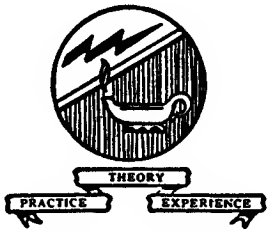
Most-Often-Needed

1962

Volume R-22

RADIO DIAGRAMS

and Servicing Information



Compiled by

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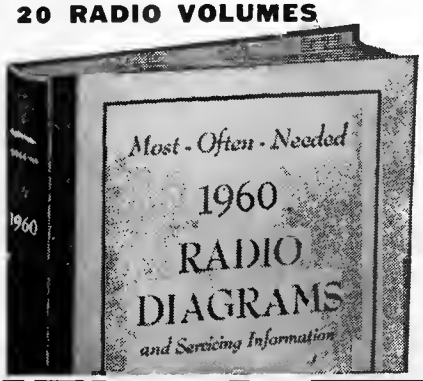

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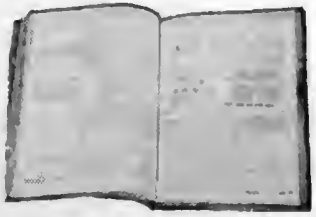

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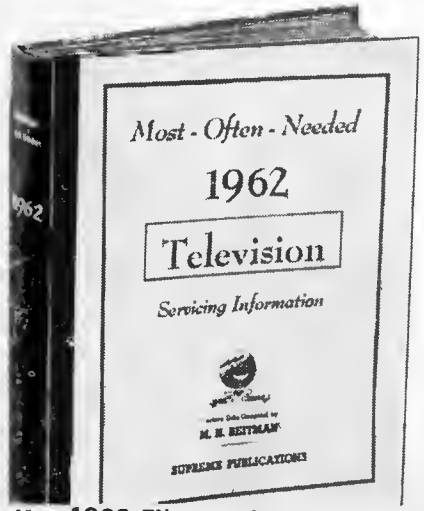

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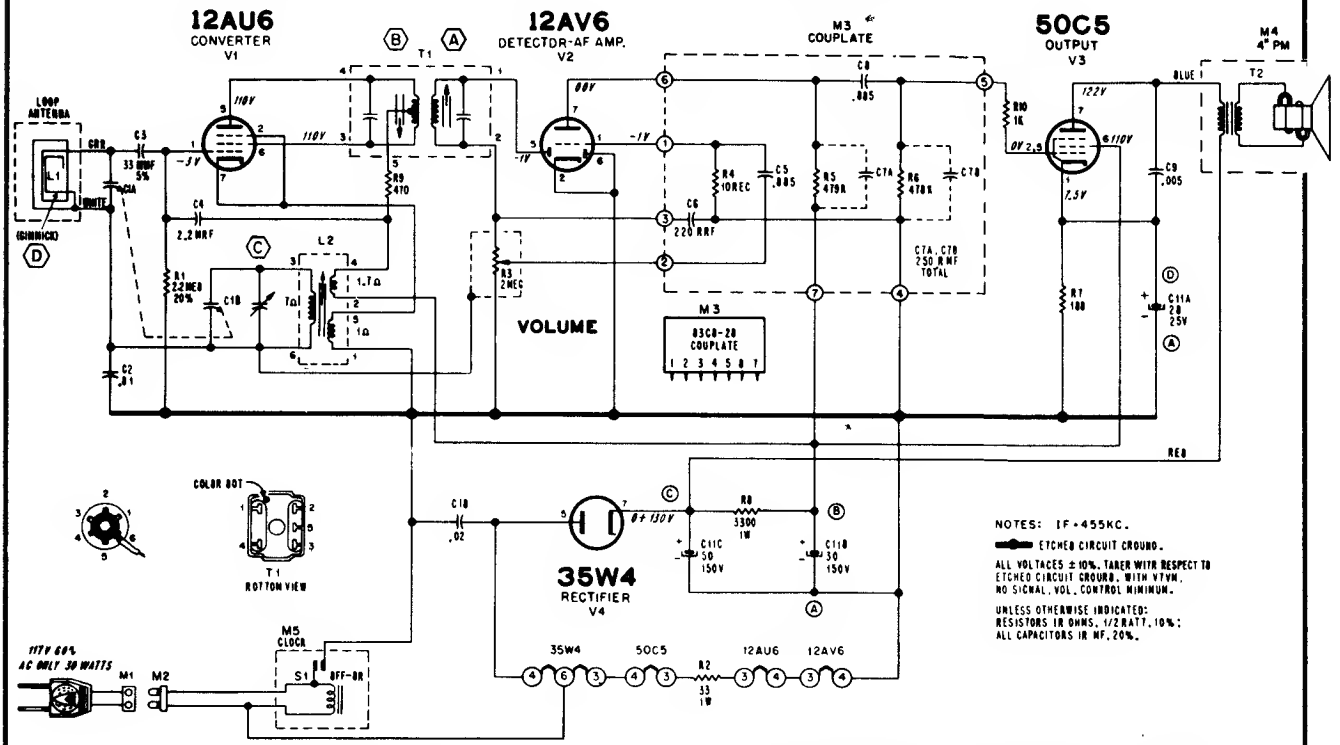
ADMIRAL

CHASSIS 4R3
MODELS Y3133 • Y3137



VOLTAGE PRECAUTION

The etched circuit common ground of this receiver is connected directly to one side of the power line. To prevent damage to etched wiring, do not place chassis directly on a metal bench, or other metal objects.

When taking voltage or resistance measurements, use test prods with needle points.

REMOVING CHASSIS FROM CABINET

Unplug and remove back. Remove the knobs from the front of the cabinet. Remove the screw outside from under the Tuning knob and the screws inside that hold the Volume control bracket to the cabinet. Remove etched circuit board support at rear of chassis. Chassis will now slide out.

ALIGNMENT PROCEDURE

a. Use an isolation transformer or connect a .1 mf. capacitor in series with low side of signal generator.
CAUTION: DO NOT CONNECT AN EARTH GROUND WIRE DIRECTLY TO CHASSIS.

b. Set Volume control full on.

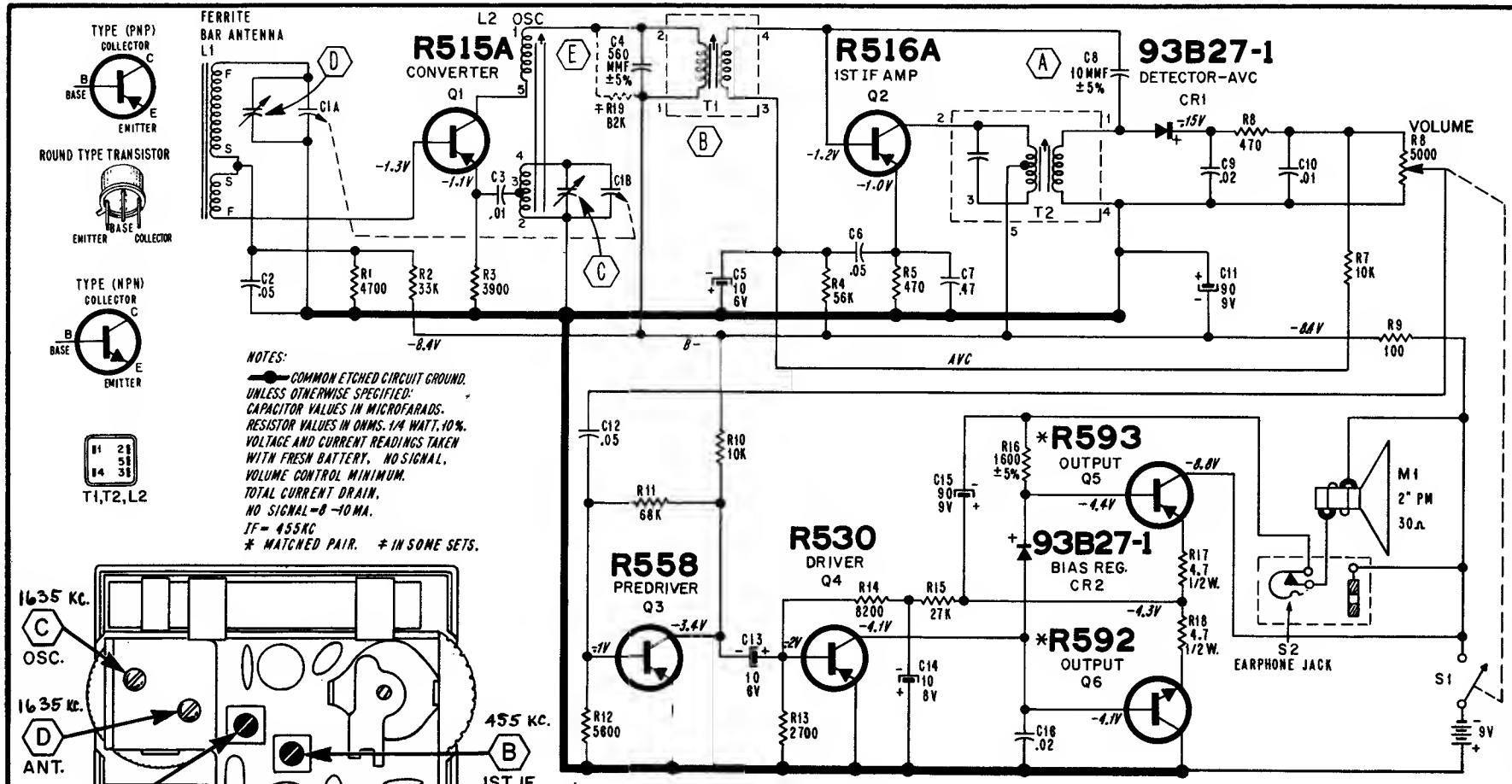
c. Connect output meter across output secondary. Disconnect speaker, use 3.2 ohm load.

d. Use lowest setting of signal generator capable of producing adequate indication on lowest scale of output meter.

e. By using alignment tool (Part No. 98A30-7) both IF transformer slugs can be aligned

f. Repeat adjustments to insure good results.

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)



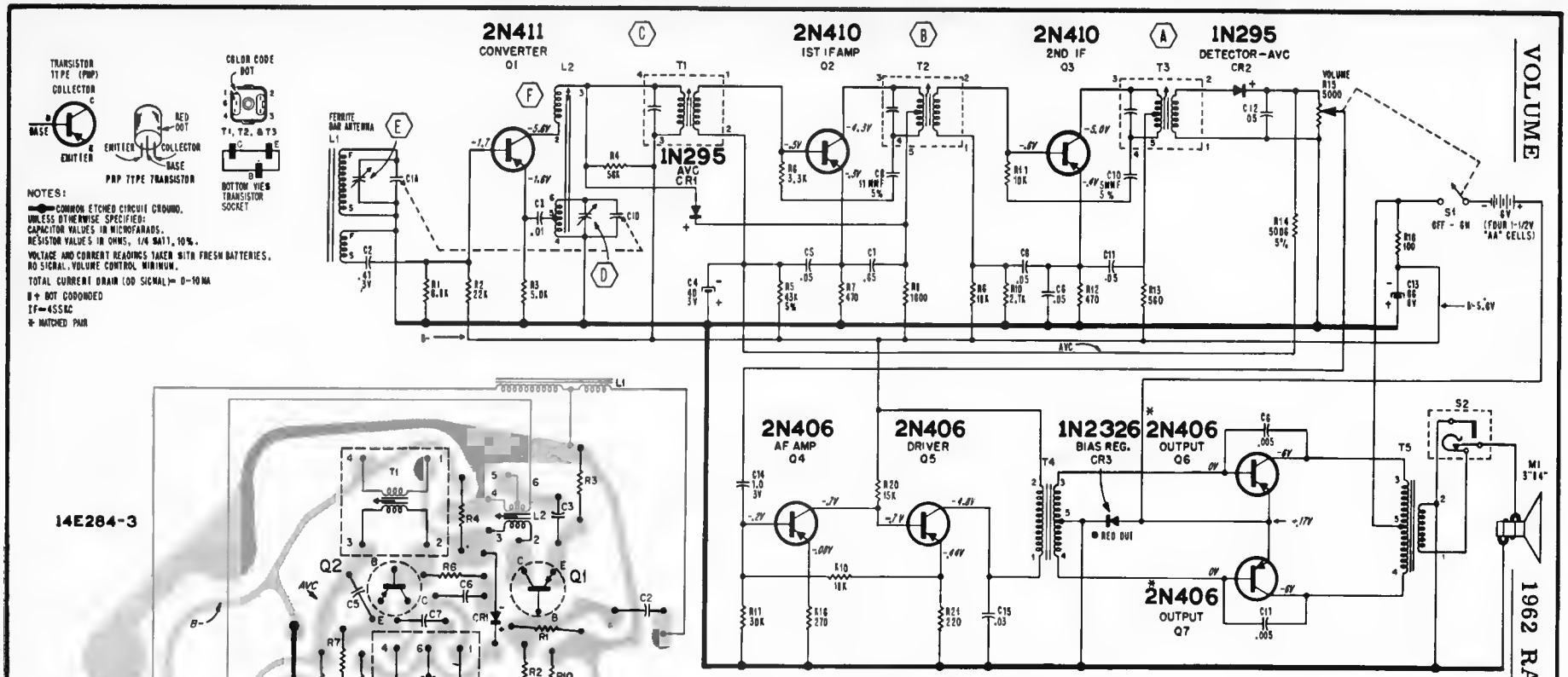
Alignment Locations.

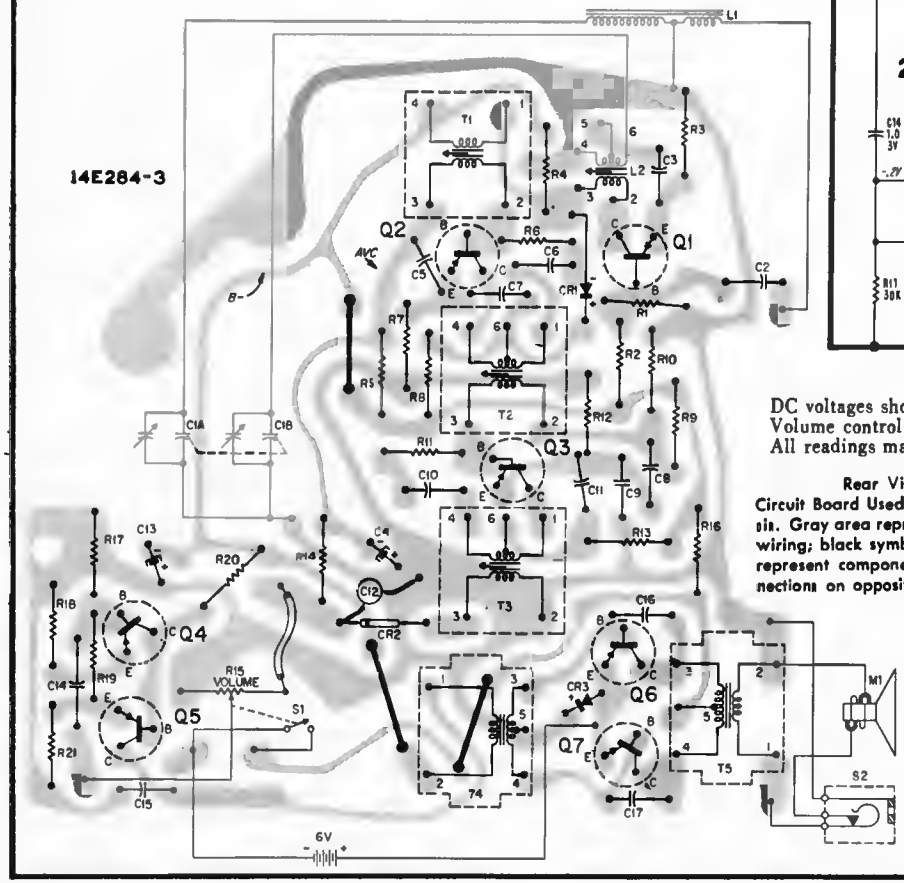
ADMIRAL

BATTERY CHART

Eveready	206
Mallory	TR126
Ray-O-Vac	1611M

MODEL	COLOR	CHASSIS
Y2221	Black	6M3A
Y2223	White	
Y2226	Yellow	
Y2229	Blue	





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

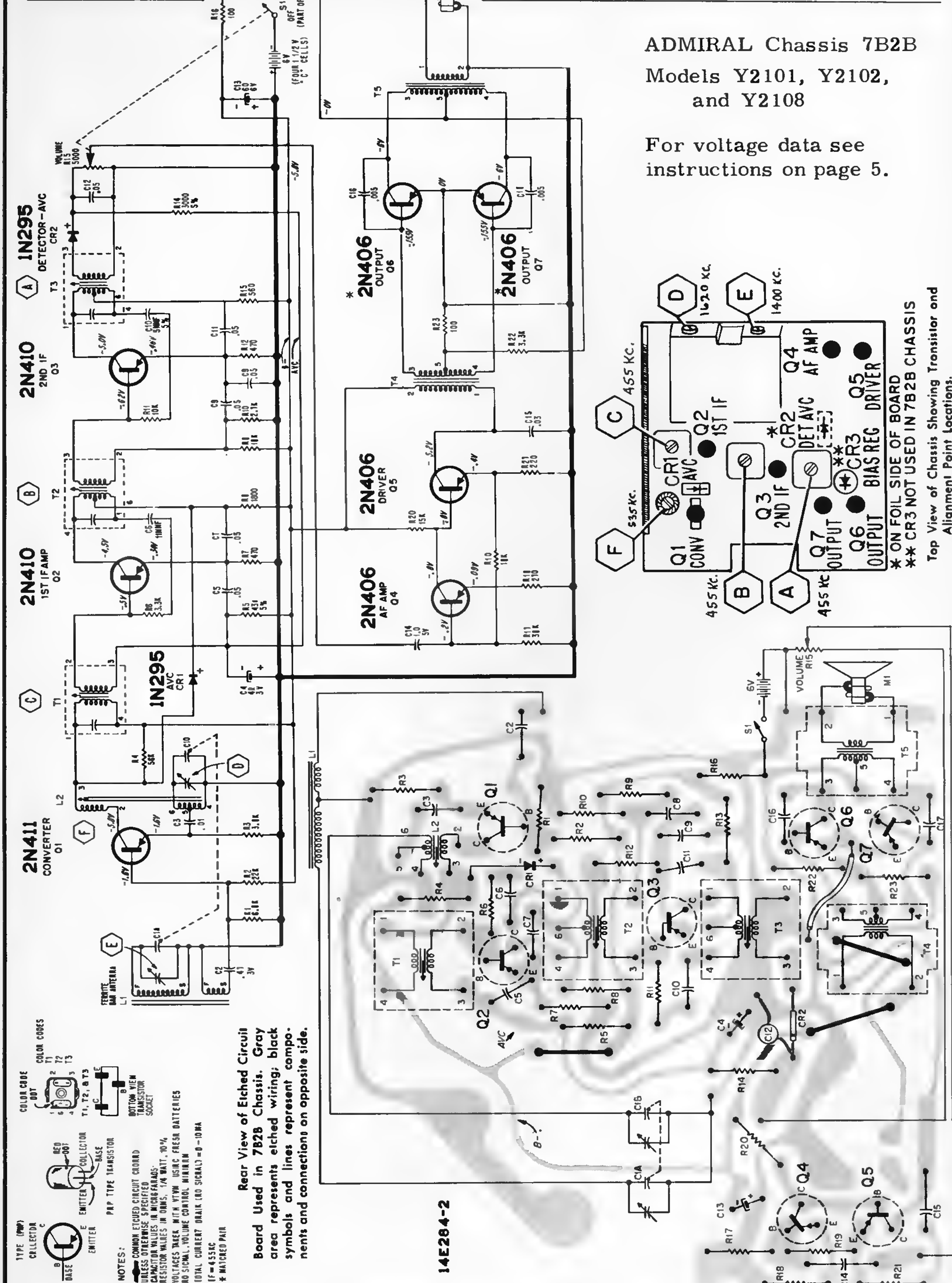
Chassis 7B2, Models Y2081, Y2082, Y2083

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

ADMIRAL Chassis 7B2B

Models Y2101, Y2102, and Y2108

For voltage data see instructions on page 5.



Top View of Chassis Showing Transistor and Alignment Point Locations.

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.

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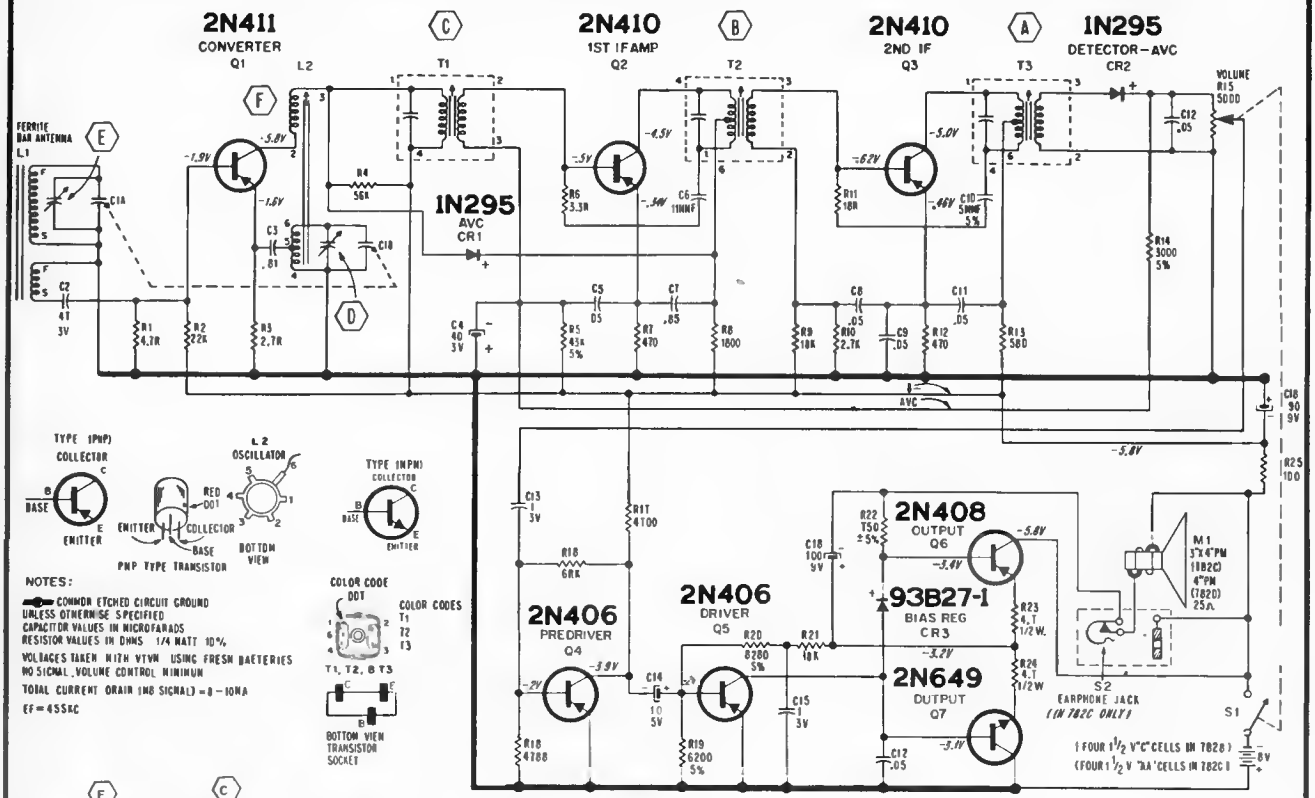
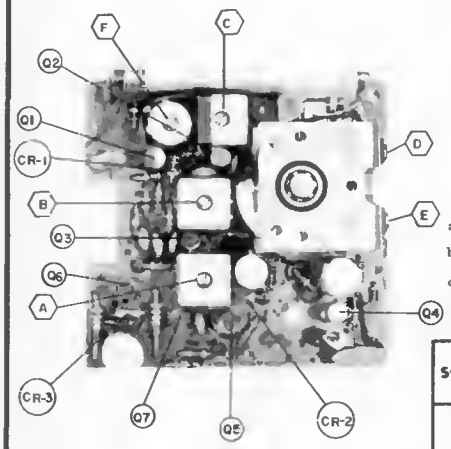
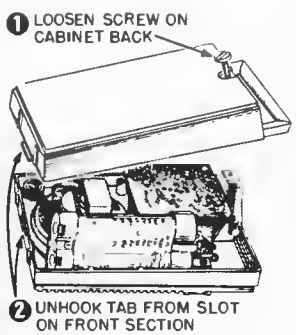
Chassis 7B2C, Models Y2081A, Y2082A, Y2083A
Chassis 7B2D, Models Y2252, Y2253, Y2256







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

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.

a. Fresh batteries should be used.

b. Set Volume control at maximum.

c Connect output meter across speaker voice coil For best results, connect 25 ohm resistive load through earphone jack, if used.

d. 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.

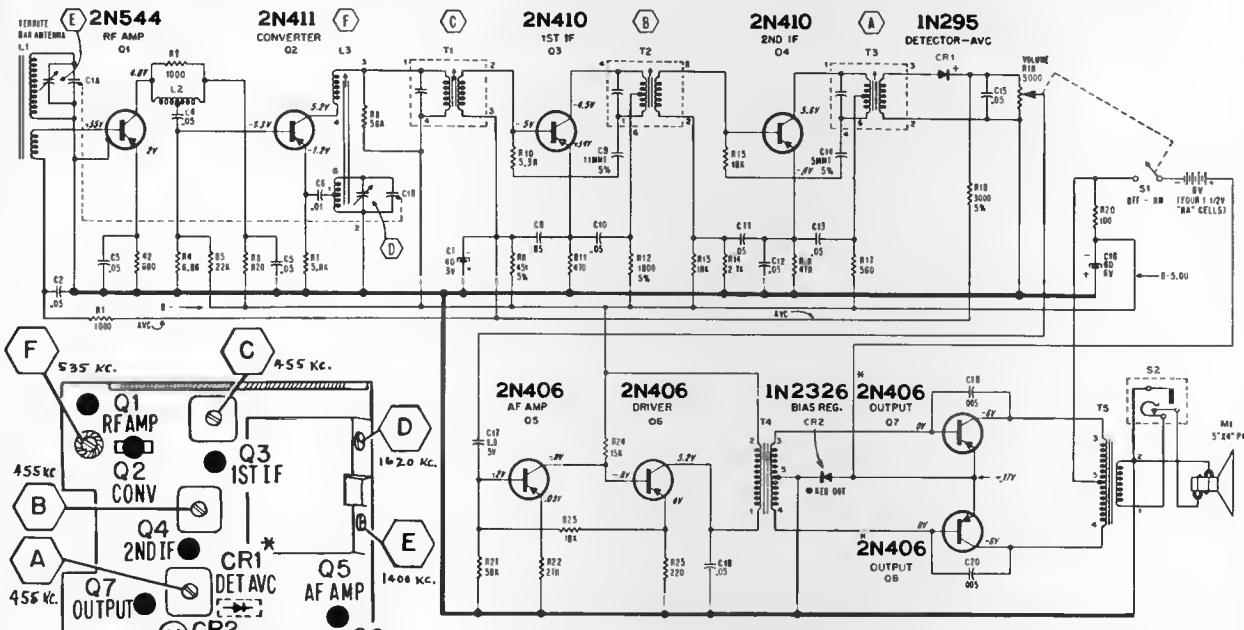
Step	Connection of Signal Generator	Signal Gen. Frequency	Receiver Gang Setting	Adjustment Description	Adjustment
1	Radiated Signal. †Loop of several turns of wire, or place generator lead close to receiver for adequate signal.	455 KC	Gang fully open	3rd IF 2nd IF 1st IF	* Ⓐ Ⓑ and Ⓒ for maximum output.
2	Same as "Step 1".	1620 KC	Gang fully open	Oscillator Trimmer	Ⓓ 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	Ⓔ 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	Ⓕ 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 Ⓐ Ⓑ and Ⓒ for usable output only. Then return to "Step 1".

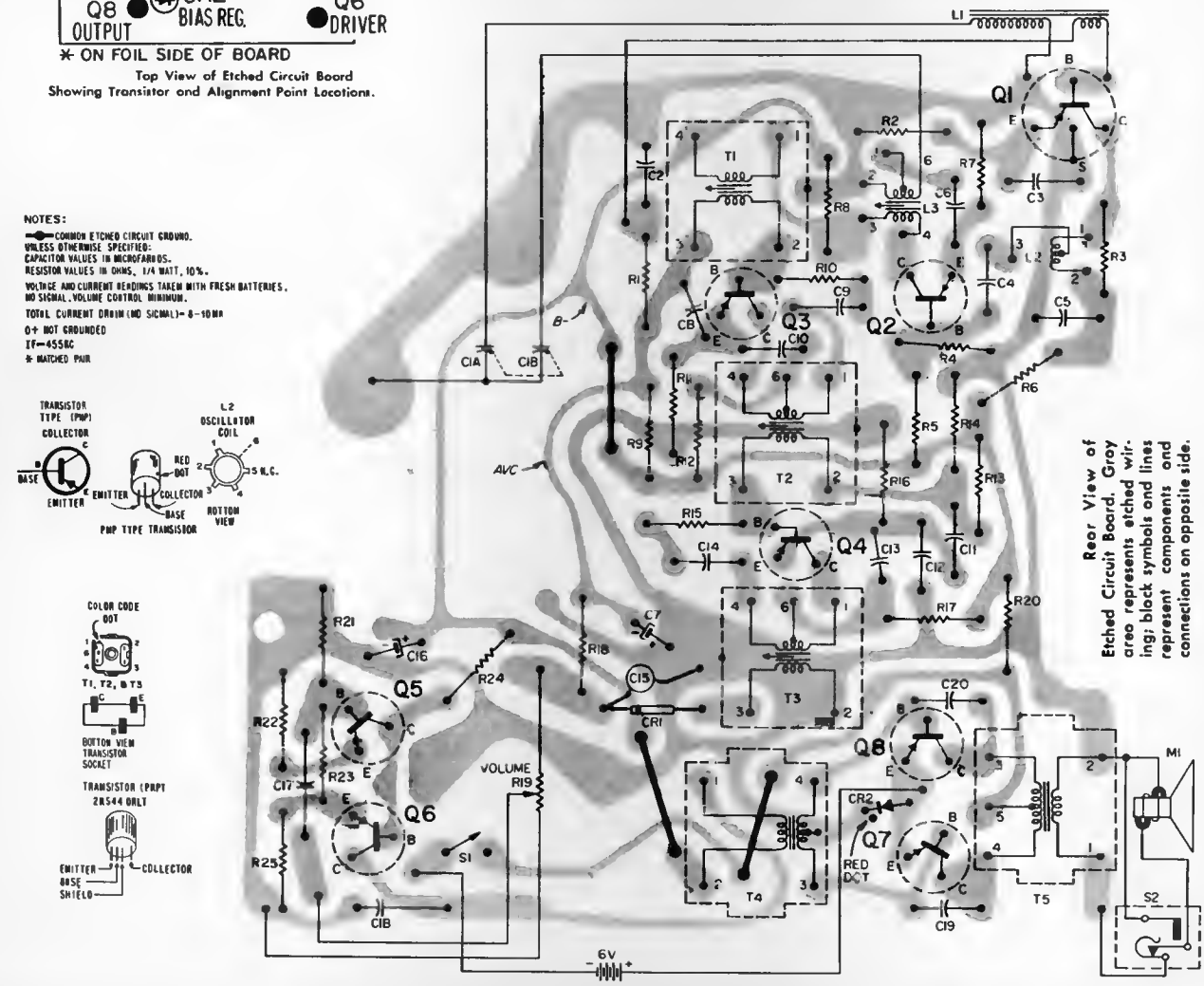
* If difficulty is experienced in obtaining signal output, first rotate IF slugs out several turns, then slowly adjust slugs in until output is obtained. Caution: Rotating slugs too far inward will damage ceramic capacitor contained in IF can.

§ Antenna trimmer Ⓔ 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.

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



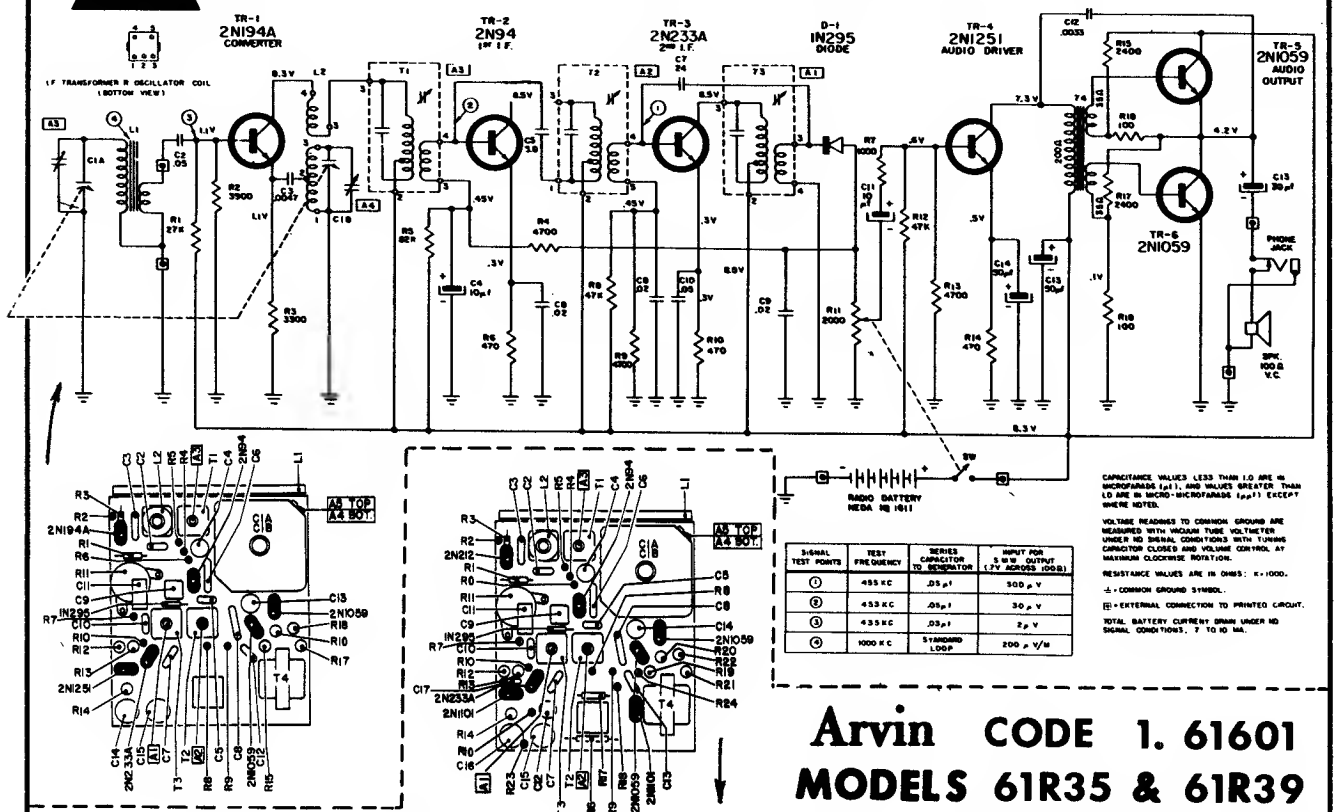
Top View of Etched Circuit Board
Showing Transistor and Alignment Point Locations.



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

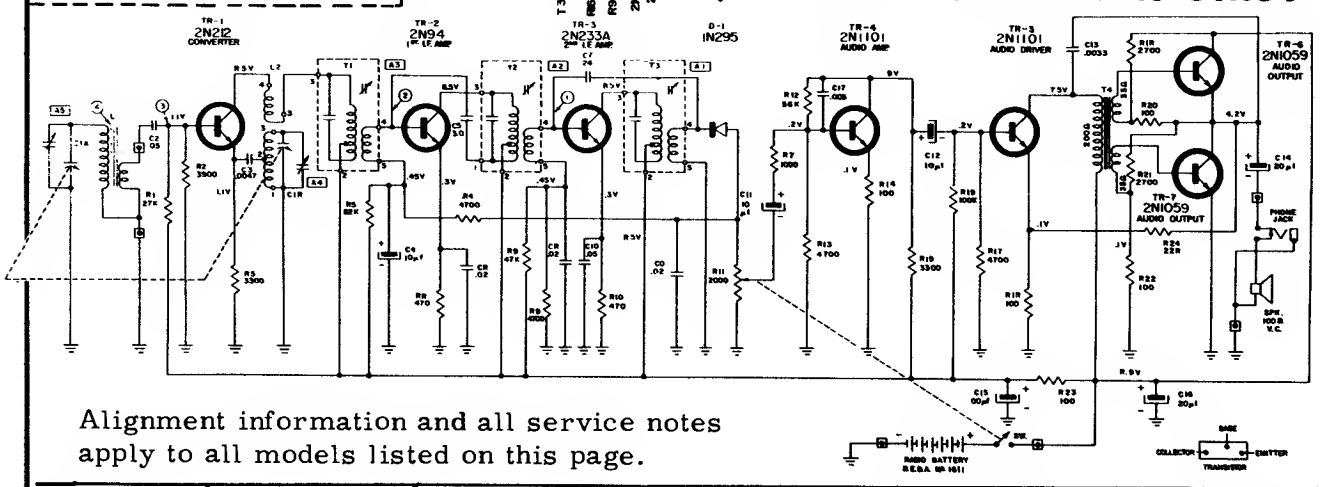
MODELS 61R13, 61R16, 61R19 61R23, 61R26, 61R29

CODE 1.61701



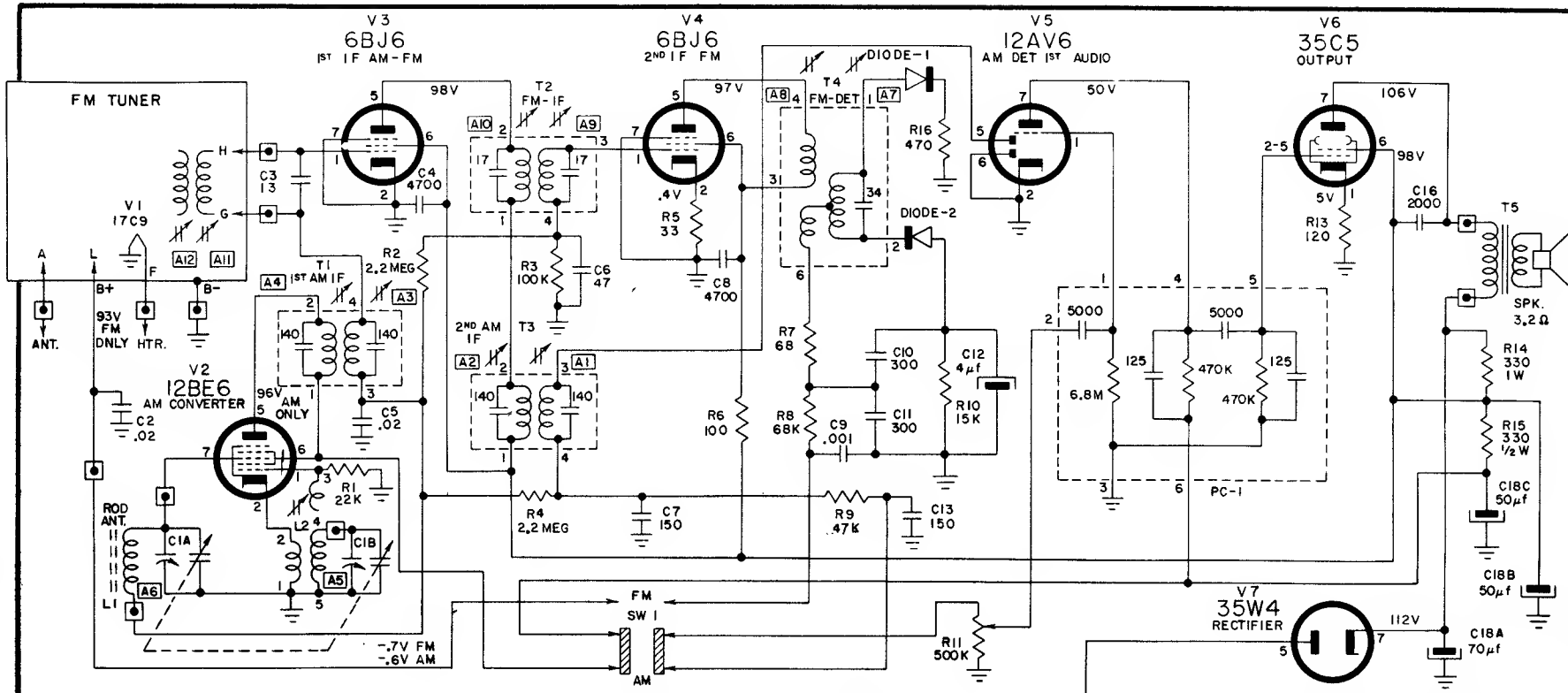
Arvin CODE 1. 61601

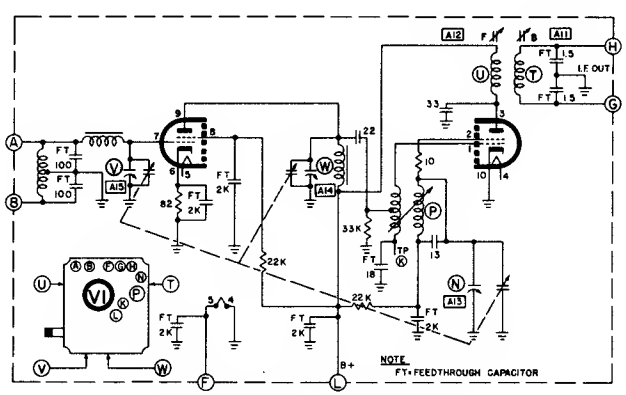
MODELS 61R35 & 61R39



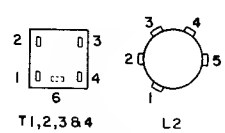
Alignment information and all service notes apply to all models listed on this page.

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





TUNER SCHEMATIC



= B-

= EXTERNAL CONNECTION TO PRINTED BOARD.

VOLTAGES MEASURED TO B- WITH A V.T.V.M. ± 20%, NO SIGNAL.

FM POSITION UNLESS OTHERWISE NOTED B+ VOLTAGES SHOULD BE APPROX. 2V HIGHER IN AM POSITION.

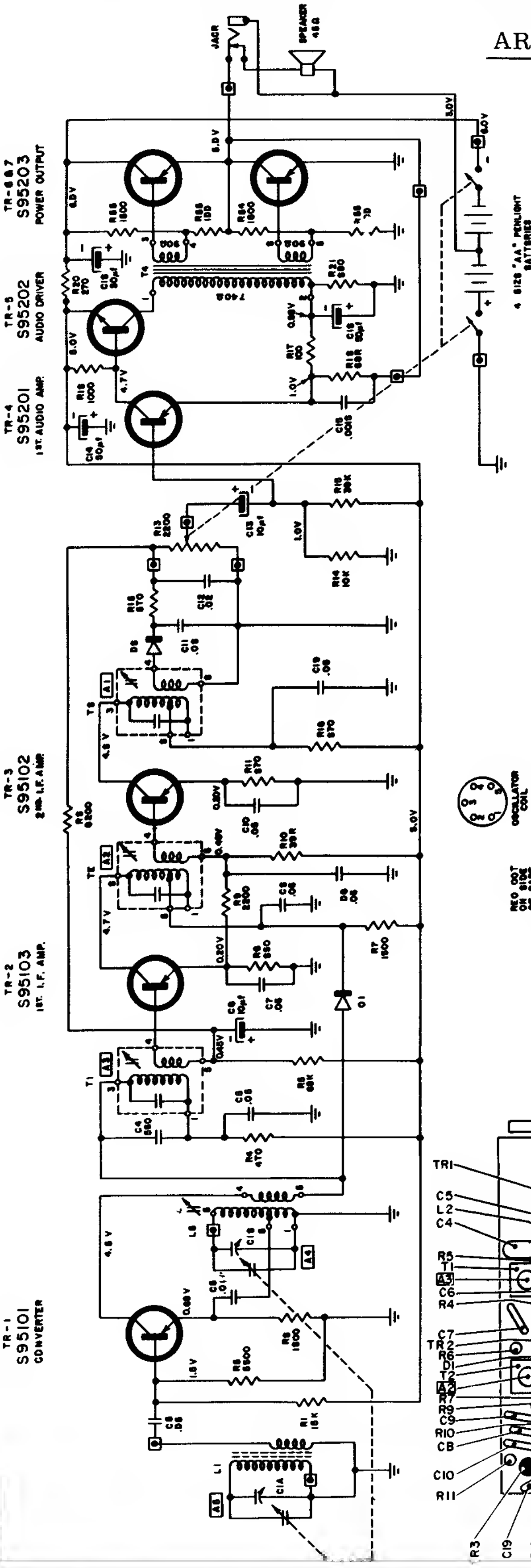
RESISTANCE VALUES ARE IN OHMS K=1,000, MEG=1,000,000
CAPACITANCE VALUES LESS THAN (1) ARE IN MICROFARADS (μf), AND VALUES OF (1) OR GREATER ARE IN MICROMICROFARADS (μμf) UNLESS OTHERWISE INDICATED.

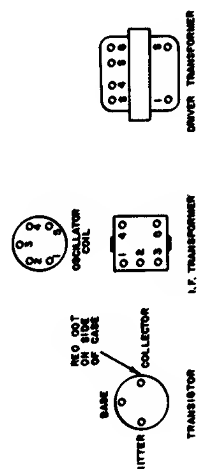
Arvin

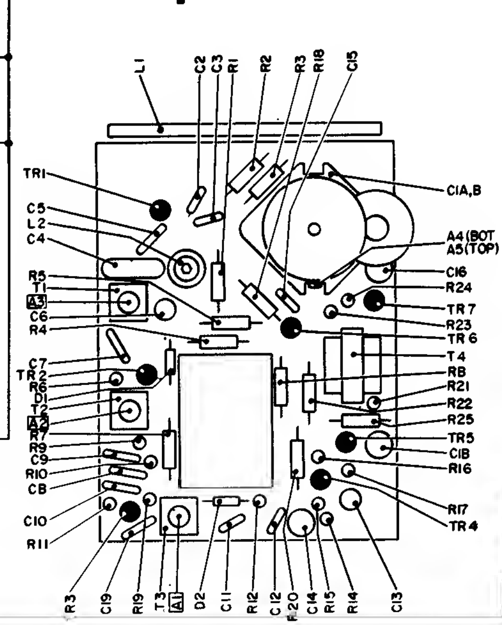
MODELS 31R25 - 31R26

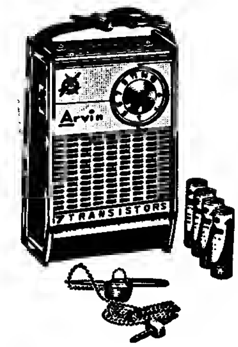
CODE 1.64901

ARVIN Models 61R48, 61R49, Code 1.62201









⏚ - COMMON GROUND.

⊡ - EXTERNAL CONNECTOR TO PRINTED CIRCUIT BOARD.

RESISTANCE VALUES ARE IN OHMS.; R = 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.

VOLTAGE READINGS TO COMMON GROUND (+) ARE MEASURED WITH VACUUM TUBE VOLTMETER UNDER NO SIGNAL CONDITIONS.

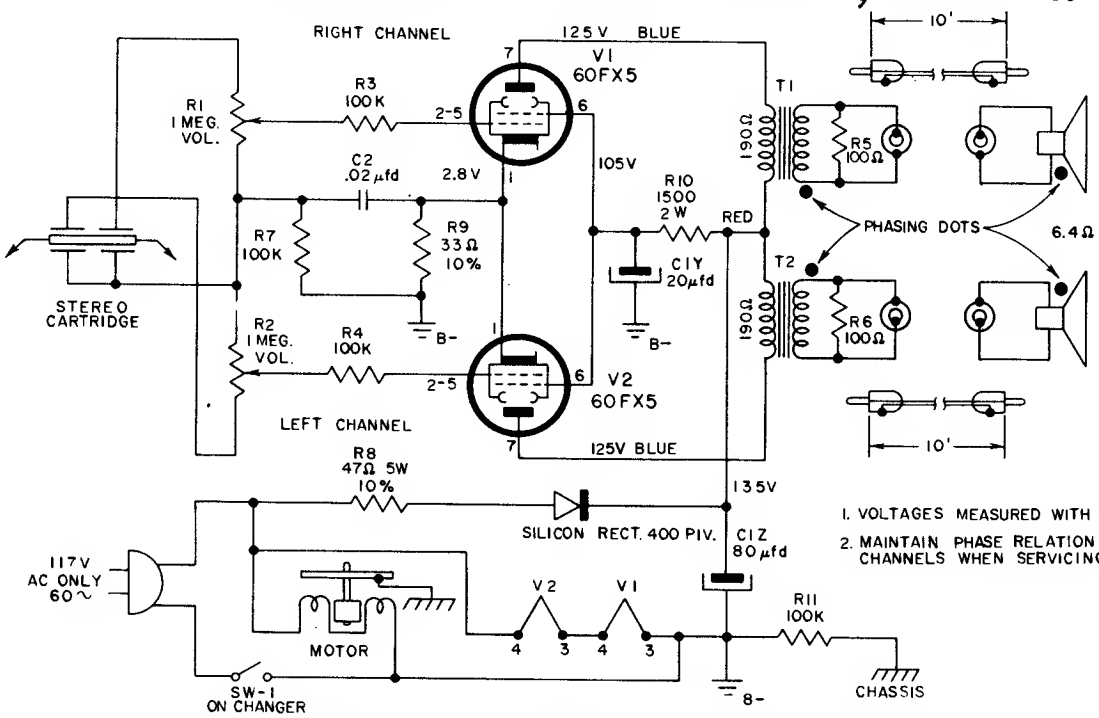
TOTAL BATTERY CURRENT DRAIN UNDER NO SIGNAL CONDITIONS IS 6 TO 15 MA.

SIGNAL TEST POINTS	TEST FREQUENCY	SERIES CAPACITOR TO GENERATOR	INPUT FOR 50 MW OUTPUT (1.5V ACROSS 4Ω)
TR-1 BASE	455 KC	.05 µf	620 µV
TR-2 BASE	455 KC	.05 µf	28 µV
TR-3 BASE	455 KC	.05 µf	6 µV
STANDARD LOOP	1000 KC	STANDARD LOOP	200 µV/M

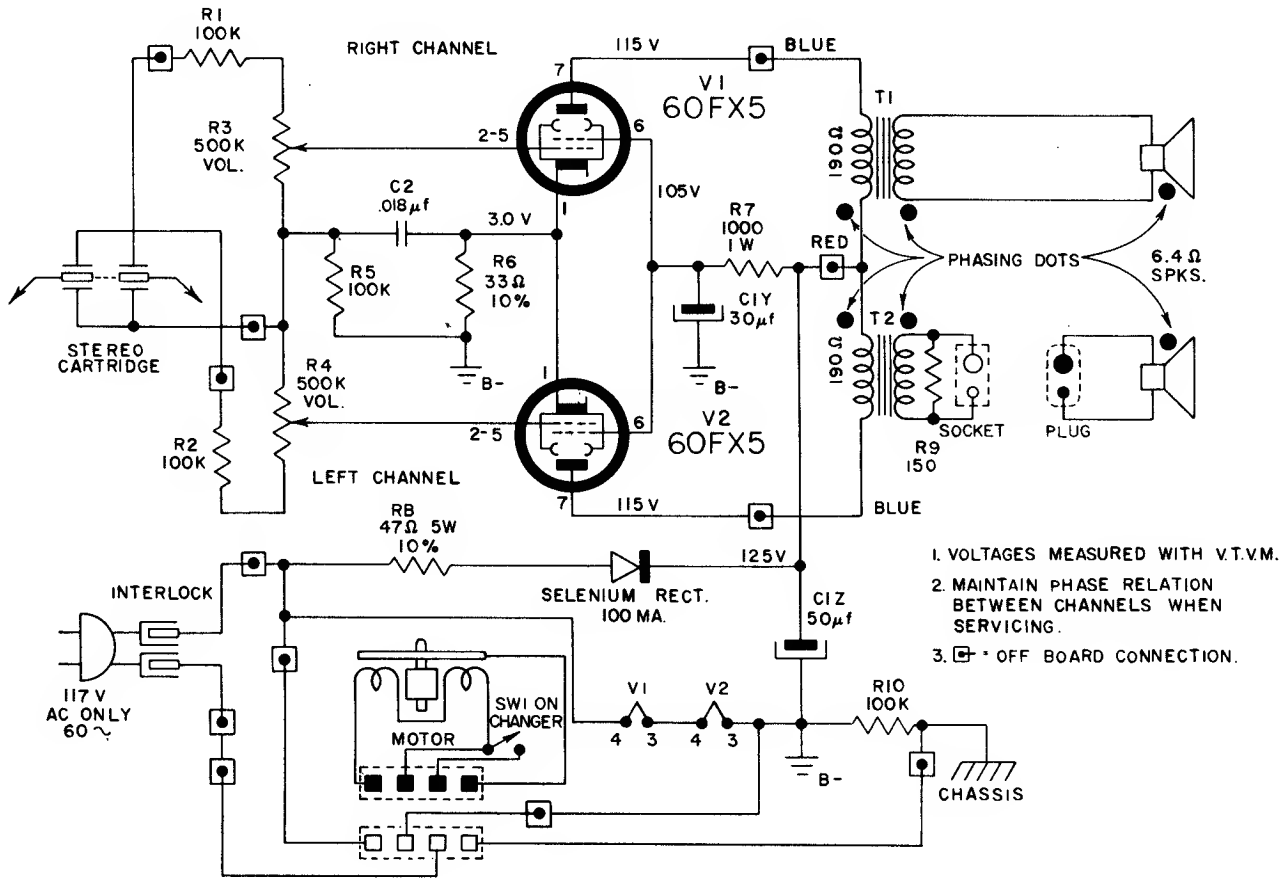
Position of Variable	Generator Frequency	Dummy Antenna	Generator Connections	Trimmers Adj. in order shown for Max. Output	Function of Trimmer
Open	455 Kc	.05 µf	C1A	A1 (Top of T3) A2 (Top of T2) A3 (Top of T1)	I.F. I.F. I.F.
Open 1400 Kc 600 Kc	1670 Kc 1400 Kc 600 Kc		*Test Loop *Test Loop *Test Loop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



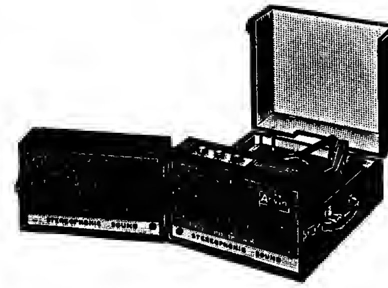
ARVIN PHONOGRAPH MODEL 81P68, CODE 1. 65301

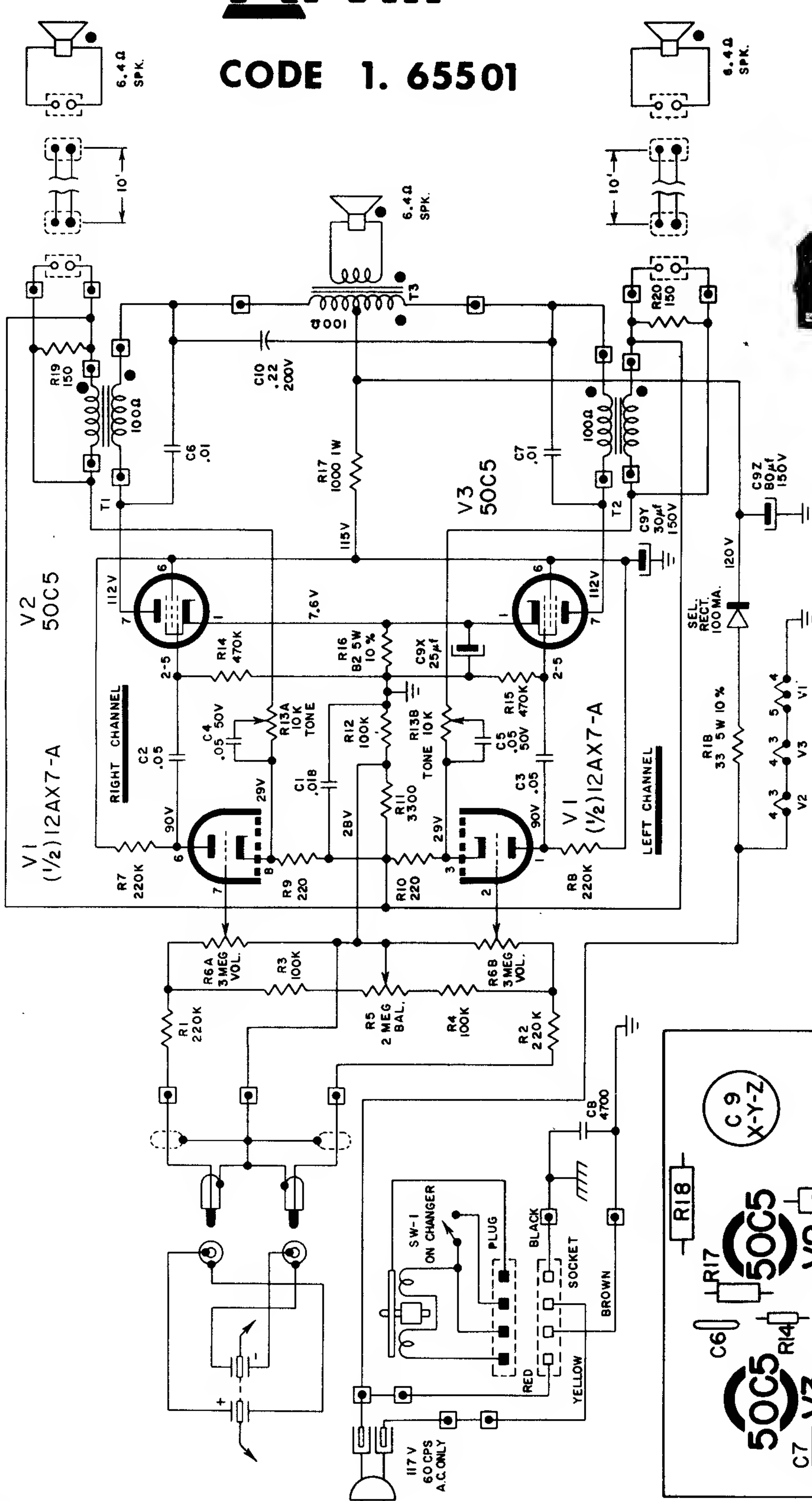


Arvin

CODE 1. 65501

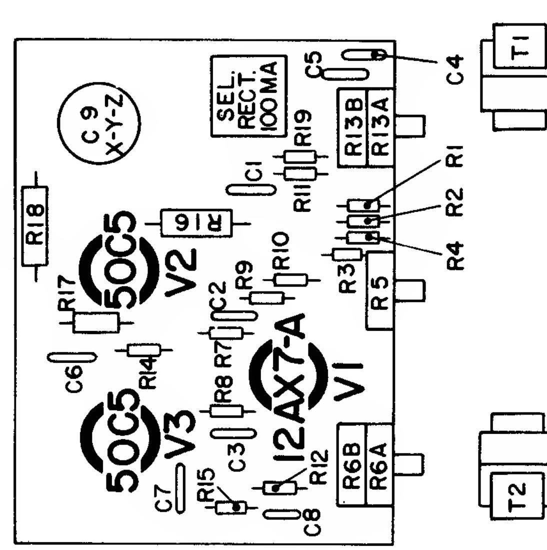
PHONOGRAPH MODELS 81P75 – 81P78





NOTES:

1. ⏚ = B-
2. ⫨ = CHASSIS
3. VOLTAGES MEASURED WITH V.T.V.M.
4. ▣ = 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 + – 20% TOLERANCE UNLESS OTHERWISE INDICATED.
7. CAPACITANCE VALUES LESS THAN ONE (1) ARE IN MICROFARAOS (μf), AND VALUES OF ONE (1) OR GREATER ARE IN MICROMICROFARADS (μμf) UNLESS OTHERWISE INOICATED.
8. COMPONENTS IN THIS AMPLIFIER ARE INTERCONNECTED TO RESULT IN A CONSISTANT PHASE RELATION BETWEEN CHANNELS DO NOT DISTURB THIS PHASE RELATIONSHIP DURING SERVICING.
9. ● = PHASING OOT. T1, T2, T3 (IN PHASE TERMINALS. RED DOT IS PRIMARY; GREEN DOT IS SECONDARY). SPEAKER (POSITIVE VOLTAGE MOVES VOICE COIL OUTWARD).



Arvin

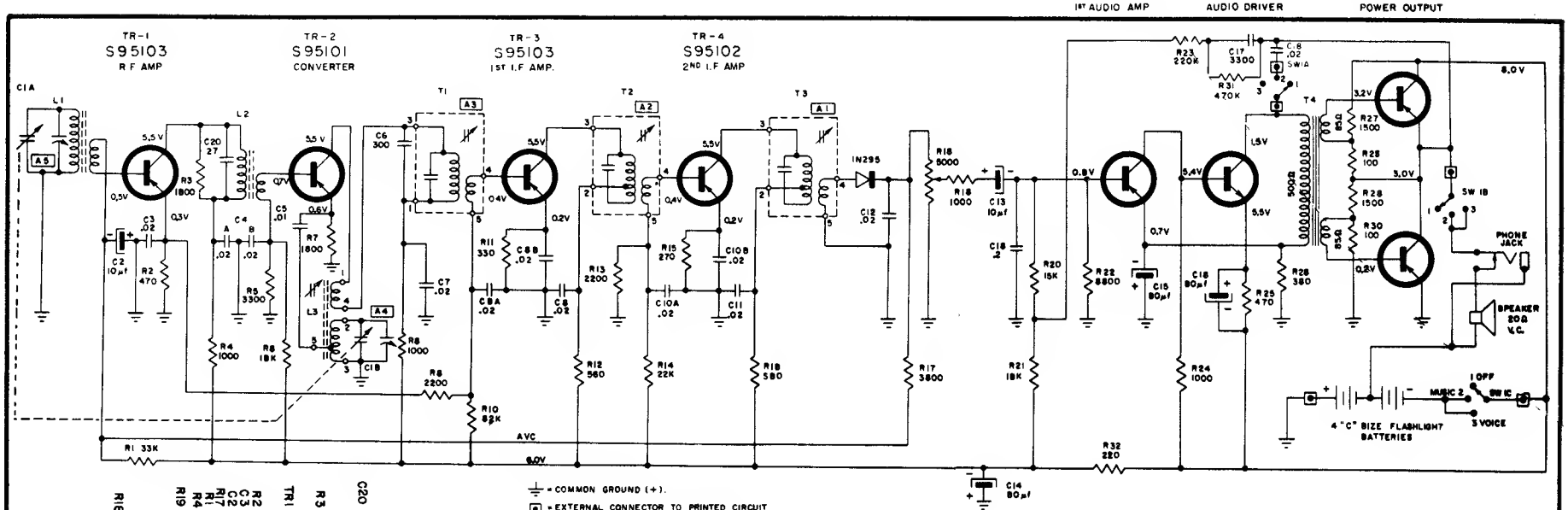
MODEL 61R58

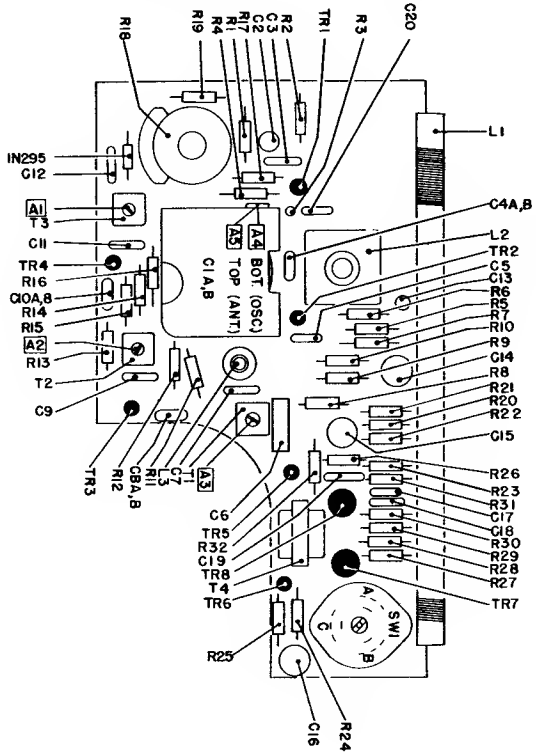
CODE 1. 62402

TR-5 S95201 1ST AUDIO AMP

TR-6 S95202 AUDIO DRIVER

TR-7 & 8 S95204 POWER OUTPUT





⏚ = COMMON GROUND (+).

⊡ = EXTERNAL CONNECTOR TO PRINTED CIRCUIT

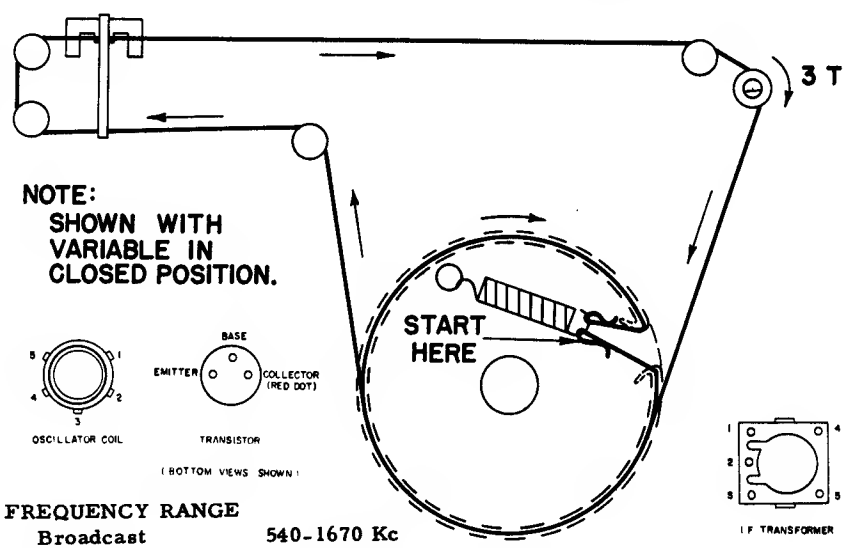
RESISTANCE VALUES ARE IN OHMS K=1000.

CAPACITANCE VALUES LESS THAN 1.0 ARE IN MICROFARADS (µf) AND VALUES GREATER THAN 1.0 ARE IN MICRO-MICROFARADS (µµf) EXCEPT WHERE NOTED.

VOLTAGE READINGS TO COMMON GROUND (+) ARE MADE WITH VACUUM TUBE VOLTMETER UNDER NO SIGNAL CONDITIONS

TOTAL BATTERY CURRENT DRAIN UNDER NO SIGNAL CONDITIONS = 8 TO 15 MA.

SIGNAL TEST POINTS	TEST FREQUENCY	SERIES CAPACITOR TO GENERATOR	INPUT FOR 50 MW OUTPUT (1.0 V ACROSS 20Ω)
TR-4 BASE	455 K.C.	.05µf	1100µV
TR-3 BASE	455 K.C.	.05µf	58µV
TR-2 BASE	455 K.C.	.05µf	6.7µV
ANTENNA ROD	1000 K.C.	STANDARD LOOP	75 µV/M



NOTE:
SHOWN WITH VARIABLE IN CLOSED POSITION.

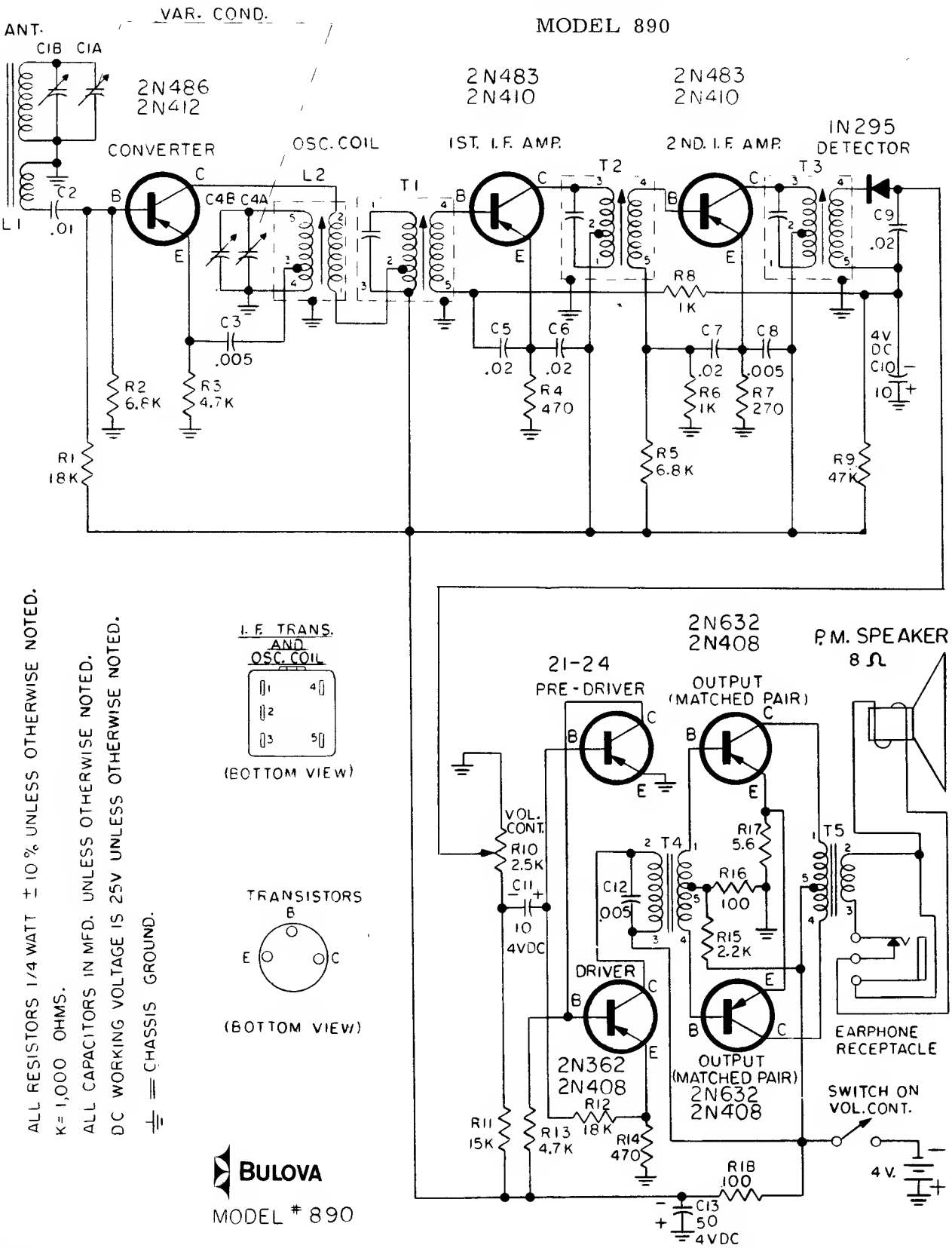
(BOTTOM VIEWS SHOWN)

FREQUENCY RANGE

Broadcast	540-1670 Kc
IF	455 Kc

BULOVA WATCH COMPANY, INC.

