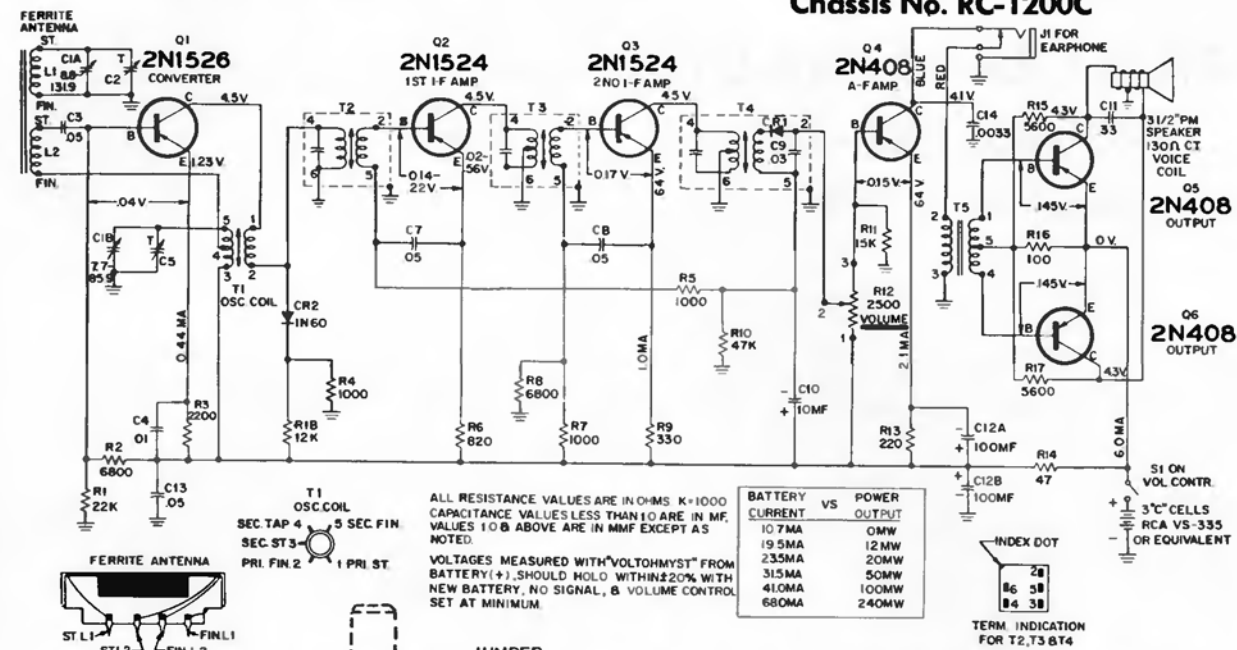


Chassis Layout—View from Component Side

Chassis Layout—View from Wiring Side

RCA VICTOR Models 1-RG-11, 1-RG-14, 1-RG-15

Chassis No. RC-1200C

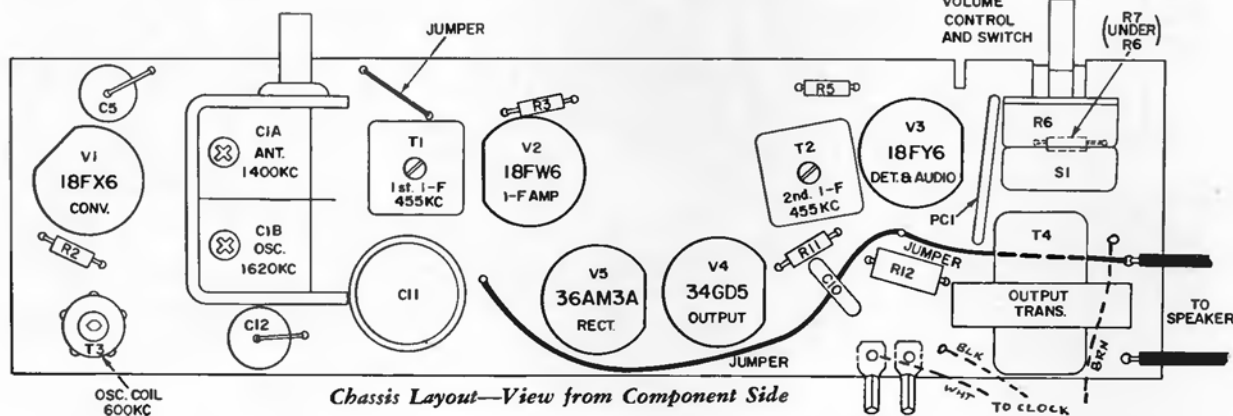
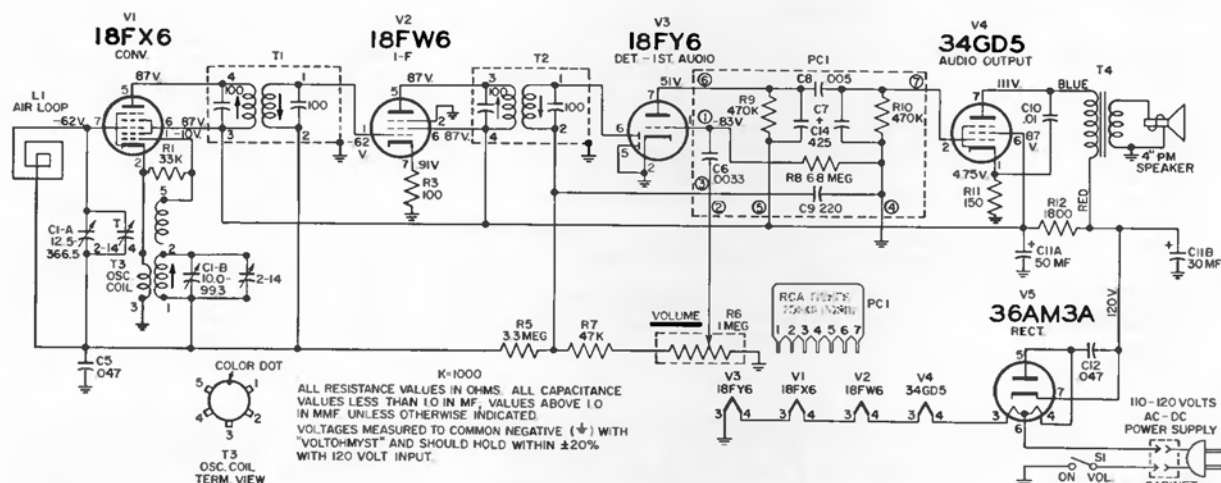
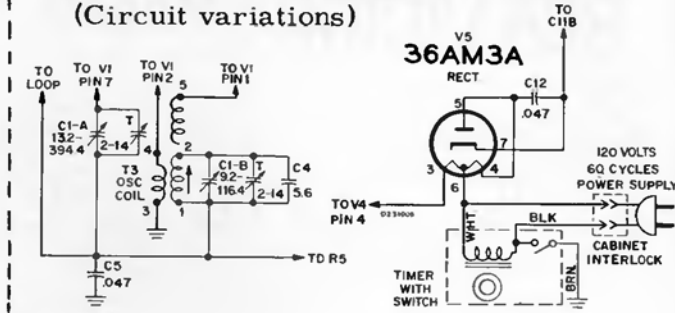


RCA Models

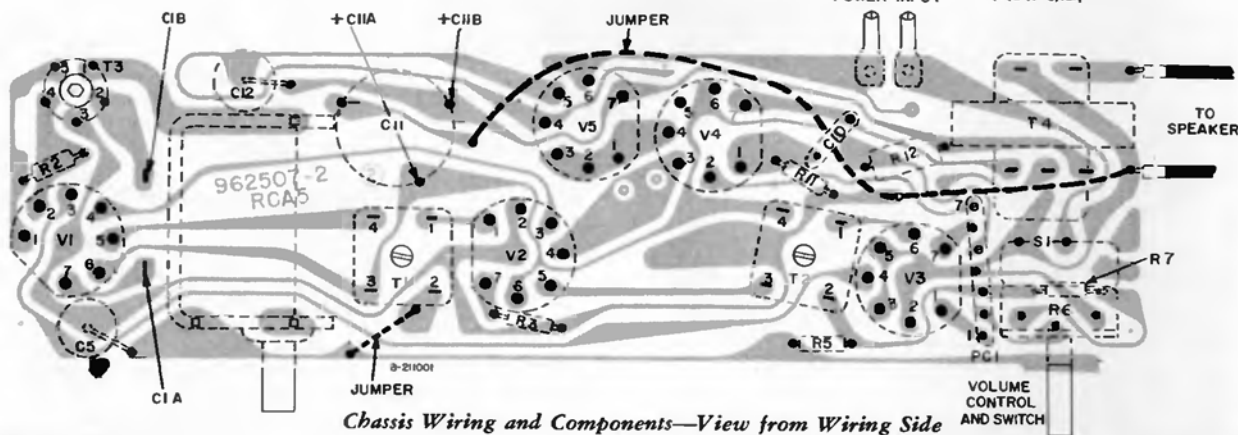
1-RA-11, 1-RA-20, 1-RA-23,
1-RA-25, 1-RA-26

Chassis No. RC-1202F

Model 1-RD-11, Chassis RC-1202H
(Circuit variations)



Chassis Layout—View from Component Side

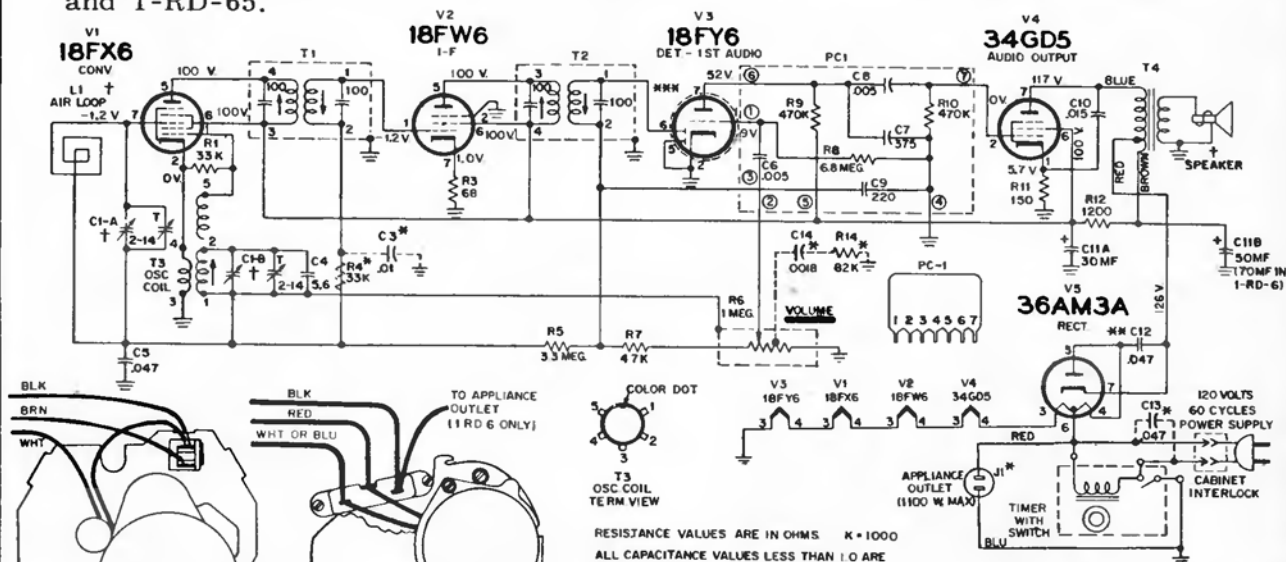


Chassis Wiring and Components—View from Wiring Side

RCA VICTOR

Chassis Nos. RC-1202K, P, R, & T

Models 1-RD-30, 1-RD-32, 1-RD-33, 1-RD-37, 1-RD-40, 1-RD-41, 1-RD-44, 1-RD-45, 1-RD-50, 1-RD-52, 1-RD-53, 1-RD-56, 1-RD-60, 1-RD-61, 1-RD-63, and 1-RD-65.



RESISTANCE VALUES ARE IN OHMS. K=1000
ALL CAPACITANCE VALUES LESS THAN 1.0 ARE IN MF, VALUES 1.0 AND ABOVE ARE IN MMF, EXCEPT AS NOTED.

VOLTAGES MEASURED TO COMMON NEGATIVE (⊕) WITH "VOLTOHMIST" AND SHOULD HOLD WITHIN ±20% WITH RATED LINE VOLTAGE

*USED ON RC-1202T ONLY (R4, R14, C14, C13, J1)

**USED ON RC-1202K, P, R ONLY (C12)

***TUBE SHIELD USED ON RC-1202K ONLY

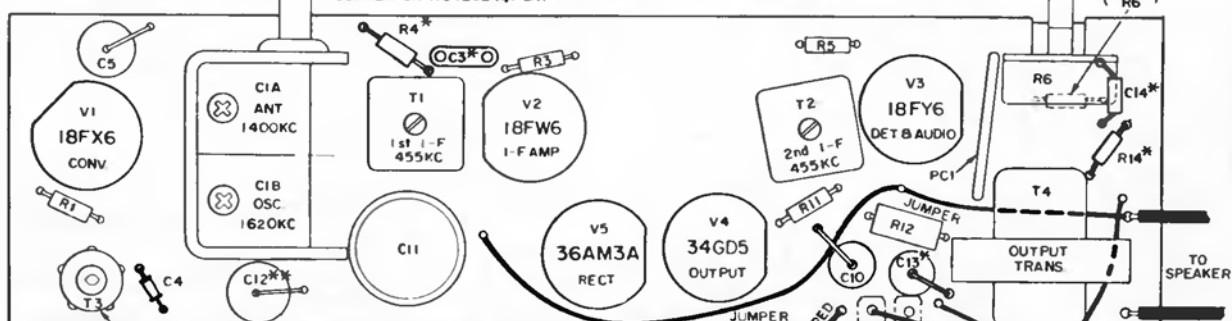
†SEE TABLE BELOW

	RC-1202K	RC-1202P, R	RC-1202T
L1	AIR LOOP	FERRITE ROD	"FILTERAMIC"
C1-A	13.2-39.4	13.4-31.9	11.2-39.2
C1-B	9.2-11.6	13-12.7	7.2-11.4
SPKR	4" PM	3" X 5" PM	3" X 5" PM

1-RD-3
Clock Wiring Diagrams

1-RD-4, -5, -6

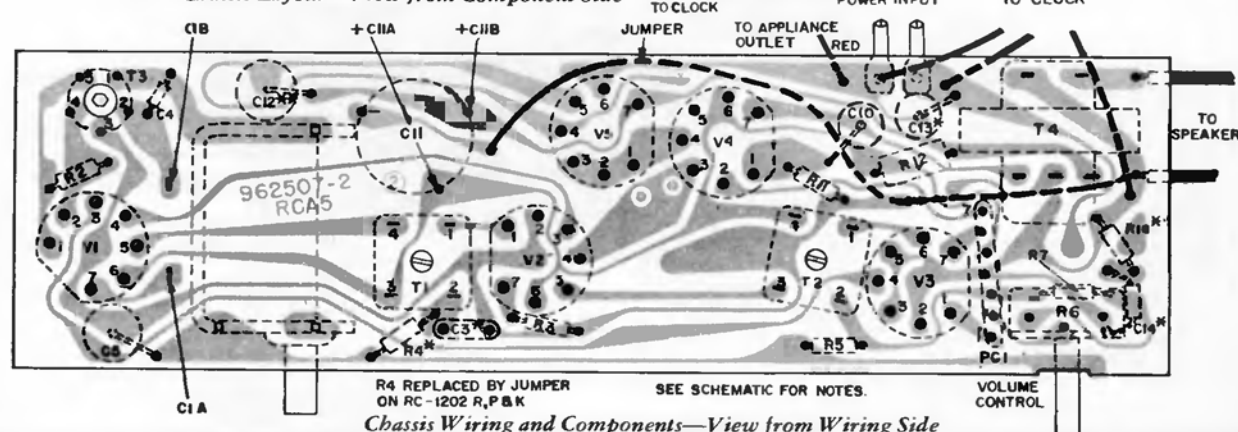
R4 REPLACED BY JUMPER ON RC-1202 R, P, & K



OSC COIL 600K

SEE SCHEMATIC FOR NOTES.

Chassis Layout—View from Component Side



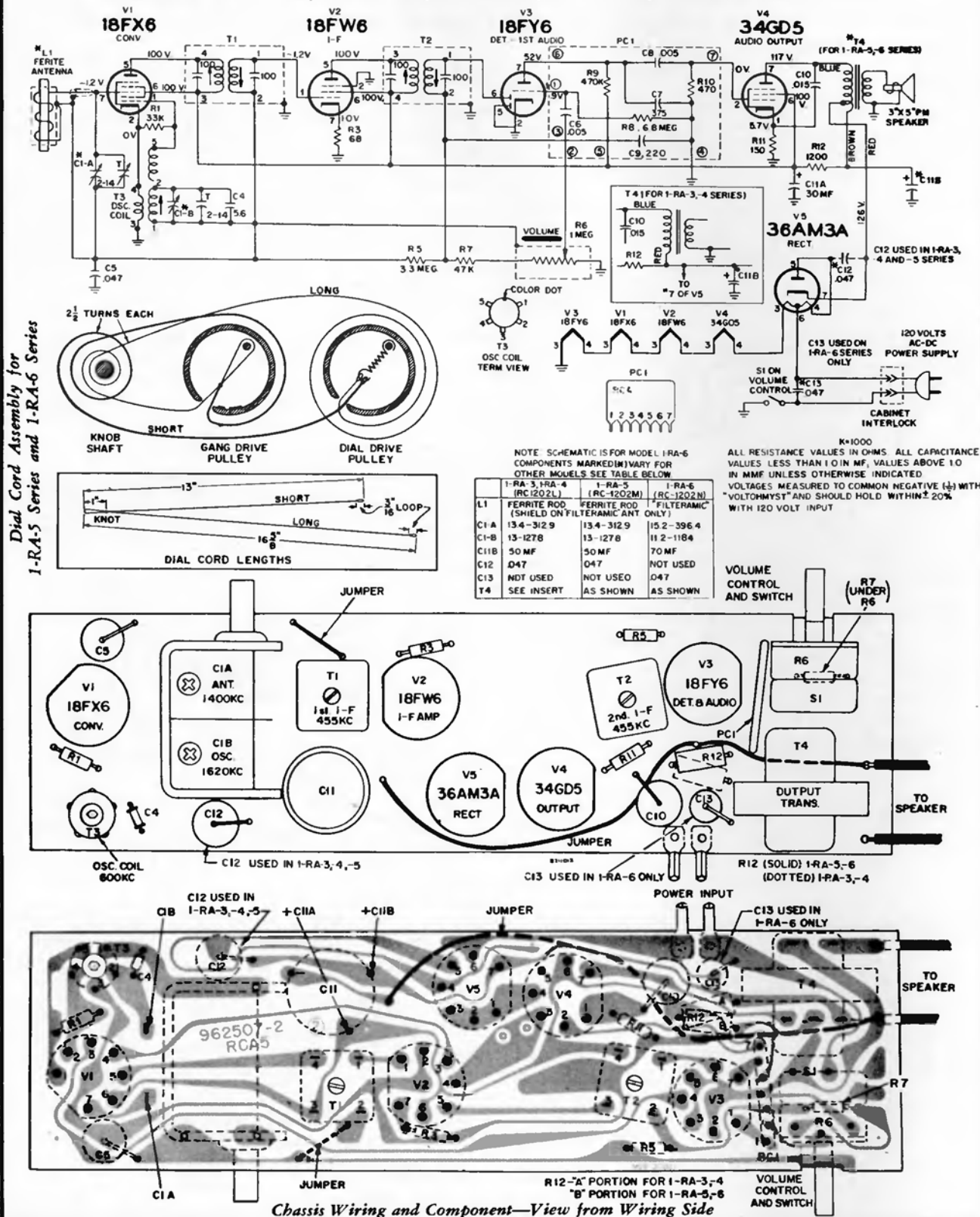
R4 REPLACED BY JUMPER ON RC-1202 R, P, & K

SEE SCHEMATIC FOR NOTES.

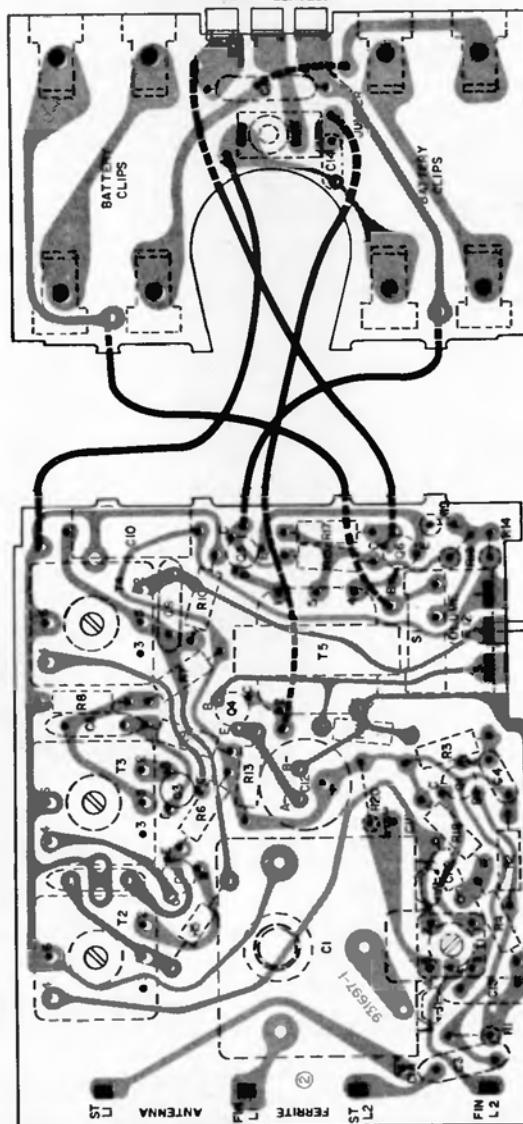
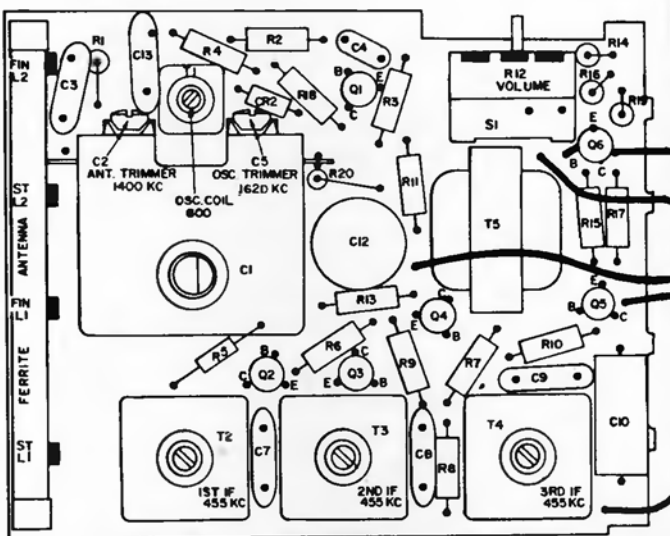
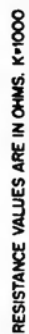
Chassis Wiring and Components—View from Wiring Side

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

RCA Victor Models 1-RA-30, 1-RA-33, 1-RA-35, 1-RA-36, 1-RA-42, 1-RA-43, 1-RA-44, 1-RA-45, use Chassis RC-1202L; Models 1-RA-50, 1-RA-51, 1-RA-52, 1-RA-55, use Chassis RC-1202M; Models 1-RA-60, 1-RA-61, 1-RA-64, 1-RA-65, Chassis RC-1202N.



Chassis RC-1208A, RC-1208B



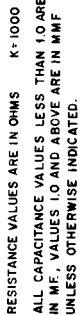
Chassis Wiring and Components—View from Wiring Side (Removed from Case)

PRODUCTION CHANGES

* In some instruments R1 is 27K and C3 is .03 mf.

ALL CAPACITANCE VALUES LESS THAN 1.0 ARE IN MF, THOSE ABOVE 1.0 ARE IN MMF EXCEPT AS NOTED.

VOLTAGES MEASURED WITH "VOLTOHMYST"[®] FROM BATTERY(+) AND CHARGE C. LIQUID WITHIN +20% WITH A NEW BATTERY



CHASSIS INSTALLATION

1. Turn AM tuning condenser to the FULLY CLOSED position.
2. Rotate the tuning knob to position the drive pulley with the NOTCH of the extended lips matching the spring on the condenser shaft. Dial pointer should indicate approximately 540 kc.
3. Push the formed spring (mounted on the condenser shaft) into the notch in the pulley as the chassis is slid into the case. If necessary, squeeze the spring together with long-nose pliers.
4. Fasten the chassis in place with two retaining screws through the back apron of the chassis. Replace speaker or resolder output transformer leads.
5. Secure the volume control to the cabinet front with the hex nut. Push knob on control shaft.
6. Solder the AM antenna leads to the tuning condenser.
7. Position the cabinet hood so that the power interlock socket and jacks will mate. Push the two sections of the cabinet together.
8. Fasten the three cabinet assembly screws.

Chassis No. RC-1201D

(Service material continued
on the next page at right.)

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

RCA Victor Models 1-RC-30, 1-RC-31, 1-RC-34, Chassis RC-1201D, Continued

Models of the 1-RC-3 Series are 6 tube (plus silicon rectifier) clock radios designed for reception on both the AM and FM bands. These instruments operate only on a 110-120 volt, 60 cycle power supply. The clock timer features five push buttons which select OFF, ON, DROWSE, RADIO alarm, and auto ALARM. A ferrite rod antenna is utilized for AM reception, and a power line antenna for FM reception.

CRITICAL LEAD DRESS

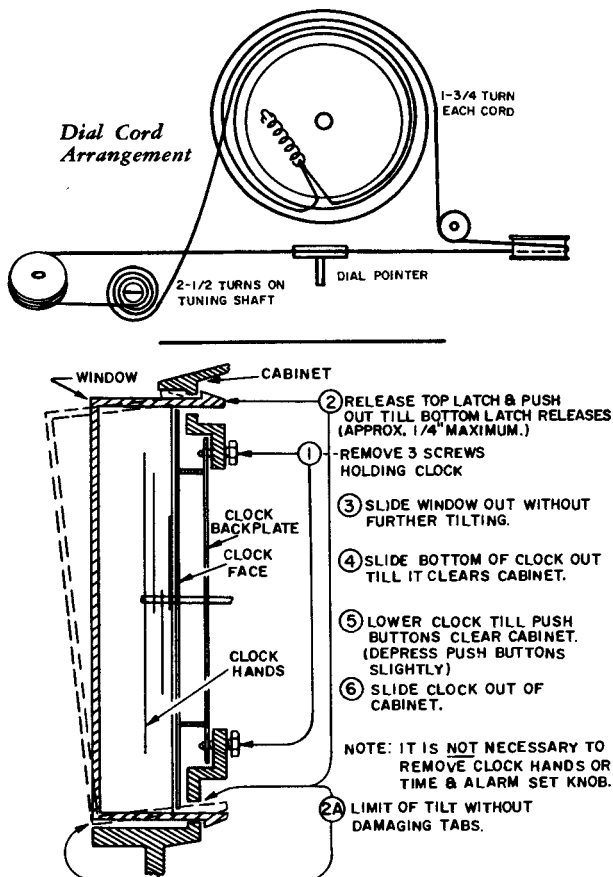
1. Dress all bus leads short and direct as possible.
2. Dress all by-pass capacitors and coupling capacitor leads short and direct as possible.
3. Dress all insulated leads down to chassis and away from any hot resistors.
4. Dress power line antenna away from ferrite rod and secure against front by hold down clips.
5. Dress grid capacitor away from oscillator coil.
6. Dress output transformer leads away from tuning drum.

THE CHASSIS IS CONNECTED DIRECTLY TO ONE SIDE OF THE POWER LINE. AN ISOLATION TRANSFORMER SHOULD BE USED DURING ALIGNMENT OR OTHER SERVICE WORK.

AM ALIGNMENT

Turn SELECTOR switch to AM position, and turn LOUDNESS control to maximum. Connect output meter across voice coil of speaker. Keep generator output low to avoid AVC action.

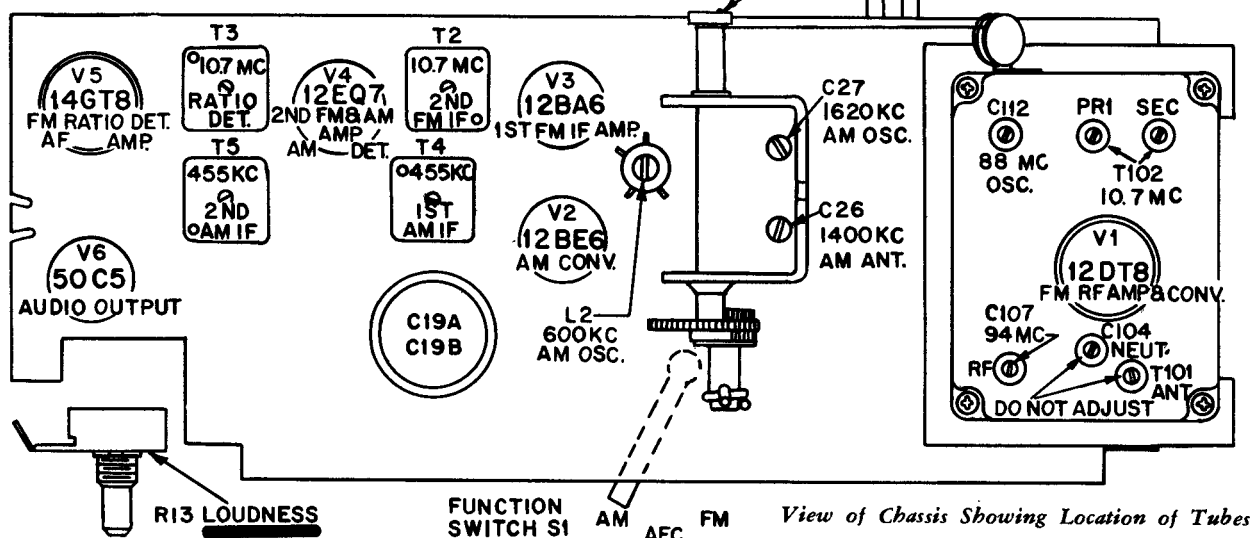
Step	Connect high side of signal gen. to—	Set signal gen. to—	Set radio dial to—	Adjust for maximum
1	Antenna gang (C25A) through 0.01 mf capacitor	455 kc (modulated)	Gang fully open	T5 (2nd AM IF) top & bottom
2				T4 (1st AM IF) top and bottom
3	Repeat steps 1 and 2.			
4		1620 kc (modulated)	1620 kc (gang fully open)	C27 (osc. trimmer)
5	Short wire placed near AM antenna to radiate signal	1400 kc (modulated)	1400 kc signal (rock gang)	C26 (ant. trimmer)
6		600 kc (modulated)	600 kc signal (rock gang)	L2 (osc. coil)
7	Repeat steps 4, 5, and 6.			



TO INSTALL CLOCK & WINDOW, REVERSE ABOVE PROCEDURE.

Clock and Window Removal

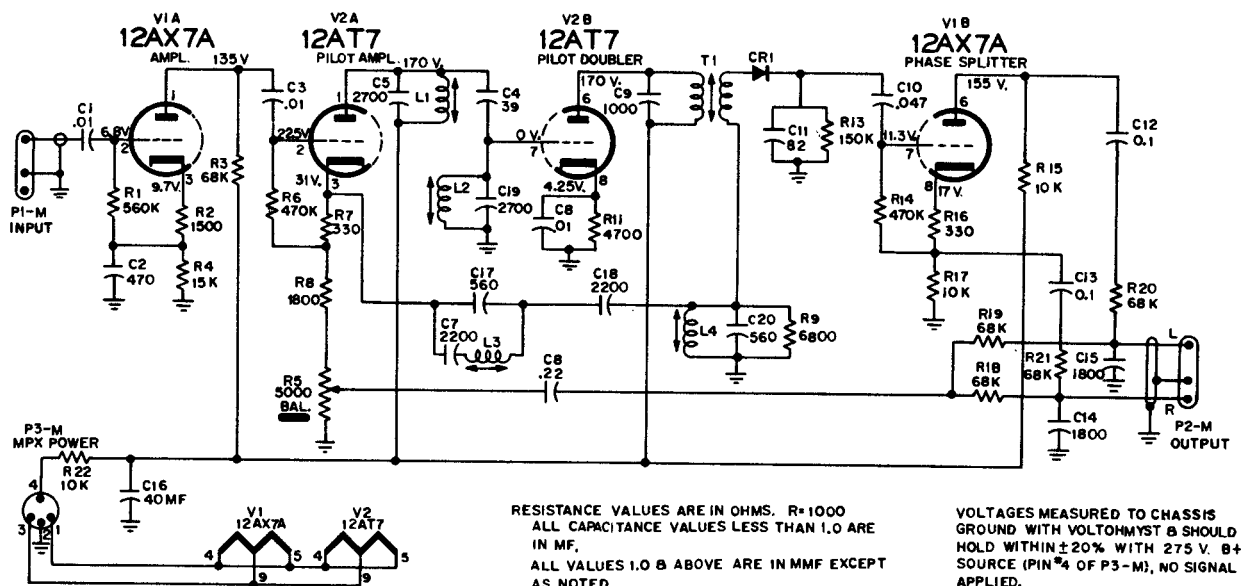
STRING DRIVE COLLAR



RCA VICTOR

RK-295

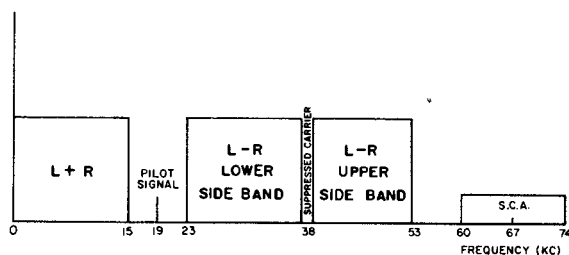
Chassis No. RS-200



FM STEREO (MULTIPLEX) OPERATION

The FM-Stereo (Multiplex) broadcasting system that has been approved by the FCC is compatible. This means that present FM tuners not equipped for the reception of an FM-Stereo signal will be able to receive a complete balanced program rather than only one channel, or an unbalanced program, as in former methods of stereocasting.

The FM-Stereo composite signal is composed of three pieces of information: the L+R signal, the L-R signal, and a 19 KC pilot signal. These are placed in the channel spectrum as shown.



Composite Signal

The L+R signal is the in-phase combination of the left channel and the right channel information and is used to frequency modulate the main carrier. The L-R signal is the out-of-phase combination of the same channels and is used to amplitude modulate a 38 KC carrier signal which is then suppressed leaving only the sidebands. This is the portion of the composite signal that, when matrixed with the L+R signal, separates the two channels. The 19 KC pilot signal is effectively the synchronizing signal and is used to reinsert the carrier in the L-R signal, thus making a local oscillator unnecessary.

Present FM tuners need only the L+R signal to reproduce the full and complete program. As this signal is the combination of the two stereo channels, none of the information is lost or suppressed for monophonic reproduction. In an FM-Stereo system, however, additional circuitry is necessary to separate the combined channels. This is the function of the L-R and 19 KC pilot signals.

After reception through the normal FM channel of the receiver, in a FM-Stereo system, the signal from the FM detector (discriminator or ratio-detector) is fed into two amplifier stages (V1A & V2A). From the cathode of V2A the L+R signal is fed directly to the matrix from the Balance control which is a part of the cathode circuit, and the L-R signal is filtered out and fed to T1—a mixing transformer. The 19 KC pilot signal is taken off at the plate of V2A and fed to a frequency doubler stage V2B. In V2B the grid is tuned to 19 KC and the plate is tuned to 38 KC. From the plate of V2B the 38 KC signal is fed to the mixing transformer, T1, where the 38 KC carrier is reinserted in the L-R signal. This signal is now demodulated in CR1 and passed on to a phase-inverter stage (V1B). In the phase inverter the L-R signal is taken off at the plate and the —L+R signal is taken off at the cathode. These two signals are now fed to the matrix where they combine with the L+R signal. By simple algebra $(L+R) + (L-R) = 2L$, and $(L+R) + (-L+R) = 2R$, thus the left and right channels are recovered and fed to the stereo amplifier.

This system, although similar in some respects to the color TV signal, differs in the fact that a local oscillator is not necessary for reinsertion of the carrier. Instead of sync pulse being supplied, an actual sync frequency is transmitted.

It is also possible for a commercial service keying signal (S. C. A.—such as is presently in use) to be transmitted in the composite signal.

RCA VICTOR

Tuner Chassis RC-1206A Amplifier Chassis Nos. RS-193A, B, D

1-VE-0 Series, Models 1VE075, 1VE086, 1VE094,
1-VE-1 Series, Models 1VE105, 1VE106, 1VE107,
1-VE-2 Series, Models 1VE205, 1VE207, 1VE224, 1VE229, 1VE246,
1-VF-1 Series, Models 1VF105, 1VF106, 1VF107,
1-VF-2 Series, Models 1VF205, 1VF207, 1VF224, 1VF229, 1VF246.

Diagram of Tuner Chassis RC-1206A is on the next page, over; and the diagram of the amplifier is on the page following. Use this related material together.

The 1-VE-2 Series, the 1-VF-1 Series, and the 1-VF-2 Series instruments use a four tube dual-channel audio amplifier (RS-193A) consisting of a preamplifier stage and an output stage in each channel. The phono input and the tuner input are fed to the function switch which selects STEREO phono, MONO phono, or RADIO tuner operation. Dual controls are provided to regulate the BASS, TREBLE, and LOUDNESS in each channel simultaneously, and a BALANCE control is provided to permit adjustment of the relative strength of each channel.

The RS-193A chassis contains output jacks for AC power to the record changer and to the tuner. A multiplex power output jack provides filament and B+ power for a multiplex adapter.

The 1-VE-1 Series instruments use the RS-193B audio amplifier which is similar to the RS-193A except that it does not contain a function switch, a tuner input, a tuner AC power output, or a multiplex power output.