MODEL 890

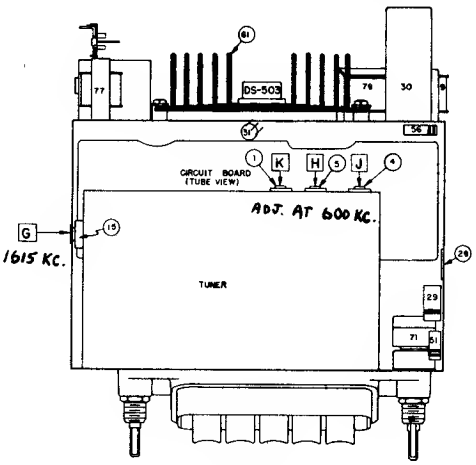


ALL RESISTORS 1/4 WATT ± 10 % UNLESS OTHERWISE NOTED.
K = 1,000 OHMS.
ALL CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
DC WORKING VOLTAGE IS 25V UNLESS OTHERWISE NOTED.
⏚ = CHASSIS GROUND.

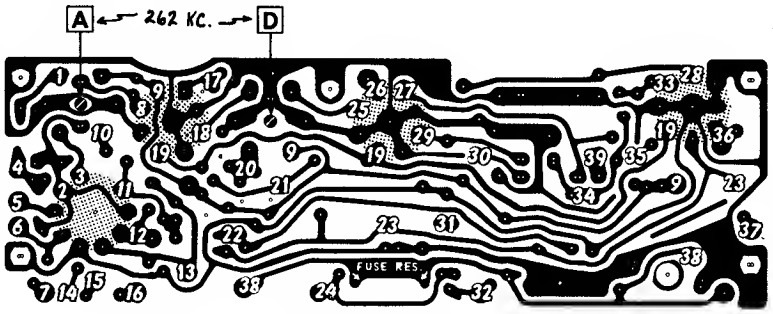
BULOVA
MODEL # 890

DELCO

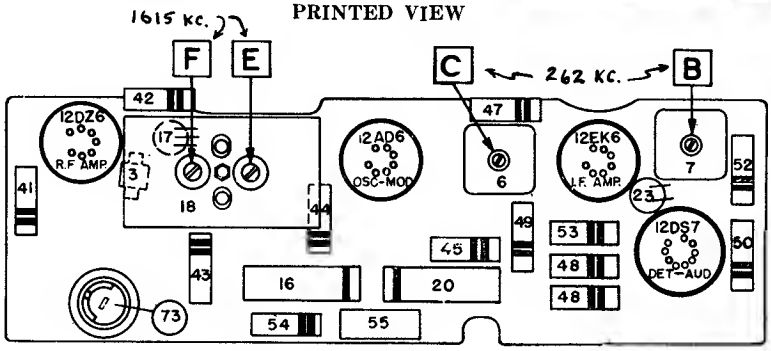
PONTIAC MODEL 989831



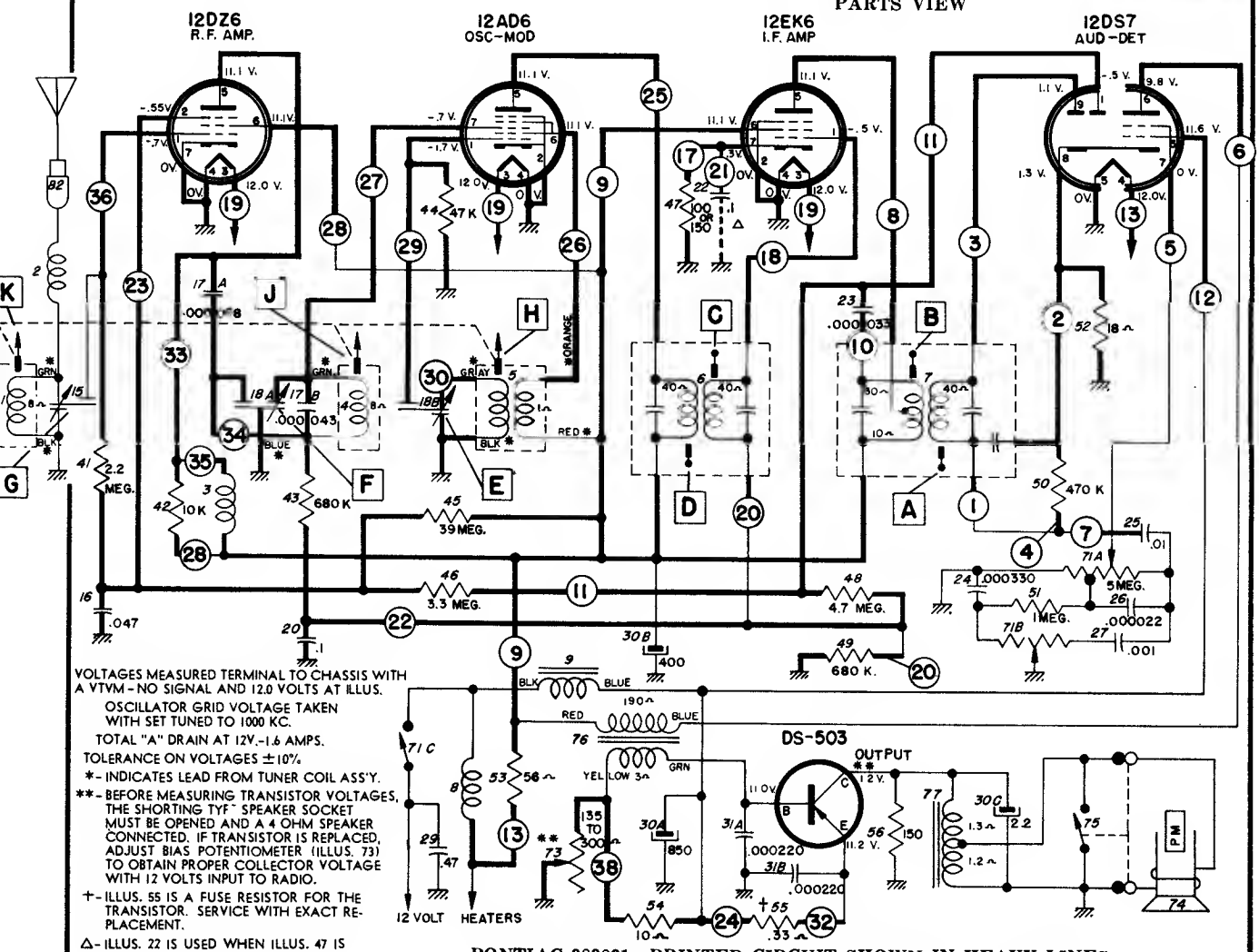
TUBE VIEW



PRINTED VIEW



PARTS VIEW



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

OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.

TOTAL "A" DRAIN AT 12V.-1.6 AMPS.

TOLERANCE ON VOLTAGES ±10%

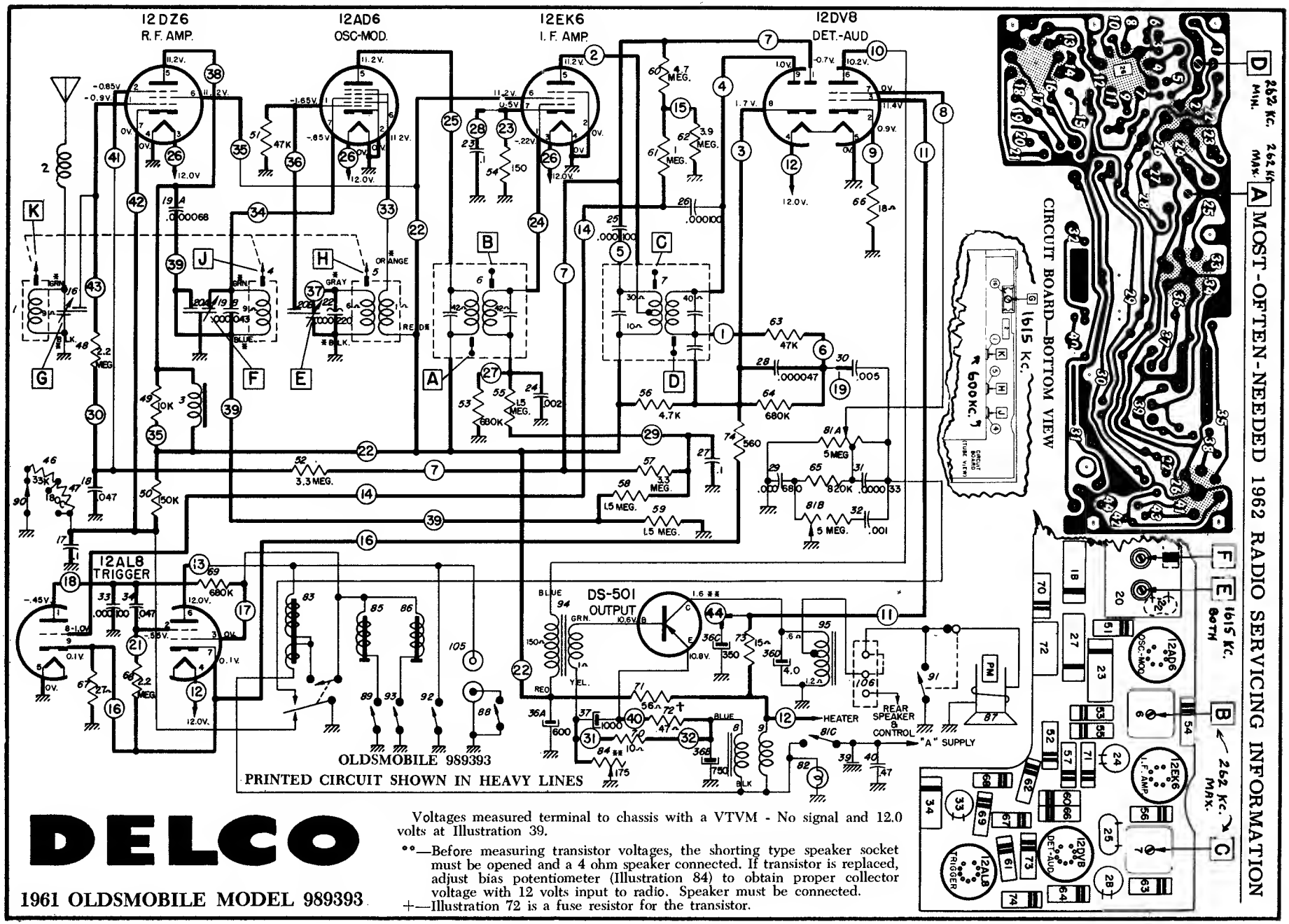
*- INDICATES LEAD FROM TUNER COIL ASS'Y.

**- BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYF" SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 73) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.

+- ILLUS. 55 IS A FUSE RESISTOR FOR THE TRANSISTOR. SERVICE WITH EXACT REPLACEMENT.

Δ- ILLUS. 22 IS USED WHEN ILLUS. 47 IS 150 OHMS.

PONTIAC 989831—PRINTED CIRCUIT SHOWN IN HEAVY LINES



DELCO

1961 OLDSMOBILE MODEL 989393

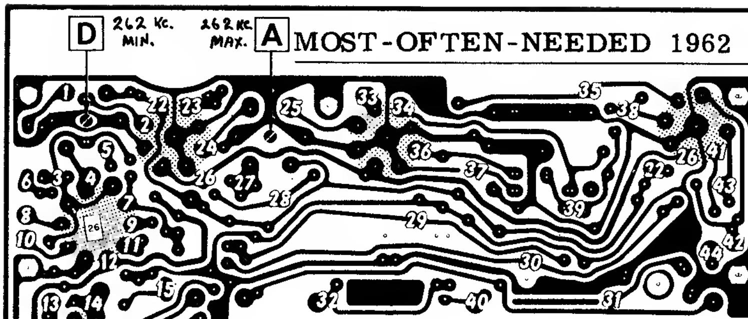
Voltages measured terminal to chassis with a VTVM - No signal and 12.0 volts at Illustration 39.

**—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.

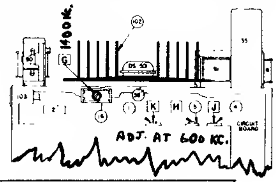
+—Illustration 72 is a fuse resistor for the transistor.

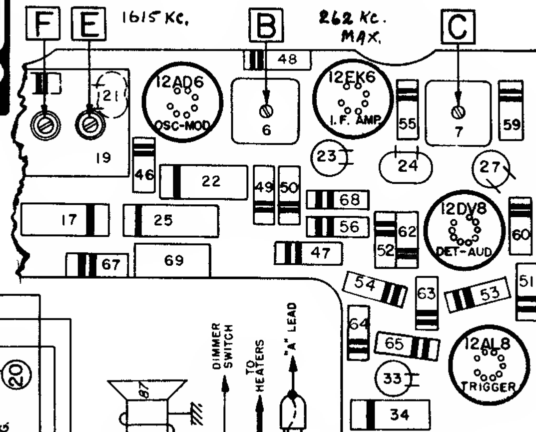
DELCO

PONTIAC MODEL 989692

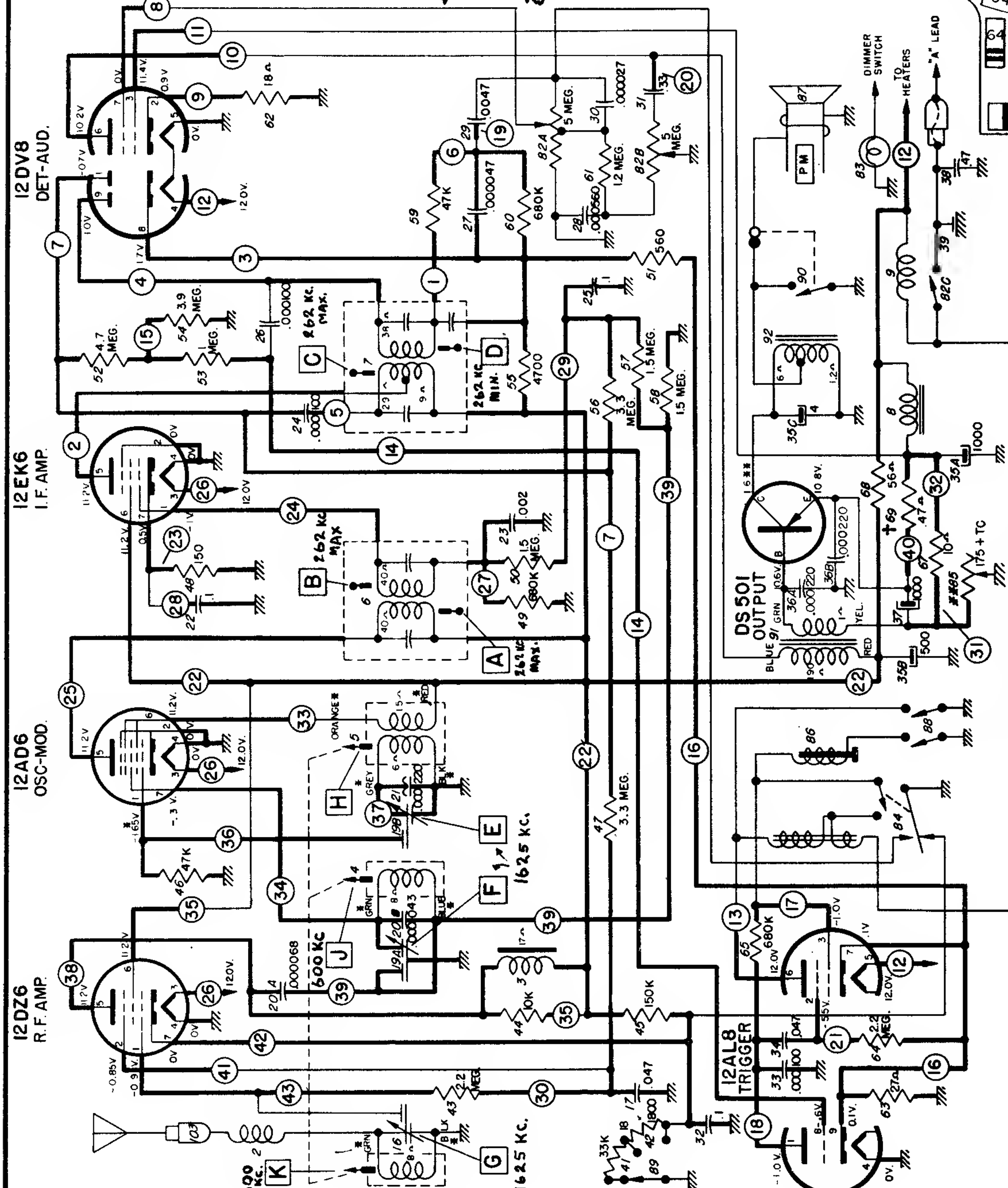


PRINTED VIEW





PARTS VIEW



PONTIAC MODEL 989692

PRINTED CIRCUIT SHOWN IN HEAVY LINES

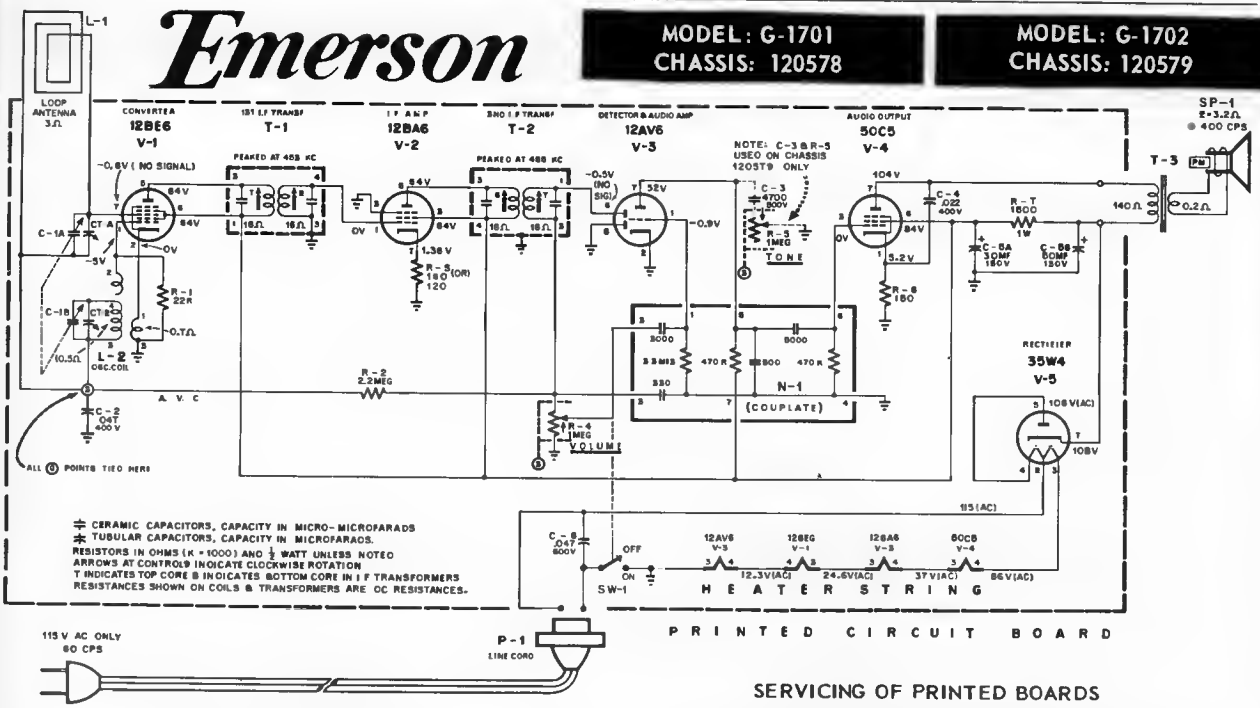
WHITE NUMBERS ON PRINTED CIRCUIT DRAWING CORRESPOND TO THE ENCIRCLED NUMBERS ON SCHEMATIC.

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



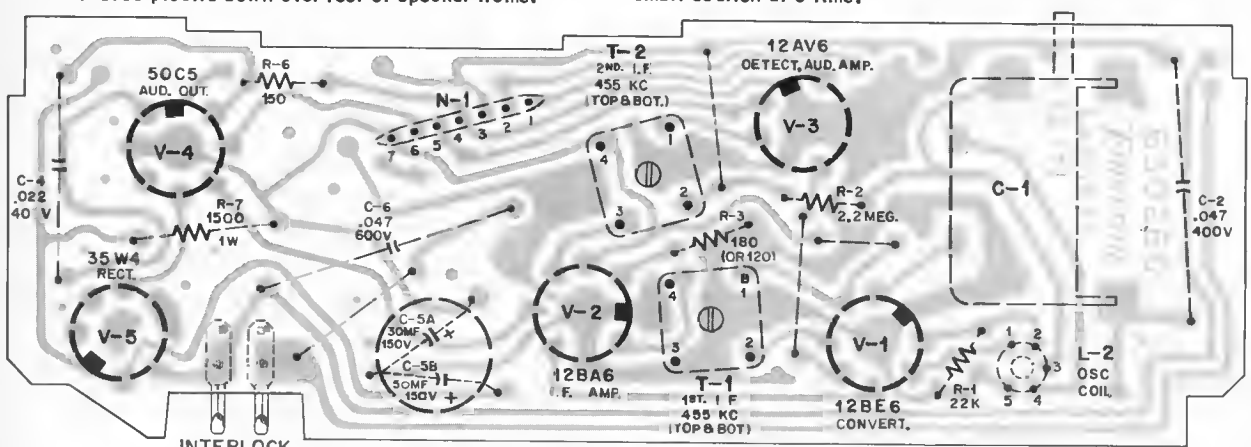
⏚ CERAMIC CAPACITORS, CAPACITY IN MICRO-MICROFARADS
✱ TUBULAR CAPACITORS, CAPACITY IN MICROFARADS.
RESISTORS IN OHMS (K = 1000) AND ½ WATT UNLESS NOTED
ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION
T INDICATES TOP CORE B INDICATES BOTTOM CORE IN I F TRANSFORMERS
RESISTANCES SHOWN ON COILS & TRANSFORMERS ARE DC RESISTANCES.

SPEAKER REPLACEMENT

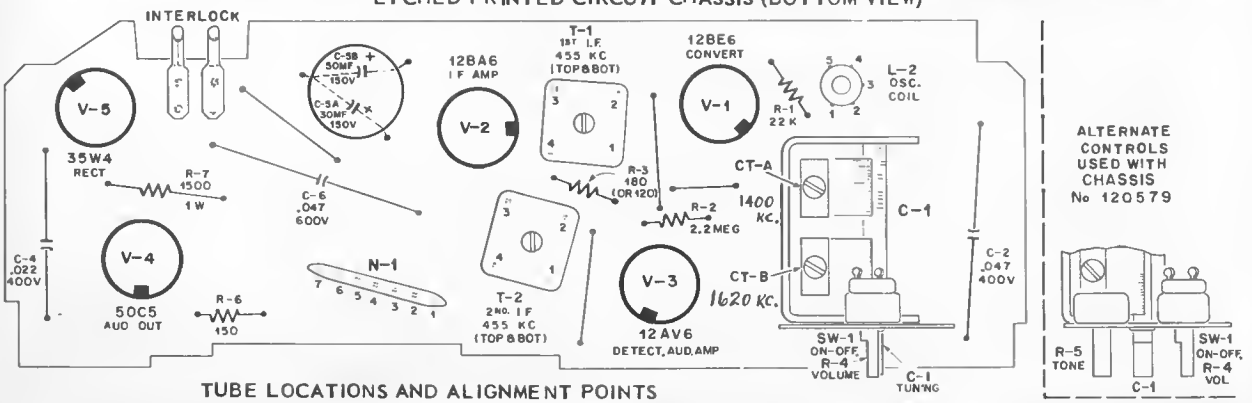
1) Remove line cord plug from wall outlet and remove back from cabinet. Remove chassis.
2) Apply heat to plastic retaining studs used to secure speaker to cabinet and remove speaker.
3) Install new speaker in cabinet. Secure speaker by re-heating original mounting studs and pressing excess plastic down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

SERVICING OF PRINTED BOARDS

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.



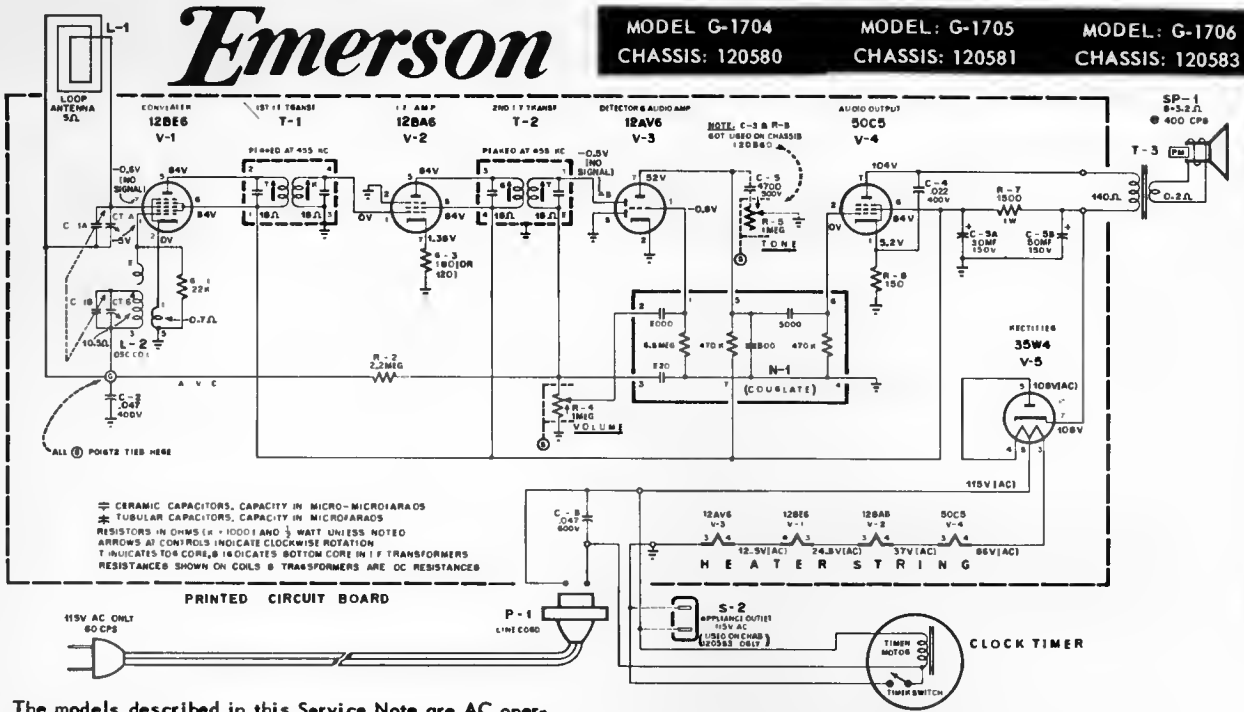
ETCHED PRINTED CIRCUIT CHASSIS (BOTTOM VIEW)



TUBE LOCATIONS AND ALIGNMENT POINTS

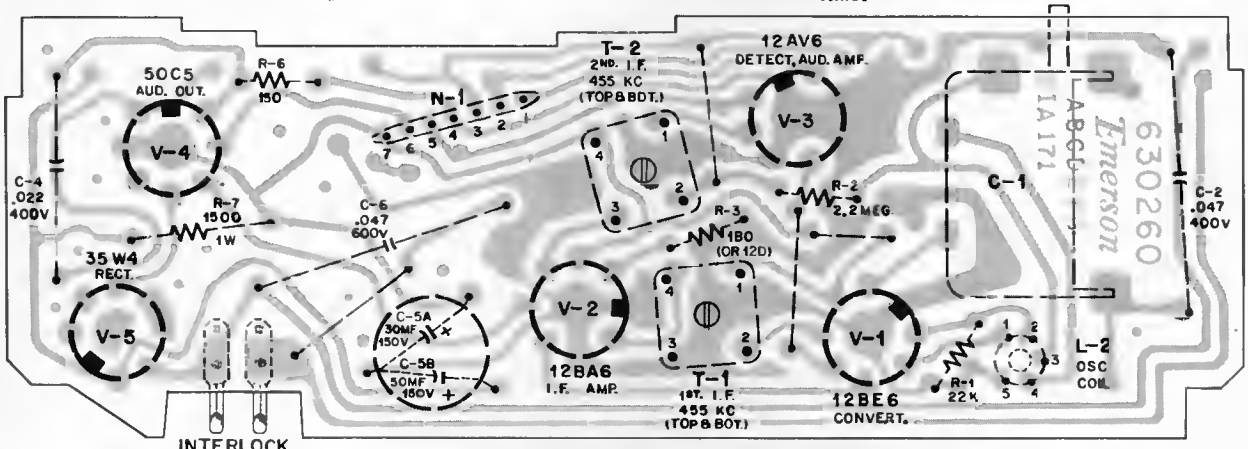
Emerson

MODEL G-1704	MODEL: G-1705	MODEL: G-1706
CHASSIS: 120580	CHASSIS: 120581	CHASSIS: 120583

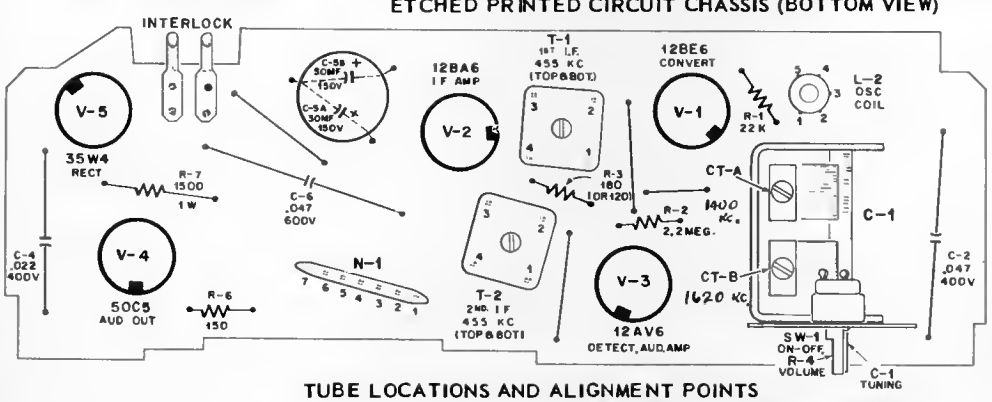


The models described in this Service Note are AC operated superheterodyne clock-radios designed for reception of programs in the AM broadcast band. They are electrically very similar; differing only in use of a tone control circuit (not used in model G-1704), automatically controlled appliance outlet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



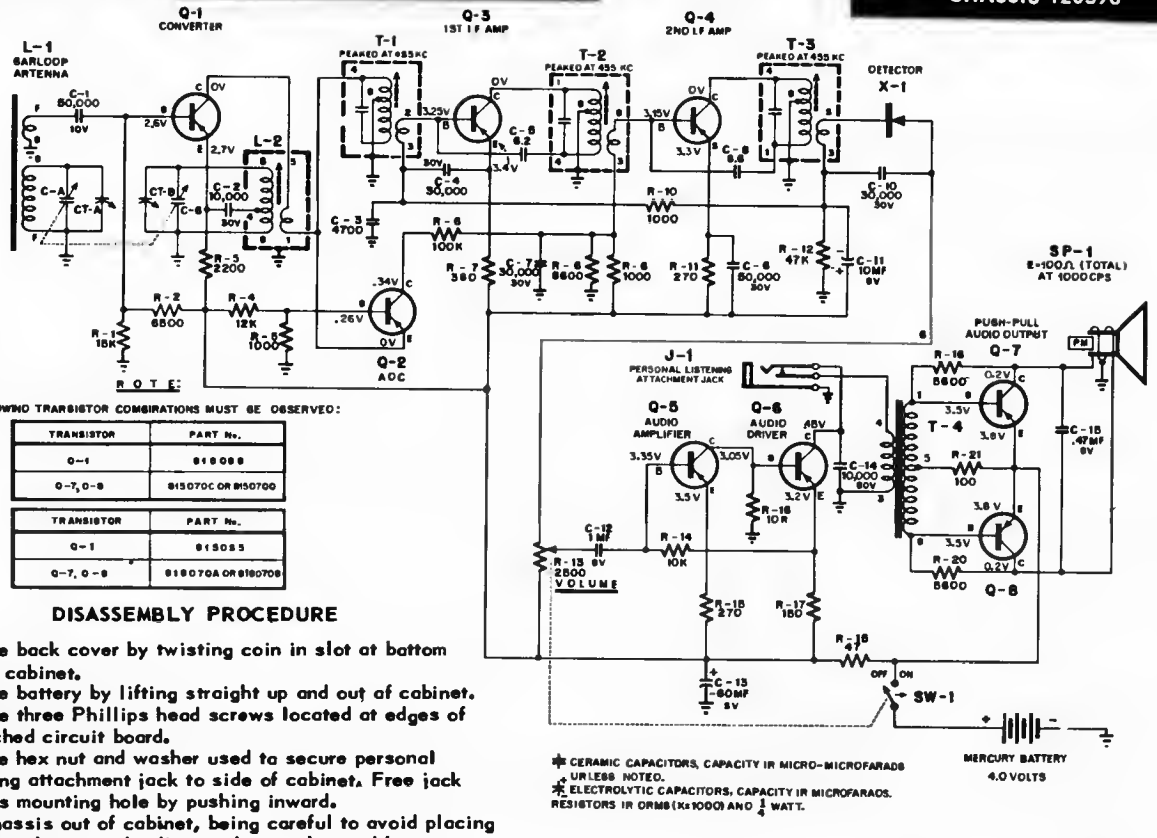
ETCHED PRINTED CIRCUIT CHASSIS (BOTTOM VIEW)



TUBE LOCATIONS AND ALIGNMENT POINTS

Emerson Radio

MODEL 707
CHASSIS 120598



NOTE:

THE FOLLOWING TRANSISTOR COMBINATIONS MUST BE OBSERVED:

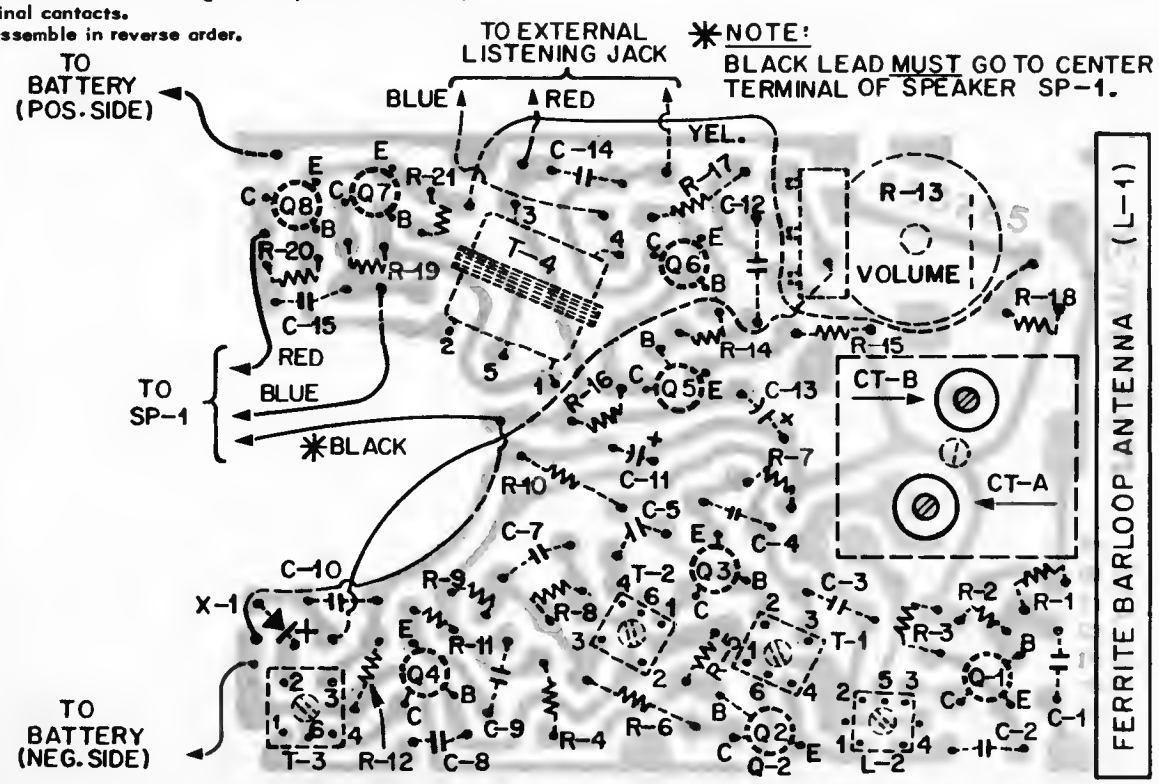
TRANSISTOR	PART No.
Q-1	818088
Q-2, Q-3	815070C OR 8150700

TRANSISTOR	PART No.
Q-1	815055
Q-2, Q-3	815070A OR 8150708

DISASSEMBLY PROCEDURE

Remove back cover by twisting coin in slot at bottom end of cabinet.
Remove battery by lifting straight up and out of cabinet.
Remove three Phillips head screws located at edges of the etched circuit board.
Remove hex nut and washer used to secure personal listening attachment jack to side of cabinet. Free jack from its mounting hole by pushing inward.
Lift chassis out of cabinet, being careful to avoid placing strain on the wires leading to the speaker and battery terminal contacts.
Re-assemble in reverse order.

* CERAMIC CAPACITORS, CAPACITY IN MICRO-MICROFARADS UNLESS NOTED.
* ELECTROLYTIC CAPACITORS, CAPACITY IN MICROFARADS.
RESISTORS IN OHMS (K=1000) AND 1/4 WATT.



ETCHED PRINTED CIRCUIT, CH. 120598 (BOT. VIEW)

Emerson Radio

MODEL 941-B
CH. 120569-B

MODEL 943-B
CH. 120569-D

(For circuit diagram see next page adjacent at right)

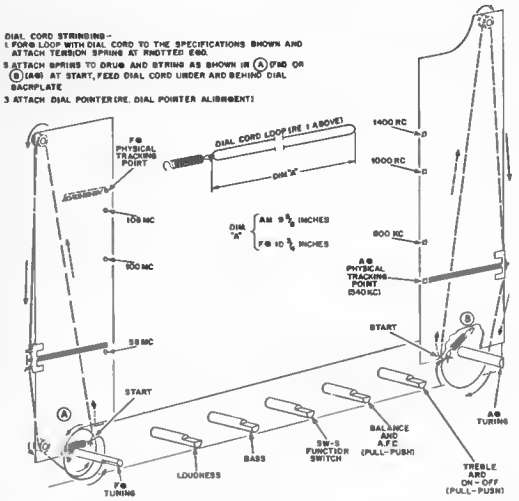


FIG. 2A, B – DIAL CORD STRINGING

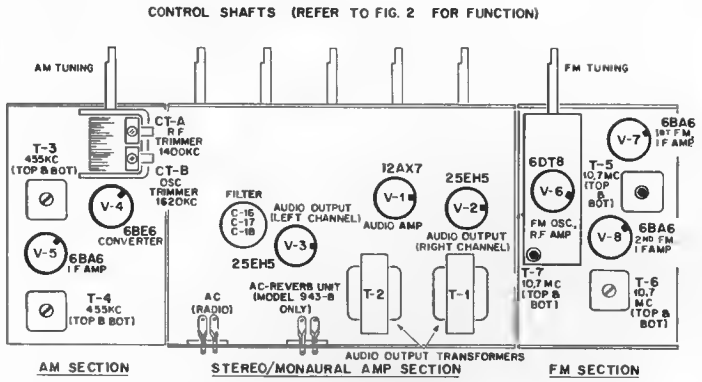
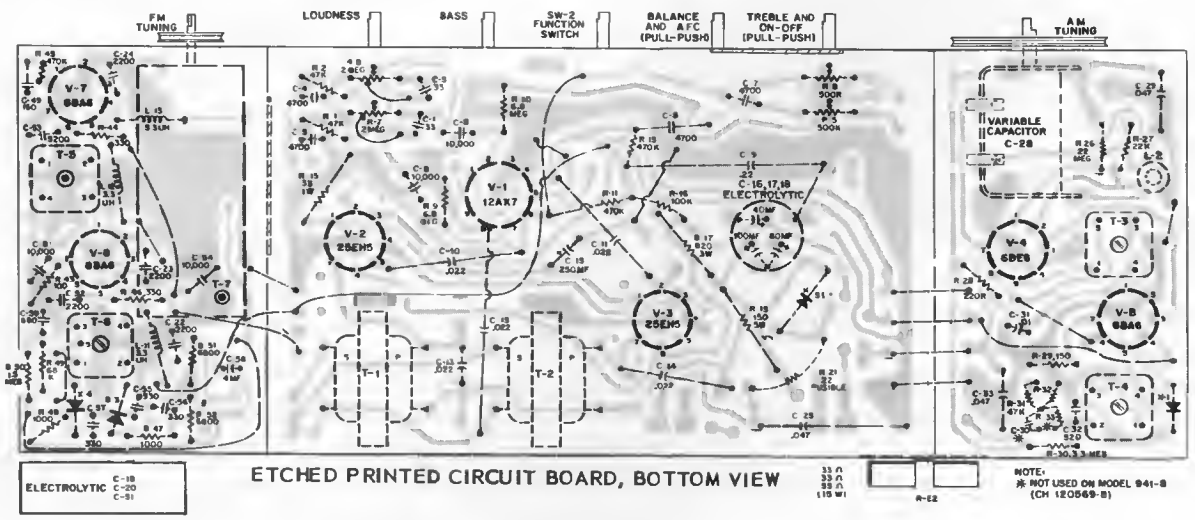


FIG. 3 – TUBE LOCATIONS AND ALIGNMENT POINTS

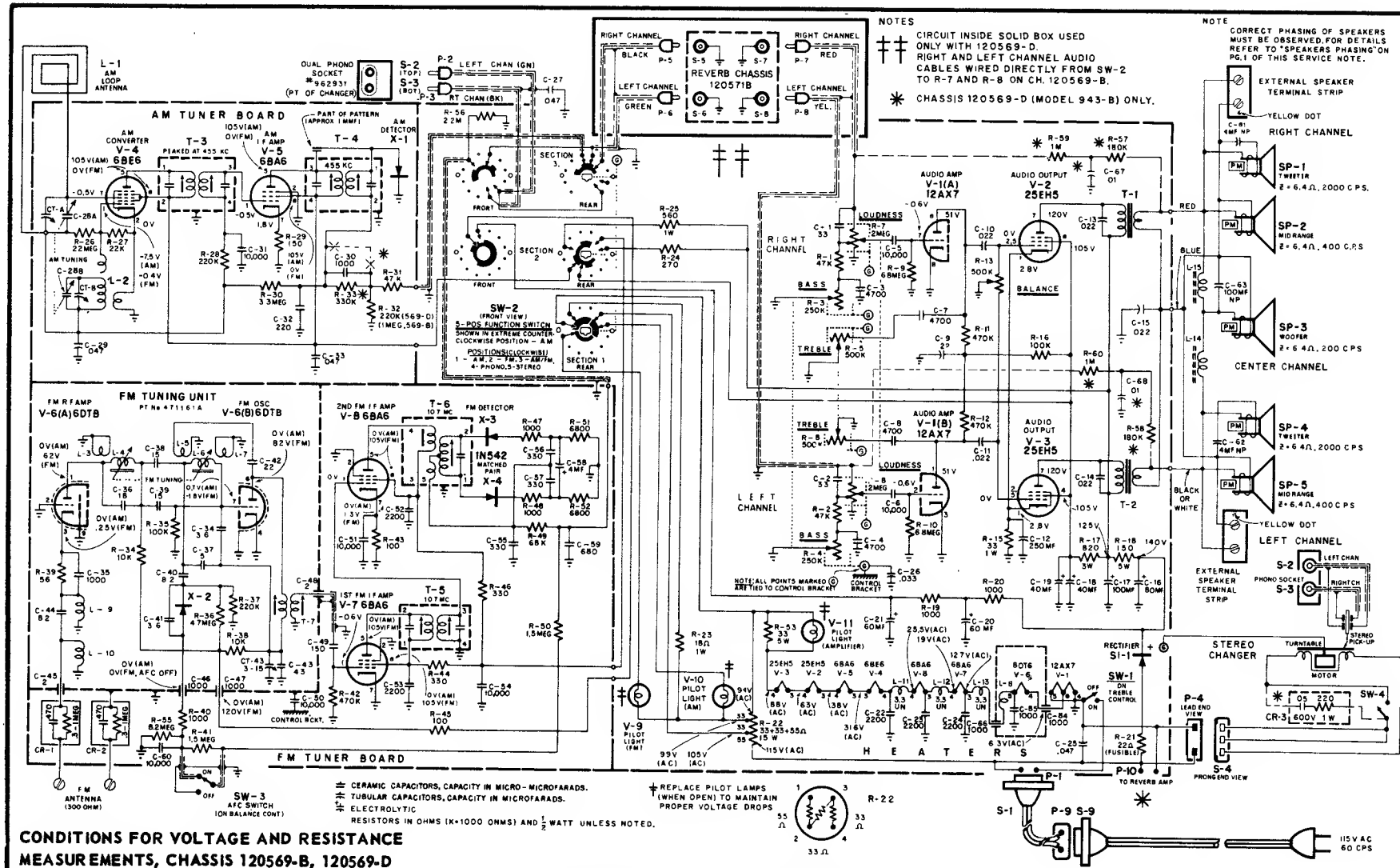


ETCHED PRINTED CIRCUIT BOARD, BOTTOM VIEW

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).



NOTES

‡‡ CIRCUIT INSIDE SOLID BOX USED ONLY WITH 120569-D. RIGHT AND LEFT CHANNEL AUDIO CABLES WIRED DIRECTLY FROM SW-2 TO R-7 AND R-8 ON CH. 120569-B.

* CHASSIS 120569-D (MODEL 943-B) ONLY.

NOTE

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

‡ CERAMIC CAPACITORS, CAPACITY IN MICRO-MICROFARADS.
‡‡ TUBULAR CAPACITORS, CAPACITY IN MICROFARADS.
‡‡‡ ELECTROLYTIC
RESISTORS IN OHMS (K=1000 OHMS) AND ½ WATT UNLESS NOTED.

† REPLACE PILOT LAMPS (WHEN OPEN) TO MAINTAIN PROPER VOLTAGE DROPS

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

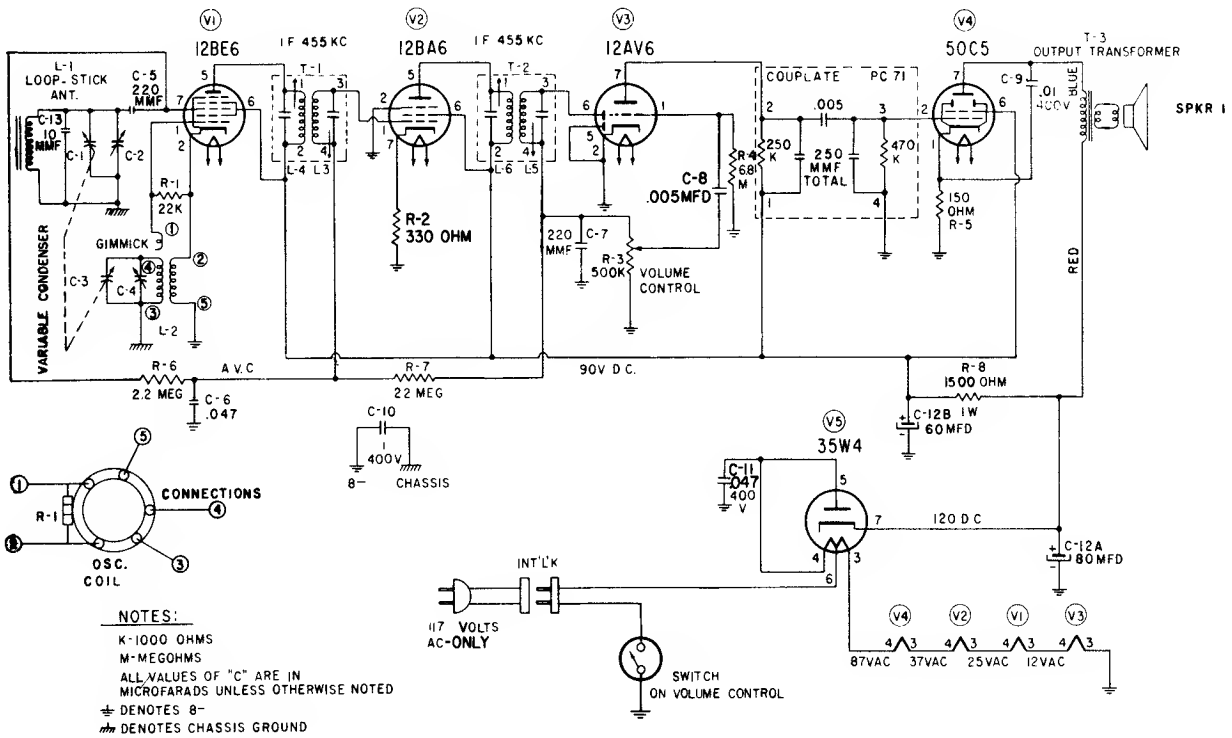
1. Voltages are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements taken with Voltohmyst or equivalent.
3. All measurements taken from tube pin to B minus (metal can of electrolytic filter) unless otherwise indicated.
4. Voltage measurements taken with:
   (a) Line voltage 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 ±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)

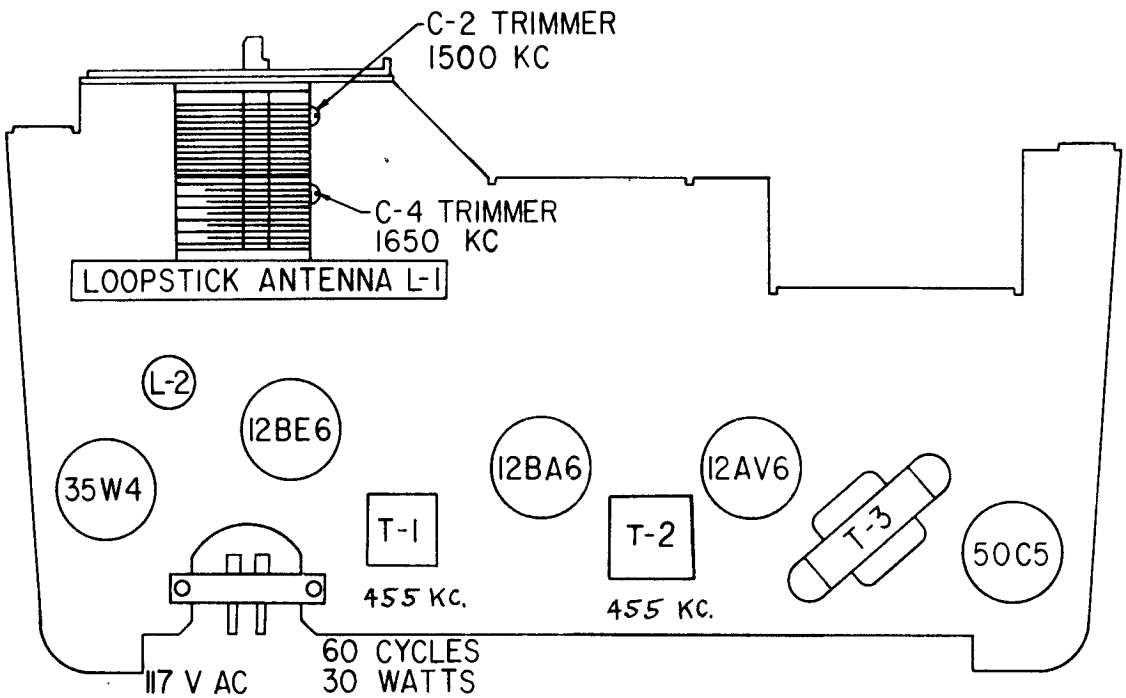
Gamble-Skogmo, Inc.

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.



NOTES:

K-1000 OHMS
M-MEGOHMS
ALL VALUES OF "C" ARE IN MICROFARADS UNLESS OTHERWISE NOTED
⏚ DENOTES 8—
⫽ DENOTES CHASSIS GROUND



Gamble-Skogmo, Inc.

MODELS RA50-9908A, RA50-9909A

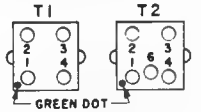
NOTES.

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

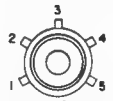
TO SERVICE RADIO

The chassis may be removed for servicing by:

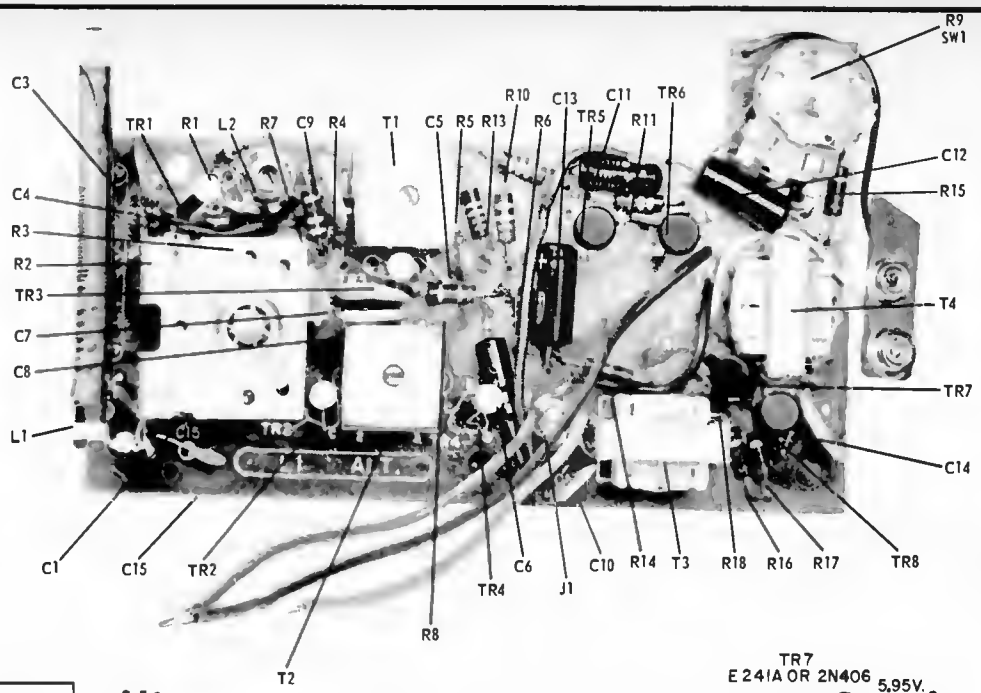
1. Removing volume and tuning knobs.
2. Removing battery compartment cover and battery holder.
3. Removing the two screws in the bottom of the battery compartment and inserting a thin screwdriver into the hole of one of these two screws to push off face of cabinet.
4. Speaker is assembled to face and 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.

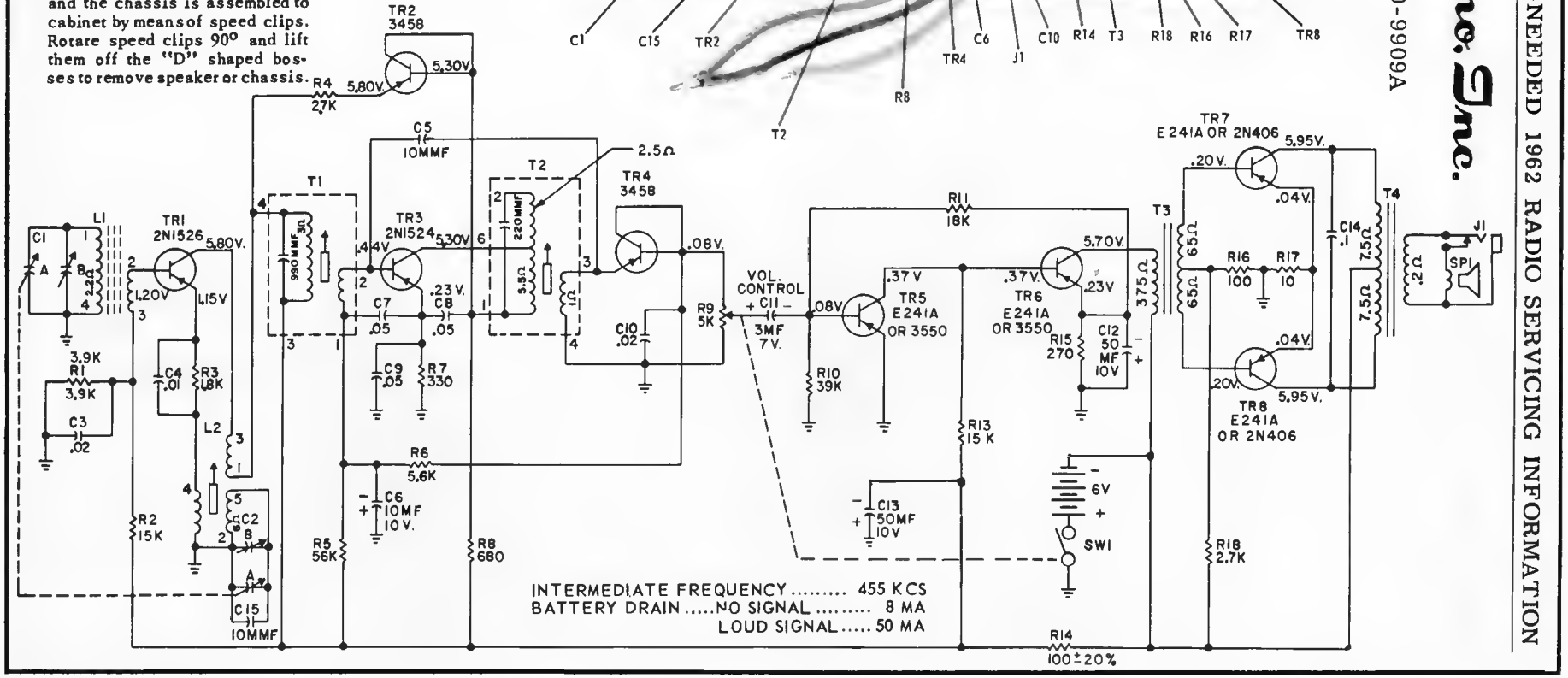


I.F. TRANSFORMERS
(BOTTOM VIEW)



L2
OSCILLATOR COIL
(BOTTOM VIEW)



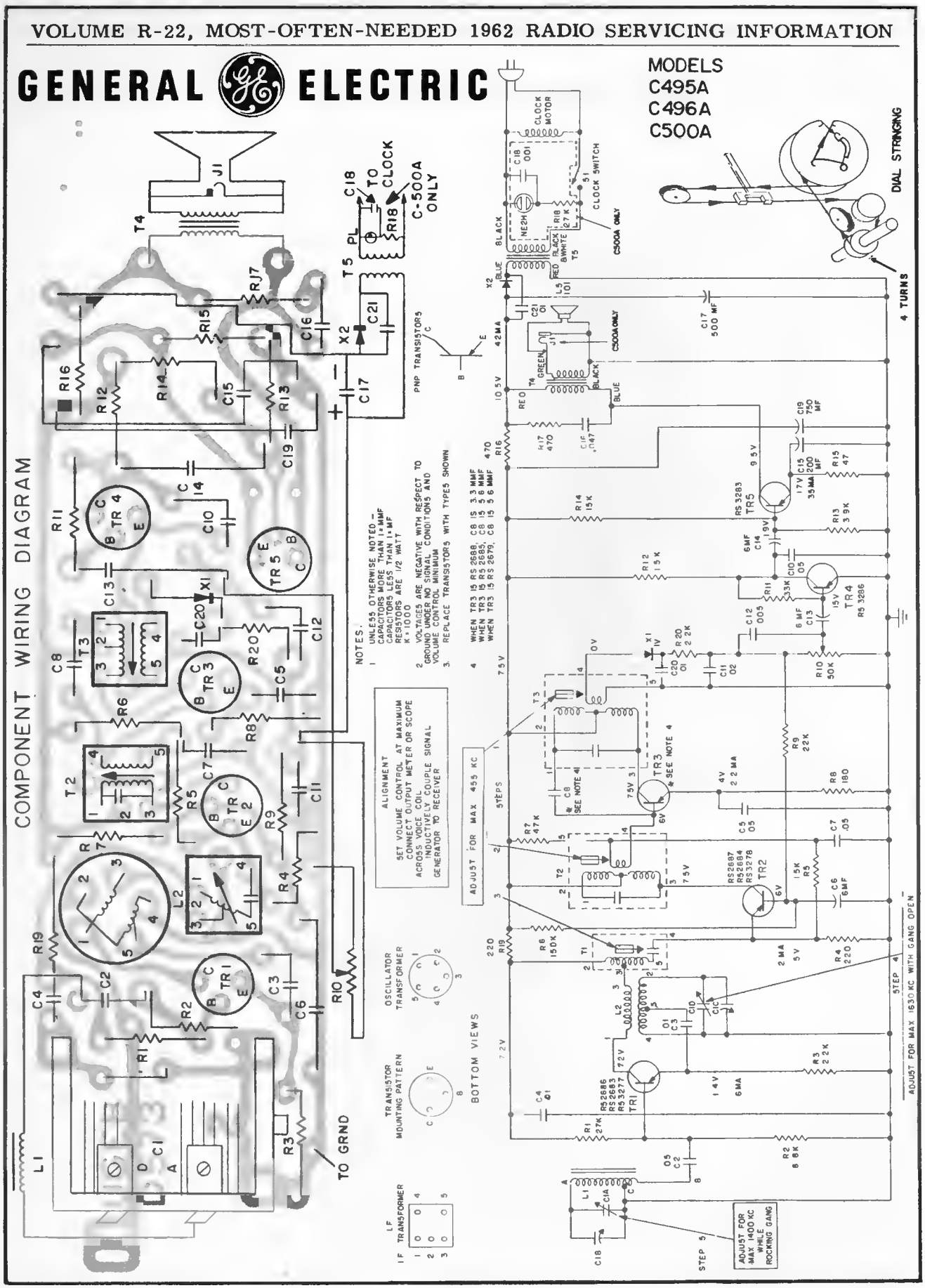


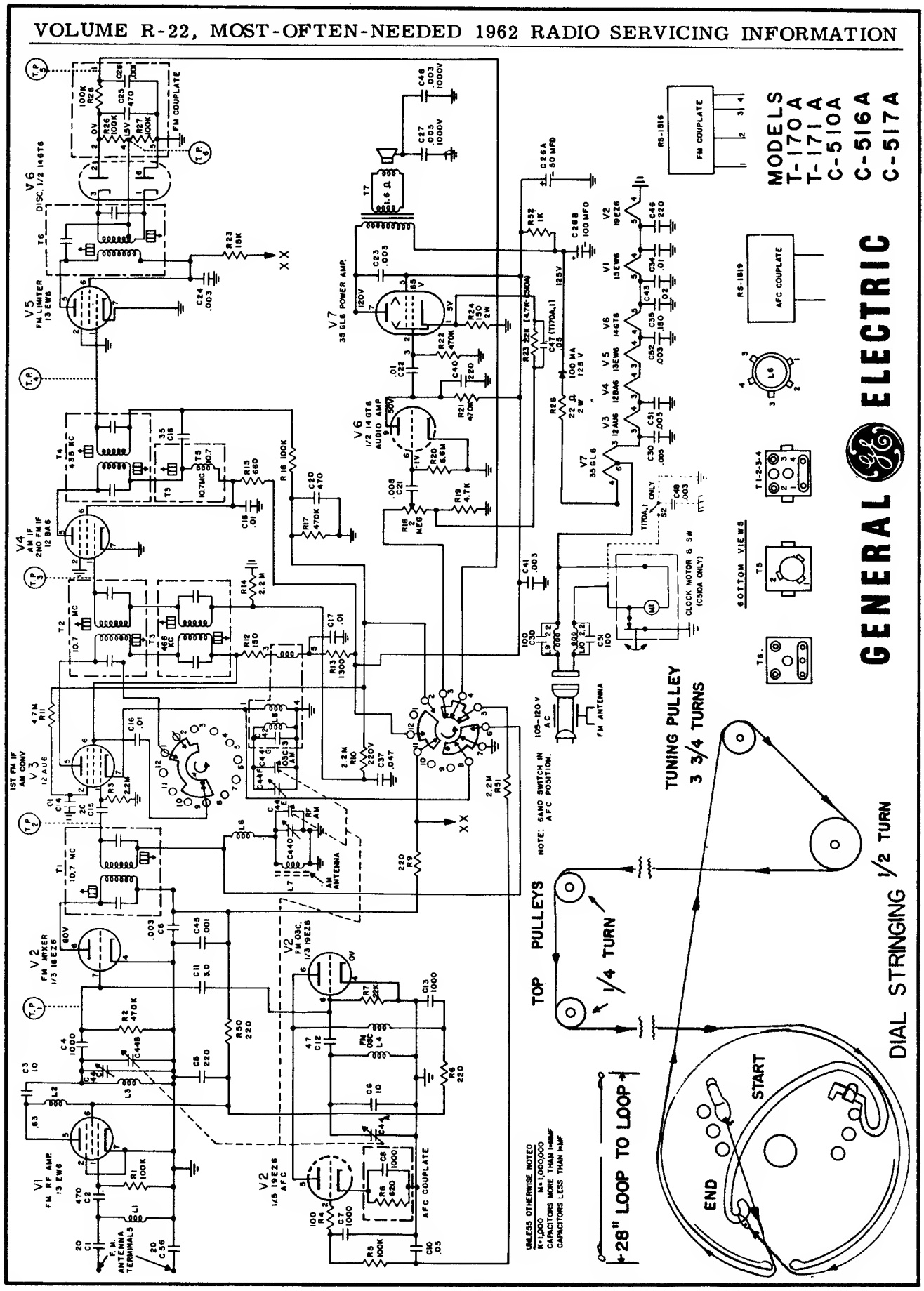
INTERMEDIATE FREQUENCY..... 455 KCS
BATTERY DRAIN.....NO SIGNAL ..... 8 MA
LOUD SIGNAL..... 50 MA

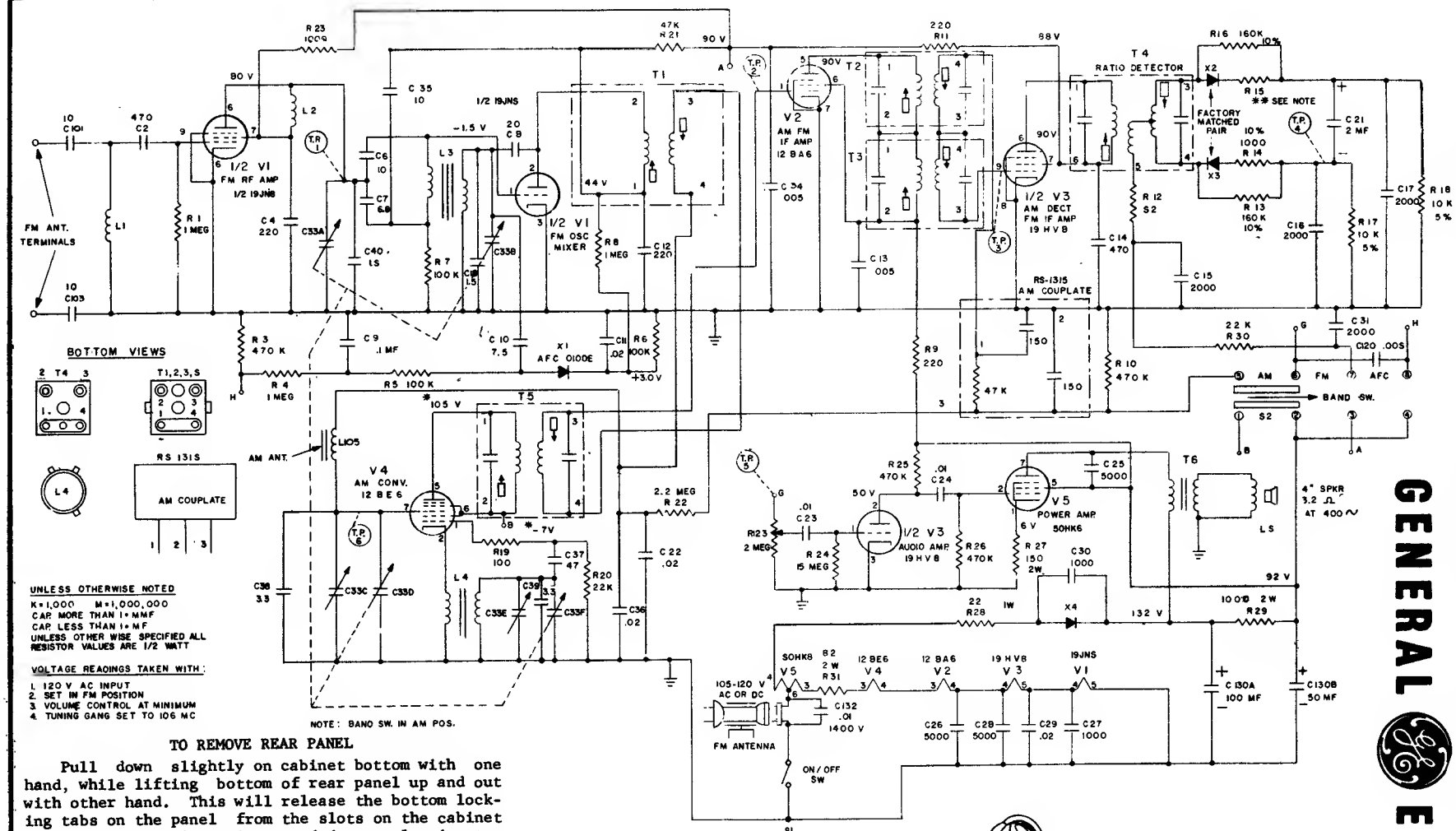
GENERAL ELECTRIC

MODELS
C495A
C496A
C500A

COMPONENT WIRING DIAGRAM




GENERAL ELECTRIC
MODELS
T-170A
T-171A
C-510A
C-516A
C-517A
TUNING PULLEY
3 3/4 TURNS
TOP PULLEYS
1/4 TURN
DIAL STRINGING 1/2 TURN
28" LOOP TO LOOP
START
END
BOTTOM VIEWS
FM COUPLATE
AFC COUPLATE
FM ANTENNA
AM ANTENNA
CLOCK MOTOR & SW (C510A ONLY)
NOTE: 6ANO SWITCH IN AFC POSITION.
UNLESS OTHERWISE NOTED
K=1,000 M=1,000,000
CAPACITORS MORE THAN 1=MF
CAPACITORS LESS THAN 1=MF



TO REMOVE REAR PANEL

Pull down slightly on cabinet bottom with one hand, while lifting bottom of rear panel up and out with other hand. This will release the bottom locking tabs on the panel from the slots on the cabinet bottom. Then pull panel out and down, releasing top locking tabs from top slots.

TO REMOVE CHASSIS FROM CABINET

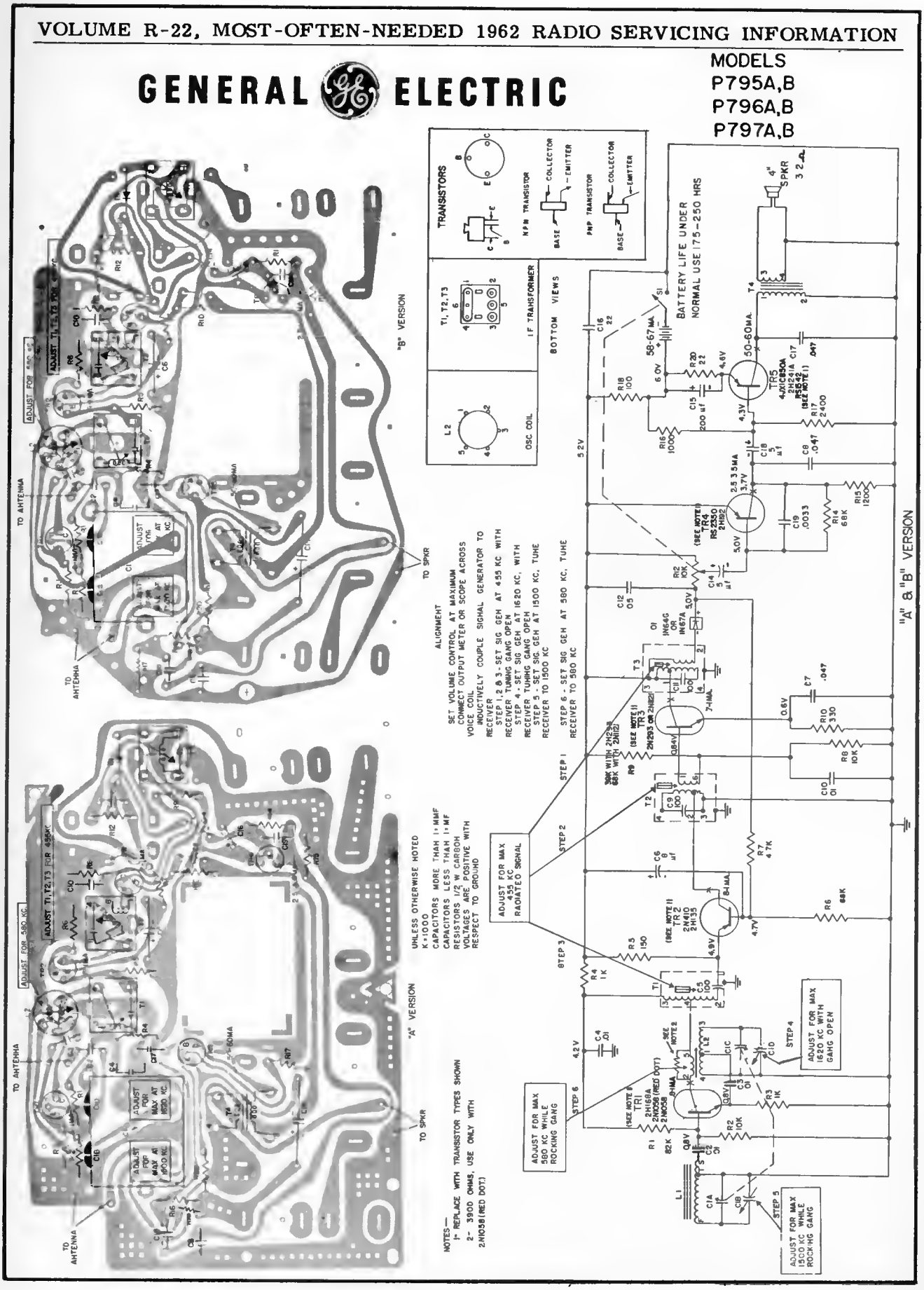
1. Remove rear panel as detailed above.
2. Pull out volume and tuning control knobs.
3. Remove nut securing volume control to cabinet.
4. Remove four screws on cabinet bottom which fasten the chassis down and remove screw ,holding front bracket.
5. Unsolder speaker leads.
6. Slide chassis out to rear.

GENERAL ELECTRIC

RADIO MODEL T-230A

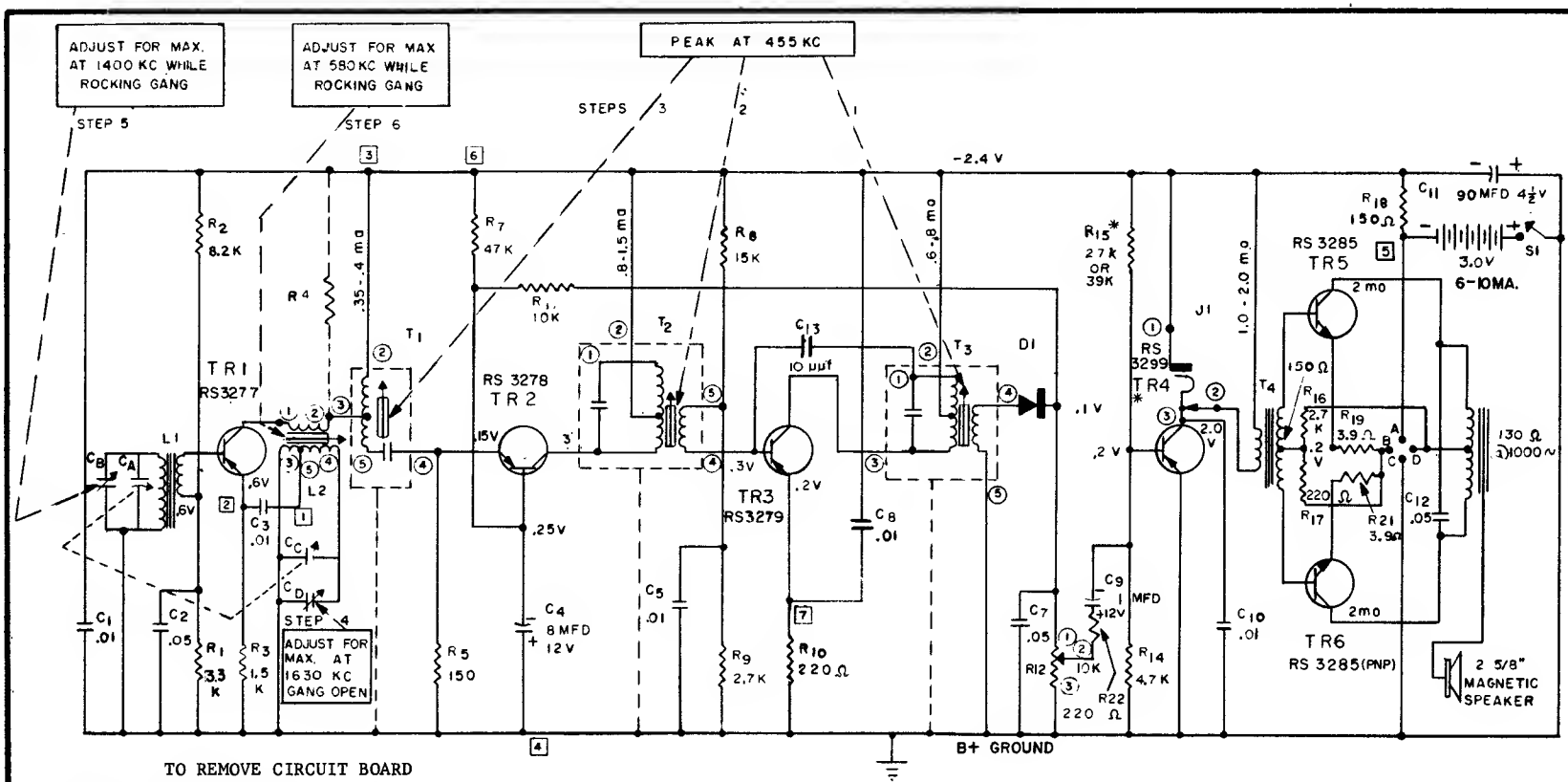
GENERAL ELECTRIC

MODELS
P795A,B
P796A,B
P797A,B



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

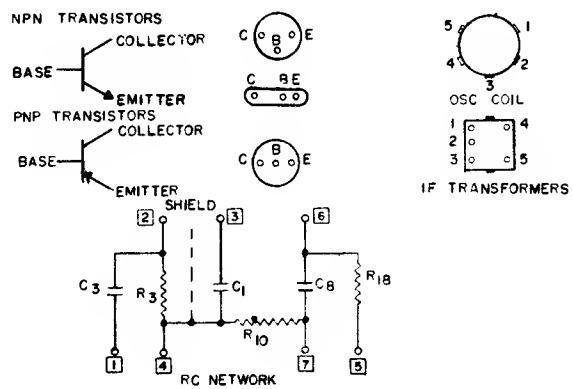
1. Remove pulley from gang shaft.
2. Remove two mounting screws.
3. Unsolder the three gang connection lugs on dip-solder side of board.

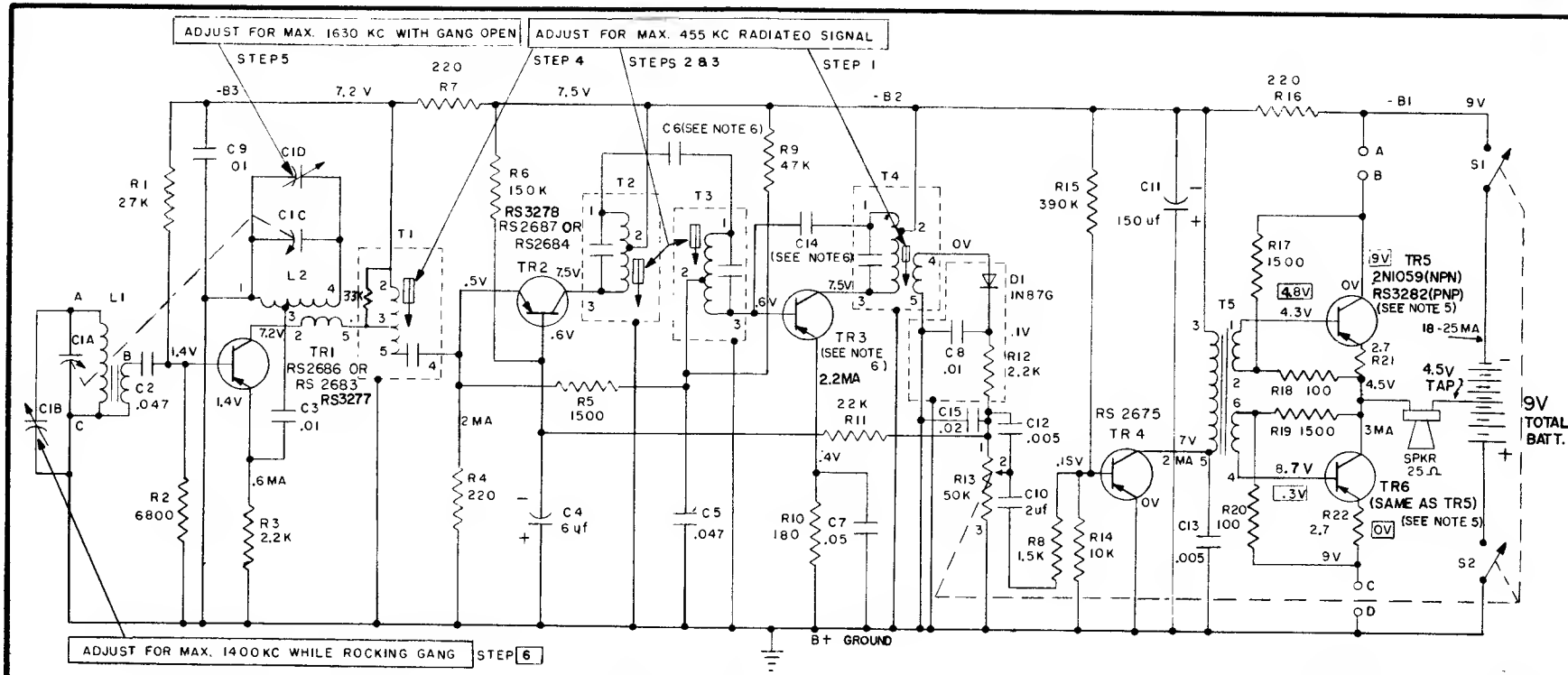
ALIGNMENT

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=μμfd
   CAPACITORS LESS THAN 1=μfd
   RESISTORS ARE 1/2 WATT & K=1000
2. VOLTAGES & CURRENT READINGS ARE AVERAGE UNDER NO SIGNAL CONDITIONS VOLTAGES ARE NEGATIVE WITH RESPECT TO GROUND.
3. REPLACE WITH TRANSISTOR TYPES SHOWN.
4. FOR NPN TRANSISTORS IN TR5 & TR6
   (a) JUMPER C TO D
   (b) JUMPER A TO B
5. FOR PNP TRANSISTORS IN TR5 & TR6
   (a) JUMPER A TO D
   (b) JUMPER C TO B
6. WHEN TR4 IS RED, R15 IS 27K
   WHEN TR5 IS YELLOW, R15 IS 39K





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
   K = 1000
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 NPN, JUMPER B TO D & A TO C. WHEN TR5 & TR6 ARE PNP, JUMPER A TO B & C TO D.
6. WHEN TR3 IS RS 2688, C6 IS 2.0 & C14 IS 3.
   WHEN TR3 IS RS 2685, C6 IS 1.5 & C14 IS 5.6
   " " " RS3279 " " " " " " "

CHASSIS REMOVAL

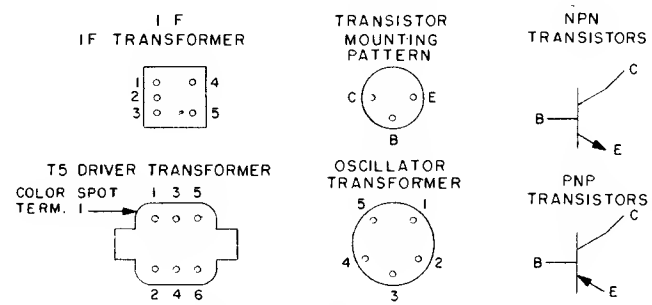
1. Remove knobs.
2. Remove battery compartment.
3. Remove 4 1/4" hex-head screws from circuit board (with 1/4" spintite).
4. Remove 1/4" hex-head screws from tuning capacitor and volume control brackets (with 1/4" spintite).
5. Carefully lift chassis out of cabinet.

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 mils. 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.

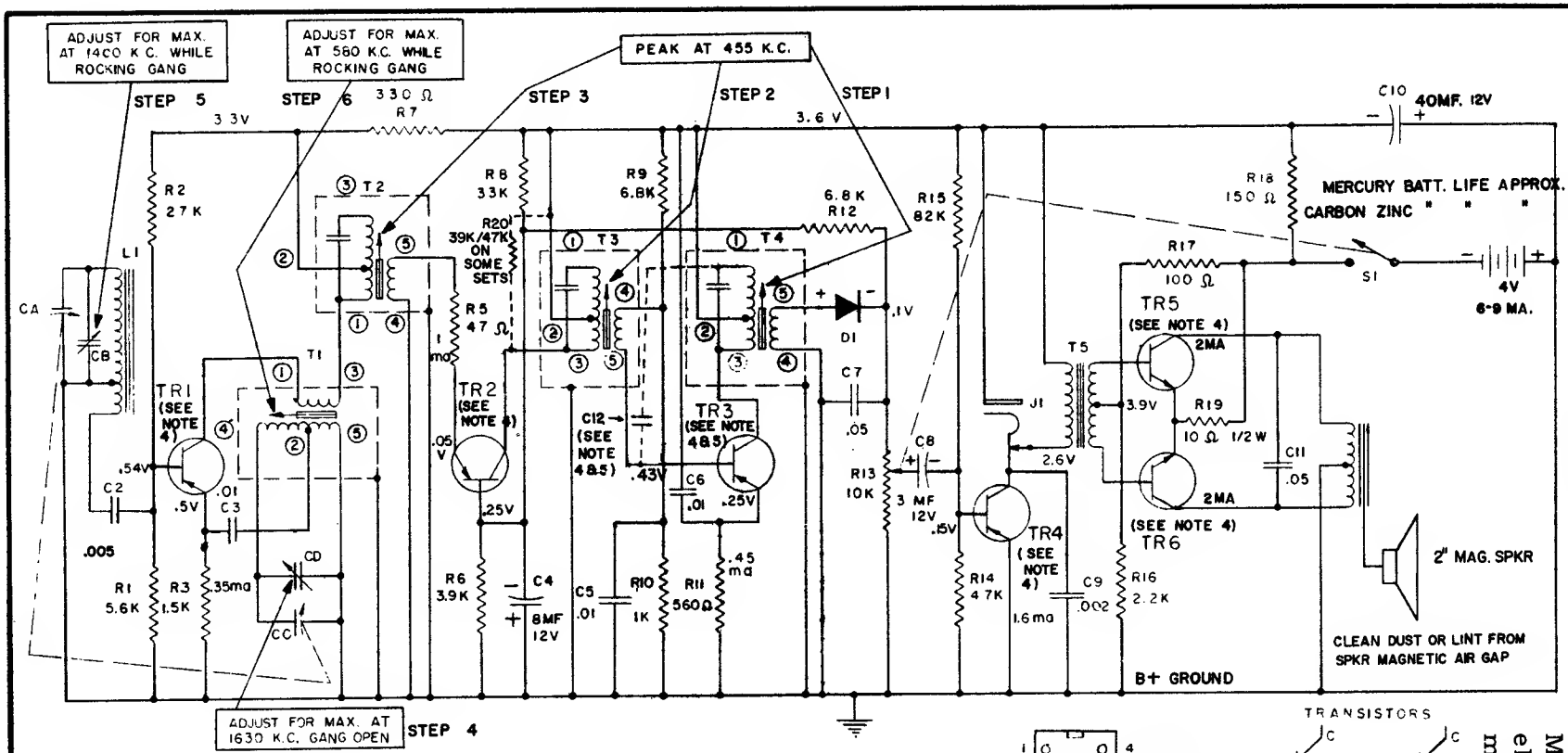


GENERAL ELECTRIC

MODEL P835A

GENERAL ELECTRIC Models P850B,C, P851C

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



ALIGNMENT

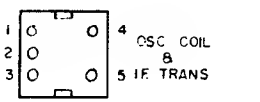
SET VOLUME CONTROL AT MAXIMUM.
CONNECT OUTPUT METER OR SCOPE ACROSS VOICE COIL.
INDUCTIVELY COUPLE SIGNAL GENERATOR TO RECEIVER.

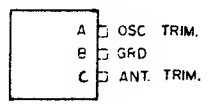
CHASSIS REMOVAL

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.

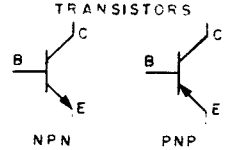
NOTE: Earphone jack must be inserted through fishpaper insulator and bushings before mounting jack to cabinet.

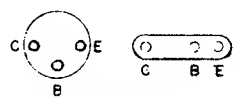
BOTTOM VIEWS





TRANSISTORS





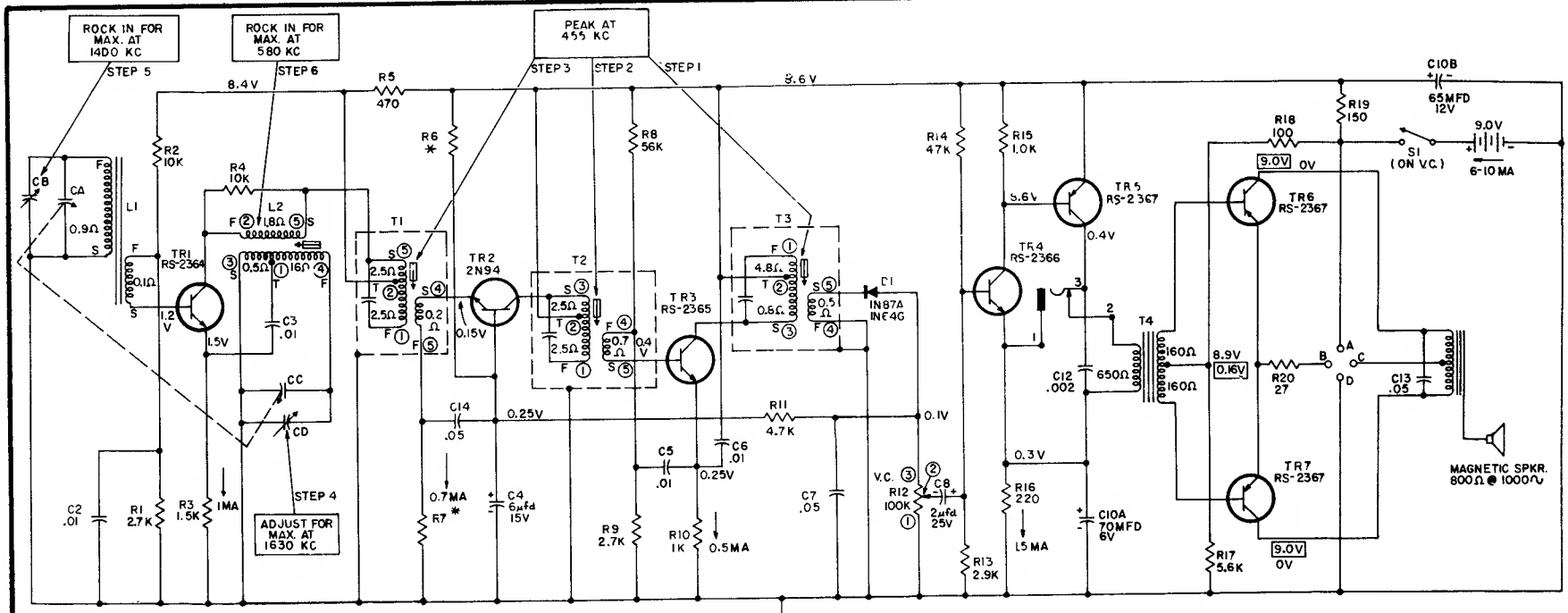
E-EMITTER
B-BASE
C-COLLECTOR

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

4. TRANSISTOR COMPLEMENT

TR1	TR2	TR3	TR4	TR5,6
RS 2694	RS 2695	RS 2696	RS 2697	RS 1549

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

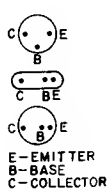


ALIGNMENT

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

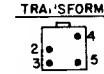
NPN TRANSISTORS
BASE — COLLECTOR — EMITTER

PNP TRANSISTORS
BASE — COLLECTOR — EMITTER

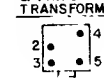


OSCILLATOR COIL

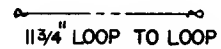
FIRST I.F. TRANSFORMER

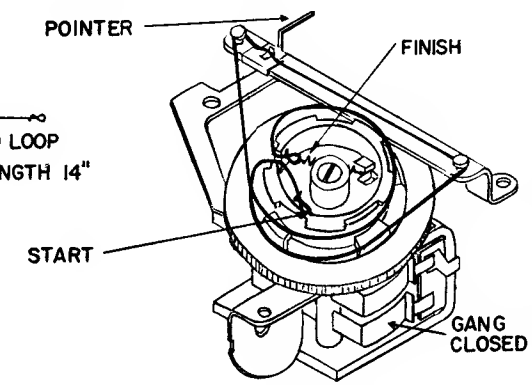


SECOND I.F. & THIRD I.F. TRANSFORMERS



BOTTOM VIEWS





DIAL STRINGING

NOTES

1- UNLESS OTHERWISE NOTED-
CAPACITORS MORE THAN 1= MMF
CAPACITORS LESS THAN 1= MF
RESISTORS ARE 1/2 WATT & K=1,000

2- VOLTAGE & CURRENT READINGS ARE AVERAGE UNDER NO SIGNAL CONDITIONS. VOLTAGES ARE POSITIVE WITH RESPECT TO GROUND.

3- SIMILAR APPROVED TRANSISTORS MAY BE USED.

4- VOLTAGES SHOWN IN [ ] ARE FOR NPN TRANSISTORS IN TR6 & TR7.

5- FOR PNP TRANSISTORS IN TR6 & TR7
A- JUMPER A TO B
B- JUMPER C TO D
C- R18 = 100Ω
D- R19 = 5.6KΩ

6- FOR NPN TRANSISTORS IN TR6 & TR7
A- JUMPER A TO C
B- JUMPER B TO D
C- R18 = 5.6KΩ
D- R19 = 100Ω

*7- R6 VALUES -

TR2	R6	R7
2N94-132	82K	220
2N94-362	150K	220
RS 3306	180K	470

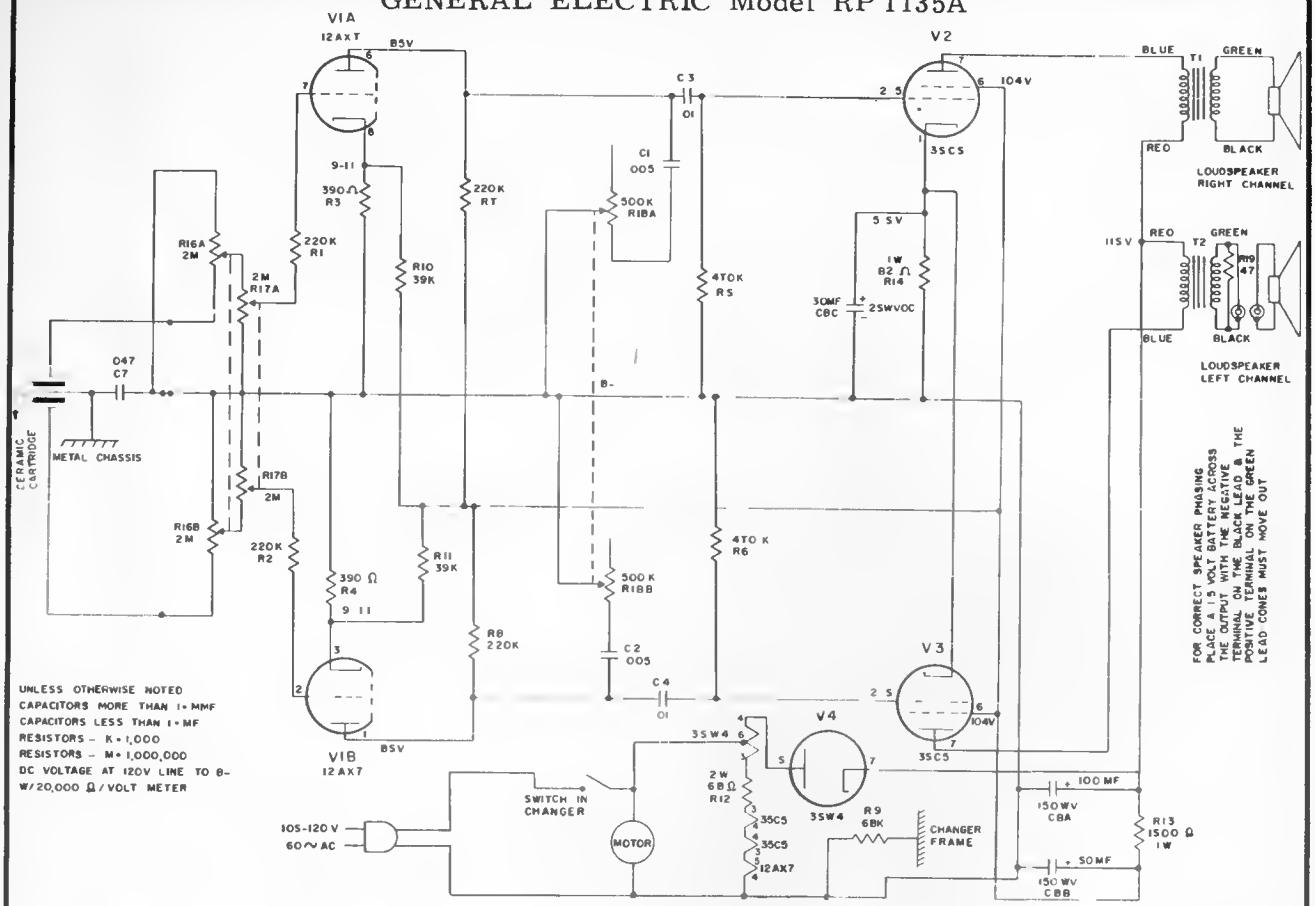
COILS AND TRANSFORMERS

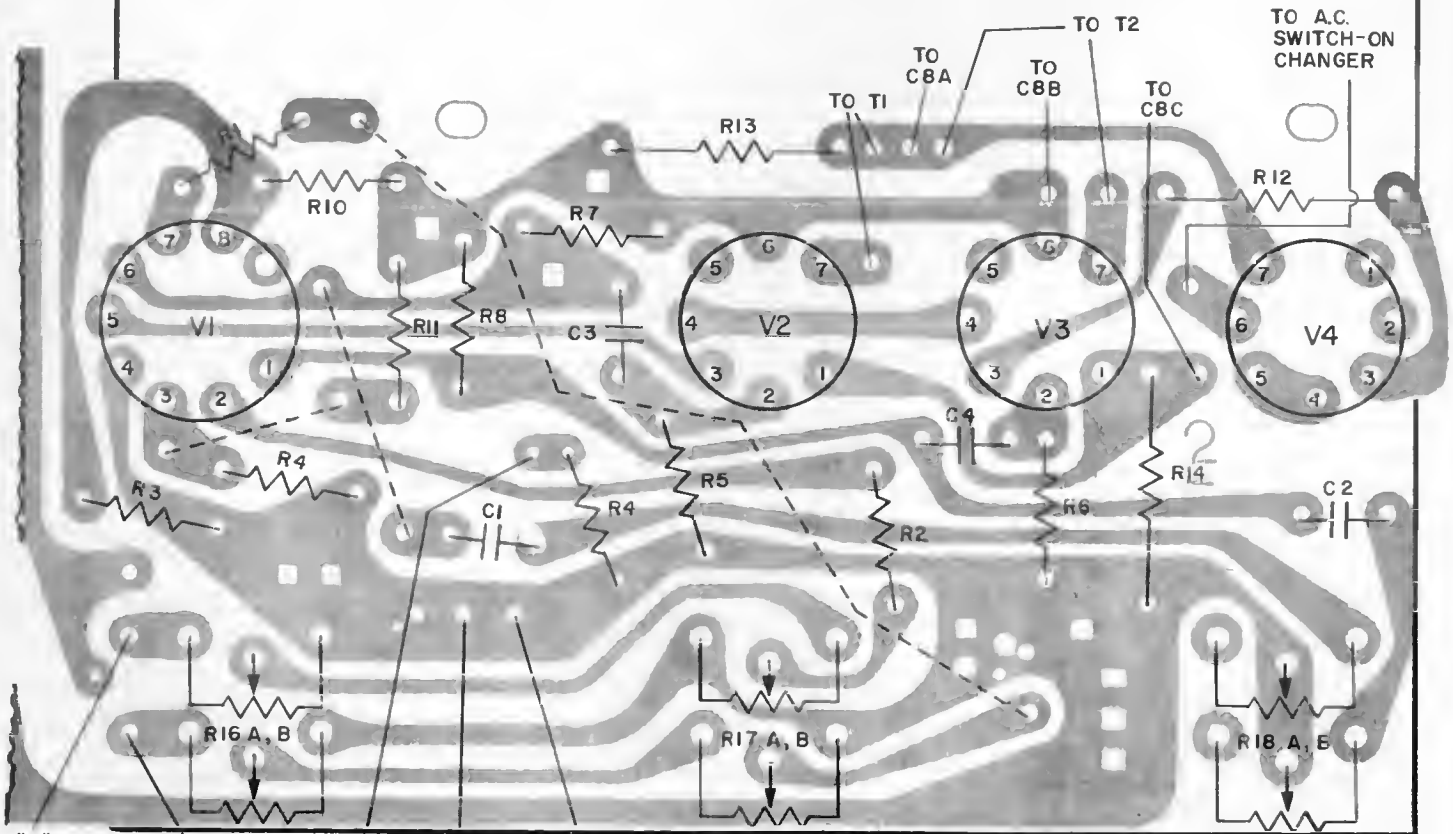
RS-2601	T4	Driver Transformer.....	1.60
RS-2602	T1	1st I.F.....	2.10
RS-2603	T2	2nd I.F.....	2.10
RS-2604	T3	3rd I.F.....	2.10
RS-2605	L2	Oscillator Coil.....	1.10
RS-2607	L1	Antenna.....	1.90

GENERAL ELECTRIC

MODELS P900IA P901IA

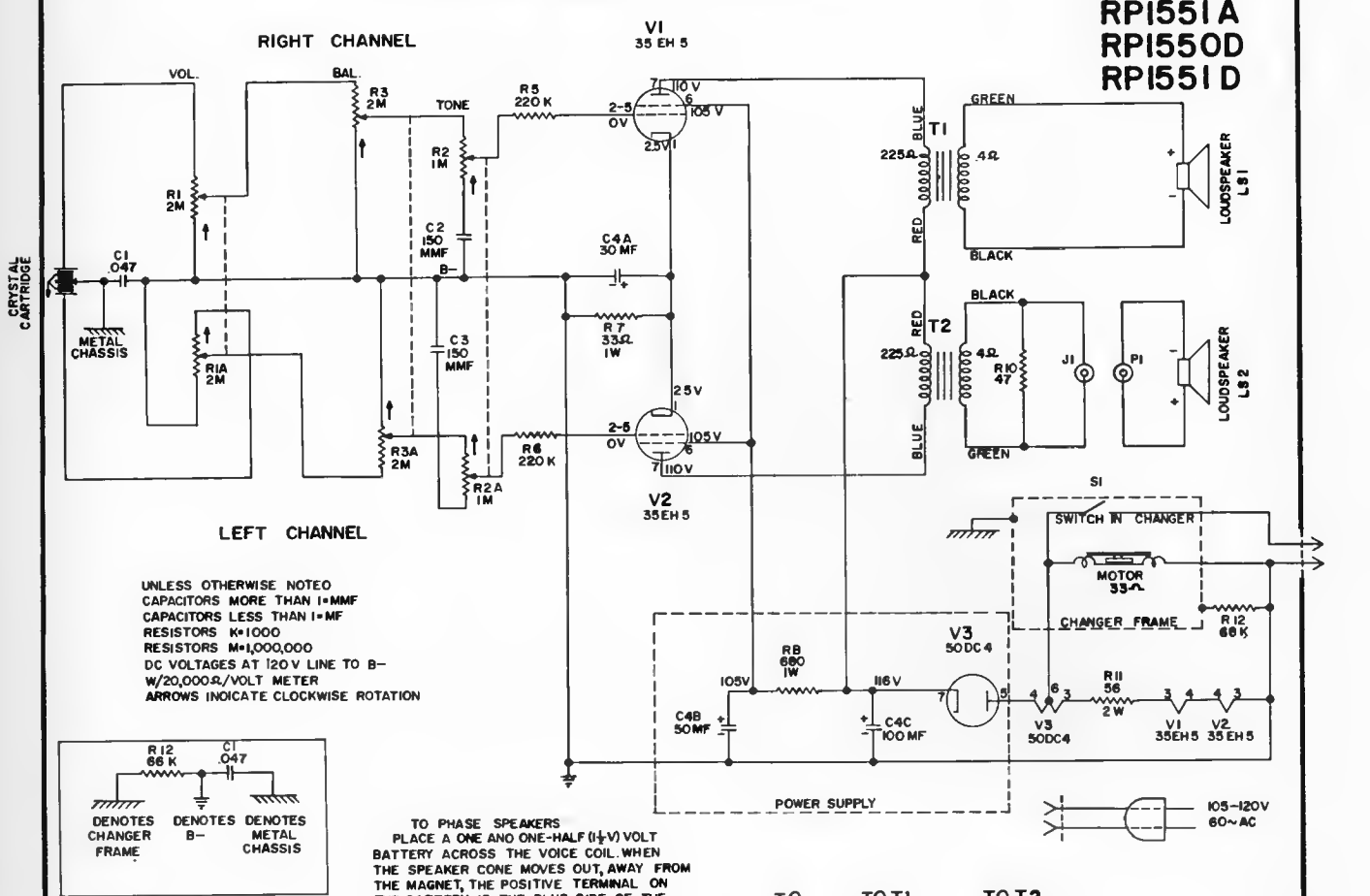
GENERAL ELECTRIC Model RP 1135A





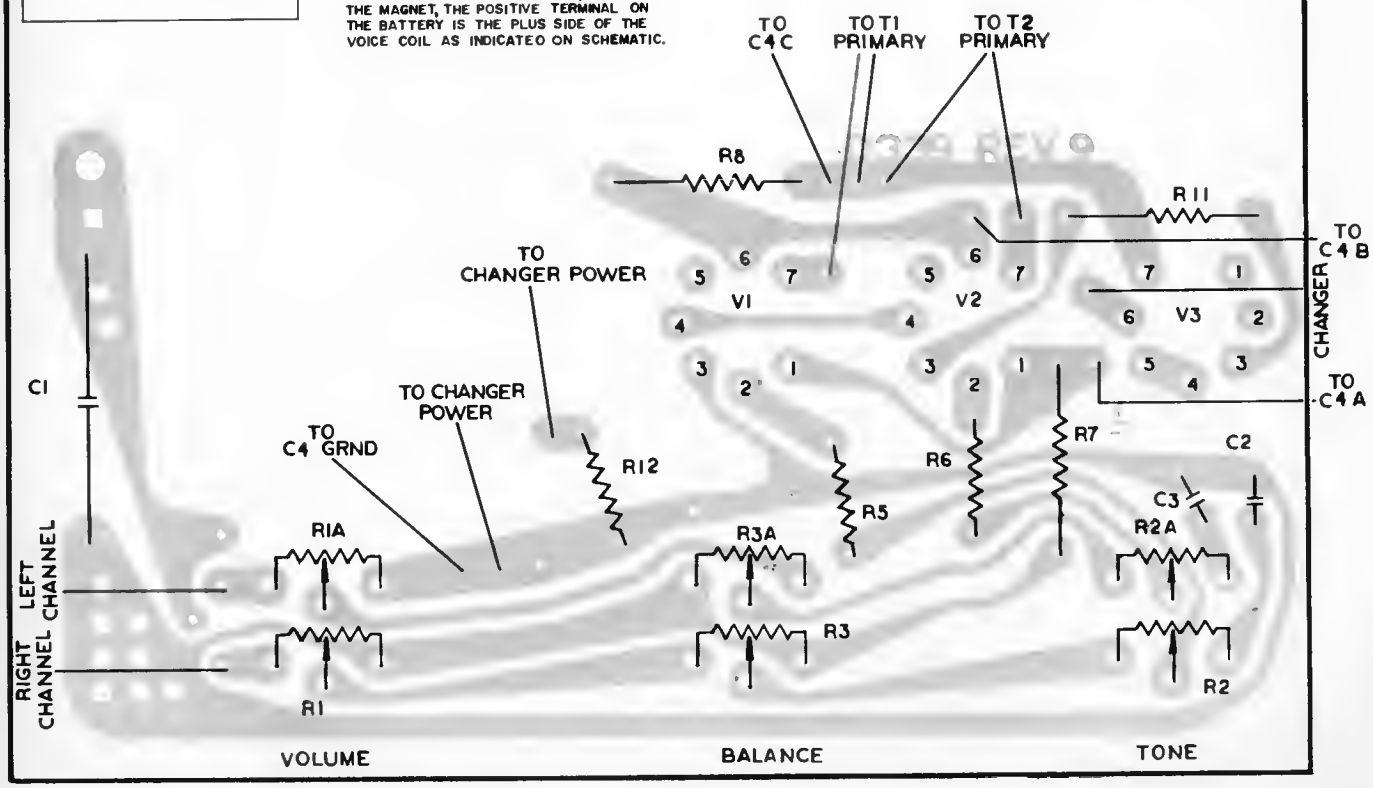
GENERAL ELECTRIC

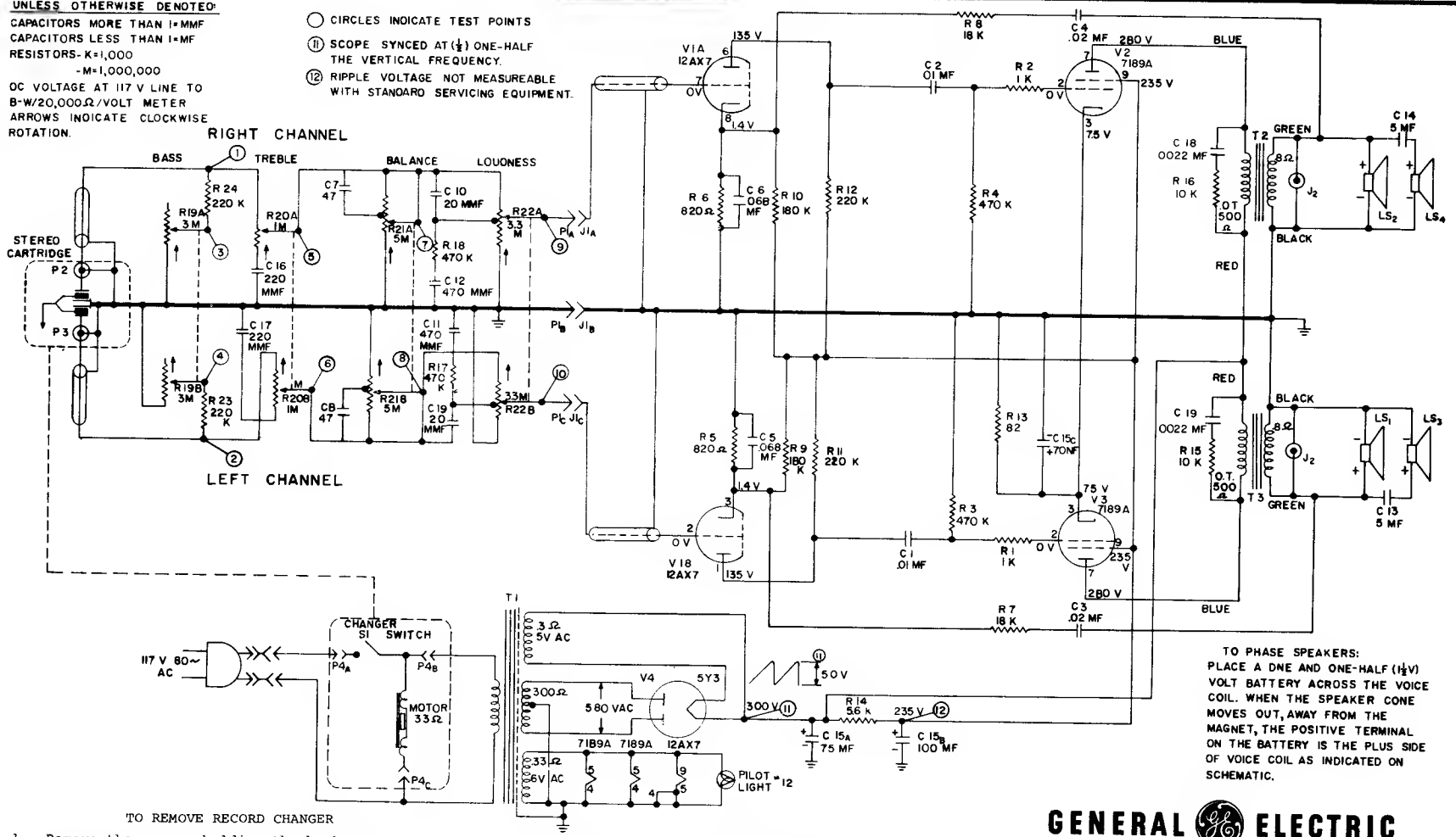
MODELS
RP1550A
RP1551A
RP1550D
RP1551D



UNLESS OTHERWISE NOTED
CAPACITORS MORE THAN 1=MMF
CAPACITORS LESS THAN 1=MF
RESISTORS K=1000
RESISTORS M=1,000,000
DC VOLTAGES AT 120 V LINE TO B−
W/20,000Ω/VOLT METER
ARROWS INDICATE CLOCKWISE ROTATION

TO PHASE SPEAKERS PLACE A ONE AND ONE-HALF (1½ V) VOLT BATTERY ACROSS THE VOICE COIL. WHEN THE SPEAKER CONE MOVES OUT, AWAY FROM THE MAGNET, THE POSITIVE TERMINAL ON THE BATTERY IS THE PLUS SIDE OF THE VOICE COIL AS INDICATED ON SCHEMATIC.





TO REMOVE RECORD CHANGER

1. Remove the screws holding the back cover to the cabinet and remove the back cover.
2. Remove (pull down) the plastic power plug (AC2) and signal plugs from the changer.
3. Flip the two shipping screw clips on the changer to a vertical position.
4. Remove the changer.

TO REMOVE CONTROL CHASSIS

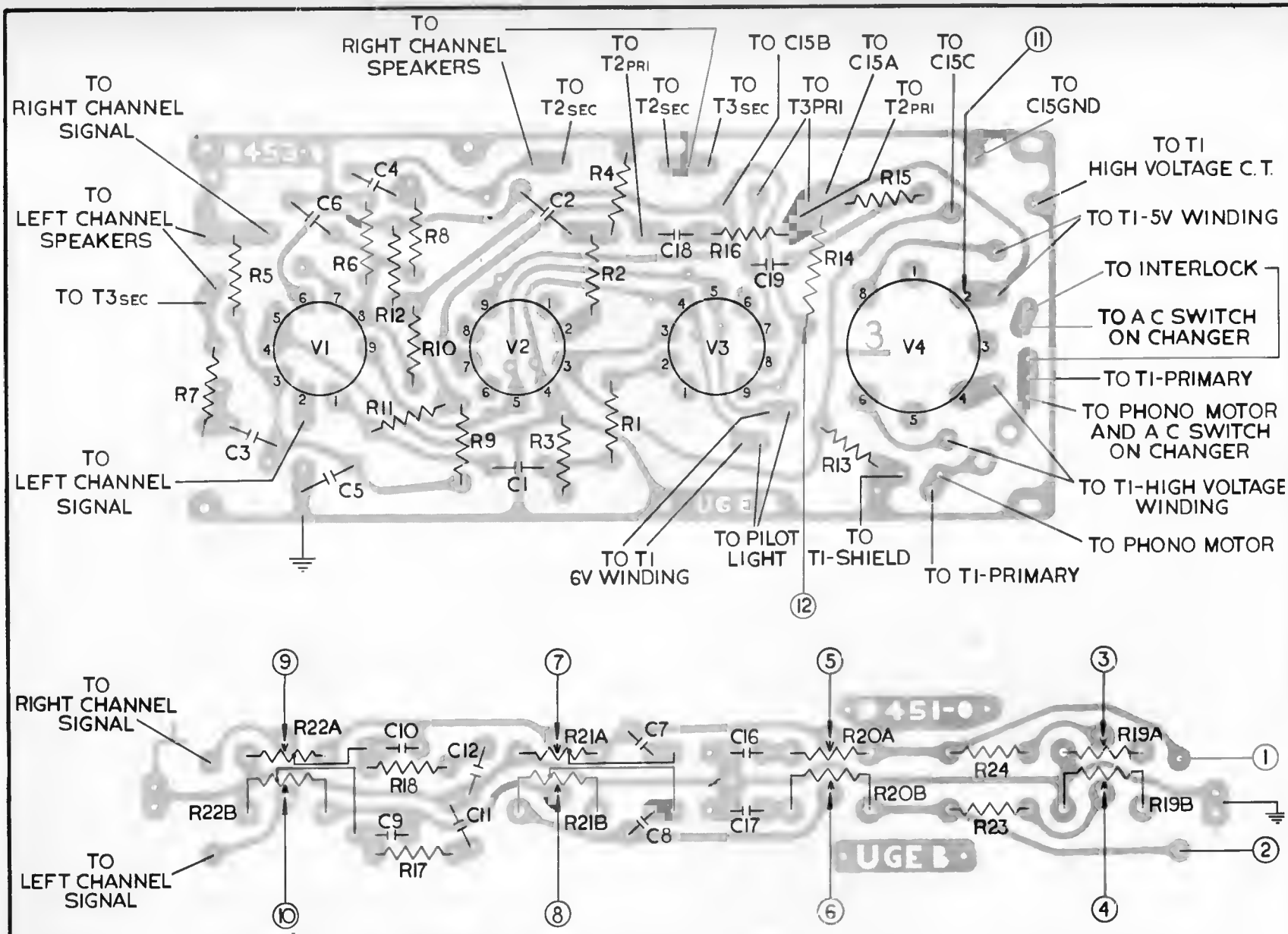
1. Remove the knobs.
2. Follow step one as described in "To Remove Record Changer."
3. Remove the signal plugs from the changer and remove the lead dresser clamp holding the plugs.
4. Remove the foil tape wrapped around S1 and disconnect the plug and cap (S1) by pulling apart.
5. Remove the two 5/16 inch nuts and the one hex head screw holding the shield and control chassis to the cabinet.

TO REMOVE SPEAKERS

1. Follow step one as described in "To Remove Record Changer."
2. Unsolder and label all leads on the speakers to assure proper phasing of the speakers when reassembling.
3. Remove the 5/16 inch nuts holding the speaker and crossover capacitors.

GENERAL ELECTRIC

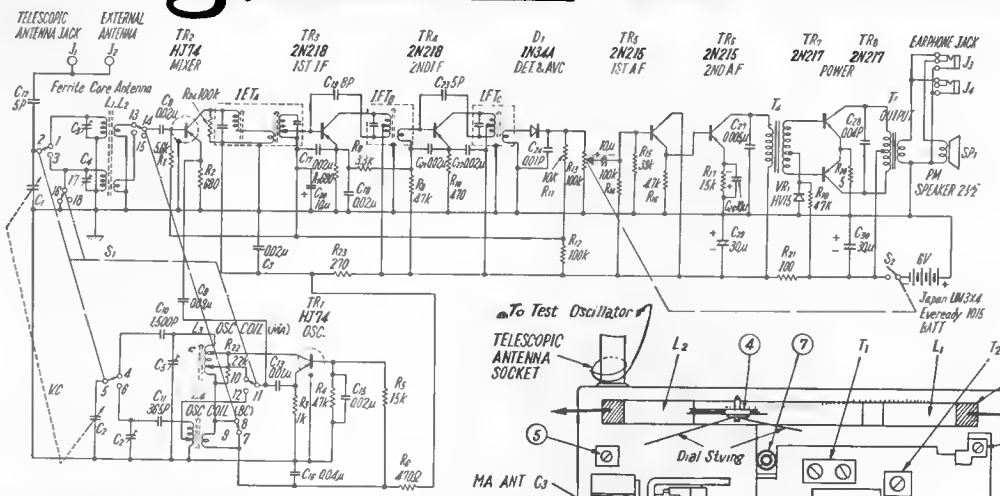
Exact circuit diagram for Models RC1200, RC1201, RC1202, RC1203. Additional Models RP1155A, -C, RP1170, RC1210, RC1211, RC-1212, RC-1213, RP1590A, are almost the same electrically and use identical wiring boards illustrated on the next page adjacent at right.

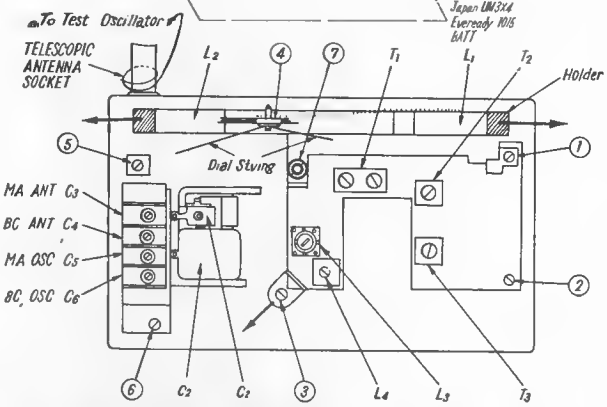


GENERAL ELECTRIC Wiring Boards for Models RP1155A, -C, RP1170, RC1200, RC-1201, RC1202, RC1203, RC1210, RC1211, RC1212, RC1213, RP1590A

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 and 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

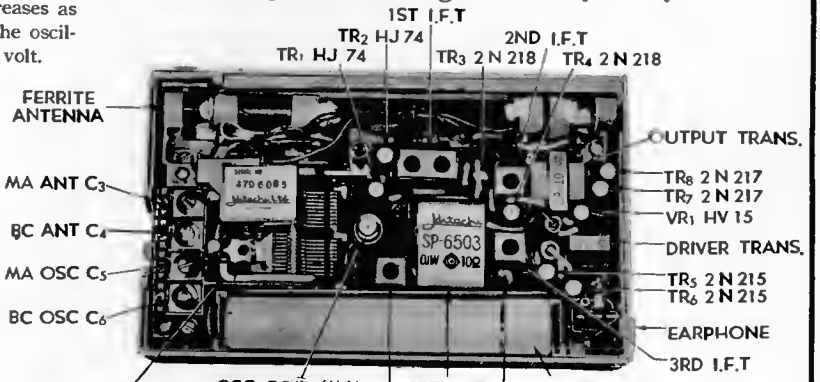
Preparation	Adjust the band switch at BC.		
Adjustment Order	Division on Dial	Oscillator Frequency	Adjustment Place
1	Max. BC Division	455 kc	T3
2	Max. BC Division	455 kc	T2
3	Max. BC Division	455 kc	T1 (Right)
4	Max. BC Division	455 kc	T1 (Left)
5	Max. BC Division	455 kc	Repeat 1-4

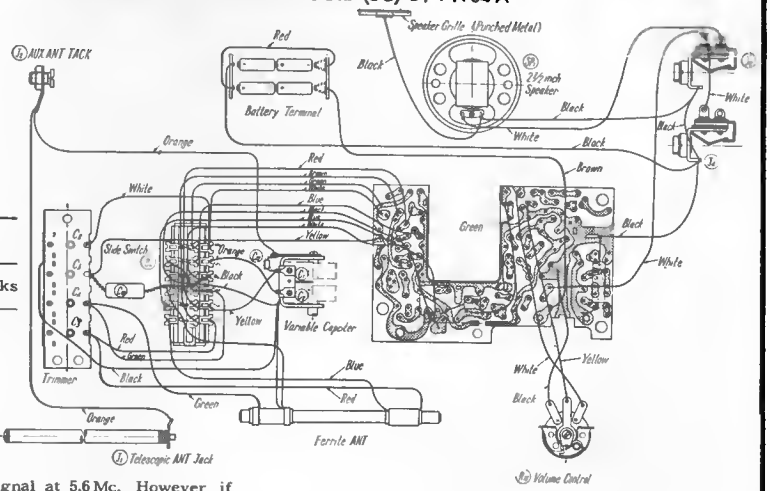
Adjustment of high frequency circuit (BC)

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	Recieve MA 4 Mc	1.65 Mc	L1	
17	Repeat 15 & 16		Repeat 15 & 16	



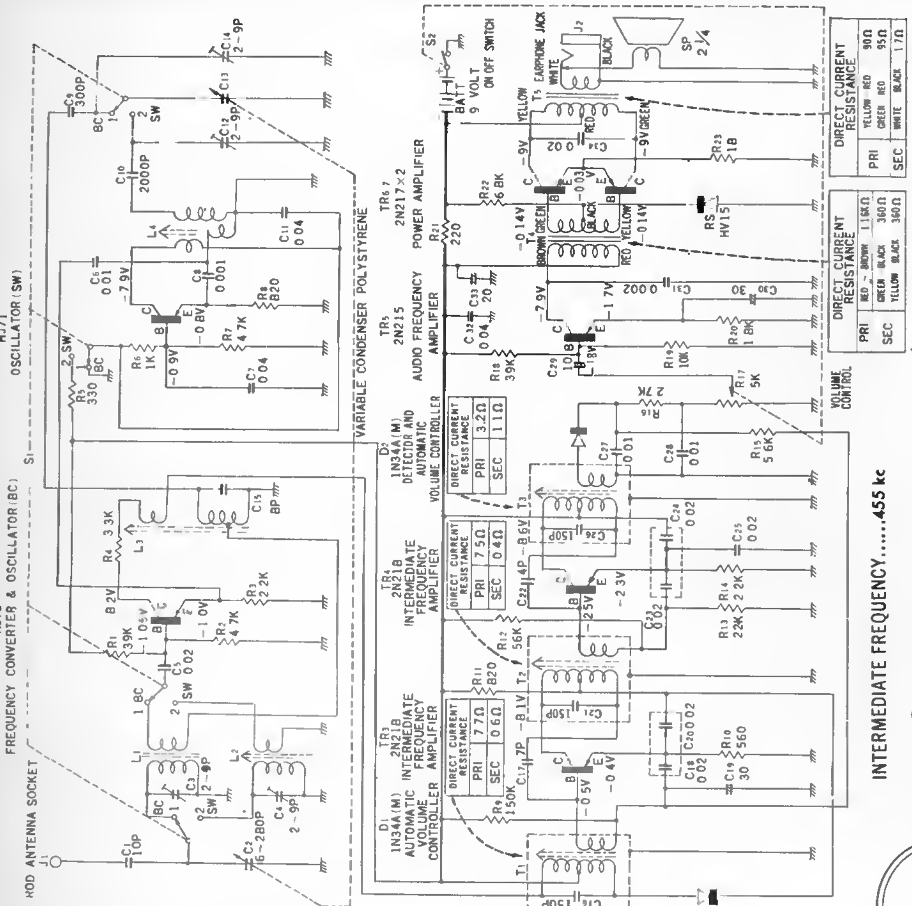


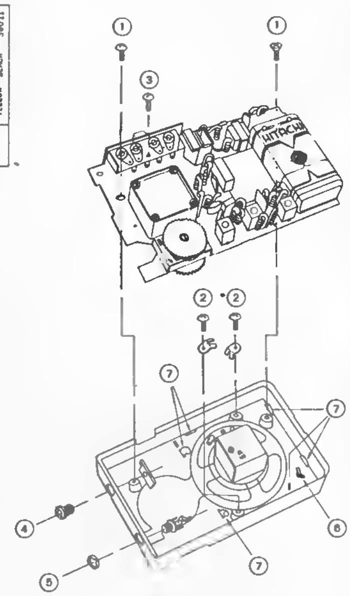
*1. When you adjust 12 & 15, watch image.
When you turn oscillator at 12, it must receive another signal at 5.6 Mc. However, if you receive the signal at 3.8 Mc, you must readjust the oscillator, as it is possible that the signal is tuned with the image. The same applies to 15.

*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.

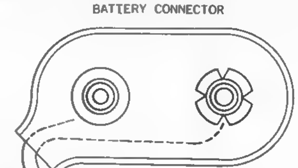
Hitachi, Ltd.

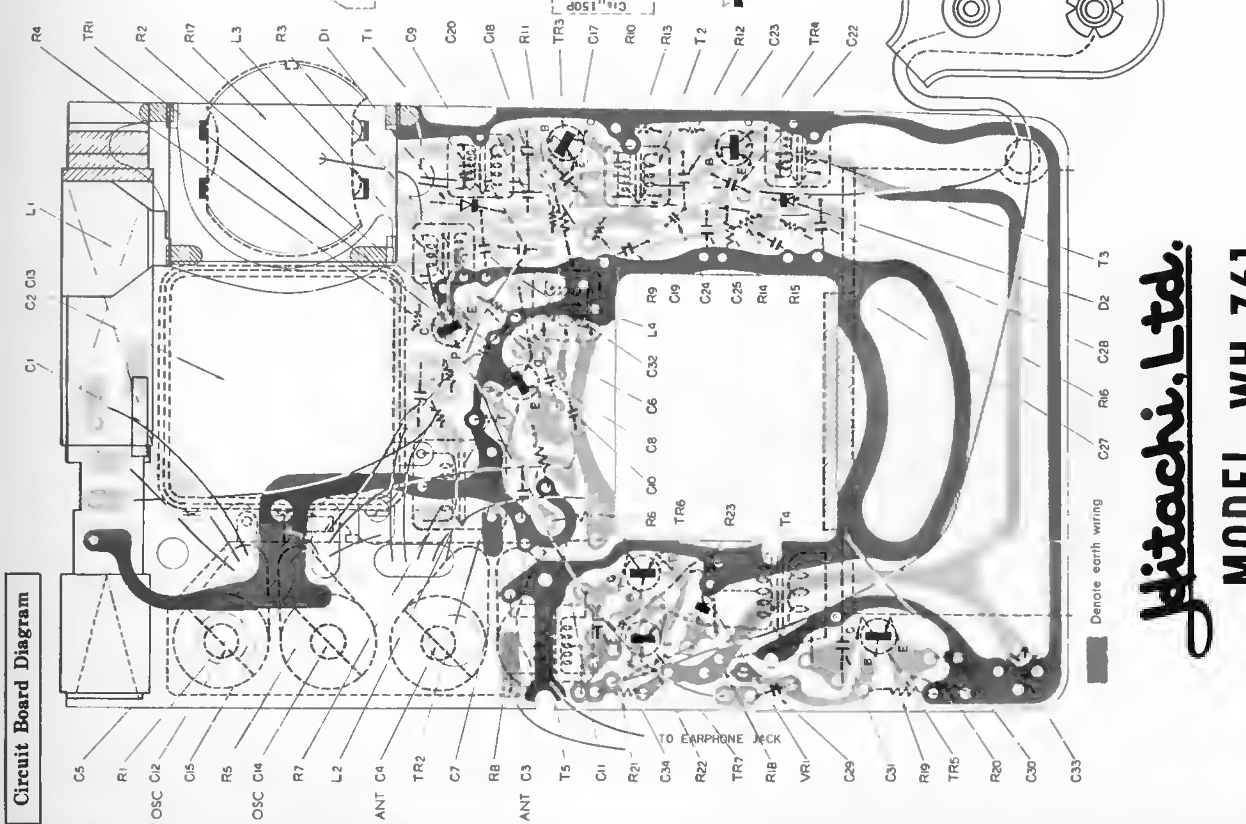
MODEL WH-761



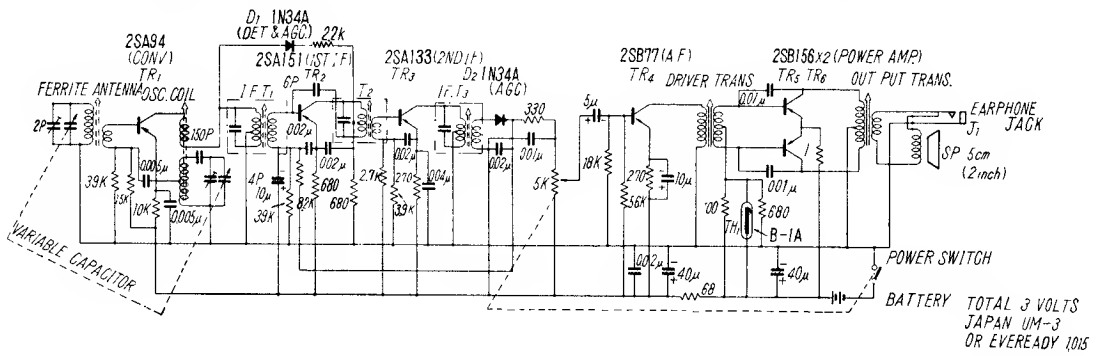


Receiver Assembly





Hitachi, Ltd. Model TH-660 Circuit Schematic Diagram

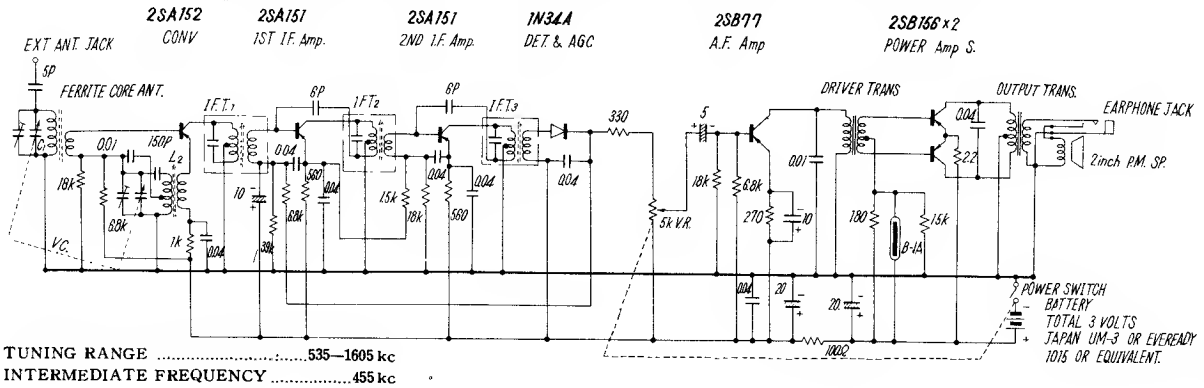


SPECIFICATIONS :

DIMENSIONS ..... 2⅝"W × 3⅛H × 1⅛D
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 (2 nd stages)
- Hitachi Transistor, 2SB77 (A. F. Amp.)
- Hitachi Transistor, 2SB156×2 (Push-pull Power Amp.)

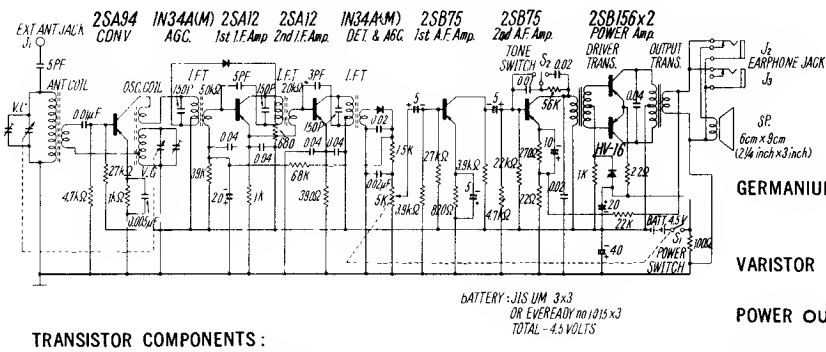
GERMANIUM DIODE ..... Hitachi Crystal Diode. 1N34A (2nd Detector, and Automatic Volume Controller)
THERMISTOR ..... Hitachi Thermistor, B-1A (Temperature Compensator)
POWER OUTPUT ..... 100 mW (Undistorted) 150mW (Maximum)
LOUD SPEAKER ..... 2 inch P. M. Speaker EL-214 can be plugged in.
RECOMMENDED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

Hitachi, Ltd. Model TH-661 Circuit Schematic Diagram



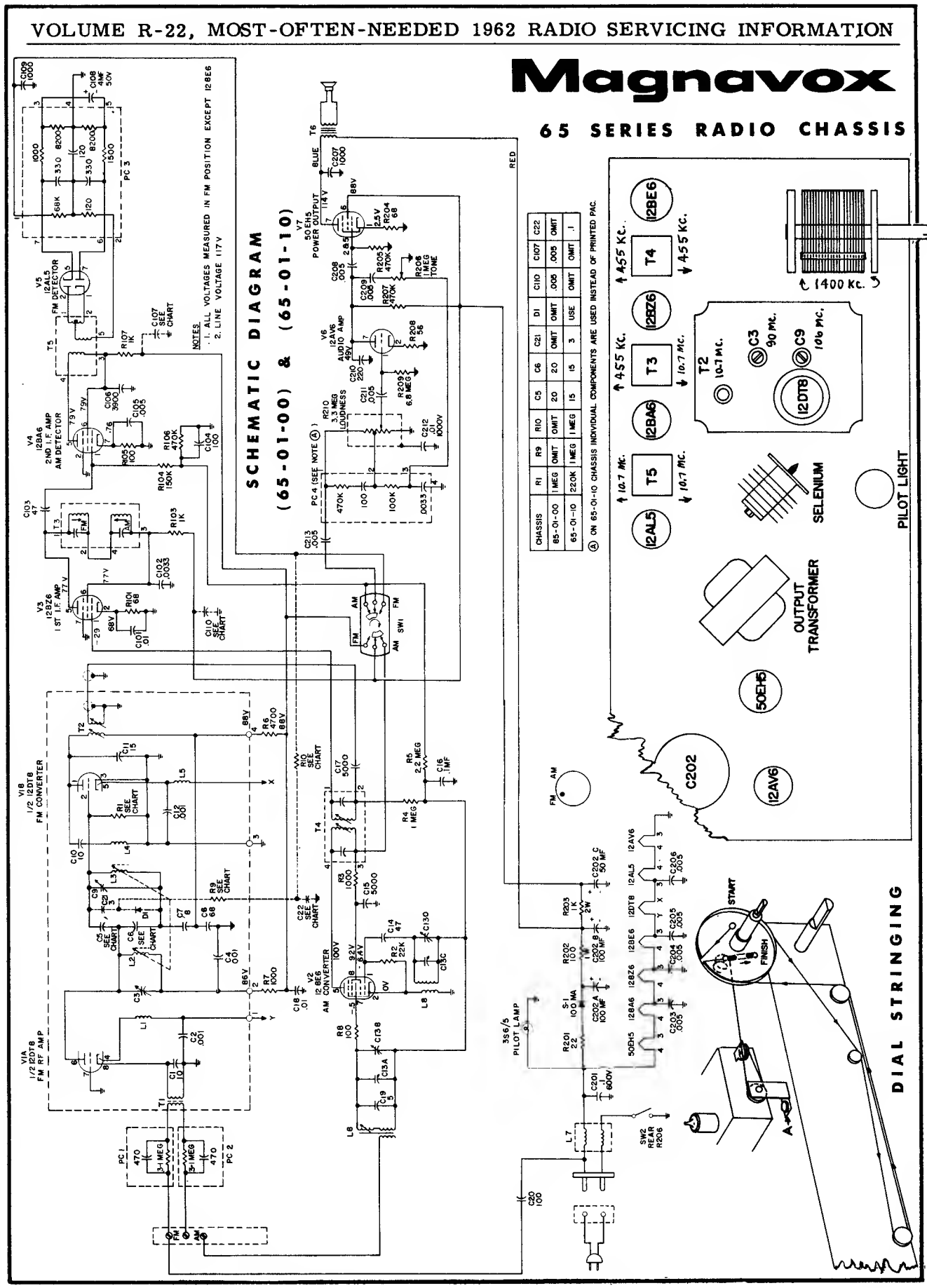
TUNING RANGE ..... 535—1605 kc
INTERMEDIATE FREQUENCY ..... 455 kc

HITACHI 7-Transistor Portable Radio TH-759



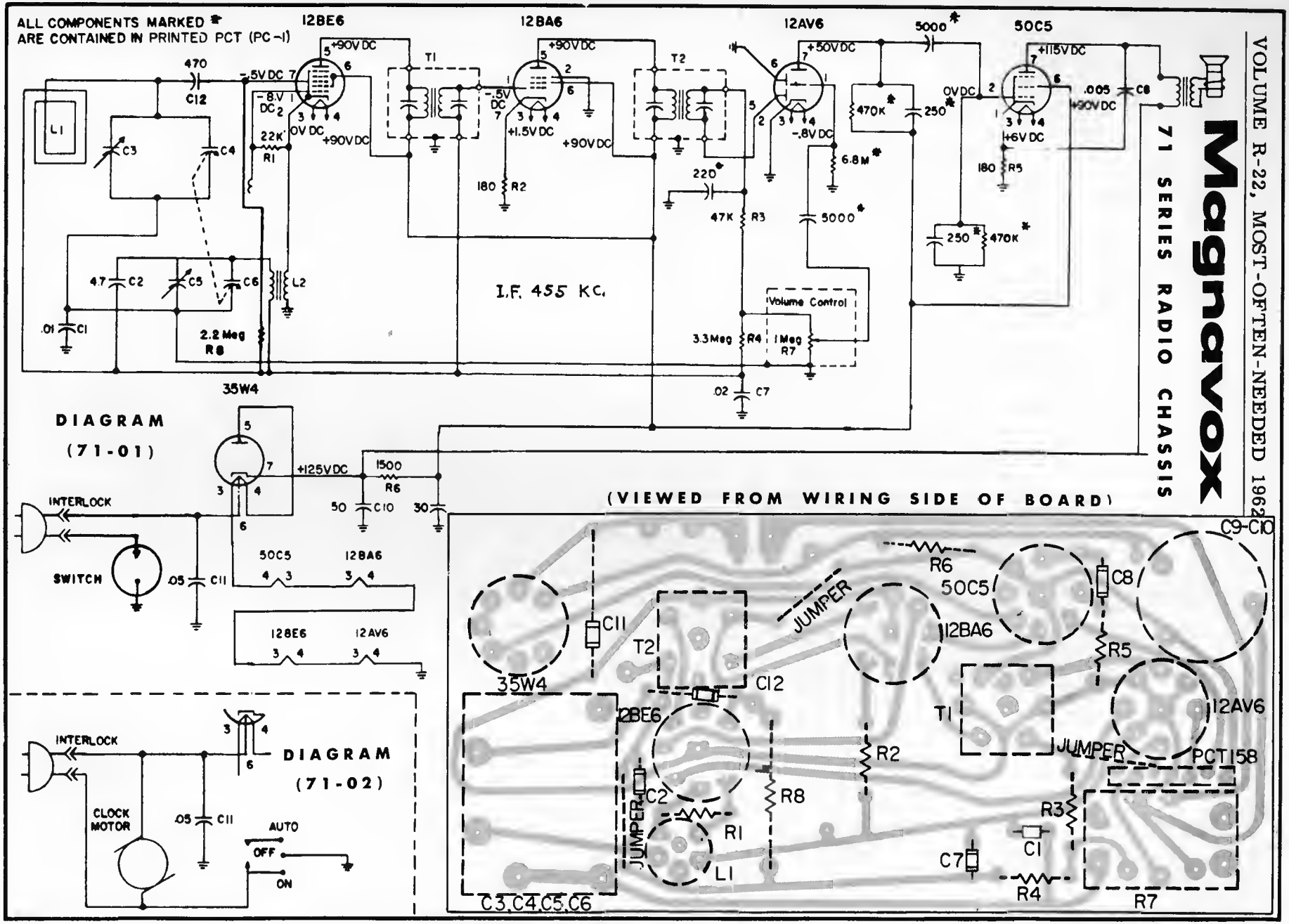
TRANSISTOR COMPONENTS:
- Hitachi Transistor, 2SA 94 (MIX.)
- Hitachi Transistor, 2SA12×2, (I.F. Amp., 2-stage)
- Hitachi Tronsistor, 2SB75×2, (A.F. Amp., 2-stage)
- Hitachi Transistor, 2SB156×2, (Push-pull Power Amp.)