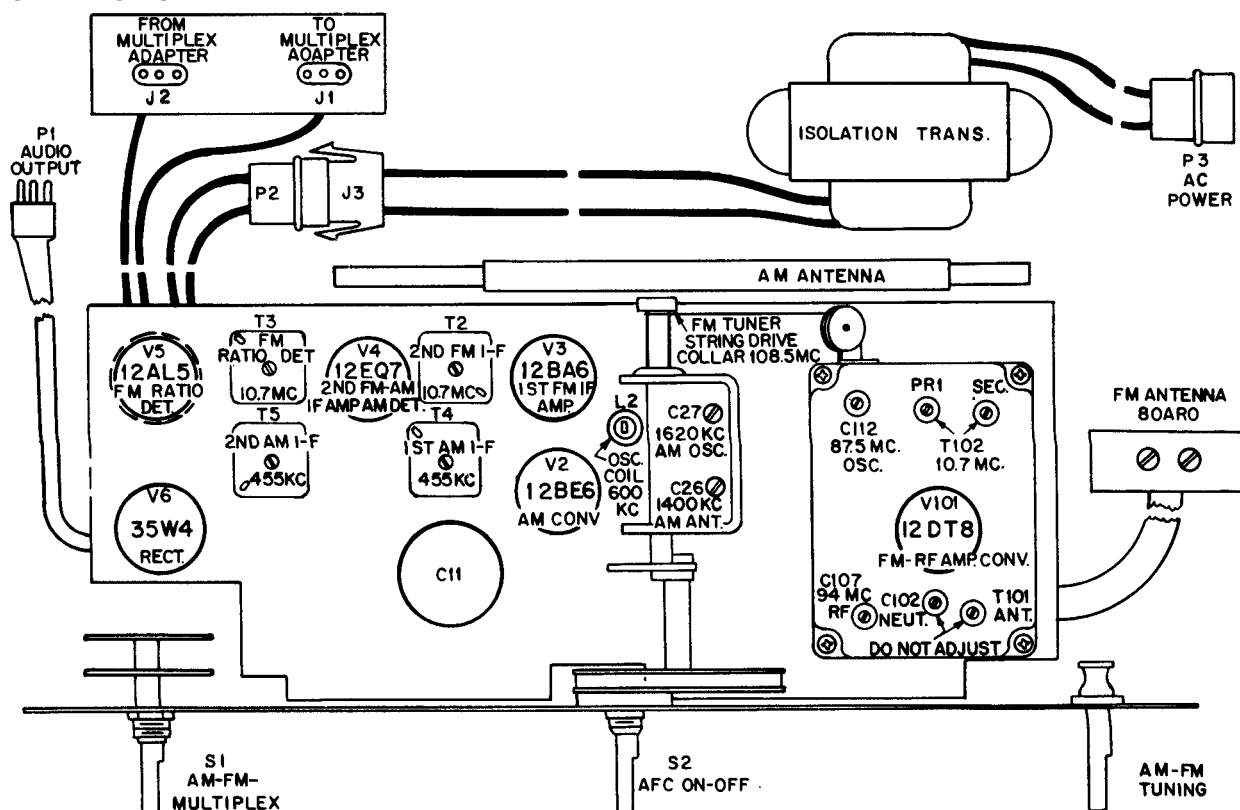
The 1-VE-0 Series instruments use the RS-193D audio amplifier. The RS-193D chassis is similar to the RS-193A except that it does not contain a function switch, a tuner input, a tuner AC power output, a multiplex power output, or a dial light.

MULTIPLEX ADAPTER

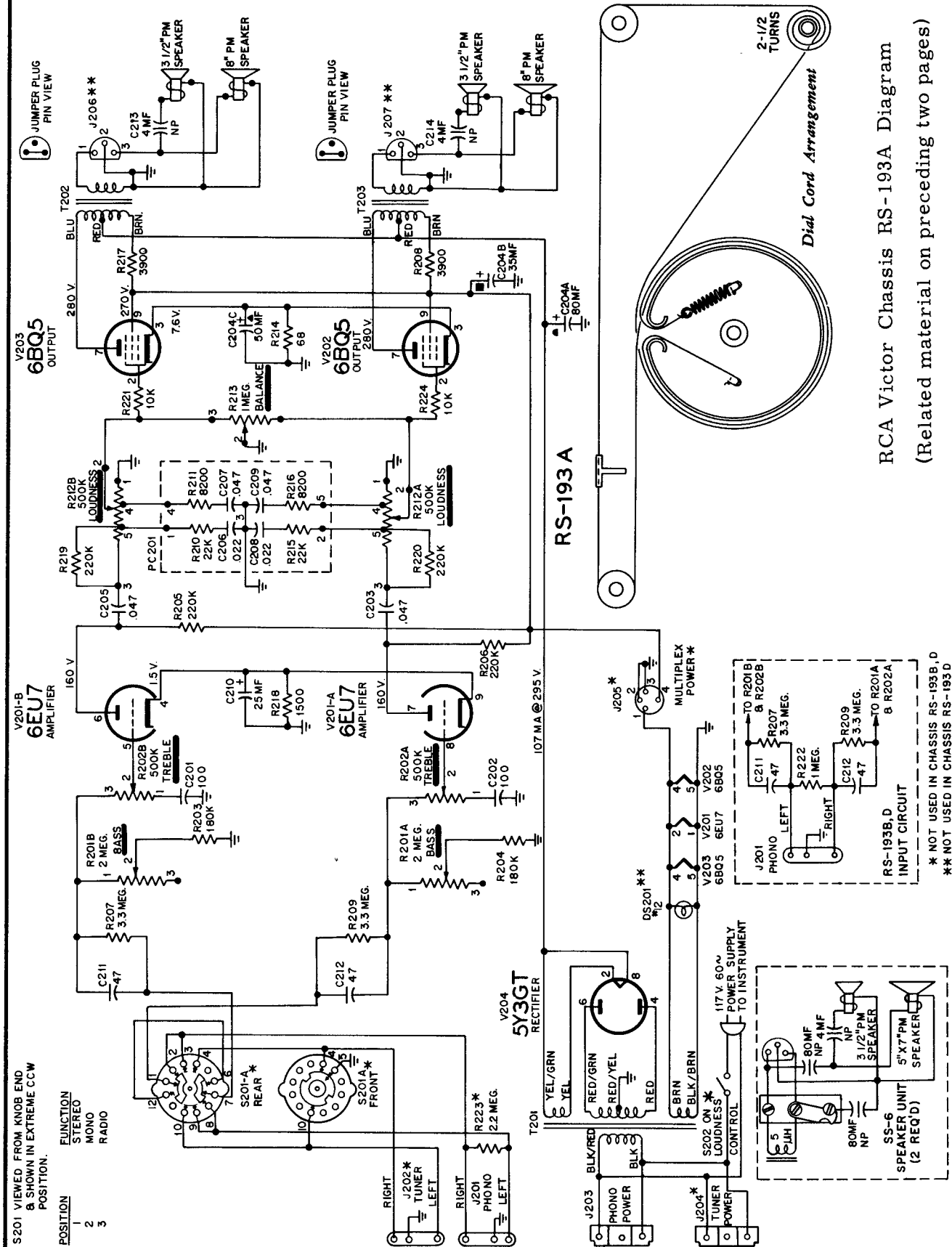
Models of the 1-VF-1 Series and the 1-VF-2 Series have provision for the connection of a multiplex adapter (RCA Model RK-295). Three jacks provide for the input, output, and power connections of the adapter. The signal input jack (J1) and the signal output jack (J2) are mounted on a bracket fastened to the cabinet underneath of the AM/FM tuner (RC-1206A). (These jacks are shown as a part of the tuner circuitry.) The MPX POWER jack is mounted on the amplifier chassis (RS-193A), and provides filament and B+ power for the adapter.

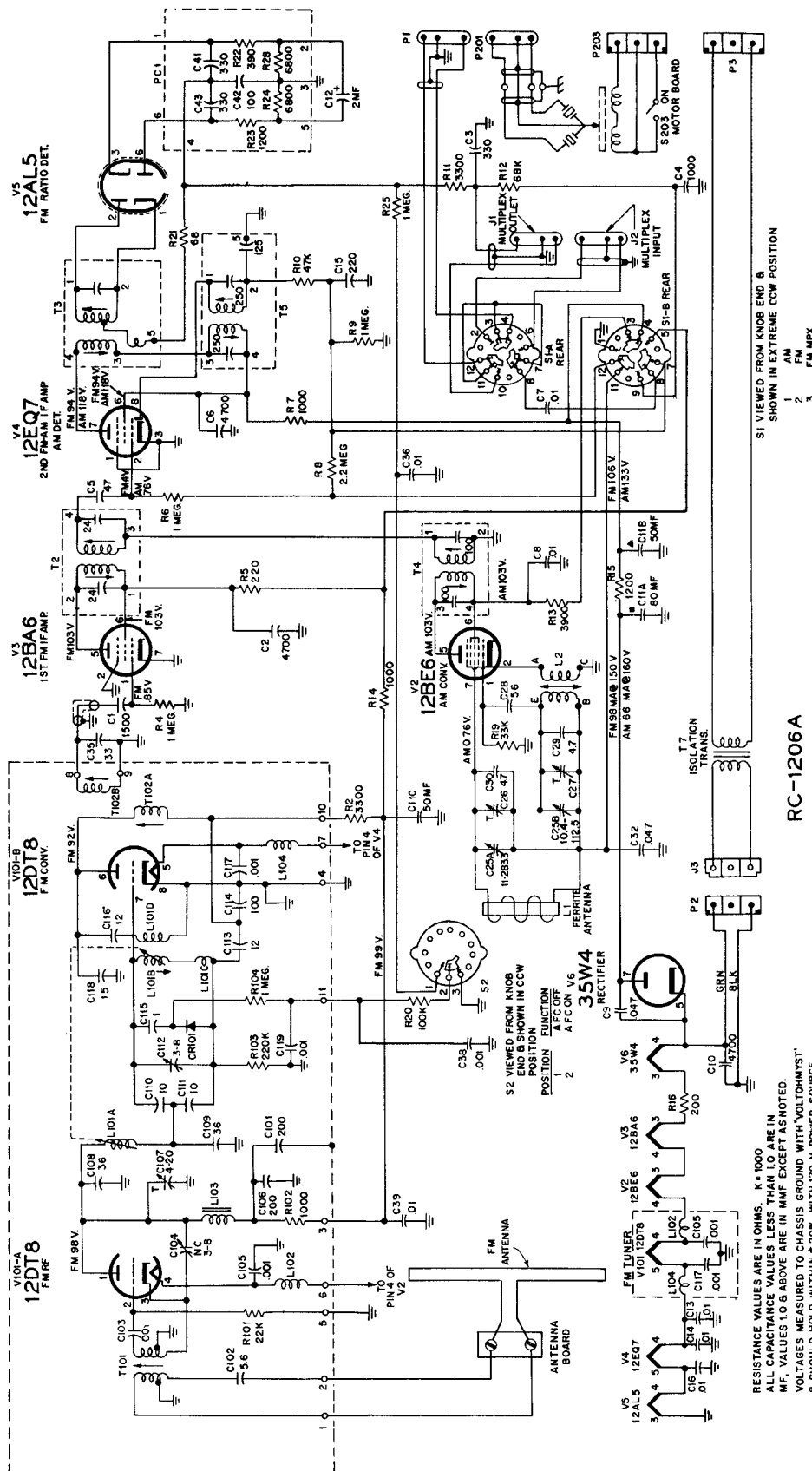
To receive FM multiplex broadcasts:

1. Connect the cables from the multiplex adapter (RK-295) to the MPX INPUT jack (J1) and the MPX OUTPUT jack (J2) on the tuner chassis, and the MPX POWER jack (J205) on the amplifier chassis.
2. Turn the FUNCTION selector switch to FM MPX.
3. Turn the STEREO-MONO-RADIO switch to RADIO.



Chassis RC-1206A—Location of Major Components





CRITICAL LEAD DRESS

Chassis RC-1206A

1. 10.7 mc IF grid and plate wiring must be short and dressed close to chassis.
2. Connect AVC side of AM antenna to top side of tuning gang, and dress clear of 12BE6 and 12BA6 tubes.
3. Dress heater lead which connects to pin 4 of 12BE6 along rear apron and to rear of 12BA6 socket.
4. B+ lead from pin 6 of 12BE6 to T4 must be short and dressed along chassis.
5. All RF bypass capacitor leads must be short and direct.
6. All heater leads must be close to chassis.

Chassis RS-193A, B, D

1. Dress all heater leads close to chassis and away from all grid connections.
2. Dress all green and white leads against front apron.
3. Dress all leads to pins 6 and 8 of V4(SY3) close to chassis.
4. Dress all leads from T2 and T3 against back apron.
5. Dress R8 and R17 (3900Ω) close to back apron keeping leads as short as possible.
6. Bend terminal 2 away from terminals 1 and 3 of J3 on RS-193B amplifier.

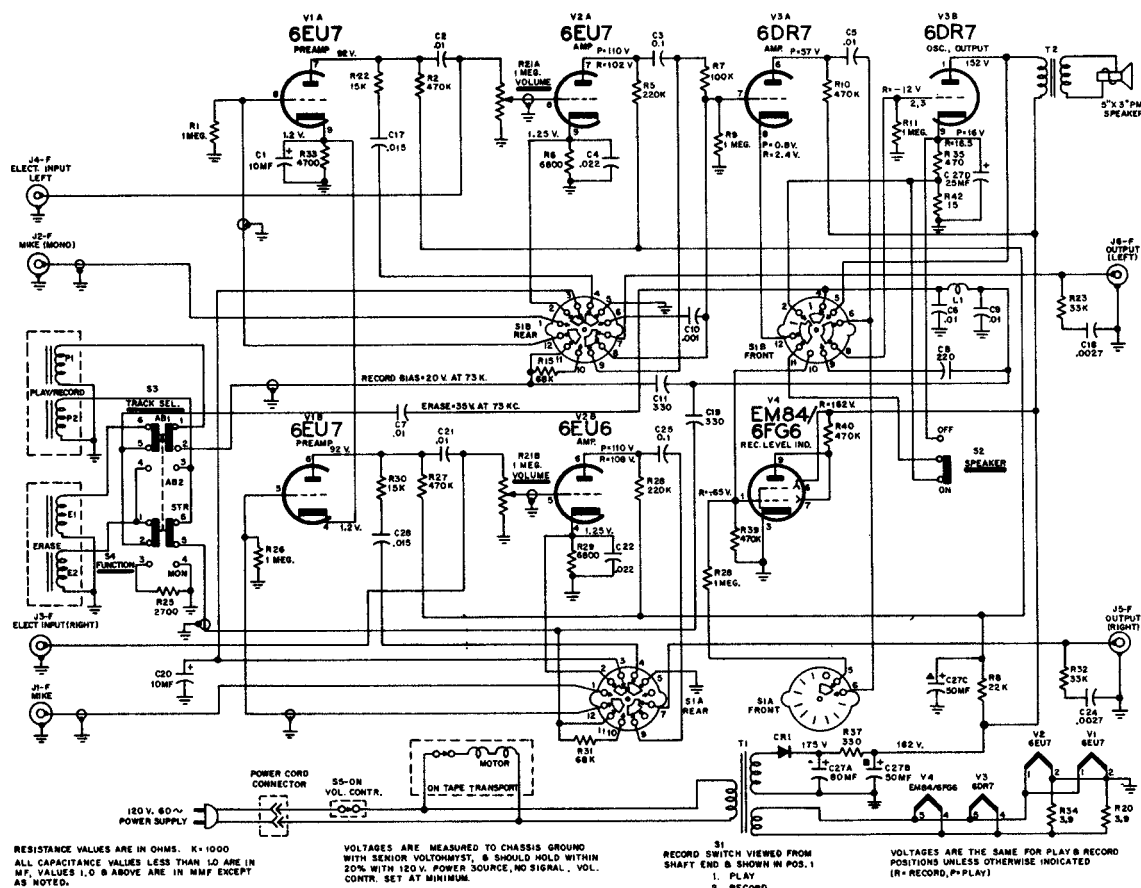
RCA Victor

Chassis RC-1206A

(Continued from preceding page; material on related amplifier is on the next page.)

RCA VICTOR TAPE RECORDER

Model 1-YC-11
Amplifier Chassis No. RS-196
Tape Transport TCT-3A



CHASSIS REMOVAL

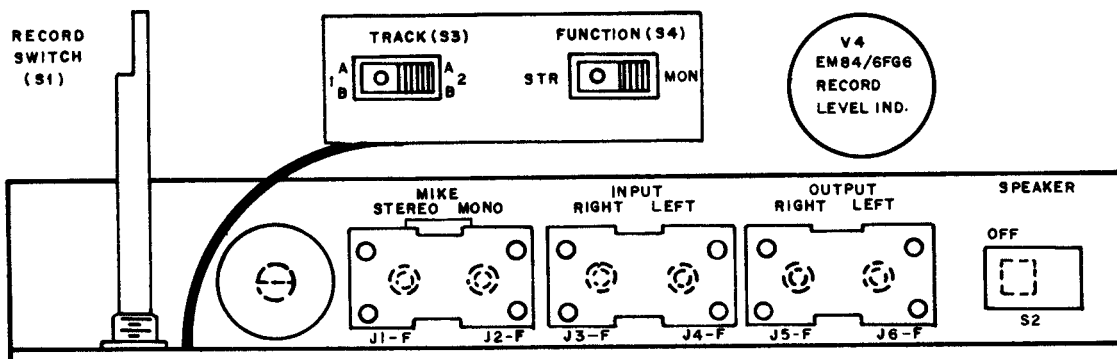
The amplifier chassis is fastened to the tape transport and is removed with it. For normal servicing it will not be necessary to separate the chassis from the transport.

To remove chassis and transport:

1. Turn REWIND-STOP-PLAY knob to rewind position.
2. Pull off RECORD, REWIND-STOP-PLAY, SPEED CONTROL and VOLUME knobs. **Note:** To remove SPEED control knob, twist while gently pulling the knob. When the knob is replaced, push it on firmly until the knob seats with a click.
3. The control escutcheon is held in place by three spring clips (2 at the front and one at the back), and one screw. Remove

the screw and plastic washer from the center of the escutcheon and lift the escutcheon straight up and off.

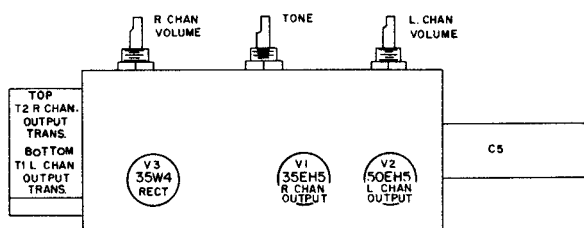
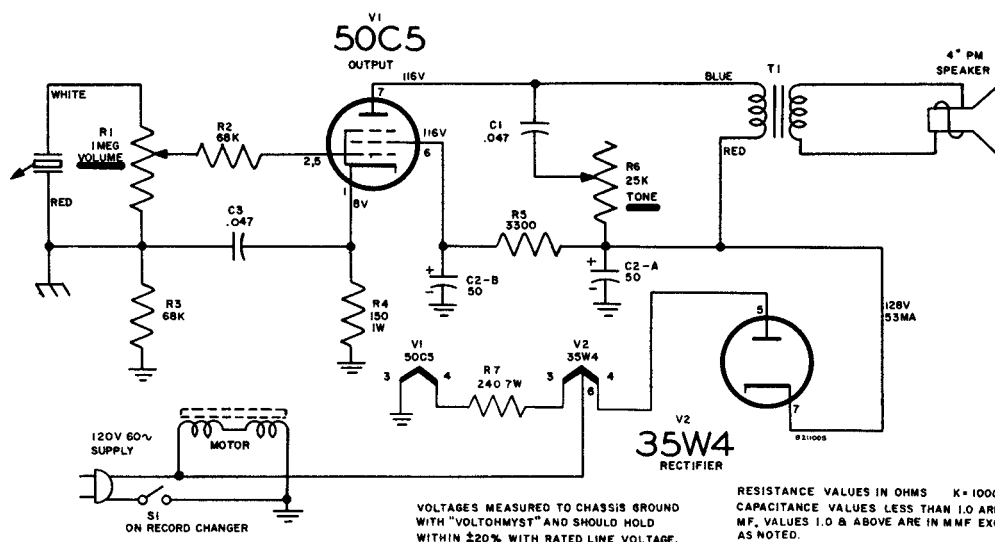
4. Block the carrying handle in its extended position.
5. Remove the four (4) red screws at the corners of the tape transport.
6. Lift right side of motor board sufficiently to permit disconnecting the speaker.
7. Lift out motor board and chassis.
Note: Support the transport mechanism on blocks or a rack if it is to be operated while outside of the case.
8. To reassemble, reverse the foregoing procedure.



RCA VICTOR

Model 1-VA-14

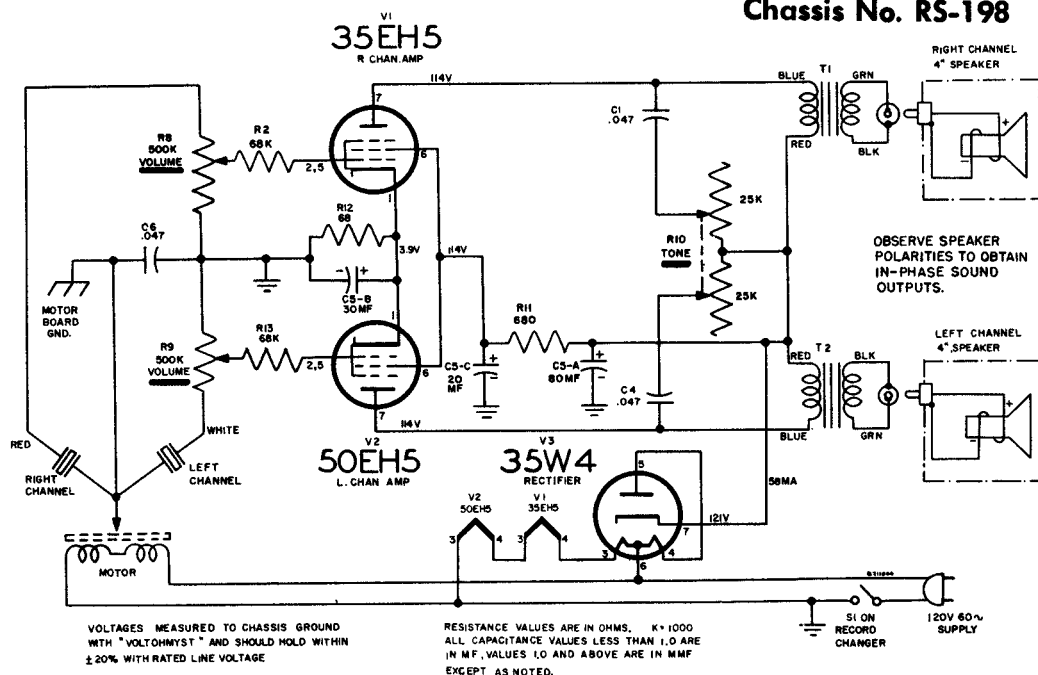
Chassis No. RS-197



RCA VICTOR

Model 1-VC-15

Chassis No. RS-198

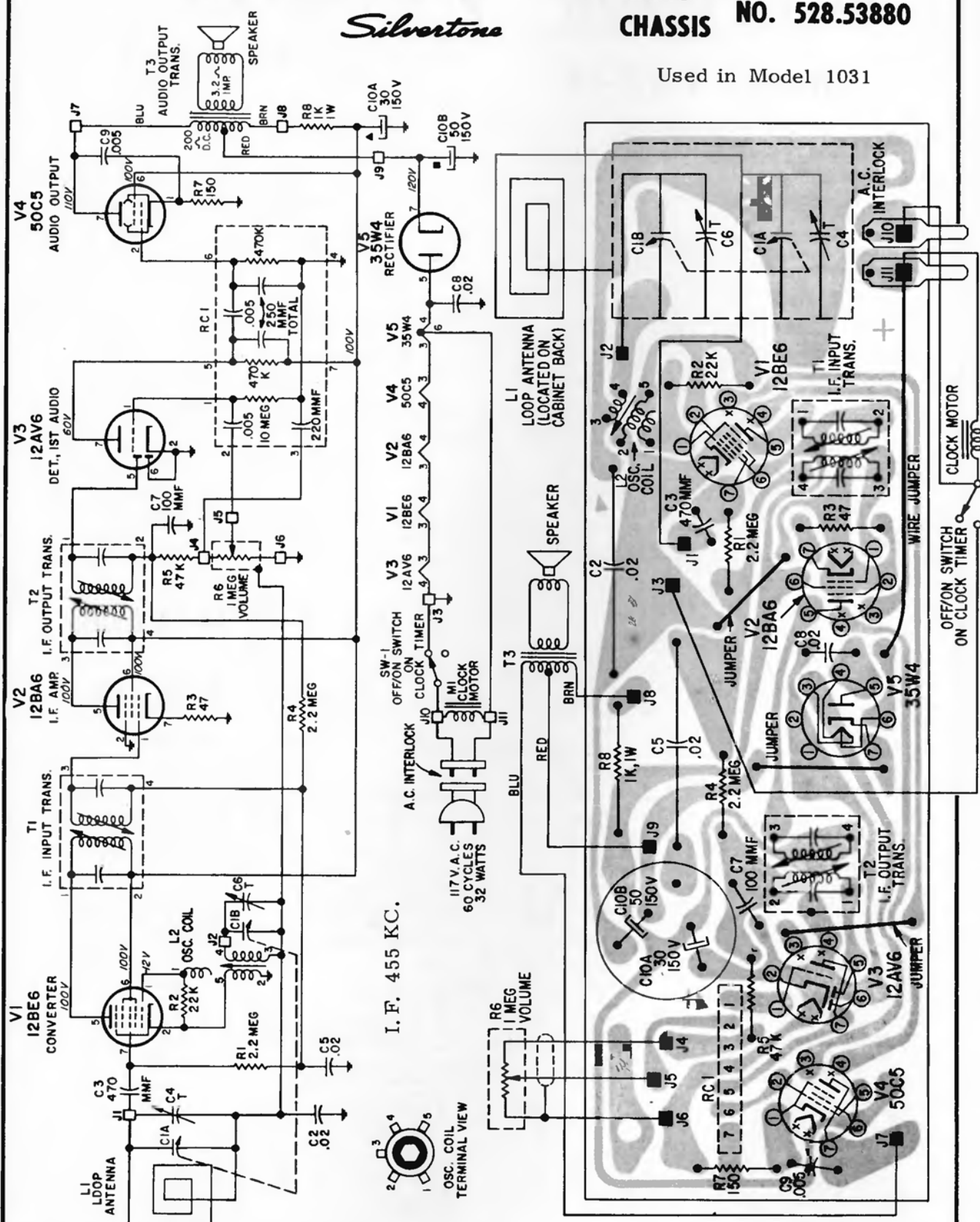


SEARS, ROEBUCK and CO.

Silvertone

RADIO CHASSIS NO. 528.53880

Used in Model 1031

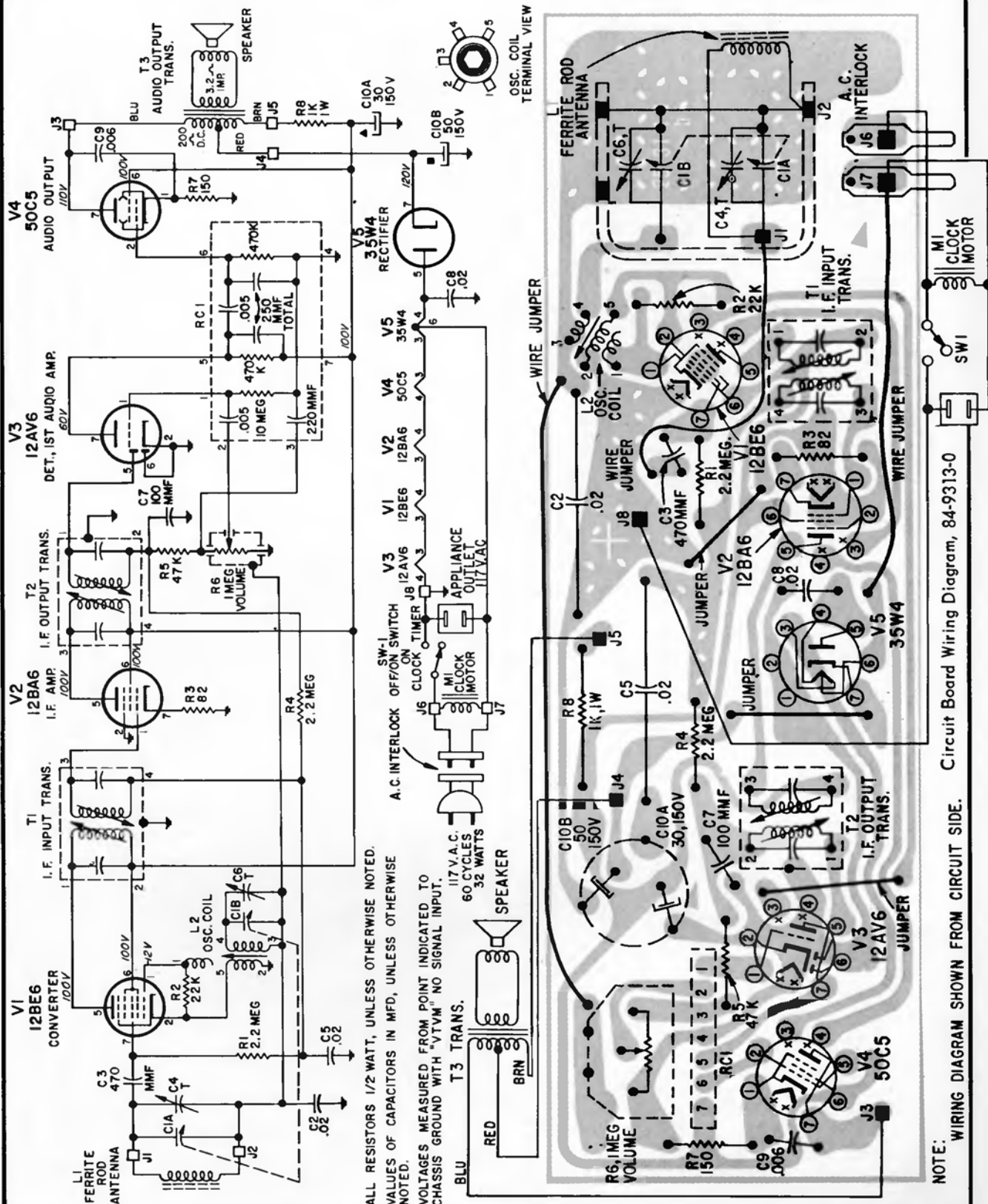


SEARS, ROEBUCK AND CO.

Models 1035, 1036, 1037, 1038

Silvertone

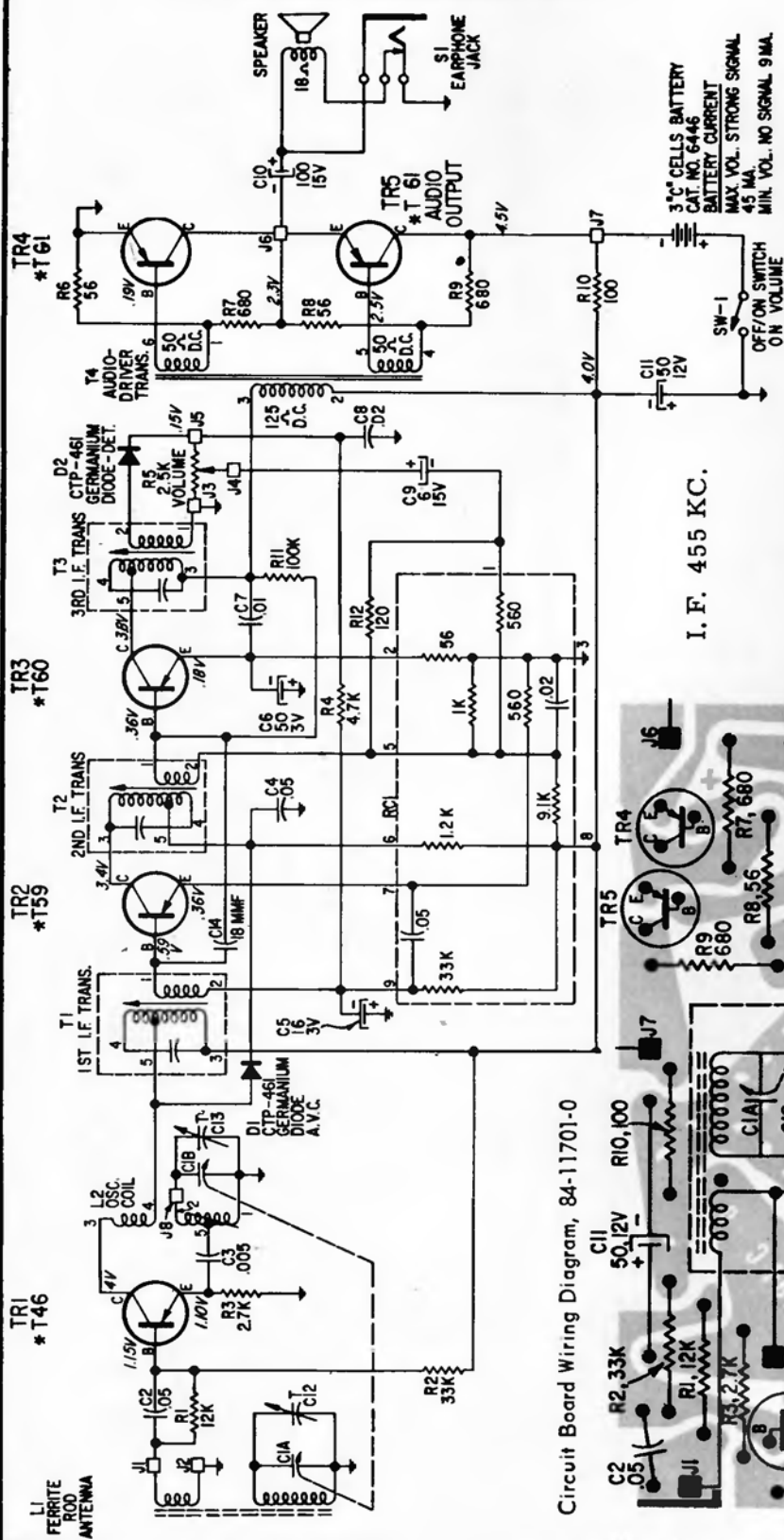
CHASSIS NO. 528.53940



SEARS, ROEBUCK AND CO.

CHASSIS NO. 528.53740

Models 1212, 1213, 1214

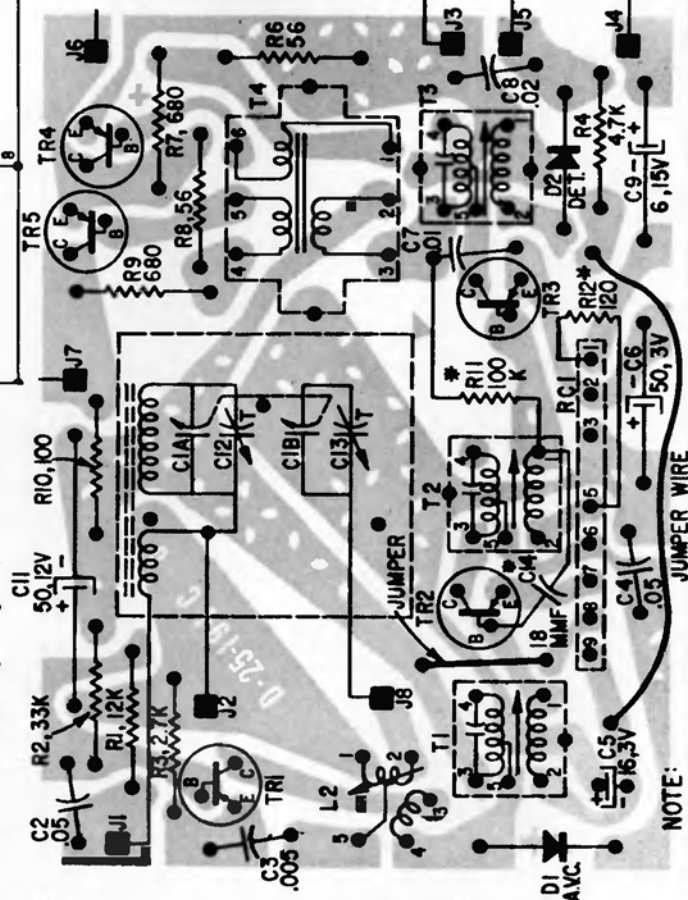
Silvertone


*Same production Models of this chassis may contain transistors identified only by manufacturers type number. Replacements should be ordered by the type number shown far that transistor on the schematic drawing.