GERMANIUM DIODE ..... Hitachi Crystal Diode, 1N34A (M)×2 (Detector and Automatic Volume Controller)
VARISTOR ..... Hitachi Varistor, HV 16 (Temperature and Voltage Campensator)
POWER OUTPUT ..... 150 mW (Undistorted) 180 mW (Maximum)
LOUD SPEAKER ..... 3 inch×2¼ inch P.M. Speaker.
EARPHONE JACK ..... Hitachi Magnetic Earphone, EL-213, can be plugged in.
RECOMMENDED BATTERY ..... EVEREADY 1015 ar its equivalent.


Magnavox
65 SERIES RADIO CHASSIS
SCHEMATIC DIAGRAM
(65-01-00) & (65-01-10)
NOTES
1. ALL VOLTAGES MEASURED IN FM POSITION EXCEPT 12BE6
2. LINE VOLTAGE 117V
A ON 65-01-10 CHASSIS INDIVIDUAL COMPONENTS ARE USED INSTEAD OF PRINTED PAC.
CHASSIS | R1 | R9 | R10 | C5 | C6 | C21 | D1 | C10 | C107 | C22
85-01-00 | 1 MEG | OMIT | OMIT | 20 | 20 | OMIT | OMIT | .006 | .005 | OMIT
65-01-10 | 220K | 1 MEG | 1 MEG | 15 | 15 | 3 | USE | OMIT | OMIT | .1
12AL5
T5
12BA6
T3
12BZ6
T4
12BE6
T2
10.7 MC.
455 KC.
1400 KC.
C3 90 MC.
C9 106 MC.
12DT8
SELENIUM
PILOT LIGHT
OUTPUT TRANSFORMER
50EH5
12AV6
C202
FM
AM
START
FINISH
DIAL STRINGING

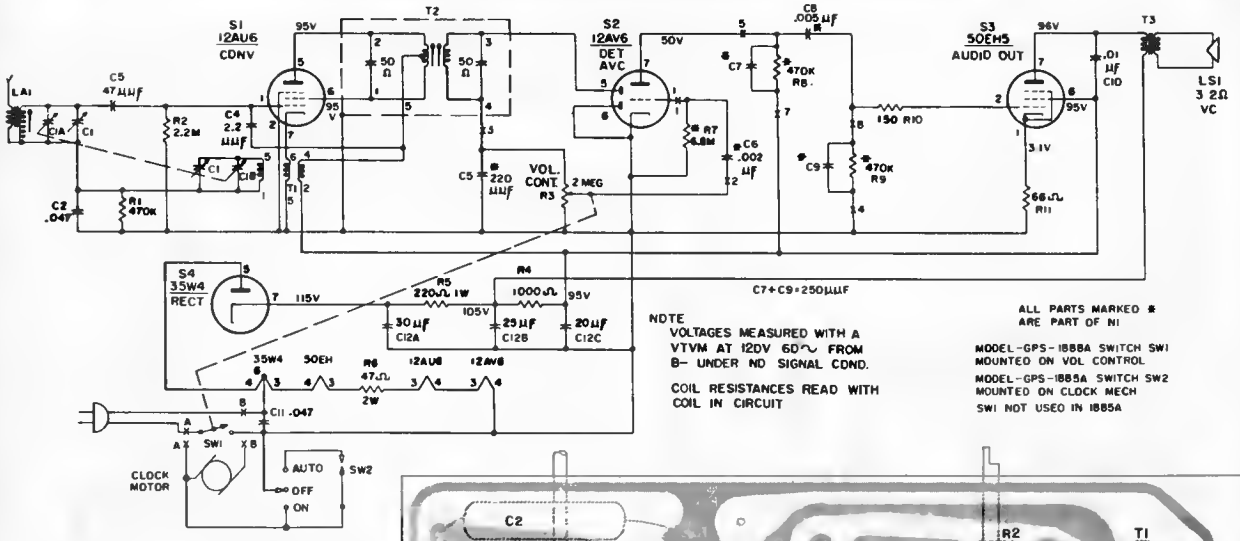
Magnavox

ALL COMPONENTS MARKED * ARE CONTAINED IN PRINTED PCT (PC-1)



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

MODELS GPS–1688A AND GPS–1865A



NOTE
VOLTAGES MEASURED WITH A VTVM AT 120V 60~ FROM B– UNDER NO SIGNAL COND.

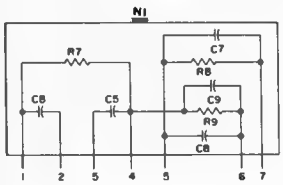
COIL RESISTANCES READ WITH COIL IN CIRCUIT

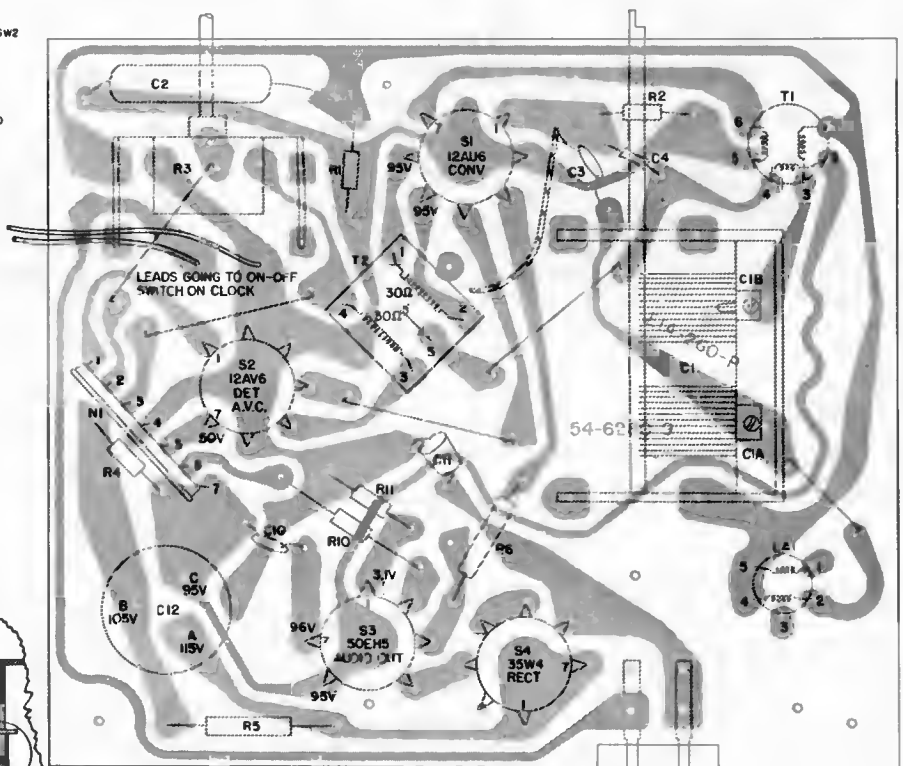
ALL PARTS MARKED * ARE PART OF N1

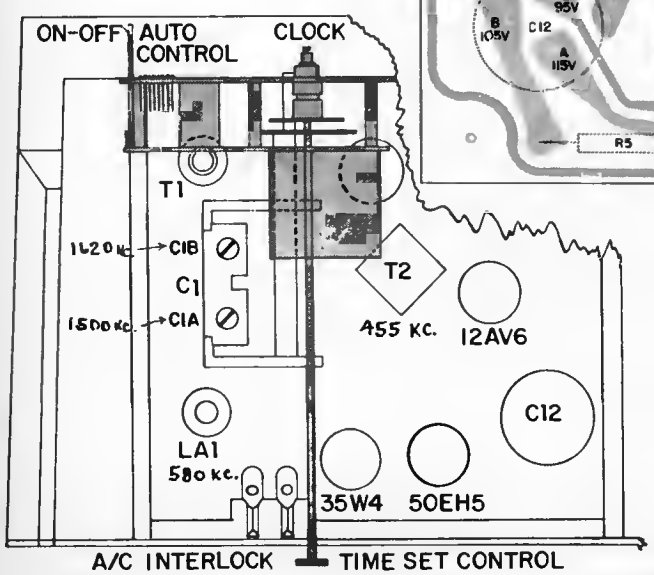
MODEL-GPS-1888A SWITCH SW1 MOUNTED ON VOL CONTROL

MODEL-GPS-1885A SWITCH SW2 MOUNTED ON CLOCK MECH

SW1 NOT USED IN 1885A







CHASSIS–PANEL REMOVAL INFORMATION

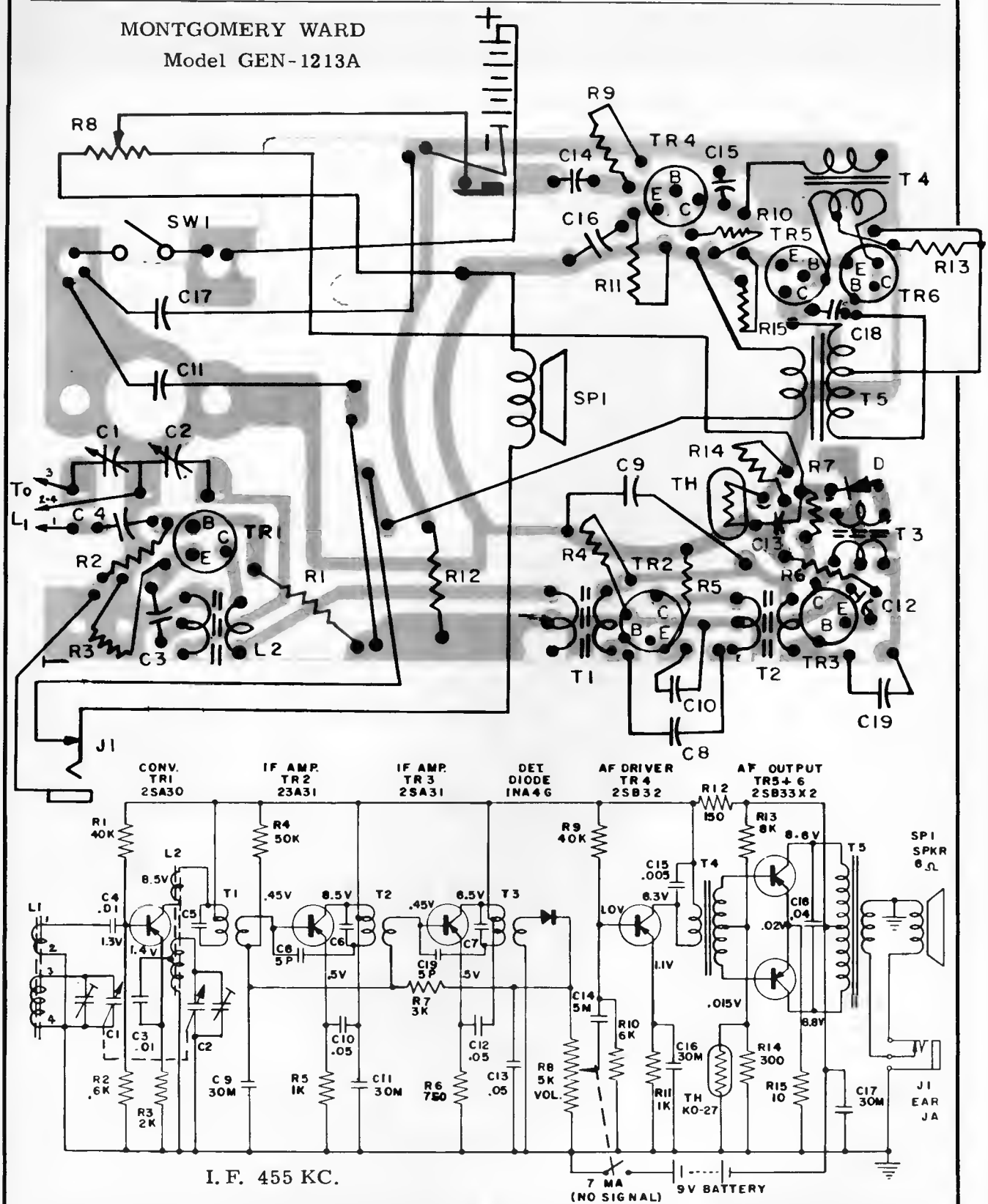
1. Remove the two screws holding on the back, and remove the back.

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).

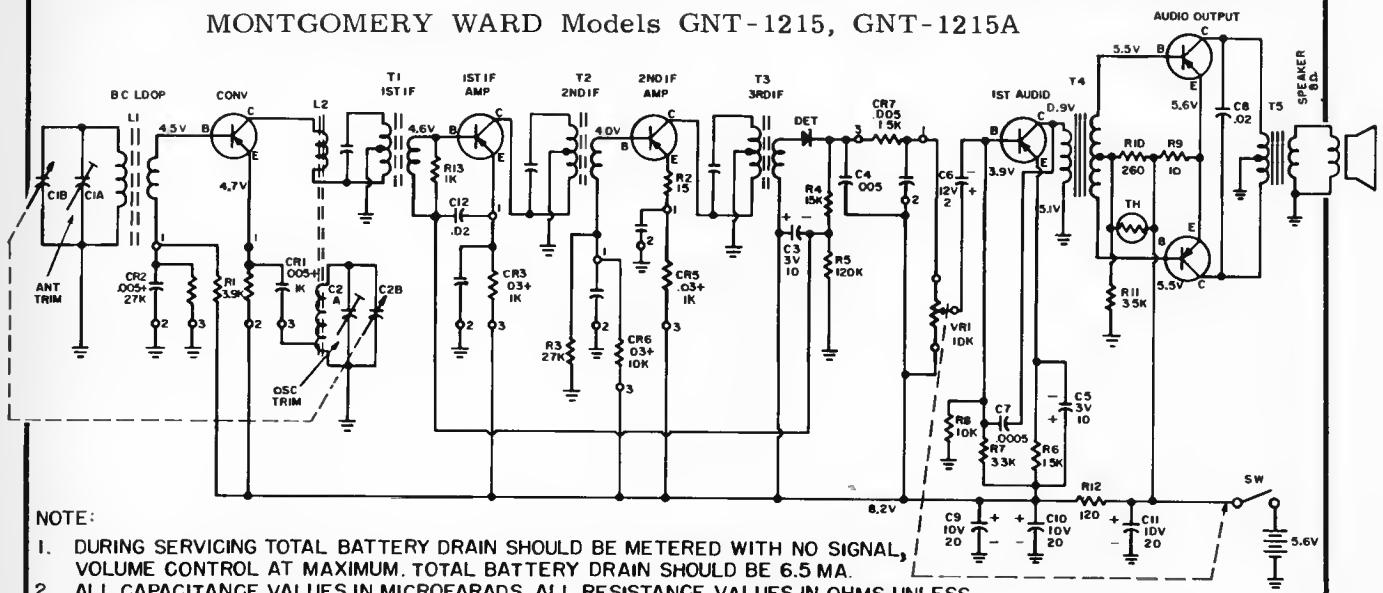
4. Remove Perma-Circuit Panel.

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 ohmeter 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:

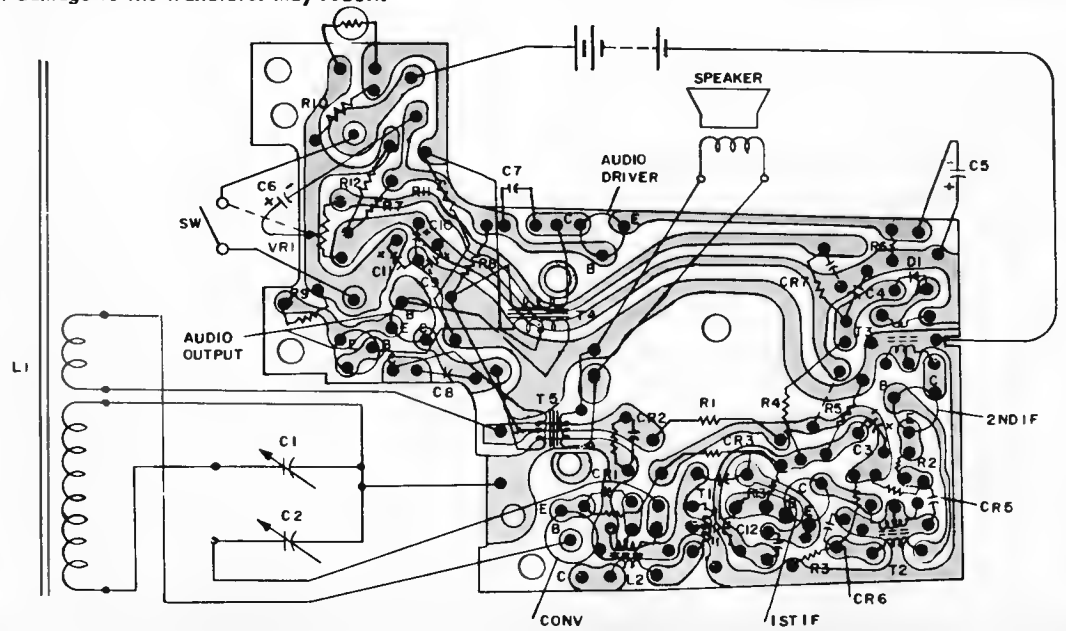
1. DURING SERVICING TOTAL BATTERY DRAIN SHOULD BE METERED WITH NO SIGNAL, VOLUME CONTROL AT MAXIMUM. TOTAL BATTERY DRAIN SHOULD BE 6.5 MA.
2. ALL CAPACITANCE VALUES IN MICROFARADS. ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE MEASUREMENTS MADE WITH A V.T.V.M FROM POINTS INDICATED 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 meosurement and supplementary voltage measurement should be made.

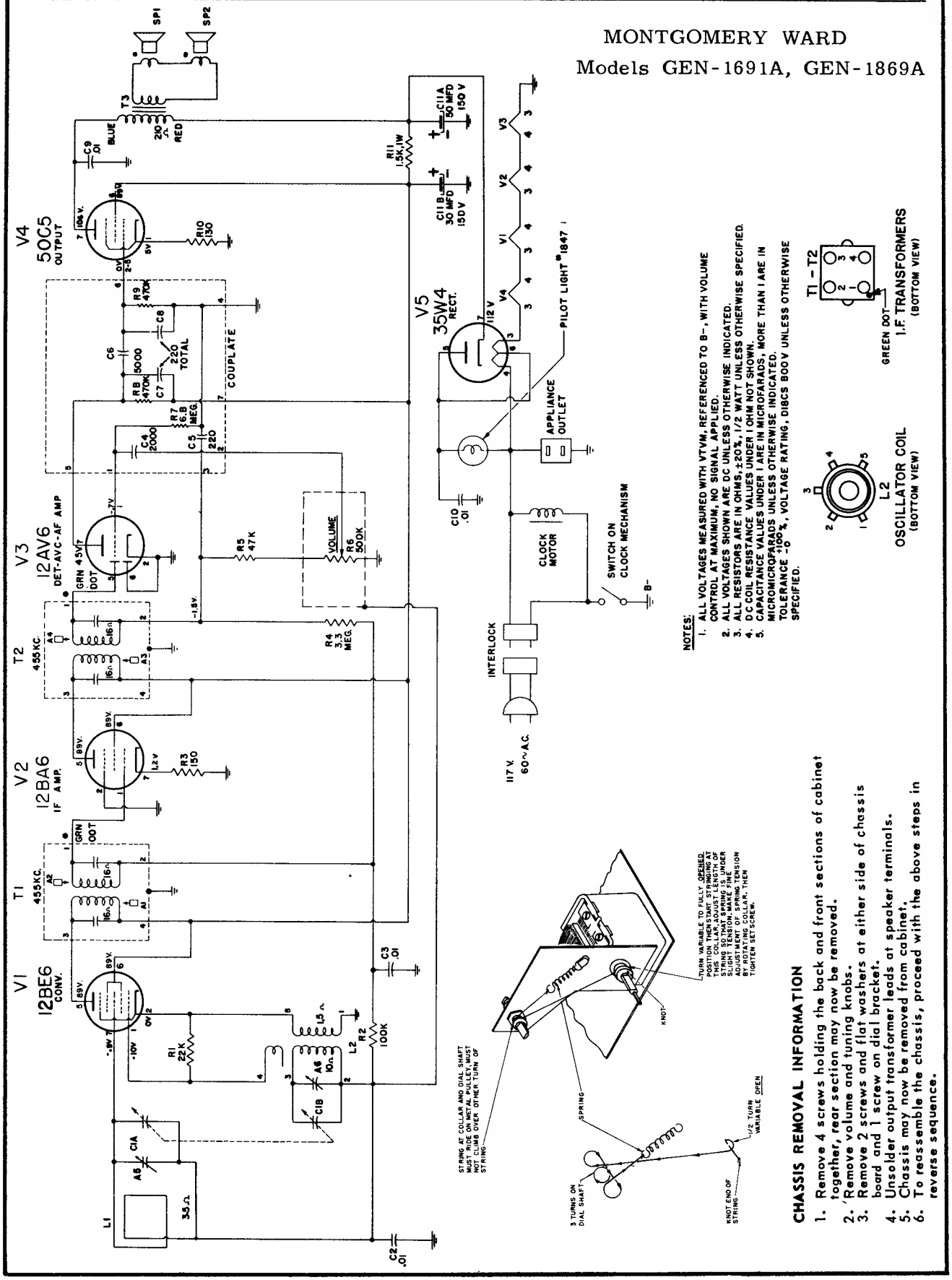
Signol tracing by injection of a signal from o signal generator is done on tronsistor radios in exactly the same manner os has been done for many years with the conventional vacuum tube radios. The signal generator should be connected in series with a capacitor to ovoid shorting out bias voltages. The base of a tronsistor is the signal input terminal (Corresponding to the signal grid of o 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 con not be judged by measurement of a DC voltoge 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 tronsistor 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 offect IF olignment.

Do not short across the base and collector terminals of the tronsistors 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 INDICATED.
3. ALL RESISTORS ARE IN OHMS, ±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. TOLERANCE -0 +100%, VOLTAGE RATING, DISCS 800V 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.

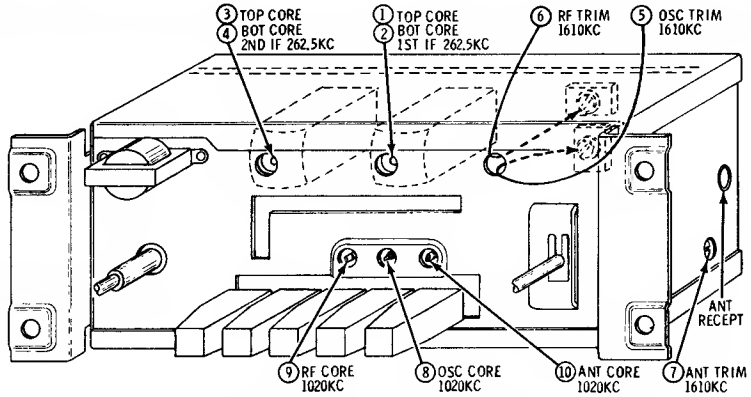
MOTOROLA

MODEL
MOTOROLA
04MI
INTERNATIONAL HARVESTER
244079-R91
24413-R91

POWER TRANSISTOR CURRENT ADJUSTMENT - After replacing a power transistor, measure the collector current of BOTH power transistors and adjust for proper operation.

R18 is used to limit total collector current. In most sets it is a piece of copper wire; in a few sets it is a 1/2 watt carbon resistor, either 27 or 56 ohms.

With 14V input to the radio "A" lead, the total collector current should not exceed 340 ma or be less than 150 ma. When 12.6V is applied to the radio "A" lead, the total collector current must not exceed 260 ma or be less than 120 ma. If the total collector current does not fall within these limits, change the value of R18 as required.



ALIGNMENT POINT LOCATION DETAIL

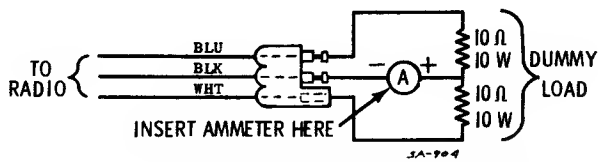
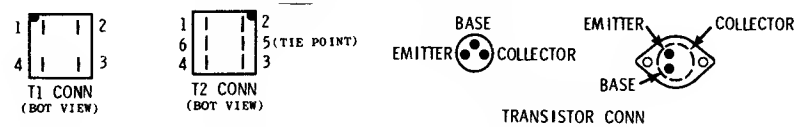
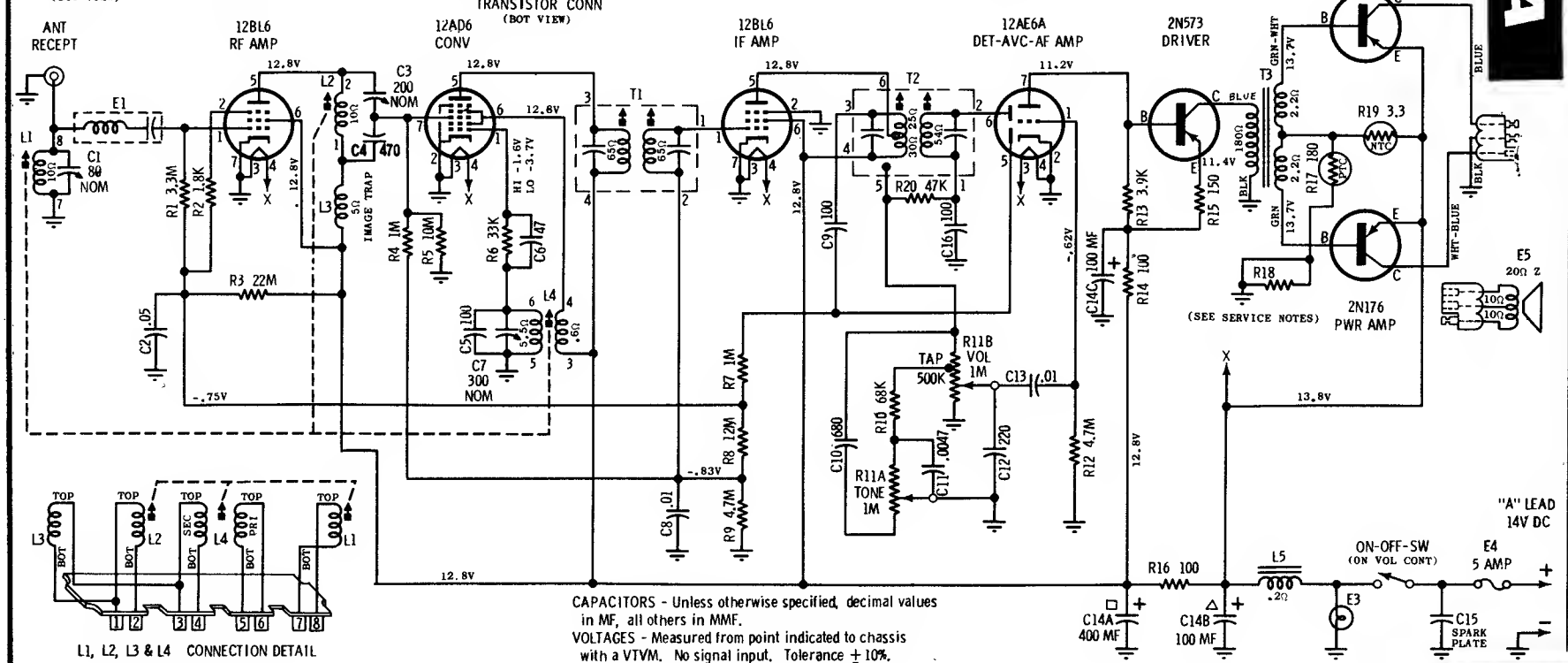


ILLUSTRATION - ADJUSTING TRANSISTOR CURRENT OR OPERATING SET WITHOUT SPEAKER



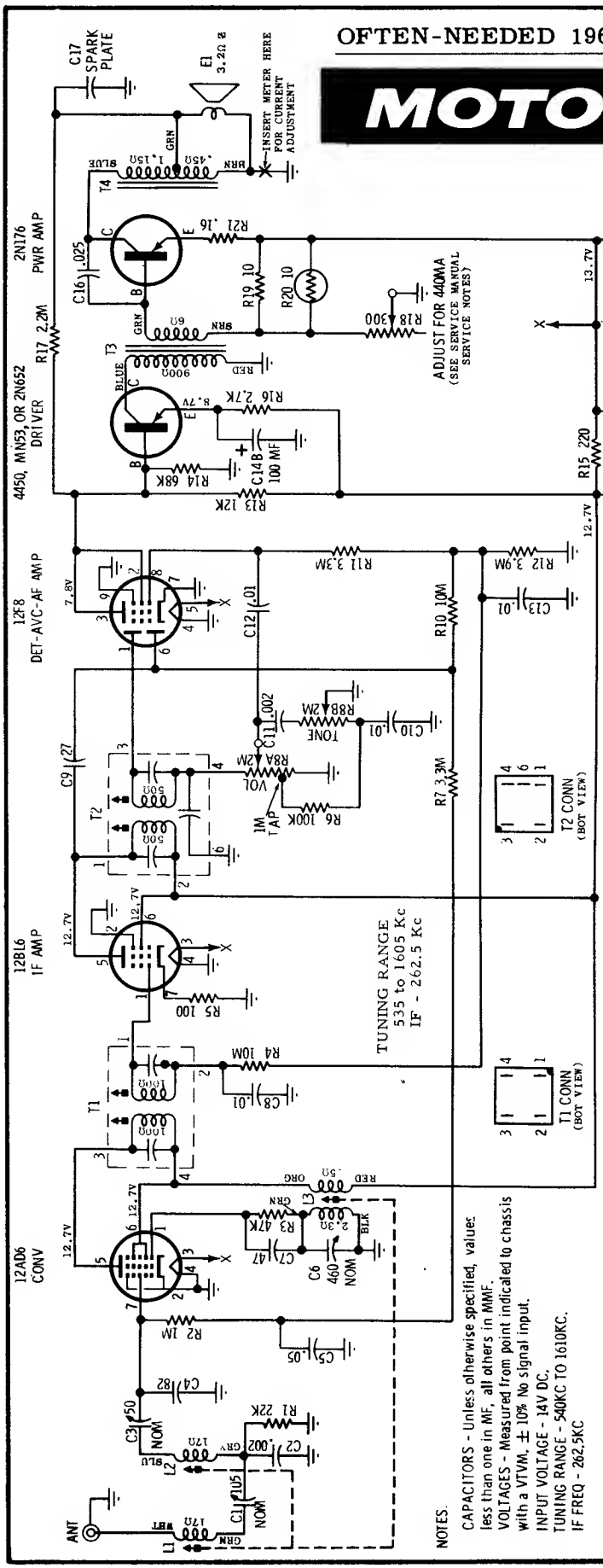


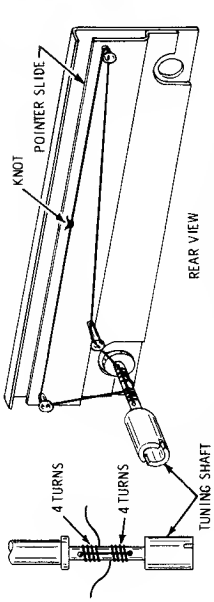
L1, L2, L3 & L4 CONNECTION DETAIL

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

MOTOROLA

MODEL
11MX





DIAL STRINGING DETAIL

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

SERVICE NOTES

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.

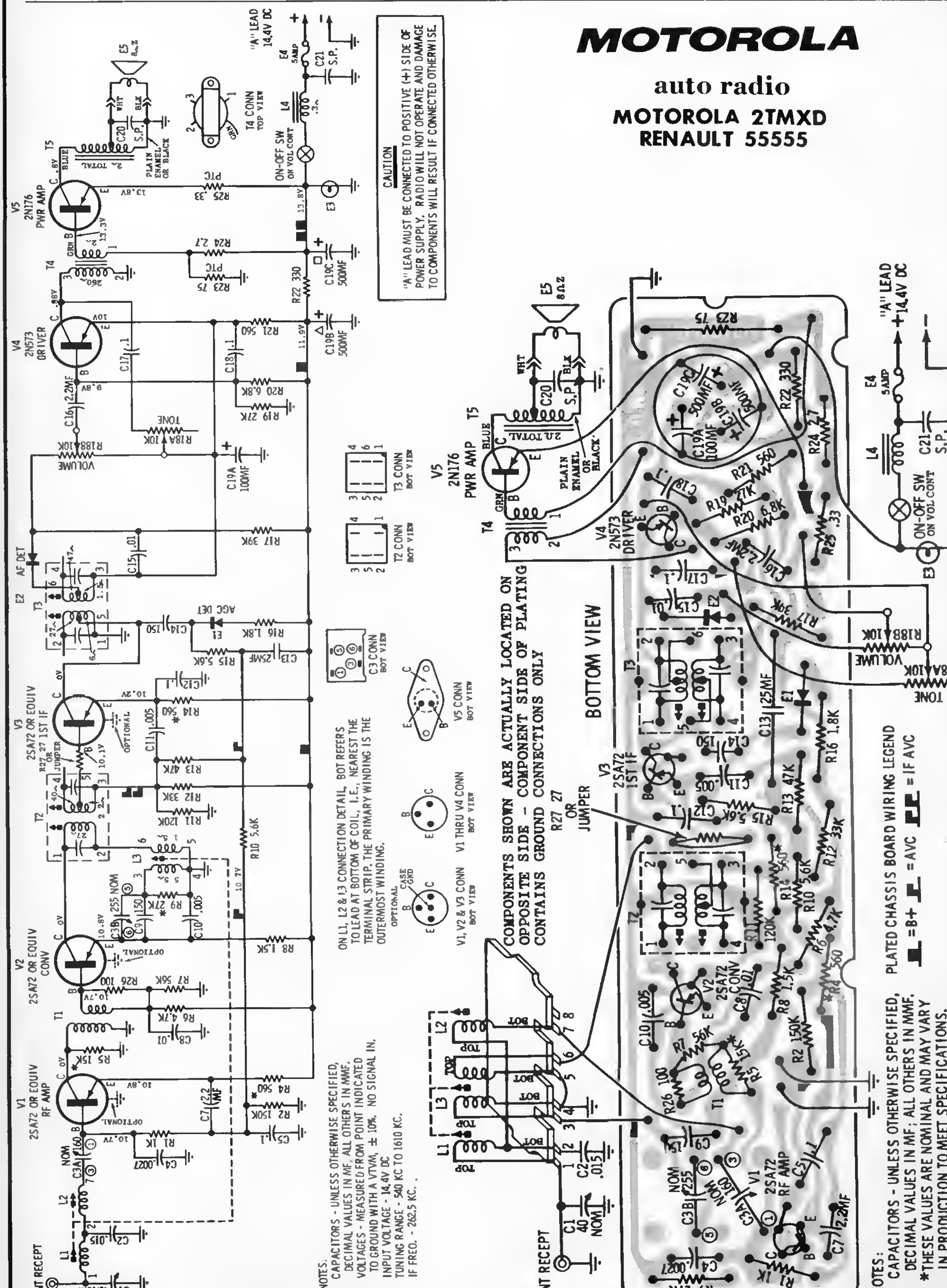
5. DRIVER TRANSISTOR REPLACEMENT - When replacing a driver transistor, grasp the transistor leads (between the transistor body and soldering lug) with a pair of long nose pliers to prevent excessive heating of transistor body during soldering operation.

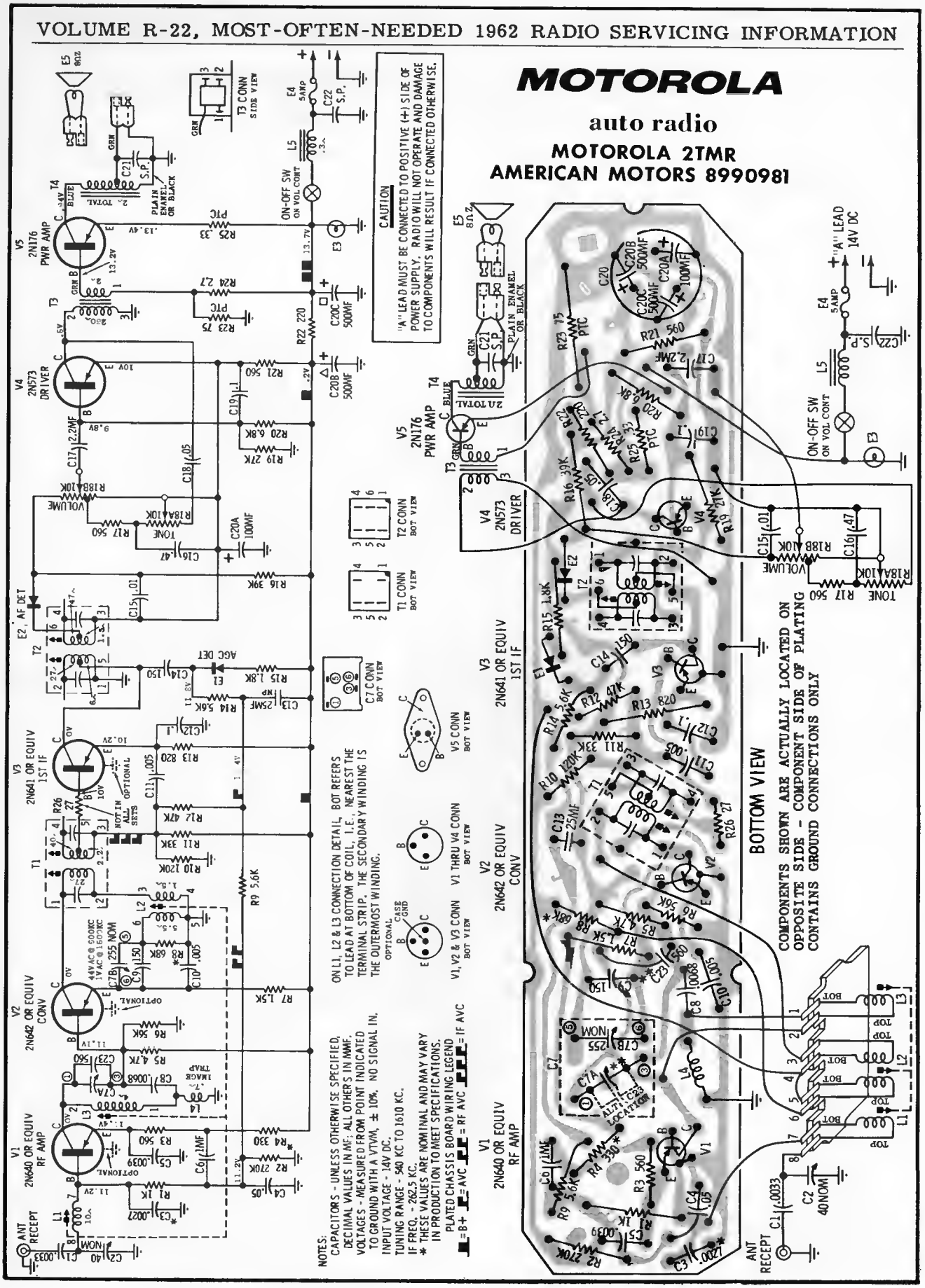
6. POWER TRANSISTOR CURRENT ADJUSTMENT - After a power transistor has been replaced, the collector current should be checked and adjusted for proper operation.
   a. Insert a low range (0-1 or 0-2 amp) DC ammeter in the primary ground return lead of the output transformer (T4). Connect the negative post 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 accomodate different power sources. The current value stated on the Schematic Diagram is for 14 volts input to the radio "A" lead.

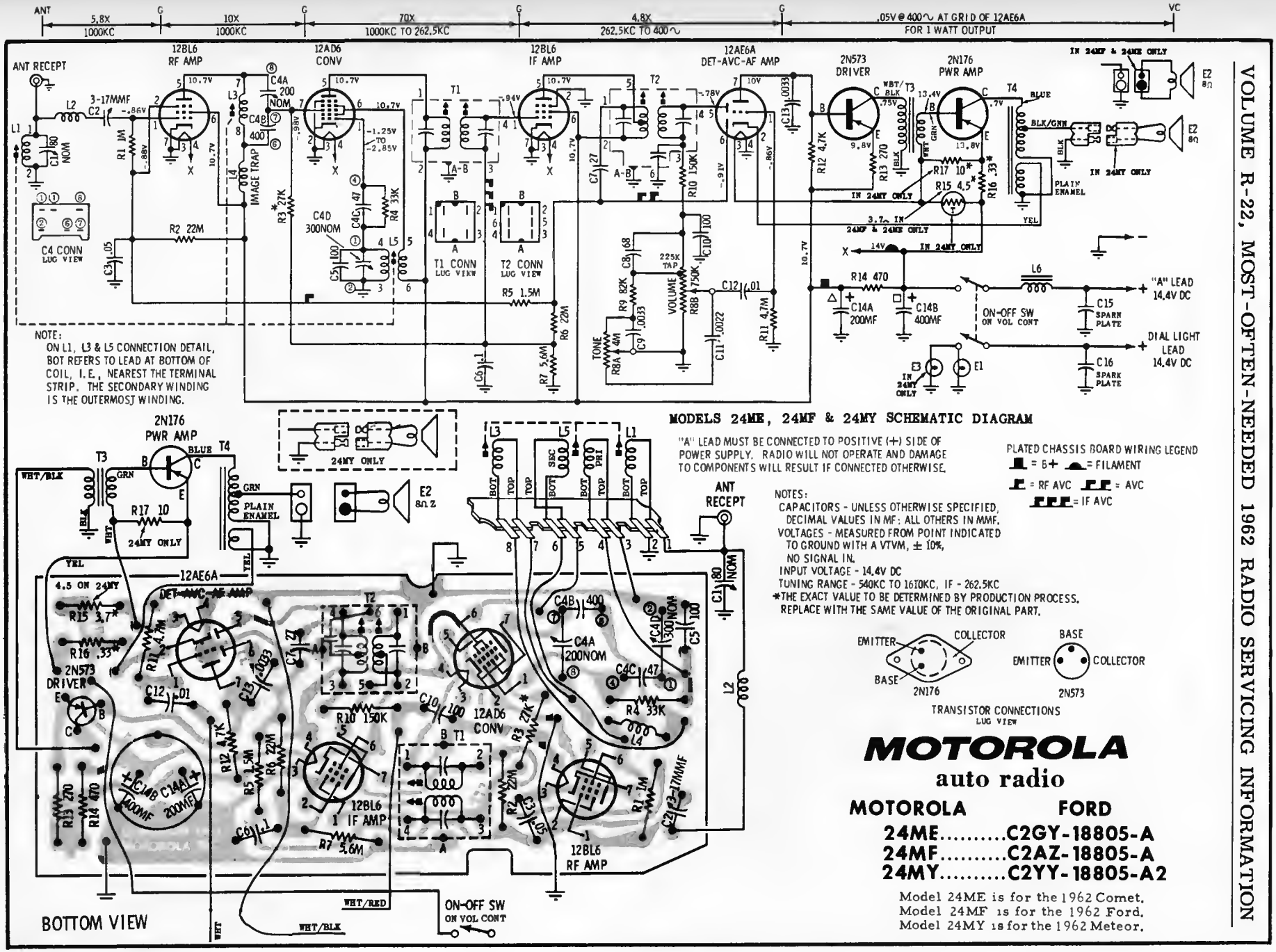
MOTOROLA

auto radio

MOTOROLA 2TMXD
RENAULT 55555




MOTOROLA
auto radio
MOTOROLA 2TMR
AMERICAN MOTORS 8990981
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.
BOTTOM VIEW
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.
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, ± 10%. NO SIGNAL IN.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540 KC TO 1610 KC.
IF FREQ. - 262.5 KC.
* THESE VALUES ARE NOMINAL AND MAY VARY IN PRODUCTION TO MEET SPECIFICATIONS.
PLATED CHASSIS BOARD WIRING LEGEND
B+ = AVC = RF AVC = IF AVC
ON L1, L2 & L3 CONNECTION DETAIL, BOT REFERS TO LEAD AT BOTTOM OF COIL, I.E., NEAREST THE TERMINAL STRIP. THE SECONDARY WINDING IS THE OUTERMOST WINDING.
V1 2N640 OR EQUIV RF AMP
V2 2N642 OR EQUIV CONV
V3 2N641 OR EQUIV 1ST IF
V4 2N573 DRIVER
V5 2N176 PWR AMP
T1 CONN BOT VIEW
T2 CONN BOT VIEW
T3 CONN SIDE VIEW
C7 CONN BOT VIEW
V1, V2 & V3 CONN BOT VIEW
V1 THRU V4 CONN BOT VIEW
V5 CONN BOT VIEW
ANT RECEPT
AGC DET
AF DET
ON-OFF SW ON VOL CONT
"A" LEAD 14V DC
VOLUME
TONE



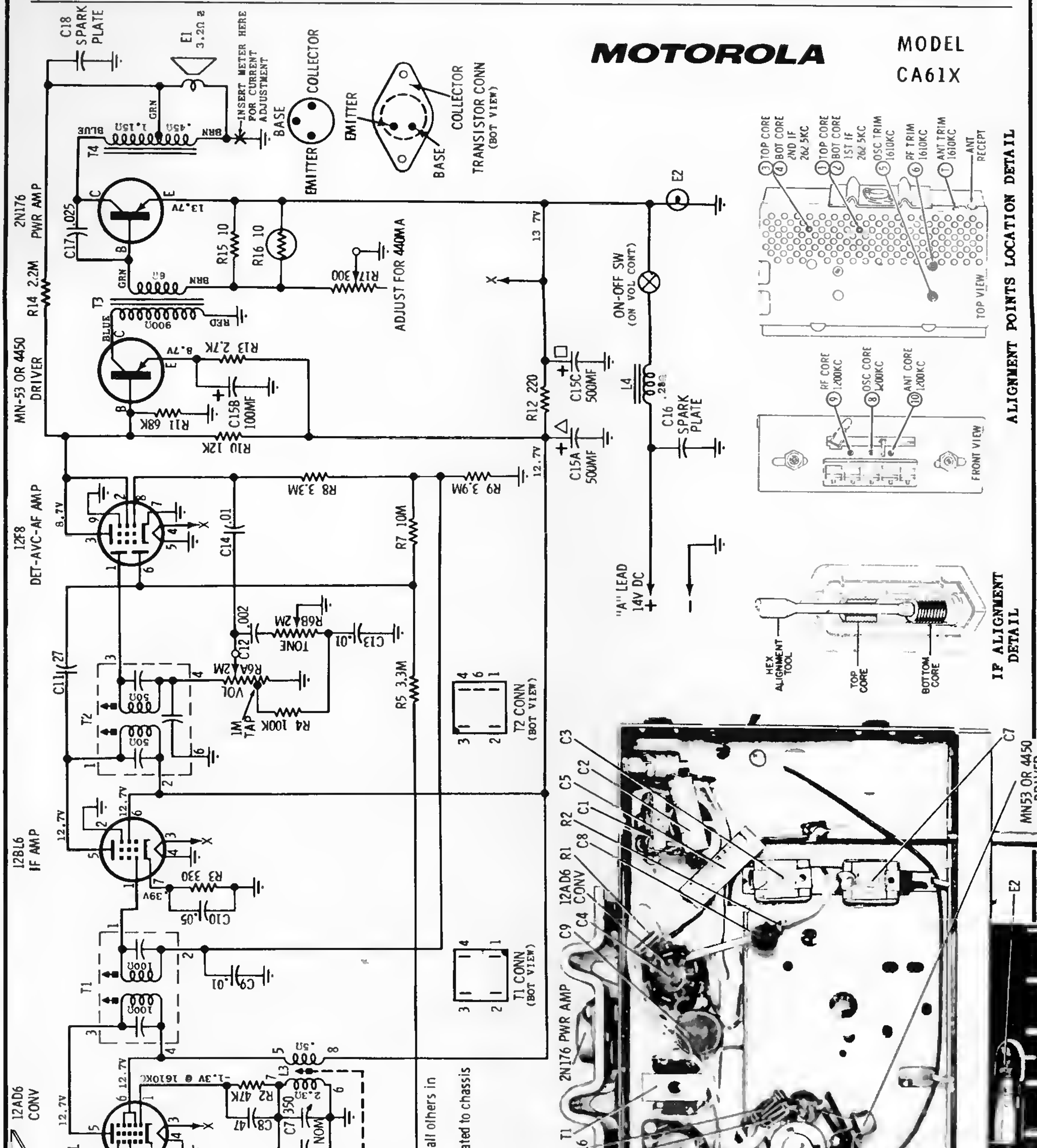
MOTOROLA
auto radio

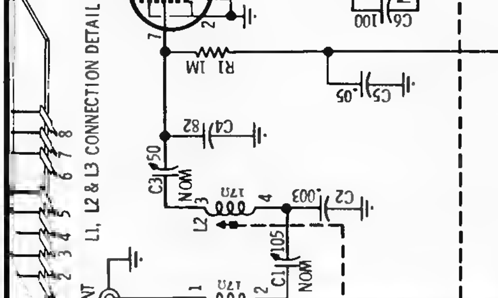
MOTOROLA	FORD
24ME.....	C2GY-18805-A
24MF.....	C2AZ-18805-A
24MY.....	C2YY-18805-A2

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

MOTOROLA

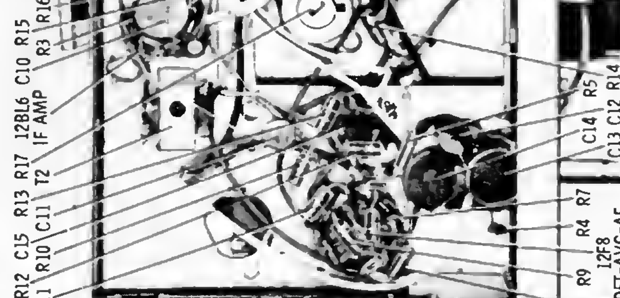
MODEL CA61X

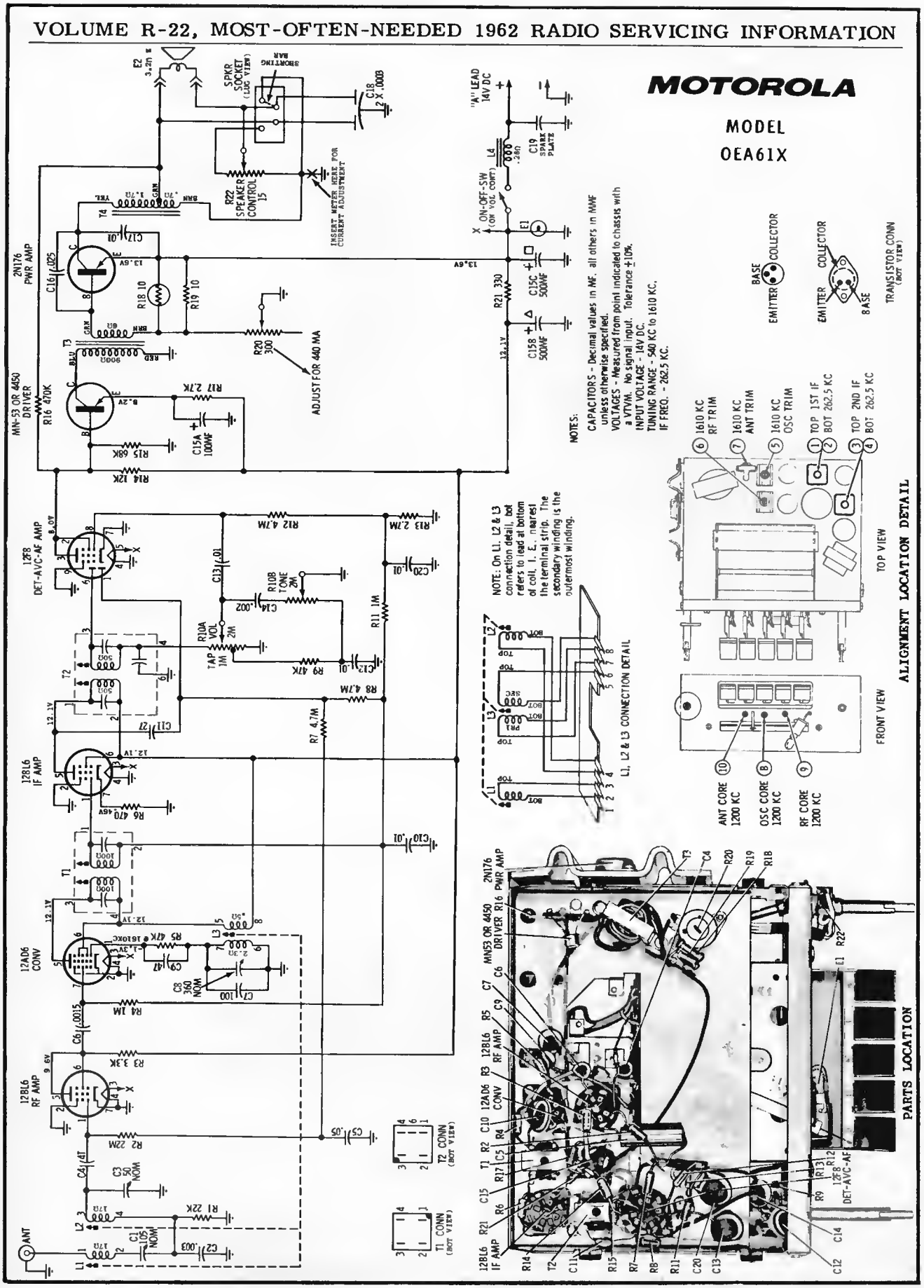


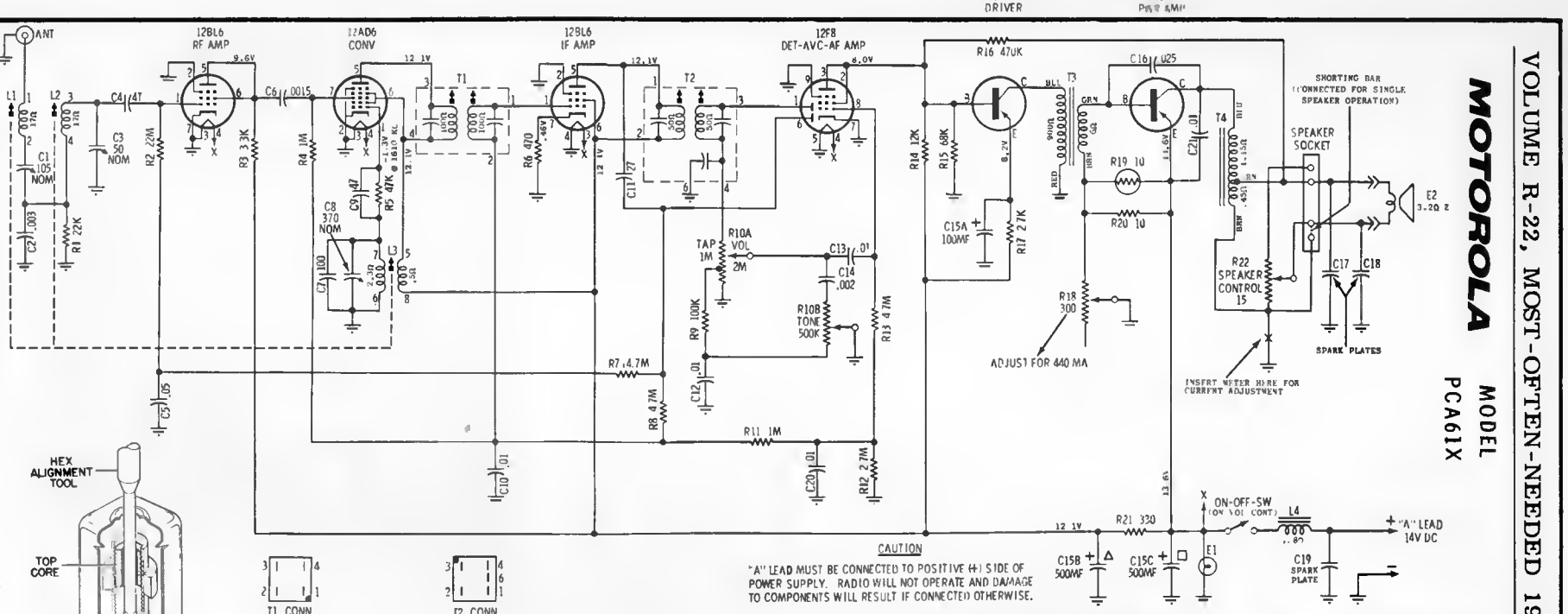


NOTES:

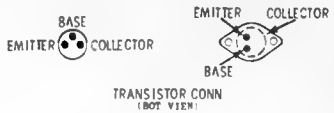
CAPACITORS - Decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM. ± 10% No signal input.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540KC TO 1610KC.
IF FREQ - 262.5KC




MOTOROLA
MODEL
OEA61X
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 ±10%.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540 KC to 1610 KC.
IF FREQ. - 262.5 KC.
ADJUST FOR 440 MA
INSERT METER HERE FOR CURRENT ADJUSTMENT
NOTE: On L1, L2 & L3 connection detail, dot refers to lead at bottom of coil, i. e., nearest the terminal strip. The secondary winding is the outermost winding.
L1, L2 & L3 CONNECTION DETAIL
ALIGNMENT LOCATION DETAIL
TOP VIEW
FRONT VIEW
1610 KC RF TRIM
1610 KC ANT TRIM
1610 KC OSC TRIM
TOP 1ST IF BOT 262.5 KC
TOP 2ND IF BOT 262.5 KC
ANT CORE 1200 KC
OSC CORE 1200 KC
RF CORE 1200 KC
TRANSISTOR CONN (BOT VIEW)
BASE
EMITTER
COLLECTOR
PARTS LOCATION
2N176 PWR AMP
MN53 OR 4450 DRIVER
12BL6 RF AMP
12AD6 CONV
12BL6 IF AMP
12F8 DET-AVC-AF
T1 CONN (BOT VIEW)
T2 CONN (BOT VIEW)

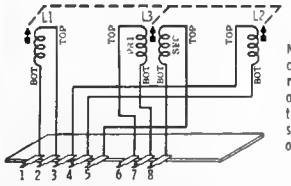


IF ALIGNMENT DETAIL



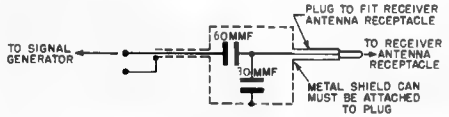
NOTES:

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 ±10%.
INPUT VOLTAGE - 14V DC.
TUNING RANGE - 540 KC to 1610 KC.
IF FREQ. - 262.5 KC.

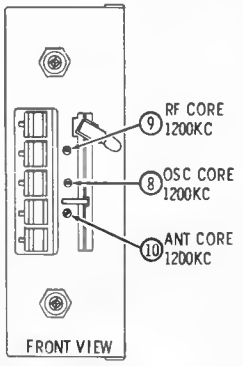


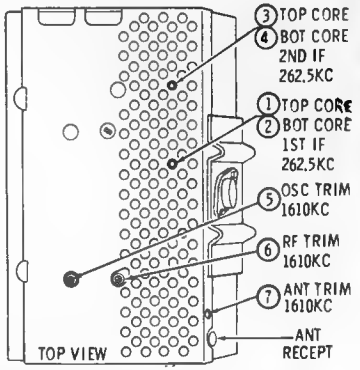
L1, L2 & L3 CONNECTION DETAIL

NOTE On L1, L2 & L3 connection detail, bot refers to lead at bottom of coil, i. E., nearest the terminal strip. The secondary winding is the outermost winding.

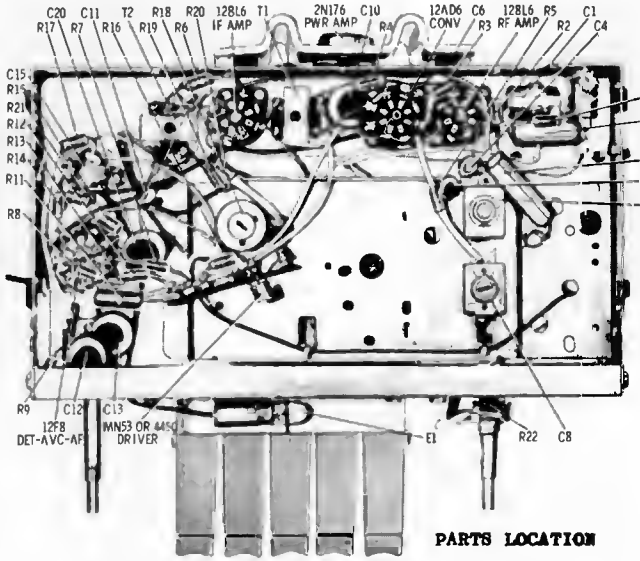


DUMMY ANTENNA DETAIL





ALIGNMENT LOCATION DETAIL



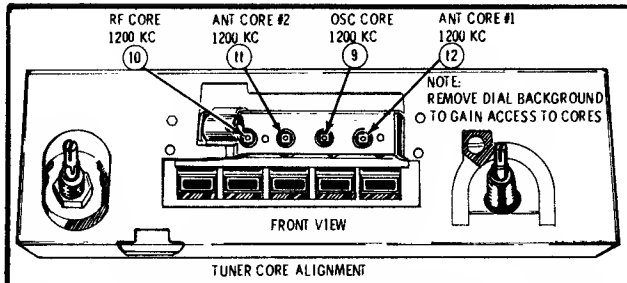
PARTS LOCATION

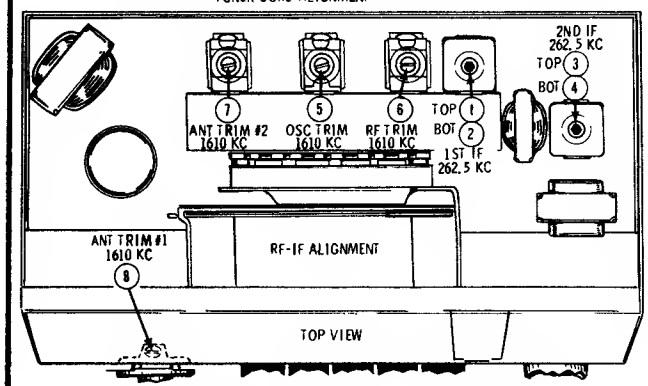
MOTOROLA Auto Radio Model PCA61X

MOTOROLA auto radio

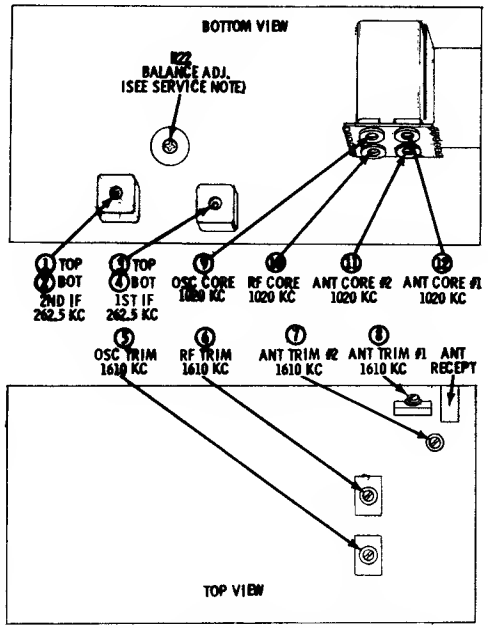
CTA62
CTM62

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

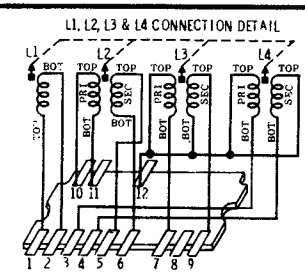




CTA62 ALIGNMENT LOCATION DETAIL

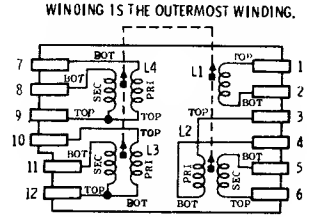


CTM62 ALIGNMENT LOCATION DETAIL

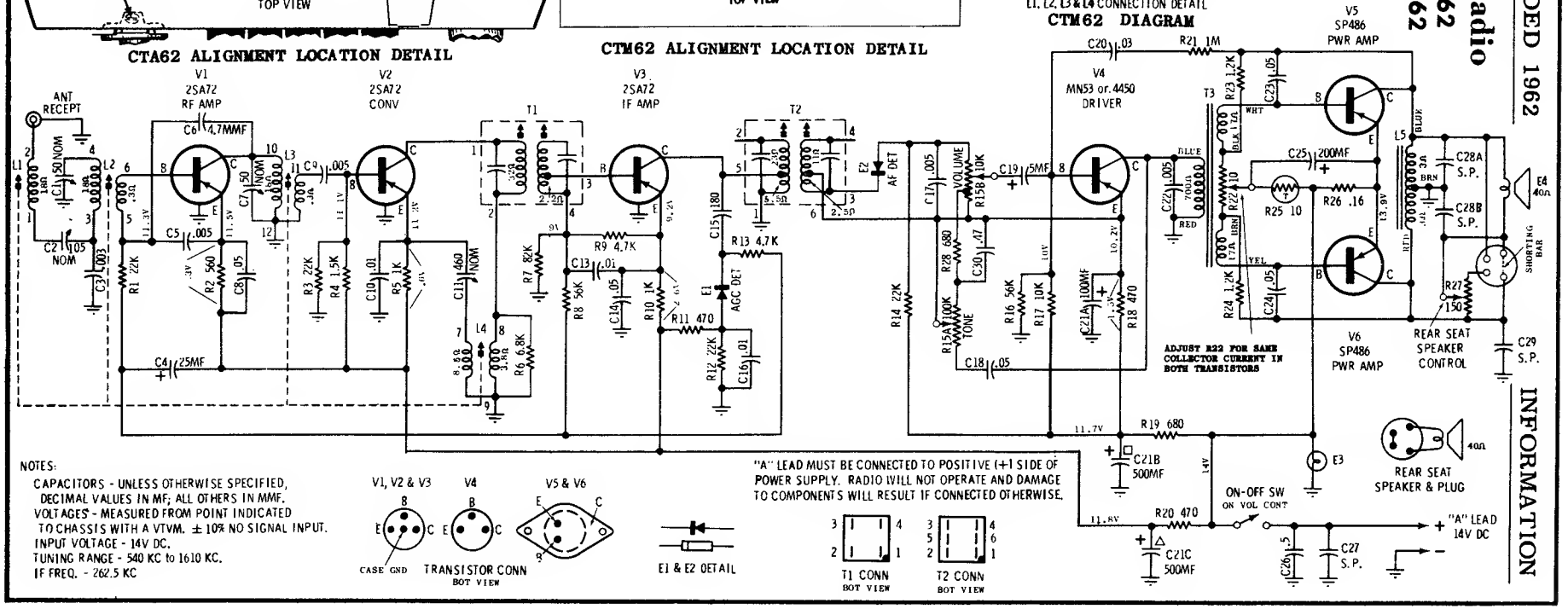


CTA62 DIAGRAM

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



NOTES:
- CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
- VOLTAGES - MEASURED FROM POINT INDICATED TO CHASSIS WITH A VTVM. ± 10% NO SIGNAL INPUT.
- INPUT VOLTAGE - 14V DC.
- 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.

MOTOROLA

auto radio

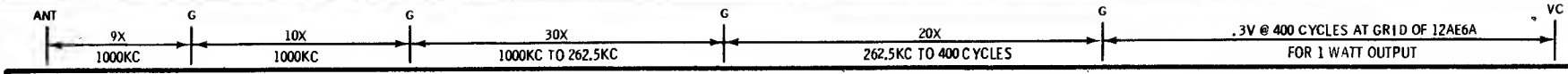
MOPAR 117,119,120

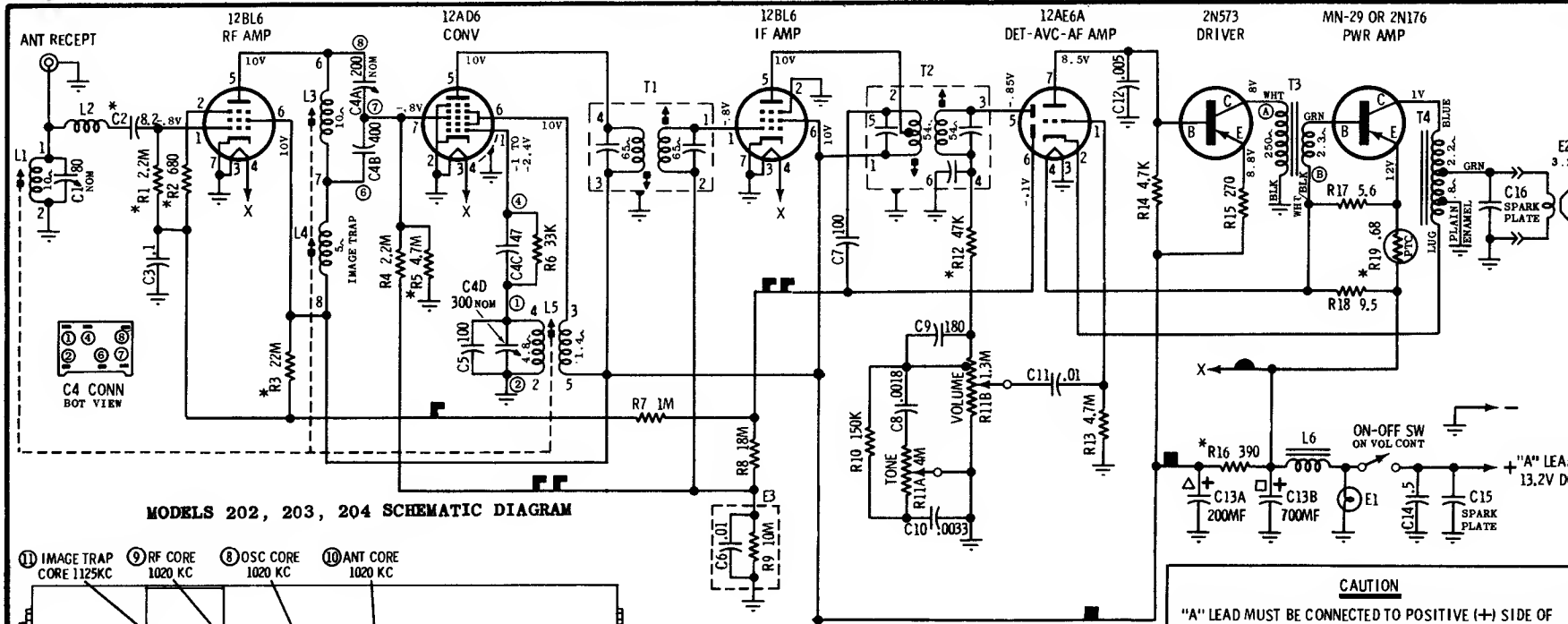
NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, ± 10%. NO SIGNAL IN.
INPUT VOLTAGE - 13.2V DC
TUNING RANGE - 540KC TO 1610KC, IF - 262.5KC
ON L1, L2 & L3 CONNECTION DETAIL, BOT REFERS TO LEAD AT BOTTOM OF COIL. I.E., NEAREST THE TERMINAL STRIP. THE SECONDARY WINDING IS THE OUTERMOST WINDING.

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

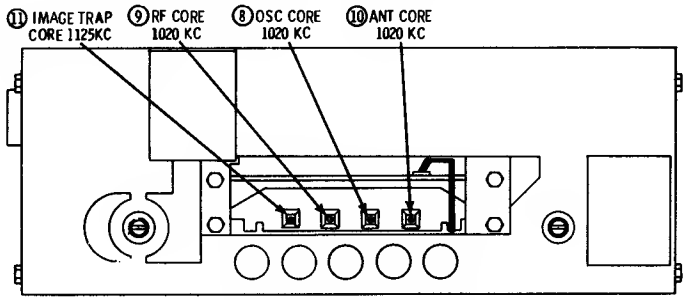
PLATED CHASSIS BOARD WIRING LEGEND
■ = B+ ▲ = FILAMENT
▬ = RF AVC ▬ = IF AVC

BOTTOM VIEW
MODELS 117, 119, 120

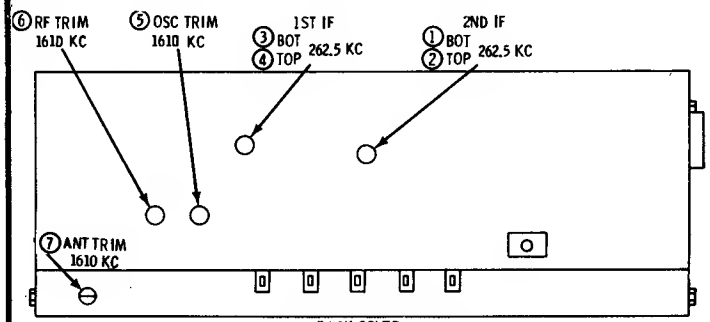




MODELS 202, 203, 204 SCHEMATIC DIAGRAM



FRONT VIEW WITH DIAL SCALE REMOVED

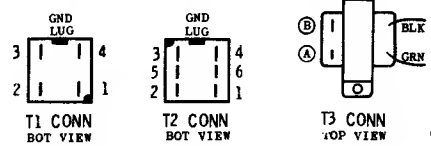


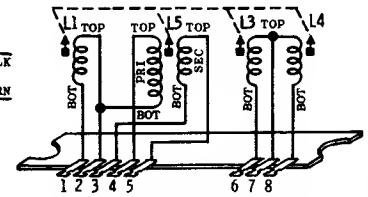
BACK COVER

MODELS 202, 203, 204 ALIGNMENT LOCATION DETAIL

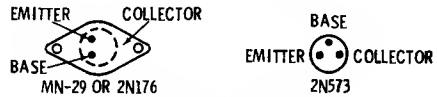
PLATED CHASSIS BOARD WIRING LEGEND

■=B+ ▬=FIL ■=RF AVC ■■=IF & CONV AVC





L1, L3, L4 & L5 CONNECTION DETAIL



TRANSISTOR CONNECTIONS
BOT VIEW

ON L1, L3, L4 & L5 CONNECTION DETAIL, BOT REFERS TO LEAD AT BOTTOM OF COIL, I.E., NEAREST THE TERMINAL STRIP. THE SECONDARY WINDING IS THE OUTERMOST WINDING.

NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF, ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED TO CHASSIS WITH A VTVM. ± 10% NO SIGNAL IN.
INPUT VOLTAGE - 13.2V DC.
TUNING RANGE - 540 KC TO 1610 KC.
IF FREQ. - 262.5 KC.

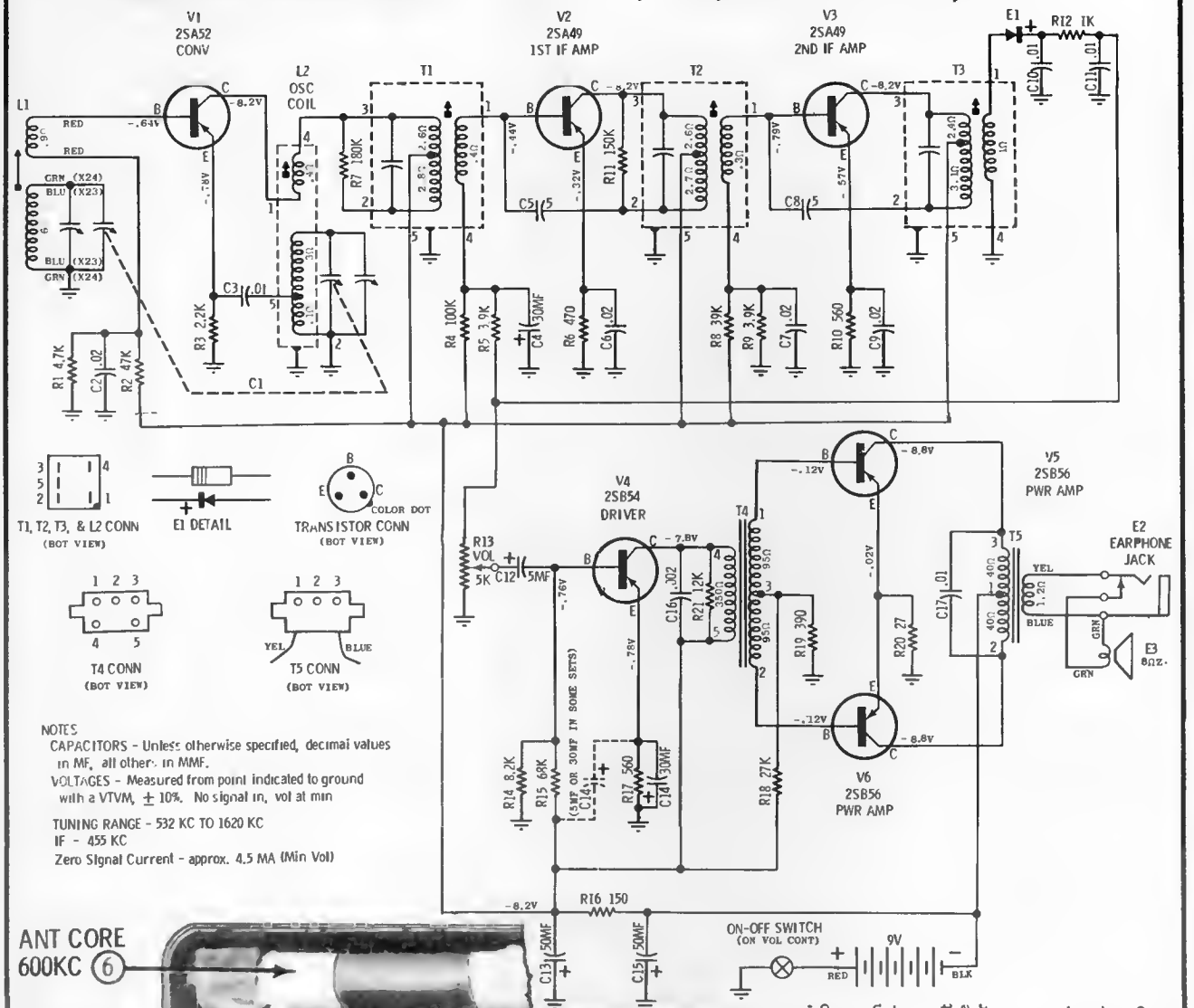
* THESE VALUES ARE NOMINAL. EXACT VALUE DETERMINED BY PRODUCTION REQUIREMENTS. WHEN SERVICING REPLACE WITH VALUE REMOVED.

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.

MOTOROLA
auto radio
MOPAR 202,203,204

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



NOTES

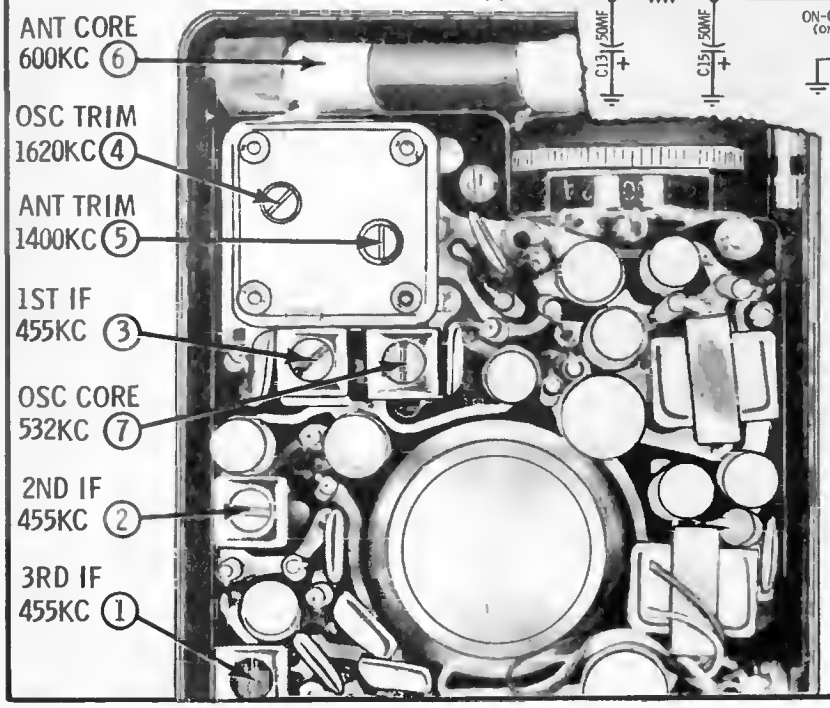
CAPACITORS - Unless otherwise specified, decimal values in MF, all others in MMF.

VOLTAGES - Measured from point indicated to ground with a VTVM, ± 10%. No signal in, vol at min

TUNING RANGE - 532 KC TO 1620 KC

IF - 455 KC

Zero Signal Current - approx. 4.5 MA (Min Vol)



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.

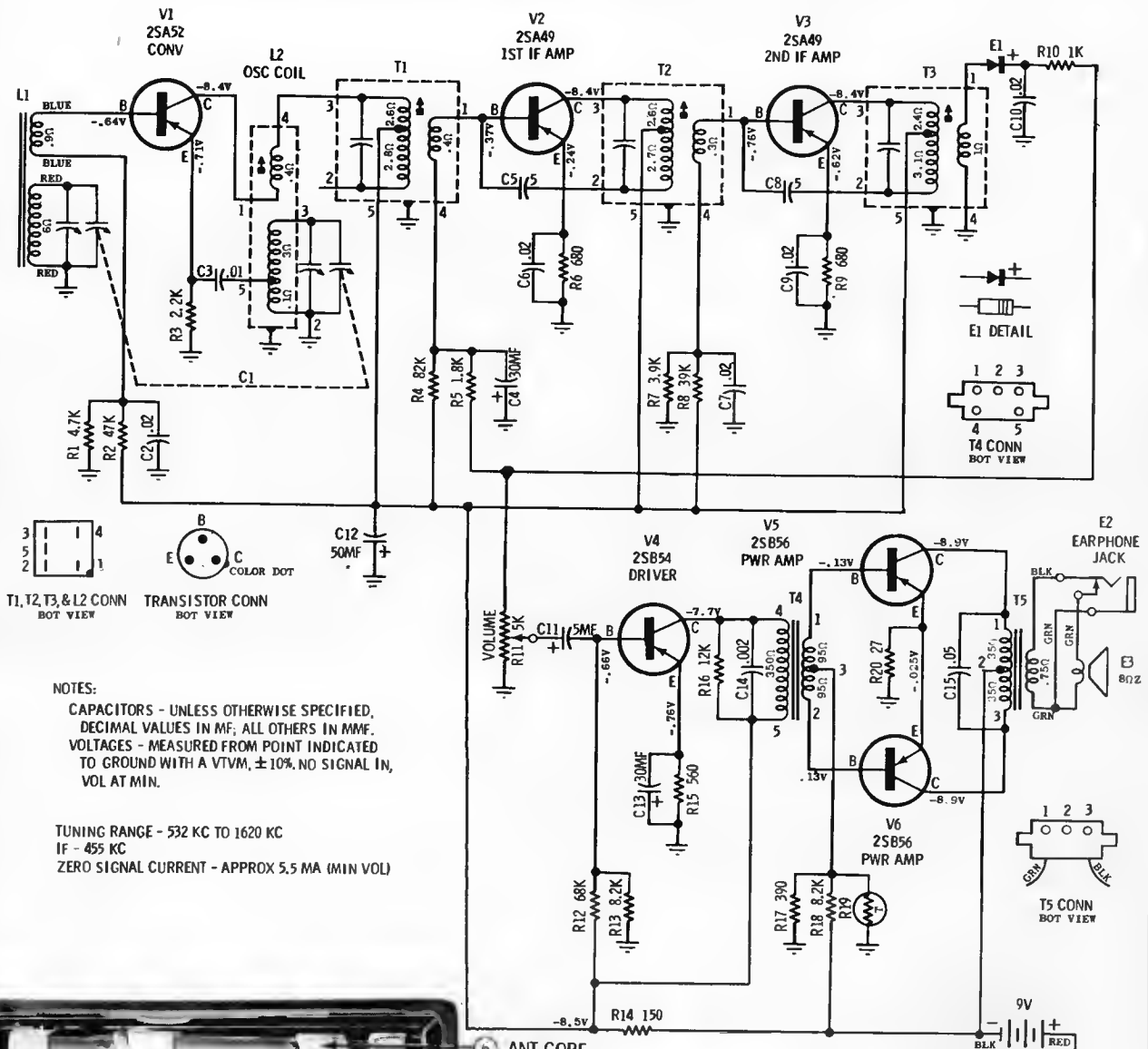
3. If necessary, unsolder all chassis connecting leads. If it becomes necessary to remove the earphone jack, unscrew the earphone jack mtg nut (a special tool is available - order Part No. 66A64621 1).

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 milliameter 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



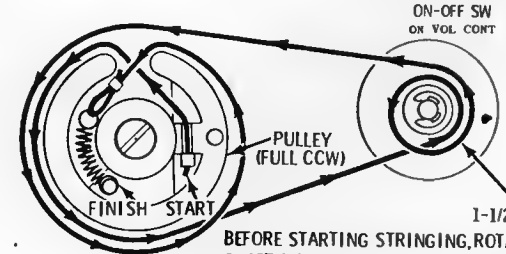
NOTES:

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

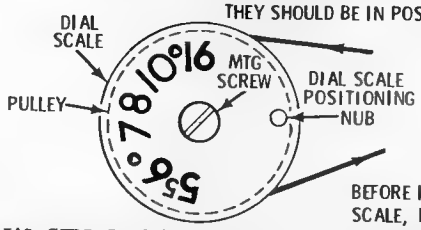
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC
ZERO SIGNAL CURRENT - APPROX 5.5 MA (MIN VOL)

5 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

ALIGNMENT POINT LOCATIONS



BEFORE STARTING STRINGING, ROTATE GANG SHAFT & PULLEY FULLY COUNTERCLOCKWISE; THEY SHOULD BE IN POSITION AS SHOWN.

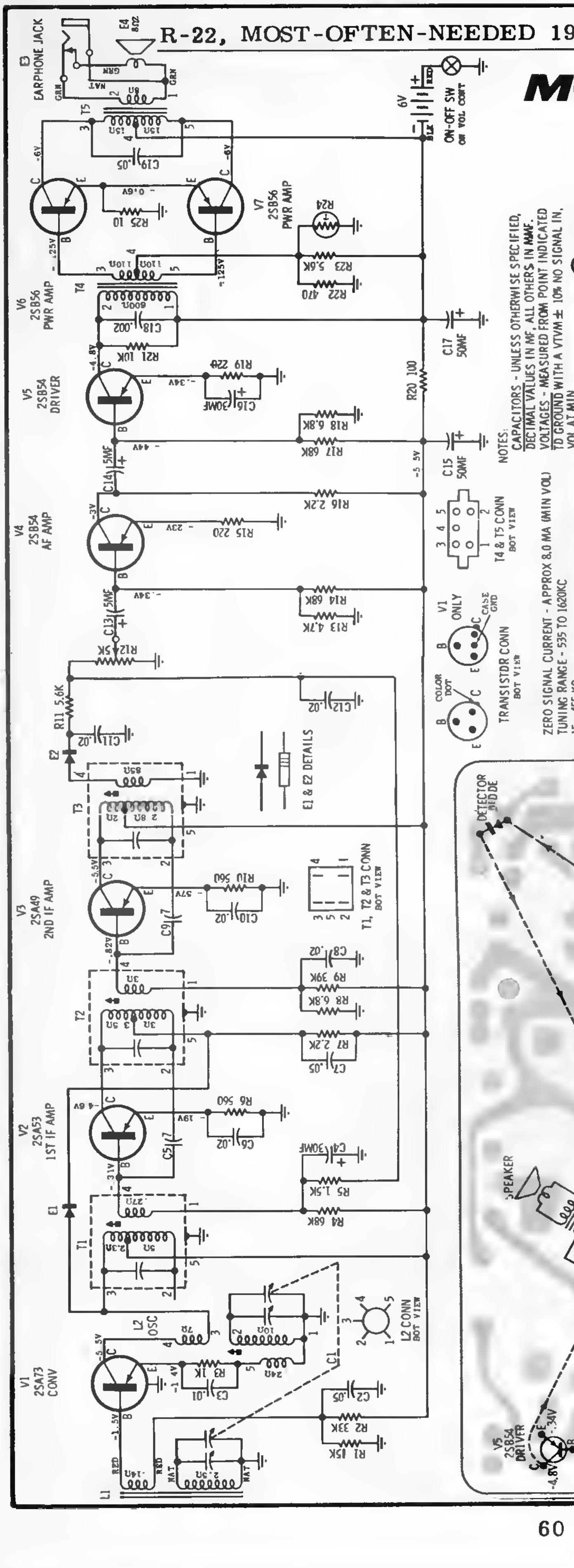


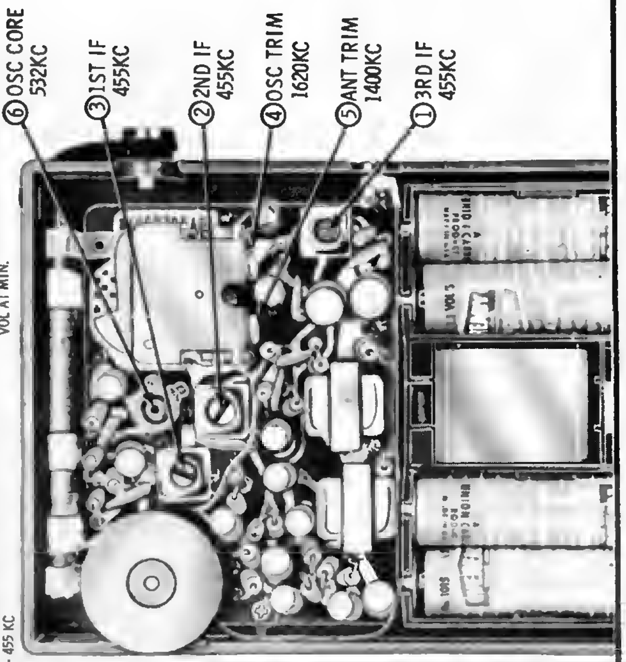
DIAL STRINGING DETAIL

BEFORE INSTALLING DIAL SCALE, REMOVE MTG SCREW BUT HOLD ONTO PULLEY.

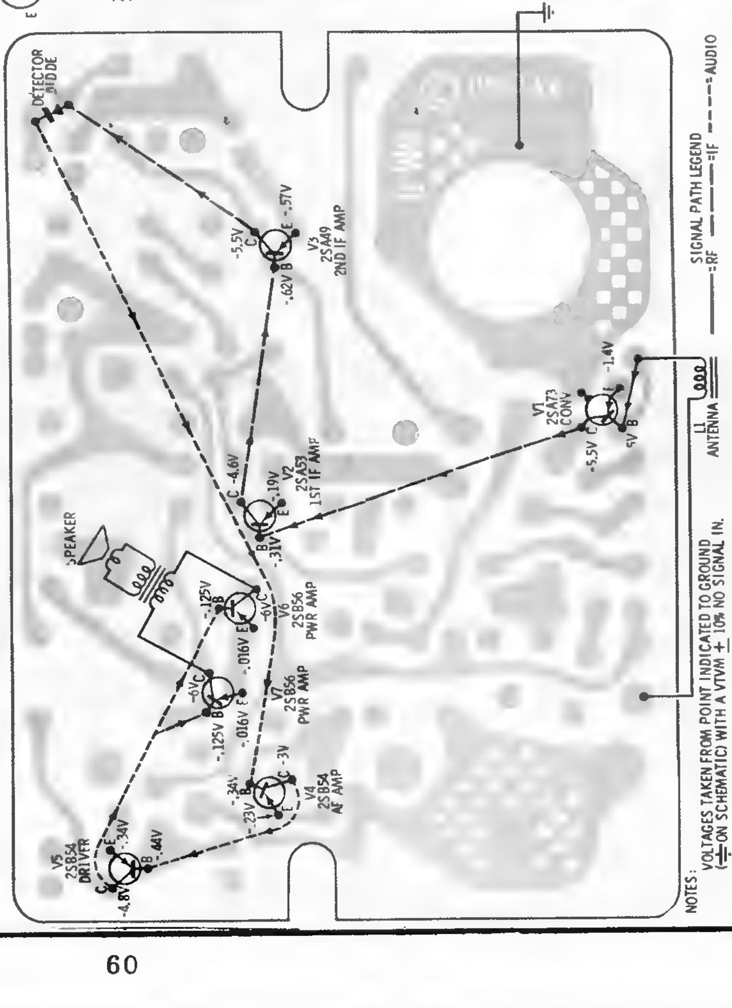
MOTOROLA

MODEL X 26 .... CHASSIS HS-883





ALIGNMENT POINT LOCATIONS

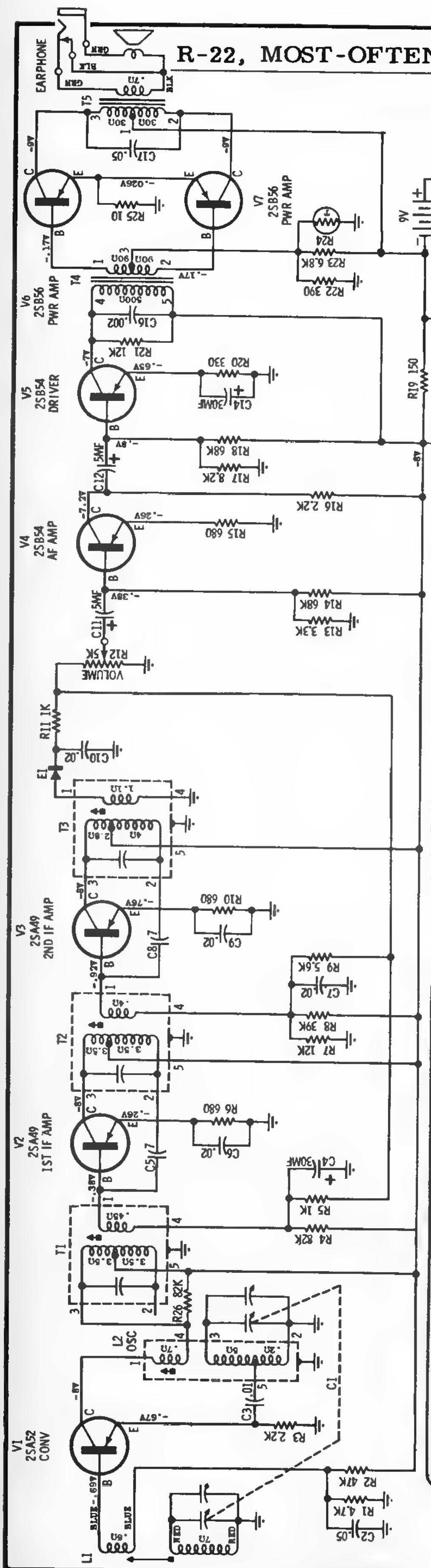


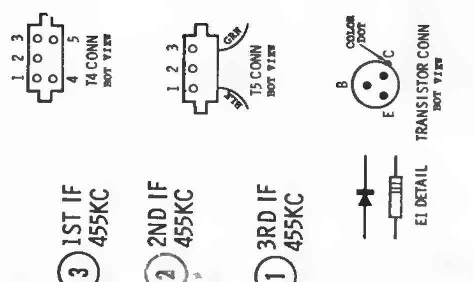
SIGNAL PATH FLOW AND VOLTAGE READINGS TAKEN FROM BOTTOM SIDE OF CHASSIS

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

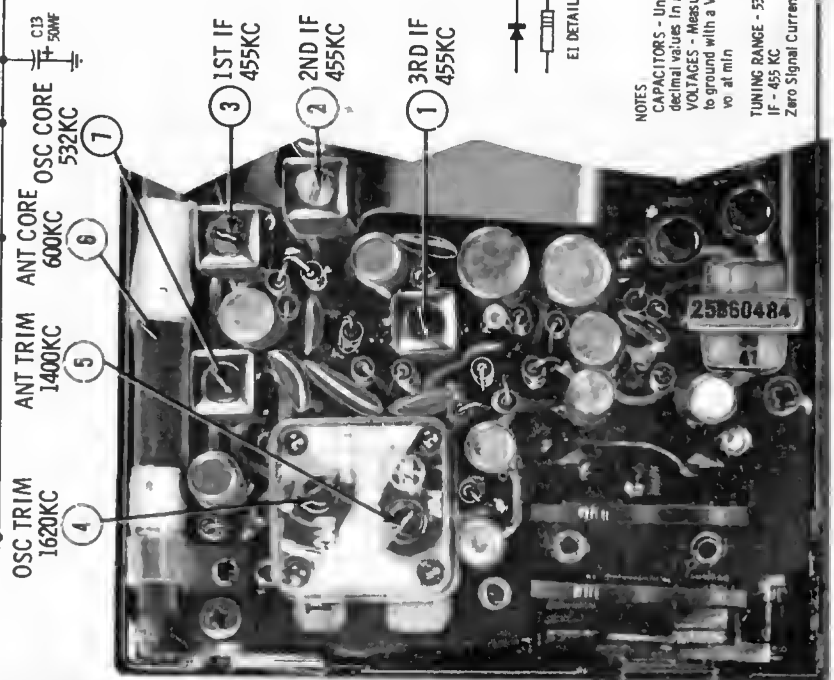
MOTOROLA

MODEL X27 .... CHASSIS HS-915

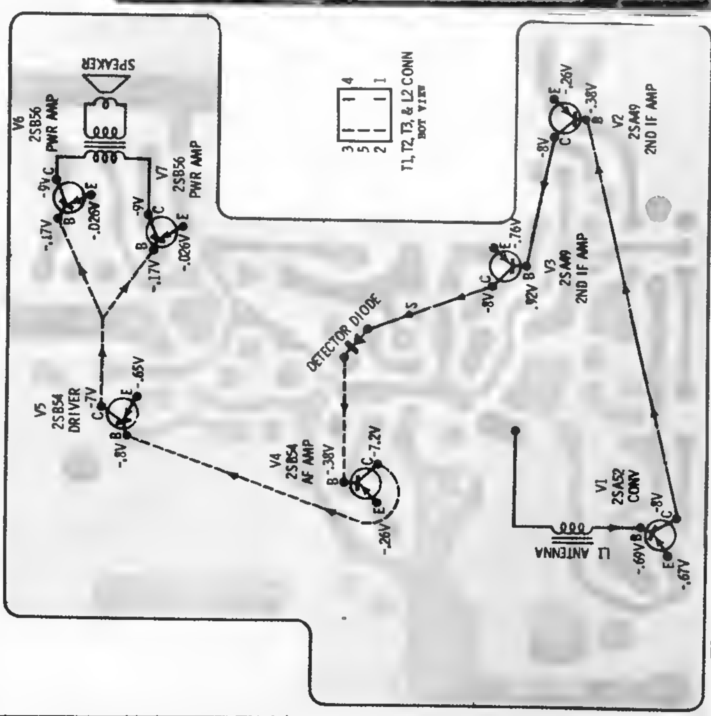




NOTES
CAPACITORS - Unless otherwise specified, decimal values in MF. all others in MMF.
VOLTAGES - Measured from point indicated to ground with a VTVM, ± 10%. No signal in. vo at min
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC
Zero Signal Current - approx. 8.5 MA (Min Vol)



ALIGNMENT POINT LOCATIONS

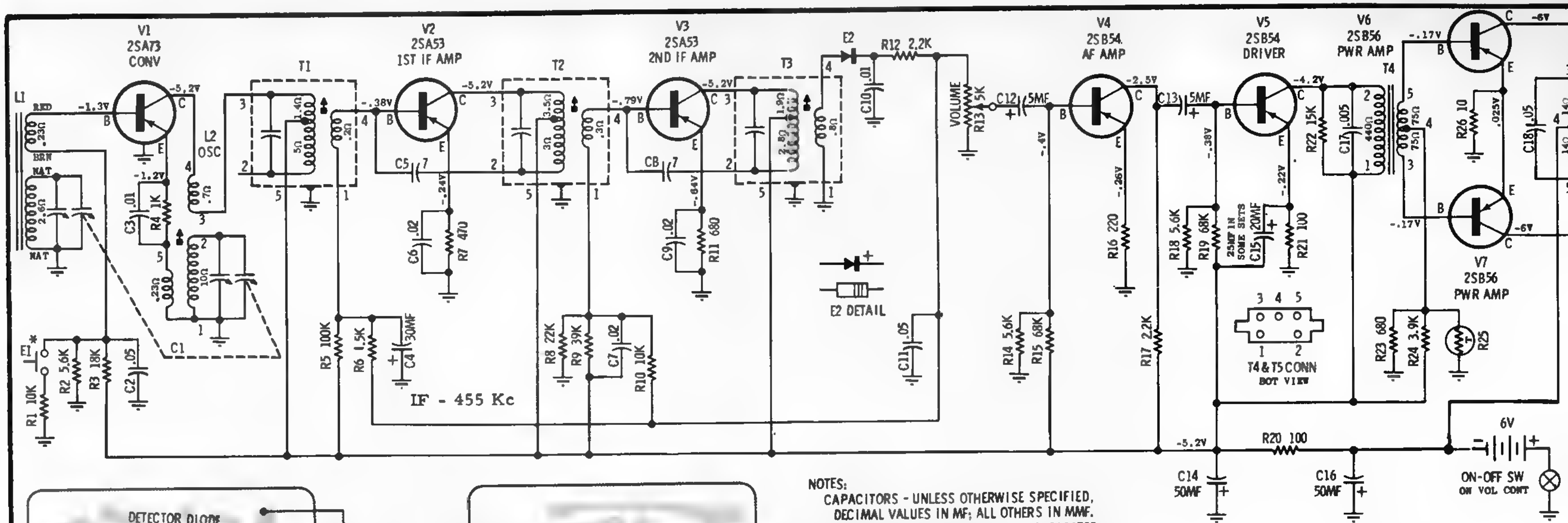


NOTES:
VOLTAGES - TAKEN FROM POINT INDICATED TO GROUND (⏚ ON SCHEMATIC) WITH A VTVM, ± 10%, NO SIGNAL IN.
SIGNAL PATH LEGEND ——— = RF ——— = IF ——— = AUDIO

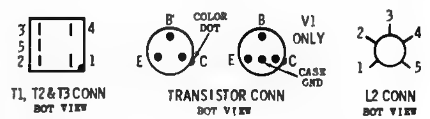
SIGNAL PATH FLOW AND VOLTAGE READINGS TAKEN FROM BOTTOM

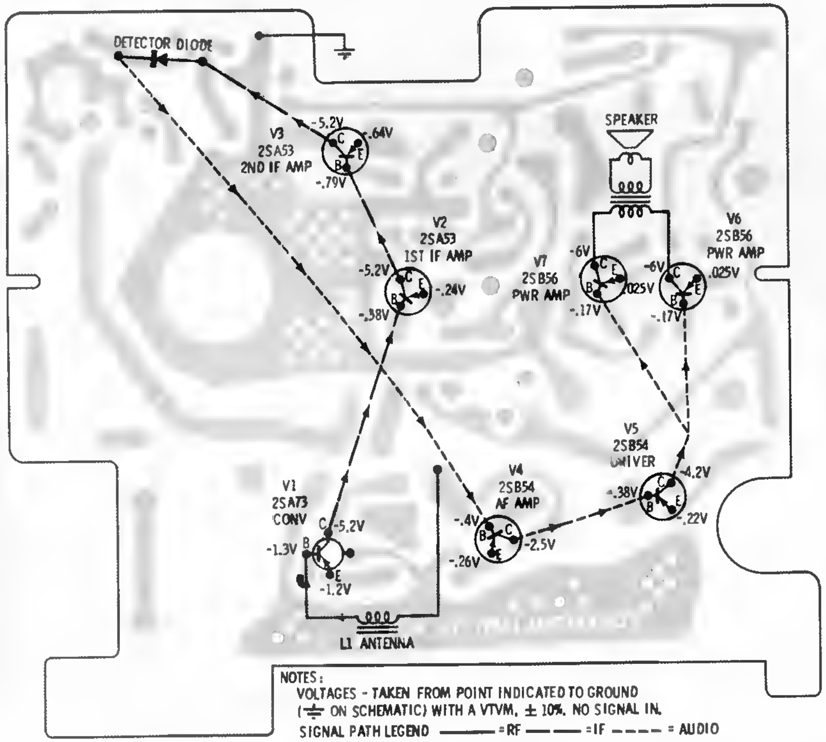
MOTOROLA

MODEL X28 .... CHASSIS HS-884



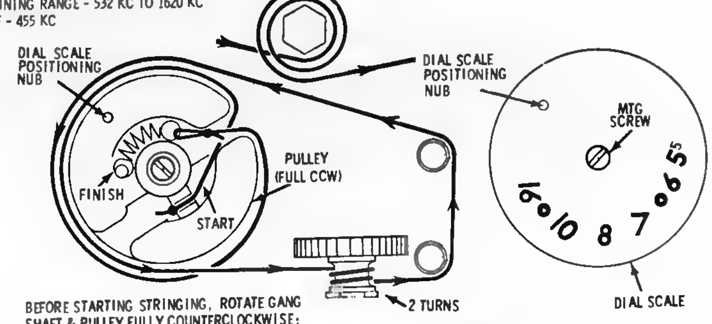
NOTES:
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, ± 10%. NO SIGNAL IN, VOL AT MIN.
ZERO SIGNAL CURRENT - APPROX 12 MA (MIN VOL)
* PUSHBUTTON SWITCH (BATTERY LIFE INDICATOR) IS LOCATED ON FRONT OF RADIO - PUSH TO CLOSE.
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC





NOTES:
VOLTAGES - TAKEN FROM POINT INDICATED TO GROUND (⏚ ON SCHEMATIC) WITH A VTVM, ± 10%. NO SIGNAL IN.
SIGNAL PATH LEGEND ——— = RF — — — = IF - - - - = AUDIO

SIGNAL PATH FLOW AND VOLTAGE READINGS TAKEN FROM BOTTOM SIDE OF CHASSIS

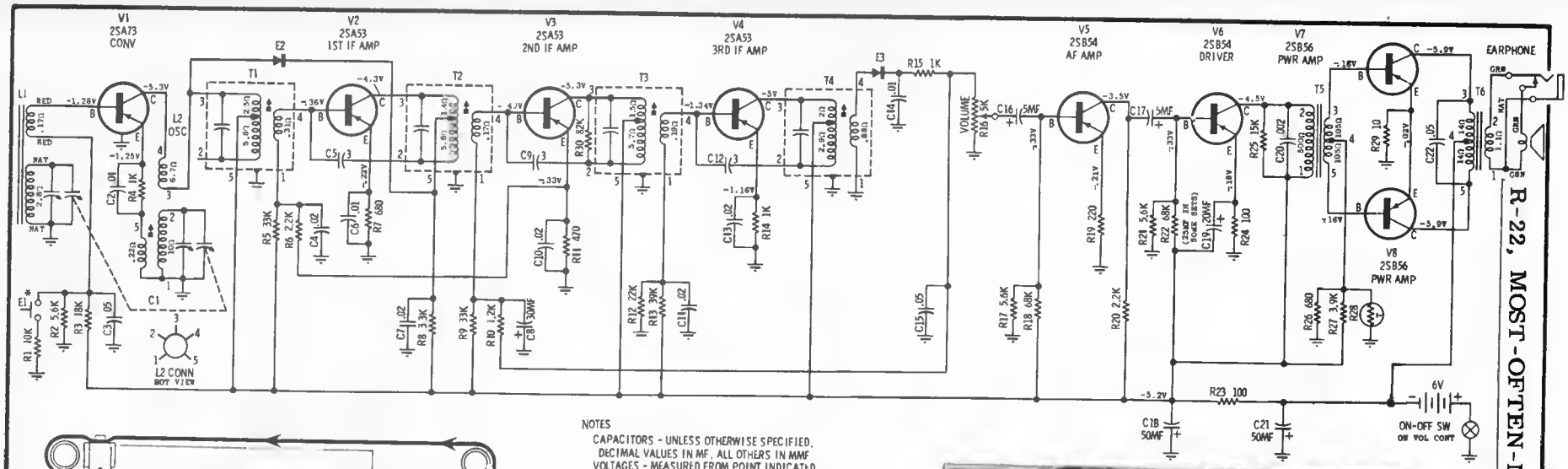


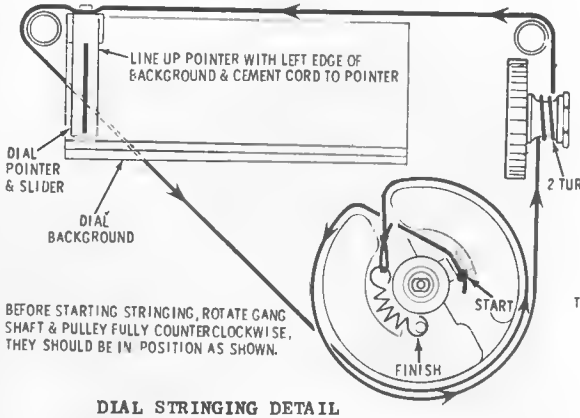
BEFORE STARTING STRINGING, ROTATE GANG SHAFT & PULLEY FULLY COUNTERCLOCKWISE; THEY SHOULD BE IN POSITION AS SHOWN.

DIAL STRINGING DETAIL

CHASSIS REMOVAL

1. Remove 3 cabinet mounting screws (2 are located under carrying strap; the other on bottom of cabinet).
2. Lift out bezel, escutcheon & chassis as an assembly.
3. Remove 3 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. 66A646211).





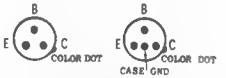
DIAL STRINGING DETAIL

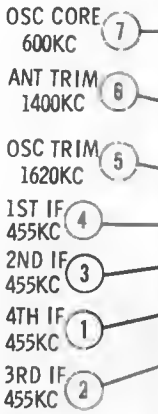
NOTES

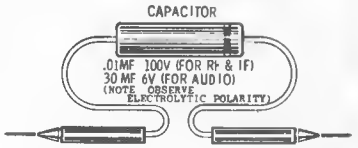
CAPACITORS - UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF, ALL OTHERS IN MMF
VOLTAGES - MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, ±10%, NO SIGNAL IN, VOL AT MIN.
ZERO SIGNAL CURRENT - APPROX 10.5MA (MIN VOL)

*PUSHBUTTON SWITCH (BATTERY LIFE INDICATOR) IS LOCATED ON FRONT OF RADIO - PUSH TO CLOSE.

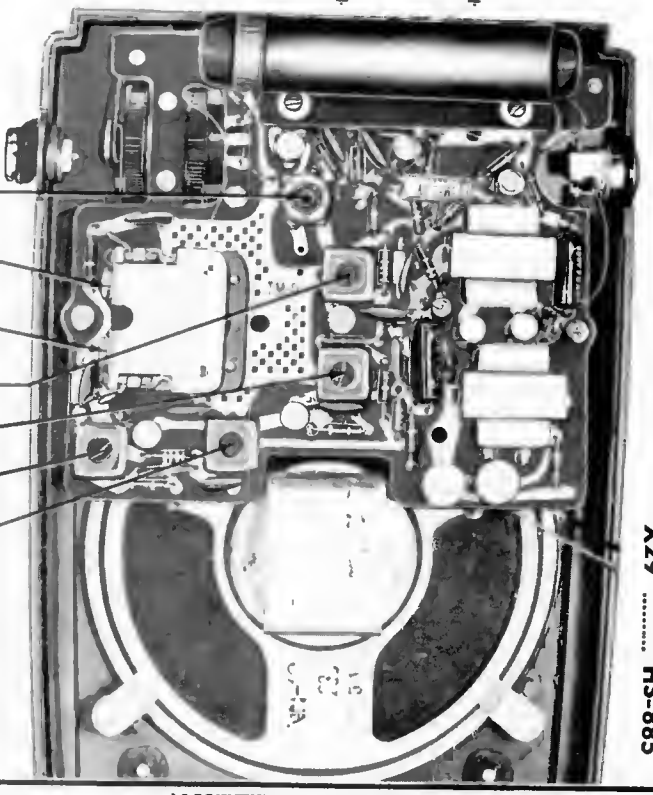
TUNING RANGE - 532 KC TO 1620 KC
IF - 455 KC







BY-PASS CAPACITOR CHECKER



ALIGNMENT POINT LOCATIONS

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. 66A646211).

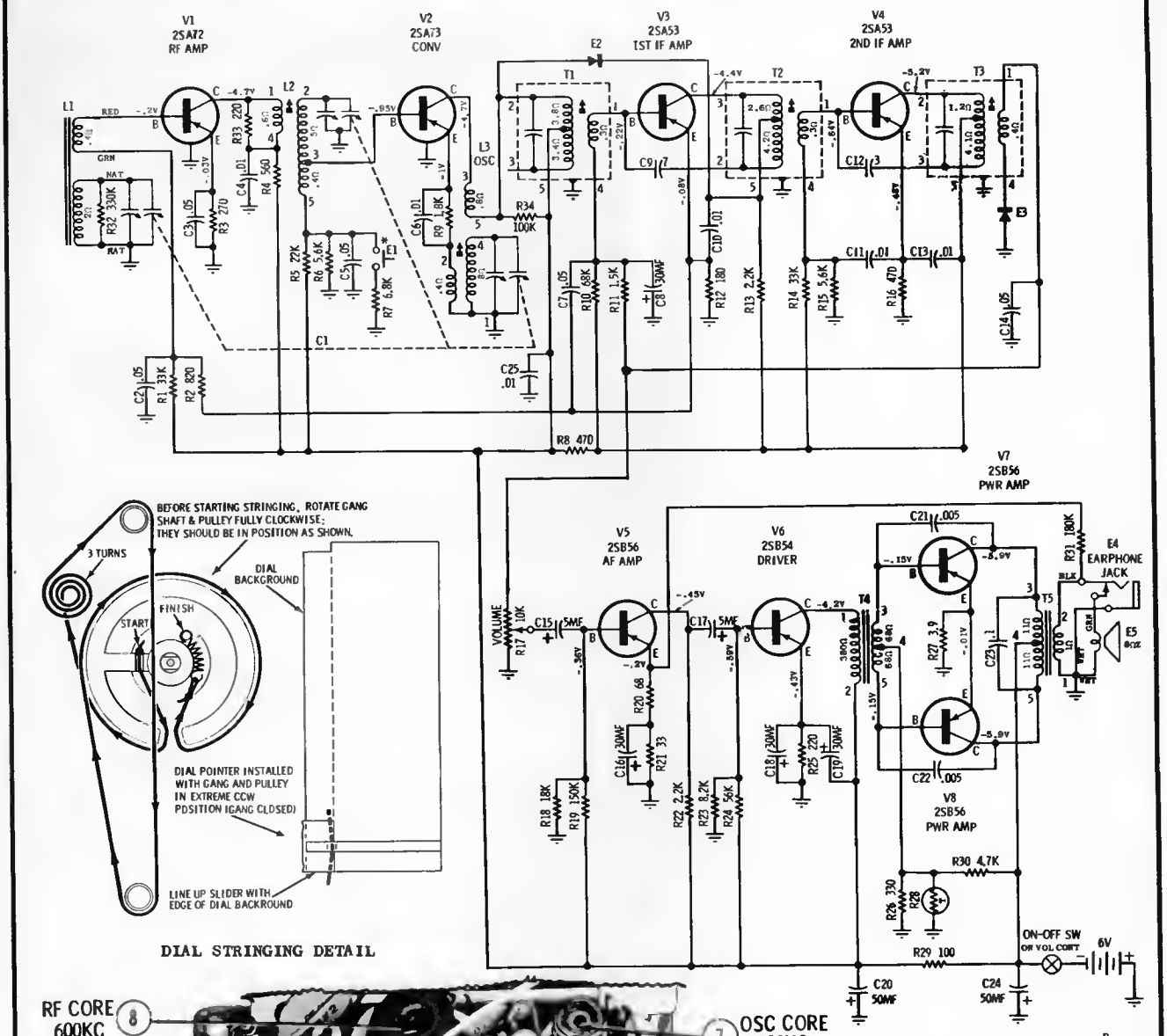
MOTOROLA

MODEL CHASSIS X29 ..... HS-885

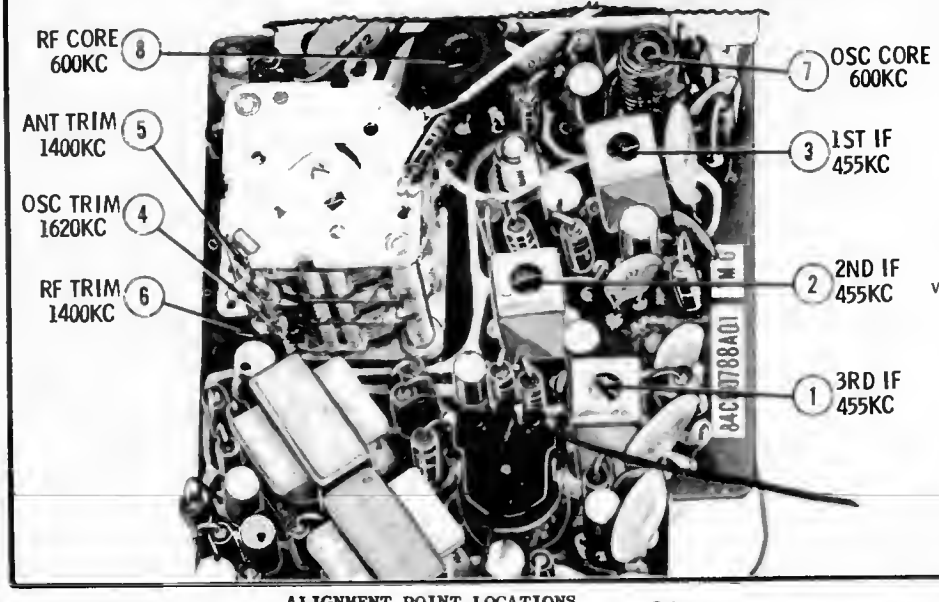
R-22, MOST-OFTEN-NEEDED 1962 RADIO SERVICING INFORMATION

MOTOROLA

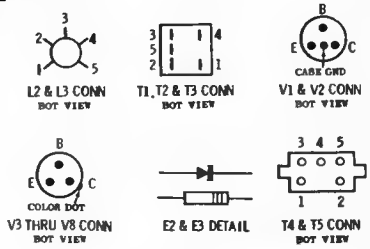
MODEL X31 ..... CHASSIS HS-894



DIAL STRINGING DETAIL



ALIGNMENT POINT LOCATIONS



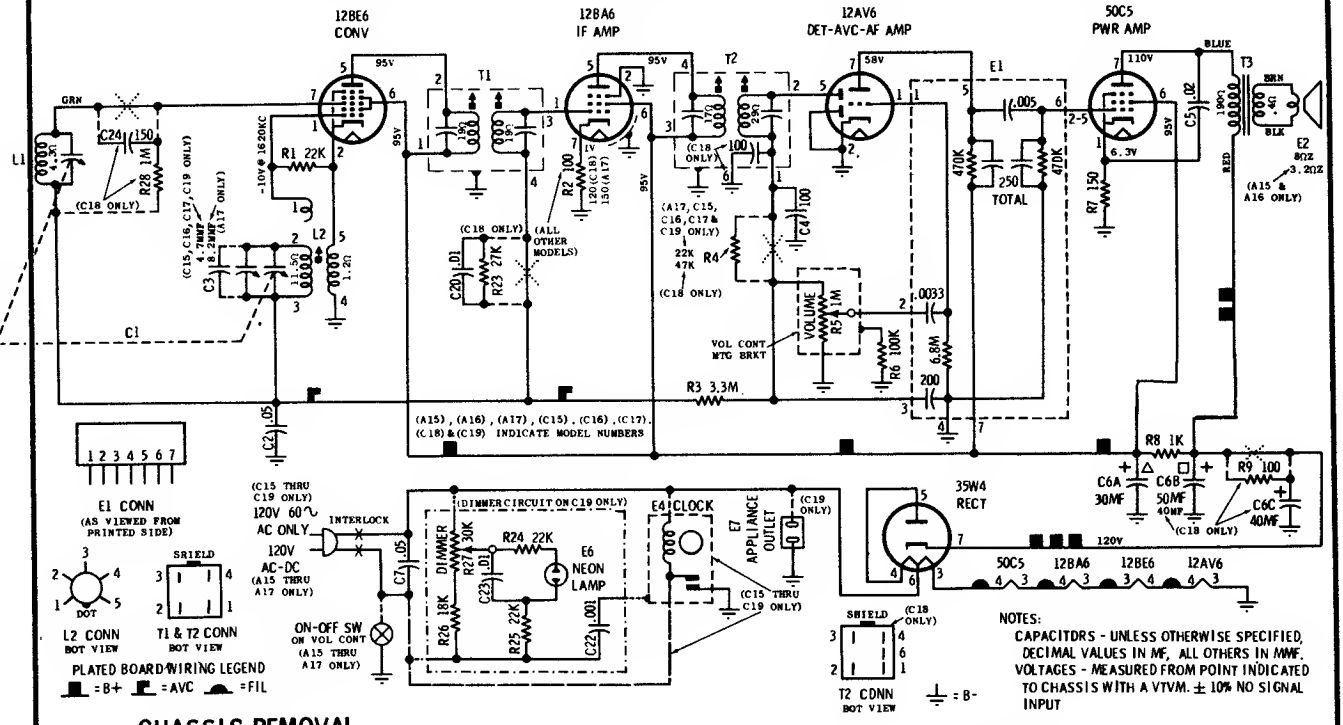
NOTES

CAPACITORS – UNLESS OTHERWISE SPECIFIED, DECIMAL VALUES IN MF; ALL OTHERS IN MMF.
VOLTAGES – MEASURED FROM POINT INDICATED TO GROUND WITH A VTVM, ±10%, NO SIGNAL IN, VOL AT MIN.

*PUSHBUTTON SWITCH (BATTERY LIFE INDICATOR) IS LOCATED ON FRONT OF RADIO – PUSH TO CLOSE
ZERO SIGNAL CURRENT – APPROX 13 MA (MIN VOL)
TUNING RANGE – 532 KC TO 1620 KC
IF – 455 KC

MOTOROLA

Models: A15, A16, - A17, - C15, C16, C17, - C18, - C19
Chassis: HS-744, - HS-922, - HS-939, - HS-813, - HS-938



CHASSIS REMOVAL

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.

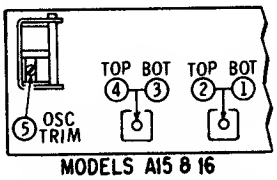
MODEL C18

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.

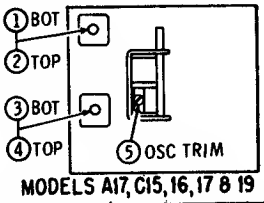
ALIGNMENT

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).

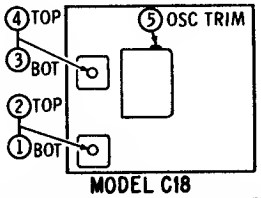
STEP A15 to A17 C15 to C19	GENERATOR CONNECTION	GENERATOR FREQ. (400 cycle mod)	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT					
1	Grid of conv (Pin 7 12BE6) thru .1 mf & B-	455 Kc	Fully opened	1, 2, 3 & 4	Adjust for max.
RF ALIGNMENT					
2	"	1620 Kc	Fully opened	5	Adjust for max.



MODELS A15 & 16

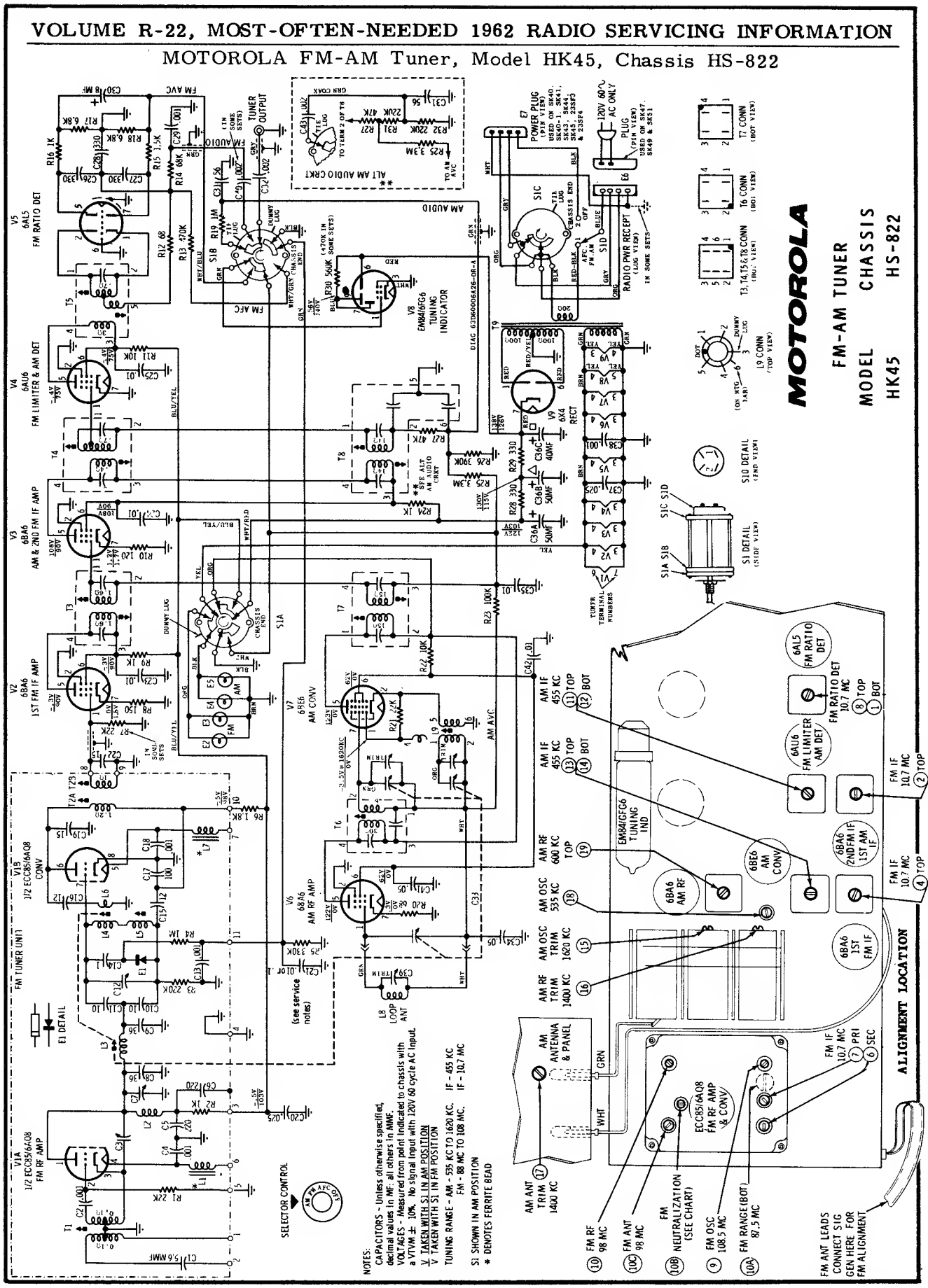


MODELS A17, C15, 16, 17 & 19

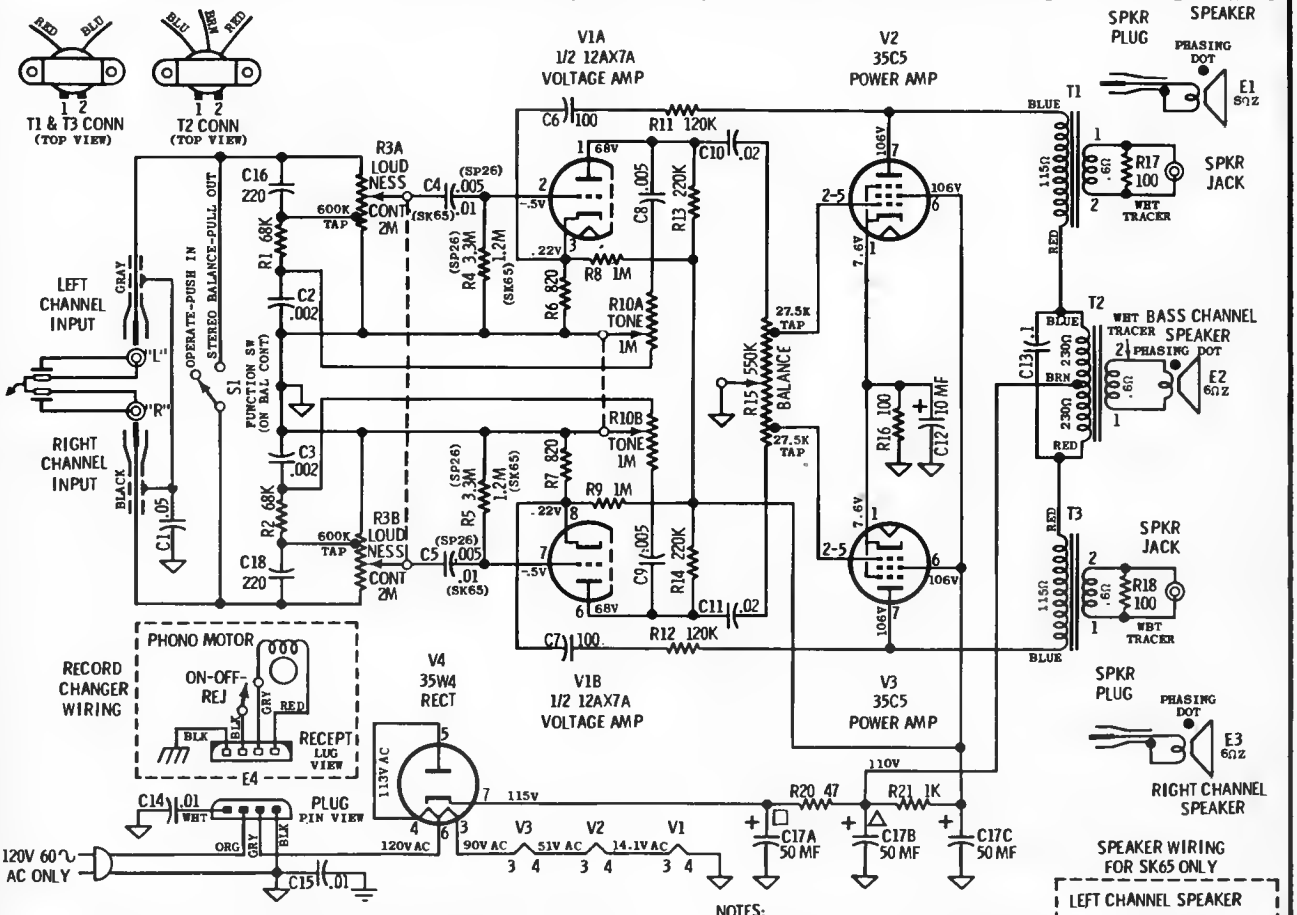


MODEL C18

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

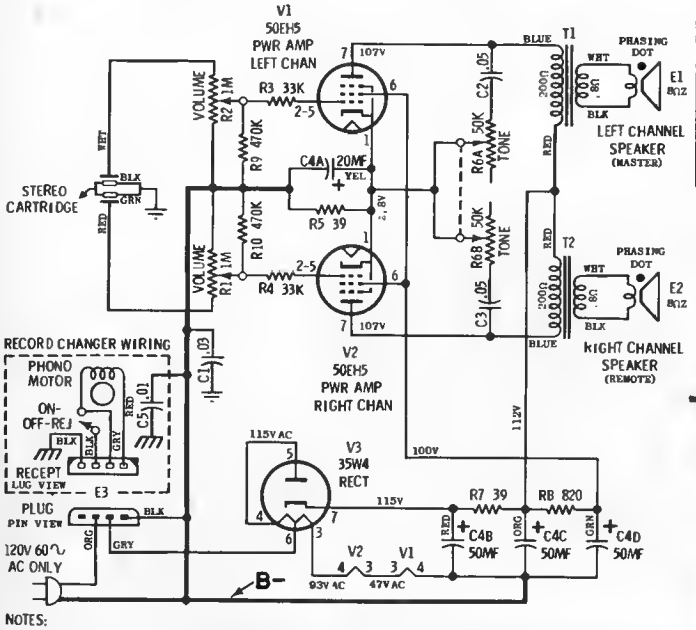


MOTOROLA Chassis HS-943, HS-952, Models SP26 and SK65

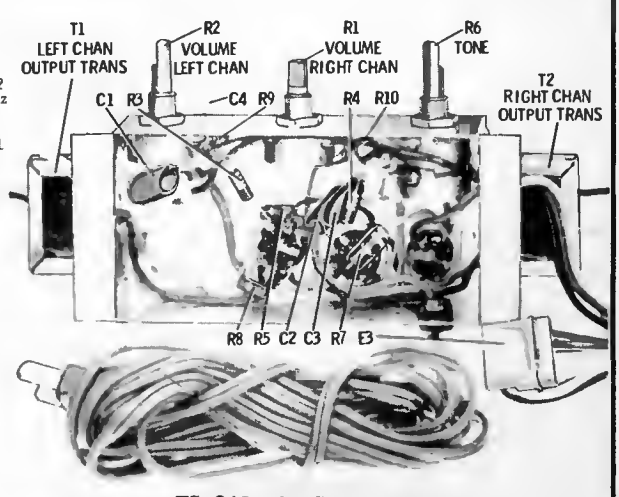


HS-943 & 952 SCHEMATIC-MODELS SP26 & SK65

MOTOROLA Chassis HS-942, Model SP25

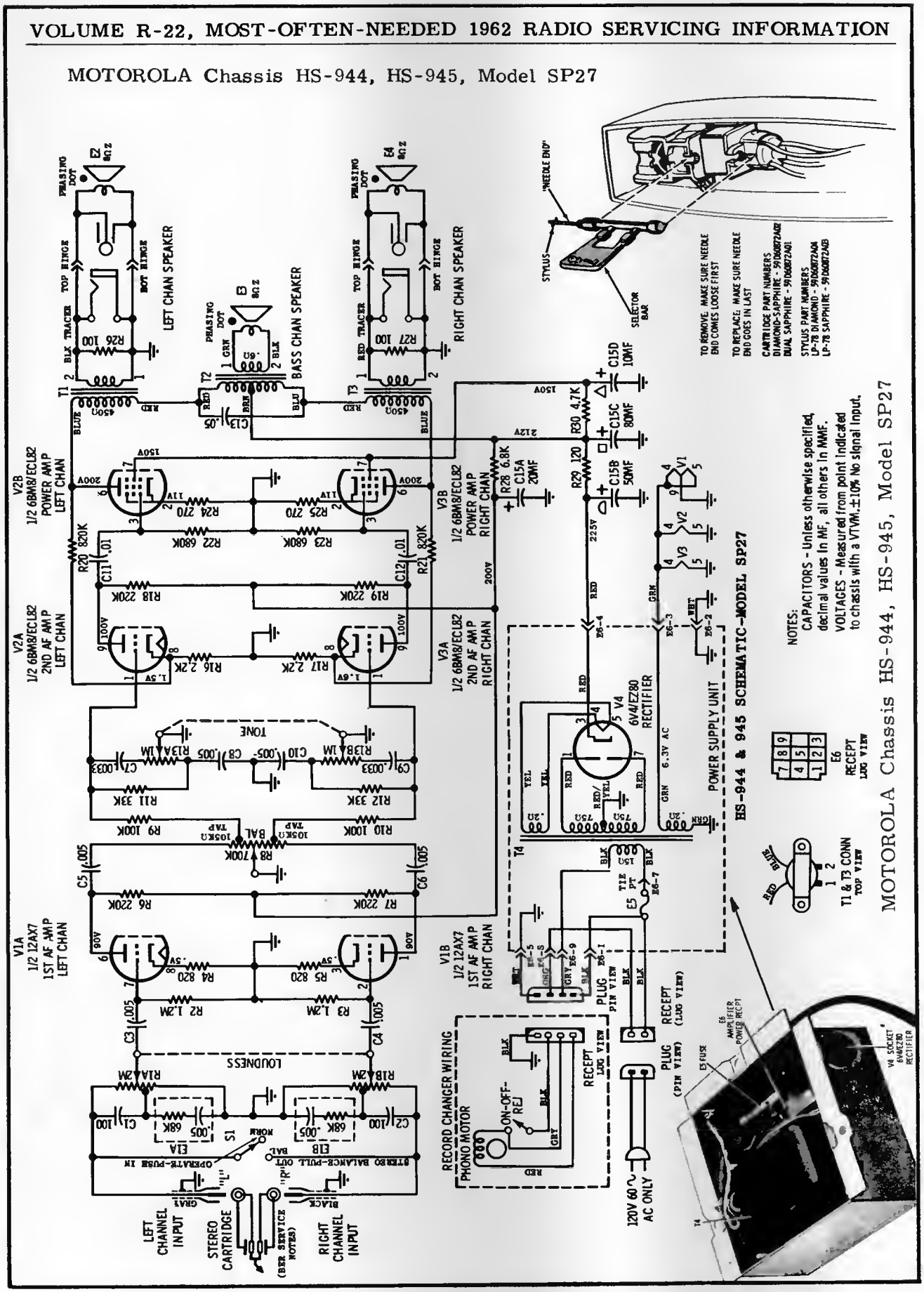


HS-942 SCHEMATIC-MODEL SP25



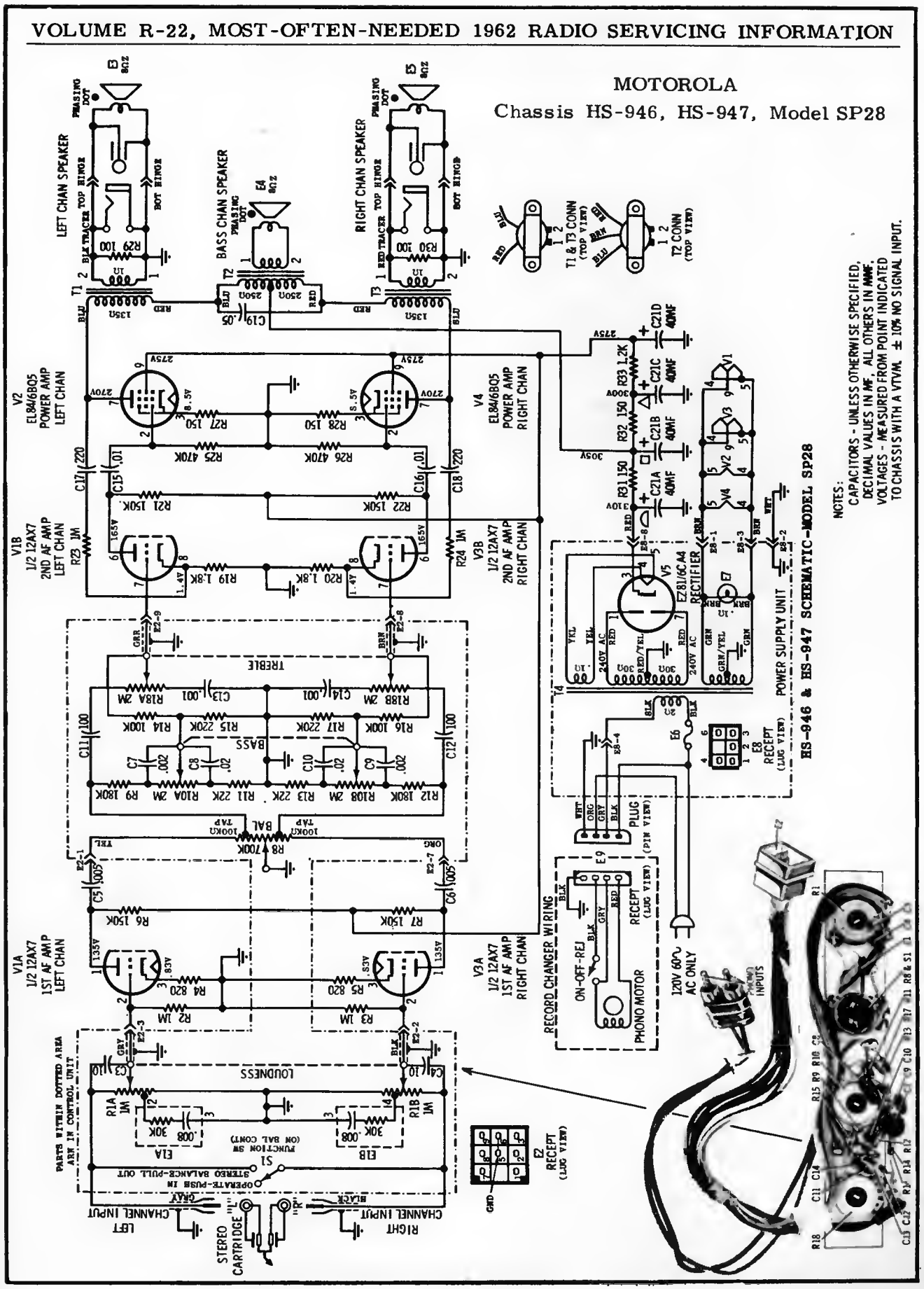
HS-942 PARTS LOCATION

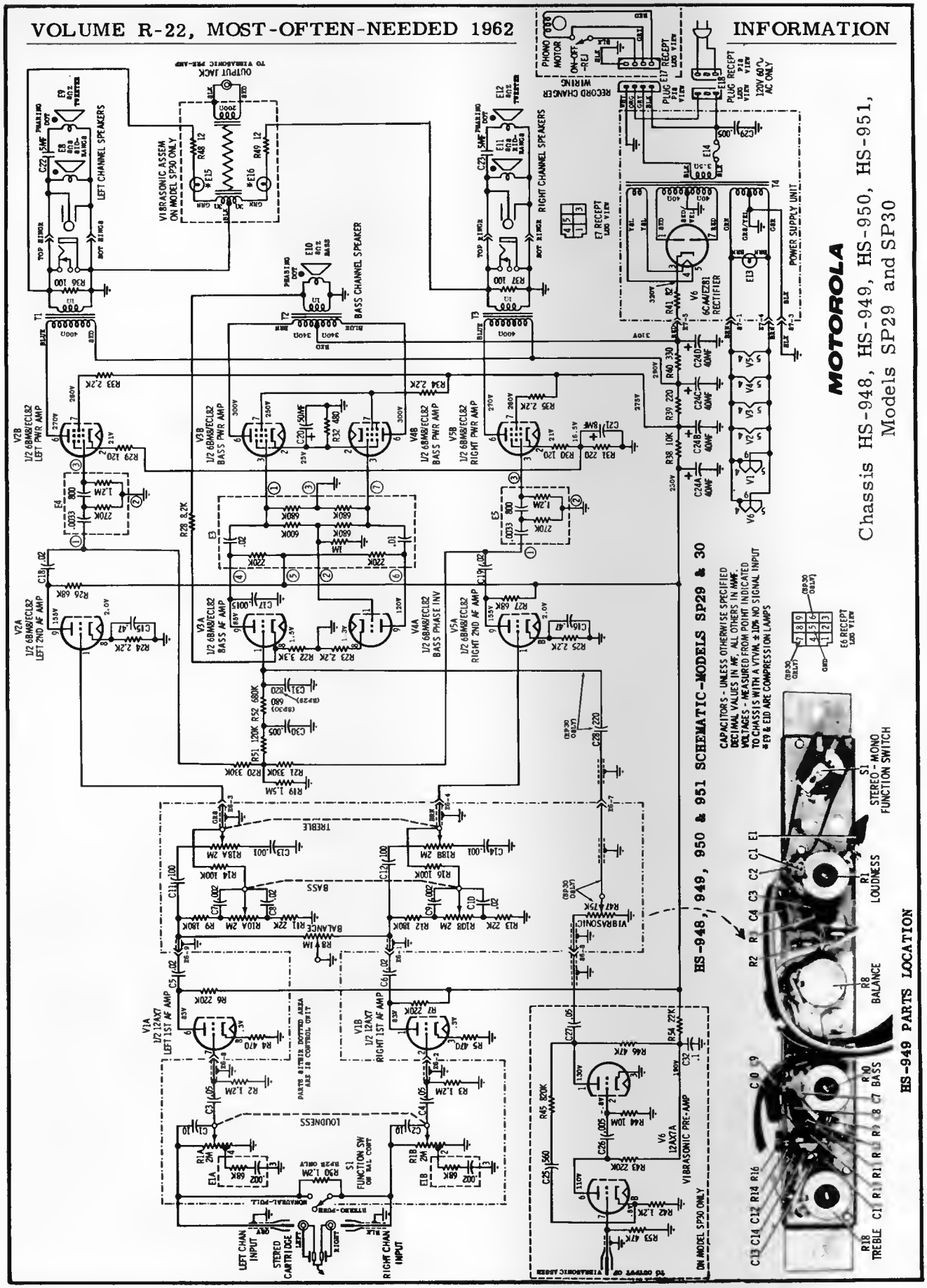
MOTOROLA Chassis HS-944, HS-945, Model SP27