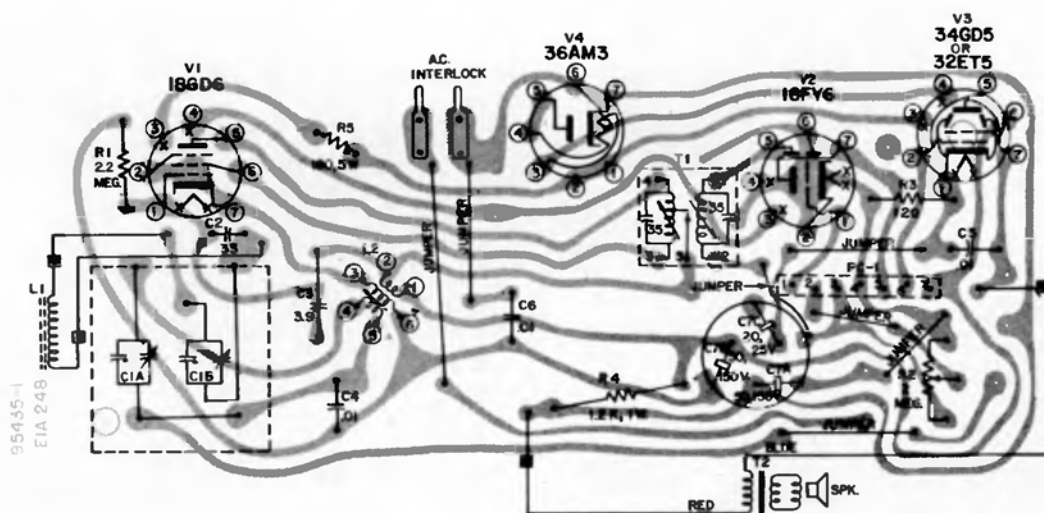
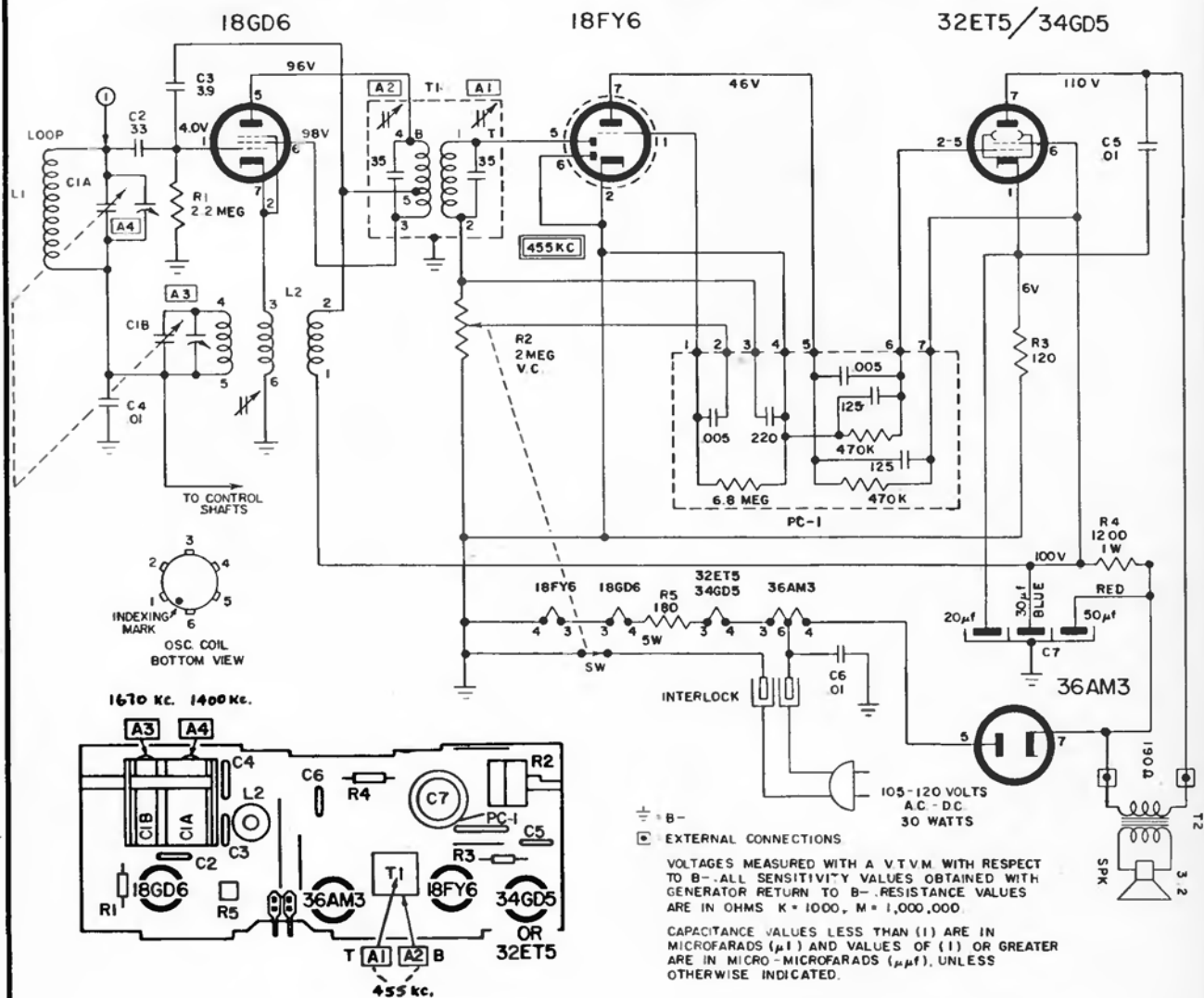
NOTES

1. VALUES OF CAPACITORS IN MFD, UNLESS OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/2 WATT, UNLESS OTHERWISE NOTED.
3. VOLTAGE READINGS ARE TAKEN FROM POINT INDICATED TO CHASSIS GROUND WITH "VTVM" NO SIGNAL INPUT.
4. J1, J2 ETC. INDICATES TERMINAL CONNECTIONS ON CIRCUIT BOARD.

Circuit Board Wiring Diagram, 84-11701-0



SEARS, ROEBUCK and CO.

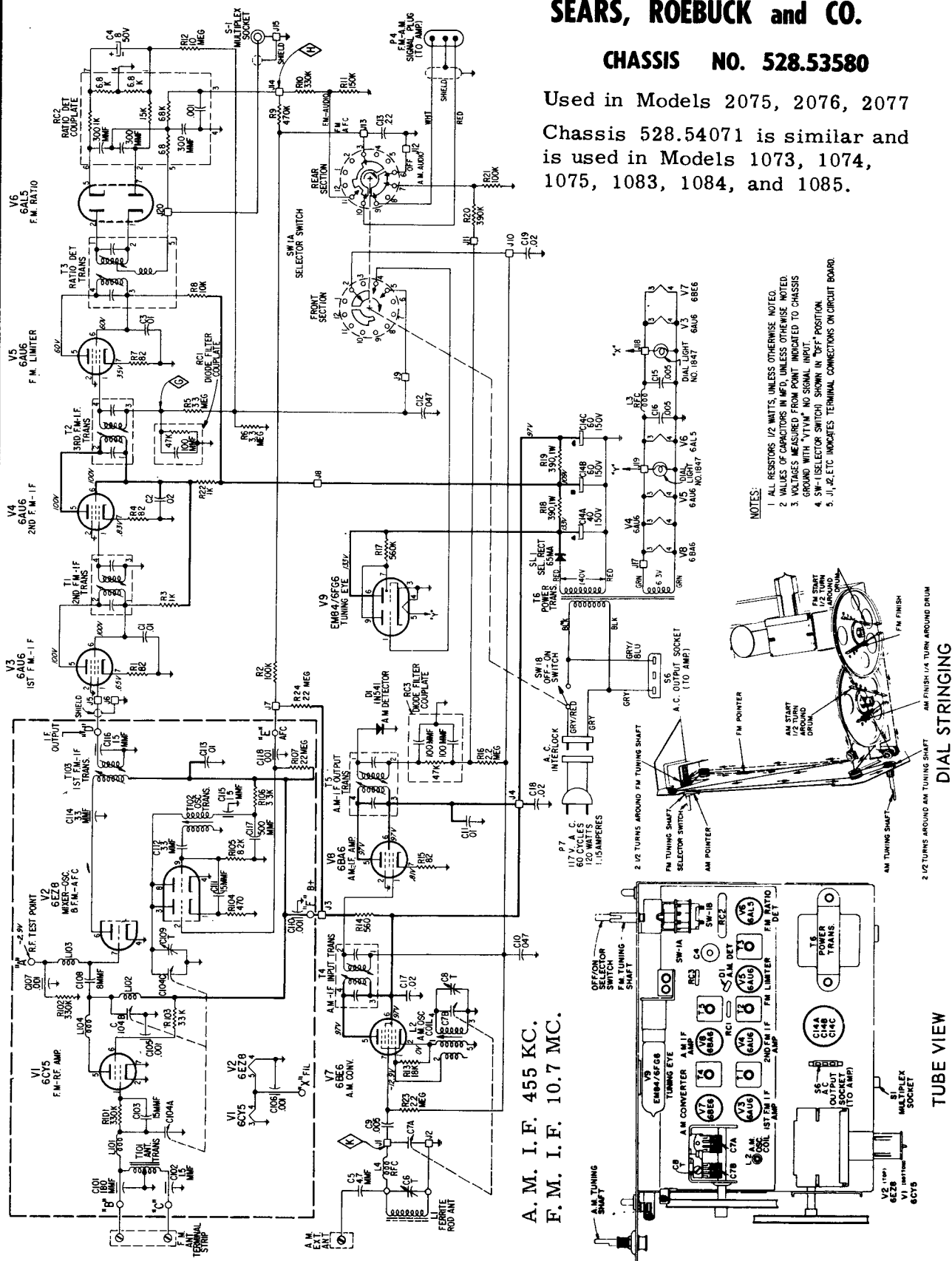
*Silverstone*CHASSIS 132.63901
MODEL 2000

SEARS, ROEBUCK and CO.

CHASSIS NO. 528.53580

Used in Models 2075, 2076, 2077

Chassis 528.54071 is similar and is used in Models 1073, 1074, 1075, 1083, 1084, and 1085.



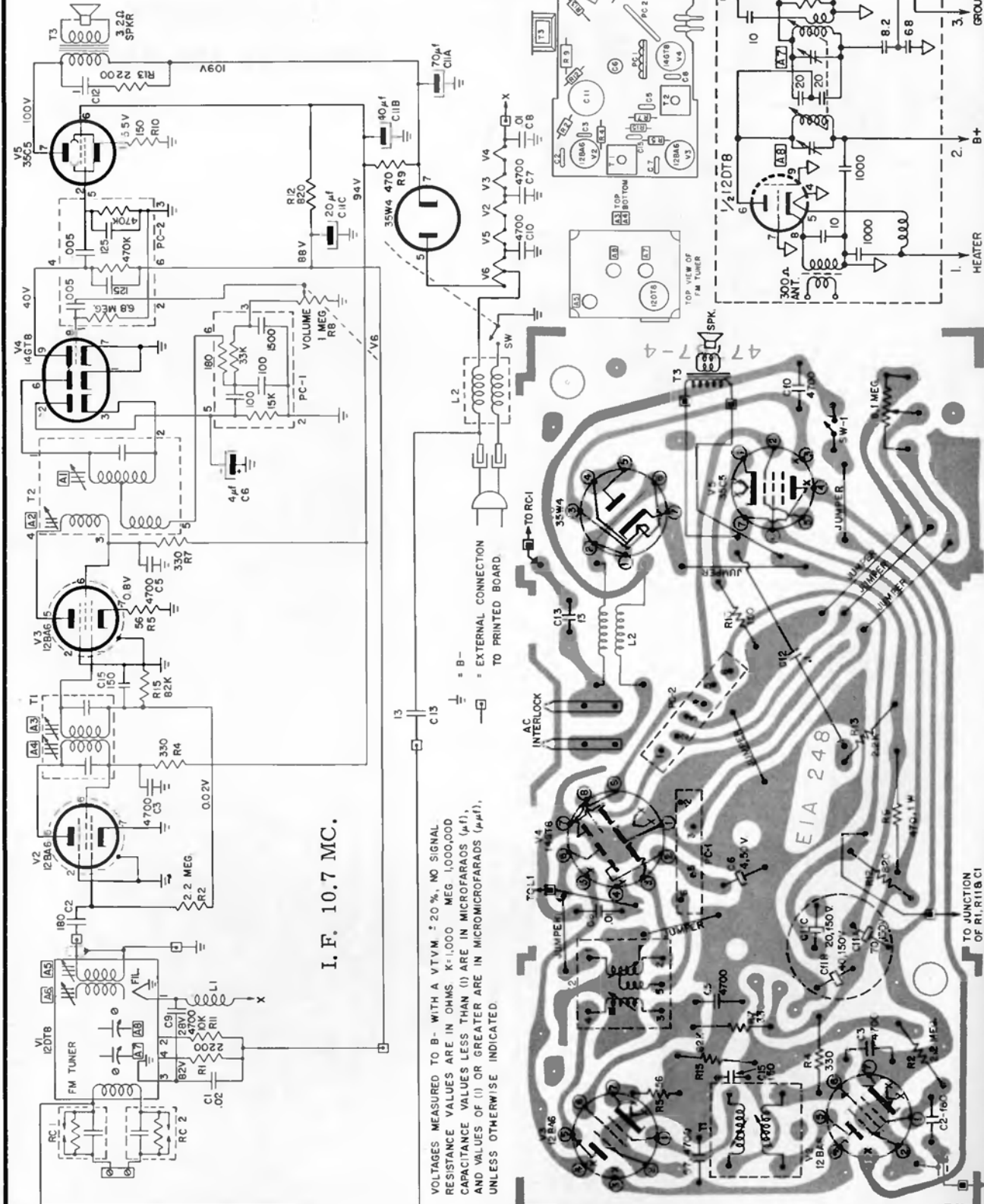
A.M. I.F. 455 KC.
F.M. I.F. 10.7 MC.

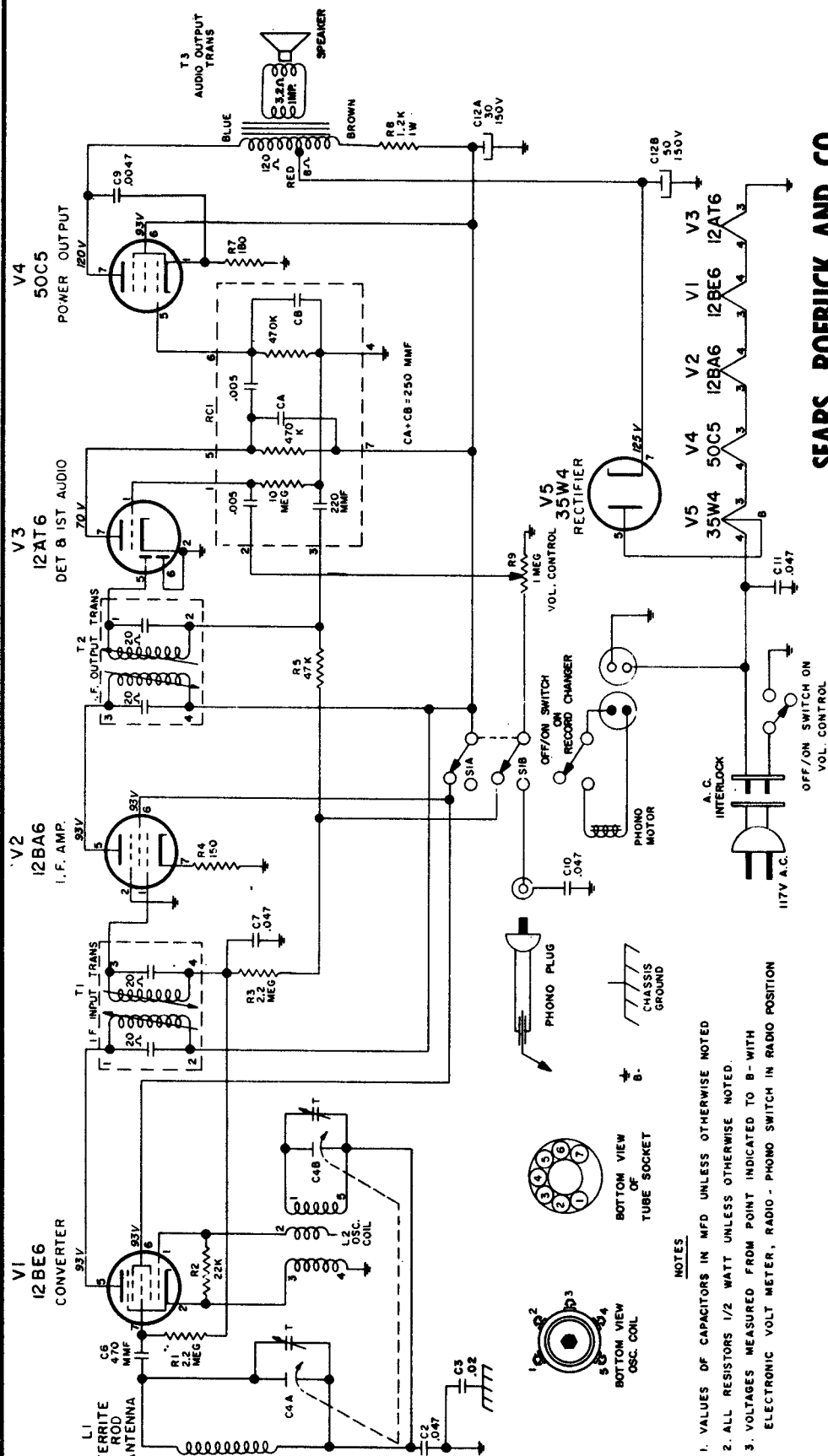
VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO

SEARS, ROEBUCK and CO.

Chassis 132.64402

Models 2018, 2019





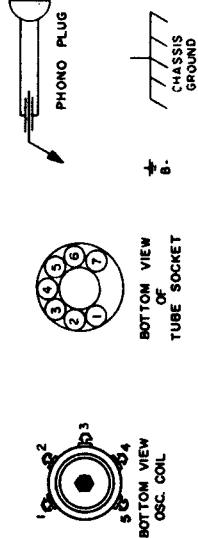
SEARS, ROEBUCK AND CO.

**RADIO
CHASSIS NO. 528.53071**

USED IN MODELS:

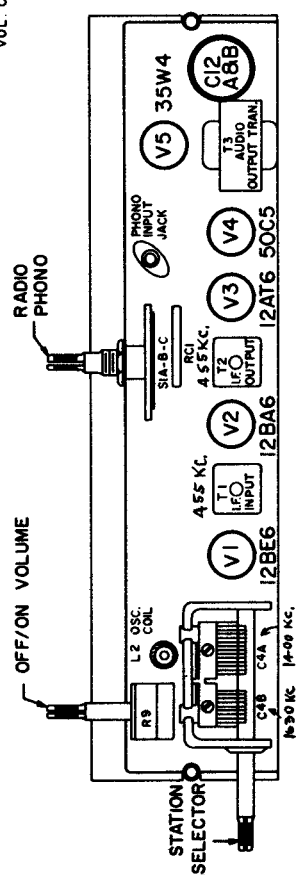
8038, 9040*, 9040A*

• Models 9040 & 9040A are exactly the same.

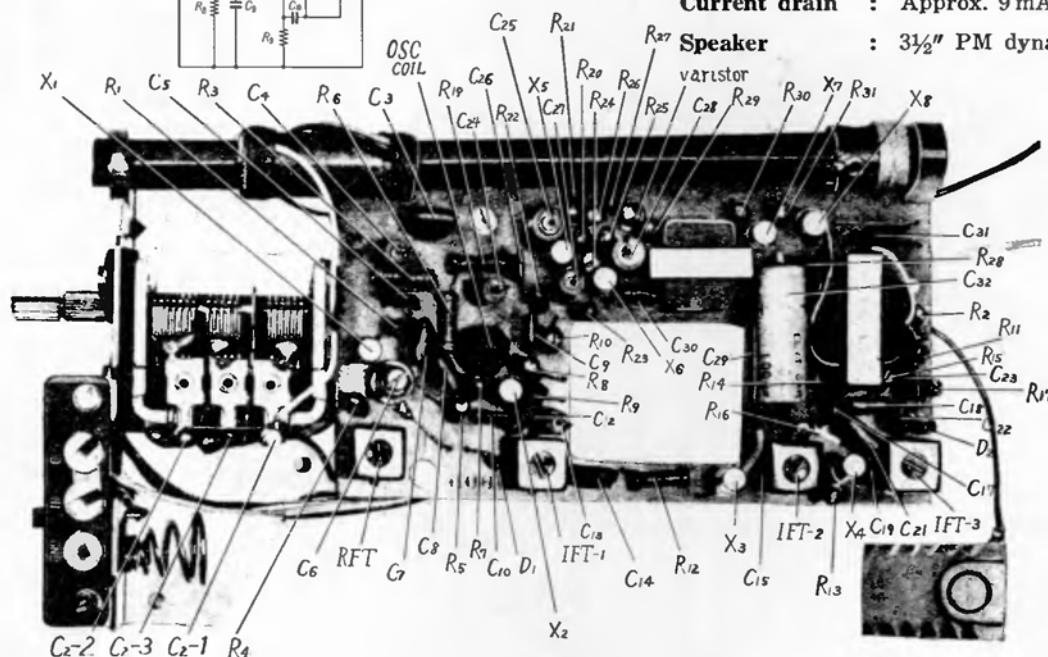


NOTES

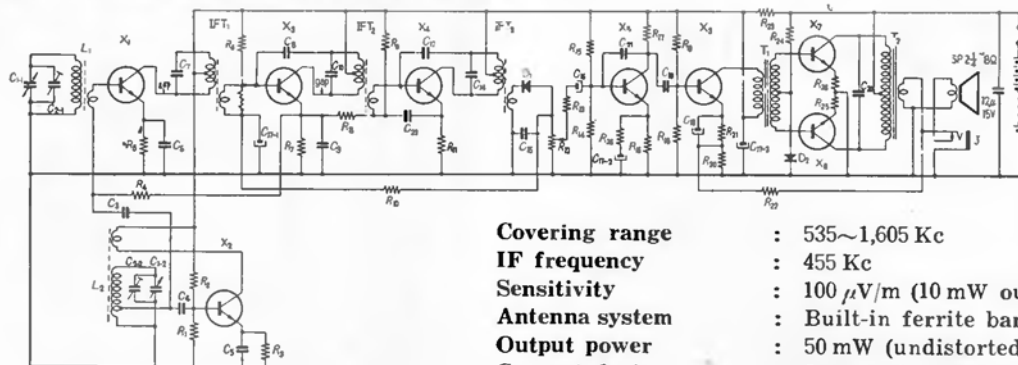
1. VALUES OF CAPACITORS IN MFD UNLESS OTHERWISE NOTED
2. ALL RESISTORS 1/2 WATT UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINT INDICATED TO B-WITH
ELECTRONIC VOLT METER, RADIO - PHONO SWITCH IN RADIO



Top View - Radio Chassis



Symbol	Description	Symbol	Description	Symbol	Description	Symbol	Description
C _{1-1, 2, 3}	3 ganged C max. 200, 165 PF	C ₂₃	0.02 μ F " (")	R ₁₄	15 K Ω " "	X ₆	AF ₂ 2T650 (2SD65)
C _{2-1, 2, 3}	" trimmer	C ₂₄	10 μ F 3 V (Electric) "	R ₁₅	470 Ω " "	X ₇	PA 2T69 or 2T31 (2SD69 or 2SB31)
C ₃	0.05 μ F MXL (Maylor)	C ₂₅	30 μ F 3 V (")	R ₁₆	470 Ω " "	X ₈	PA 2T69 or 2T31 (2SD69 or 2SB31)
C ₄	10 μ F 3 V (Electrolytic)	C ₂₆	0.05 μ F MXL (Maylor)	R ₁₇	3.3 K Ω " "	D ₁	Mix. 1T23G
C ₅	0.005 μ F MXL (Maylor)	C ₂₇	10 μ F 3 V (Electric)	R ₁₈	5 K Ω Volume control	D ₂	Det. 1T23G
C ₆	2~20 PF Cylindrical trimmer	C ₂₈	30 μ F 6 V (")	R ₁₉	15 K Ω RL $\frac{1}{2}$ W	D ₃	Varistor 1T51
C ₇	0.05 μ F MXL (Maylor)	C ₂₉	100 μ F 6 V (")	R ₂₀	3.3 K Ω " "	L _{1, 2, 3}	Ferrite bar antenna 10 ϕ $\times$ 160 mm LA-040-1F
C ₈	0.05 μ F " (")	C ₃₀	0.05 μ F MXL (Maylor)	R ₂₁	470 Ω " "	L _{4, 5}	RF Transformer (LH-003)
C ₉	0.02 μ F " (")	C ₃₁	0.1 μ F PS191 (Maylor)	R ₂₂	1 K Ω " "	L _{6, 7, 8}	Oscillator coil (LQ-025 Q)
C ₁₀	0.002 μ F " (")	C ₃₂	100 μ F 6 V (Electrolytic)	R ₂₃	10 K Ω " "	IFT ₁	LI-023AP
C ₁₁ ①	180 PF	R ₁	150 K Ω RL $\frac{1}{8}$ W	R ₂₄	3.3 K Ω " "	IFT ₂	LI-008BP
C ₁₂	0.02 μ F MXL (Maylor)	R ₂	8.7 K Ω " "	R ₂₅	330 Ω " "	IFT ₃	LI-008CP
C ₁₃	10 μ F 3 V (Electrolytic)	R ₃	560 Ω " "	R ₂₆	5 Ω " "	T ₁	1.5 K Ω : 2 K Ω (TI-007)
C ₁₄	0.05 μ F MXL (Maylor)	R ₄	150 K Ω " "	R ₂₇	220 Ω " "	T ₂	200 Ω : 8 Ω (TX-003)
C ₁₅ ②	2 PF (Styrol)	R ₅	220 Ω " "	R ₂₈	60 Ω " "	SP	3 $\frac{1}{2}$ " 8 Ω DS-008-1
C ₁₆ ①	180 PF	R ₆	220 Ω " "	R ₂₉	2.2 K Ω RL $\frac{1}{8}$ W	① Built in IFT ② To be adjusted	
C ₁₇	0.02 μ F MXL (Maylor)	R ₇	56 K Ω " "	R ₃₀	5 Ω " "		
C ₁₈	0.02 μ F " (")	R ₈	12 K Ω " "	R ₃₁	5 Ω " "		
C ₁₉	2 PF (Styrol)	R ₉	1 K Ω " "	X ₁	RF 2T734 (2SC73)		
C ₂₀ ①	180 PF	R ₁₀	56 K Ω " "	X ₂	Osc. 2T732 (2SC73)		
C ₂₁	0.05 μ F MXL (Maylor)	R ₁₁	5.6 K Ω " "	X ₃	IF ₁ 2T750 (2SC75)		
C ₂₂	0.02 μ F " (")	R ₁₂	470 Ω " "	X ₄	IF ₂ 2T750 (2SC75)		
		R ₁₃	2.2 K Ω " "	X ₅	AF, 2T652 (2SD65)		

SONY**TR-86**

Covering range : 535~1,605 Kc
 IF frequency : 455 Kc
 Sensitivity : 100 μ V/m (10 mW output)
 Antenna system : Built-in ferrite bar antenna
 Output power : 50 mW (undistorted)
 Current drain : 8 mA (at zero signal)
 Speaker : 2 1/4" PM dynamic speaker 8 Ω

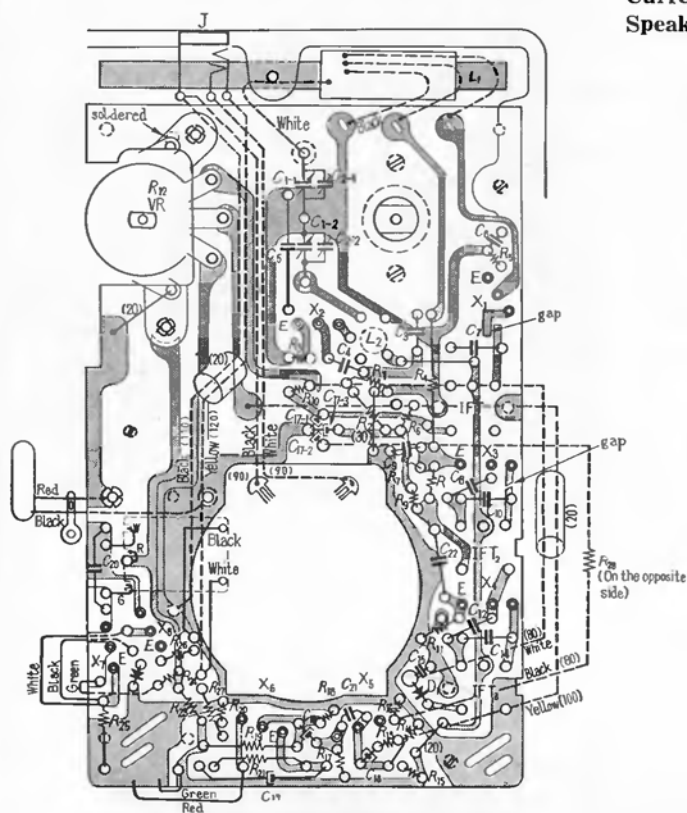
Parts list for TR-86

Symbol	Description	Symbol	Description
L ₁	Antenna coil LA-033-LE	R ₂₆	22 Ω " "
L ₂	Oscillator coil LO-002-Q	R ₂₇ ①	33 K Ω " "
IFT ₁	LI-008-AP	R ₂₈	270 Ω " 20%
IFT ₂	LI-008-BP	C _{1-1, 1-2}	Variable condenser
IFT ₃	LI-008-CP	C _{2-1, 2-2}	CV-007-02
T ₁	TI-002-03	C ₃	0.005 μ F
T ₂	TX-002-03	C ₄	0.01 μ F
SP	2 1/4" 8 Ω DS-004-1	C ₅	0.005 μ F
J	Earphone jack	C ₆	0.01 μ F
R ₁	10 K Ω 1/4 W 20%	C ₇	180 PF
R ₂	56 K Ω " "	C ₈	2 PF
R ₃	2.2 K Ω " "	C ₉ ③	30 μ F 3 V
R ₄	2.2 K Ω " "	C ₁₀	180 μ F
R ₅ ①	820 Ω " 10%	C ₁₂	2 PF
R ₆	82 K Ω " 20%	C ₁₄	180 PF
R ₇	470 Ω " "	C ₁₅	0.02 μ F
R ₈	820 Ω " "	C ₁₆ ③	5 μ F 6 V
R ₉	18 K Ω " "	C ₁₇ ③	20 μ F 10 V 3 in block
R ₁₀	7.5 K Ω " "	C ₁₈ ③	5 μ F 6 V
R ₁₁	470 Ω " "	C ₁₉ ③	30 μ F 3 V
R ₁₂ ②	5 K Ω (RV-234)	C ₂₉	0.05 μ F
R ₁₃	1.5 K Ω 1/4 W 20%	C ₂₁	0.001 μ F
R ₁₄	10 K Ω 1/4 W 20%	C ₂₂	0.01 μ F
R ₁₅	56 K Ω " "	X ₁	Mixer 2 T7 (2SC76)
R ₁₆	820 Ω " "	X ₂	Oscillator 2 T7 (2SC73)
R ₁₇	2.2 K Ω " "	X ₃	IF 2 T7 (2SC76)
R ₁₈	10 K Ω " "	X ₄	IF 2 T7 (2SC76)
R ₁₉	56 K Ω " "	X ₅	Audio 2 T6 (2SD66)
R ₂₀	5 Ω " 10%	X ₆	Audio 2 T6 (2SD66)
R ₂₁	680 Ω " 20%	X _{7, X8}	Power stage 2 T6 (2SD65)
R ₂₂	220 Ω " "	D ₁	Detector 1 T23
R ₂₃	220 Ω " "	D ₂	Varistor 1 T52
R ₂₄	5.6 k Ω " "		
R ₂₅	22 Ω " 10%		

① To be adjusted.

② With switch.

③ Electrolytic.

**Circuit board of TR-86 (Printed side)****Audio Transformer**

Input transformer TI-002

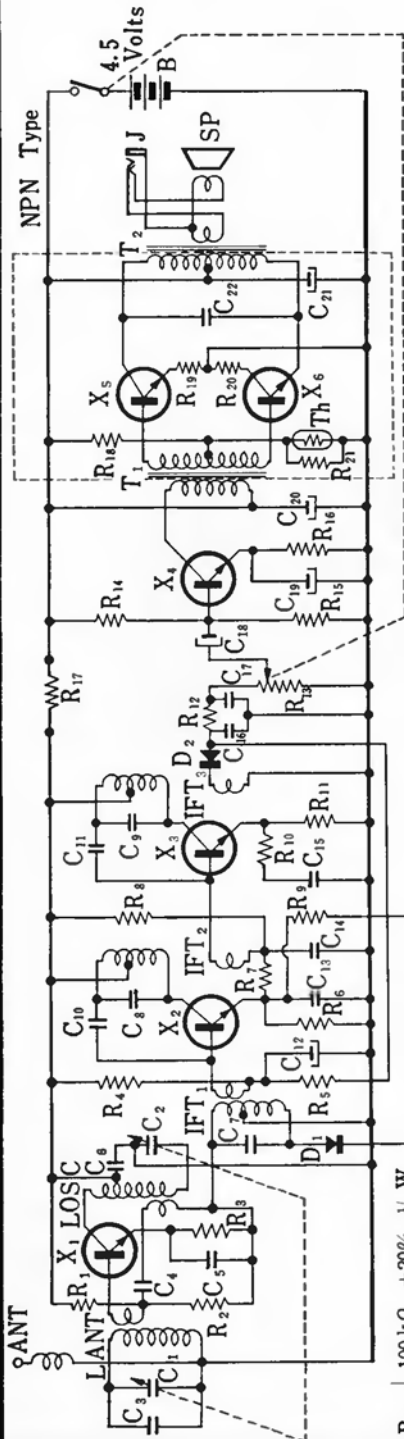
6 K Ω : 3 K Ω DC resistance 500 Ω : 280 Ω

Output transformer TX-002

1.4 K Ω : 8 Ω DC resistance 100 Ω : 0.5 Ω

SONY

TR-608



Covering frequency : 535~1605 kc

IF frequency : 455 kc

Sensitivity : 200 μ V/m with built-in ferrite bar antenna

Battery : 40 μ V/m with external aerial

Current drain : 3 size "C" flashlight batteries (4.5 Volts)

Current drain : 7.5 mA $\pm$ 20% at zero signal

⊗ (Beneath the ferrite bar)

Transistor 2T73 (2SD73)
" 2T76 (2SC76)
" 2T76 (2SC76)
" 2T6 (2SD65)
" 2T85
Diode 1T23 (1S75)
" 1T22 (1S75)
Thermistor S-250

X₁ LANT
X₂ OSC
X₃ IFT₁
X₄ IFT₂
X₅ IFT₃
X₆ T₁
D₁ J
Th SP
B

LANT

OSC

IFT₁

IFT₂

IFT₃

T₁

J

SP

B

Volume control
with Switch

$\pm$ 5% $\frac{1}{4}$ W

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

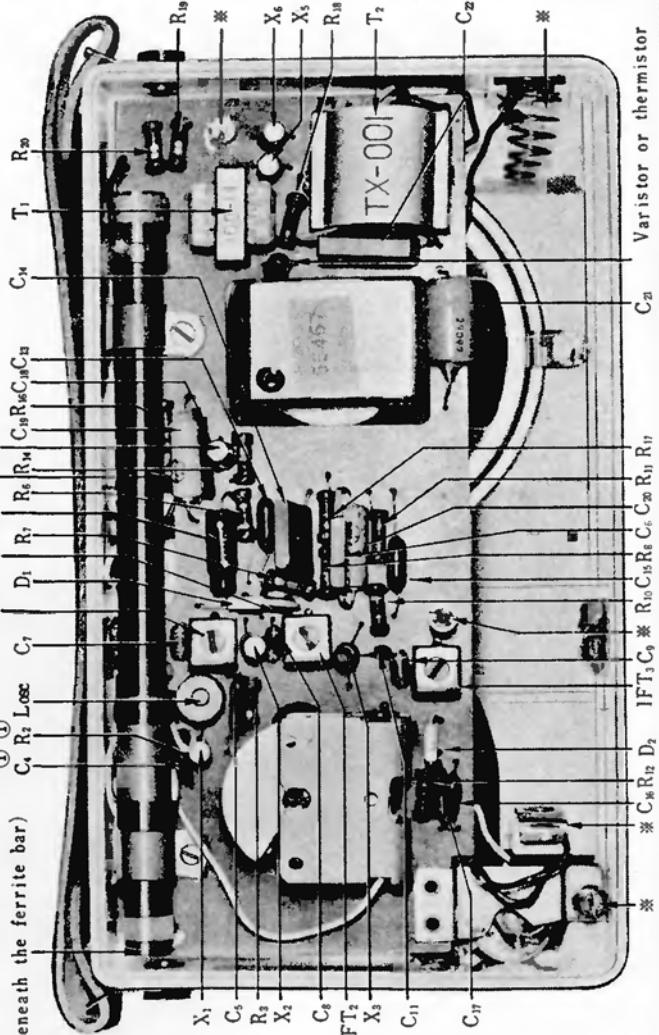
" " " "

" " " "

" " " "

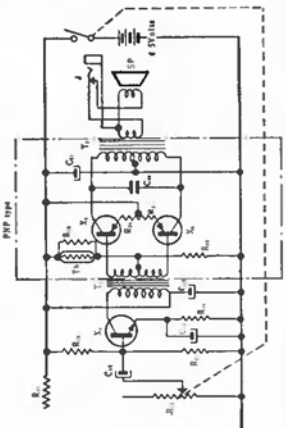
" " " "

" " " "



TR-608 Mounted circuit board (NPN)

TR-608 PNP 2T32 X₁X₂



6V

6V

6V

6V

6V

6V

6V

6V

6V

6V

6V

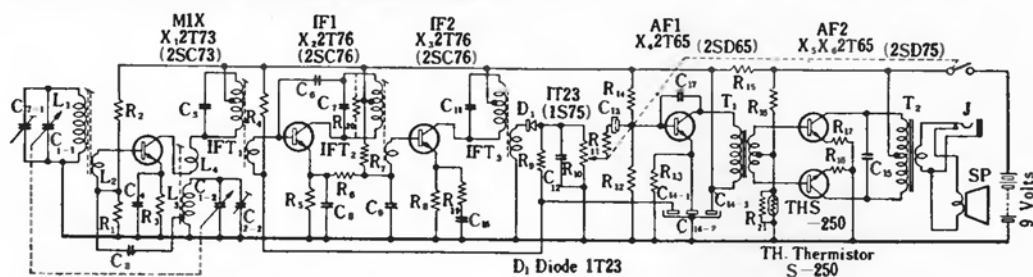
6V

6V

6V

6V

SONY TR-610



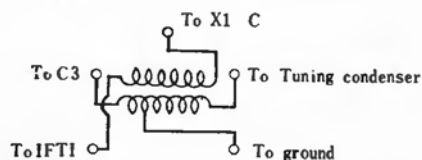
L_1, L_2	Antenna Coil	R_8	470 Ω $\pm 20\%$ $\frac{1}{4}$ W	C_3	0.01 μ F
L_3, L_4	Oscillator Coil	R_9	8.2 k Ω $\pm 10\%$ "	C_4	0.005 μ F
IFT ₁	I.F. transformer	R_{10}	5 k Ω VR with switch	C_5	200 pF (Built in IFT)
IFT ₂	"	R_{11}	470 Ω $\pm 20\%$ $\frac{1}{4}$ W	C_6	2 pF
IFT ₃	"	R_{12}	8.2 k Ω $\pm 10\%$ "	C_7	200 pF (Built in IFT)
T_1	Interstage transformer	R_{13}	1.5 k Ω $\pm 20\%$ "	C_8	0.02 μ F
T_2	Output transformer	R_{14}	27 k Ω " "	C_9	0.005 μ F
J	Earphone Jack	R_{15}	220 Ω " "	C_{11}	200 pF (Built in IFT)
SP	2 1/4" PM Speaker 8 Ω	R_{16}	7.5 k Ω $\pm 10\%$ "	C_{12}	0.02 μ F
R_1	8.2 k Ω $\pm 5\%$ $\frac{1}{4}$ W	R_{17}	22 Ω $\pm 20\%$ "	C_{13}	10 μ F 3 V
R_2	110 k Ω $\pm 20\%$ "	R_{18}	22 Ω " "	C_{14-1}	20 μ F 10 V
R_3	1.5 k Ω $\pm 5\%$ "	R_{19}	150 Ω " "	C_{14-2}	20 μ F 10 V
R_4	130 k Ω $\pm 20\%$ "	R_{20}	220 k Ω " "	C_{14-3}	20 μ F 10 V
R_5	470 Ω " "	R_{21}	220 Ω " "	} Block	
R_6	1.5 k Ω " "	C_1	} PVC-2 M. Tuning condenser	C_{15}	0.04 μ F
R_7	33 k Ω $\pm 10\%$ "	C_2		Trimmer condenser	0.005 μ F
				C_{16}	100 pF