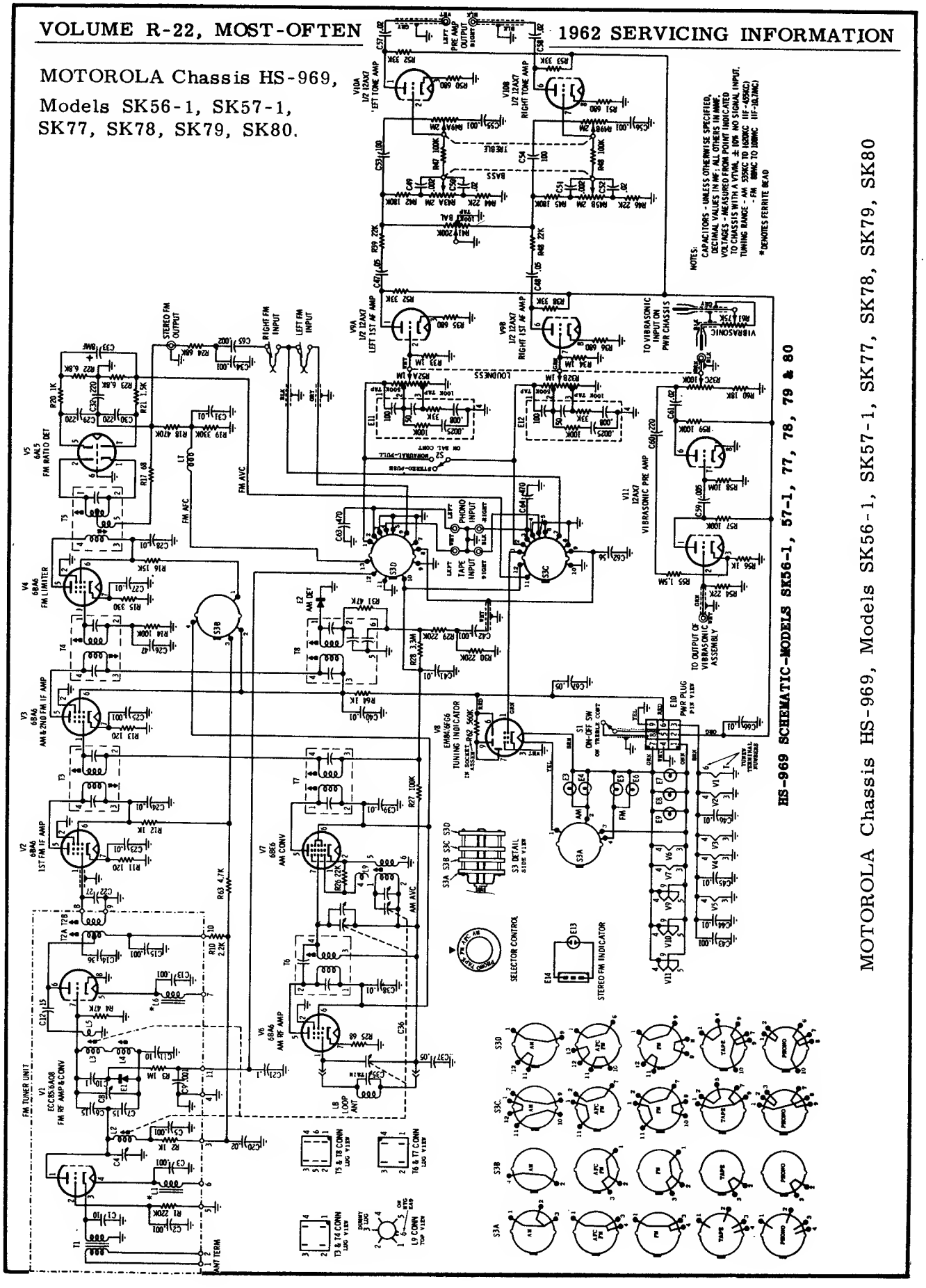
MOTOROLA

Chassis HS-946, HS-947, Model SP28

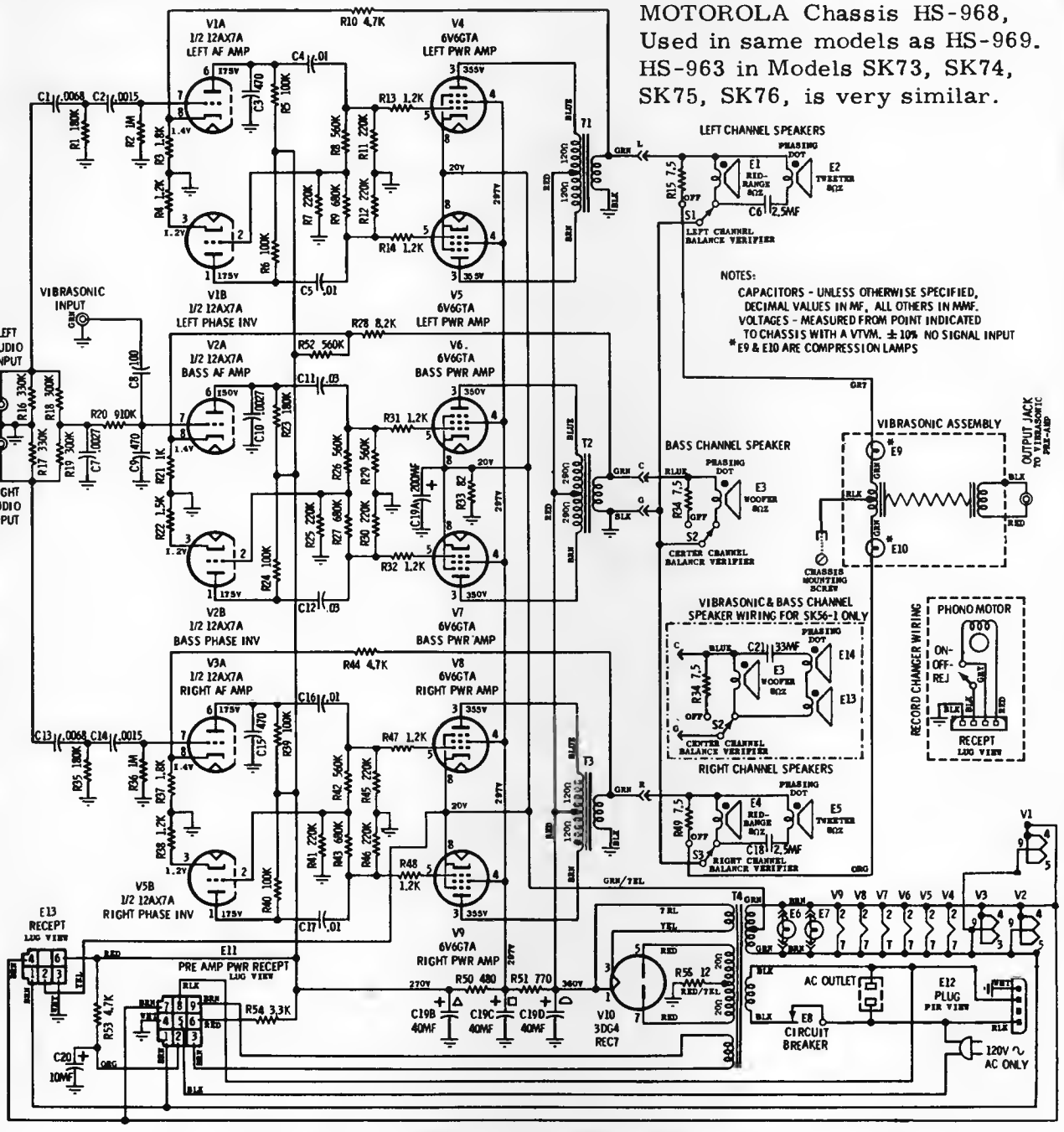



MOTOROLA
Chassis HS-948, HS-949, HS-950, HS-951,
Models SP29 and SP30
HS-948, 949, 950 & 951 SCHEMATIC-MODELS SP29 & 30
HS-949 PARTS LOCATION
CAPACITORS - UNLESS OTHERWISE SPECIFIED DECIMAL VALUES IN MF, ALL OTHERS IN MMF.
VOLTAGES - MEASURED FROM POINT INDICATED TO CHASSIS WITH A VTVM, ± 10% NO SIGNAL INPUT
*E9 & E10 ARE COMPRESSION LAMPS
LEFT CHANNEL SPEAKERS
RIGHT CHANNEL SPEAKERS
BASS CHANNEL SPEAKER
VIBRASONIC ASSEM ON MODEL SP30 ONLY
OUTPUT JACK
RECORD CHANGER WIRING
PHONO MOTOR
ON-OFF -REV
PLUG RECEPT
POWER SUPPLY UNIT
6CA4/EZ81 RECTIFIER
V1A 1/2 12AX7 LEFT 1ST AF AMP
V1B 1/2 12AX7 RIGHT 1ST AF AMP
V2A 1/2 6BM8/ECL82 LEFT 2ND AF AMP
V2B 1/2 6BM8/ECL82 LEFT PWR AMP
V3A 1/2 6BM8/ECL82 BASS AF AMP
V3B 1/2 6BM8/ECL82 BASS PWR AMP
V4A 1/2 6BM8/ECL82 BASS PHASE INV
V4B 1/2 6BM8/ECL82 BASS PWR AMP
V5A 1/2 6BM8/ECL82 RIGHT 2ND AF AMP
V5B 1/2 6BM8/ECL82 RIGHT PWR AMP
V6 12AX7A VIBRASONIC PRE-AMP
TREBLE
BASS
LOUDNESS
BALANCE
VIBRASONIC
FUNCTION SW
STEREO-MONO FUNCTION SWITCH
LOUDNESS
BALANCE
TREBLE
BASS
LEFT CHAN INPUT
RIGHT CHAN INPUT
STEREO CARTRIDGE
ON MODEL SP30 ONLY

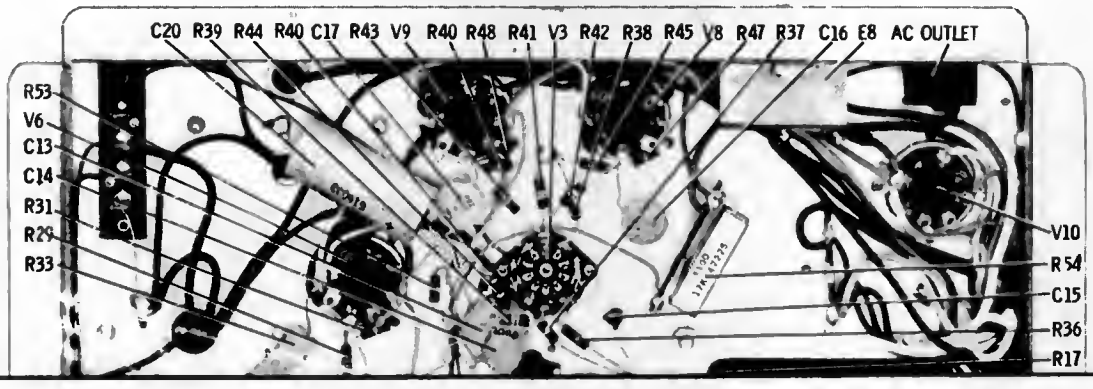
MOTOROLA Chassis HS-969,
Models SK56-1, SK57-1,
SK77, SK78, SK79, SK80.

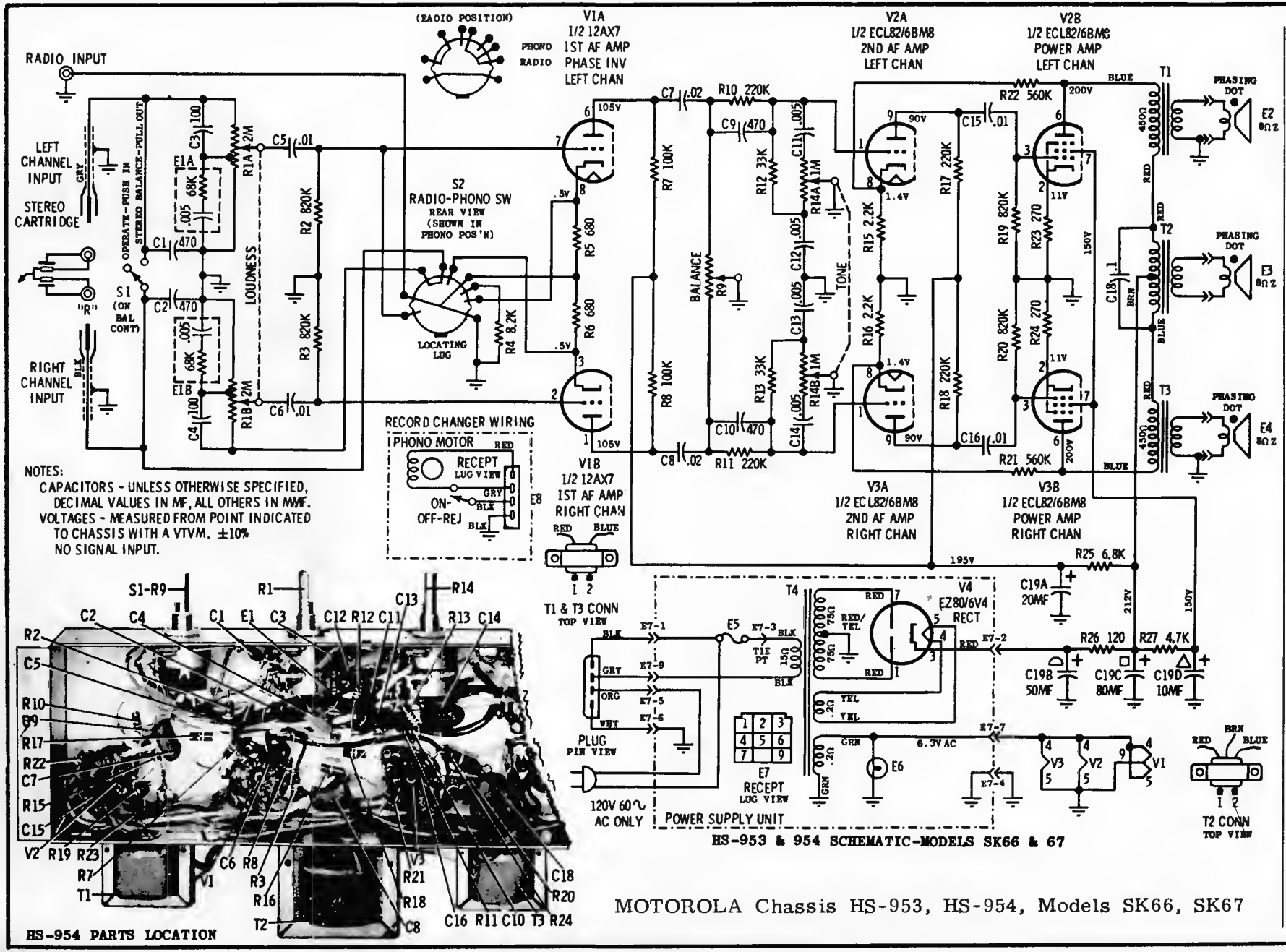


MOTOROLA Chassis HS-968, Used in same models as HS-969. HS-963 in Models SK73, SK74, SK75, SK76, is very similar.



CHASSIS HS-96S SCHEMATIC-MODELS SK56-1, 57-1, 77, 7S, 79 & 80





HS-954 PARTS LOCATION

HS-953 & 954 SCHEMATIC-MODELS SK66 & 67

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

Packard Bell

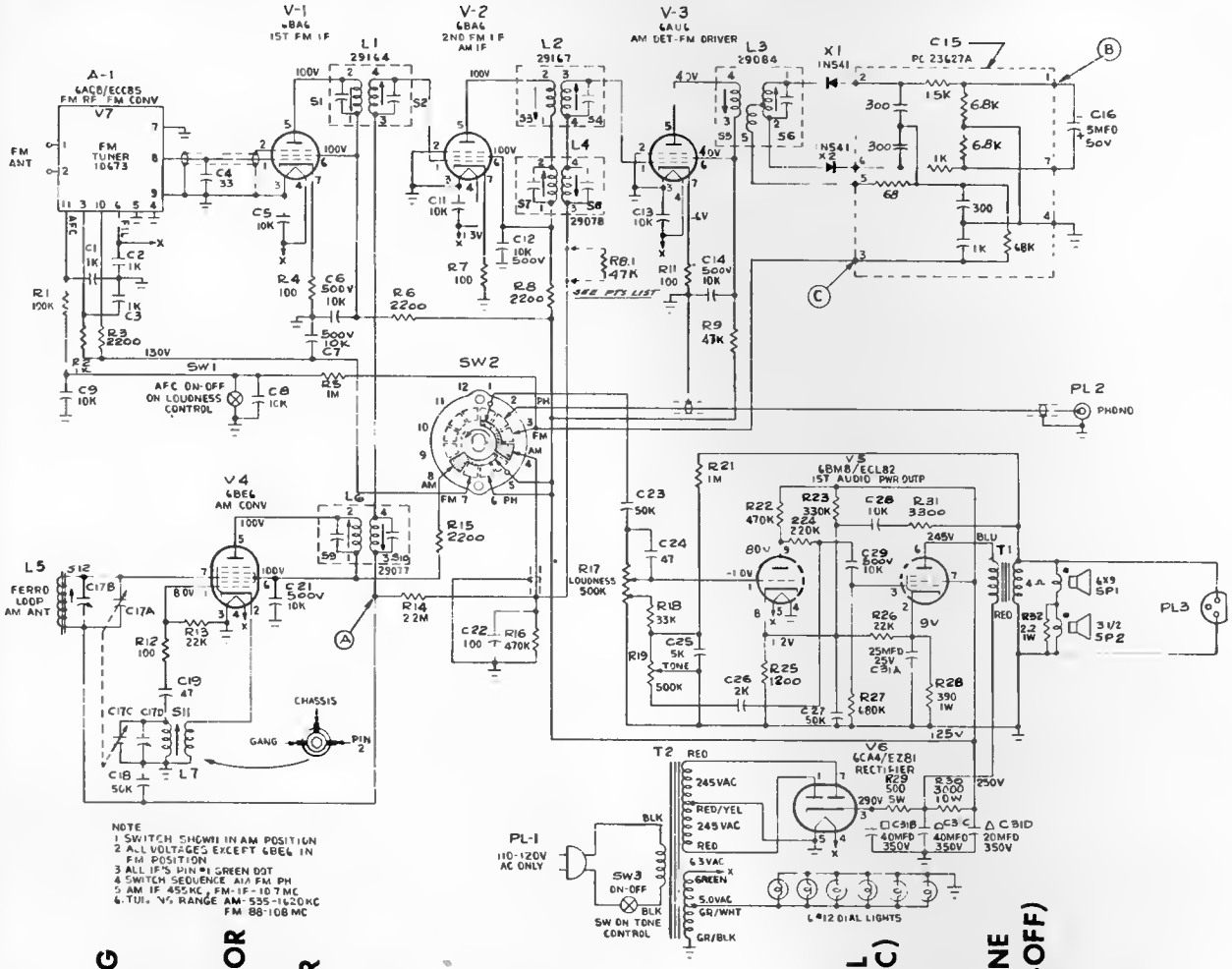
MODEL 7R4 RADIO

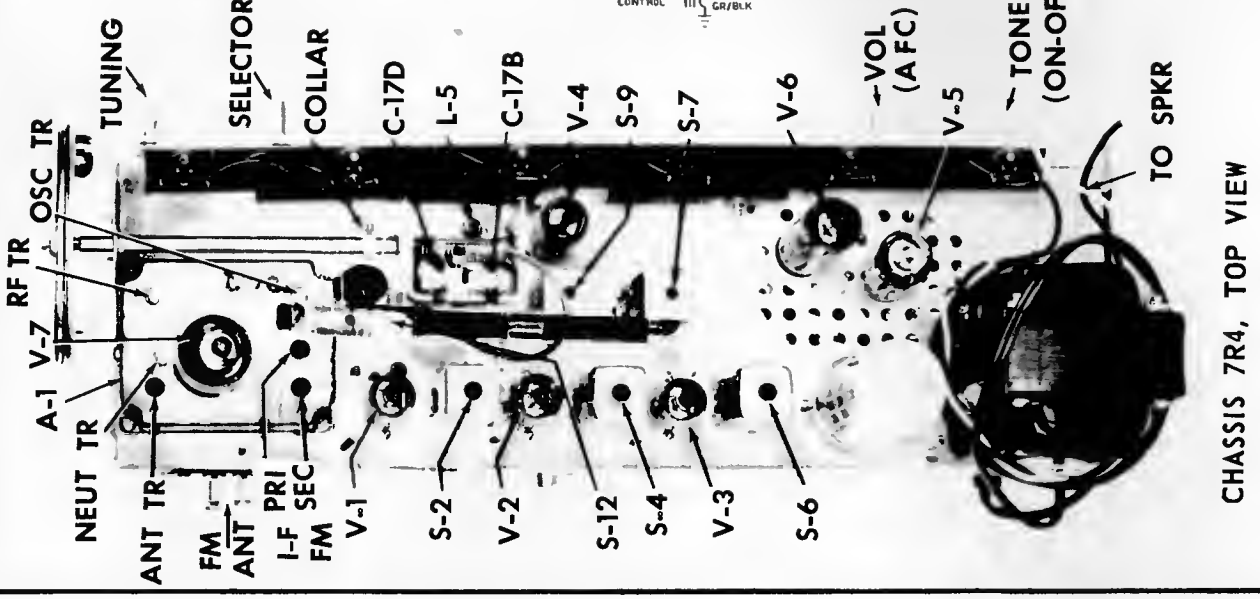
Model 7R4 is an AM-FM radio receiver containing seven electron tubes and three crystal diodes. The FM section contains AFC circuitry. A phono input socket is provided at the rear of the set,

Frequencies

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

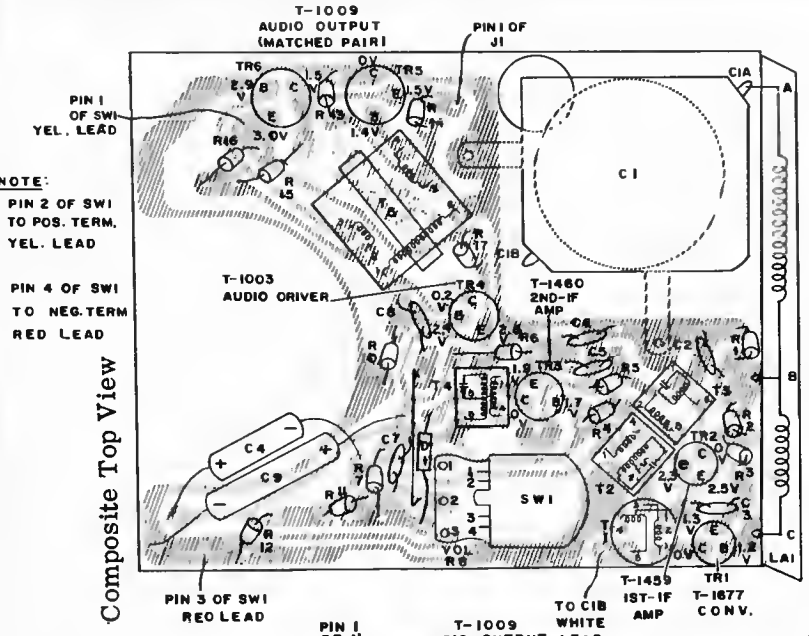
FM radio: 87.5 mc to 108.5 mc; I-F 10.70 mc

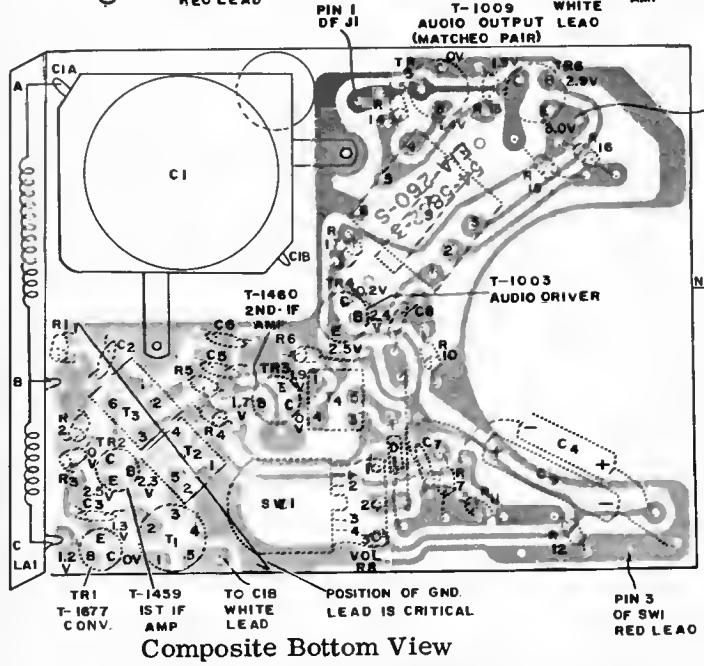




PHILCO

MODEL T-61, CODE 124

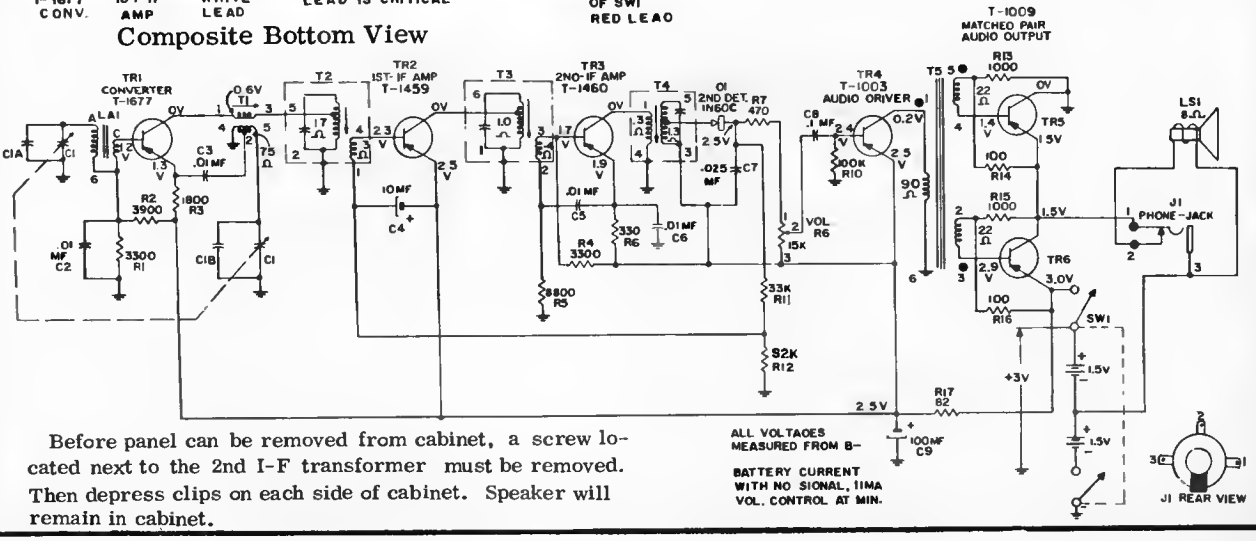




ALIGNMENT CHART

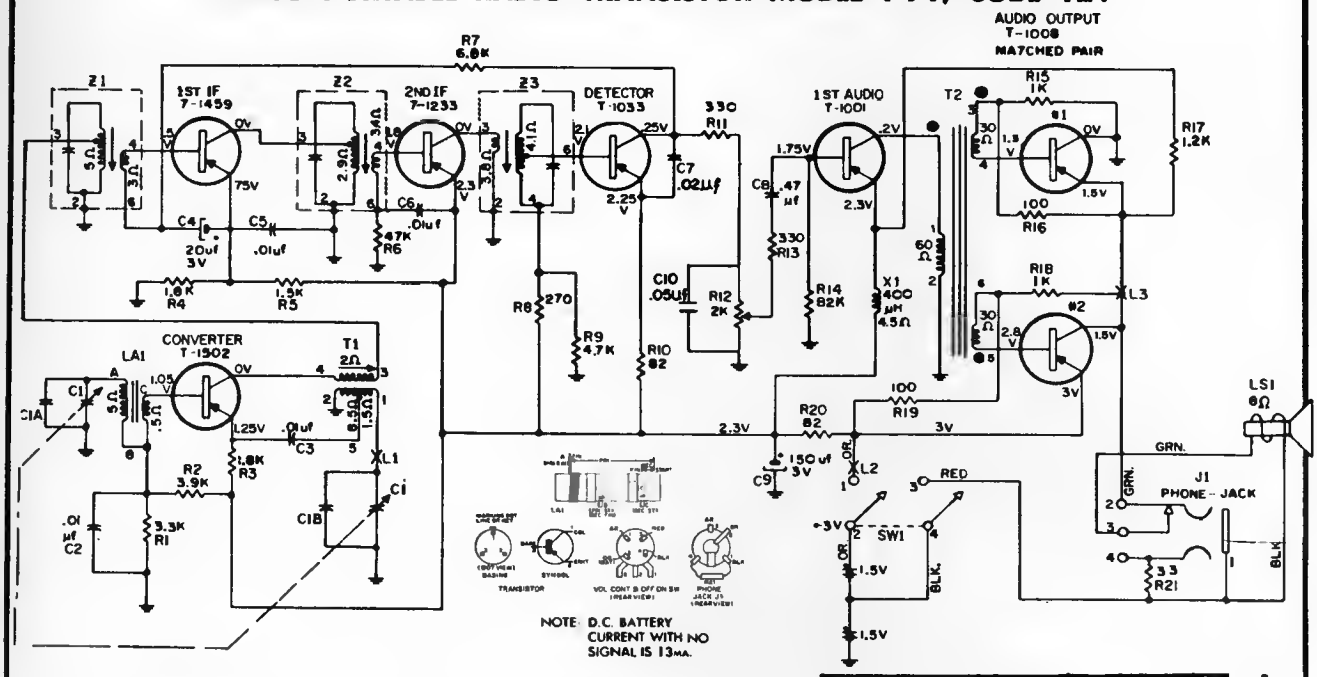
	SIGNAL GENERATOR		RADIO		
STEP	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	ADJUST
1	Connect signal generator through a .1-uf. condenser to ant. section of gang.	455 kc.	Tuning gang fully open.	Adjust for maximum output in order given.	T4—3rd I-F T3—2nd I-F T2—1st I-F
2	Use radiating 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.				

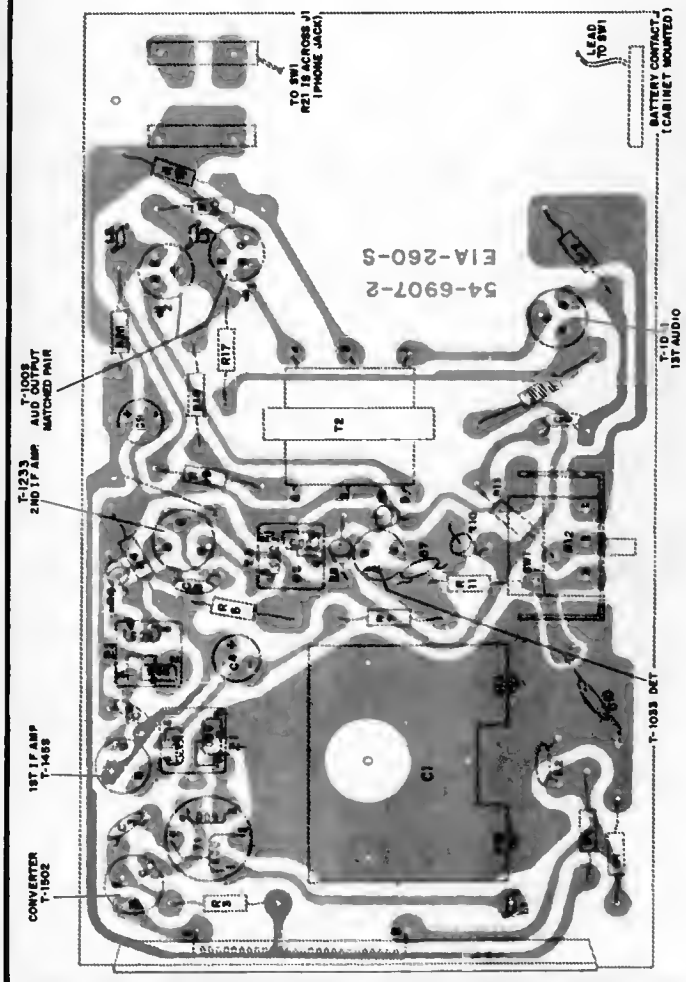
NOTE 1. Use a 6-to-8-turn, 6-inch-diameter loop made up of insulated wire. Connect to generator terminals, and place about one foot from radio loop.



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.

PHILCO PORTABLE RADIO TRANSISTOR MODEL T-71, CODE 124



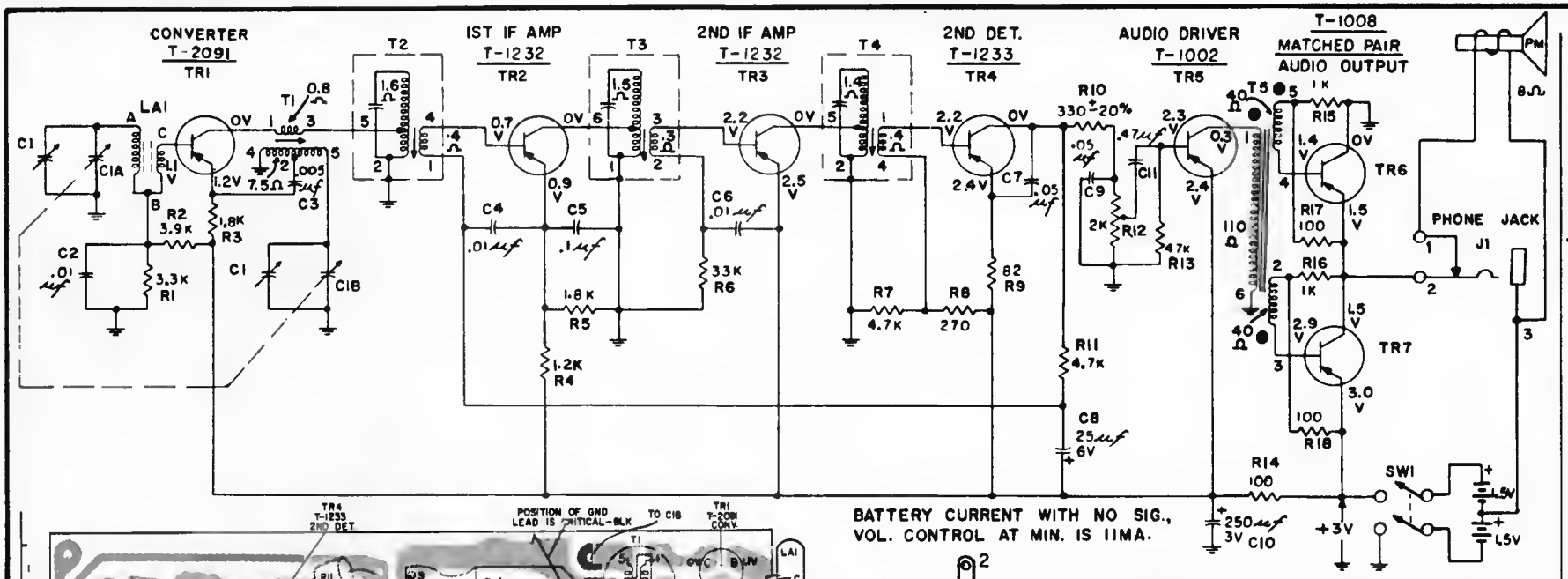


Component Panel Bottom View—Showing Parts Location

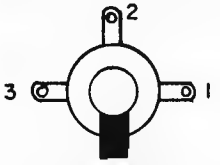
ALIGNMENT CHART

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.	Z3—3rd i-f Z2—2nd i-f Z1—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, place about one foot from radio loop.



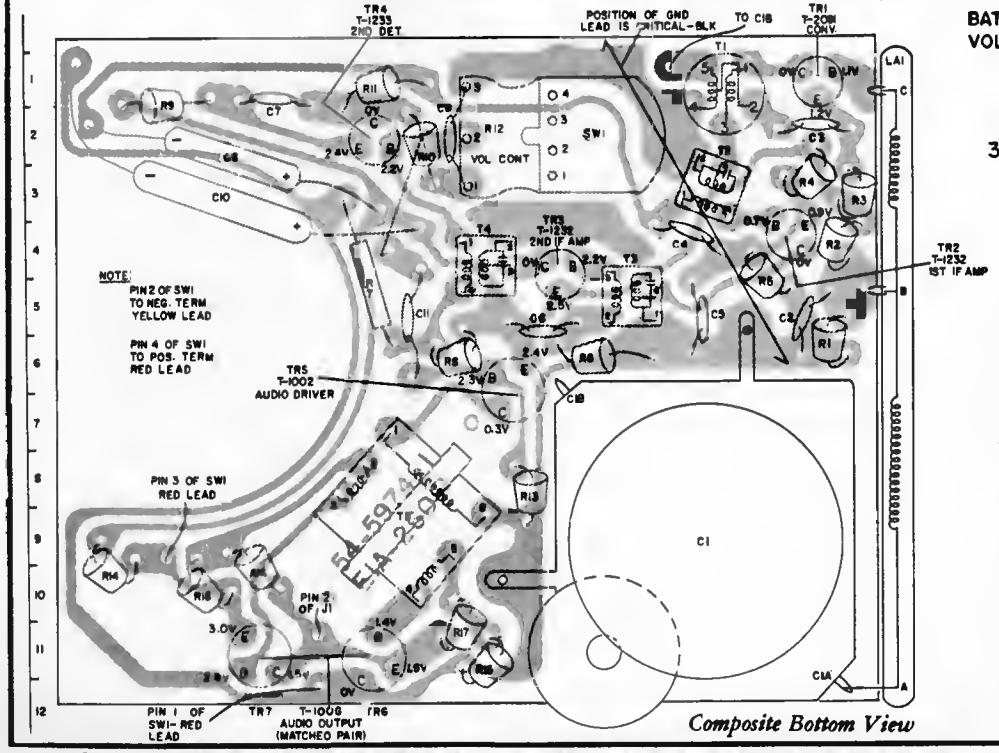
BATTERY CURRENT WITH NO SIG., VOL. CONTROL AT MIN. IS 11MA.



J1 REAR VIEW

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

ALL VOLTAGES MEASURED FROM B MINUS



Composite Bottom View

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.

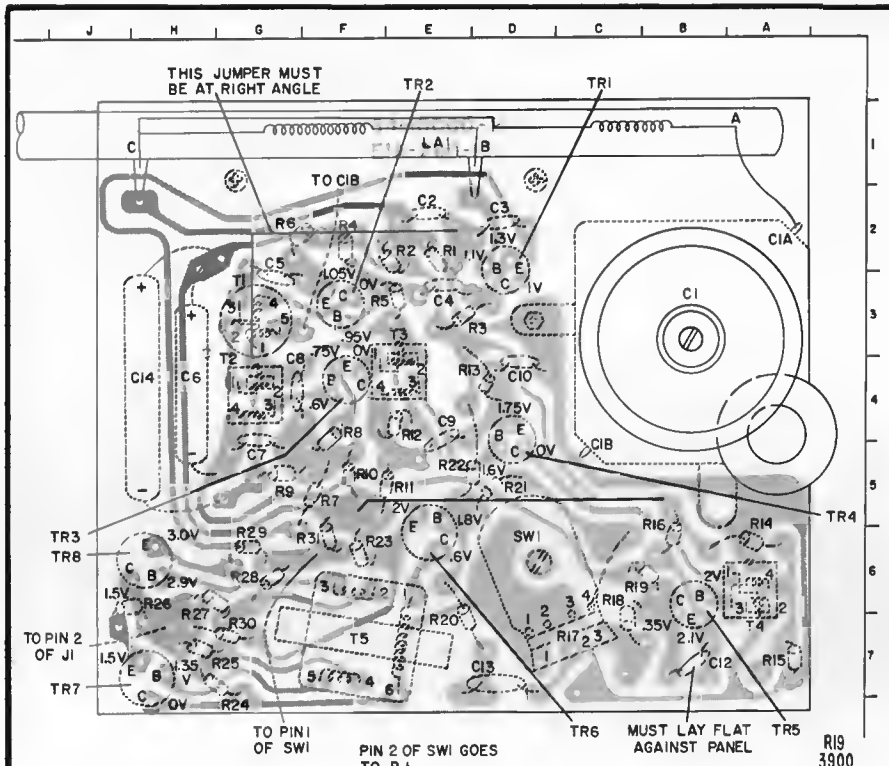
NOTE: Panel Removal

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.

PHILCO

MODEL T-77, CODE 124

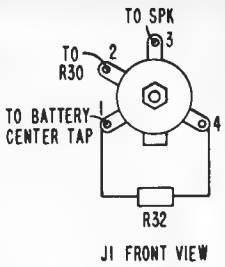
PHILCO TRANSISTOR RADIO
MODEL T-88, CODE 124



Composite Bottom View

TRANSISTOR IDENTIFICATION

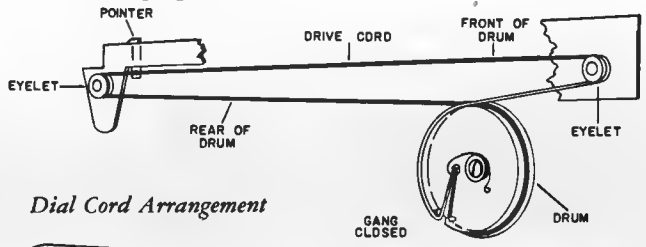
NOTES:
ALL RESISTOR VALUES EXPRESSED IN OHMS AND ALL CAPACITOR VALUES EXPRESSED IN MICROFARADS UNLESS OTHERWISE NOTED.
WHEN CHECKING DC RESISTANCES POSITIVE LEAD GOES TO BASE OF TRANSISTORS
WITH NO SIGNAL, VOLUME CONTROL AT MINIMUM, CURRENT = 9 MILLIAMPS



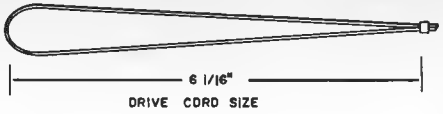
FREQUENCY COVERAGE—535 to 1620 KC.

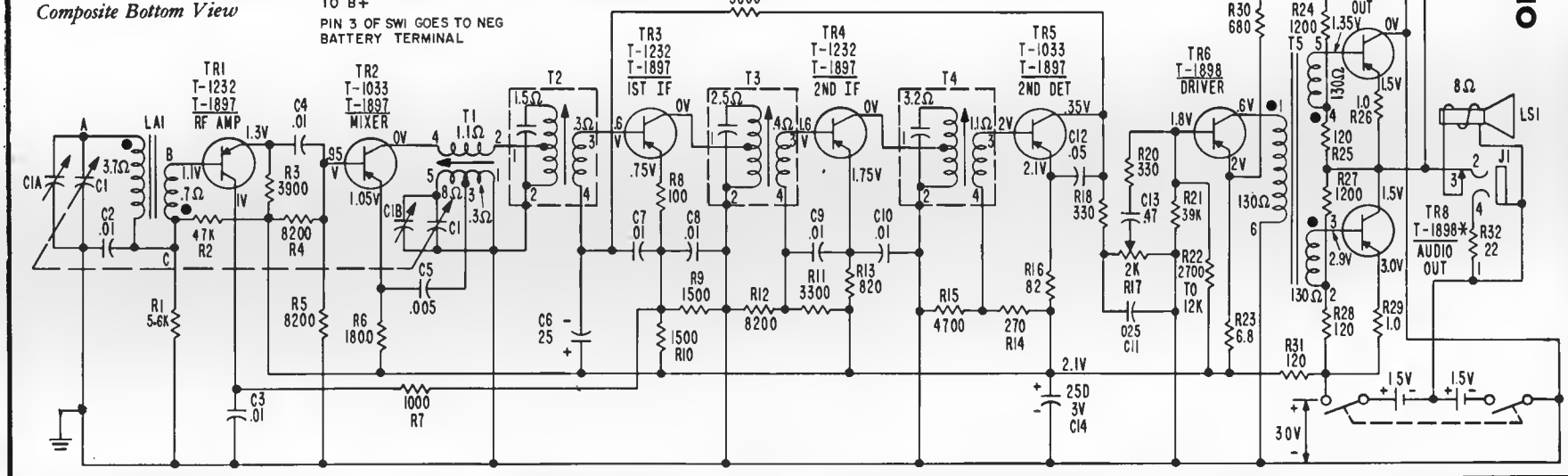
INTERMEDIATE FREQUENCY—455 KC.

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.

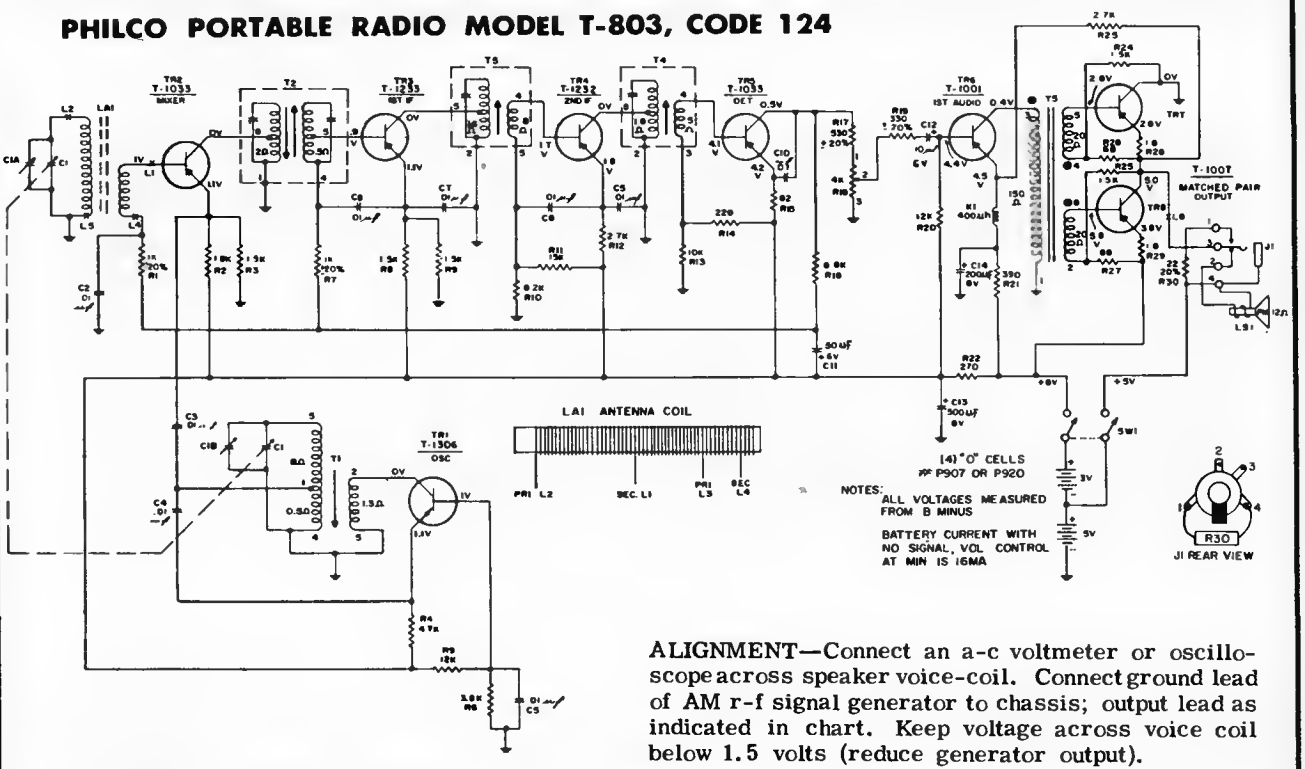


Dial Cord Arrangement





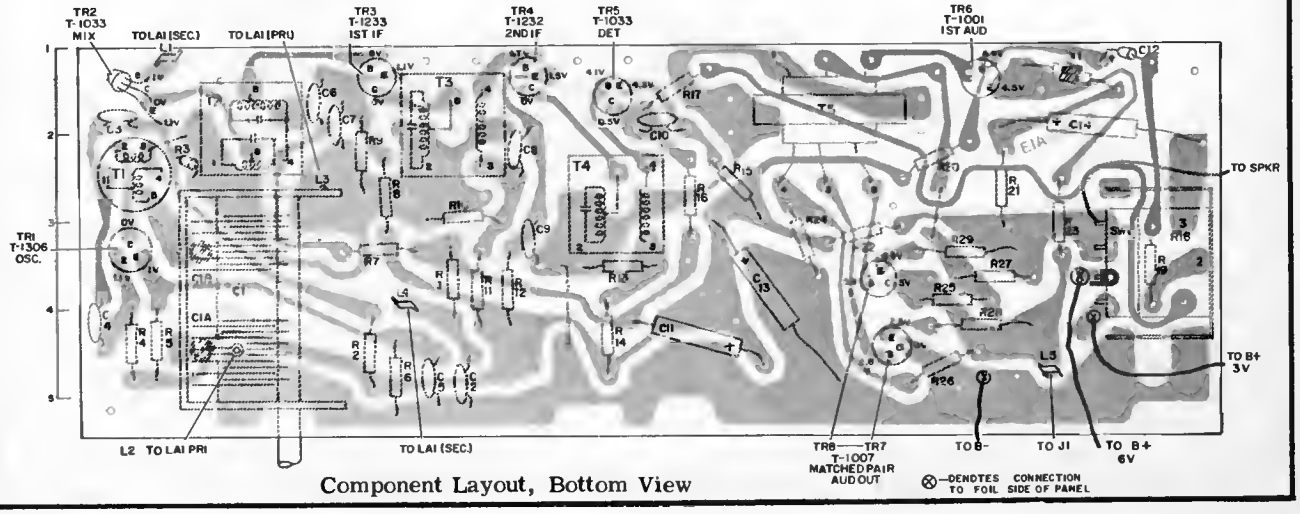
PHILCO PORTABLE RADIO MODEL T-803, CODE 124



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—ocs. 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.



Component Layout, Bottom View

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

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

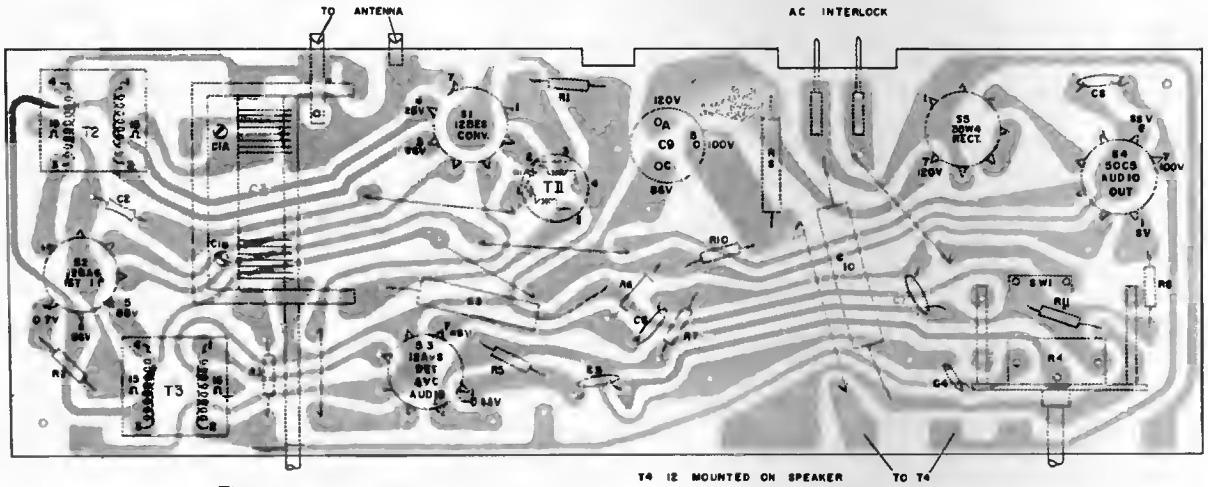


Figure 1. Bottom View of Perma Circuit Panel Component Layout Models K-849, K-850

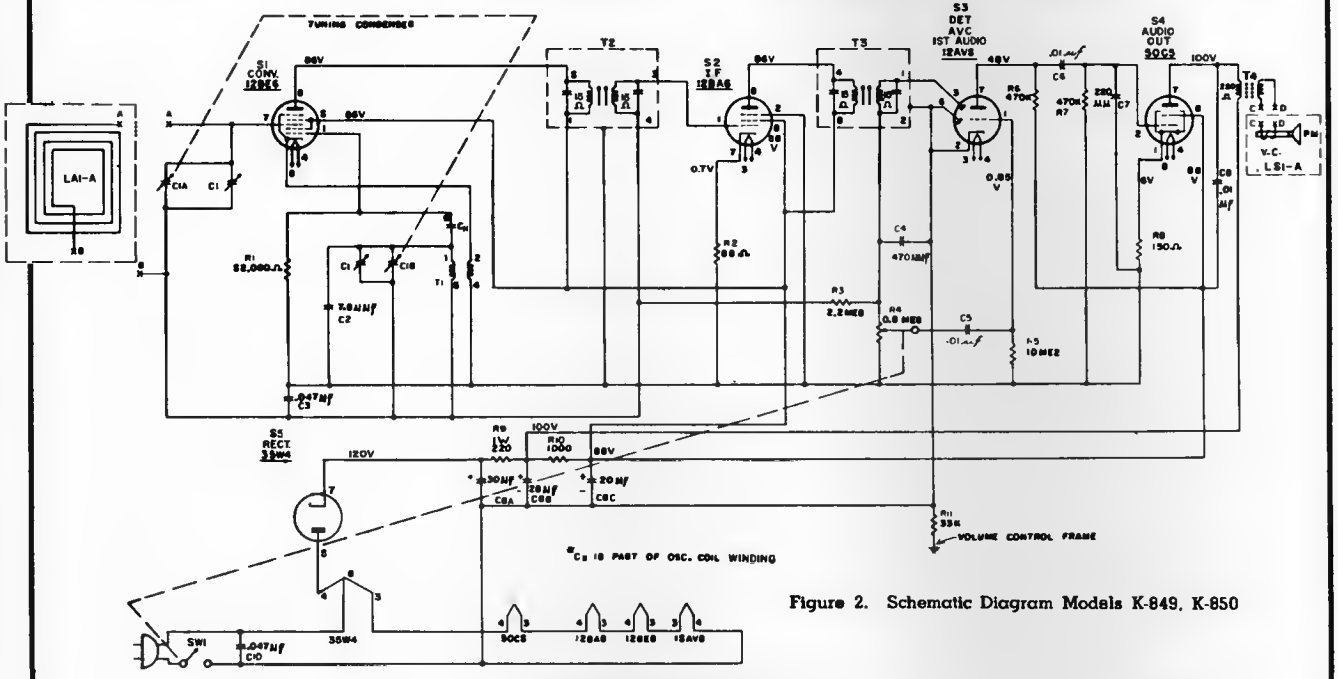


Figure 2. Schematic Diagram Models K-849, K-850

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)

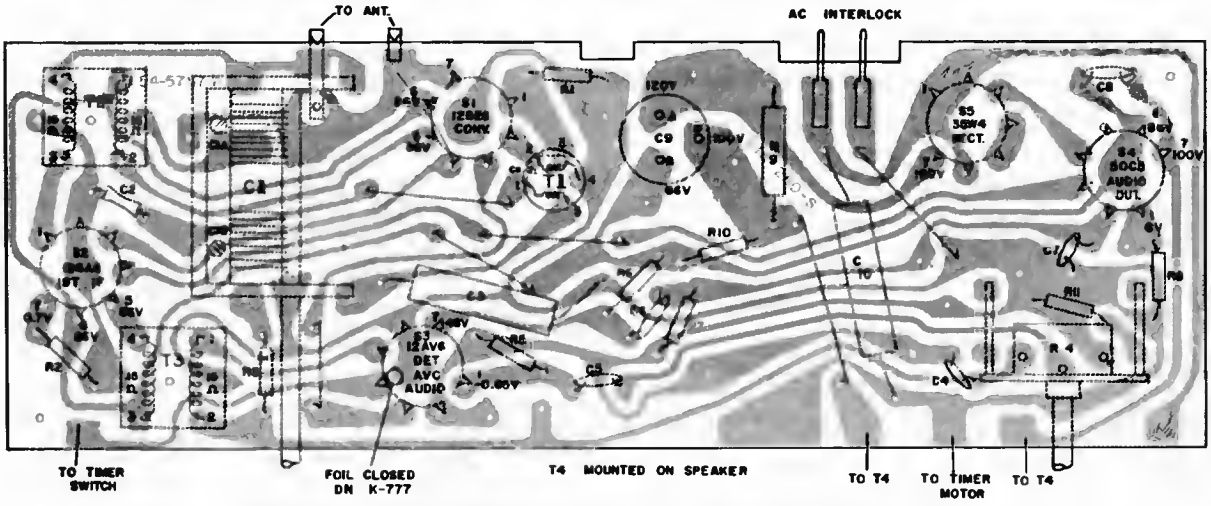
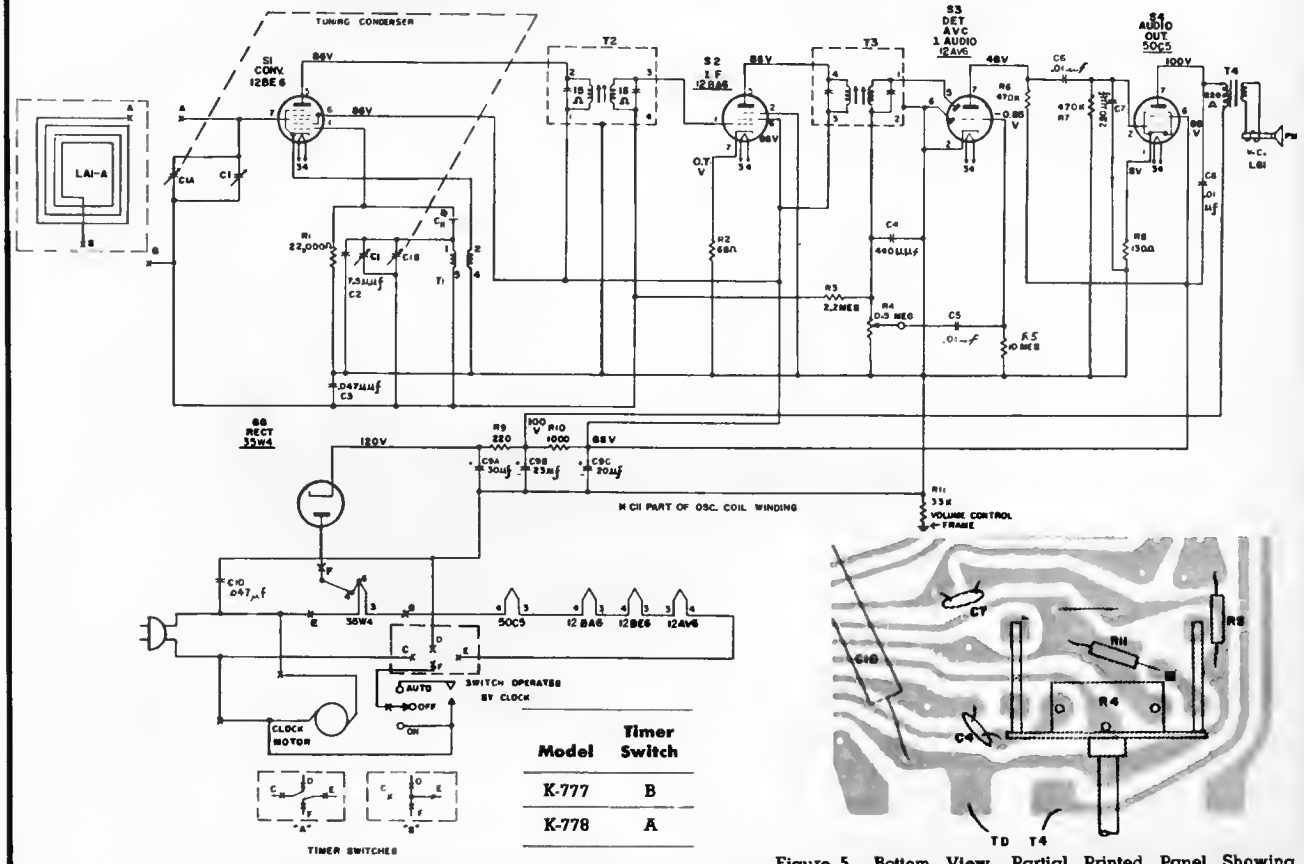


Figure 3. Bottom View of Perma Circuit Panel Component Layout Model K-778

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.



Model	Timer Switch
K-777	B
K-778	A

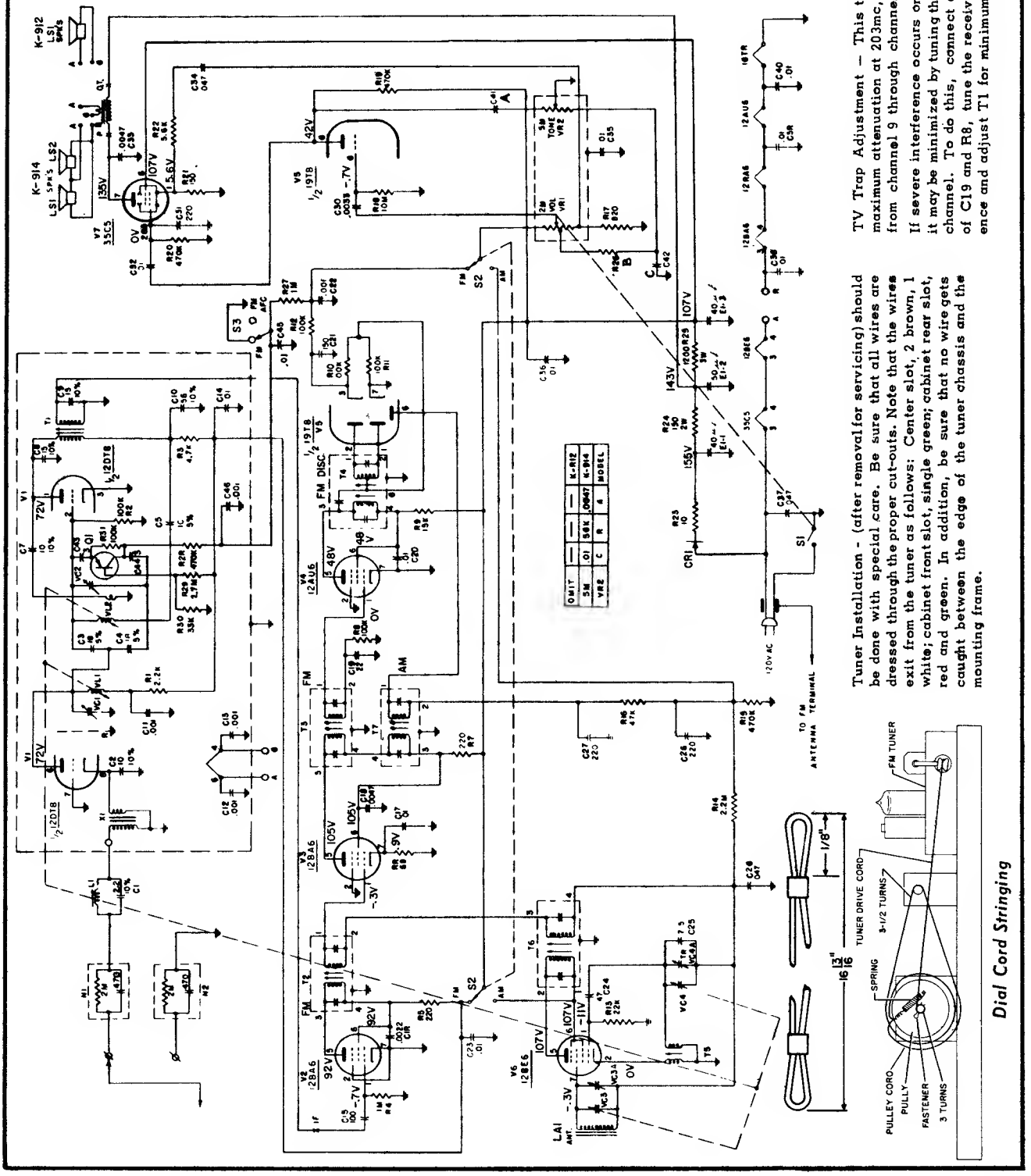
Figure 4. Schematic Diagram Models K-777, K-778

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

PHILCO

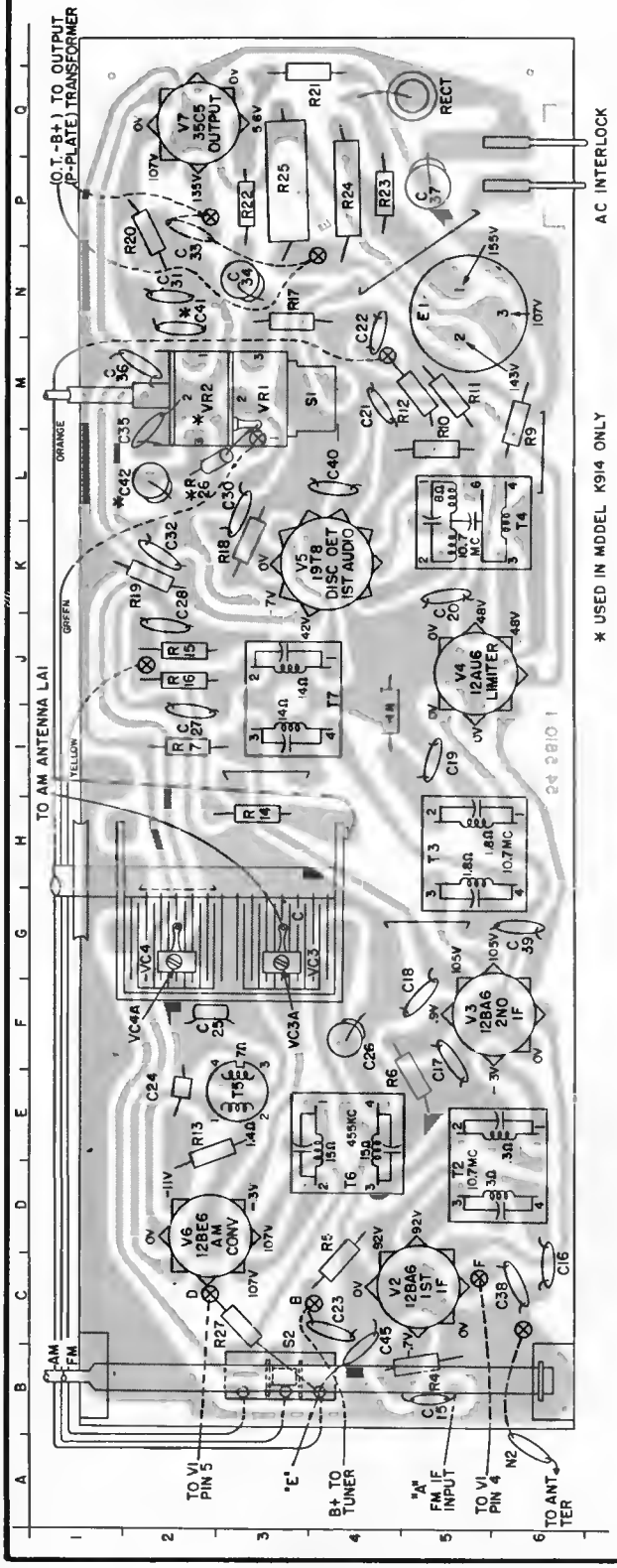
PHILCO AM/FM MODELS K-912, K-914

(Continued on the next page at right)



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

(Continued from preceding page)



PARTS LIST

Symbol	Location	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 Oscillator grid circuit	30-1251-48
C4	A3 [1]	Capacitor, 18 mmf, 5%, FM Oscillator grid circuit	30-1251-48
C5	B3 [1]	Capacitor, 10 mmf, 5%, Oscillator 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 cathode 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 Oscillator grid	30-1230-4
C25	F2	Capacitor, 7.5 mmf, AM Oscillator 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).

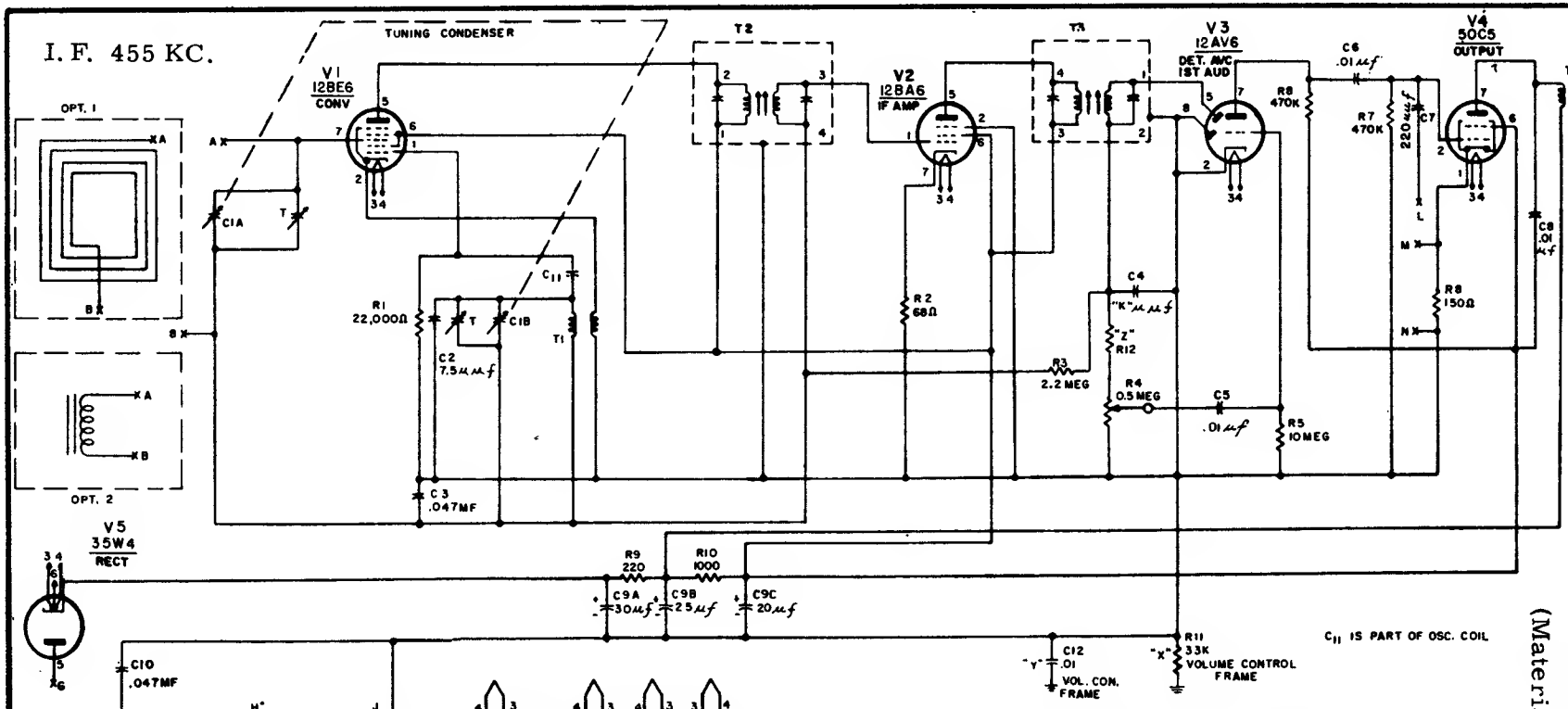


Figure 1. DIAGRAM MODELS K-780, K-782, K-783, K-784, K-785

"Z"	"Y"	"X"	APPLIANCE OUTLET	"K"	OPT. 8	OPT. 7	OPT. 6	OPT. 5	OPT. 4	OPT. 3	OPT. 2	OPT. 1	MODEL
47K	OMIT	USE	OMIT	220	USE	—	USE	—	—	USE	—	USE	K-782
47K	OMIT	USE	OMIT	220	USE	—	USE	—	USE	—	—	USE	K-780
OMIT	USE	OMIT	OMIT	470	USE	—	—	USE	—	USE	—	USE	K-785
47K	USE	OMIT	USE	220	USE	—	USE	—	-	USE	USE	—	K-784
47K	OMIT	USE	OMIT	220	USE	—	USE	—	—	—	USE	—	K-783

The K-780, K-782, K-783, K-784 and K-785 are all clock models. The K-780, incorporates a "40 winks" feature which permits the set to be turned off by depressing the button on top. After approximately 7 minutes, the set will turn itself on. This cycle can be repeated up to a maximum of one hour. The "40 winks" circuit is inoperative when the clock switch is in either the "ON" or "OFF" positions.

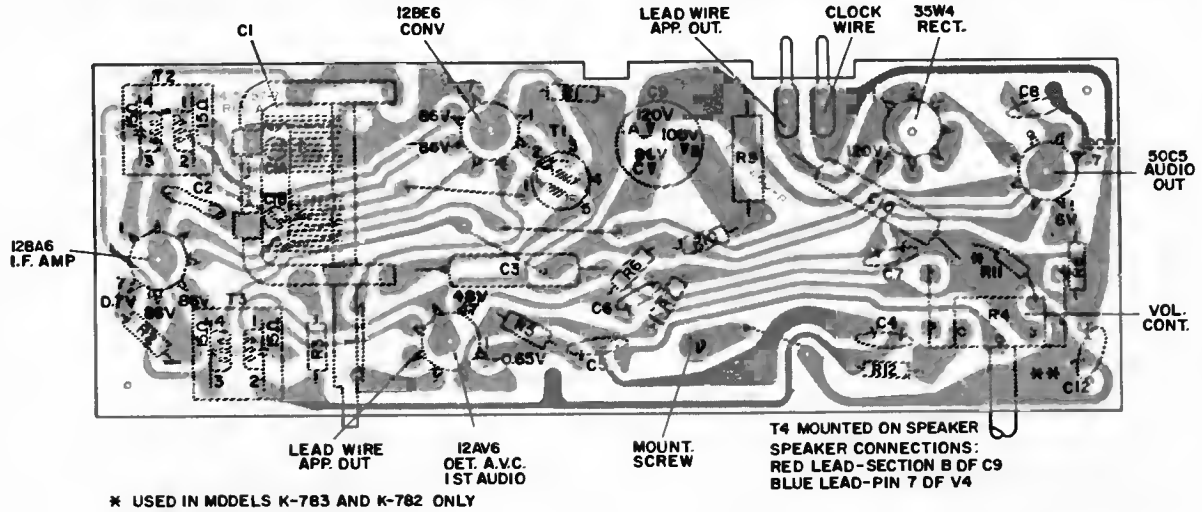
Models K-782 and K-783 employ the "40 winks" circuit to mute a buzzer by means of a pushbutton located on the cabinet top. These models also include a "sleep" position which turns the set off after a preset time period. The buzzer is inoperative when the lever is in the "Auto Radio".

Models K-784 and K-785 both employ four "piano keys" marked "sleep", "radio", "alarm", and "off". If the set is off, and the sleep button is pushed, the set will play for a period of ten minutes. If this button is pushed twice, the set will play for 30 minutes, and so on up to a maximum period of 65 minutes. If the alarm is on, the sleep button will mute it for a period of 10 - 30 minutes, depending on the number of times the sleep button is depressed.

(Material continued on the next two pages)

(Service 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)



* USED IN MODELS K-783 AND K-782 ONLY
** USED IN MODEL K-784 ONLY

Figure 2. Bottom View of Perma Circuit Ponel Component Loyout Models K–782, K–783, K–784

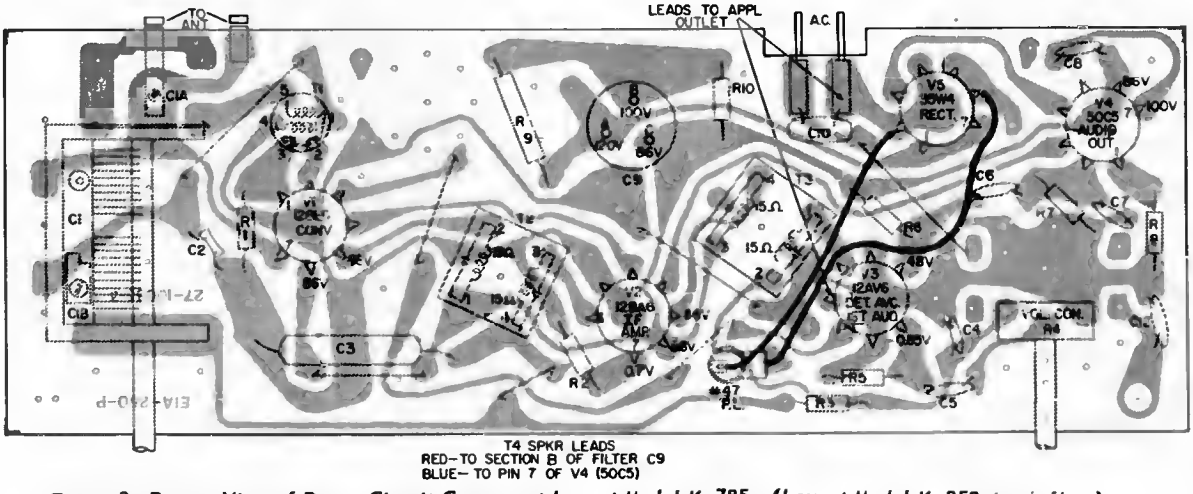
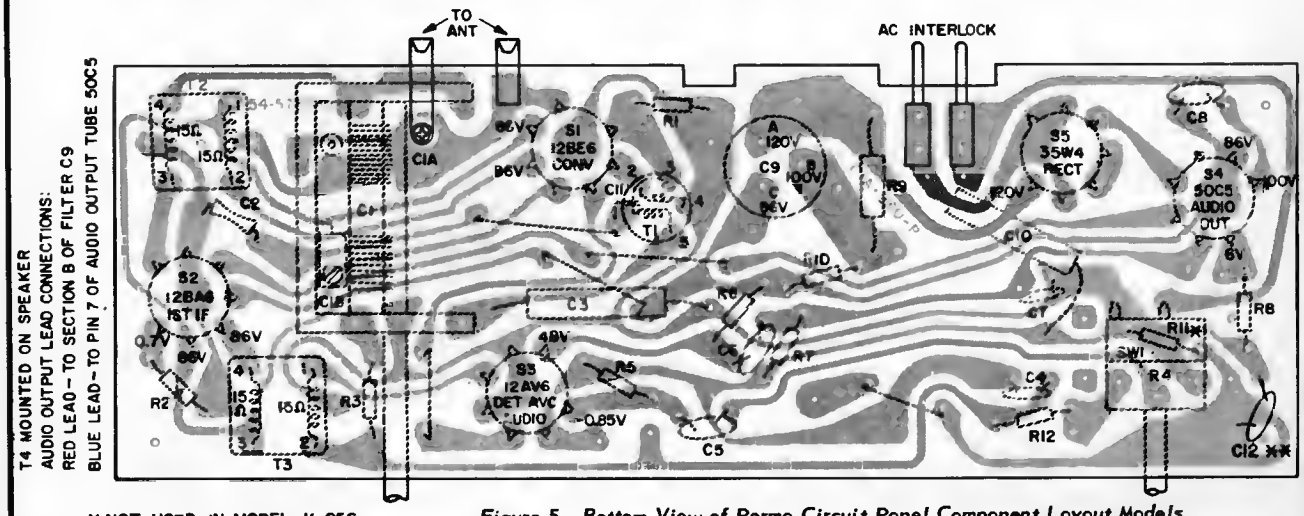


Figure 3. Bottom View of Permo Circuit Component Loyout Model K–785 (Loyout Model K–858 is similar.)



* NOT USED IN MODEL K-856
** USED IN MODEL K-856 ONLY

Figure 5. Bottom View of Permo Circuit Ponel Component Loyout Models K–847, K–851, K–852, K–853, K–855, K–856, ond K–780

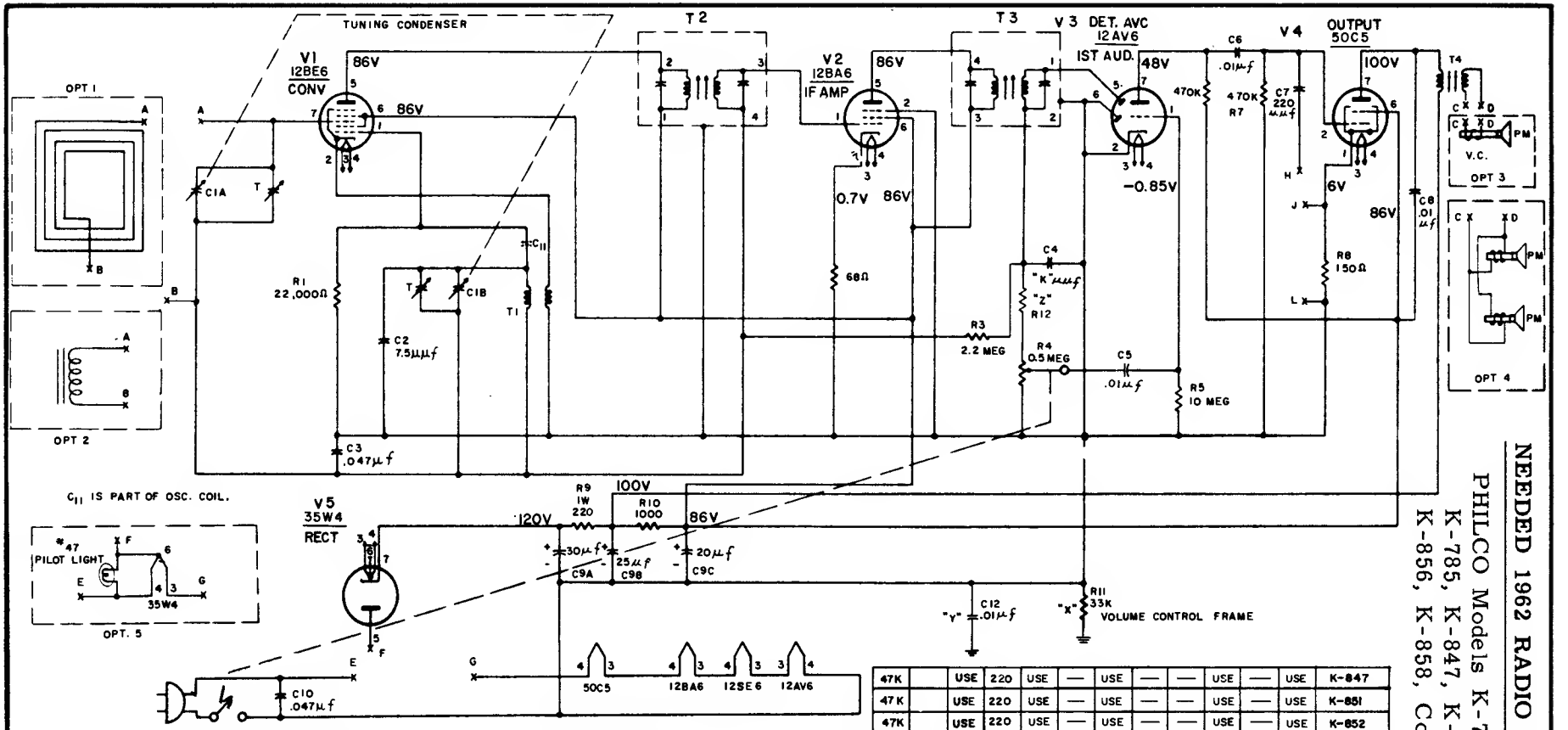
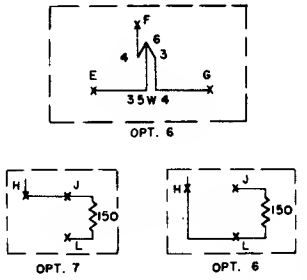


Figure 4. Schematic Diagram Models K–847, K–851, K–852, K–853, K–855, K–856, K–858

47K		USE	220	USE	—	USE	—	—	USE	—	USE	K-847
47K		USE	220	USE	—	USE	—	—	USE	—	USE	K-851
47K		USE	220	USE	—	USE	—	—	USE	—	USE	K-852
47K		USE	220	USE	—	USE	—	—	USE	—	USE	K-853
47K	—	USE	220	USE	—	USE	—	USE	—	—	USE	K-855
47K	USE	OMIT	220	USE	—	USE	—	USE	—	USE	—	K-856
OMIT	USE	OMIT	470	USE	—	—	USE	USE	—	—	USE	K-858
"Z"	"Y"	"X"	"K"	OPT. 8	OPT 7	OPT. 6	OPT. 5	OPT. 4	OPT. 3	OPT. 2	OPT. 1	MODEL



I. F. 455 KC.

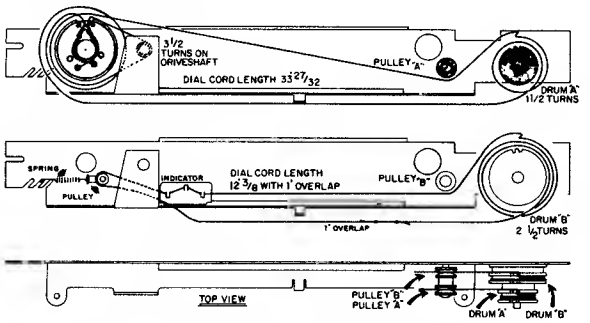


Figure 7. Dial Card Installation – Models K–785, K-784 K–856 and K–858

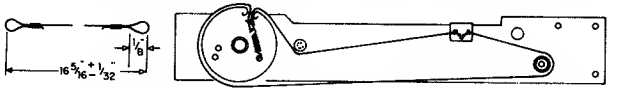


Figure 8. Dial Card Installation – Models K–856 and K–784

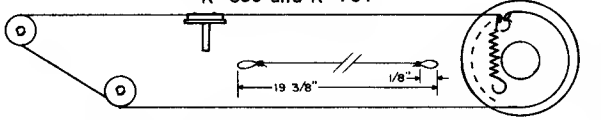


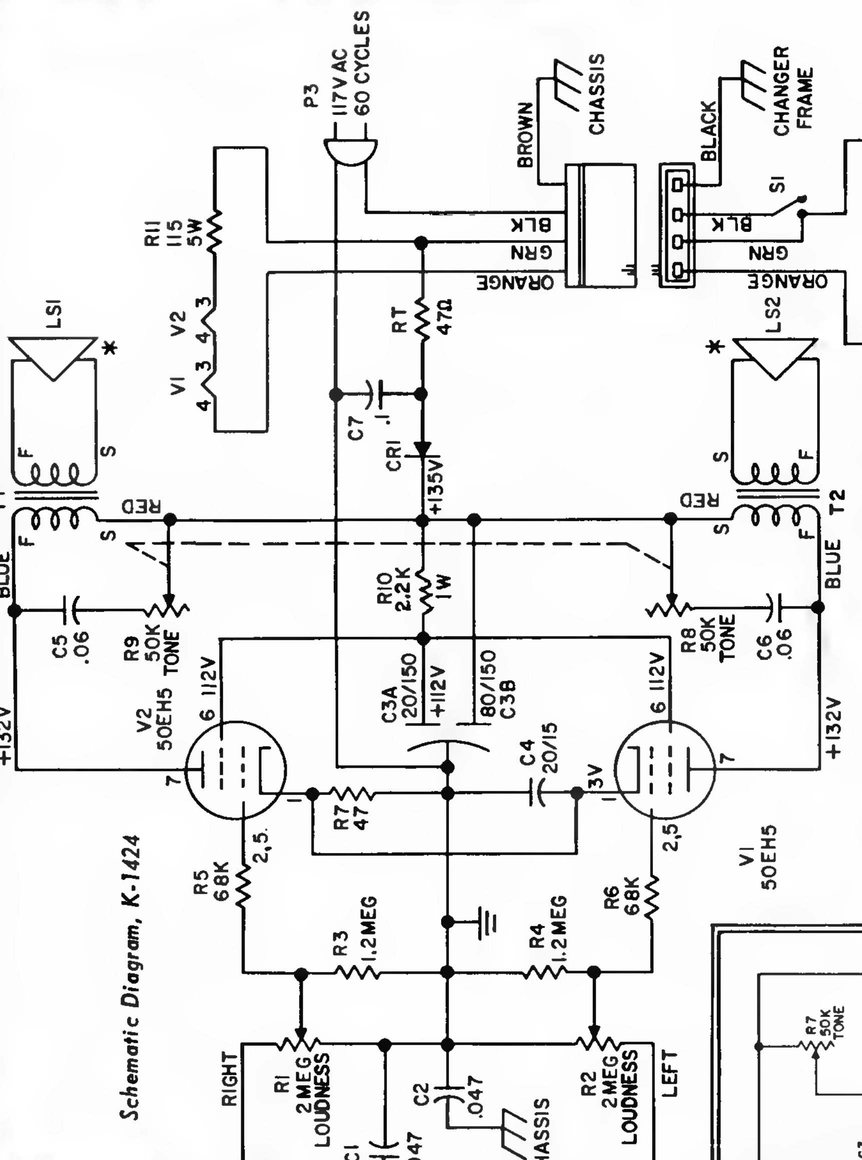
Figure 9. Dial Card Installation – Models K–783 and K–855

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

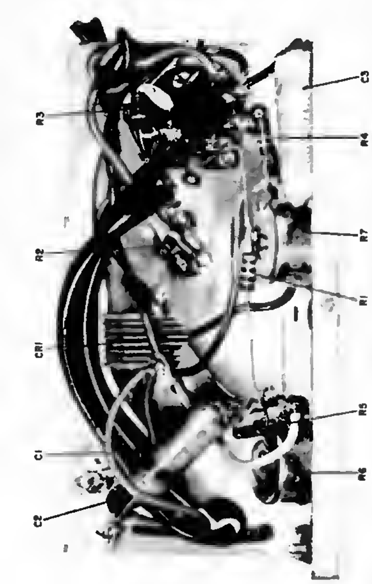
PHILCO

PHONO MODELS K-1414, K-1424

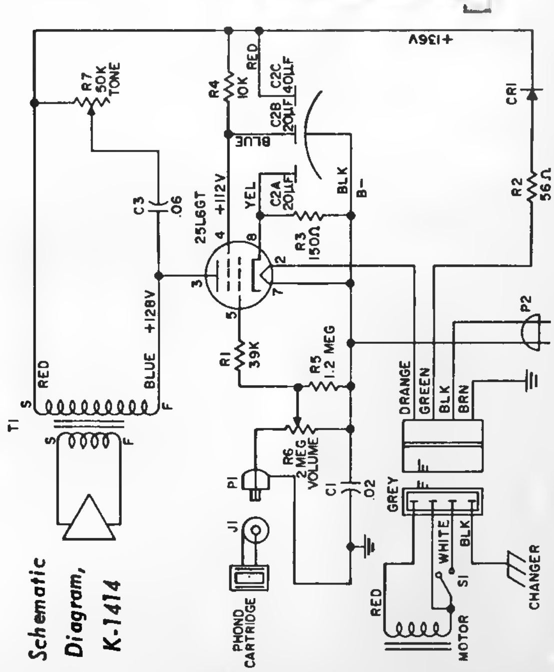


Schematic Diagram, K-1424

MODEL K-1424



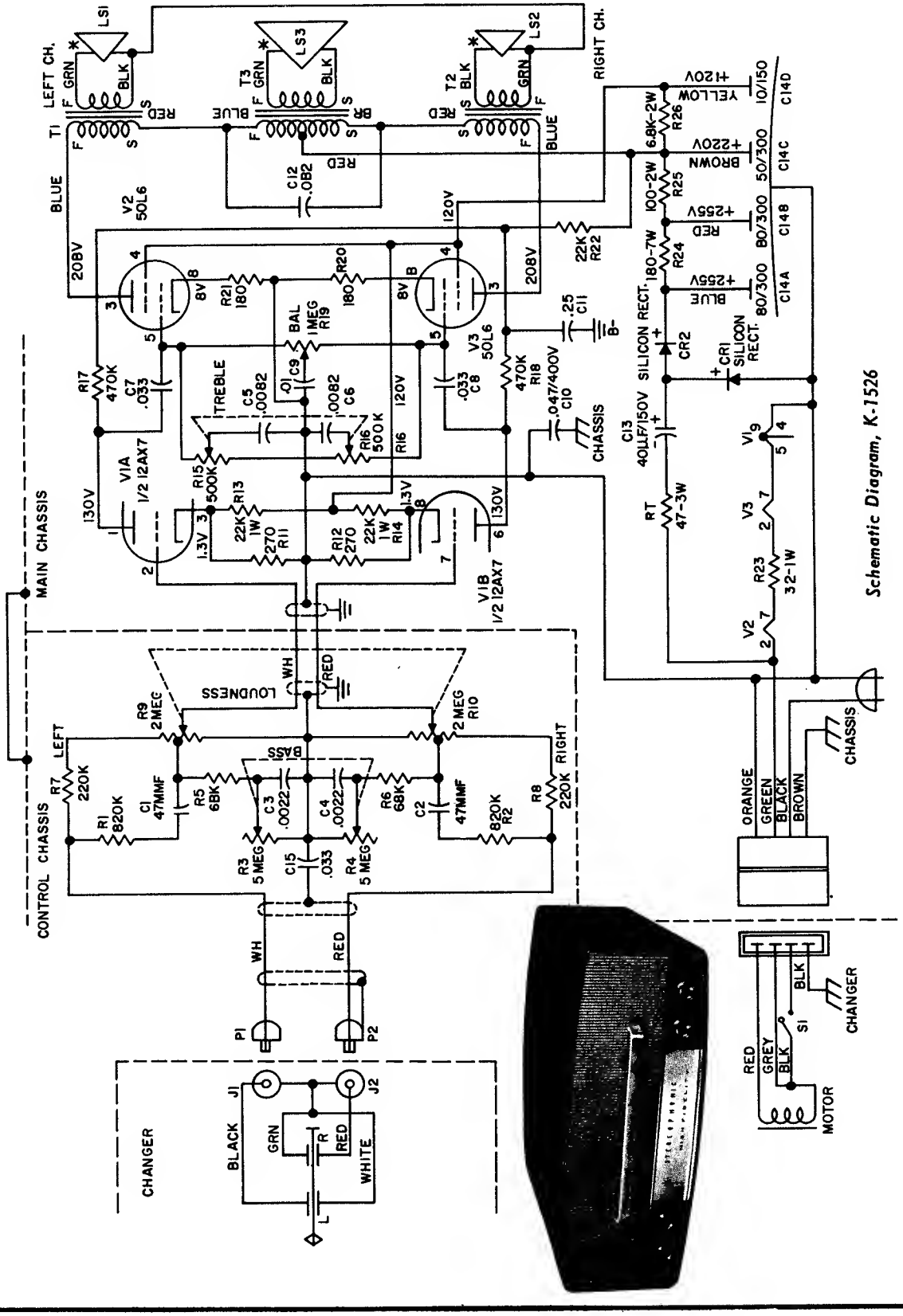
Chassis Bottom View, K-1414



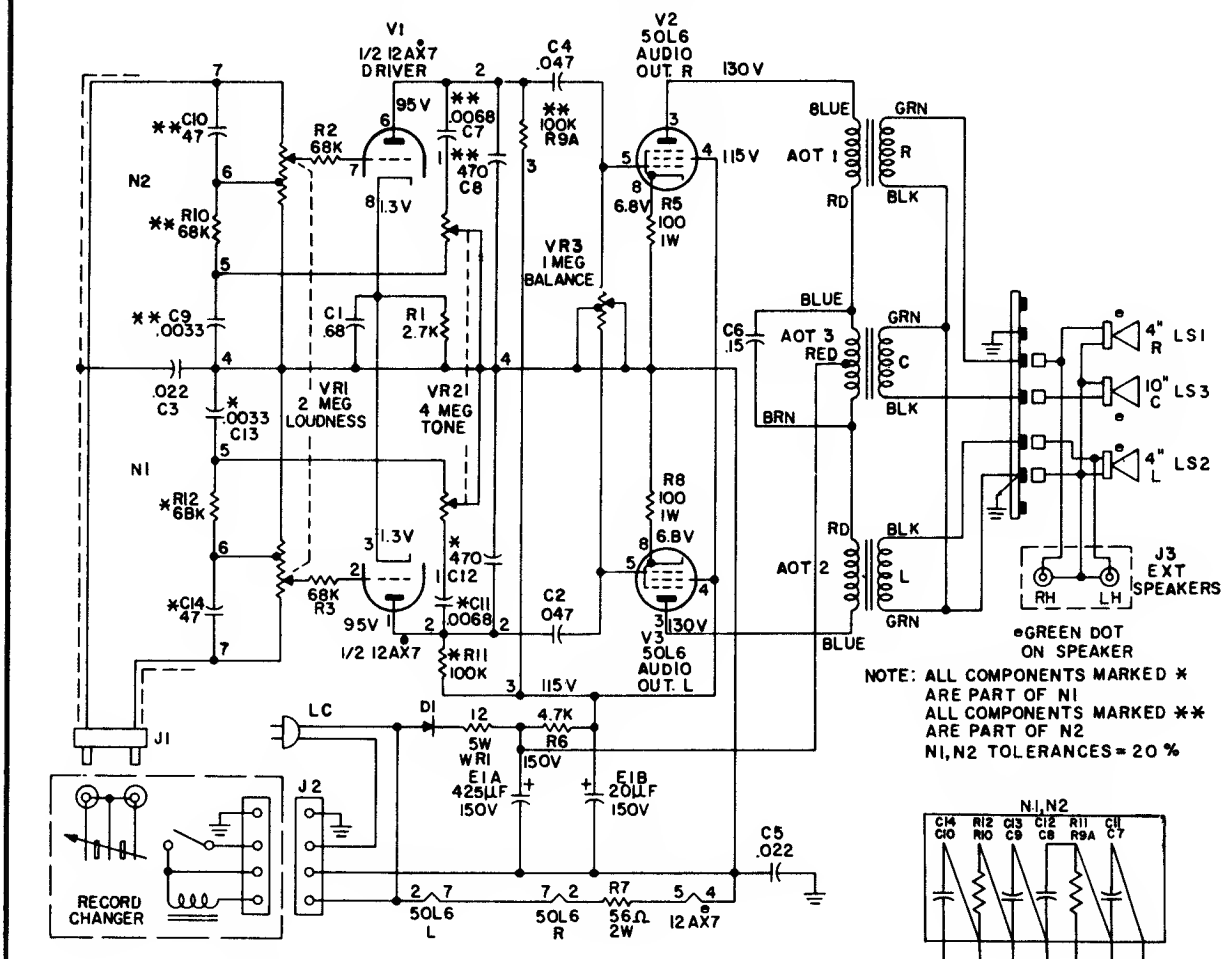
Schematic Diagram, K-1414

PHILCO PHONOGRAPH MODEL K-1426

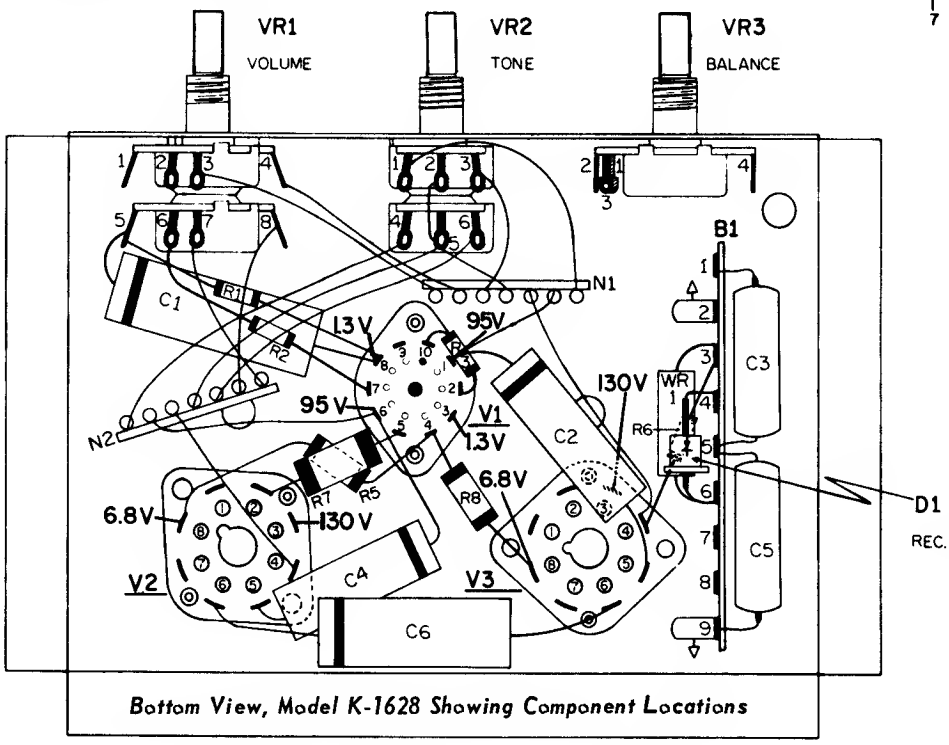
PHILCO MODEL K-1526



PHILCO AMPLIFIER—MODEL K-1628



NOTE: ALL COMPONENTS MARKED * ARE PART OF N1
ALL COMPONENTS MARKED ** ARE PART OF N2
N1, N2 TOLERANCES = 20 %



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.

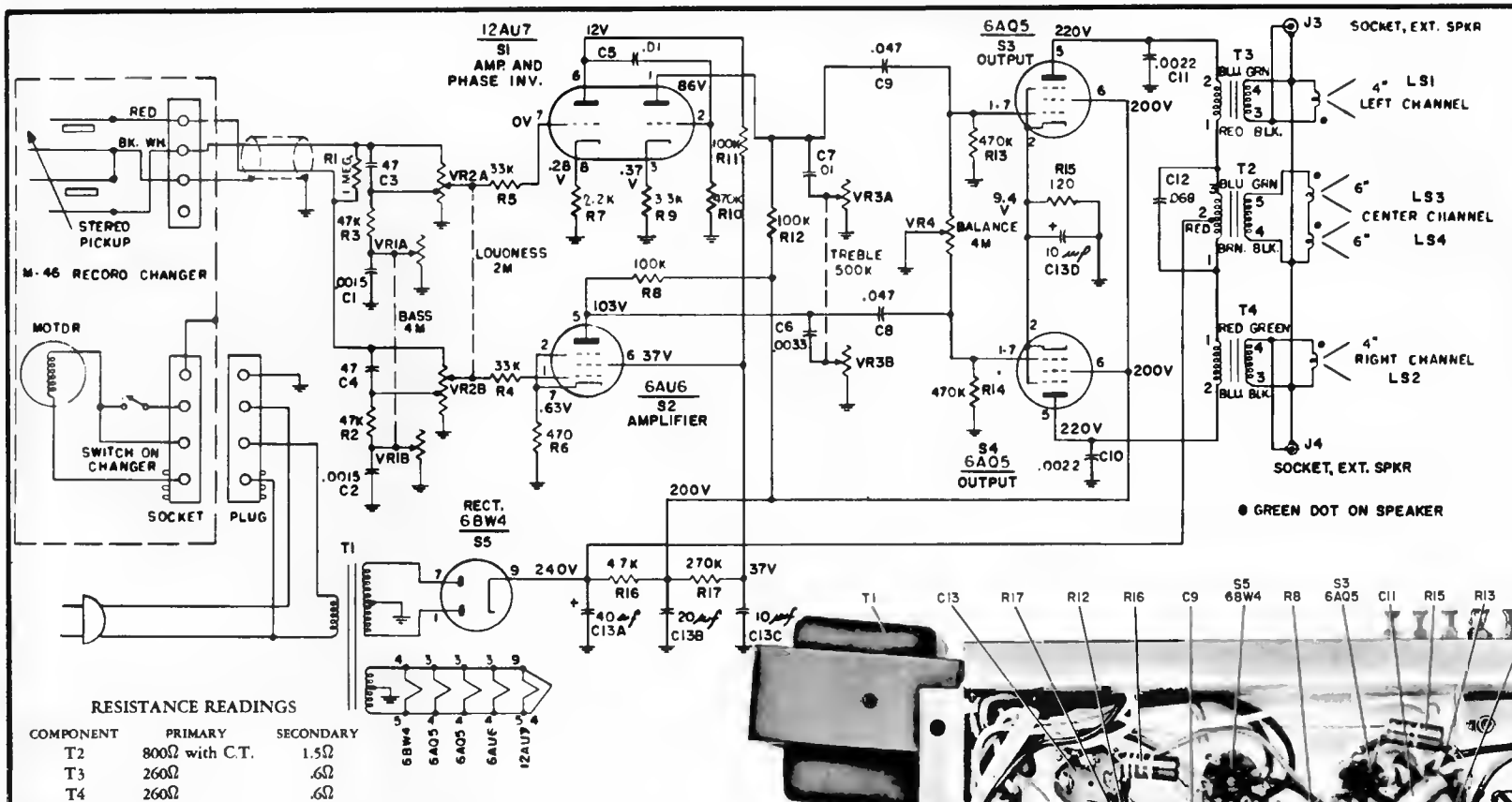
OPERATING VOLTAGE: 105-120 volts, 60 cycles A.C.

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

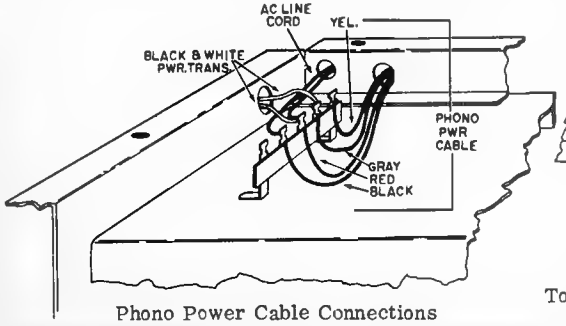


RESISTANCE READINGS

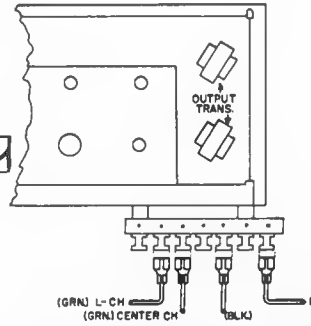
COMPONENT	PRIMARY	SECONDARY
T2	800Ω with C.T.	1.5Ω
T3	260Ω	.6Ω
T4	260Ω	.6Ω

NOTE: All resistance readings made with component in circuit.

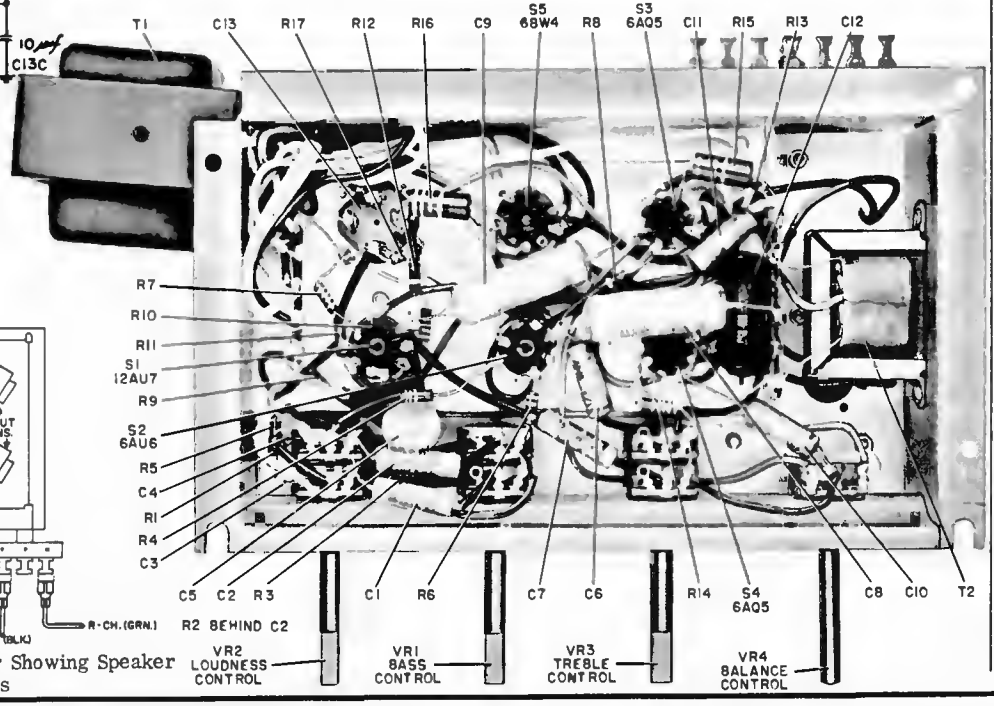
VOLTAGE READING TAKEN FROM CHASSIS GROUND WITH PHILCO MODEL 6110 V.T.V.M.



Phono Power Cable Connections



Top View of Amplifier Showing Speaker Lead 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

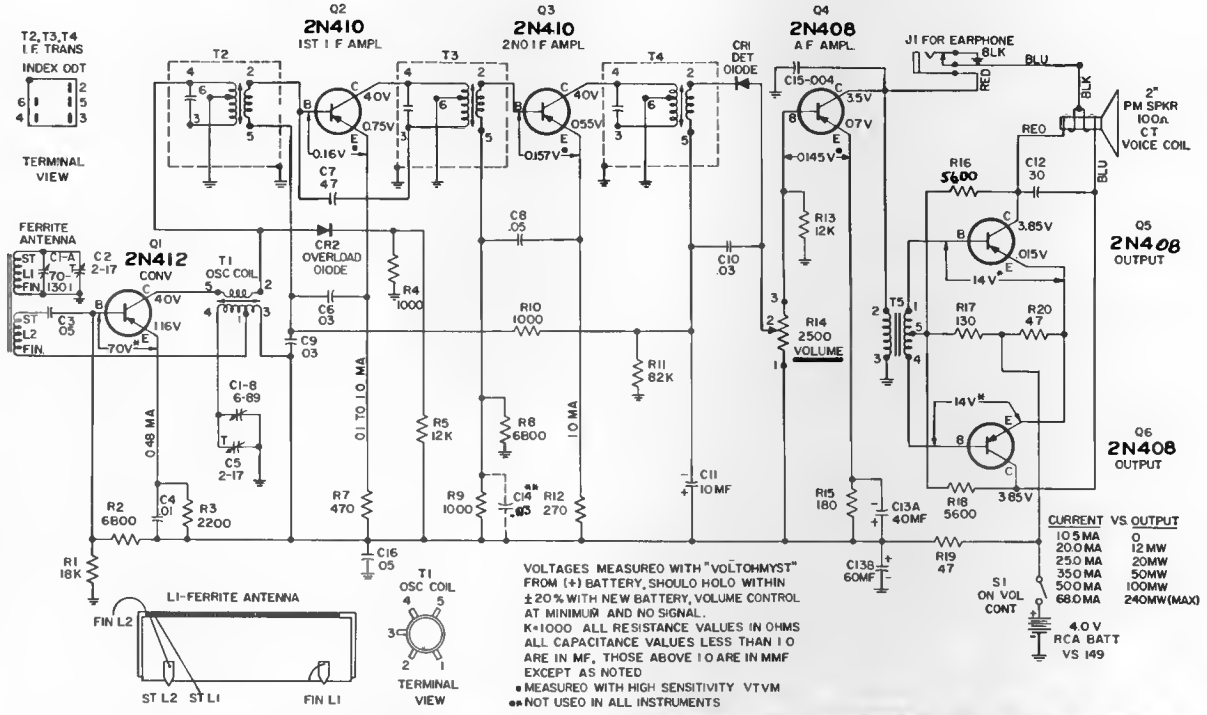
Chassis No. RC-1199D

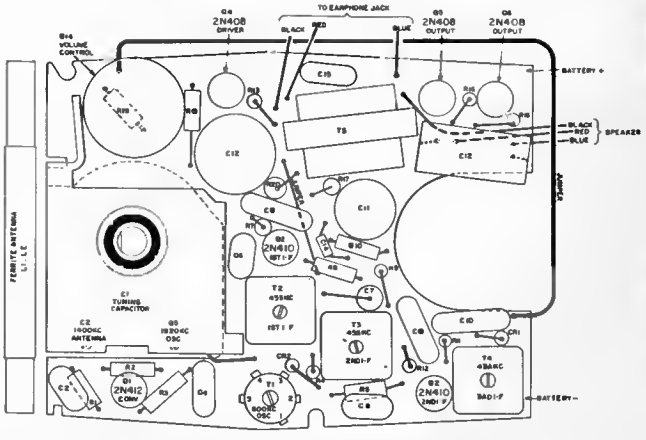
CHASSIS REMOVAL

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.

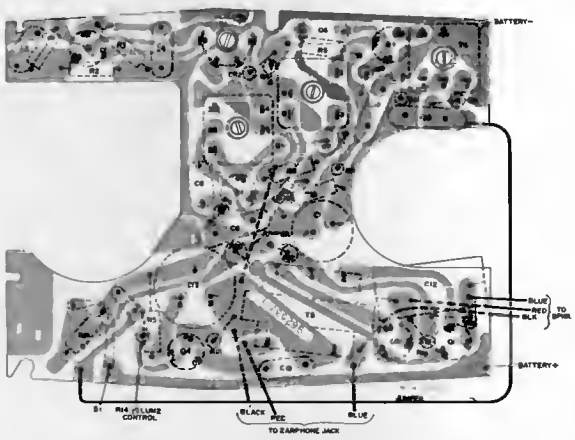
CRITICAL LEAD DRESS

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 mf capacitor.





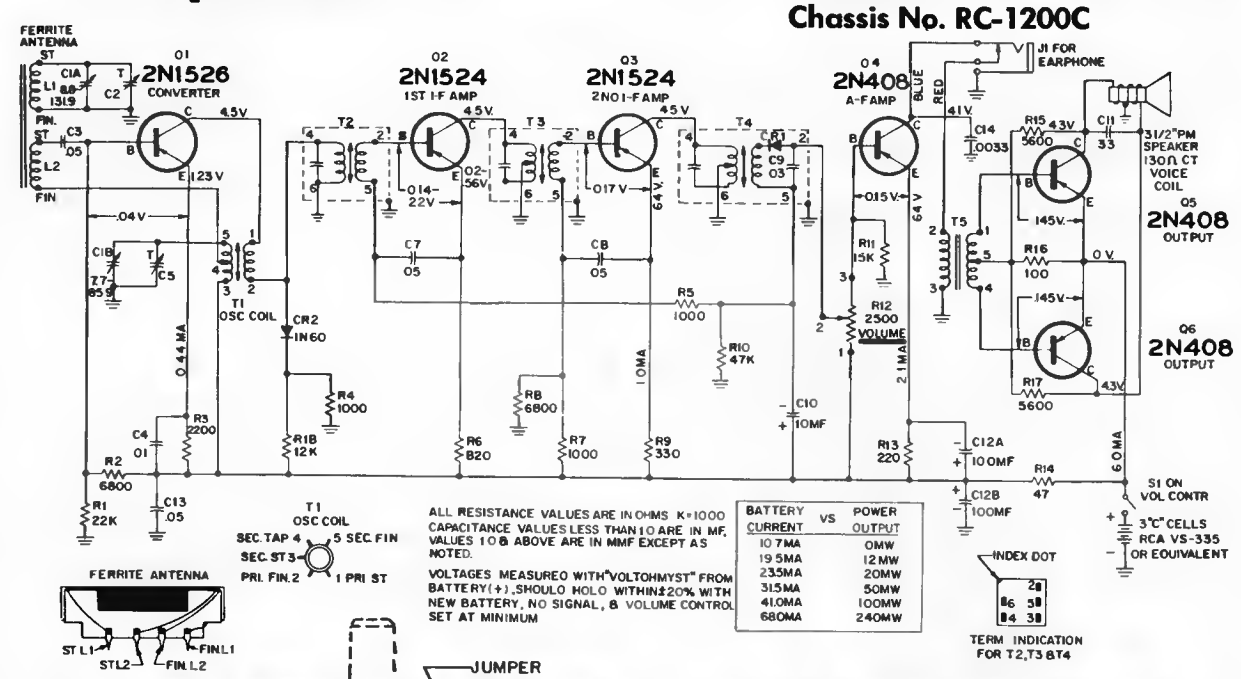
Chassis Layout—View from Component Side

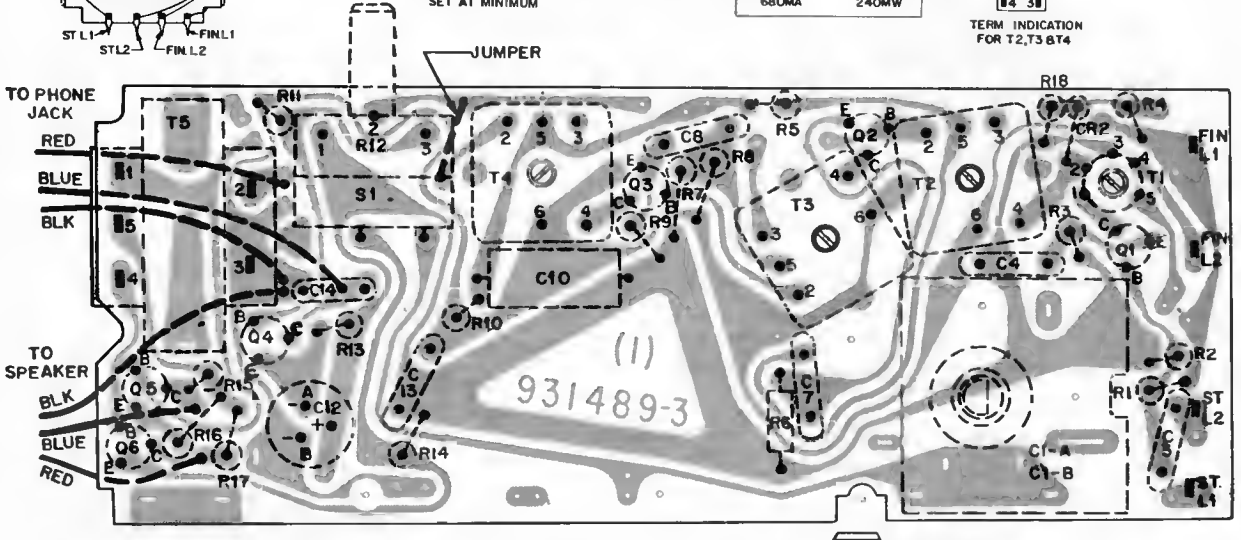


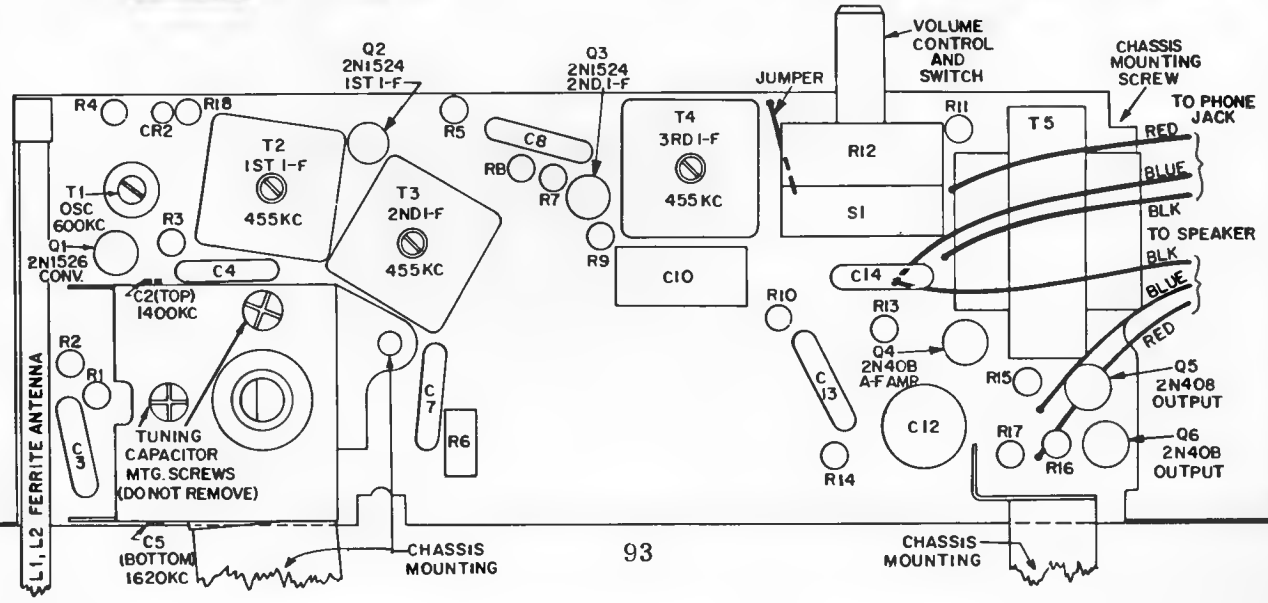
Chassis Layout—View from Wiring Side

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

Chassis No. RC-1200C





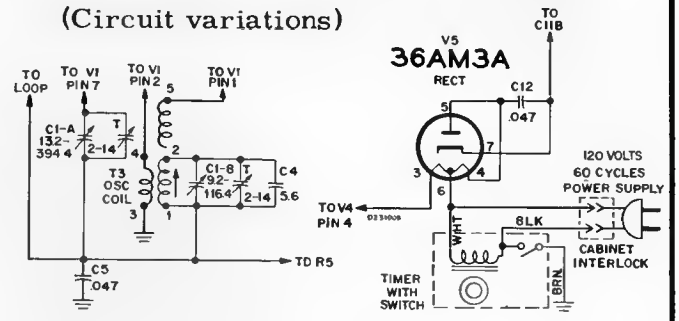


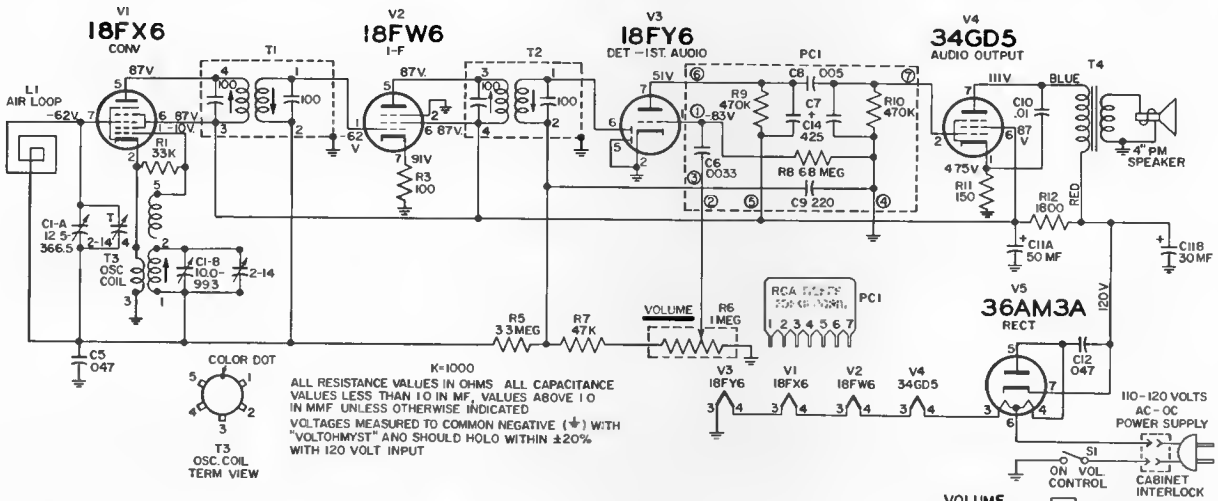
RCA Models

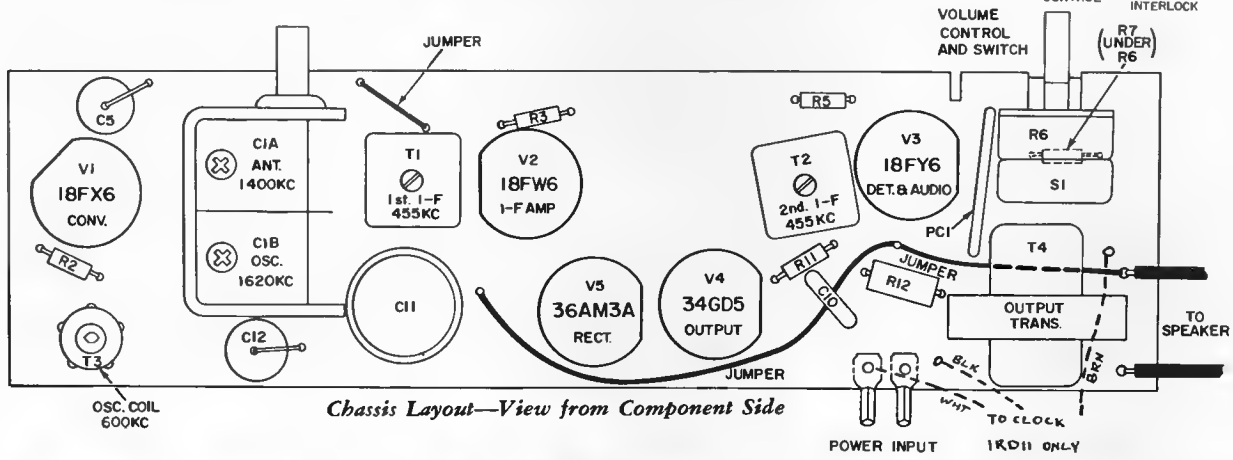
1-RA-11, 1-RA-20, 1-RA-23, 1-RA-25, 1-RA-26

Chassis No. RC-1202F

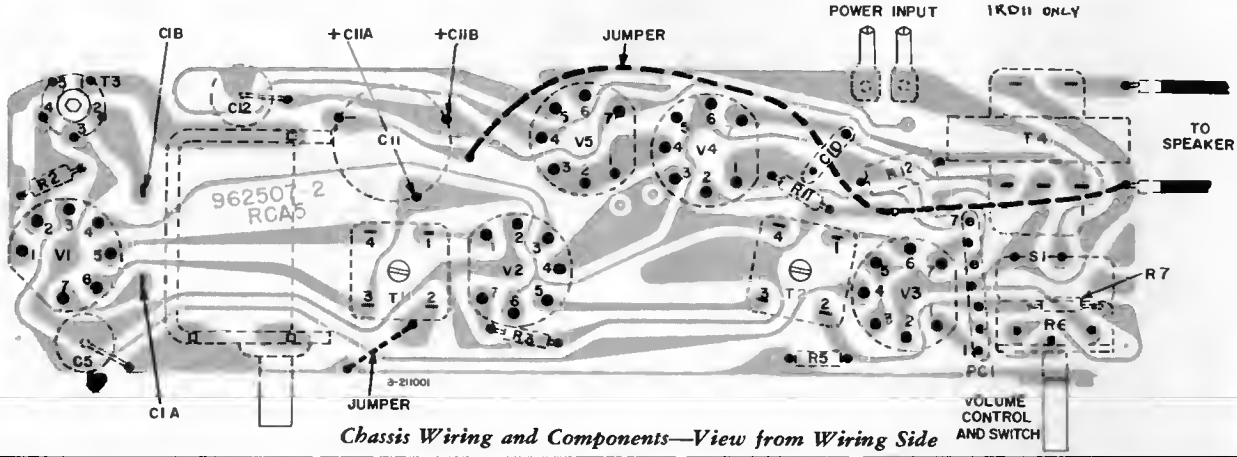
Model 1-RD-11, Chassis RC-1202H
(Circuit variations)







Chassis Layout—View from Component Side

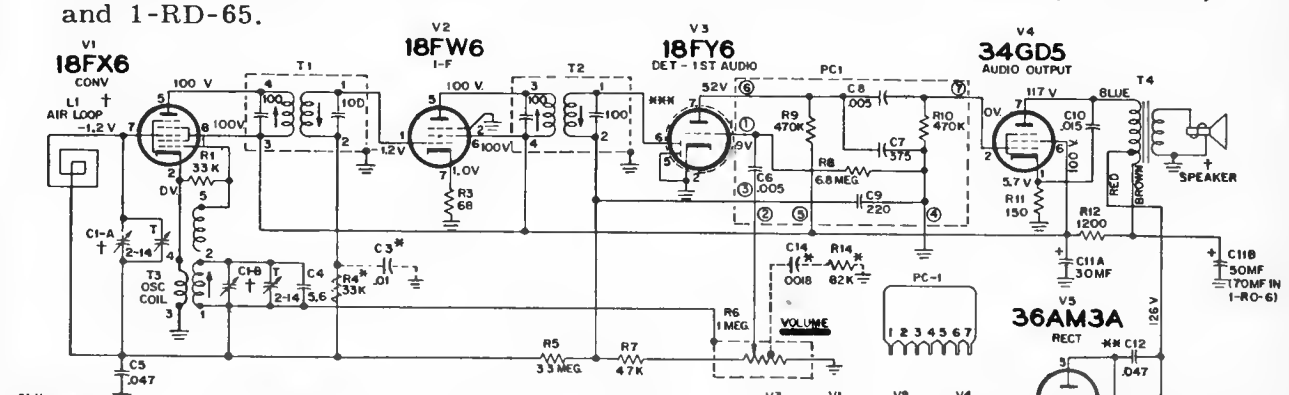


Chassis Wiring and Components—View from Wiring Side

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.



1-RD-3

1-RD-4, -5, -6

Clock Wiring Diagrams

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 "VOLTOHMYST" AND SHOULD HOLD WITHIN ±20% WITH RATED LINE VOLTAGE

*USED ON RC-1202T ONLY (R4, R14, C14, C3, C13 & J1)

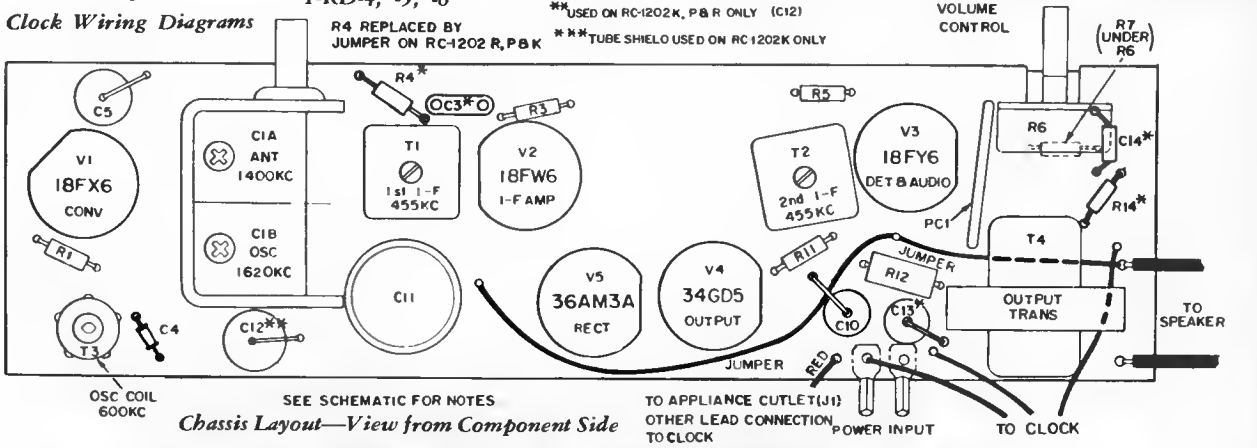
**USED ON RC-1202K, P & R ONLY (C12)

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

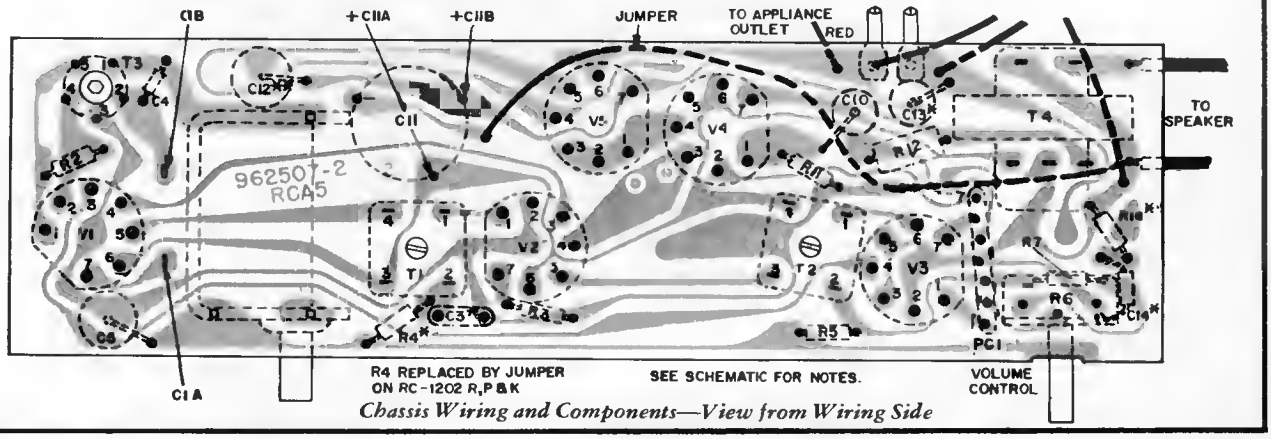
†SEE TABLE BELOW

	RC-1202K	RC-1202 P & R	RC-1202T
L1	AIR LOOP	FERRITE ROD	"FILTERAMIC"
C1-A	13.2-394.4	13.4-312.9	11.2-392.4
C1-B	9.2-116.4	13-127.8	7.2-114.4
SPKR	4"PM	3"X5"PM	3"X5"PM

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

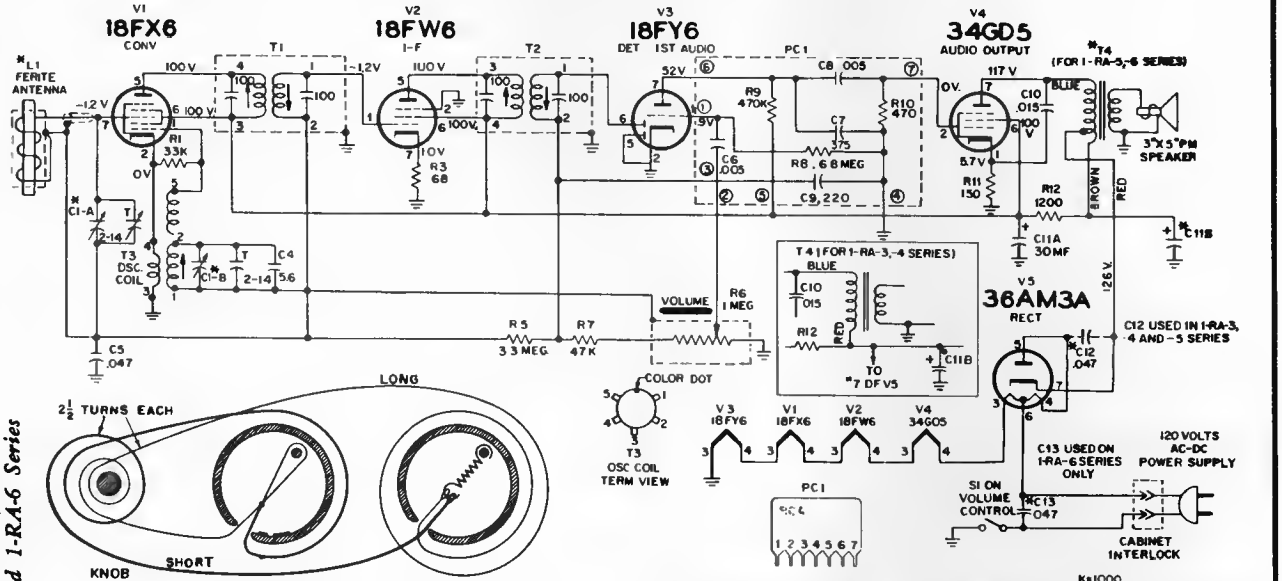


Chassis Layout—View from Component Side



Chassis Wiring and Components—View from Wiring Side

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.