TR-610 Circuit board printed side

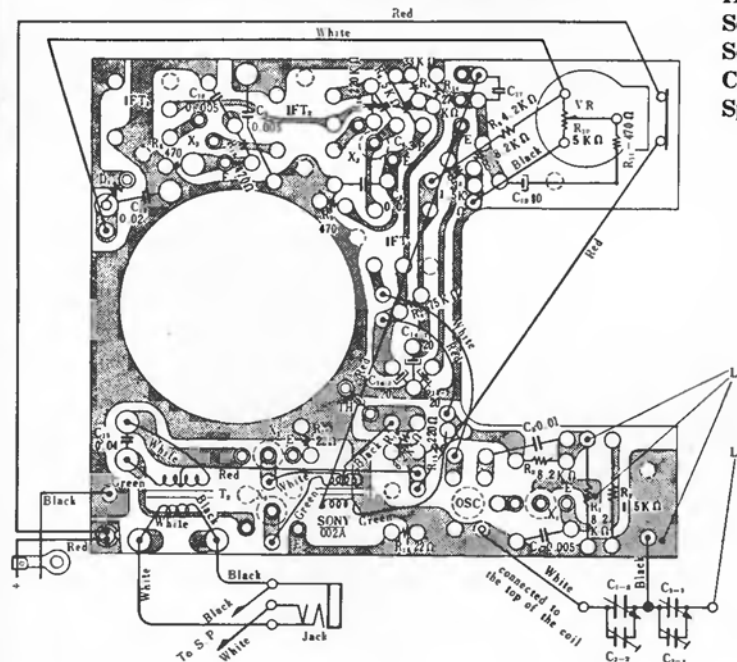
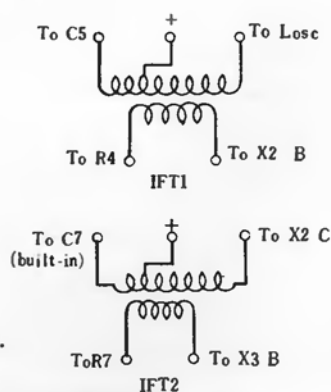
IF frequency : 455 kc
Sensitivity : 400 μ V/m at 10 mW output
Selectivity : 18 db at 10 kc off resonance
Current drain : Approx. 5 mA at zero signal
Speaker : 2 1/4" PM dynamic 8 Ω

Coils

(a) Oscillator coil (bottom view)



(b) IFT (bottom view)

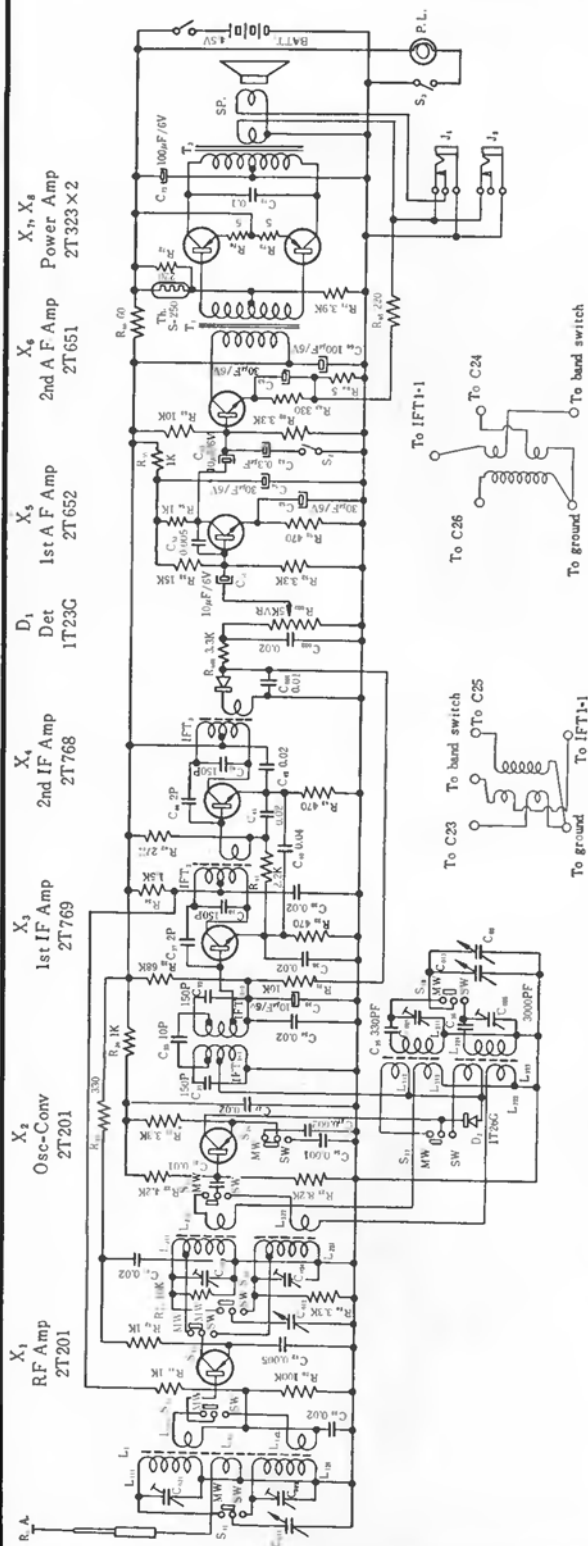


How to remove Cabinet

- Remove 2 small Philips screws on both side of the Cabinet.
- Open the Back cover and remove a screw on the back of the speaker. The circuit board can be easily taken out.

SONY

TR-815B and TR-815Y

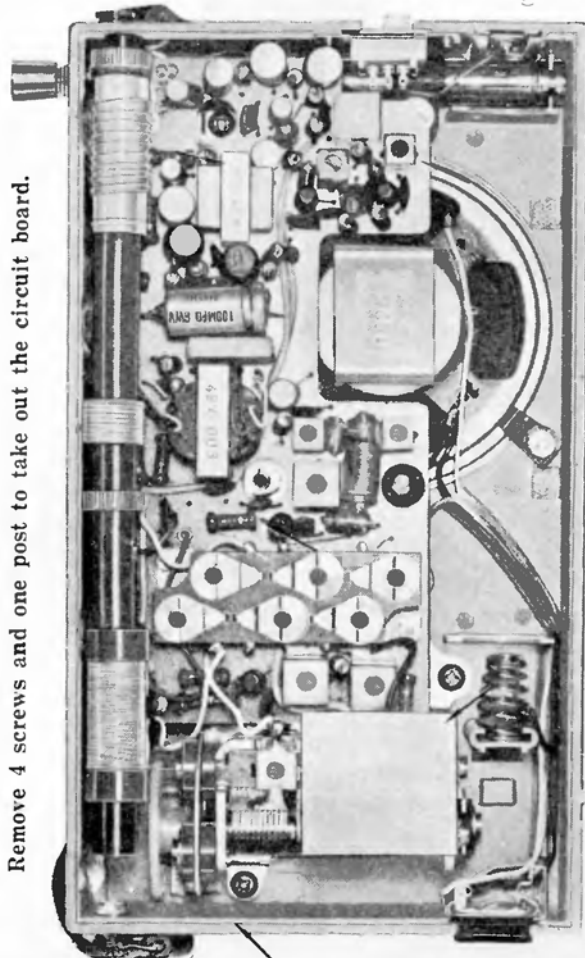


Covering frequency: MW 535~1,605 kc

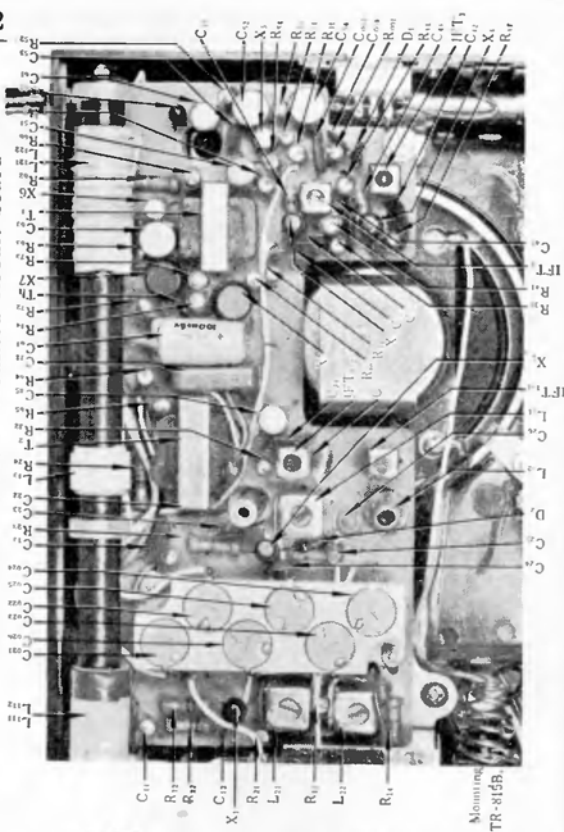
IF frequency : 455 kc

Current drain : Approx. 8 mA at zero signal
Approx. 55 mA at 150 mW output

Remove 4 screws and one post to take out the circuit board.

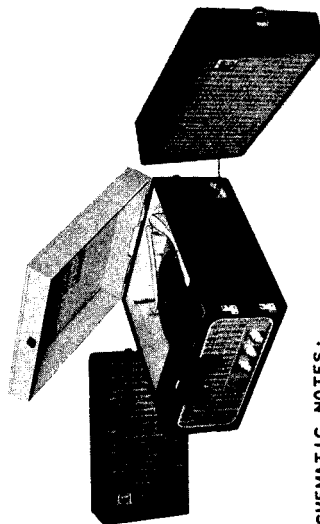
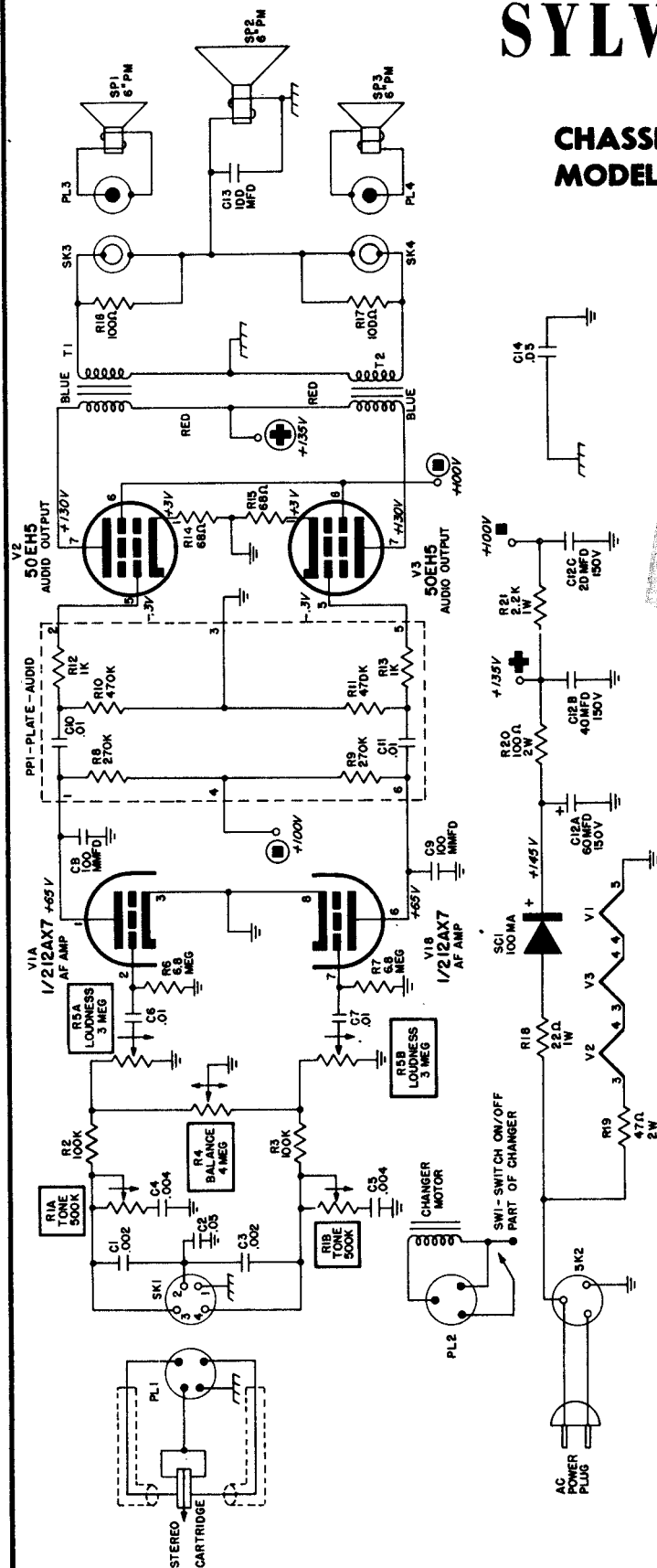


TR-815B and TR-815Y Mounted circuit board



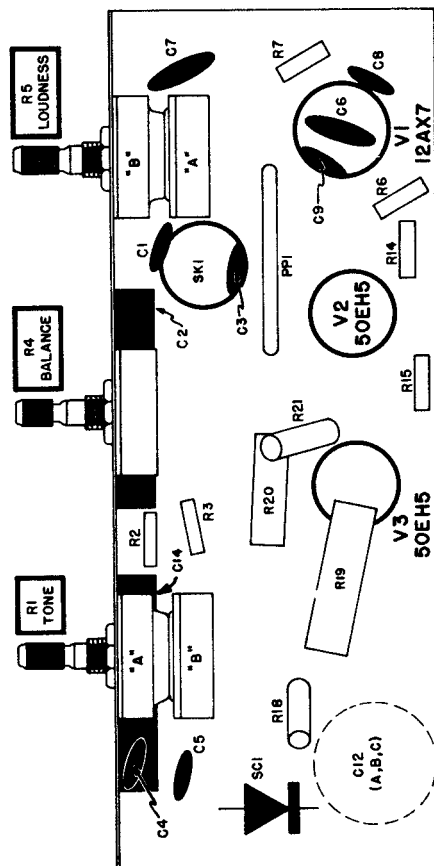
SYLVANIA

CHASSIS: 664-1
MODELS: 45P18



SCHEMATIC NOTES:

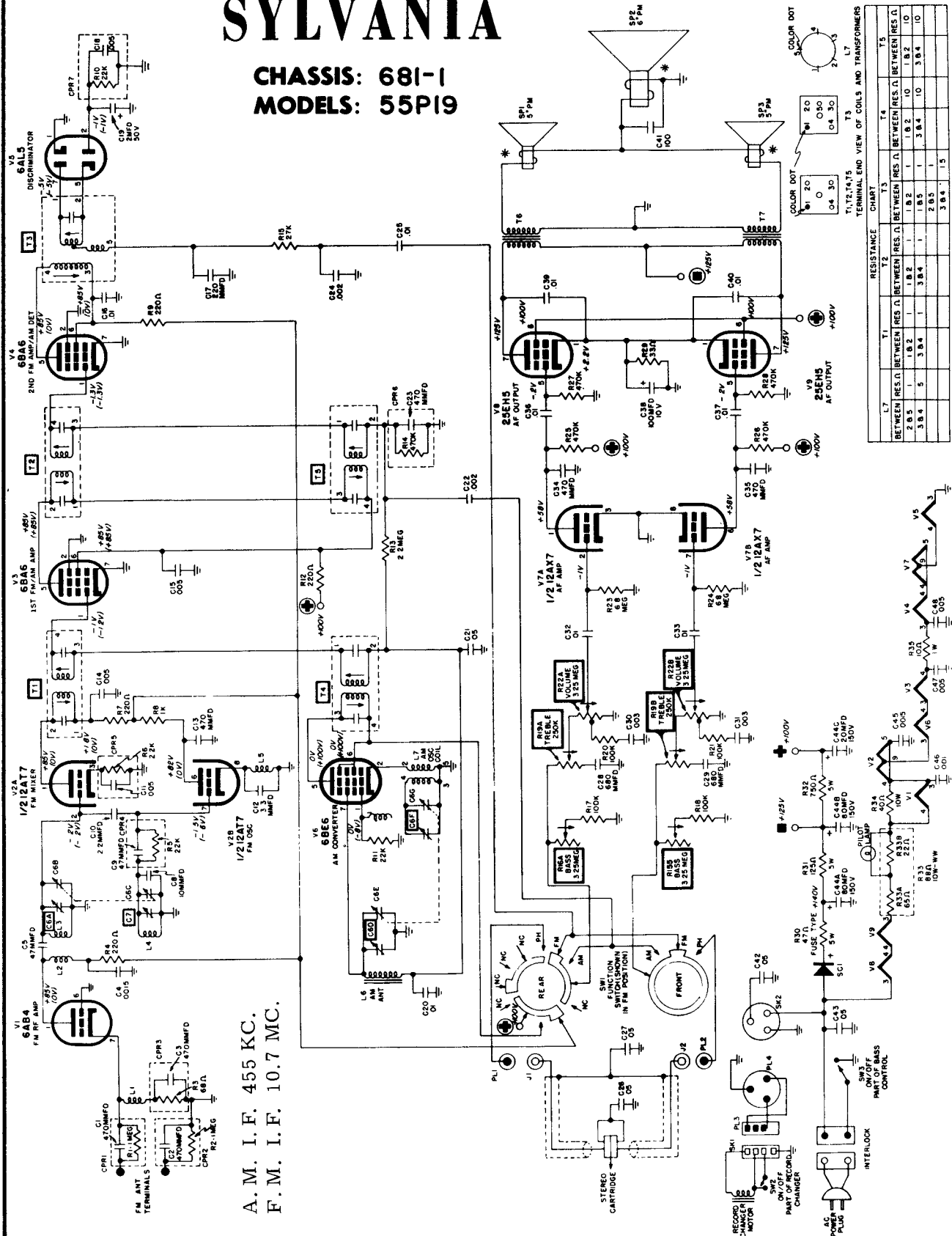
1. VOLTAGES SHOWN ARE AVERAGE READINGS MEASURED TO NEGATIVE "B" WITH NO SIGNAL INPUT. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCES.
2. AC POWER SOURCE - 117V 60W "VARIAC REGULATED".
3. VOLTAGE SOURCES ARE INDICATED BY SYMBOLS WITHOUT CIRCLES + : ENCIRCLED SYMBOLS ⊕ INDICATE VOLTAGE TIE POINTS.
4. ⊕ DESIGNATES CHASSIS GROUND.
5. ⊖ DESIGNATES NEGATIVE "B".



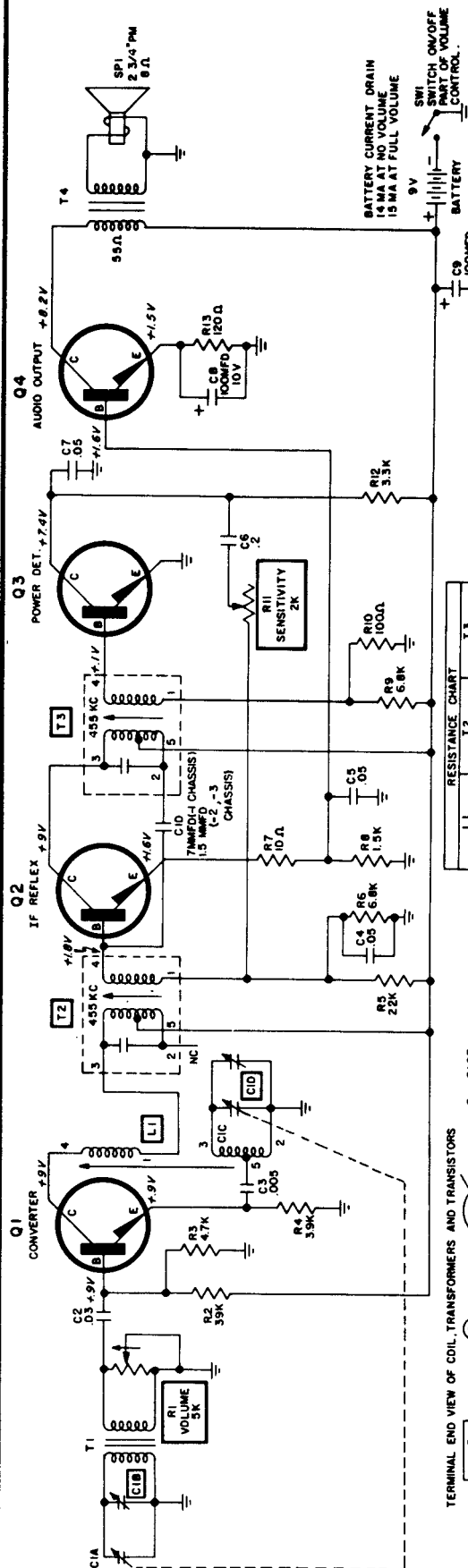
BOTTOM PARTS LAYOUT

SYLVANIA

CHASSIS: 68I-1
MODELS: 55P19



VOLUME R-22, MOST-OFTEN



L1	T2	T3
BETWEEN RES.	BETWEEN RES.	BETWEEN RES.
18.4	1.50	18.4
28.3	0.50	28.3
28.5	0.50	28.5
38.5	0.50	38.5

CHASSIS REMOVAL

Remove back cover by inserting a coin into the cover opening slot (located on bottom of case) and twist until cover is free.

Remove the four (4) screws located in the corners of the chassis. CAUTION: Do not remove the two screws (soldered) securing the variable tuning capacitor to the board.

SENSITIVITY CONTROL ADJUSTMENT

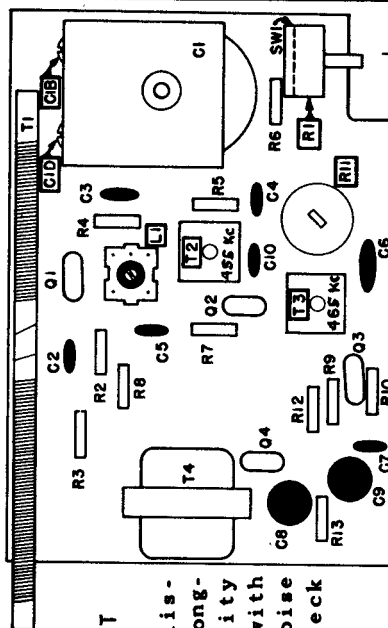
With volume control set for normal listening level and receiver tuned to strongest local station, adjust sensitivity control [R11] for best audible sound with minimum interference and background noise such as whistles, tweet, etc. Recheck entire band for oscillations.

IMPORTANT: Groups of matched transistors are used in this receiver. If replacement is necessary same grouping must be maintained.

GROUP	CONVERTER	IF REFLEX	DETECTOR	OUTPUT
I	2N212 (SYL2133)	SYL2132	SYL2130	SYL2136
II	2N212 (SYL2133)	SYL2132	SYL2131	SYL2134
III	2N212 (SYL2133)	SYL2131	SYL2131	SYL2135
IV	SYL 2133	SYL2132	SYL2131	SYL2136

RADIO INFORMATION

TOP PARTS LAYOUT



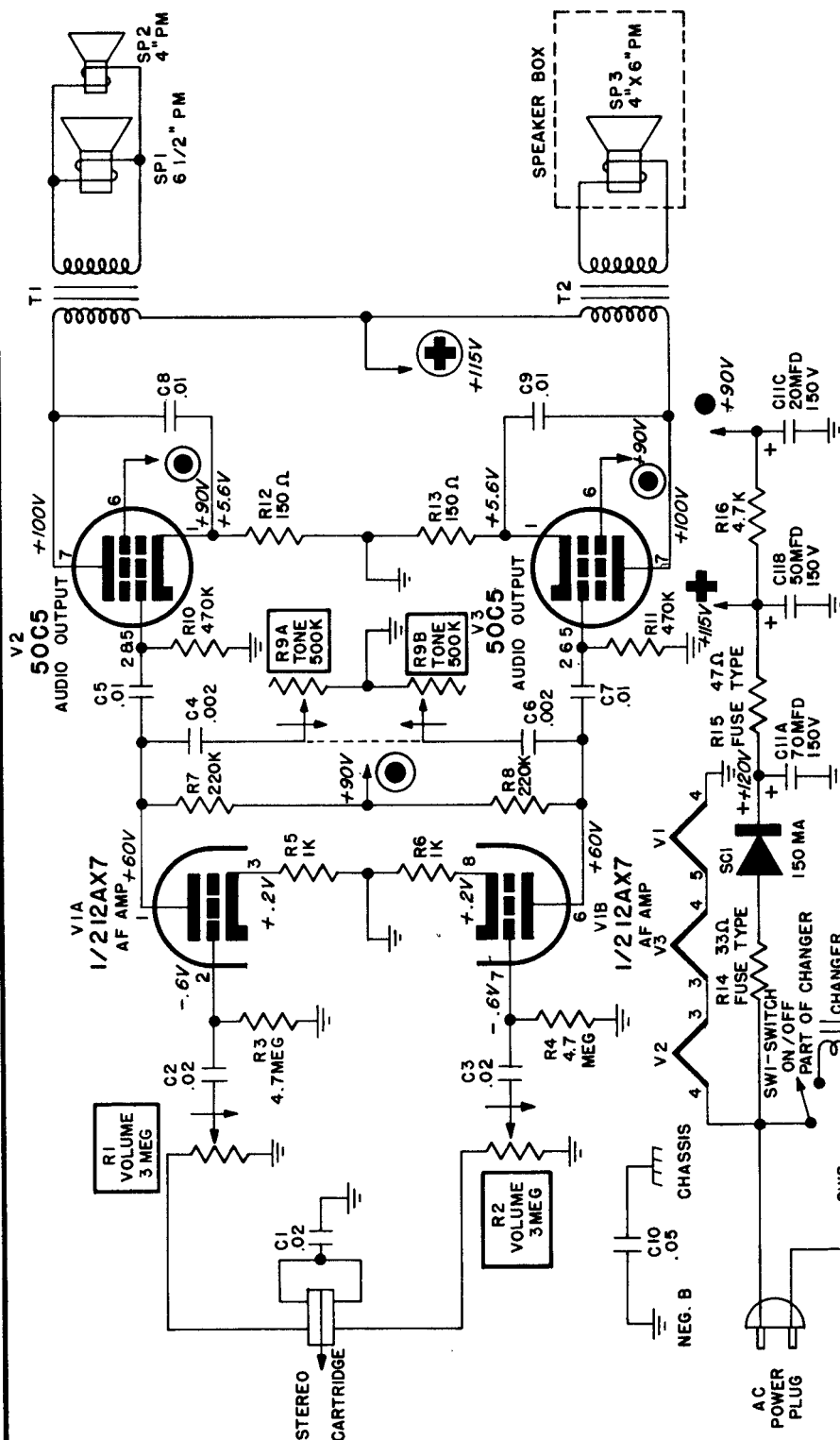
SYLVANIA

CHASSIS: 682-1,-2,-3
 MODELS: 4PI9WD (-1 CHASSIS)
 4PI9W (-2 CHASSIS)
 4PI9WC (-3 CHASSIS)

SYLVANIA

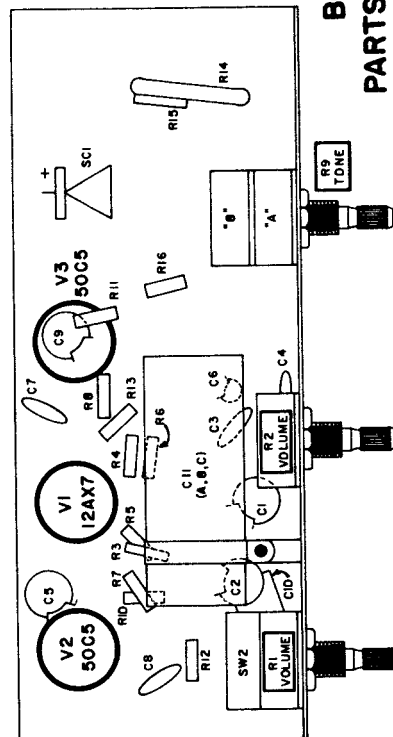
CHASSIS: 691-1
MODELS: 45C20

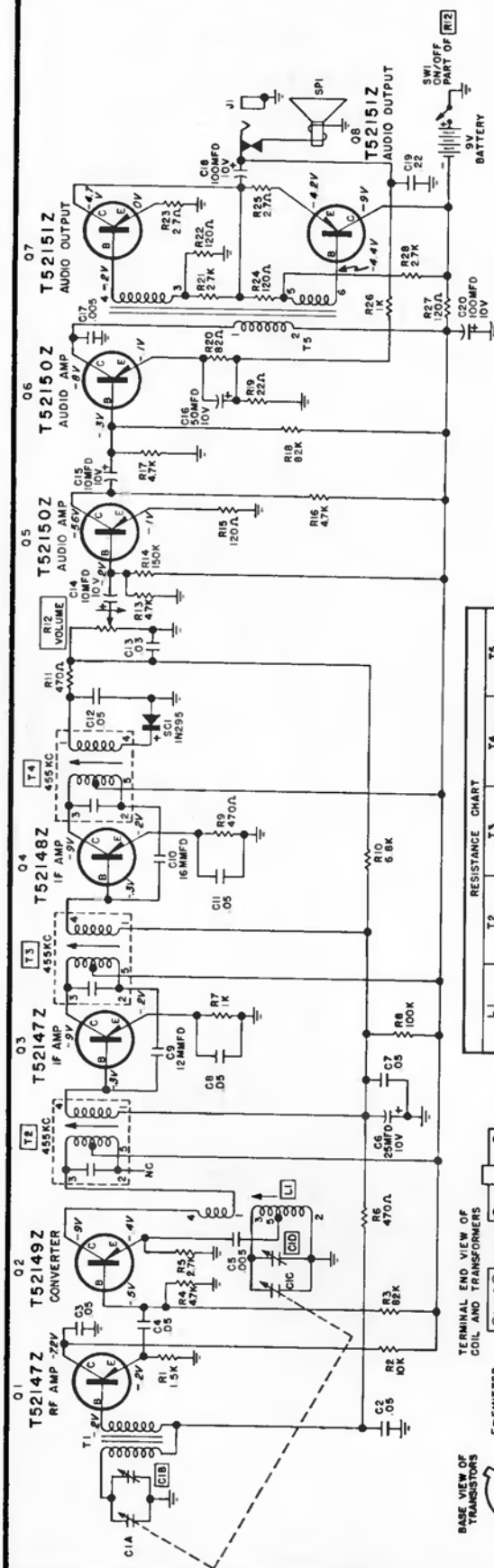
BOTTOM
PARTS LAYOUT



SCHEMATIC NOTES

1. VOLTAGES SHOWN ARE AVERAGE READINGS MEASURED TO NEGATIVE "B" WITH NO SIGNAL INPUT. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCES.
2. AC POWER SOURCE 117V, 60 CYCLE.
3. VOLTAGE SOURCES ARE INDICATED BY $\oplus$; CORRESPONDING SYMBOL WITH CIRCLE INDICATES VOLTAGE TIE POINTS.
4. $\ominus$ DESIGNATES NEGATIVE "B"; --- DESIGNATES CHASSIS GROUND.





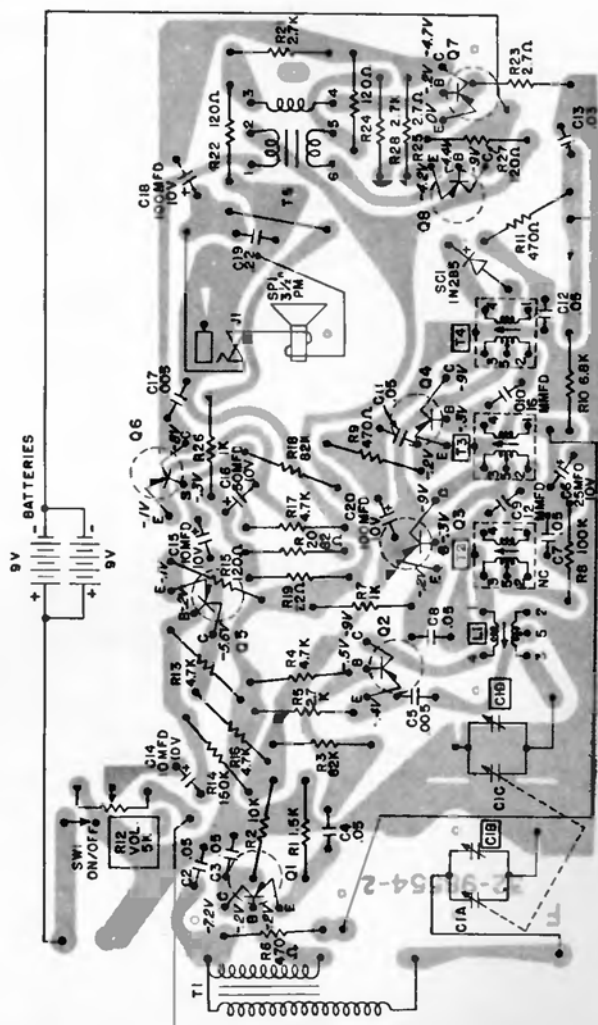
SCHEMATIC NOTES

1. VOLTAGES MEASURED TO CHASSIS GROUND, WITH RECEIVER NOT TUNED TO ANY SPECIFIC STATION.
2. BATTERY VOLTAGE WITH RECEIVER OPERATING 9 VOLTS.
3. VOLTAGES SHOWN ARE AVERAGE READINGS. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCE.
4. COIL AND TRANSFORMER RESISTANCE ARE TAKEN WITH COMPONENTS CONNECTED IN THE CIRCUIT.
5. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
6. INTERMEDIATE FREQUENCY (IF), 455KC.
7. $\pm$ DESIGNATES CHASSIS GROUND.

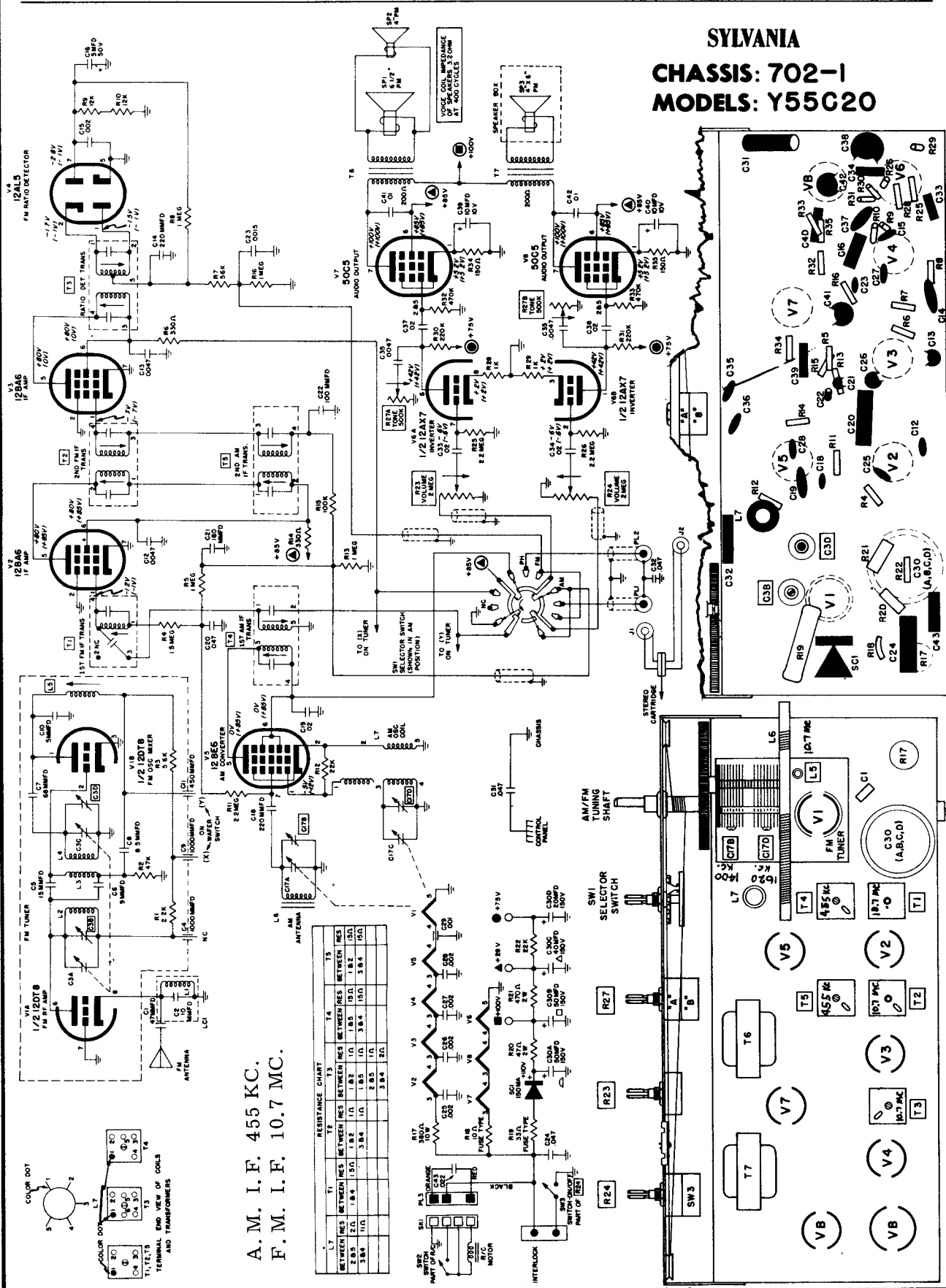
SYLVANIA

CHASSIS: 700-2

MODELS: TH16 SERIES



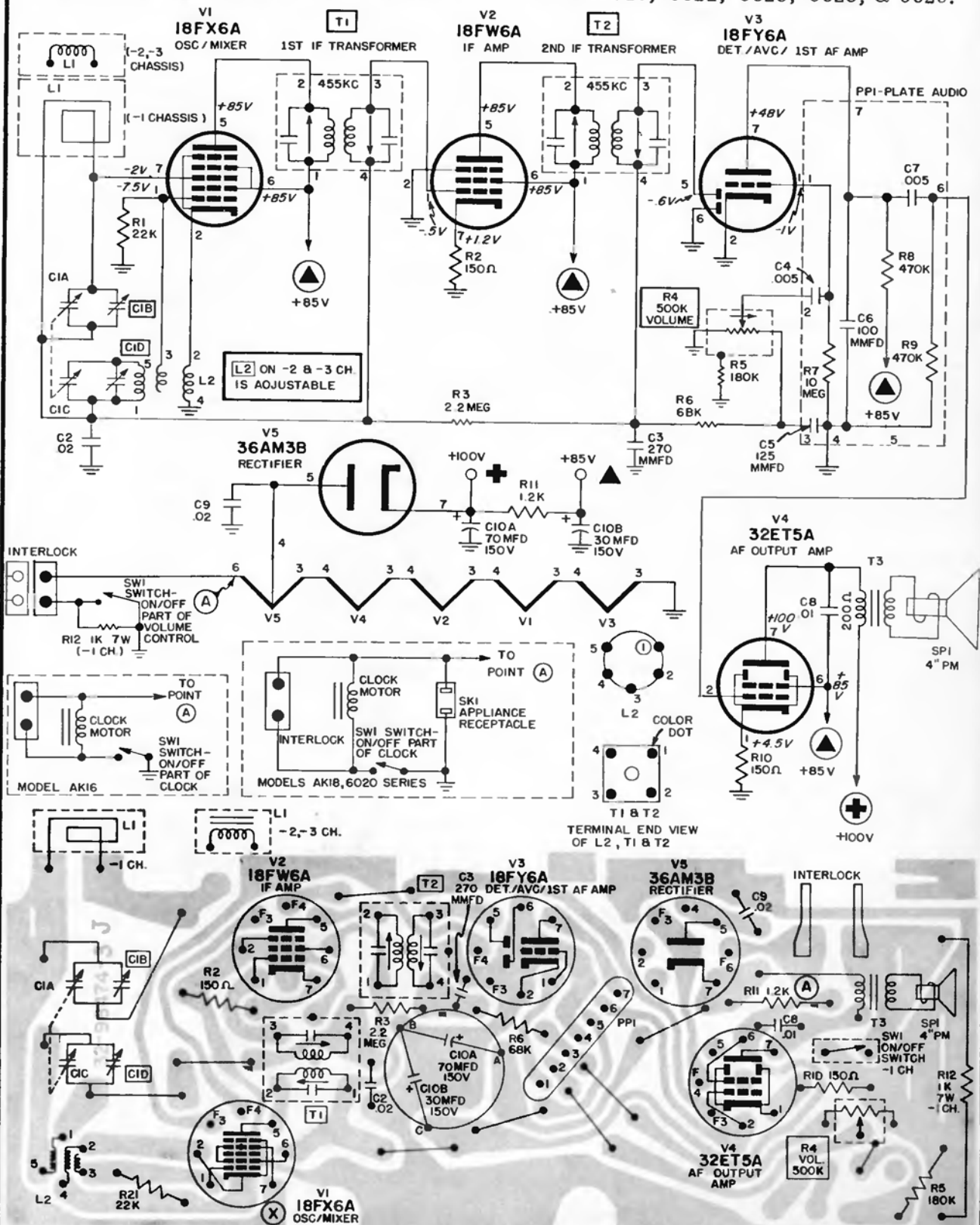
SYLVANIA
CHASSIS: 702-1
MODELS: Y55G20



SYLVANIA

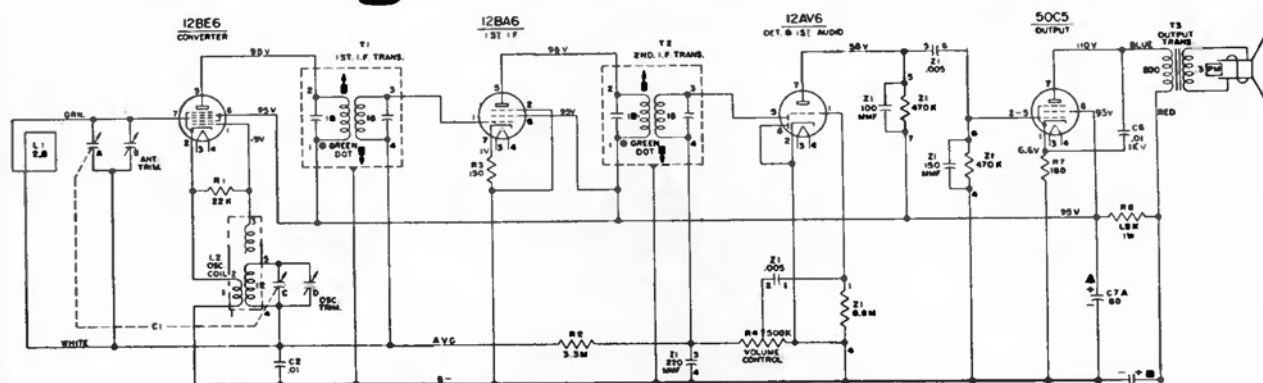
CHASSIS:711-1,-2,-3

Models AK15, AK16, AK17, AK18, AT15,
AT16, 6022, 6025, 6028, & 6029.



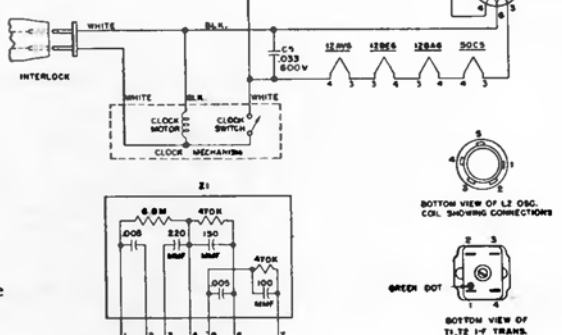
Westinghouse

Model H-816L5, Chassis V-2259-7,
Model H-803T5, Chassis V-2259-8,
is the same except for clock circuit.



CHASSIS REMOVAL INFORMATION

1. Remove the volume knob from the front of the cabinet. The tuning knob is captivated and cannot be removed from the front by pulling. The chassis must be removed first and then the lock washer taken off the knob shank.
2. Remove the back cover from the cabinet.
3. Remove the self-tapping screw securing the tuning capacitor bracket to the front of the cabinet.
4. Unloosen the chicken bands securing the clock AC and audio output transformer wires and then slide the chassis out from the rear of the cabinet for servicing.
5. Use a conventional cheater cord or a TV AC interlock line cord to power the radio while servicing.

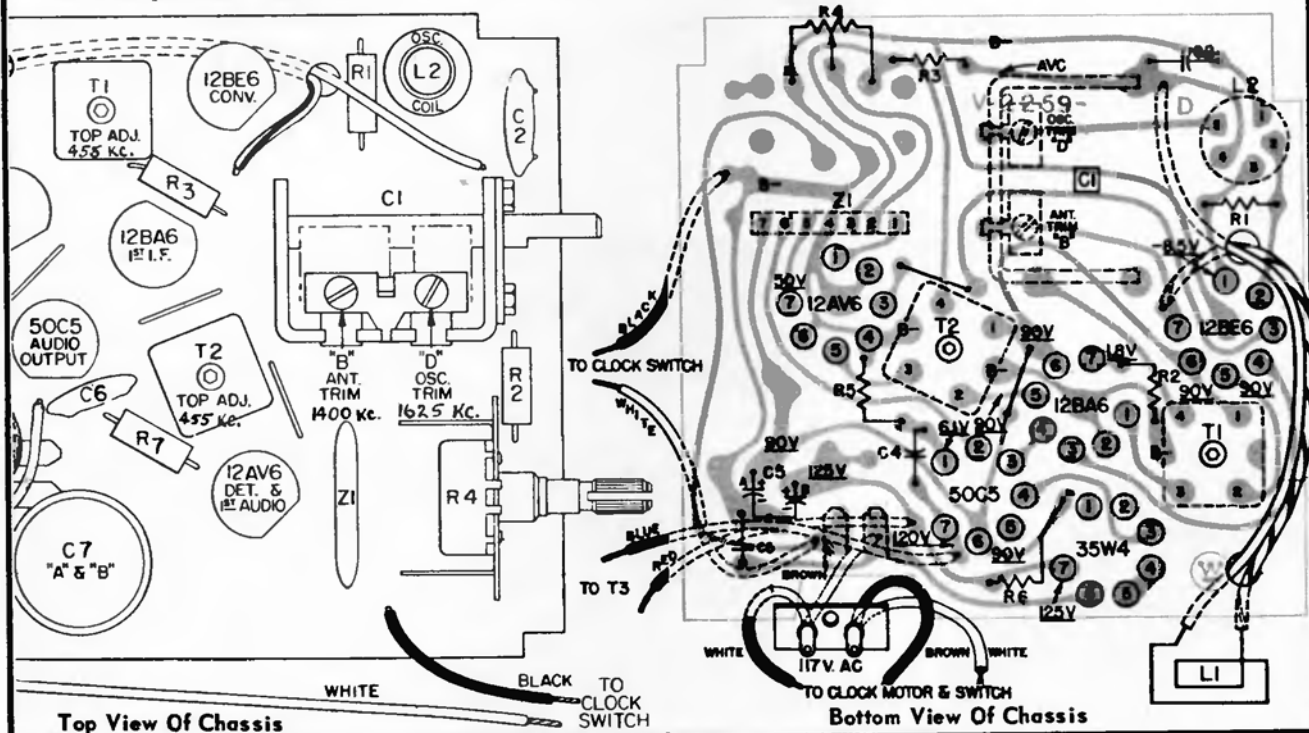


CLOCK REMOVAL

1. Remove the clock control knob from the front of the cabinet.
2. Remove the back cover from the cabinet.
3. Unsolder the leads to the clock.
4. Remove the two screws securing the clock to the cabinet and remove the clock. Use the reverse procedure to install the replacement clock.

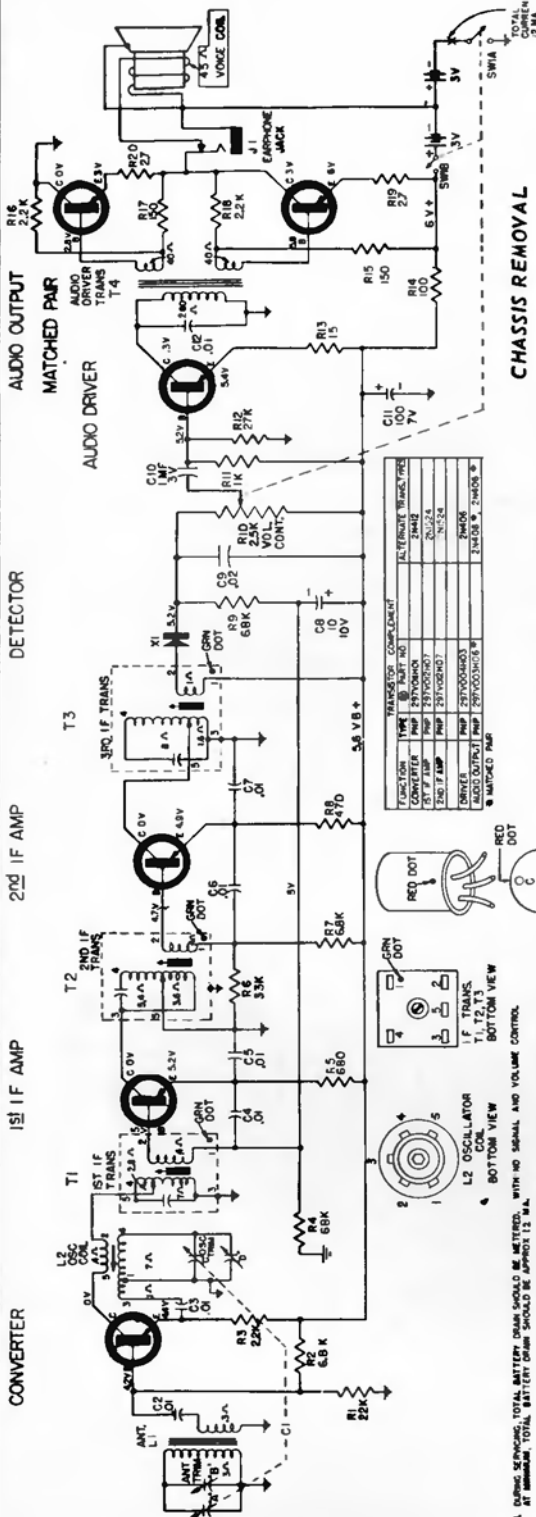
NOTES:

1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A V.T.M. AND NO SIGNAL INPUT. LINE VOLTAGE SET AT 117 V. A.C. READINGS SHOULD BE AS SHOWN ± 20 PER CENT.
2. ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.



WESTINGHOUSE

Models H-790P6, -GP, H-791P6, H-791P6GP, Chassis V-2393-4.



CHASSIS REMOVAL

1. Remove the tuning knob as follows. Insert a loop of string (see figure 1) under the tuning knob and pull the knob up and out of the cabinet front. Remove the hex head screw.
2. Remove the back of the cabinet by loosening the two coin-slot screws on the back.
3. Remove the two 1" long hex head screws securing the chassis to the cabinet front.
4. Remove the printed circuit chassis, battery case, speaker spacers, rubber grommet and speaker.
5. To insert the printed circuit chassis back into the cabinet use the reverse procedure.

TUNING KNOB REMOVAL
INSERT STRING UNDER
TUNING KNOB & PULL UP

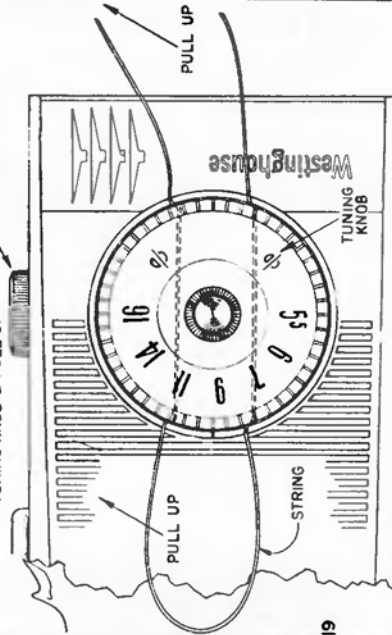
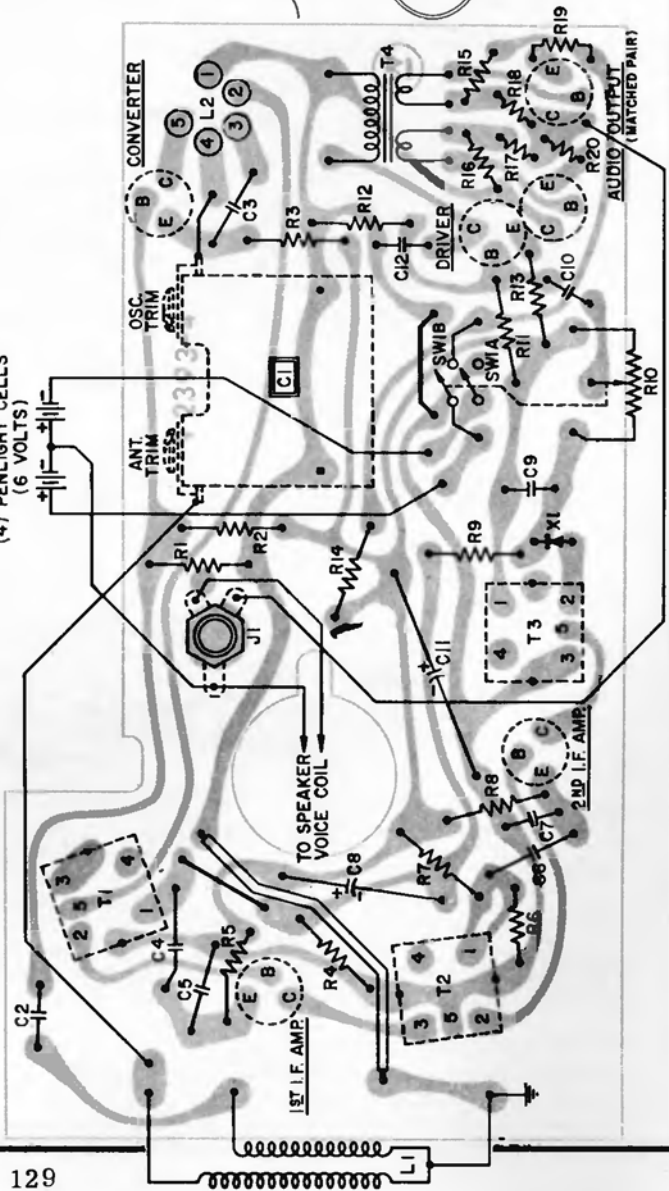


Figure 1 - Tuning Knob Removal

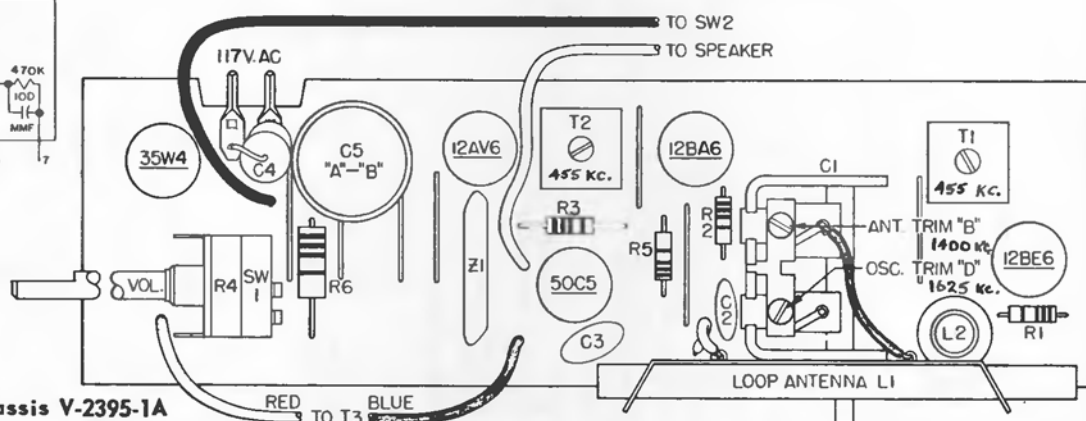
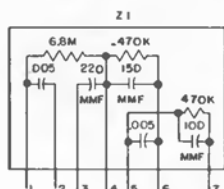
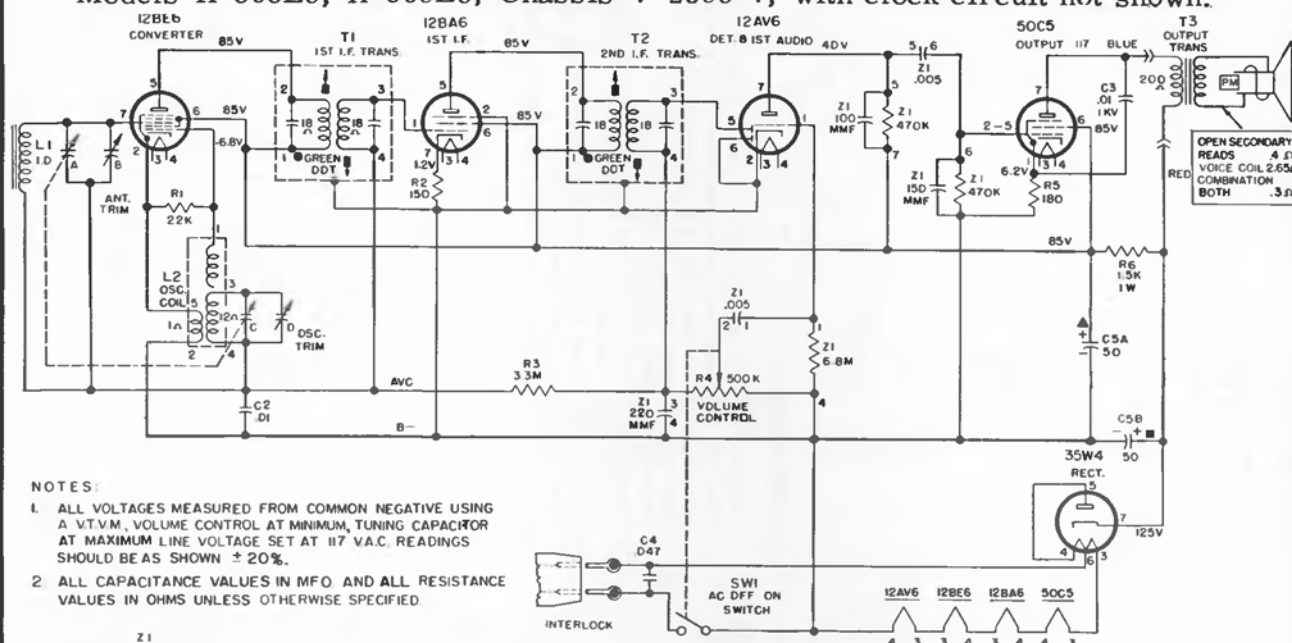
Frequency Range . . . 540 to 1600 KC
Intermediate Frequency . . . 455 KC

(4) PENLIGHT CELLS
(6 VOLTS)

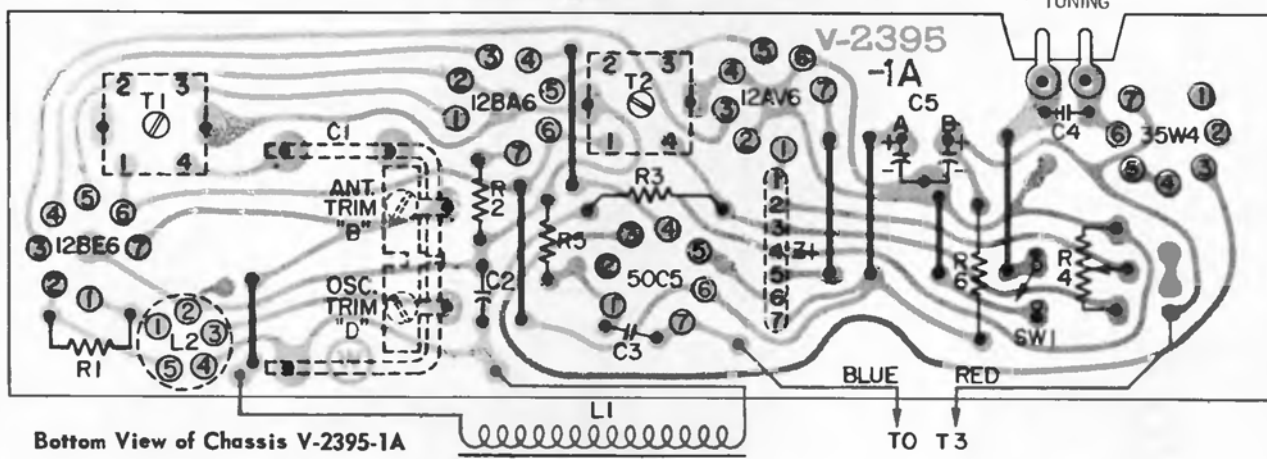


VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

WESTINGHOUSE Models H-746T5A, H-747T5A, Chassis V-2395-1A, and Models H-808L5, H-809L5, Chassis V-2395-7, with clock circuit not shown.



Top View of Chassis V-2395-1A



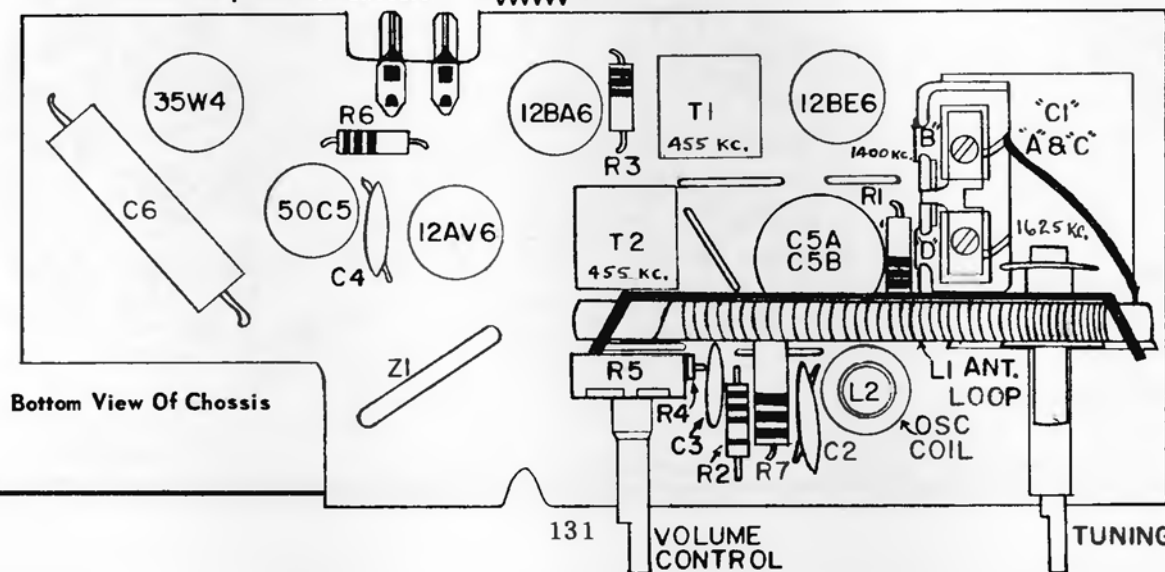
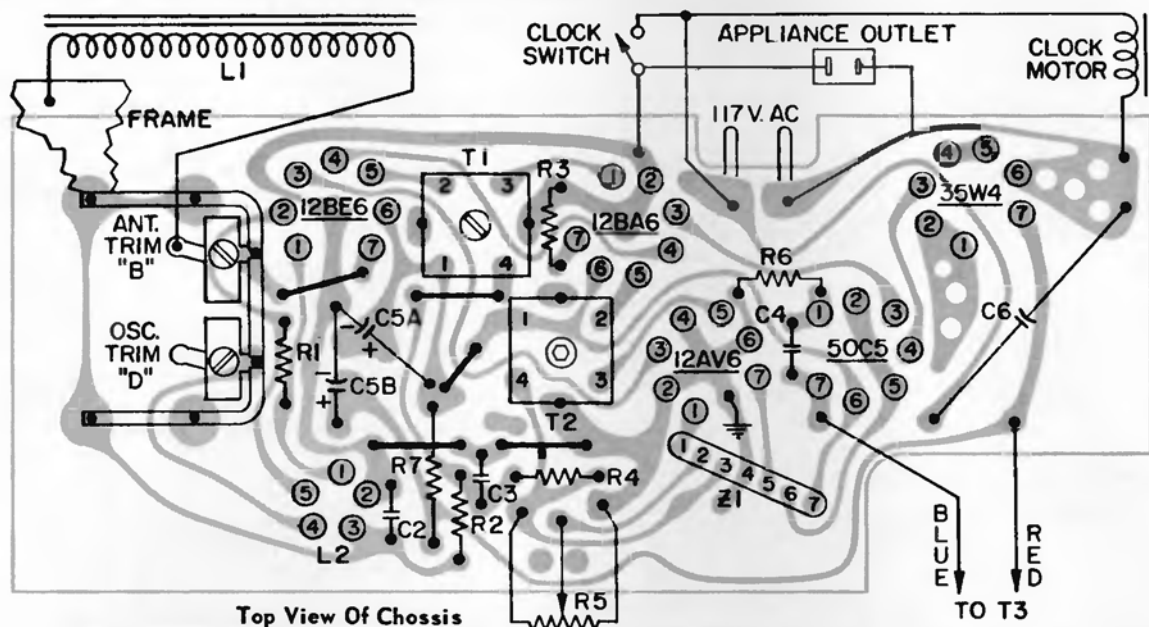
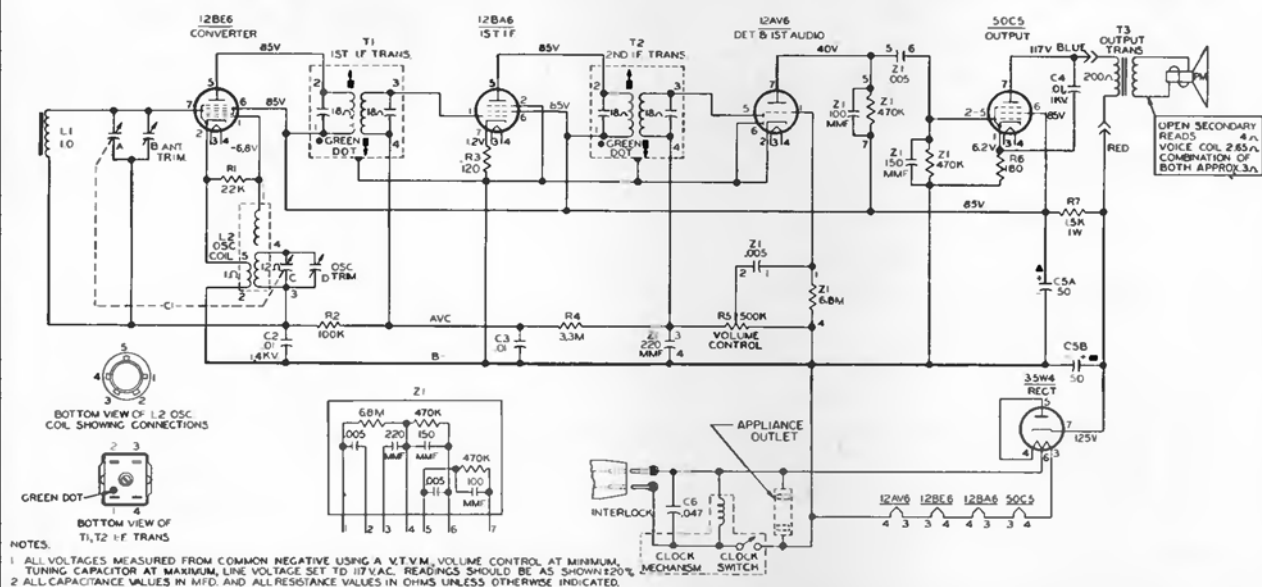
Bottom View of Chassis V-2395-1A

PRINTED BOARD REMOVAL

- Disengage volume control knob (located on side of cabinet) from volume control shaft.
- Remove two screws from rear of cabinet.
- Loosen screw on bottom of cabinet slightly; then push forward on this screw to disengage AC line cord interlock.
- Remove screw from bottom of cabinet. Front panel and attached PC board can now be removed from cabinet.
- For PC board installation reverse the above procedure.

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

WESTINGHOUSE Models H-804L5, H-805L5, H-806L5, Chassis V-2398-3



WESTINGHOUSE Models H-775L6A, H-776L6A, Chassis V-2401-4



Westinghouse

H-798P7
H-798P7GP

H-799P7
H-799P7GP

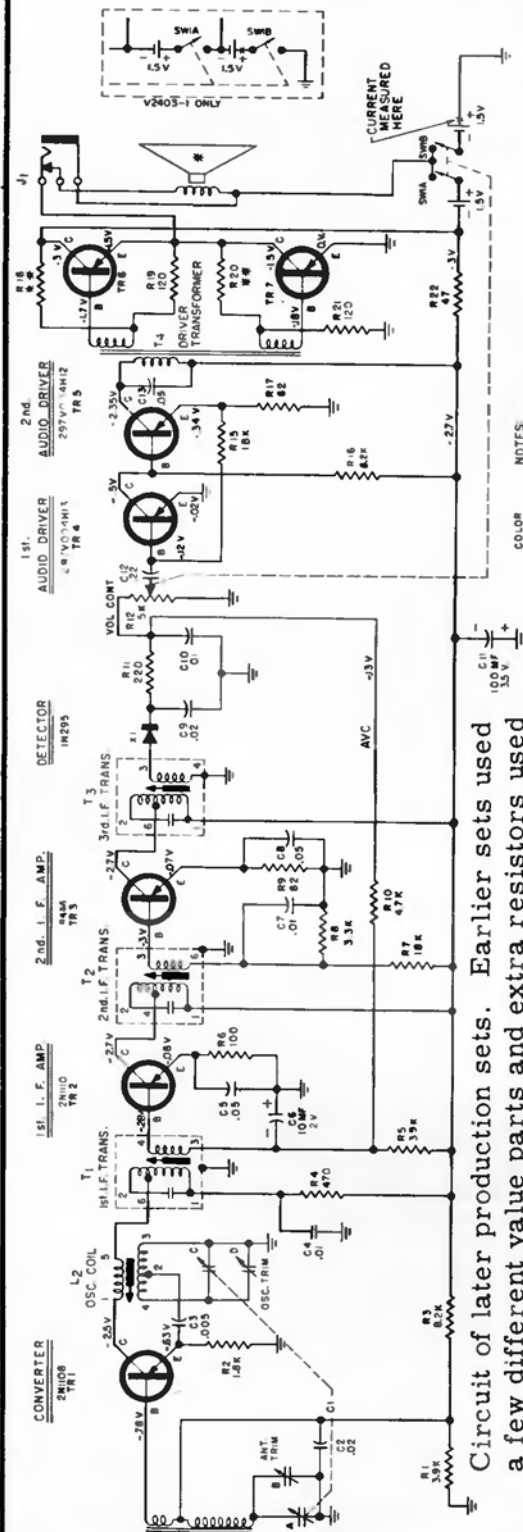
H-732P7
H-733P7
H-798P7A
H-798P7GPA

H-732P7GP
H-733P7GP
H-799P7A
H-799P7GPA

CHASSIS V-2403-4

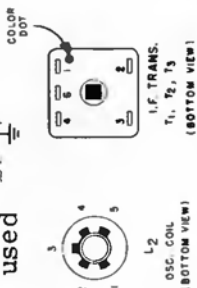
CHASSIS V-2403-1

AUDIO OUTPUT
MATCHED PAIR
R291 OR R358

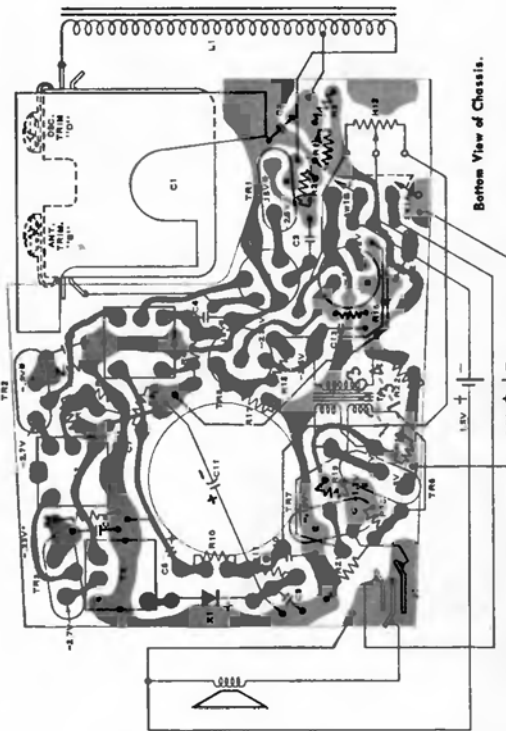


Circuit of later production sets. Earlier sets used a few different value parts and extra resistors used with another type TR4 transistor.

- NOTES
1. DURING SERVICING, BATTERY DRAIN SHOULD BE MINIMUM. WITH NO SIGNAL AND VOL. CONT. AT MINIMUM, CURRENT DRAIN AT POINT SHOWN SHOULD BE 15 MA. APPROX.
 2. ALL CAPACITANCE VALUES IN MFD., ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
 3. VOLTAGE MEASUREMENTS MADE WITH A VTVM. FROM DETECTOR TO AUDIO DRIVER AND FROM AUDIO DRIVER TO SPEAKER. MAXIMUM VOLTAGE 3 VOLTS. (NO SIGNAL INPUT) BATTERY SOURCE AT 3 VOLTS.
 - * SPEAKER IS A LATER CHANGE TO 75Ω.
 - * R18 AND R20 SHOULD BE CHANGED FROM 820 OHMS TO 750 OHMS WHEN OUTPUT PAIR OF TRANSISTORS ARE REPLACED.

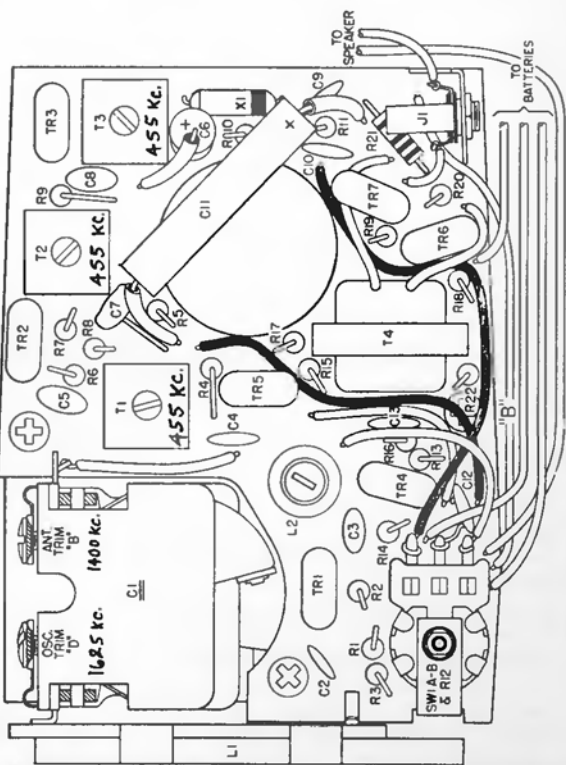


FUNCTION	TRANSISTOR	COMPLEMENT
CONVERTER	2N108	2N110
1ST I.F. AMP	2N110	2N110
2ND I.F. AMP	2N110	2N110
2ND I.F. AMP	2N110	2N110
AUDIO DRIVER	2N110	2N110
AUDIO OUTPUT	2N110	2N110



Bottom View of Chassis.

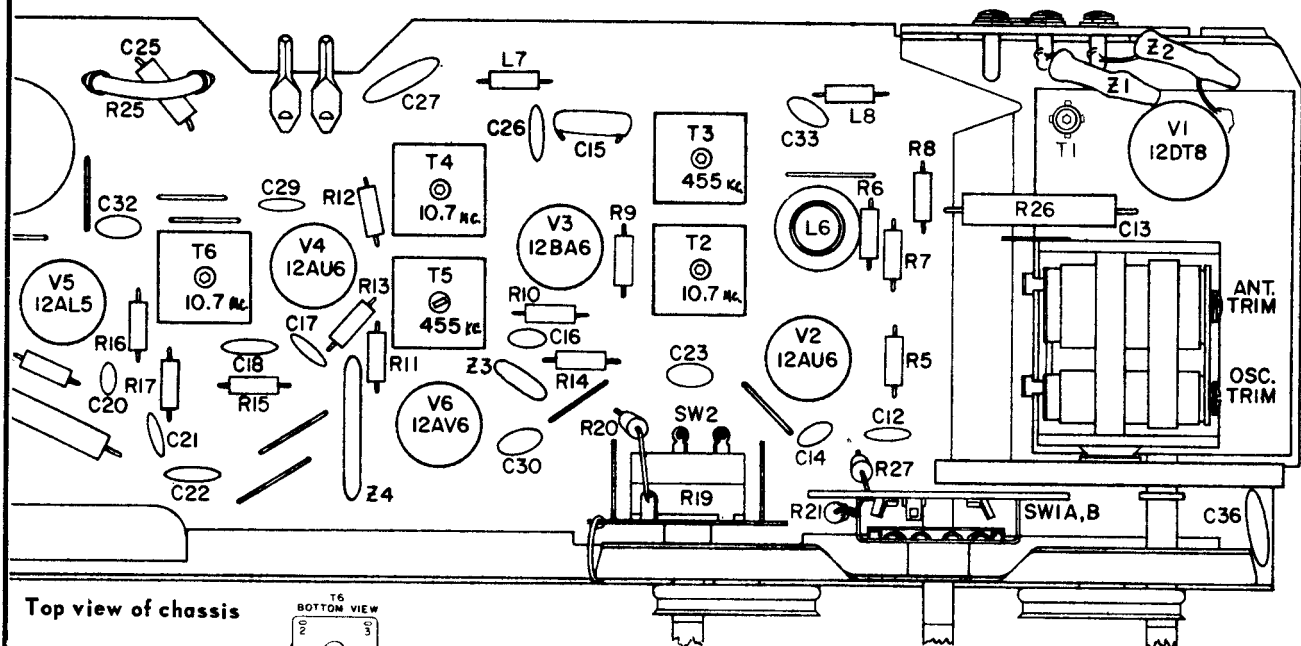
ALL VOLTAGES MEASURED IN RESPECT TO GROUND EXCEPT "INDICATES FORWARD BIAS, MEASURED ON WAVE IN RESPECT TO EMITTER. SLOWLY VARYING VOLTAGE MAY INDICATE A DEFECTIVE STAGE."



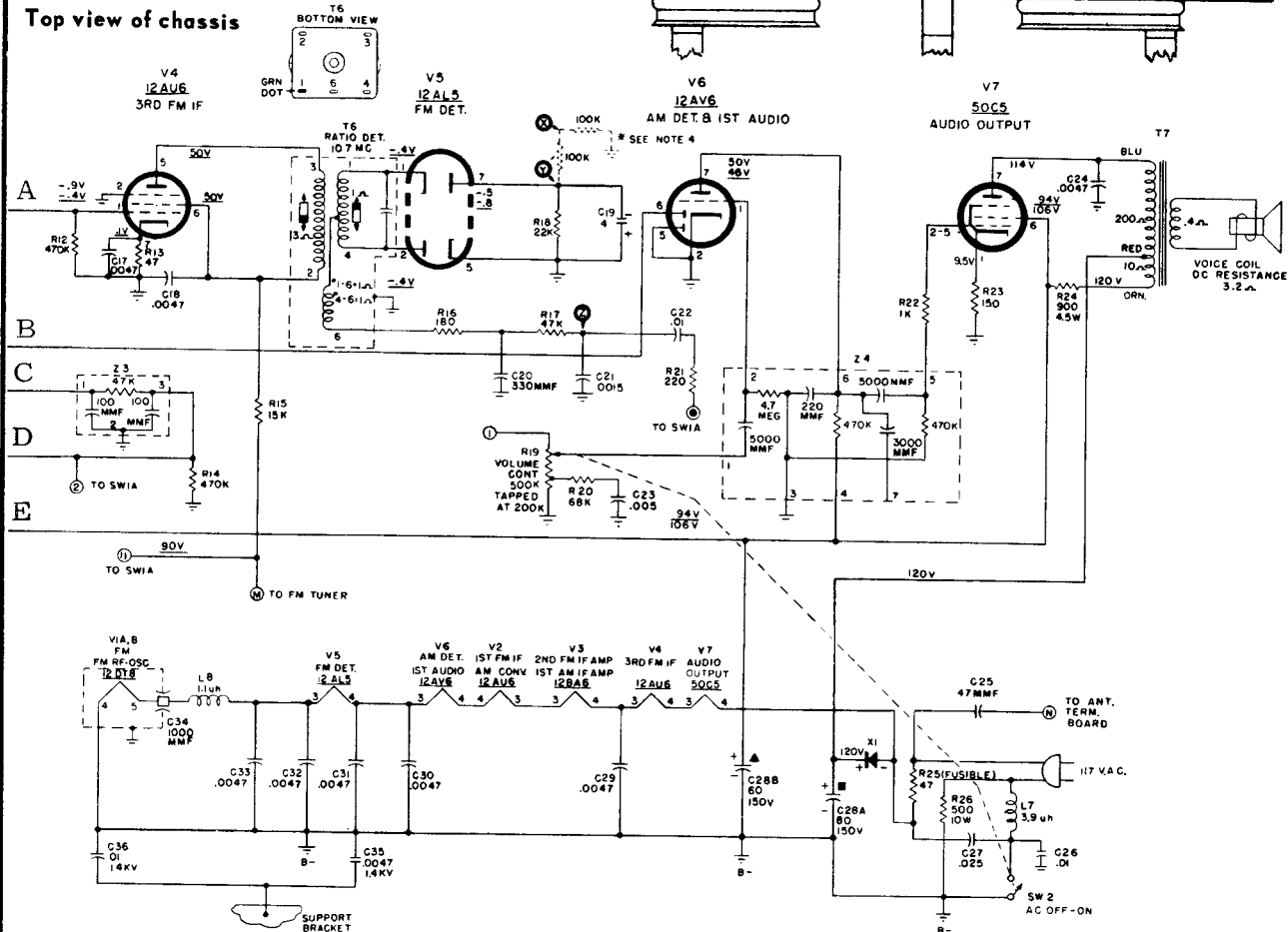
Top View Later Production

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

WESTINGHOUSE Models H-761N7, H-762N7, Chassis V-2407-1, Continued



Top view of chassis



KEY TO SLUG REPRESENTATION

1. The body of the slug is represented by □
2. A band is used to indicate the location of the slug (ex. □ indicates a top slug --- □ indicates a bottom slug).

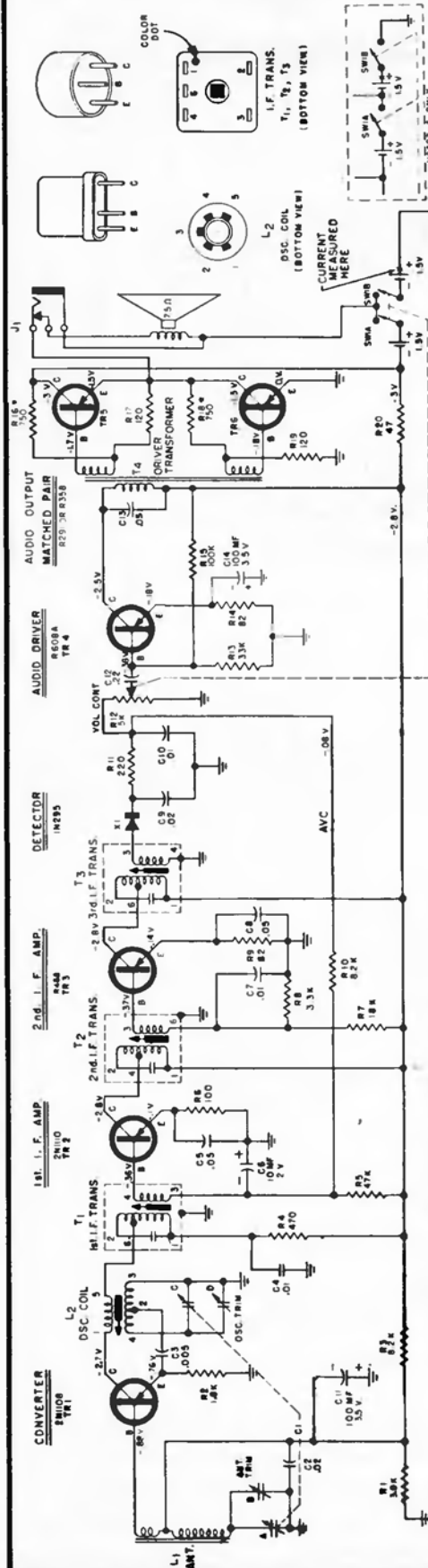
3. An arrow is used to indicate the direction from which the slug can be adjusted (ex. ↓ indicates a bottom slug adjustable from the bottom --- ↑ indicates a bottom slug adjustable from the top --- ↓ indicates a bottom slug adjustable from top or bottom.)

Westinghouse

MODELS

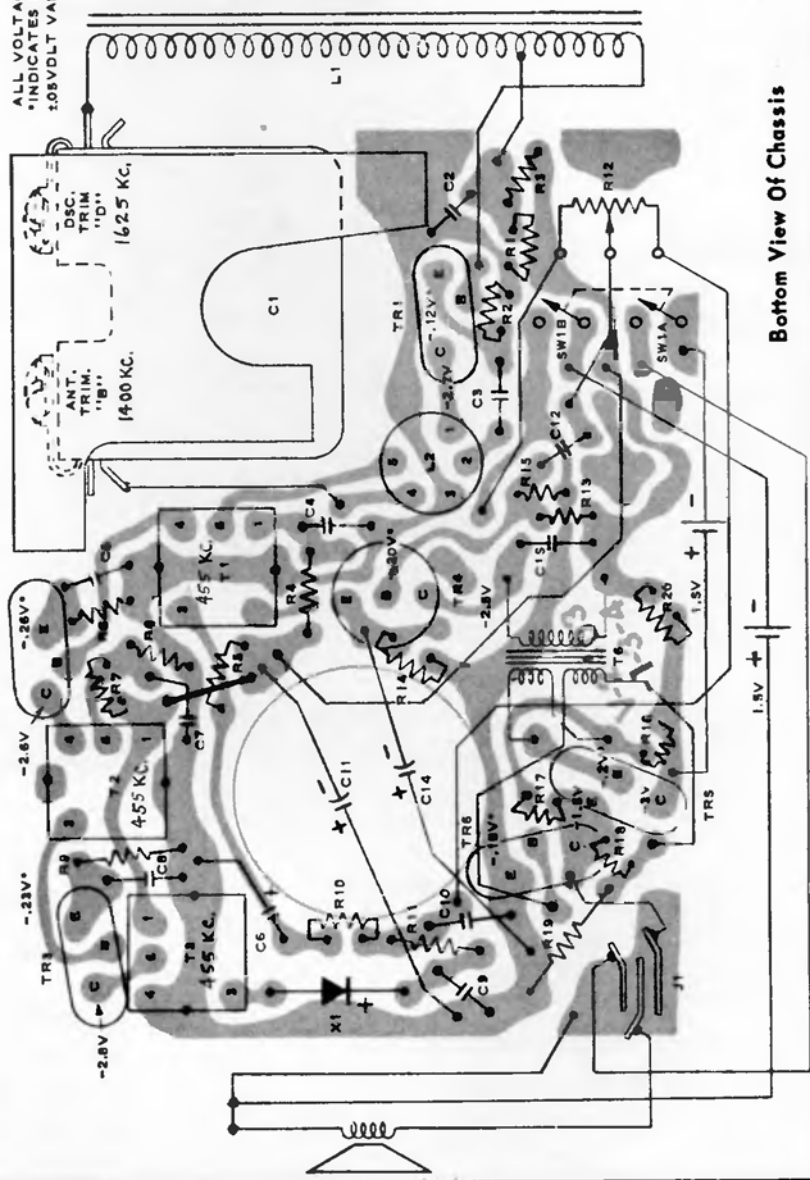
H-795P6	H-795P6GP
H-795P6A	H-795P6GPA
	(charcoal gray)
H-796P6	H-796P6GP
H-796P6A	H-796P6GPA
	(aztec red)

CHASSIS V-2403-3,-5



ALL VOLTAGES MEASURED IN RESPECT TO GROUND EXCEPT WHERE INDICATED OTHERWISE. INDICATES FORWARD BIAS, MEASURED ON BASE IN RESPECT TO Emitter. ±0.5VOLT VARIATION MAY INDICATE A DEFECTIVE STAGE.

- NOTES:
1. DURING SERVICING, BATTERY DRAIN SHOULD BE MINIMUM. WITH NO SIGNAL AND VOL. CONT. AT MINIMUM, CURRENT DRAIN AT POINT SHOWN SHOULD BE 13 MA. APPROX.
 2. ALL CAPACITANCE VALUES IN INFO, ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
 3. VOLTAGE MEASUREMENTS MADE WITH A V.T.M. FROM POINTS INDICATED TO GND. WITH TUNING CAPACITOR AT MINIMUM. COILS AT 100 MC. (NO SIGNAL INPUT).
 4. BATTERY SHOULD BE 1.5 VOLTS.
 5. TUBE PRODUCTION WAS 6000 WHEN REPLACING OUTPUT TRANSISTORS, IN AND RB SHOULD BE CHANGED TO 750 Ω.

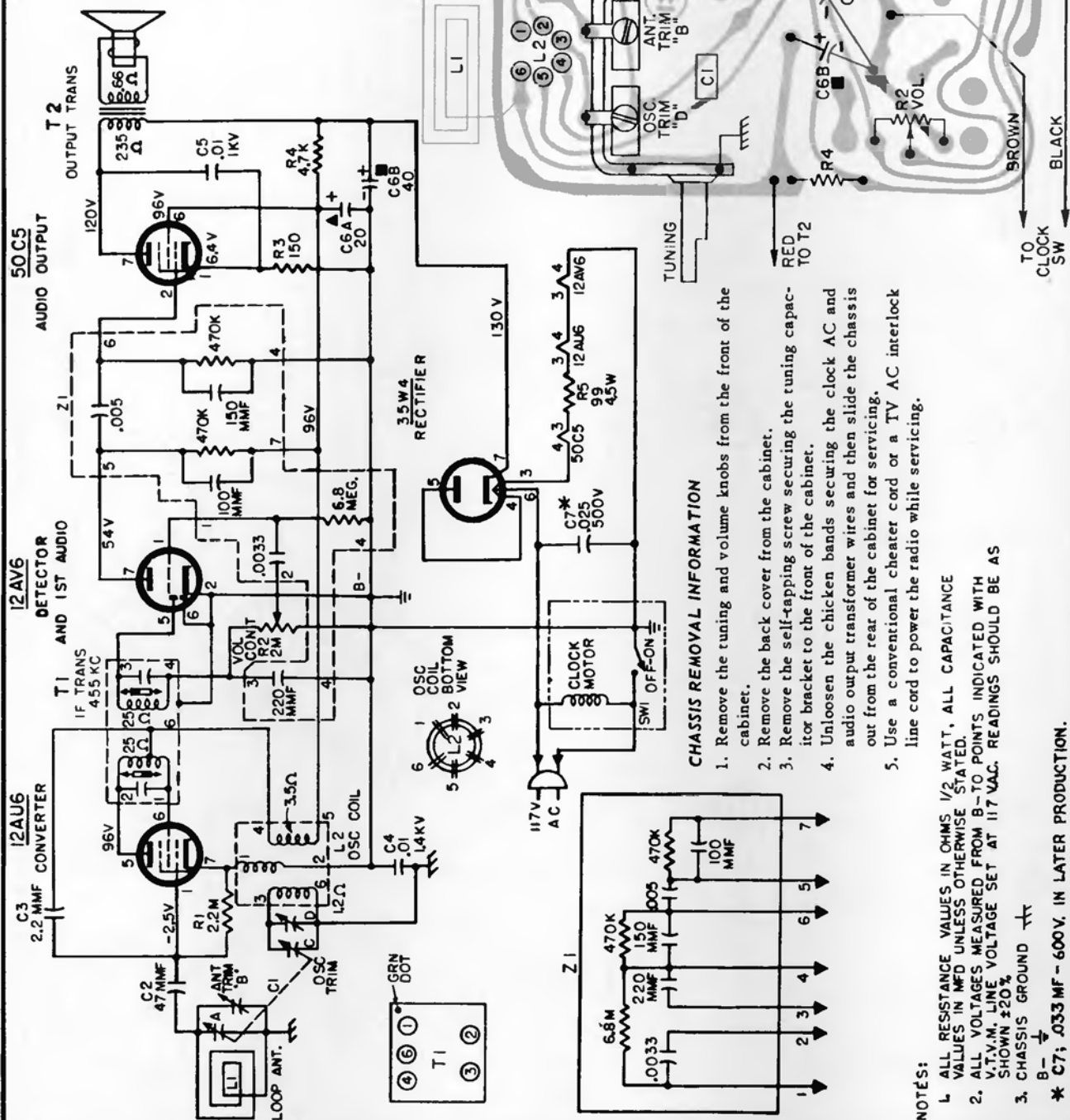


Bottom View Of Chassis

Westinghouse

MODEL
H-766L4-A

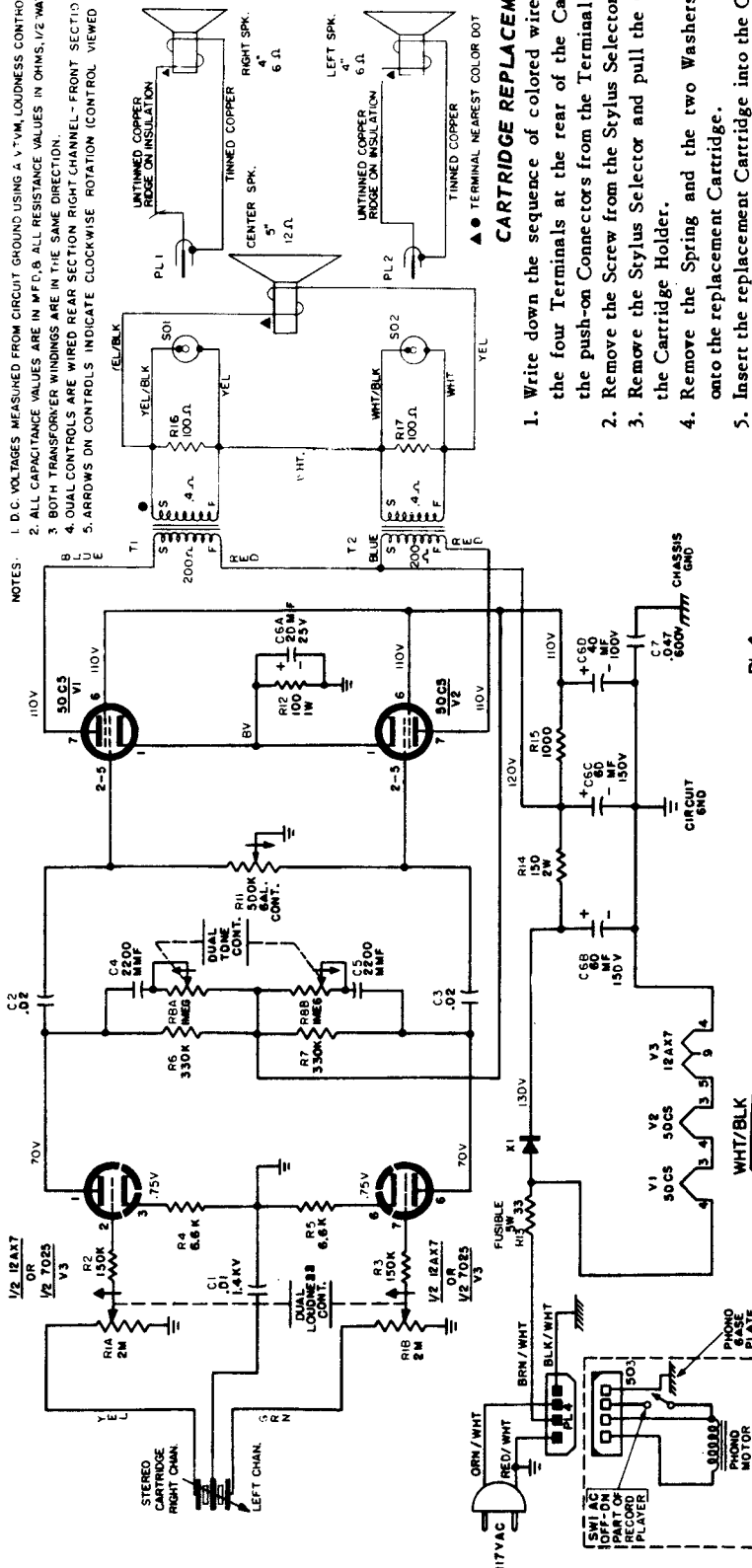
V-2420-1 CHASSIS



Tube pin numbering is for bottom of socket.

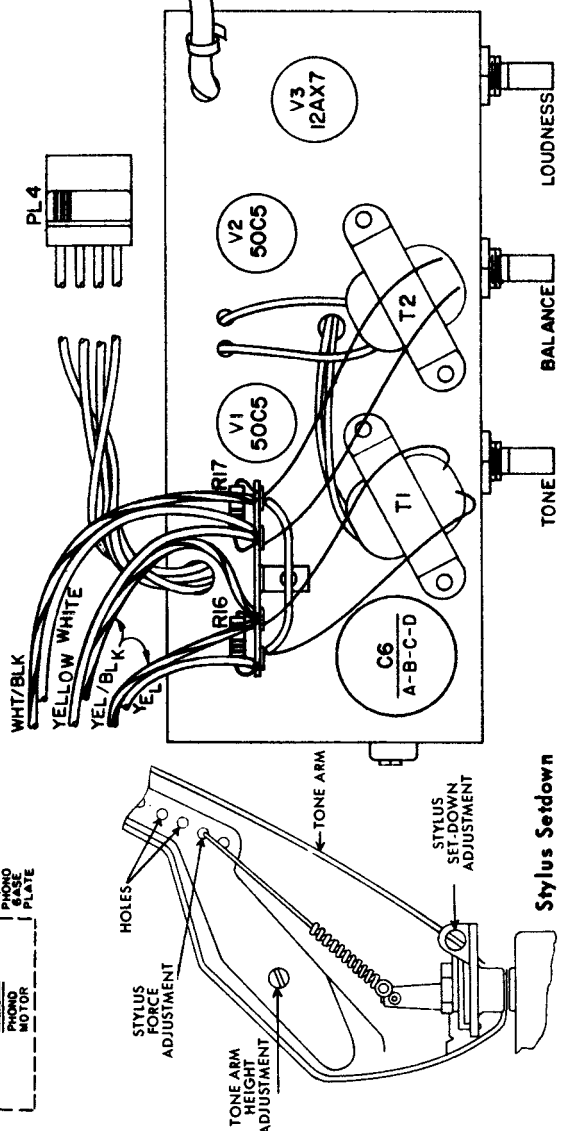
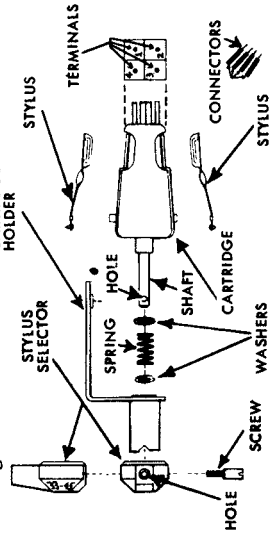
WESTINGHOUSE Models H-78ACS1, -ACS2 Chassis V-2506-6

- NOTES:
1. D.C. VOLTAGES MEASURED FROM CIRCUIT GROUND USING A 4.5 V.M. LOUDNESS CONTROL AT MINIMUM
 2. ALL CAPACITANCE VALUES ARE IN MFD., & ALL RESISTANCE VALUES IN OHMS, 1/2 WATT
 3. BOTH TRANSFORMER WINDINGS ARE IN MFD., & ALL RESISTANCE VALUES IN OHMS, 1/2 WATT
 4. DUAL CONTROLS ARE WIRED REAR SECTION CHANNEL - FRONT SECTION 1-1 LEFT CHANNEL.
 5. ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (VIEWED FROM SHAFT END).



CARTRIDGE REPLACEMENT

1. Write down the sequence of colored wires connecting to the four Terminals at the rear of the Cartridge. Remove the push-on Connectors from the Terminals.
2. Remove the Screw from the Stylus Selector.
3. Remove the Stylus Selector and pull the Cartridge out of the Cartridge Holder.
4. Remove the Spring and the two Washers and put them onto the replacement Cartridge.
5. Insert the replacement Cartridge into the Cartridge holder; push it as far in toward the front of the Tone Arm as it will go and hold it there.
6. Put the Stylus Selector onto the Cartridge Shaft so that the Hole in the Stylus Selector lines up with the Hole in the Cartridge Shaft. Secure it in place with the Screw. Be sure that the "33-45" marking on the Stylus Selector faces upward and the Stylus marked SA-075 faces down.
7. Push the Connectors onto the Terminals with the wire colors in the sequence previously noted for the original cartridge.



Westinghouse

MODEL H-69AC51

CHASSIS V-2507-7

PORTABLE - STEREO PHONO

NOTES:

1. CAPACITANCE VALUES IN MFD & ALL RESISTANCE VALUES IN OHMS, 1/2 WATT, UNLESS OTHERWISE STATED.
2. ALL VOLTAGES MEASURED FROM CHASSIS GROUND USING A V.T.V.M., NO SIGNAL INPUT.
3. LINE VOLTAGE SET AT 117 VAC READINGS SHOULD BE AS SHOWN $\pm 20\%$.
4. ALL AMPLOK CONNECTORS VIEWED FROM CONTACT END.
5. Φ R12 & R13 ARE NOT INCLUDED IN B.O.P.C.
6. VOLTAGES UNDERLINED WITH SW2 IN MONAURAL POSITION.

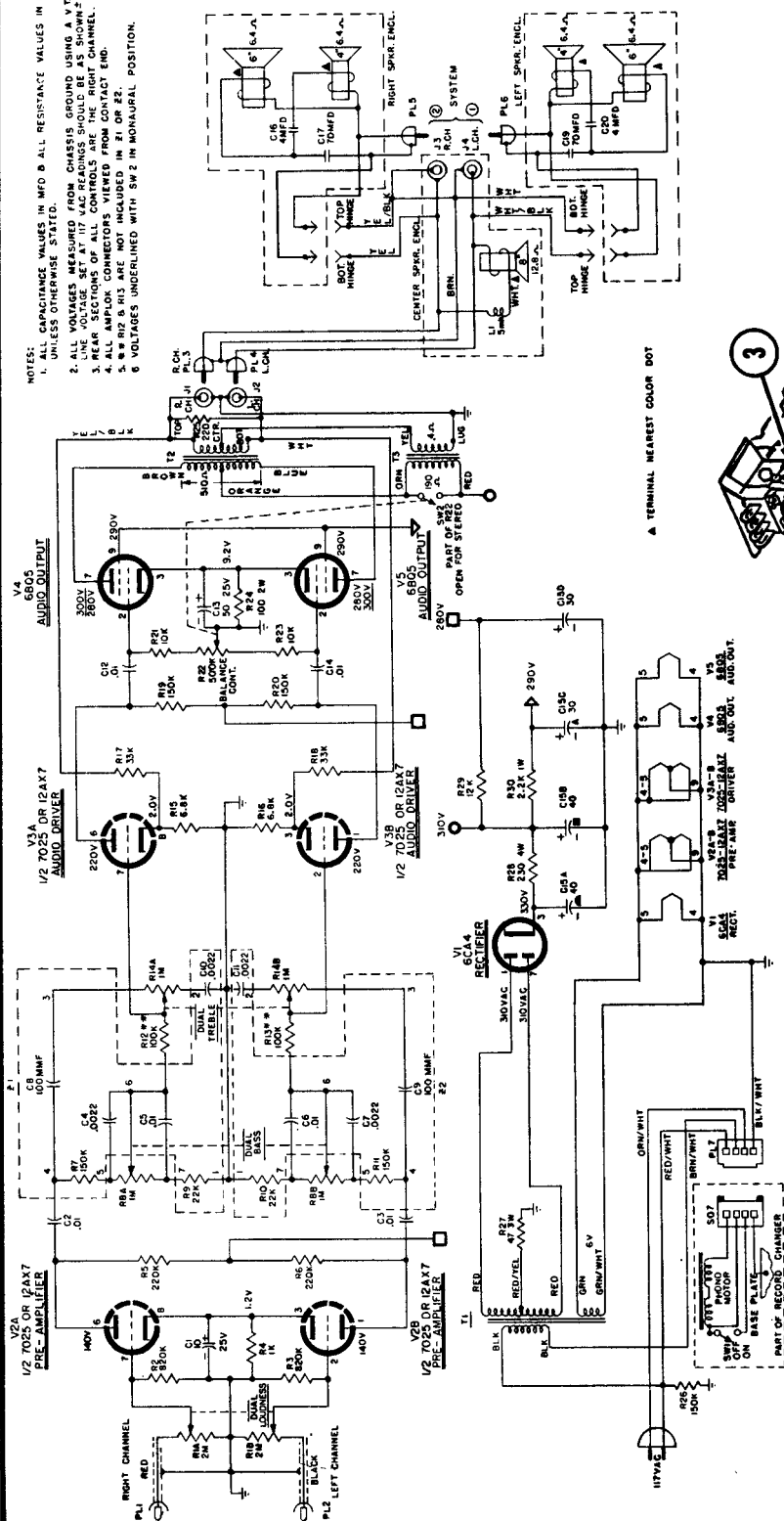
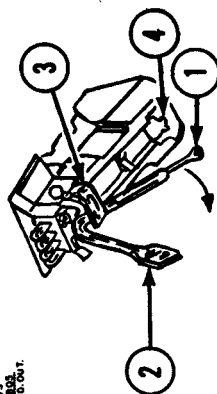


Figure 1
Stylus removal
and replacement.



POWER CORD POLARITY

To remove the possibility of hum due to incorrect power plug polarity, try reversing this plug while the Bass and Loudness controls are set at maximum. Leave the plug in the minimum hum position. Always check the AC power plug polarity first when servicing a hum problem.

PHASING

Each speaker is coded with a dot on one terminal. The striped speaker leads must go to the speaker terminals marked with a color dot.

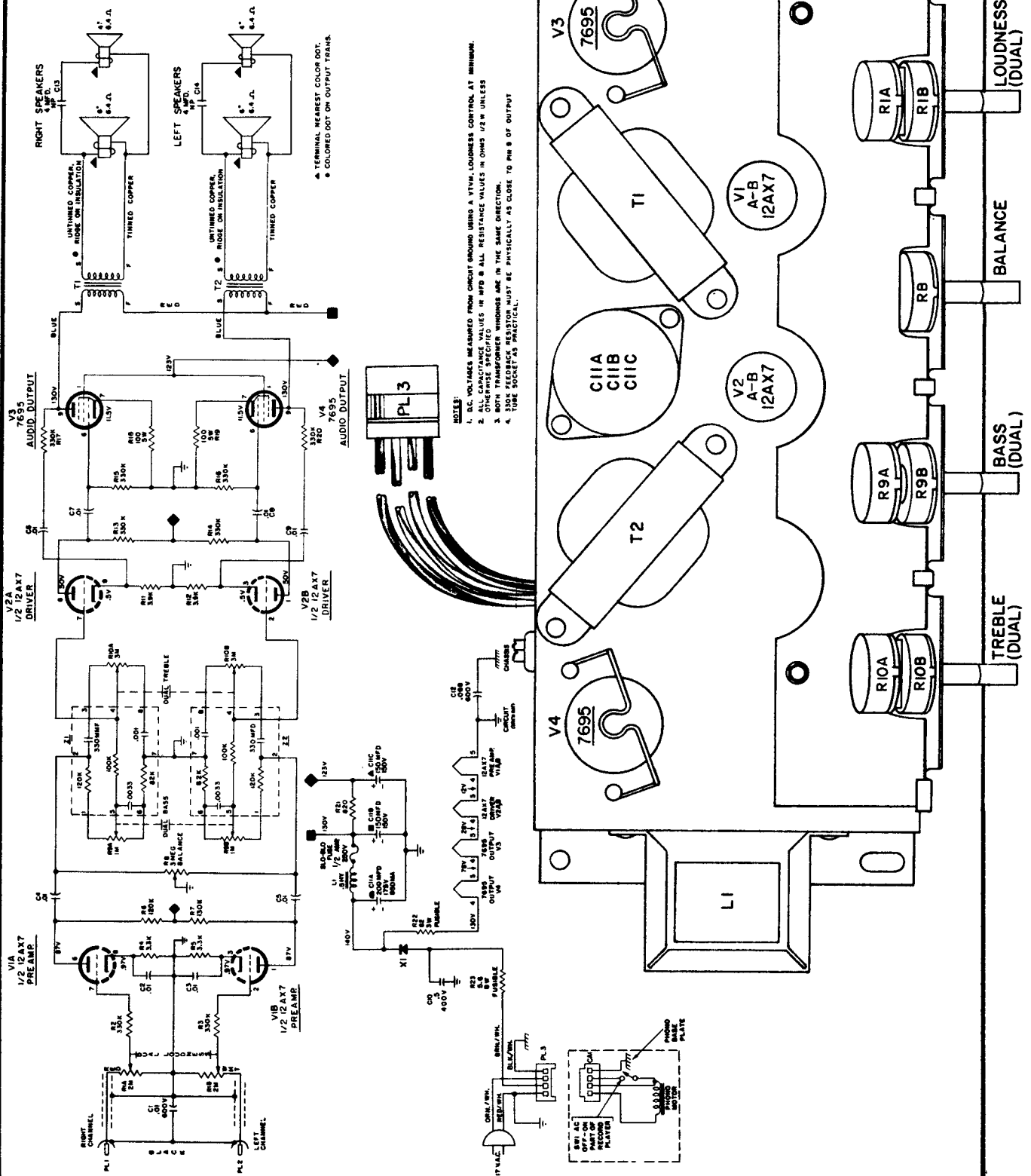
STYLUS REPLACEMENT (See Figure 1)

To remove stylus (item #1), move lever handle (#2) until it is pointing down. Gently pull spring clip (#3) slightly open with finger. Grasp stylus by lever handle and slip it out from under clip. To replace stylus, slip heel of stylus under clip. Gently pull clip slightly open with finger. Slip stylus under clip making certain that stylus shaft rests in center of coupler (#4).

CARTRIDGE REPLACEMENT

Write down the sequence of colored wires connecting to the four terminals at rear of cartridge. Remove the mounting screws securing the cartridge in the tone arm. Remove the push-on connectors from the cartridge terminals. Push the connectors onto the terminals of the replacement cartridge with the wire-colors in the sequence previously noted for the original cartridge.

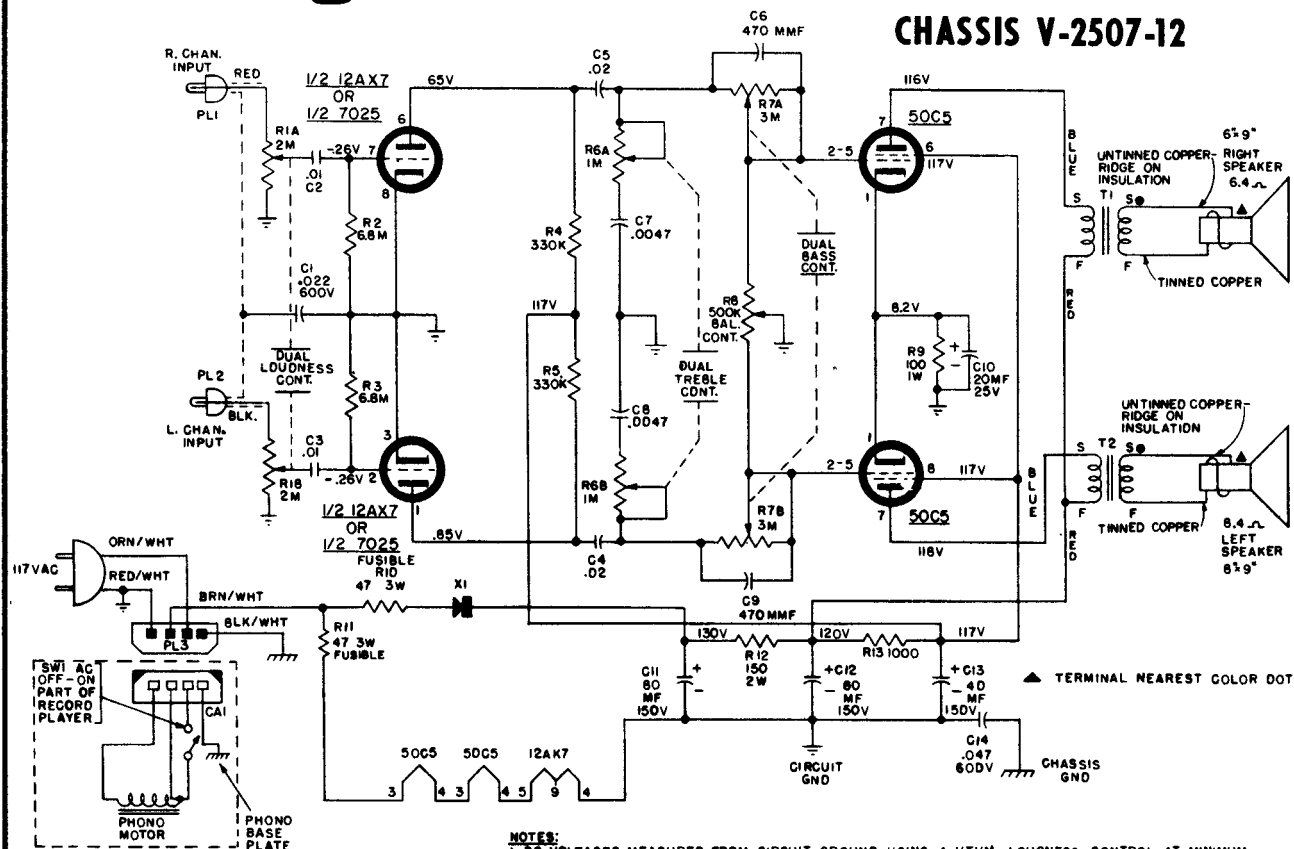
WESTINGHOUSE
Models H-81ACS1, H-81ACS2,
Chassis V-2507-11



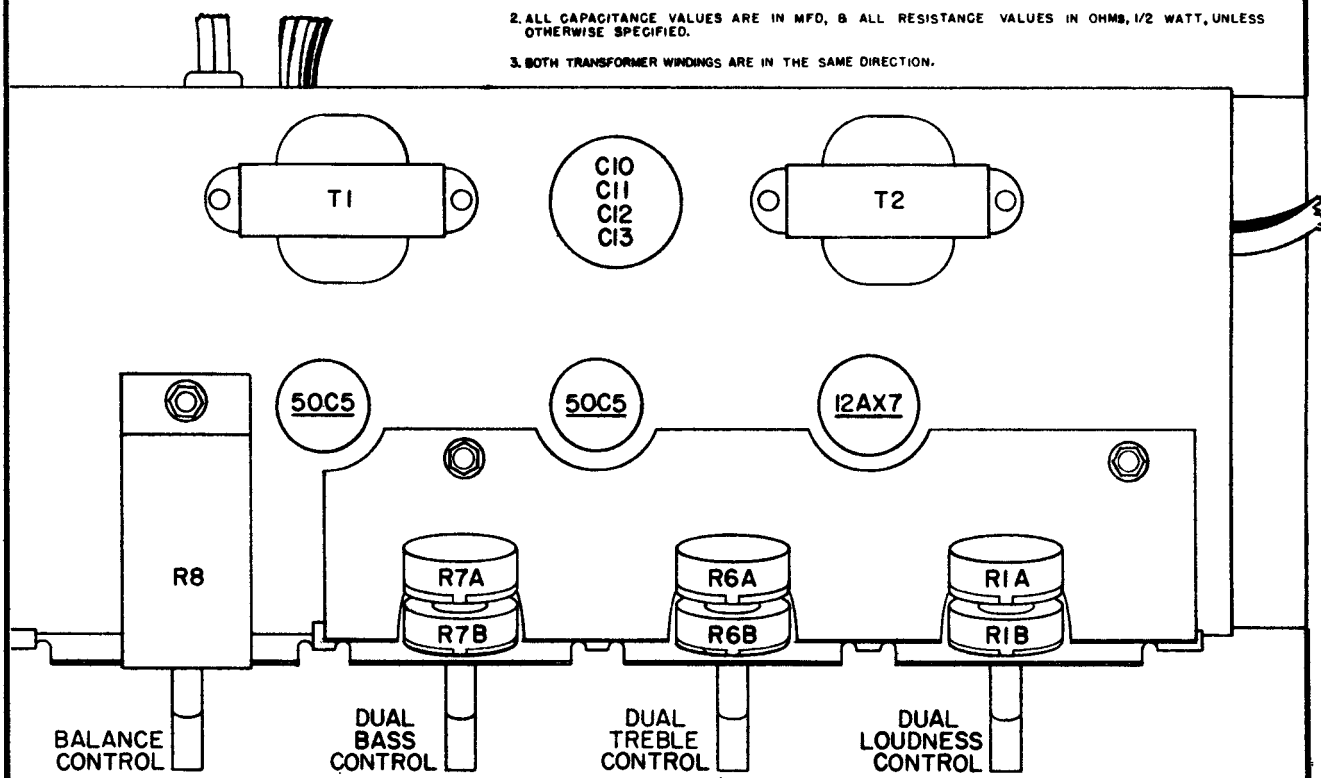
Westinghouse

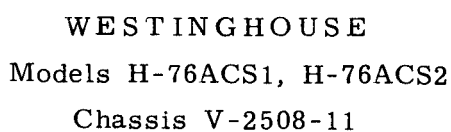
MODELS H-79ACSI, H-79ACS2

CHASSIS V-2507-12



- NOTES:
1. DC VOLTAGES MEASURED FROM CIRCUIT GROUND USING A VTVM, LOUDNESS CONTROL AT MINIMUM.
 2. ALL CAPACITANCE VALUES ARE IN MFD, & ALL RESISTANCE VALUES IN OHMS, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
 3. BOTH TRANSFORMER WINDINGS ARE IN THE SAME DIRECTION.



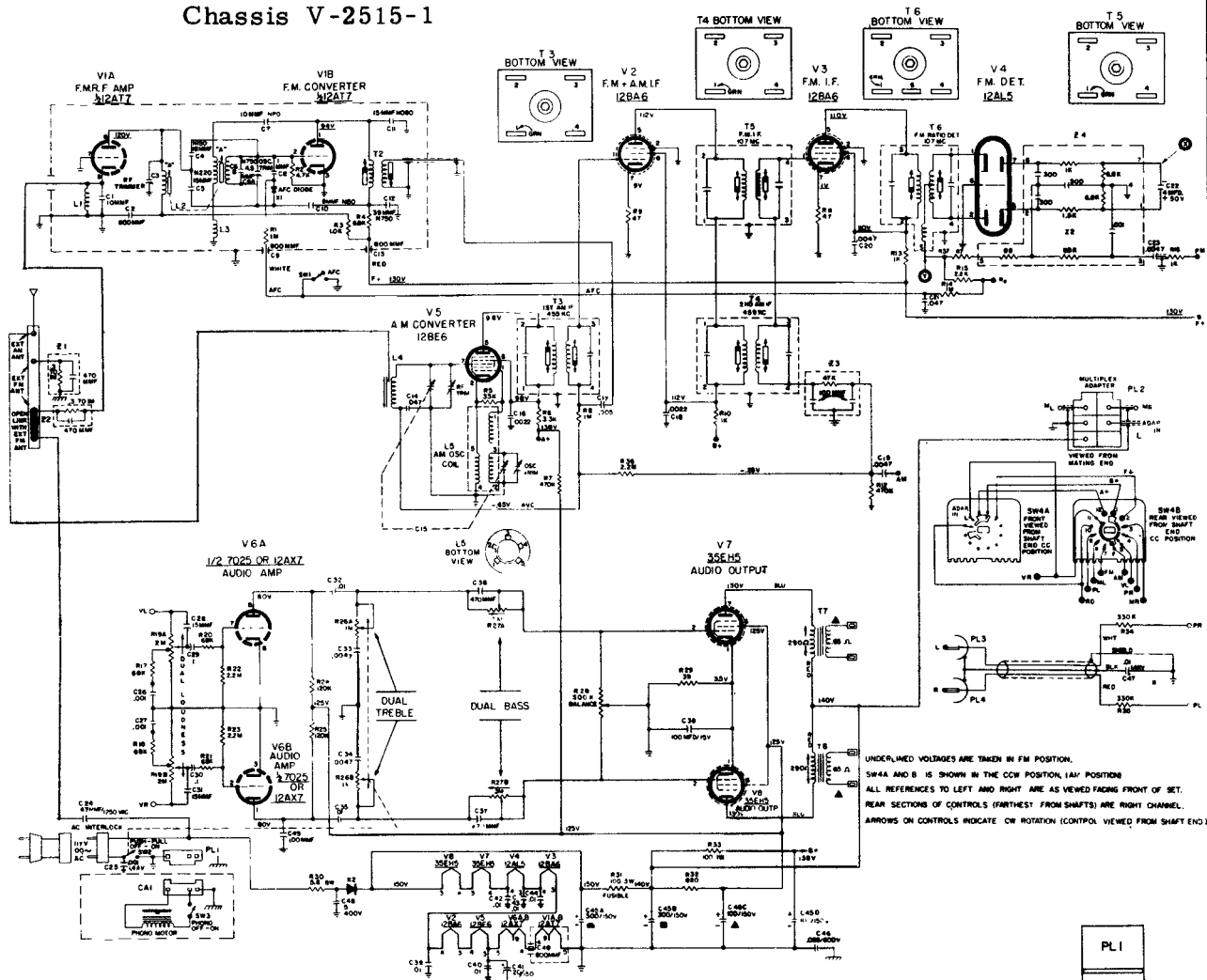


1. Remove the perforated tube-service cover which is attached by 2 phillips screws.
2. Remove the 4 phillips screws holding the motor board. Lift the motor board.
3. Disengage the amp-lok from the changer and unsolder the leads to the changer terminal board.
4. Remove Volume control knobs.
5. Remove the 2 speed nuts holding the chassis to the cabinet front.
6. Disconnect the speaker leads.



VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

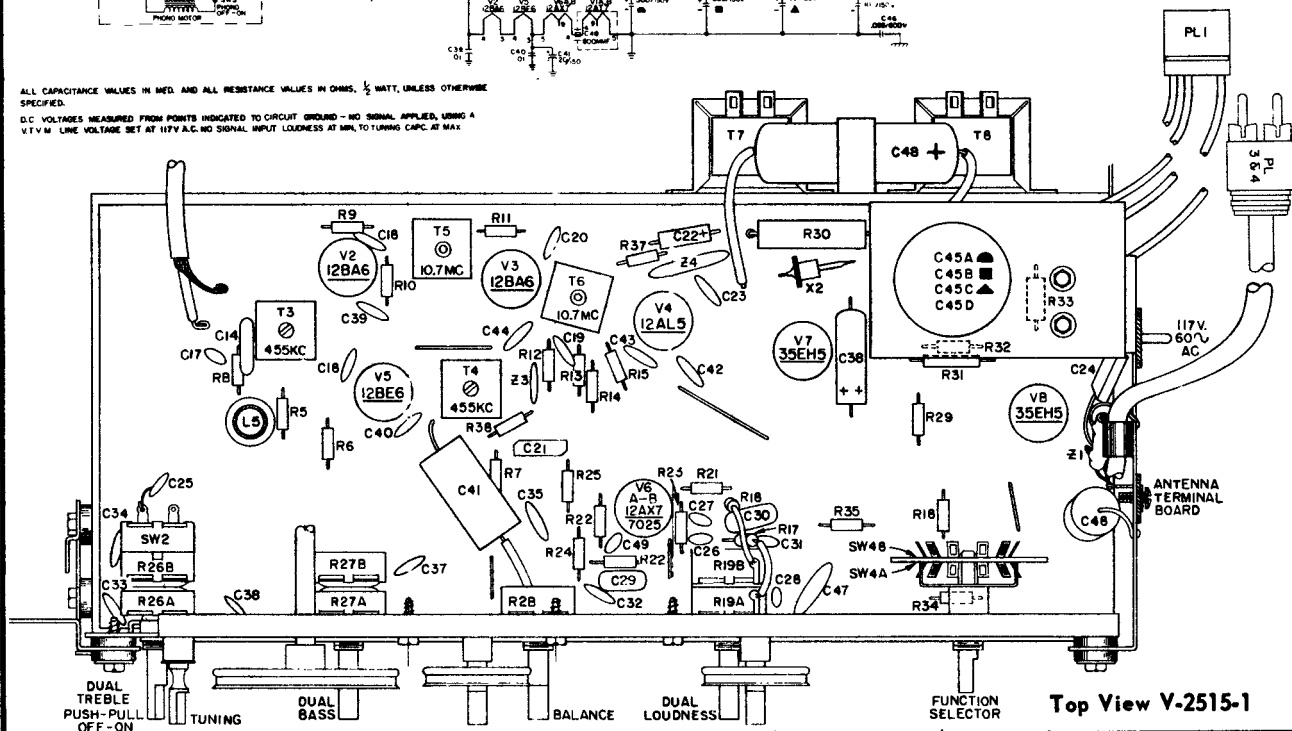
WESTINGHOUSE Models H-M1700, H-M1701, H-M1702, H-M1703, Chassis V-2515-1



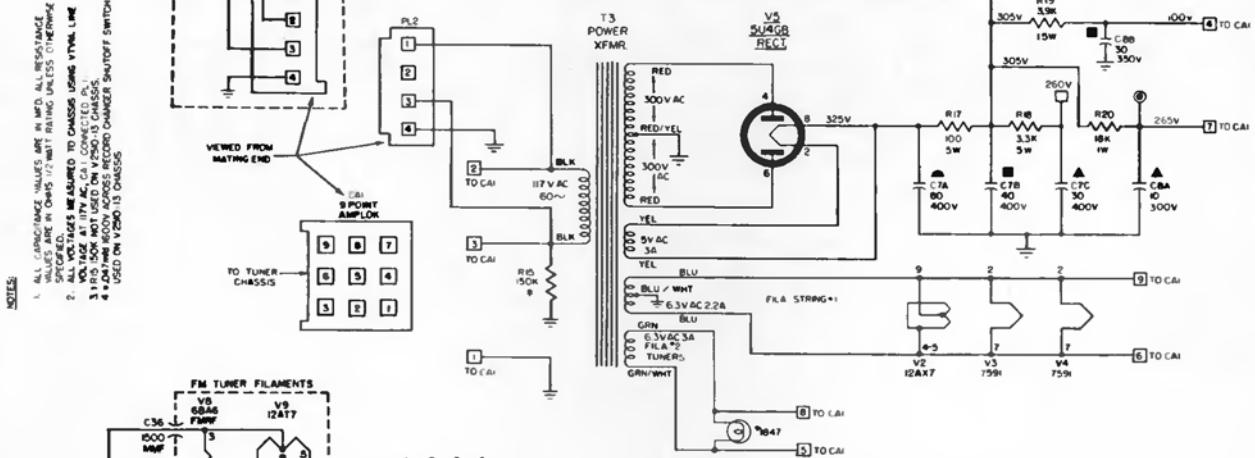
ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS, $\frac{1}{2}$ WATT, UNLESS OTHERWISE SPECIFIED.

D.C. VOLTAGES MEASURED FROM POINTS INDICATED TO CIRCUIT GROUND - NO SIGNAL APPLIED, USING A V.T.M. LINE VOLTAGE SET AT 117V A.C. NO SIGNAL INPUT LOUDNESS AT MIN. TO TURNING CAPAC. AT MAX.

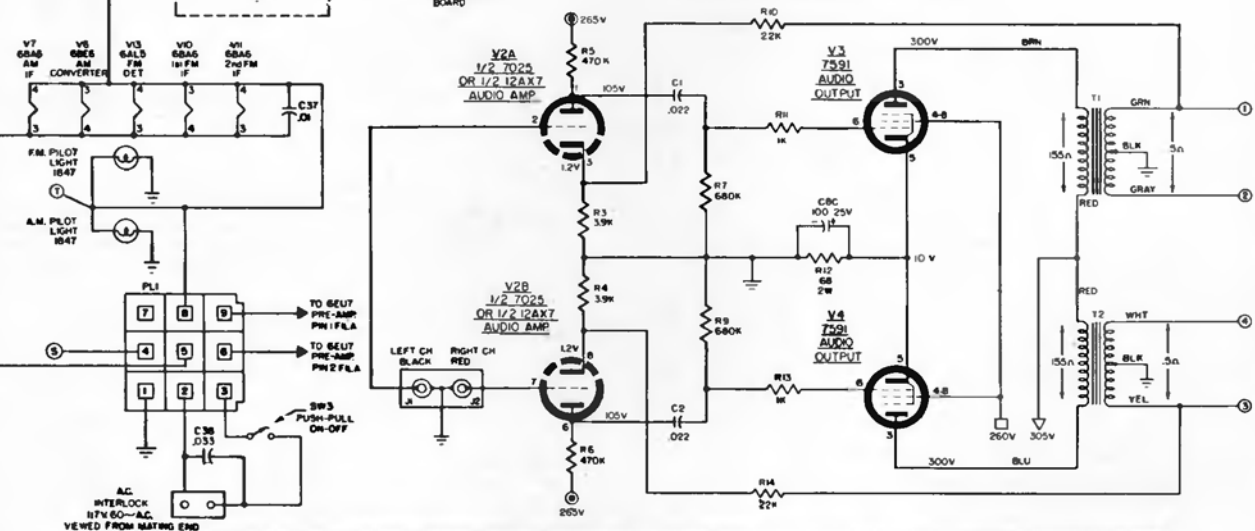
UNDERLINED VOLTAGES ARE TAKEN IN FM POSITION.
SW4A AND B IS SHOWN IN THE CCW POSITION, LAY POSITION.
ALL REFERENCES TO LEFT AND RIGHT ARE AS VIEWED FROM FRONT OF SET.
REAR SECTIONS OF CONTROLS (FARTHEST FROM SHAFTS) ARE RIGHT CHANNEL.
ARROWS ON CONTROLS INDICATE CW ROTATION (CONTROL VIEWED FROM SHAFT END).



WESTINGHOUSE Chassis V-2510-7 and V-2511-5,
Models H-M1310B, H-M1311B, H-M1312B, H-M1313B,
H-M1410, H-M1411, H-M1412, H-M1413.
(Continued on the next page)



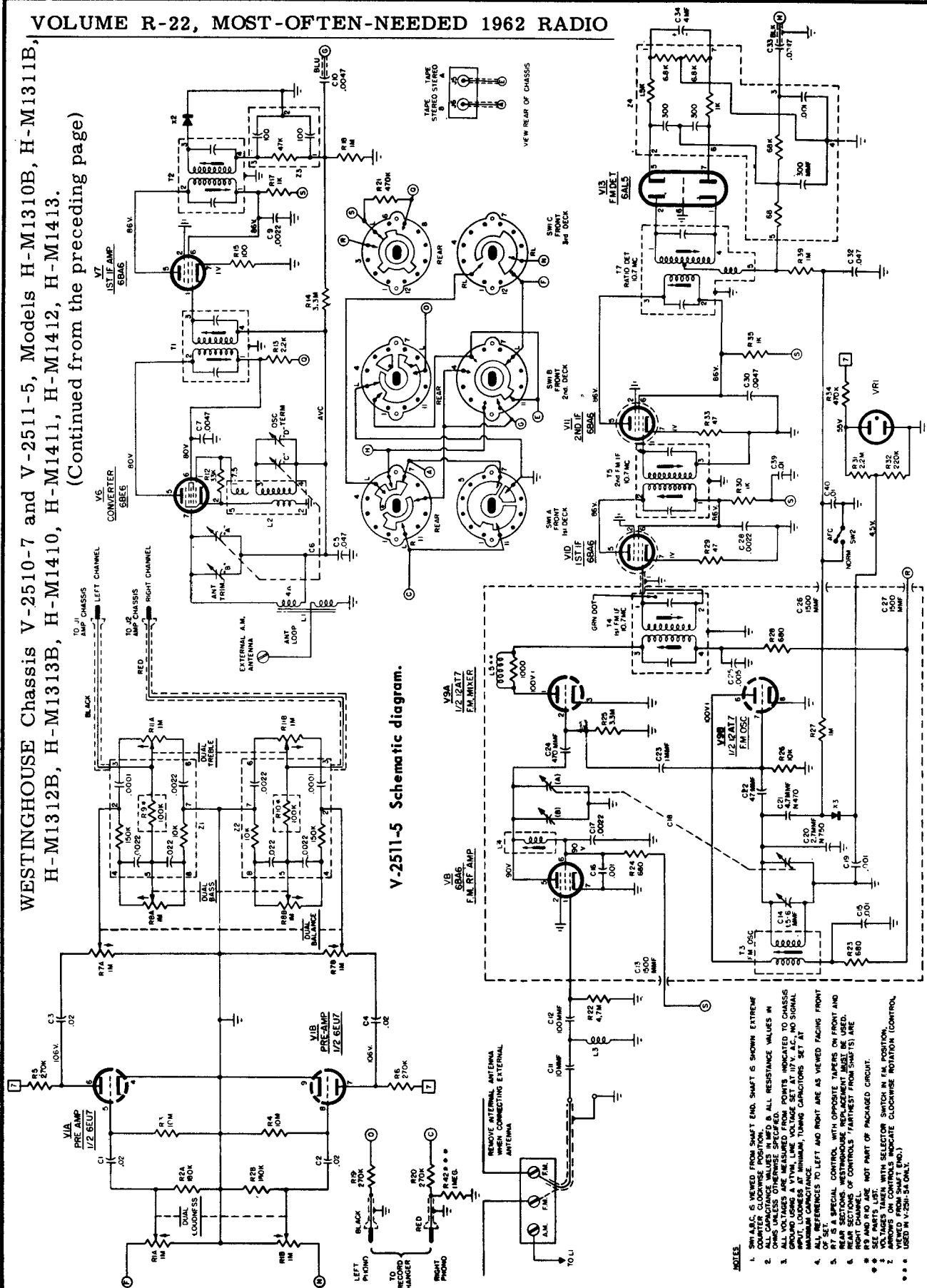
V-2510-7 Schematic Diagram.

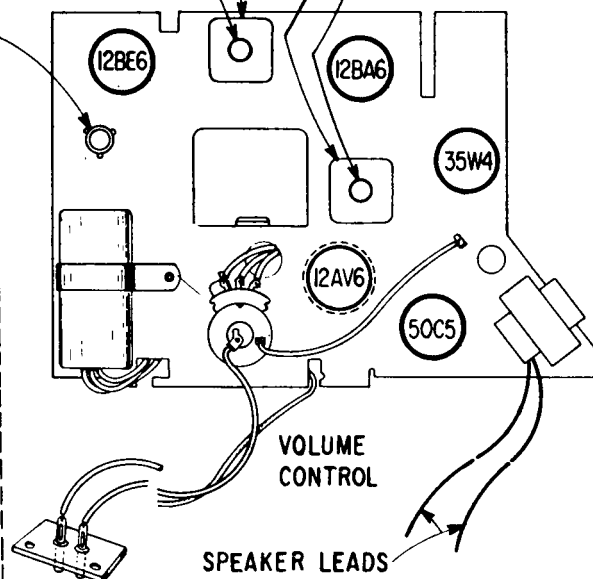
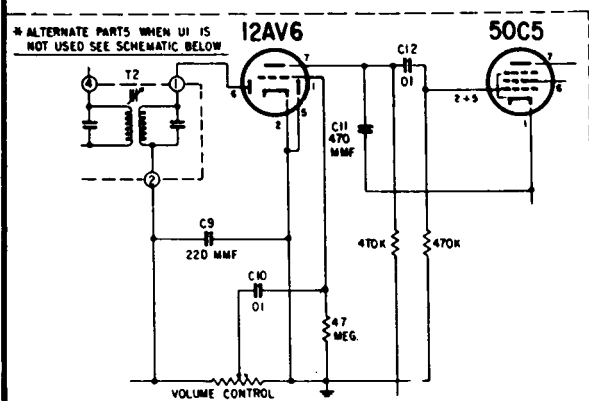
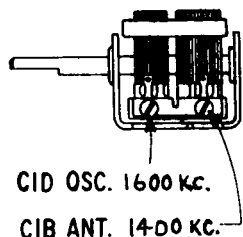


Bottom of PC board showing location of top components in solid outlines. Tube pin numbering is for bottom of socket.

WESTINGHOUSE Chassis V-2510-7 and V-2511-5, Models H-M1310B, H-M1311B, H-M1312B, H-M1313B, H-M1410, H-M1411, H-M1412, H-M1413.

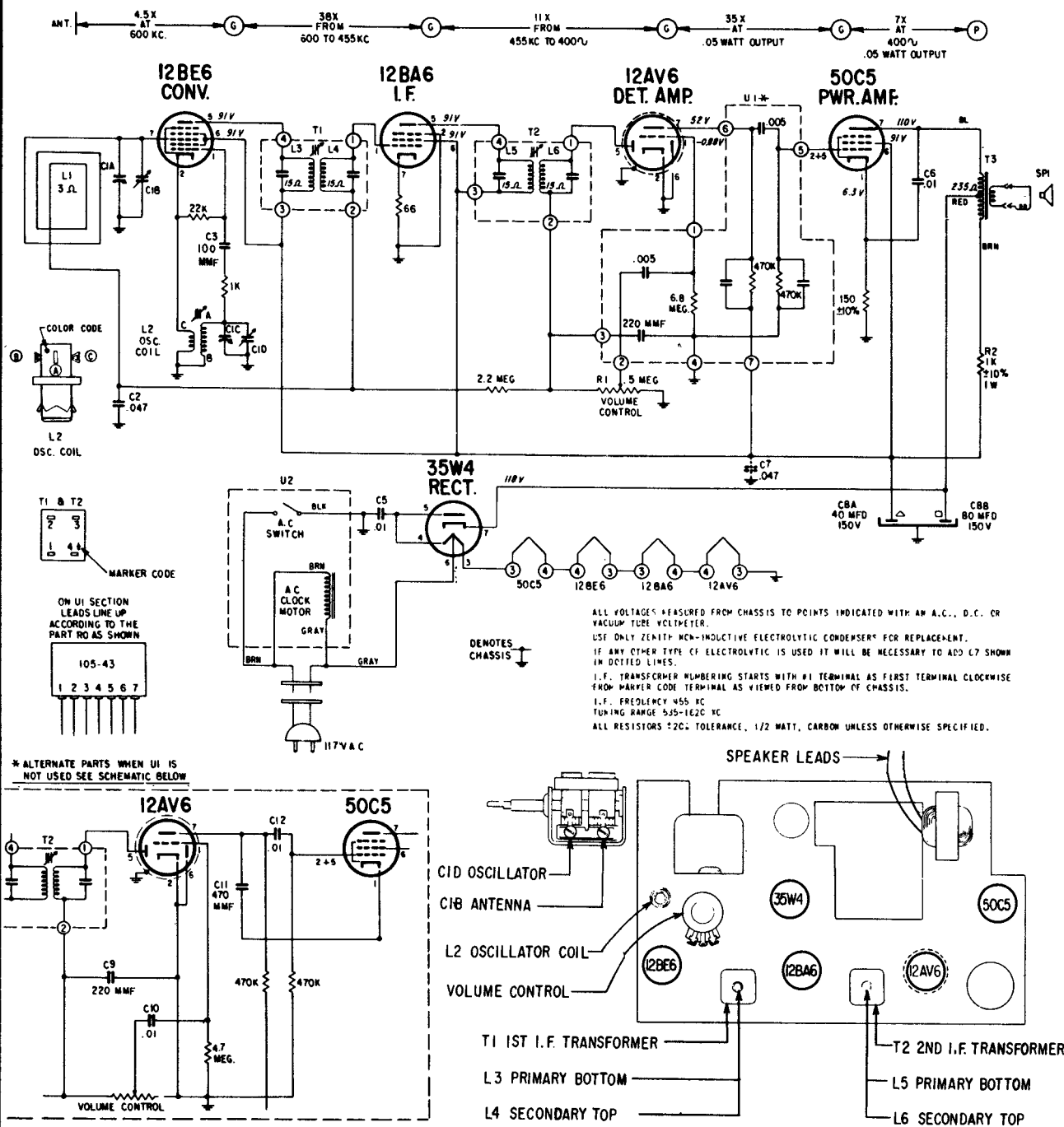
(Continued from the preceding page)





VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

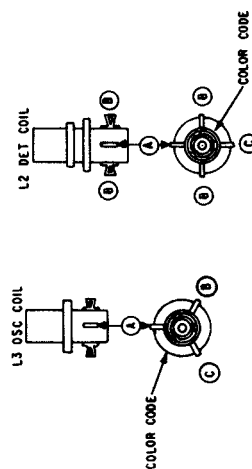
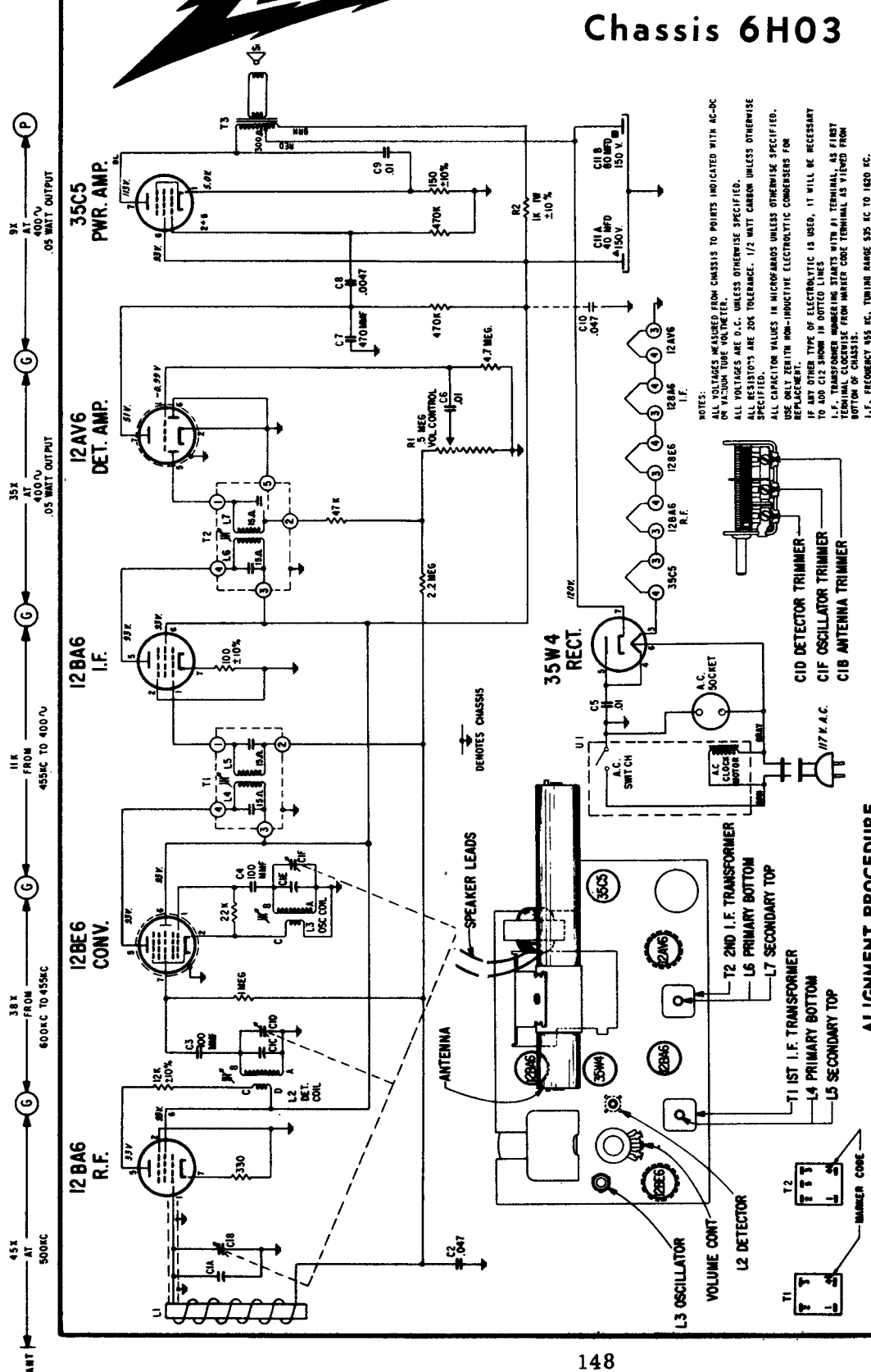
ZENITH Radio Model H519, Chassis 5H07



ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Sig. Frequency	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	L3 L4,L5,L6,	For I.F. Alignment.
2	One Turn Loop Coupled Loosely to Wave-magnet	—	1600 Kc.	1600 Kc.	C1D	Set Oscillator to Dial Scale.
3		—	1400 Kc.	1400 Kc.	C1B	Align Antenna Stage.

Chassis 6H03



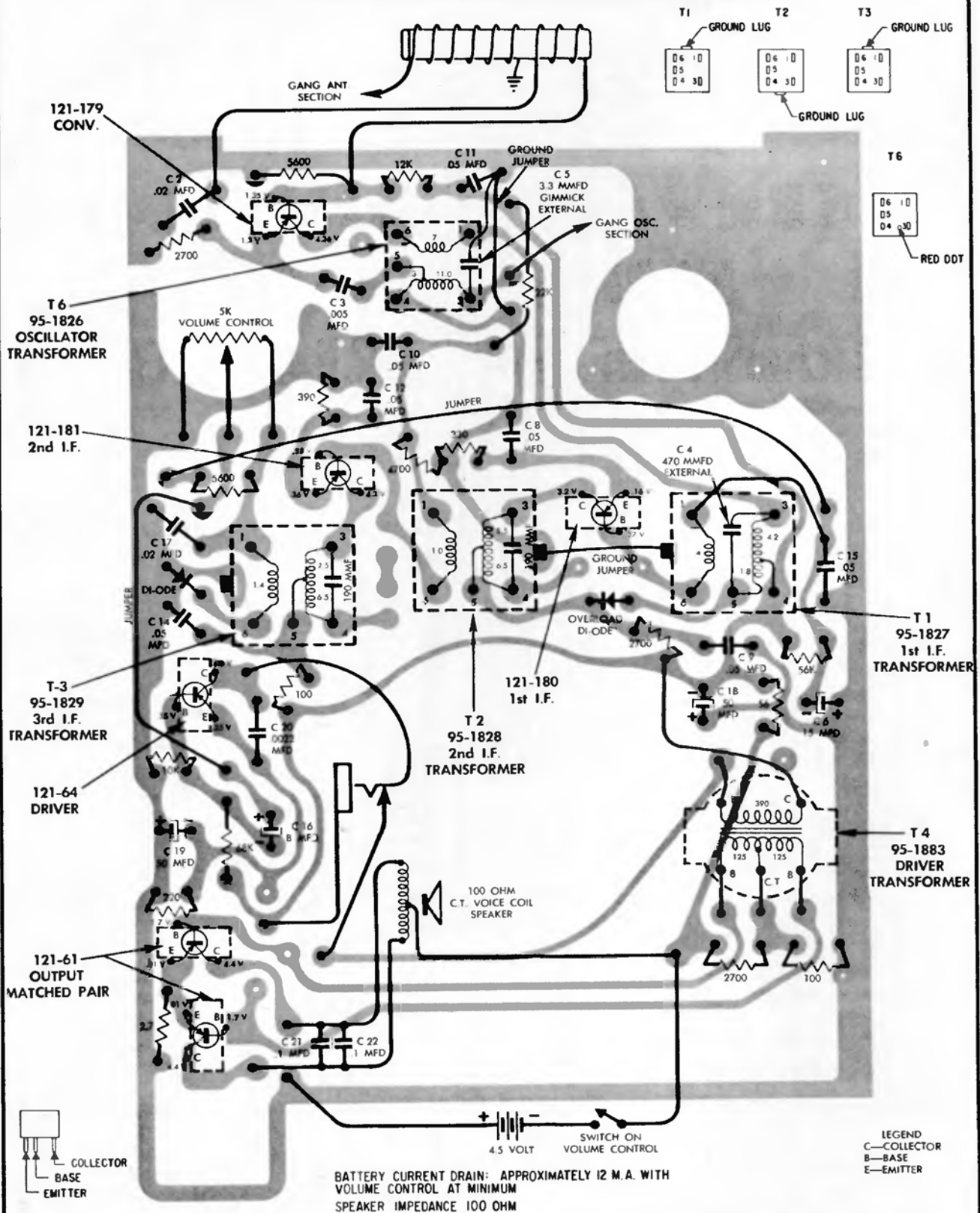
Operation	Connect Oscillator To	Dummy Antennas	Input Sig. Frequency	Set Disl At	Trimmers	Purpose
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	L4, L5, L6, L7	For I.F. Alignment.
2	One Turn Loop Coupled Loosely to Wave-magnet	—	1600 Kc.	1600 Kc.	C1F	Set Oscillator to Disl Scale.
3		—	1400 Kc.	1400 Kc.	C1D, C1B	Align Detector and Antenna Sigs.

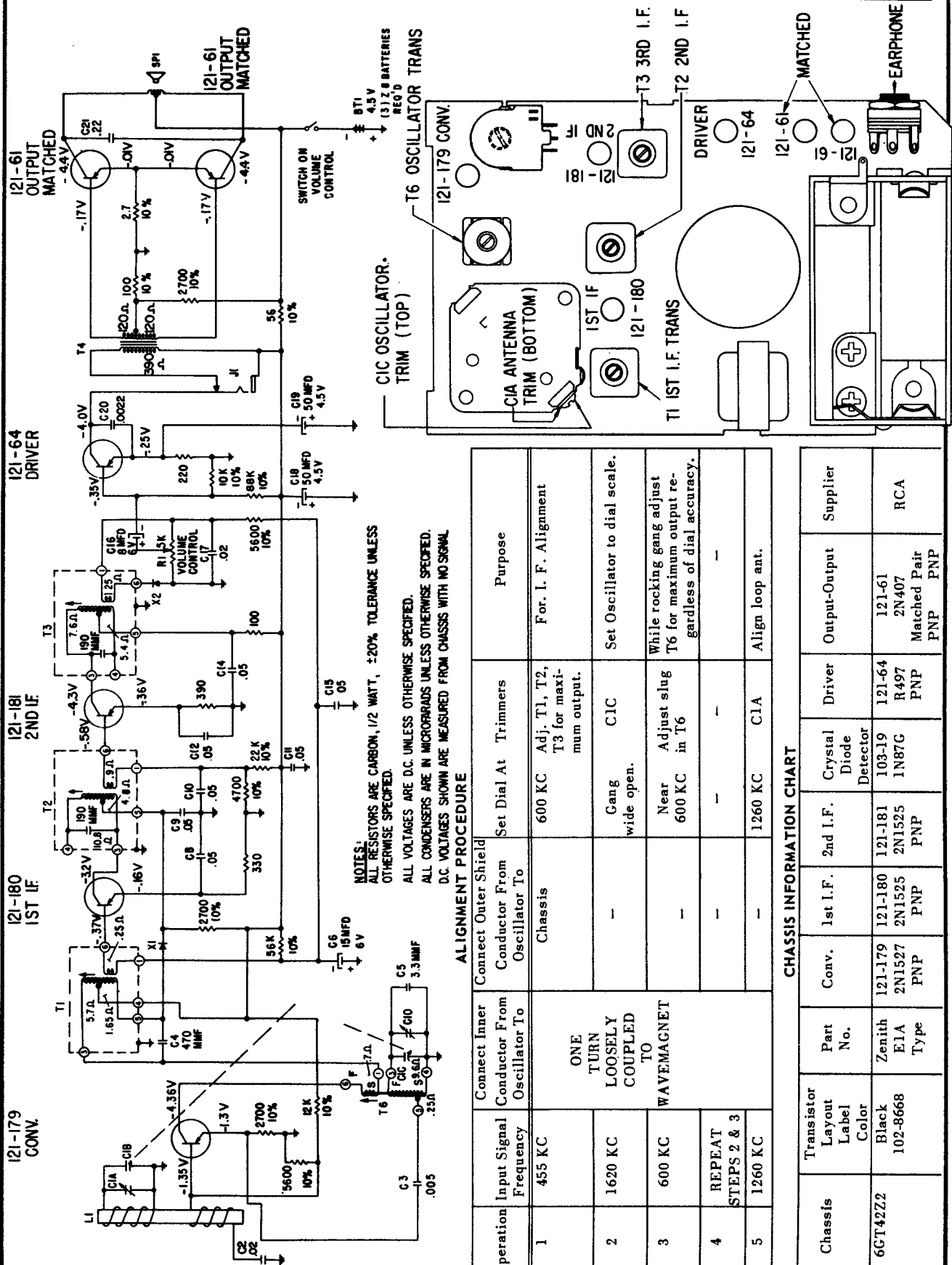


VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

ZENITH RADIO Model Royal 150, Chassis 6GT42Z2

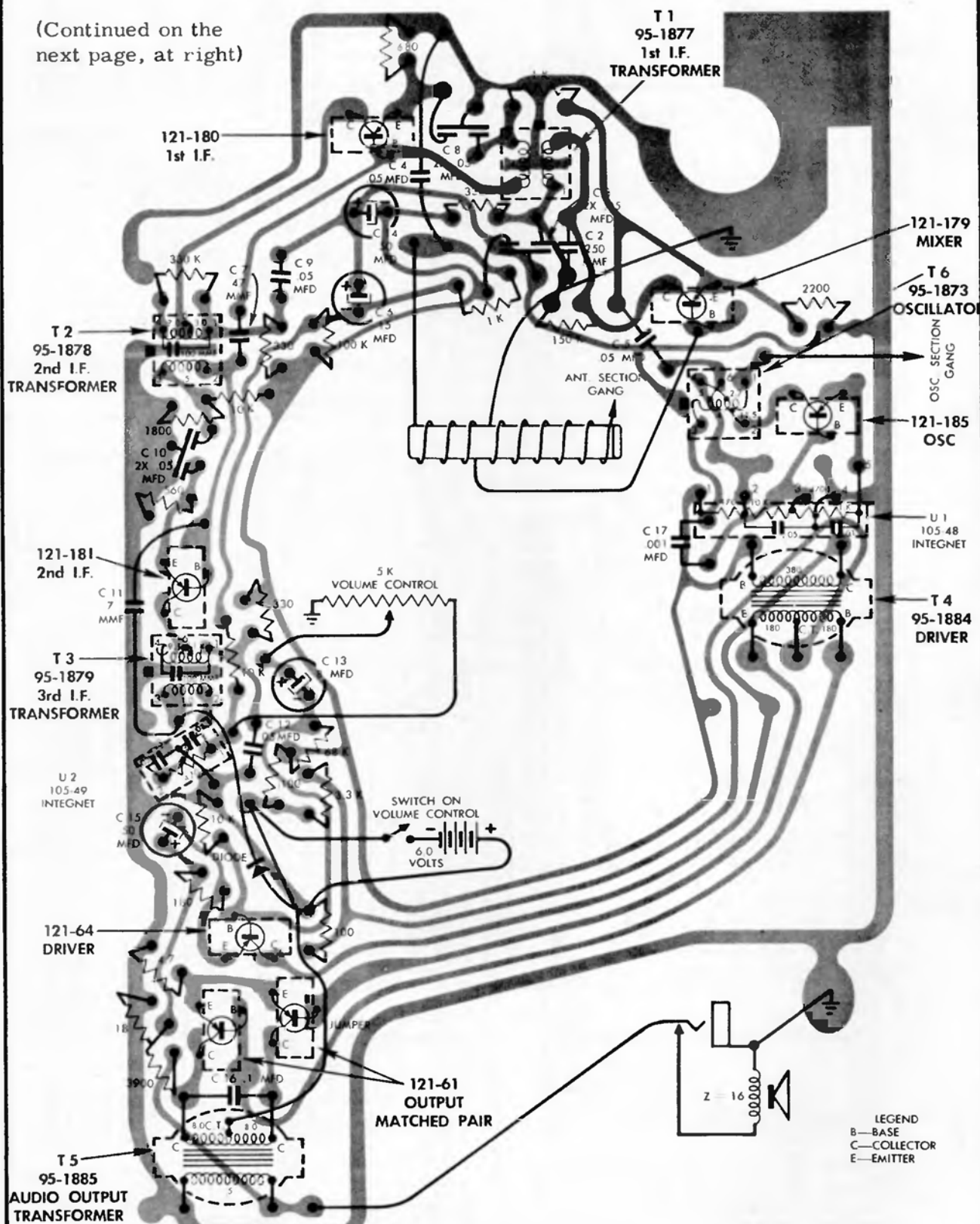
(Circuit diagram and alignment on next page, at right)



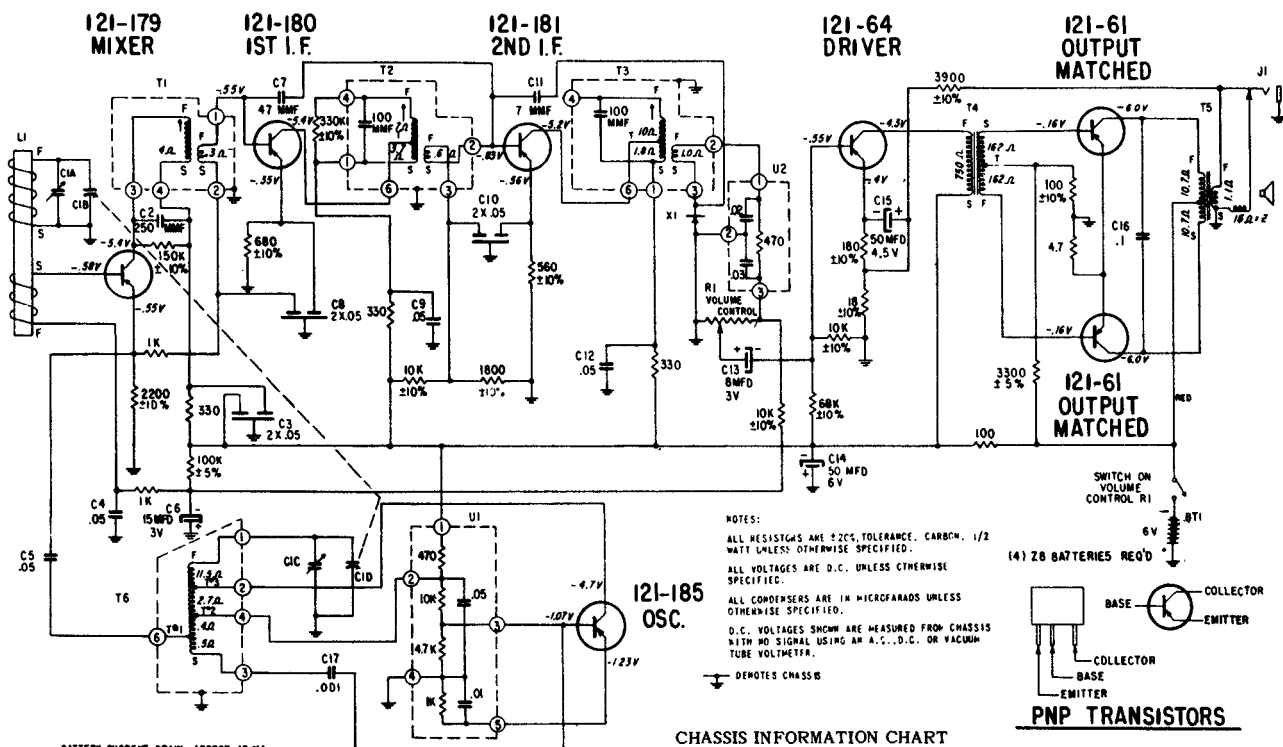


ZENITH RADIO Model Royal 400, Chassis 7GT40Z2, Continued

(Continued on the next page, at right)



ZENITH RADIO Model Royal 400, Chassis 7GT40Z2, Continued



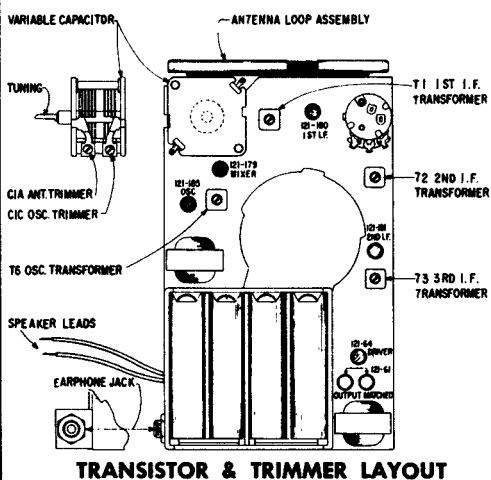
CHASSIS INFORMATION CHART

Chassis	Chassis Color Dot	Transistor Layout Label Color	Part No.	Mixer	Osc.	1st I.F.	2nd I.F.	Crystal Diode Detector	Driver	Output	Supplier R.C.A.
7GT40Z2	Black	Black	Zenith RETMA Type	121-179 2N1527 PNP	121-185 2N1525 PNP	121-80 2N1525 PNP	121-181 2N1525 PNP	103-19 1N87G	121-64 2N407 PNP	121-61 2N407 PNP	R.C.A.

This transistor portable chassis is a conventional super-heterodyne receiver using an individual mixer and oscillator to produce the 455Kc intermediate frequency. The first and second intermediate frequency amplifiers are conventional. A (103-19) is used as the diode detector and AVC voltage source. This is then followed by a driver stage and a class "B" push-pull output stage. As you can see from the chart, the chassis uses a pair of matched transistors in the final output stage and therefore should one transistor fail, both transistors must be replaced simultaneously as chances are they will not perform properly unless so matched.

ALIGNMENT PROCEDURE

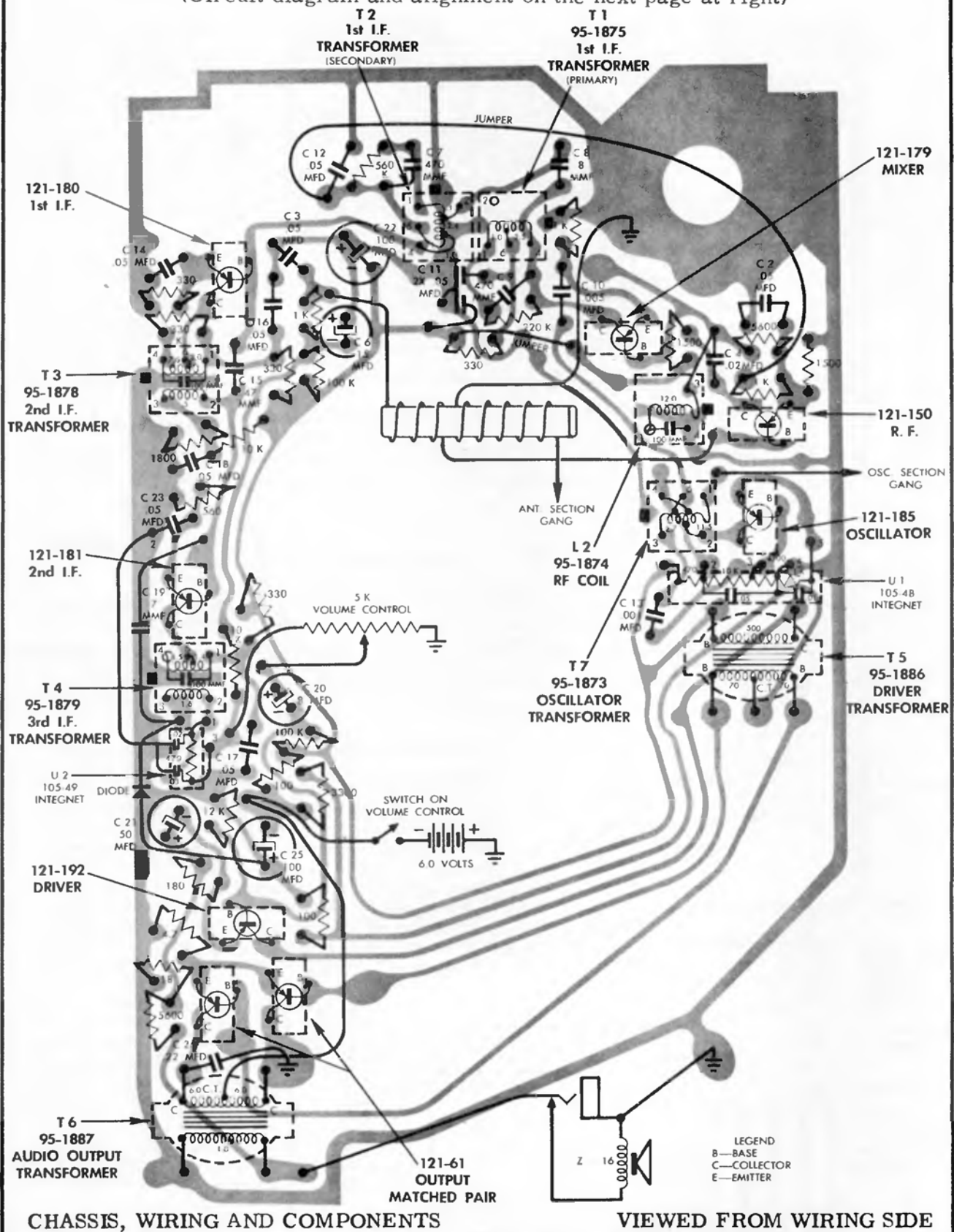
Operation	Input Signal Frequency	Connect Inner Conductor From Oscillator To	Connect Outer Shield Conductor From Oscillator To	Set Dial At	Trimmers
1	455 KC	ONE TURN LOOSELY COUPLED TO WAVEMAGNET	Chassis	600 KC	Adj. T1, T2, T3 for maximum output.
2	1620 KC		—	Gang wide open.	C1C
3	535 KC		—	Gang Closed	Adjust slug in T6
4	REPEAT STEPS 2 & 3		—	—	—
5	1260 KC		—	1260 KC	C1A



VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

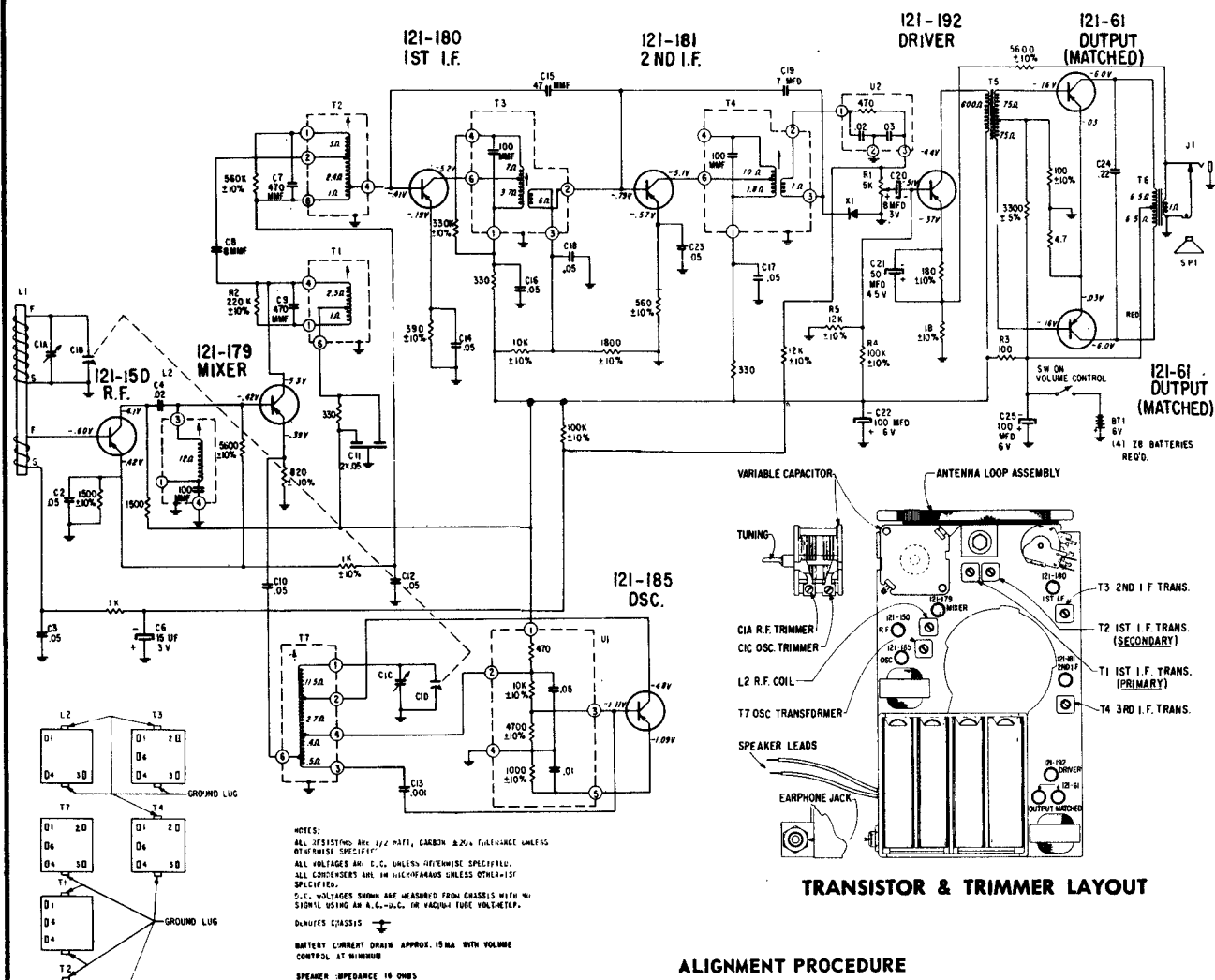
ZENITH RADIO Model Royal 500H, Chassis 8HT40Z2

(Circuit diagram and alignment on the next page at right)



VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

ZENITH RADIO Model Royal 500H, Chassis 8HT40Z2, Continued



TRANSISTOR & TRIMMER LAYOUT

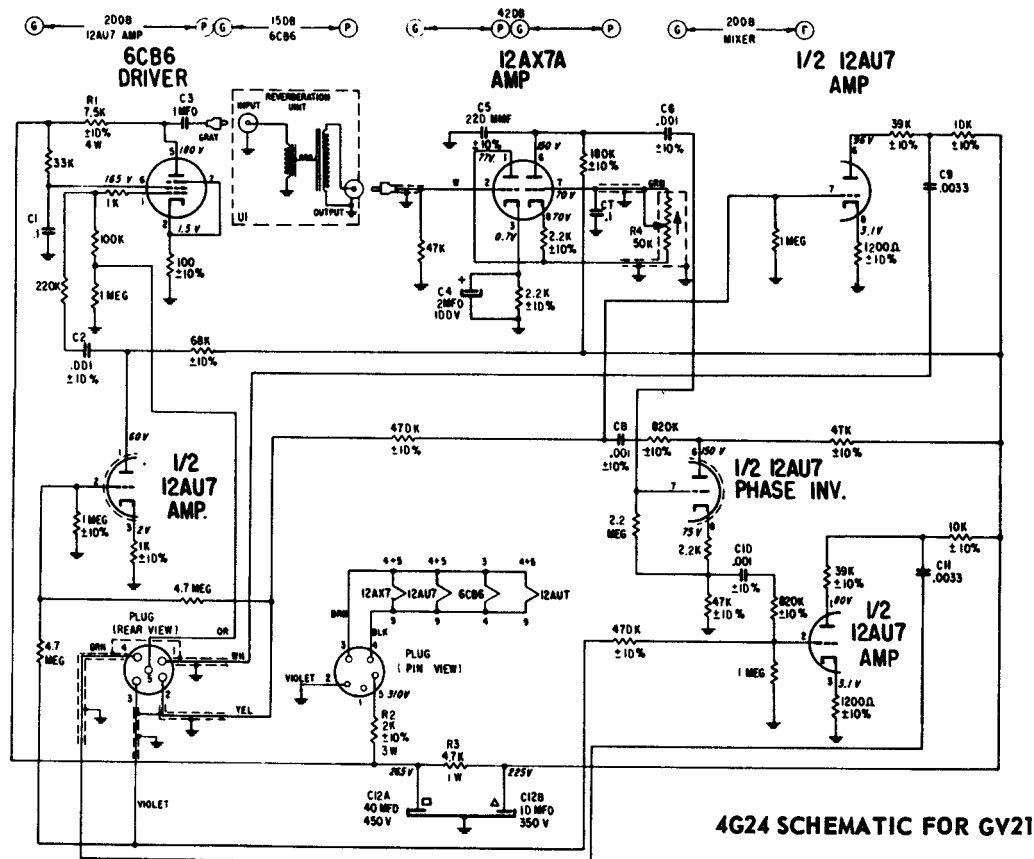
ALIGNMENT PROCEDURE

Operation	Input Signal Frequency	Connect Inner Conductor From Oscillator To	Set Dial At	Trimmers	Purpose
1	455 KC	ONE TURN LOOSELY COUPLED TO WAVEMAGNET	600 KC	Adj. T1, T2 T3, T4 for Maximum output	For I.F. Alignment
2	455 KC		600 KC	Adj. L2 for Minimum output	Tune Trap to IF Frequency
3	1620 KC		Gang Wideopen	C1C	Set Oscillator To Dial Scale
4	600 KC		Near 600	Adjust slug in T7	Adjust T6 for Maximum output while rocking gang. Tune T5 For Maximum output regardless of dial accuracy
5	Repeat Steps 3 & 4				
6	1260 KC		1260 KC	C1A	Align Loop Antenna

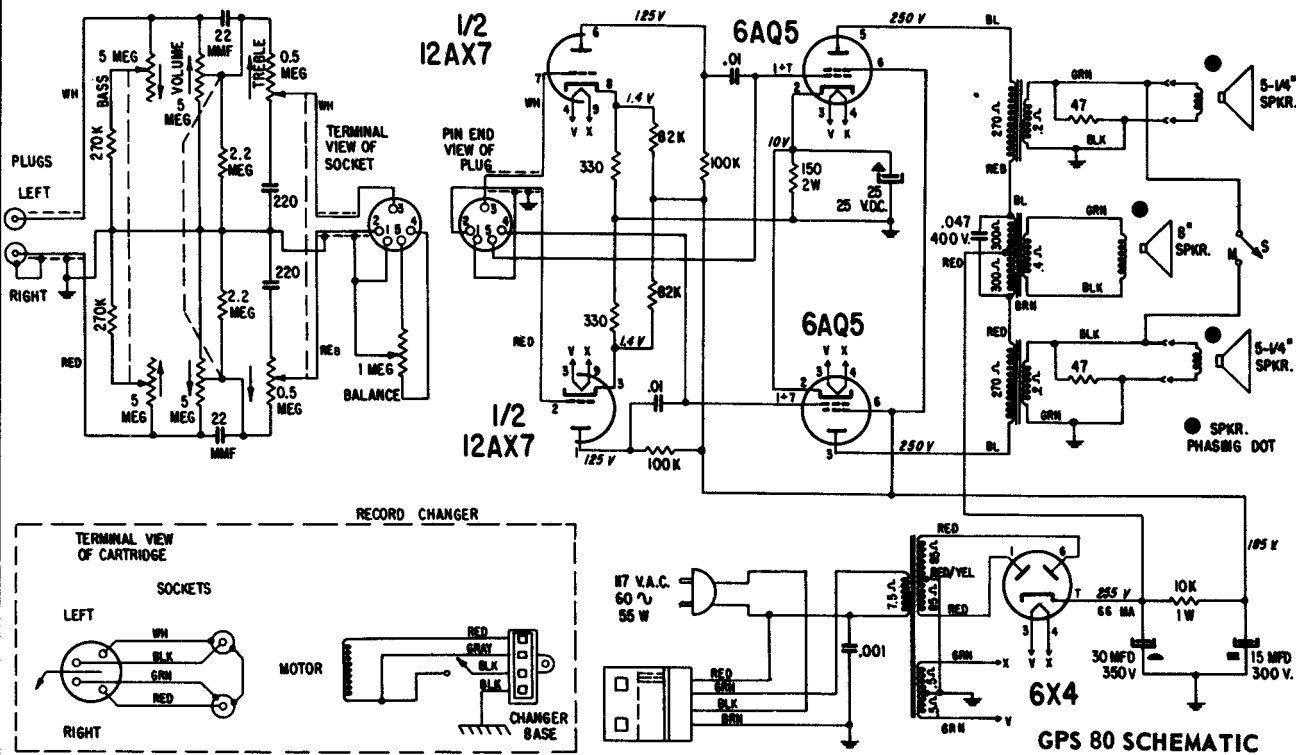
CHASSIS INFORMATION CHART

Chassis	Transistor Layout Label Color	Part No.	R.F.	Mixer	Osc.	1st I.F.	2nd I.F.	Xtal diode detector	Driver	Output	Supplier R C A
8HT40Z2	Black 102-8202	Zenith E.I.A. Type	121-150 2N1631 PNP	121-179 2N152T PNP	121-185 2N152S PNP	121-180 2N152S PNP	121-181 2N152S PNP	X03-19 8N87G	121-192 2N407 PNP	121-61 2N407 PNP	

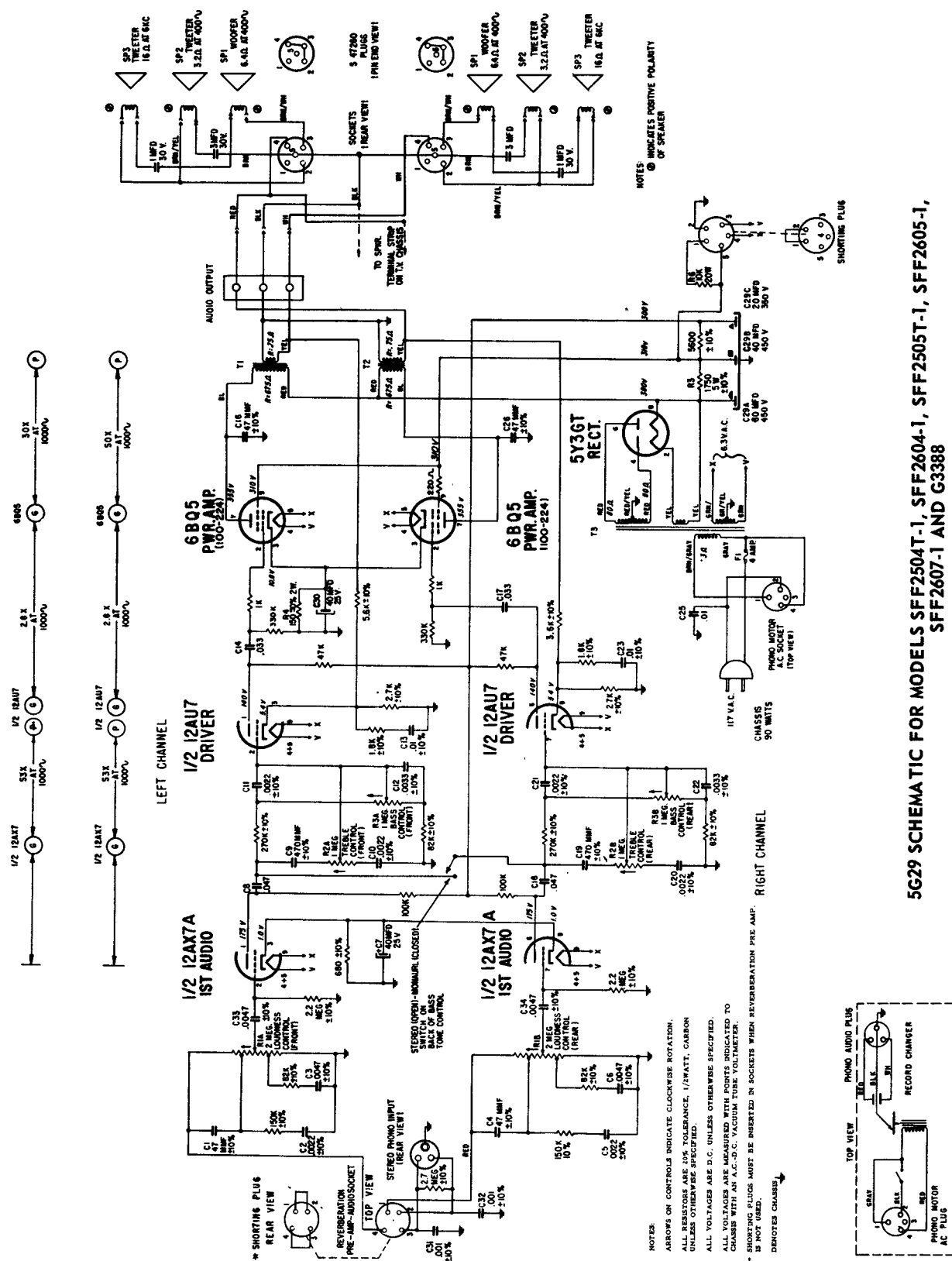
ZENITH RADIO Chassis 4G24 used in Model GV21

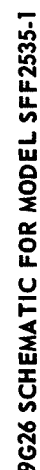


ZENITH RADIO Chassis GPS 80



ZENITH RADIO Chassis 5G29 used in Models SFF2504T-1, SFF2505T-1,
SFF2604-1, SFF2605-1, SFF2607-1, and G3388





NOTE: SHORTING PLUGS MUST BE
INSERTED INTO SOCKET'S WHEN
REGENERATION PRE-AMPLIFIER
IS NOT USED

NOTES

USING RANGES 140-140 MC A M
80-140 MC F M
PUMP MOD 1F FREQ. 415 KC
PUMP MOD 1F FREQ. 177 MC
PULL VOLTS FROM COMMON RETURN TO POINTS INDICATED
WITH A VACUUM TUBE VOLTMETER

ALL VOLTAGES ARE D C UNLESS OTHERWISE SPECIFIED

SWITCH POSITION 1 SHOWN IN PHOTO POSITION 2 PULL COUNTERCLOCKWISE
AS VIEWED FROM FRONT OF CHASSIS

COMPONENTS: 100 K 100 VOLTS 1/2 WATT CARBON UNIFORM

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

INDEX	Arvin, Cont.		G.E. Cont.		Motorola, Cont.		Motorola, Cont.	
<u>Admiral Corp.</u>	4R3	3	1.62201	11	P825A	32	C16	65
	6M3A	4	1.62402	14	P826A	32	A17	65
	7B2	5	1.64901	10	P835A	31	C17	65
	7B2B	6	1.65301	12	P850B,C	32	C18	65
	7B2C	7	1.65501	13	P851C	32	C19	65
	7B2D	7			RP1135A	34	X23	58
	8A2	8	<u>Bulova Watch</u>		RP1155A,C	36	24ME	51
	Y2081	5	890	15	RC1200	36-37	24MF	51
	Y2081A	7			RC1201	36	24MY	51
	Y2082	5	Delco		RC1202	36-37	X24	58
	Y2082A	7	989393	17	RC1203	36	SP25	67
	Y2083	5	989692	18	RC1210	36-37	X25	59
	Y2083A	7	989831	16	RC1211	36	SP26	67
	Y2091	8			RC1212	36-37	X26	60
	Y2093	8	<u>Emerson Radio</u>		RC1213	36	SP27	68
	Y2098	8	707	21	RP1550A,D	35	X27	61
	Y2101	6	941B	22	RP1551A,D	35	SP28	69
	Y2102	6	943B	22	RP1590A	36	X28	62
	Y2108	6	G-1701	19	RP1170	36-37	SP29	70
	Y2221	4	G-1702	19	P9001A	33	X29	63
	Y2223	4	G-1704	20	P9011A	33	SP30	70
	Y2226	4	G-1705	20			X31	64
	Y2229	4	G-1706	20	<u>Hitachi, Ltd.</u>		HK45	66
	Y2252	7	120569B	22	TH-660	40	SK56-1	71
	Y2253	7	120569D	22	TH-661	40	SK57-1	71
	Y2256	7	120578	19	TH-759	40	CA61X	52
	Y3133	3	120579	19	WH-761	39	OEA61X	53
	Y3137	3	120580	20	WH-822M	38	PCA61X	54
<u>American Motors</u>	8990981	50	120581	20			CTA62	55
			120583	20	<u>International</u>		CTM62	55
			120598	21	<u>Harvester</u>		SK65	67
					244079-R91	47	SK66	73
			<u>Ford</u>		244113-R91	47	SK67	73
			C2AZ-18805	51			SK73	72
			C2GY-18805	51	<u>Magnavox</u>		SK74	72
			C2YY-18805	51	65	41	SK75	72
					71	42	SK76	72
			<u>Gamble-Skogmo</u>				SK77	71
<u>Arvin</u>	31R25	10	RA48-8260A	24	<u>Montgomery</u>		SK78	71
	31R26	10	RA48-8261A	24	<u>Ward</u>		SK79	71
	61R13	9	RA48-8266A	24	GEN-1213A	44	SK80	71
	61R16	9	RA50-9908A	25	GNT-1215	45	117	56
	61R19	9	RA50-9909A	25	GNT-1215A	45	119	56
	61R23	9			GPS-1688A	43	120	56
	61R26	9	<u>General</u>		GEN-1691A	46	202	57
	61R29	9	<u>Electric</u>		GPS-1865A	43	203	57
	61R35	9	T170A	27	GEN-1869A	46	204	57
	61R39	9	T171A	27			HS-744	65
	61R43	11	T230A	28	<u>Motorola</u>		HS-813	65
	61R49	11	C495A	26	2TMR	50	HS-822	66
	61R58	14	C496A	26	2TMXD	49	HS-880	58
	80P78	12	C500A	26	C2AZ-18805	51	HS-881	58
	81P68	12	C510	27	C2GY-18805	51	HS-882	59
	81P75	13	C516A	27	C2YY-18805	51	HS-883	60
	81P78	13	C517A	27	04MI	47	HS-884	62
	1.61601	9	P795A,B	29	11MX	48	HS-885	63
	1.61701	9	P796A,B	29	A15	65	HS-894	64
	1.62001	12	P797A,B	29	C15	65	HS-915	61
			P820A	30	A16	65	HS-922	65
			P821A	30				
<u>Oldsmobile</u>								
<u>Packard-Bell</u>								
<u>Philco Corp.</u>								
<u>Pontiac</u>								

VOLUME R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

RCA Victor		RCA, Continued		Sears, Cont.		Sylvania, Cont.		Westinghouse+	
1RA11	94	1VC15	105	1038	107	682-1,-2	123	H-M1410	144
1RA20	94	1-VE-0	101	1073	110	682-3	123	H-M1411	144
1RA23	94	1-VE-1	101	1074	110	691-1	124	H-M1412	144
1RA25	94	1-VE-2	101	1075	110	700-2	125	H-M1413	144
1RA26	94	1VE075	101	1083	110	702-1	126	H-M1700	143
1RA30	96	1VE086	101	1084	110	711-1,-2	127	H-M1701	143
1RA33	96	1VE094	101	1085	110	711-3	127	H-M1702	143
1RA35	96	1VE105	101	1212	108	6022	127	H-M1703	143
1RA36	96	1VE106	101	1213	108	6025	127	V-2259-7	128
1RA42	96	1VE107	101	1214	108	6028	127	V-2259-8	128
1RA43	96	1VE205	101	2000	109	6029	127	V-2393-4	129
1RA44	96	1VE207	101	2018	111			V-2395-1A	130
1RA45	96	1VE224	101	2019	111	Westinghouse		V-2395-7	130
1RA50	96	1VE229	101	2035	112	H-69ACS1	139	V-2398-3	131
1RA51	96	1VE246	101	2036	112	H-72MP1	142	V-2401-4	132
1RA52	96	1-VF-1	101	2037	112	H-72MP2	142	V-2403-1	133
1RA55	96	1-VF-2	101	2038	112	H-76ACS1	142	V-2403-3	136
1RA60	96	1VF105	101	2075	110	H-76ACS2	142	V-2403-4	133
1RA61	96	1VF106	101	2076	110	H-78ACS1	138	V-2403-5	136
1RA64	96	1VF107	101	2077	110	H-78ACS2	138	V-2407-1	134
1RA65	96	1VF205	101	8038	113	H-79ACS1	141	V-2407-2	134
1RC30	98-99	1VF207	101	9040,A	113	H-79ACS2	141	V-2420-1	137
1RC31	98	1VF224	101	132.63901	109	H-81ACS1	140	V-2506-6	138
1RC34	98	1VF229	101	132.64402	111	H-81ACS2	140	V-2507-7	139
1RD11	94	1VF246	101	528.53071	113	H-732P7	133	V-2507-11	140
1RD30	95	1YC11	104	528.53580	110	H-732P7GP	133	V-2507-12	141
1RD32	95	RS-193A	101	528.53740	108	H-733P7,+	133	V-2508-11	142
1RD33	95	RS-193B	101	528.53760	112	H-746T5A	130	V-2510-7	144
1RD37	95	RS-193D	101	528.53880	106	H-747T5A	130	V-2511-5	144
1RD40	95	RS-196	104	528.53940	107	H-761N7	134	V-2515-1	143
1RD41	95	RS-197	105	528.54071	110	H-762N7	134		
1RD44	95	RS-198	105			H-764N7	134	Zenith Radio	
1RD45	95	RS-200	100	Sony		H-765N7	134	4G24	156
1RD50	95	RK-295	100	TR-84	114	H-766L4A	137	5F02	146
1RD52	95	RC-1199D	92	TR-86	115	H-775L6A	132	5G29	157
1RD53	95	RC-1200C	93	TR-608	116	H-776L6A	132	5H07	147
1RD56	95	RC-1201D	98	TR-610	117	H-777N7	134	6GT42Z2	150
1RD60	95	RC-1202F	94	TR-620	118	H-778N7	134	6H03	148
1RD61	95	RC-1202H	94	TR-815B,Y	119	H-779N7	134	6H06	149
1RD63	95	RC-1202K	95			H-780N7	134	7GT40Z2	152
1RD65	95	RC-1202L	96	Sylvania		H-790P6	129	8HT40Z2	154
1RG11	93	RC-1202M	96	4P19W,+	123	H-790P6GP	129	9G26	158
1RG14	93	RC-1202N	96	6P08	121	H-791P6,+	129	GV21	156
1RG15	93	RC-1202P	95	6P09	121	H-795P6,+	136	GPS80	156
1RG31	97	RC-1202R	95	AK15	127	H-796P6,+	136	150	150
1RG33	97	RC-1202T	95	AT15	127	H-798P7,+	133	400	152
1RG34	97	RC-1206A	101	AK16	127	H-799P7,+	133	500H	154
1RG41	97	RC-1208A	97	AT16	127	H-803T5	128	H509C,P,W	146
1RG43	97	RC-1208B	97	TH16	125	H-804L5	131	H519	147
1RG46	97			AK17	127	H-805L5	131	H624	148
1RH10	92	Renault		AK18	127	H-806L5	131	H722C,G,W	149
1RH11	92	55555	49	45C20	124	H-808L5	130	SFF2504T	157
1RH12	92			45P18	120	H-809L5	130	SFF2505T	157
1RH13	92	Sears, Roebuck		55P19	122	H-816L5	128	SFF2535-1	158
1RJ19	92	1031	106	Y55C20	126	H-M1310B	144	SFF2604-1	157
1TP1E,HE	92	1035	107	664-1	120	H-M1311B	144	SFF2605-1	157
1TP1JE	92	1036	107	666-1,-2	121	H-M1312B	144	SFF2607-1	157
1VA14	105	1037	107	681-1	122	H-M1313B	144	G3388	157