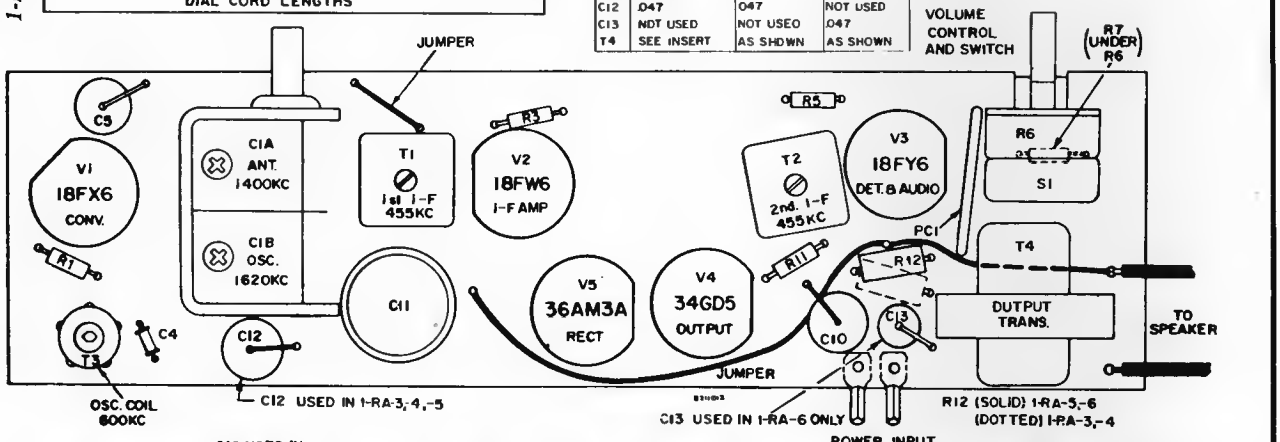


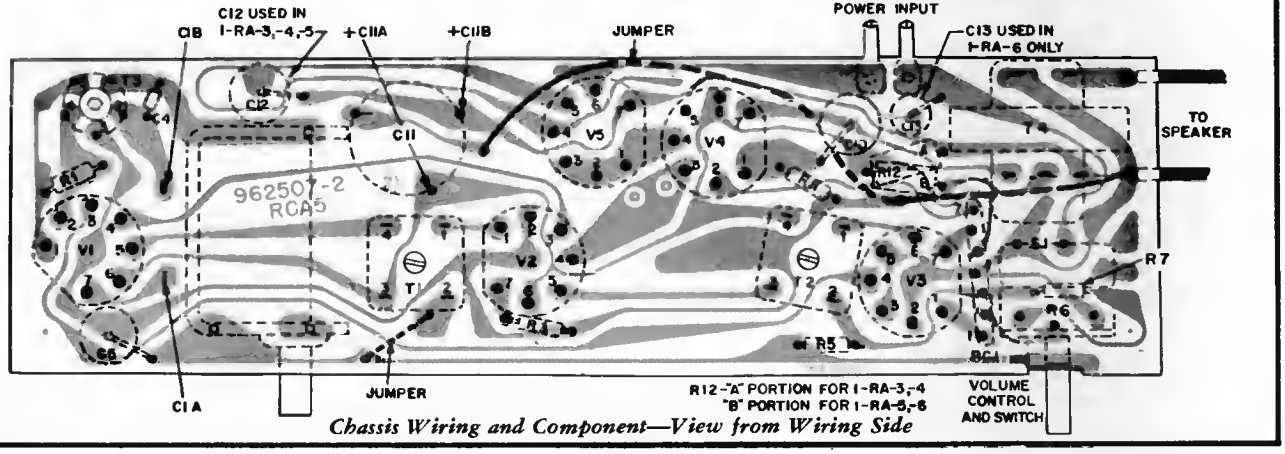
Dial Cord Assembly for 1-RA-5 Series and 1-RA-6 Series

NOTE SCHEMATIC IS FOR MODEL 1-RA-6
COMPONENTS MARKED (N) VARY FOR OTHER MODELS SEE TABLE BELOW

	1-RA-3, 1-RA-4 (RC-1202L)	1-RA-5 (RC-1202M)	1-RA-6 (RC-1202N)
L1	FERRITE ROD (SHIELD ON FILTERAMIC ANT ONLY)	FERRITE ROD FILTERAMIC ANT ONLY)	"FILTERAMIC"
C1A	134-3129	134-3129	152-3964
C1-B	13-1278	13-1278	112-1184
C11B	5D MF	5D MF	70 MF
C12	.047	.047	NOT USED
C13	NOT USED	NOT USED	.047
T4	SEE INSERT	AS SHOWN	AS SHOWN

K=1000
ALL RESISTANCE VALUES IN OHMS ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF, VALUES ABOVE 1.0 IN MMF UNLESS OTHERWISE INDICATED
VOLTAGES MEASURED TO COMMON NEGATIVE (⏚) WITH "VOLTOHMYST" AND SHOULD HOLD WITHIN ± 20% WITH 120 VOLT INPUT

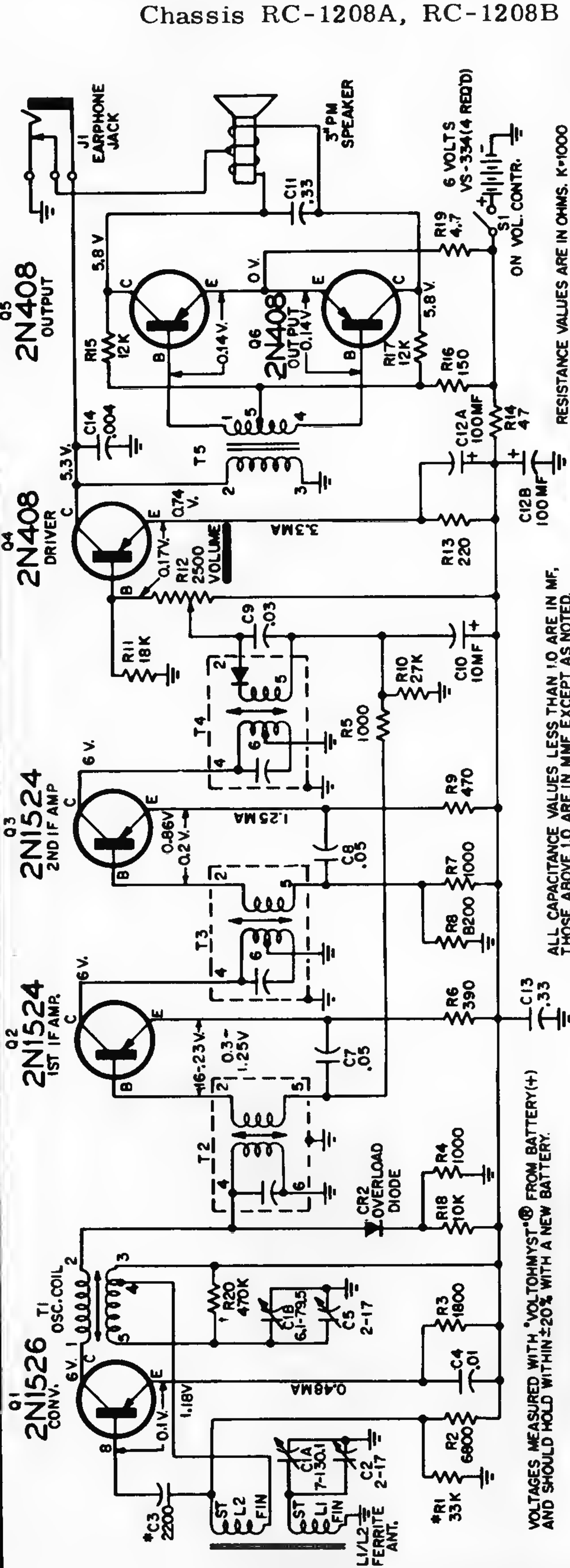




Chassis Wiring and Component—View from Wiring Side

RCA Victor Models 1RG31, 1RG33, 1RG34, 1RG41, 1RG43, 1RG46

Chassis RC-1208A, RC-1208B



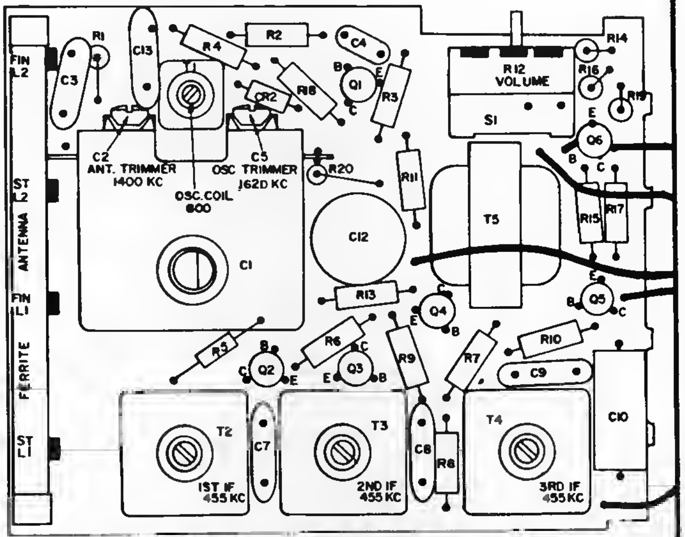
RESISTANCE VALUES ARE IN OHMS. K=1000

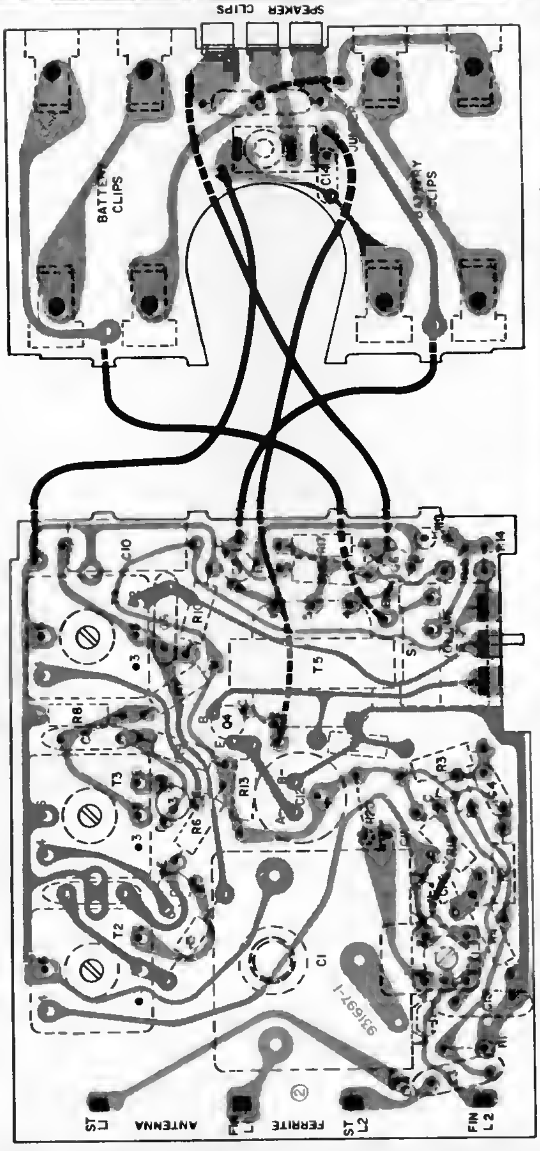
ALL CAPACITANCE VALUES LESS THAN 1.0 ARE IN MF, THOSE ABOVE 1.0 ARE IN MMF EXCEPT AS NOTED.

VOLTAGES MEASURED WITH "VOLTOHMYST"® FROM BATTERY(+) AND SHOULD HOLD WITHIN ±20% WITH A NEW BATTERY.

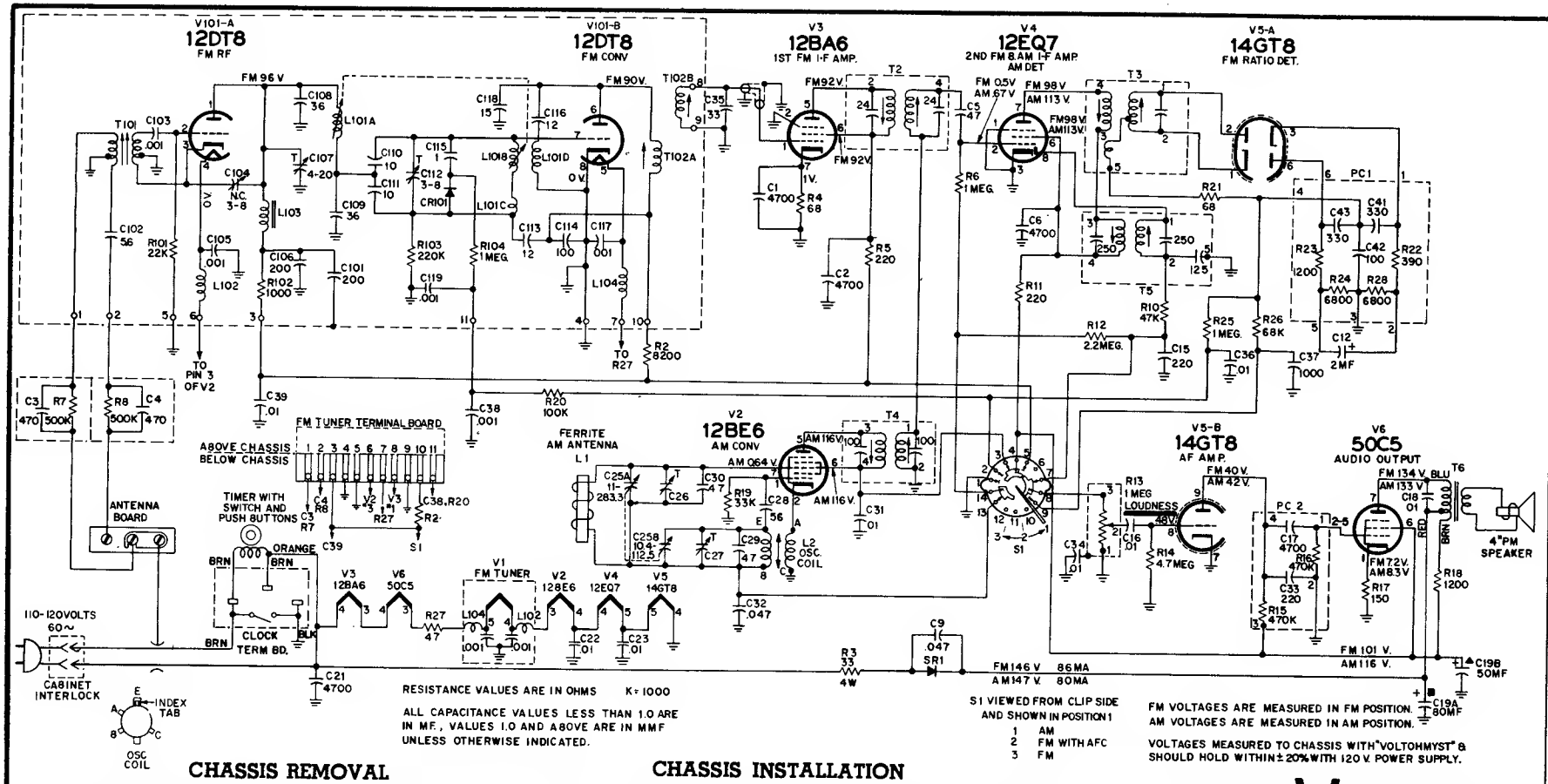
PRODUCTION CHANGES

† In some instruments R20 (470K) is
* In some instruments R1 is 27K and C3 is .03 mf. omitted.





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



CHASSIS REMOVAL

1. Remove two screws at the bottom rear of cabinet.
2. Loosen one screw in hand cut-out at top center of cabinet. Screw will remain captive in the cabinet hood.
3. Pull cabinet apart.
4. Pull off volume control knob. DO NOT ATTEMPT TO REMOVE TUNING KNOB.
5. Remove hex nut holding volume control to cabinet front.
6. Unsolder leads connecting AM antenna to tuning condenser.
7. Bend three retaining lugs to permit removal of power line antenna from cabinet front.
8. Remove two screws holding speaker to cabinet front, or unsolder three leads to output transformer on speaker from terminal strips on chassis.
9. Remove two screws at rear apron of chassis.
10. Slide chassis straight out back of the cabinet.

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.

RCA VICTOR

Models

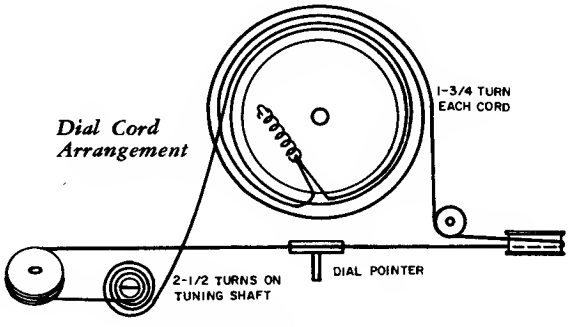
1-RC-30, 1-RC-31, 1-RC-34

Chassis No. RC-1201D

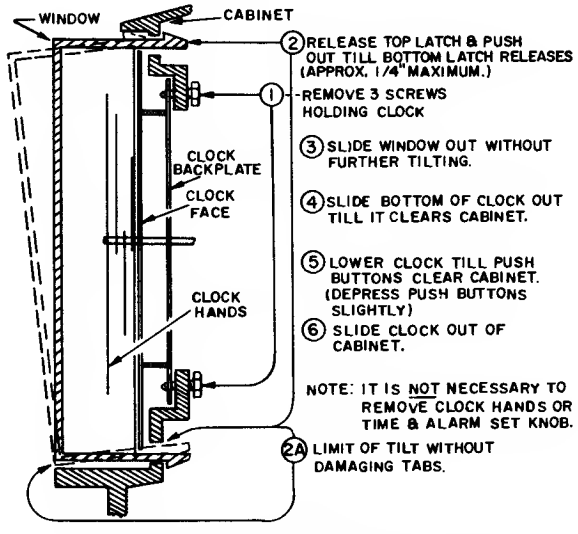
(Service material continued on the next page at right.)

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.



Dial Cord Arrangement



TO INSTALL CLOCK & WINDOW, REVERSE ABOVE PROCEDURE.

Clock and Window Removal

CRITICAL LEAD DRESS

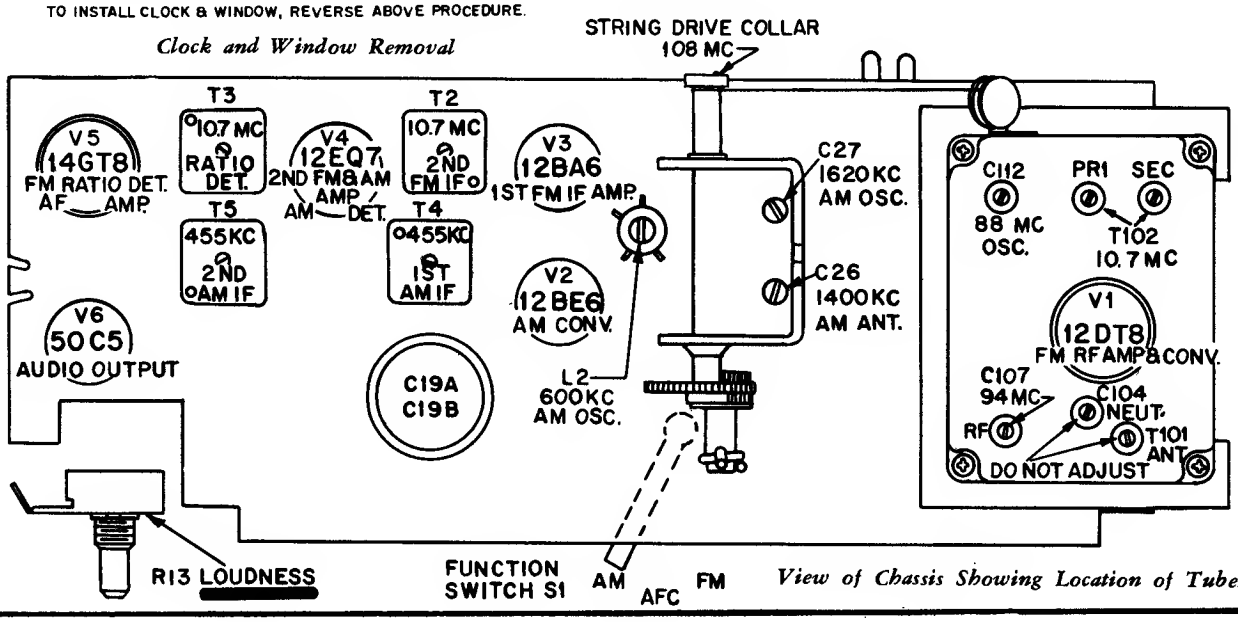
1. Dress all bus leads short and direct as possible.
2. Dress all by-pass capacitors and coupling capacitor leads short and direct as possible.
3. Dress all insulated leads *down* to chassis and away from any hot resistors.
4. Dress power line antenna away from ferrite rod and secure against front by 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.

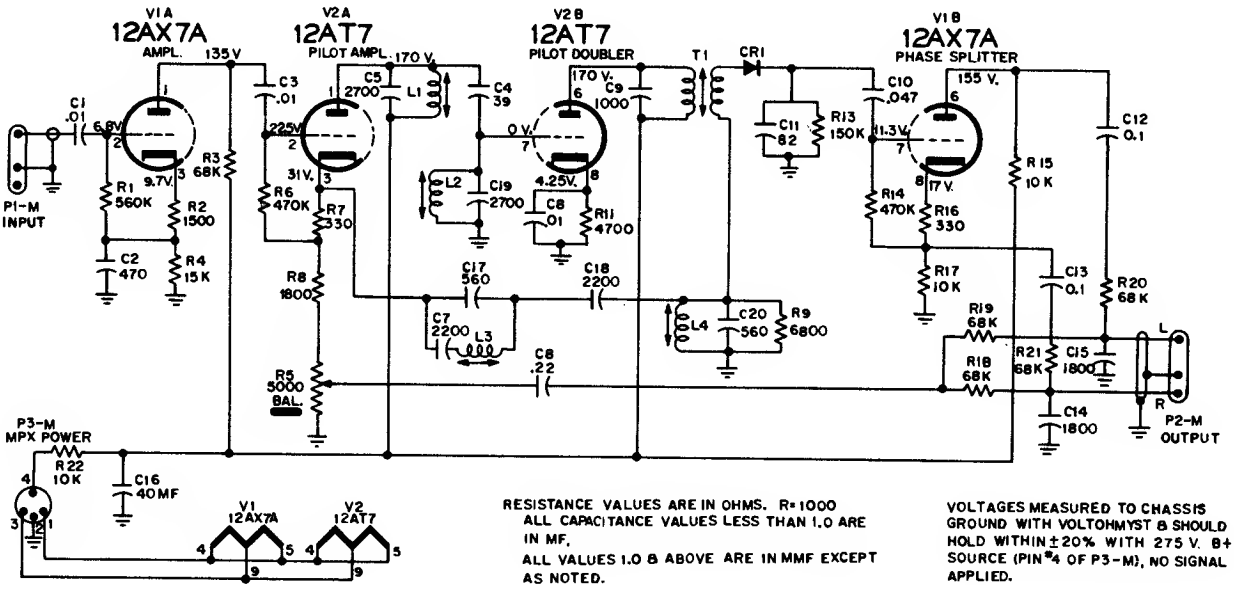
Step	Connect high side of signal gen. to—	Set signal gen. to—	Set radio dial to—	Adjust for maximum
1	Antenna gang (C25A) through 0.01 mf capacitor	455 kc (modulated)	Gang fully open	T5 (2nd AM IF) top & bottom
2				T4 (1st AM IF) top and bottom
3	Repeat steps 1 and 2.			
4	Short wire placed near AM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



View of Chassis Showing Location of Tubes

RCA VICTOR RK-295

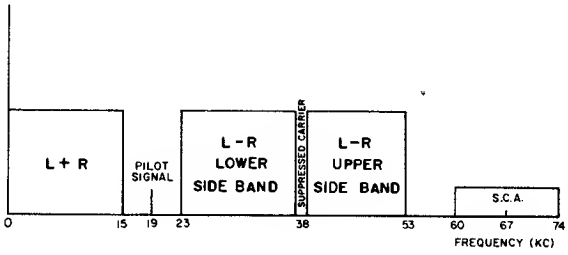
Chassis No. RS-200



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 syncronizing signal and is used to reinsert the carrier in the L—R signal, thus making a local osciliator 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 circuity 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.

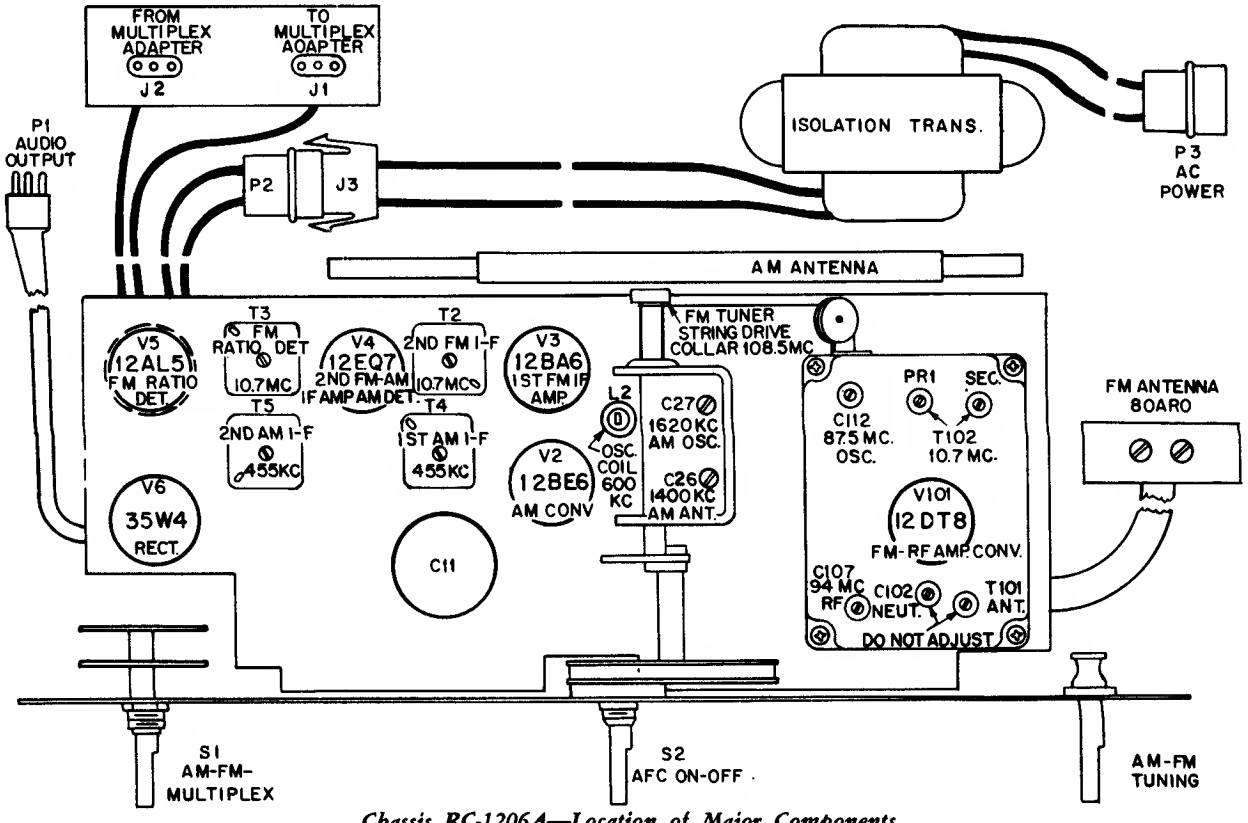
The 1-VE-0 Series instruments use the RS-193D audio amplifier. The RS-193D chassis is similar to the RS-193A except that it does not contain a function switch, a tuner input, a tuner AC power output, a multiplex power output, or a dial light.

MULTIPLEX ADAPTER

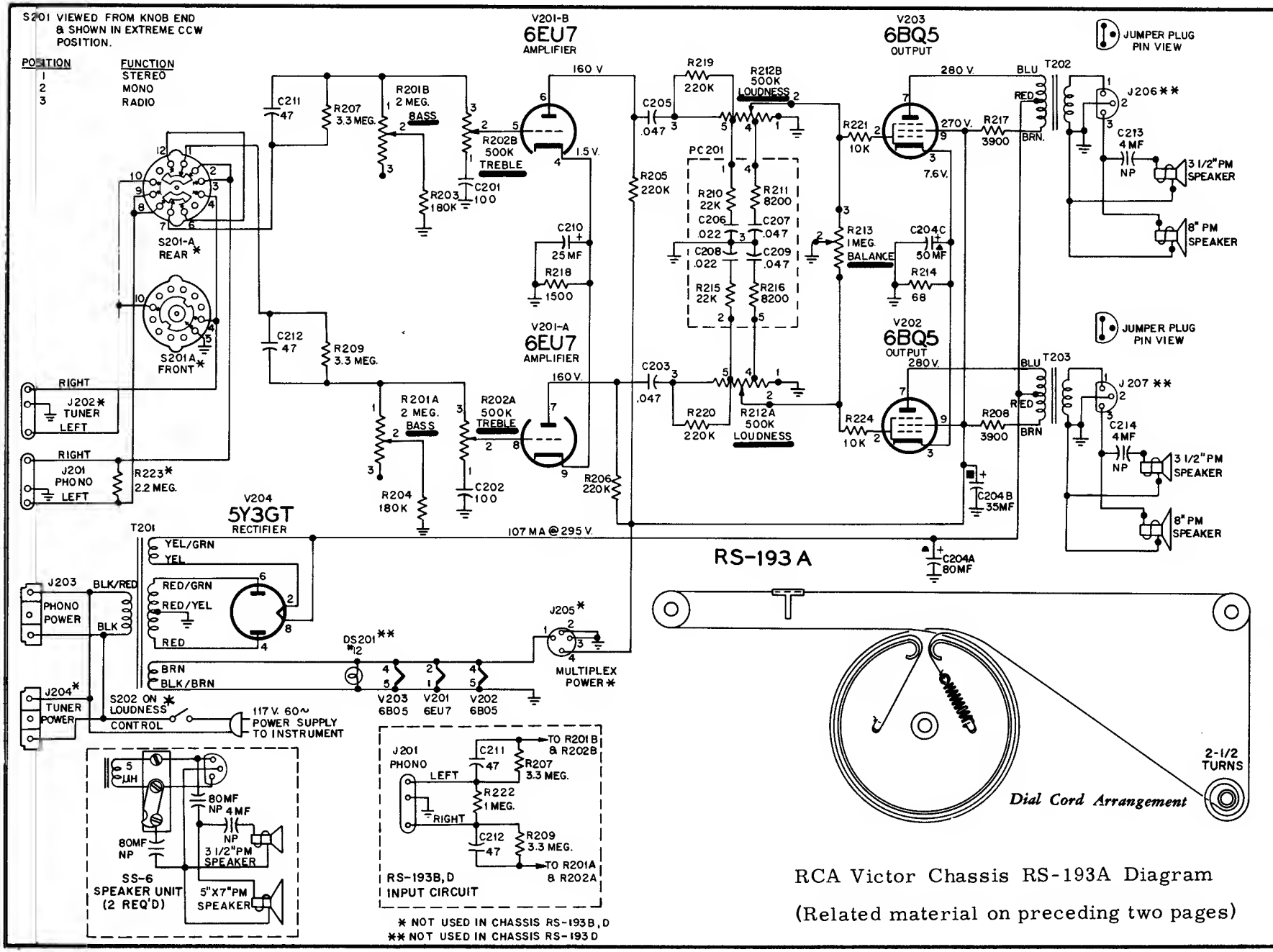
Models of the 1-VF-1 Series and the 1-VF-2 Series have provision for the connection of a multiplex adapter (RCA Model RK-295). Three jacks provide for the input, output, and power connections of the adapter. The signal input jack (J1) and the signal output jack (J2) are mounted on a bracket fastened 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.

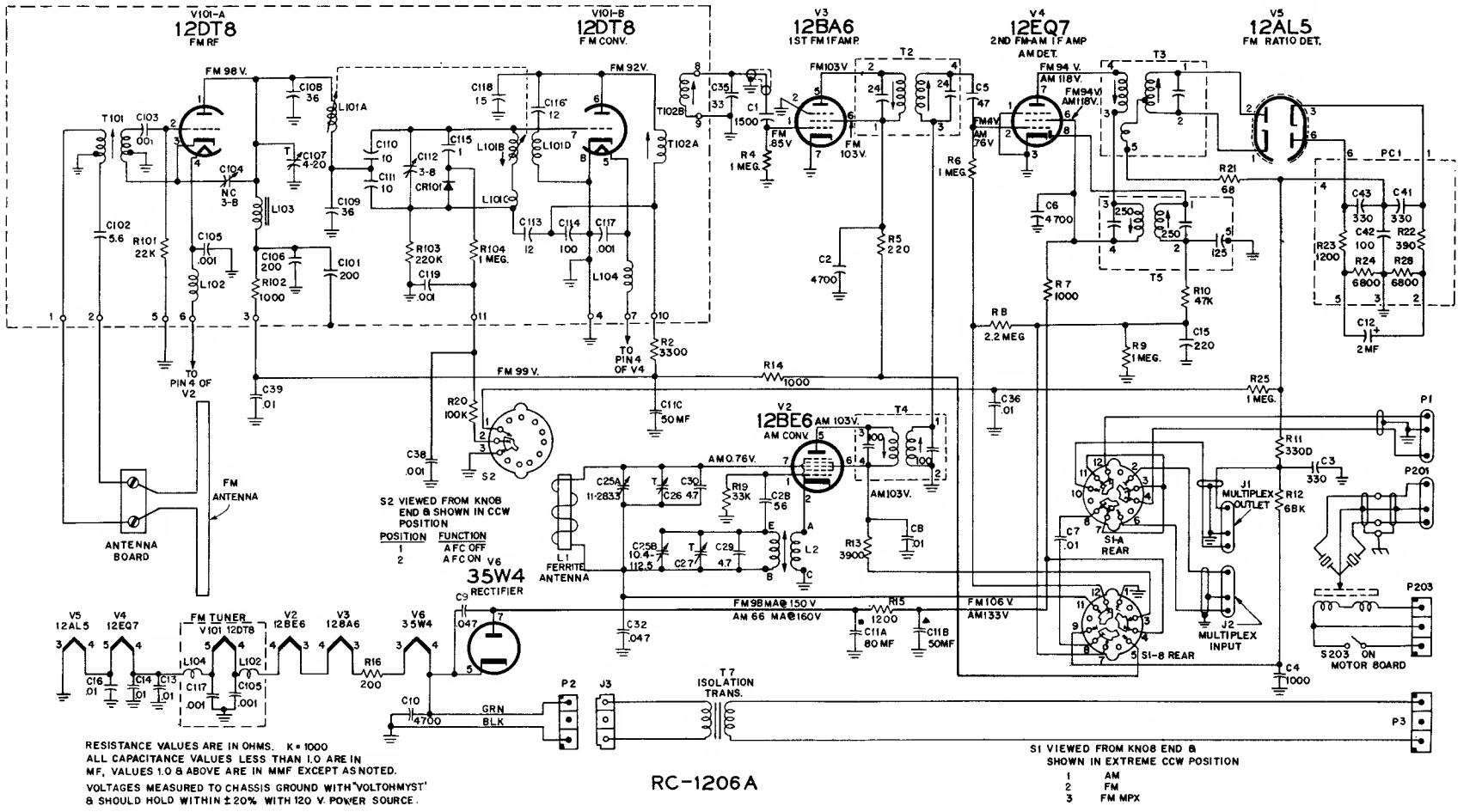


Chassis RC-1206A—Location of Major Components



RCA Victor Chassis RS-193A Diagram

(Related material on preceding two pages)



RC-1206A

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(5Y3) 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

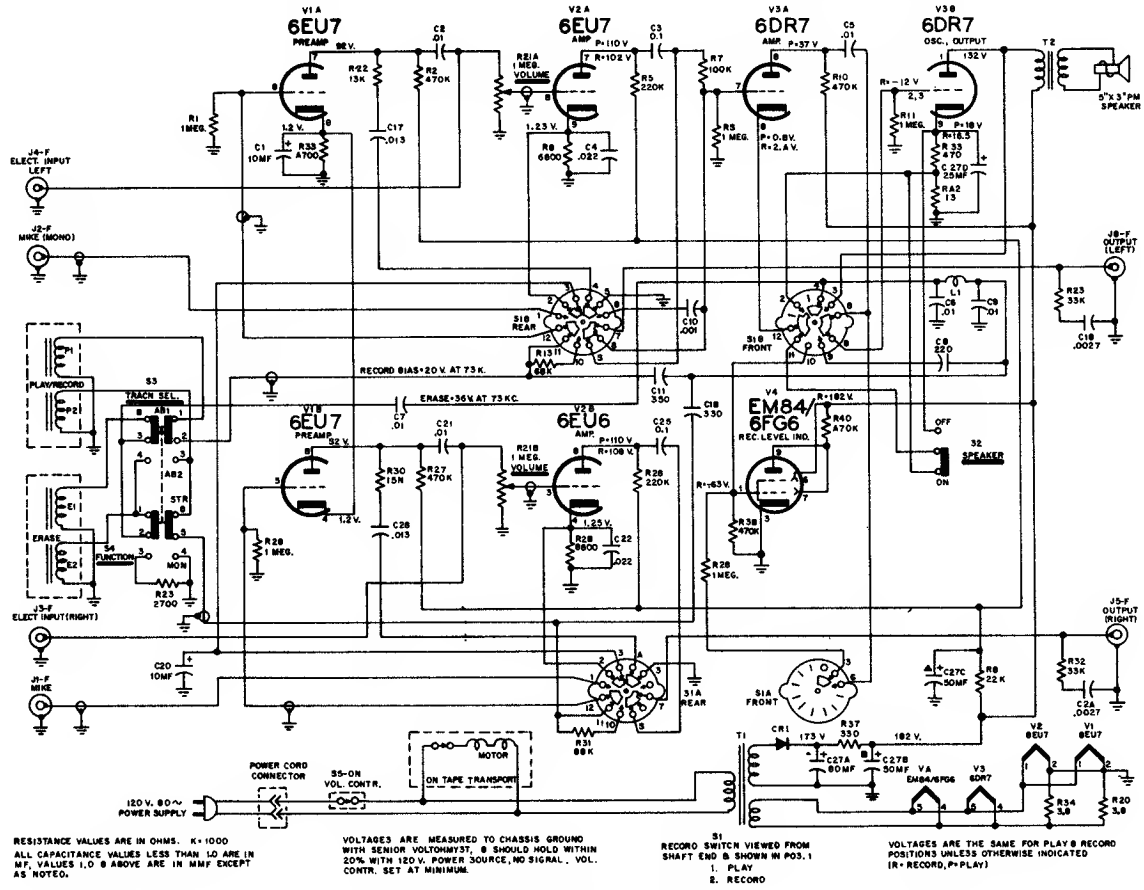
(Continued from preceding page; material on related amplifier is on the next page.)

RCA VICTOR TAPE RECORDER

Model 1-YC-11

Amplifier Chassis No. RS-196

Tape Transport TCT-3A

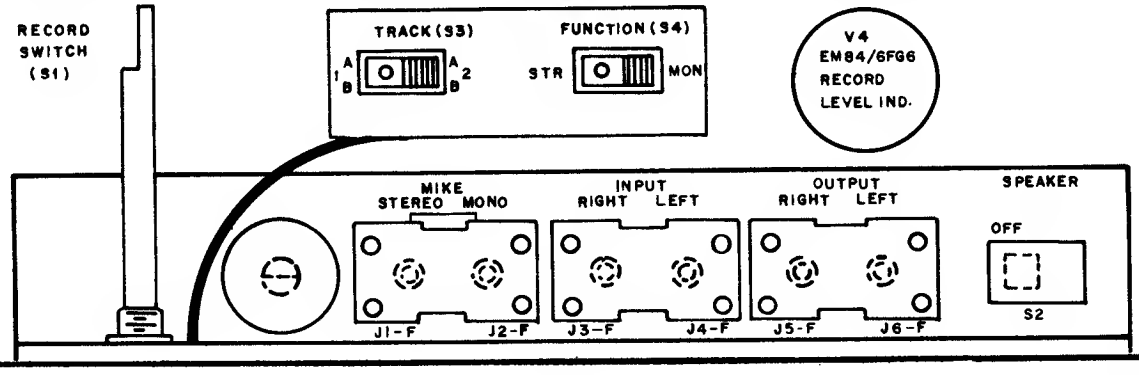


CHASSIS REMOVAL

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:

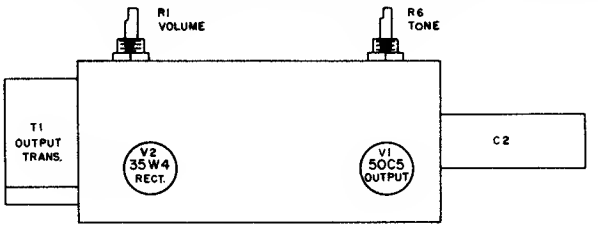
1. Turn REWIND-STOP-PLAY knob to rewind position.
2. Pull off RECORD, REWIND-STOP-PLAY, SPEED CONTROL and VOLUME knobs. **Note:** To remove SPEED control knob, twist while gently pulling the knob. When the knob is replaced, push it on firmly until the knob seats with a click.
3. The control escutcheon 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 sufficently 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.

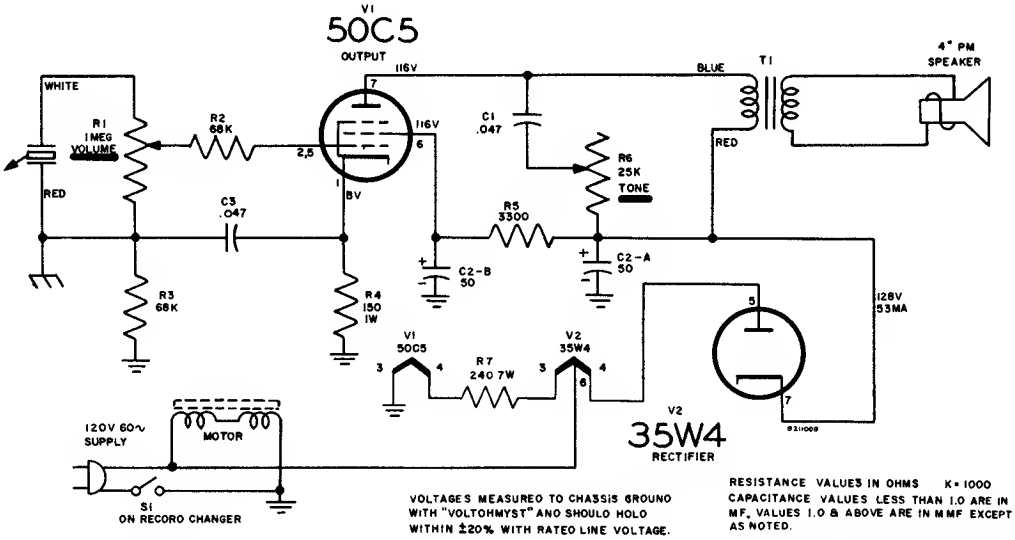


RCA VICTOR

Model 1-VA-14

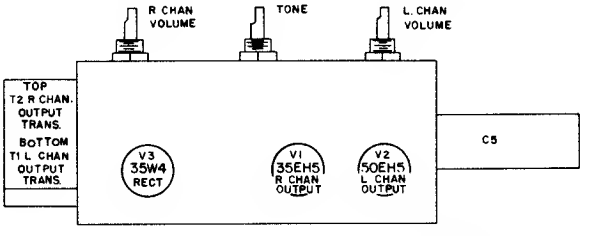
Chassis No. RS-197





VOLTAGES MEASURED TO CHASSIS GROUND WITH "VOLTOHMYST" AND SHOULD HOLD WITHIN ±20% WITH RATED LINE VOLTAGE.

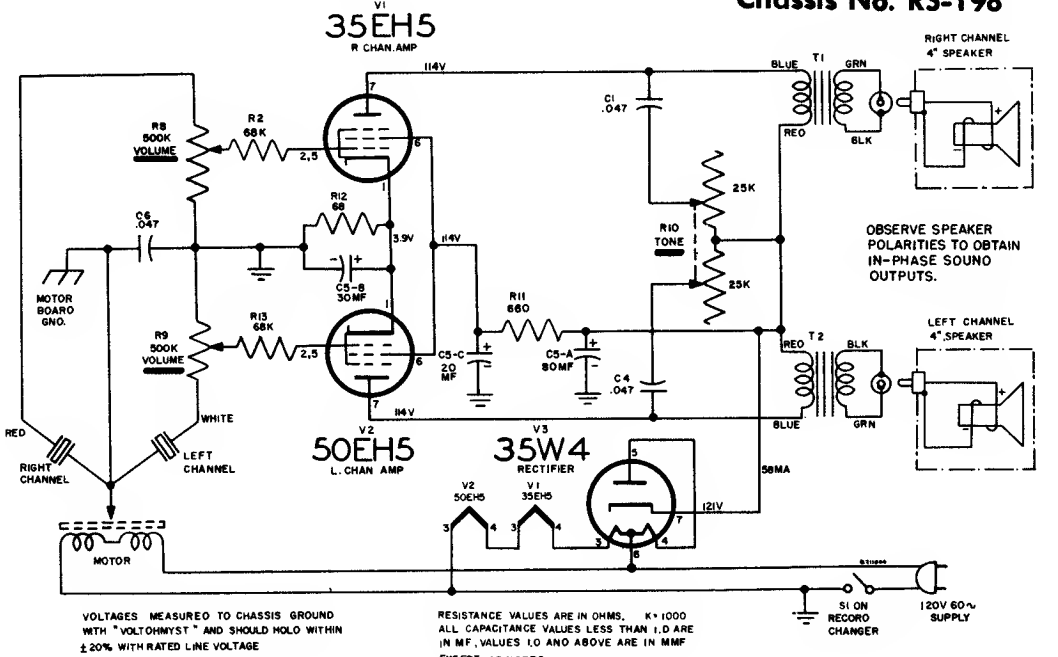
RESISTANCE VALUES IN OHMS K = 1000
CAPACITANCE VALUES LESS THAN 1.0 ARE IN MF, VALUES 1.0 & ABOVE ARE IN MMF EXCEPT AS NOTED.



RCA VICTOR

Model 1-VC-15

Chassis No. RS-198



VOLTAGES MEASURED TO CHASSIS GROUND WITH "VOLTOHMYST" AND SHOULD HOLD WITHIN ±20% WITH RATED LINE VOLTAGE

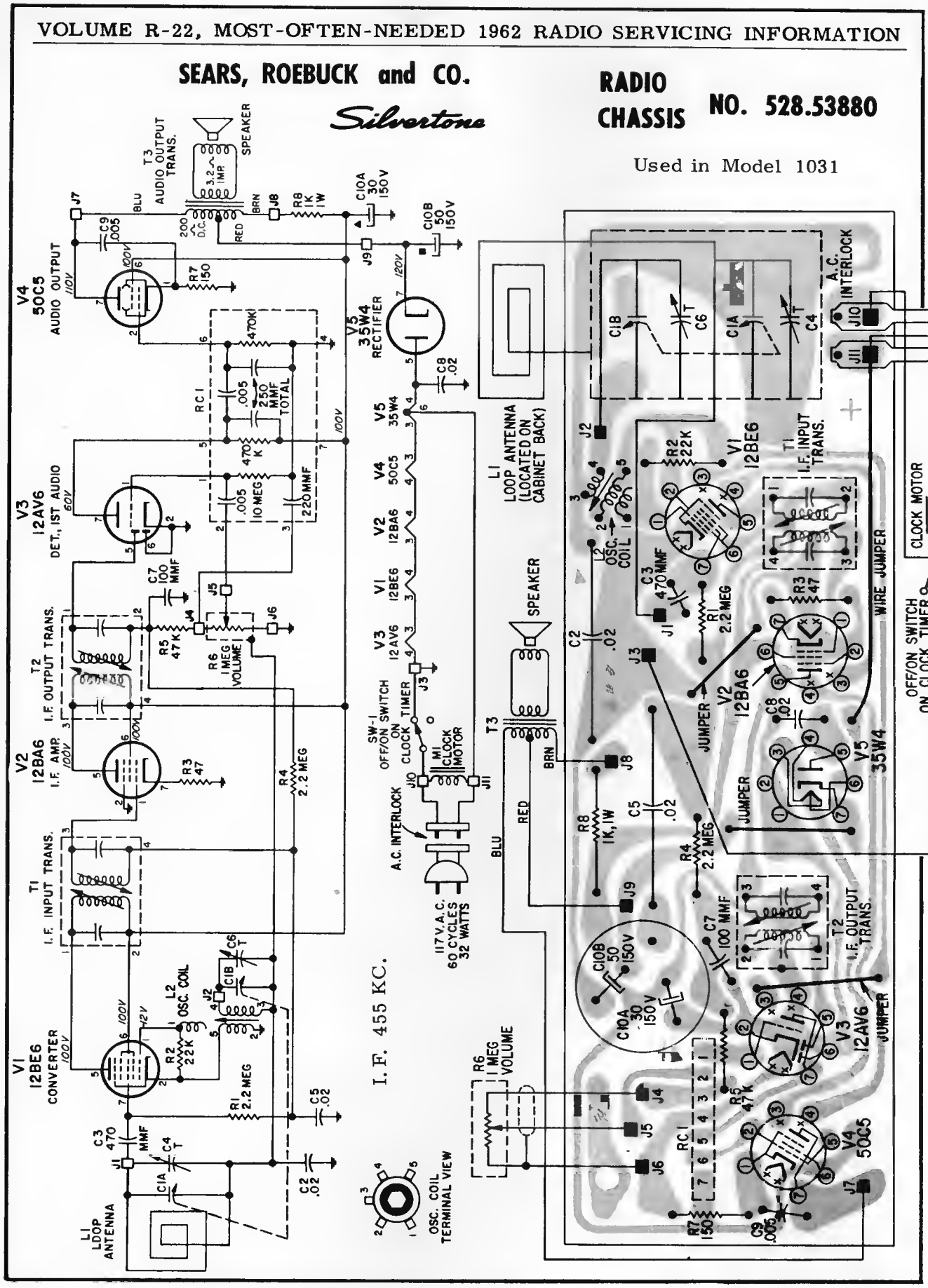
RESISTANCE VALUES ARE IN OHMS, K = 1000
ALL CAPACITANCE VALUES LESS THAN 1.0 ARE IN MF, VALUES 1.0 AND ABOVE ARE IN MMF EXCEPT AS NOTED.

SEARS, ROEBUCK and CO.

Silvertone

RADIO CHASSIS NO. 528.53880

Used in Model 1031

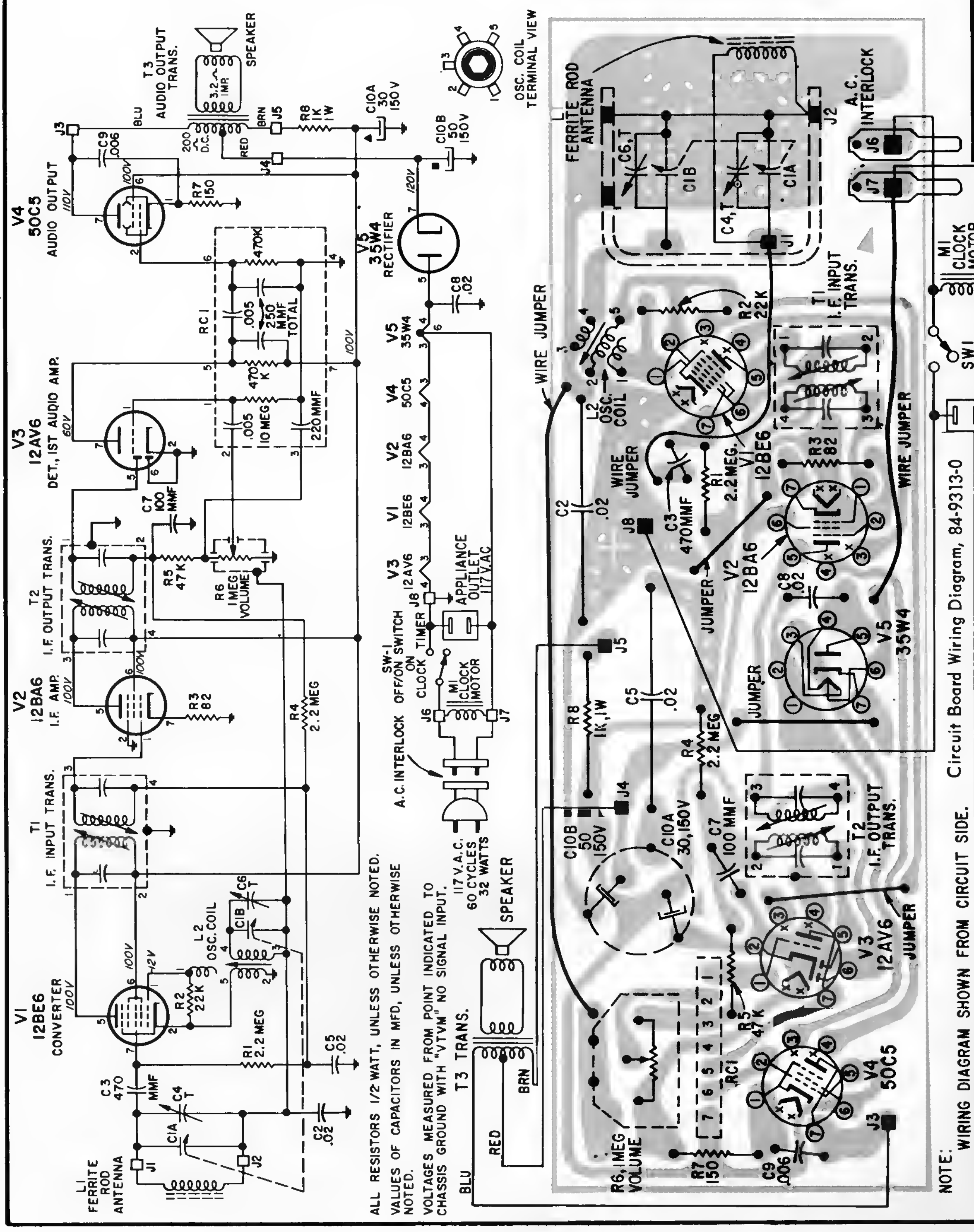


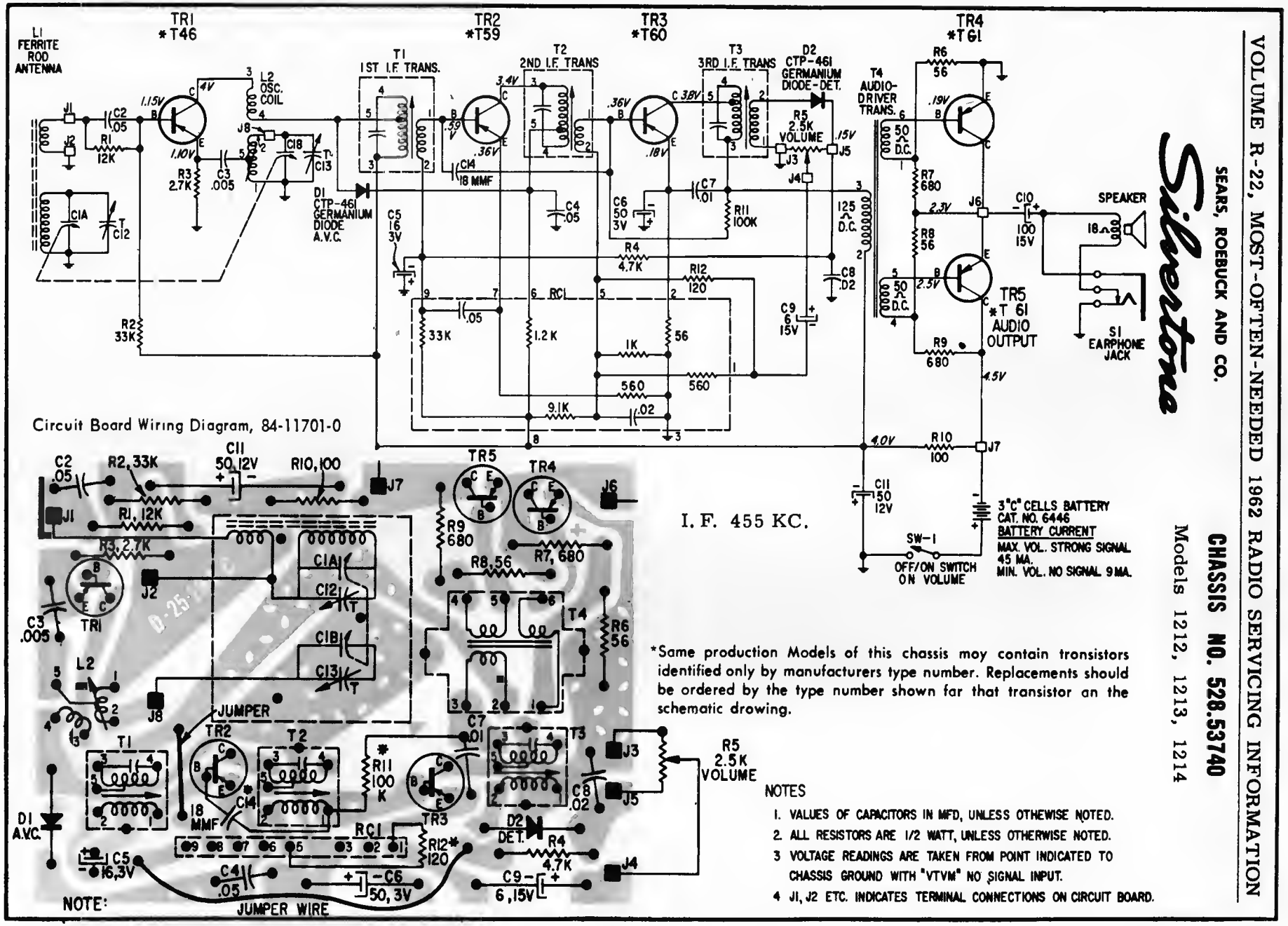
SEARS, ROEBUCK AND CO.

Silvertone

Models 1035, 1036, 1037, 1038

CHASSIS NO. 528.53940





SEARS, ROEBUCK AND CO.

Silvertone

CHASSIS NO. 528.53740

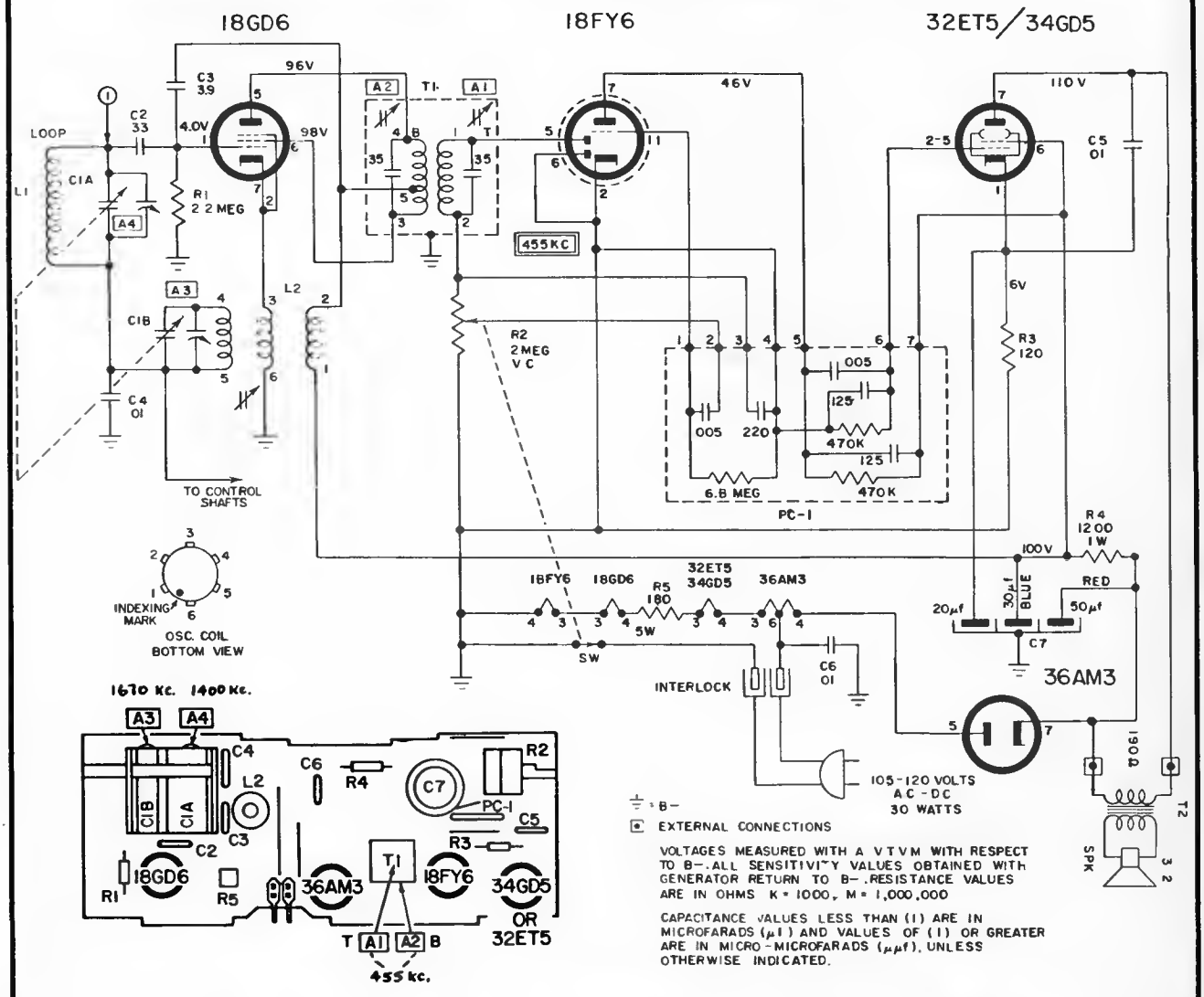
Models 1212, 1213, 1214

*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 an the schematic drowing.

NOTES

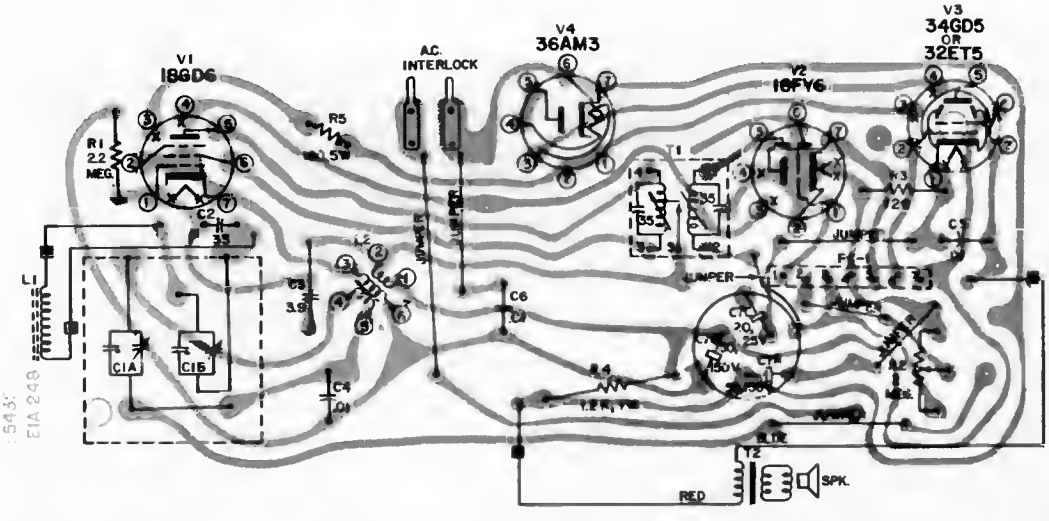
1. VALUES OF CAPACITORS IN MFD, UNLESS OTHEWISE NOTED.
2. ALL RESISTORS ARE 1/2 WATT, UNLESS OTHERWISE NOTED.
3. VOLTAGE READINGS ARE TAKEN FROM POINT INDICATED TO CHASSIS GROUND WITH "VTVM" NO SIGNAL INPUT.
4. J1, J2 ETC. INDICATES TERMINAL CONNECTIONS ON CIRCUIT BOARD.

SEARS, ROEBUCK and CO. *Silvertone* CHASSIS 132.63901 MODEL 2000



VOLTAGES MEASURED WITH A V T V M WITH RESPECT TO B-. ALL SENSITIVITY VALUES OBTAINED WITH GENERATOR RETURN TO B-. RESISTANCE VALUES ARE IN OHMS K = 1000, M = 1,000,000

CAPACITANCE VALUES LESS THAN (1) ARE IN MICROFARADS (μf) AND VALUES OF (1) OR GREATER ARE IN MICRO-MICROFARADS (μμf), UNLESS OTHERWISE INDICATED.

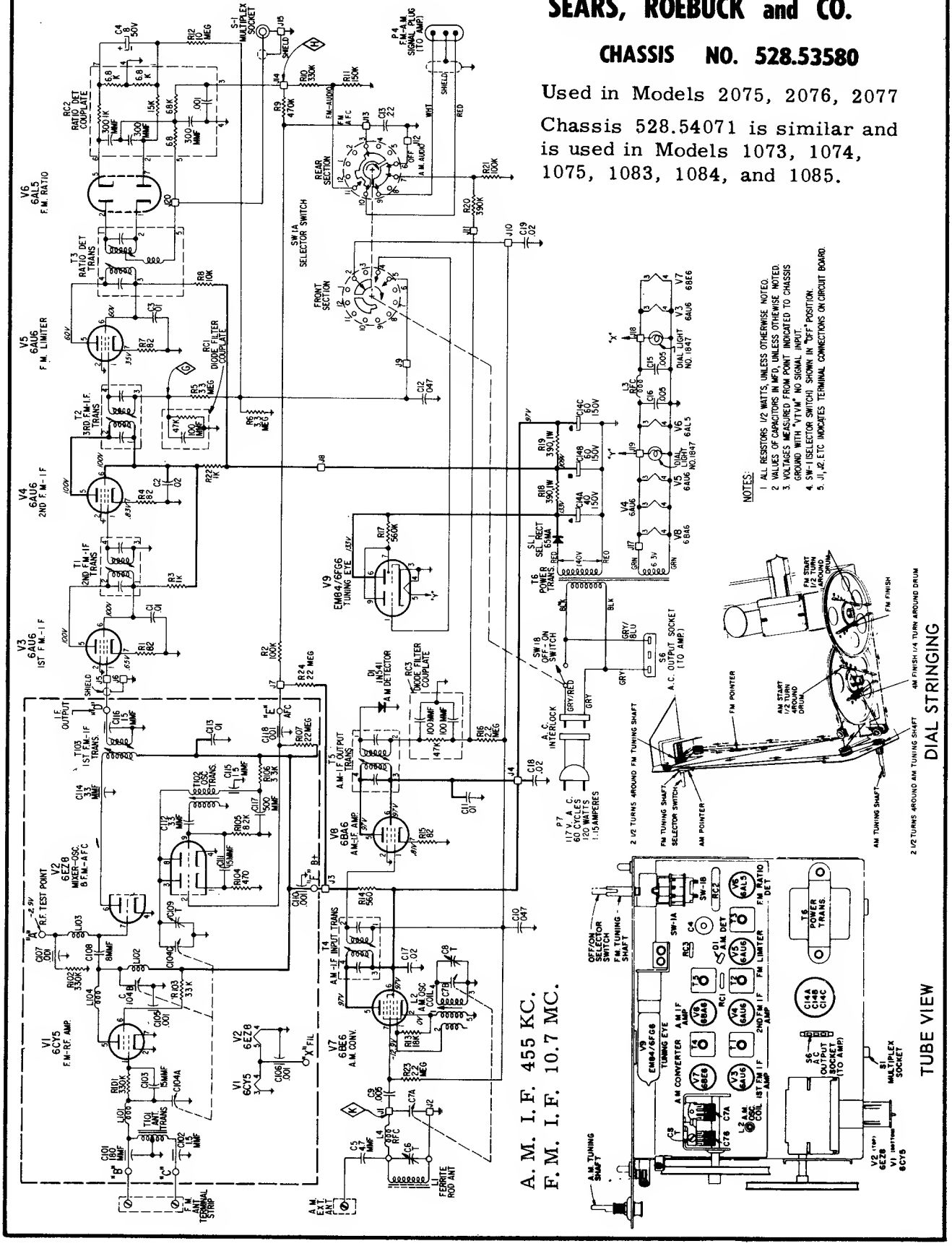


SEARS, ROEBUCK and CO.

CHASSIS NO. 528.53580

Used in Models 2075, 2076, 2077

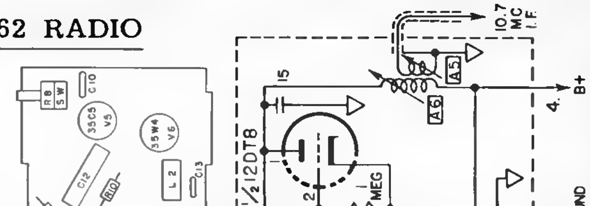
Chassis 528.54071 is similar and is used in Models 1073, 1074, 1075, 1083, 1084, and 1085.

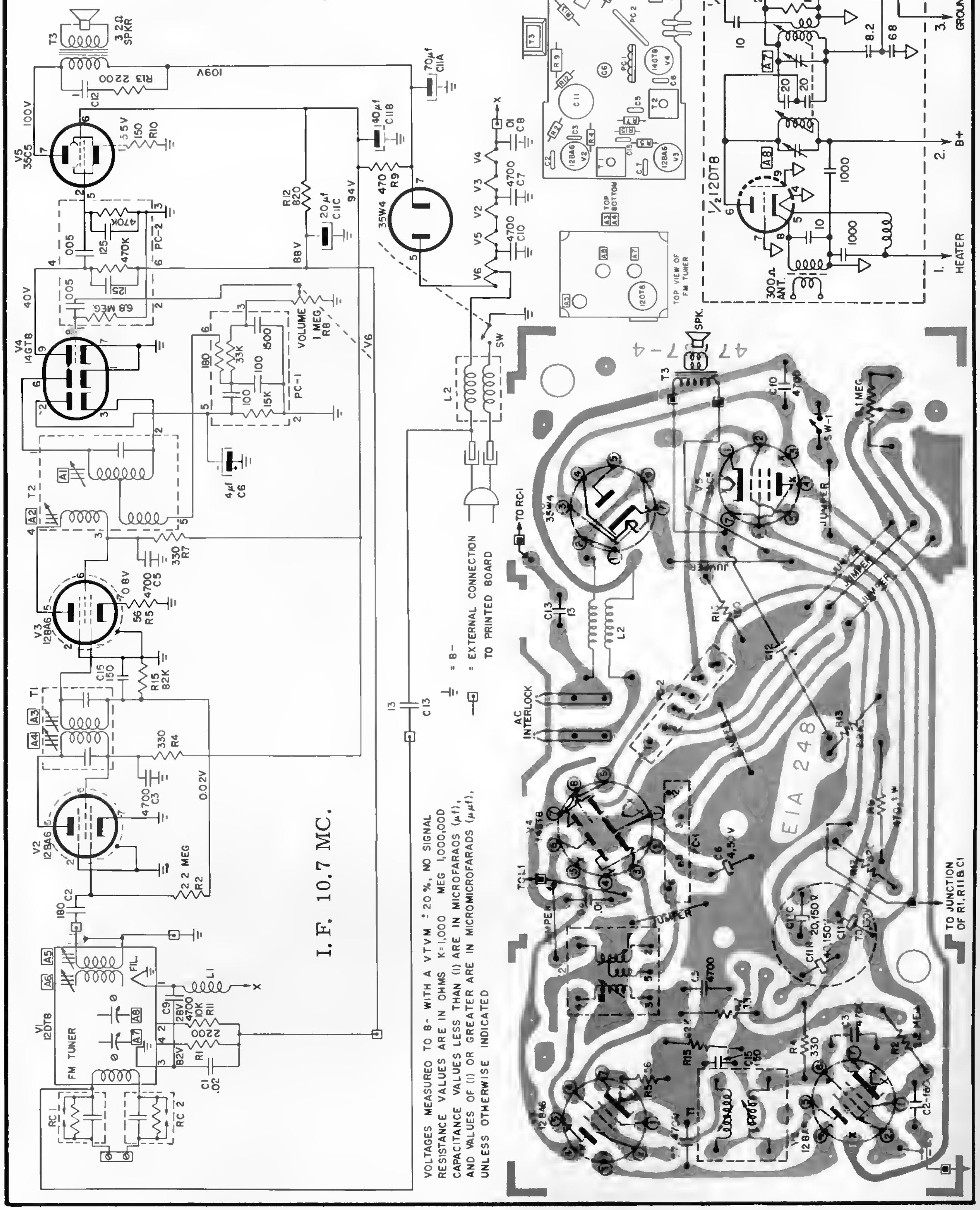


SEARS, ROEBUCK and CO.

Chassis 132.64402

Models 2018, 2019



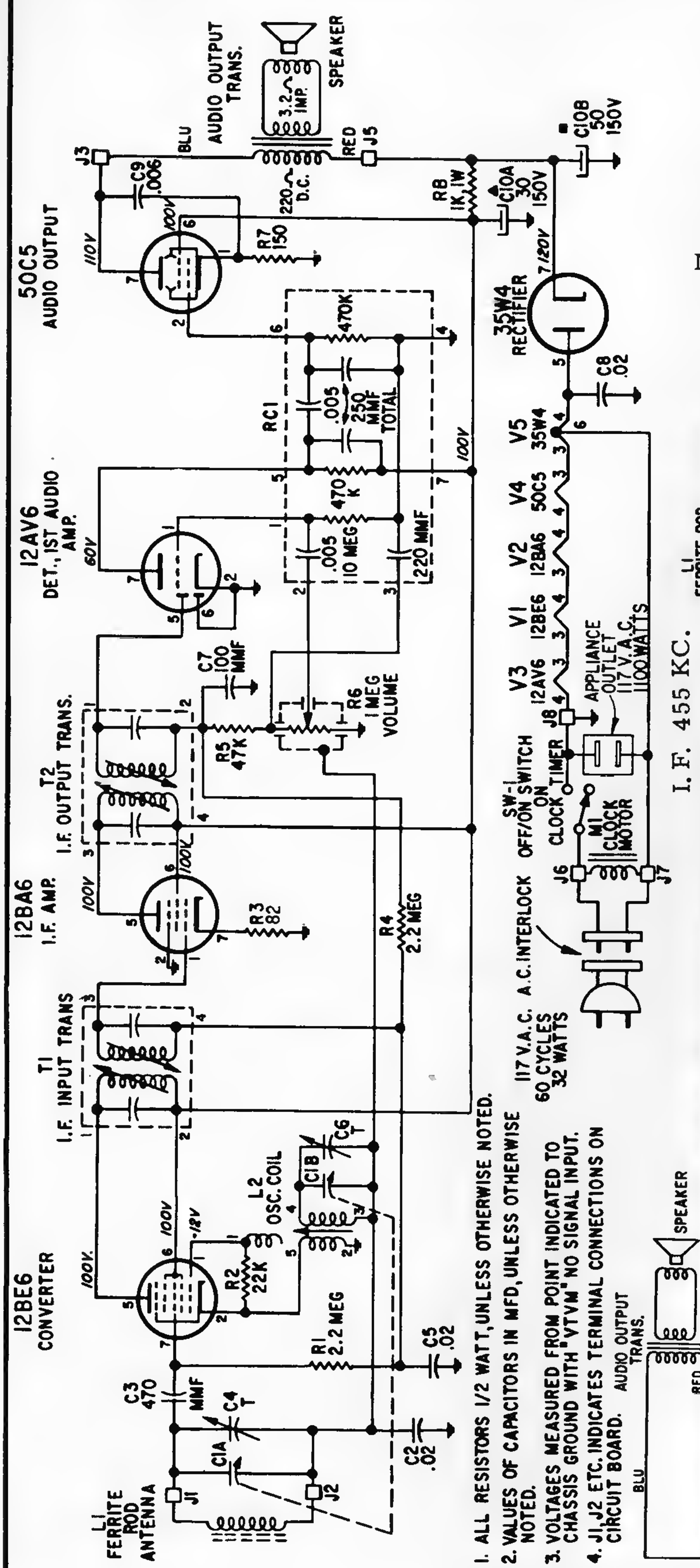


SEARS, ROEBUCK and Co.

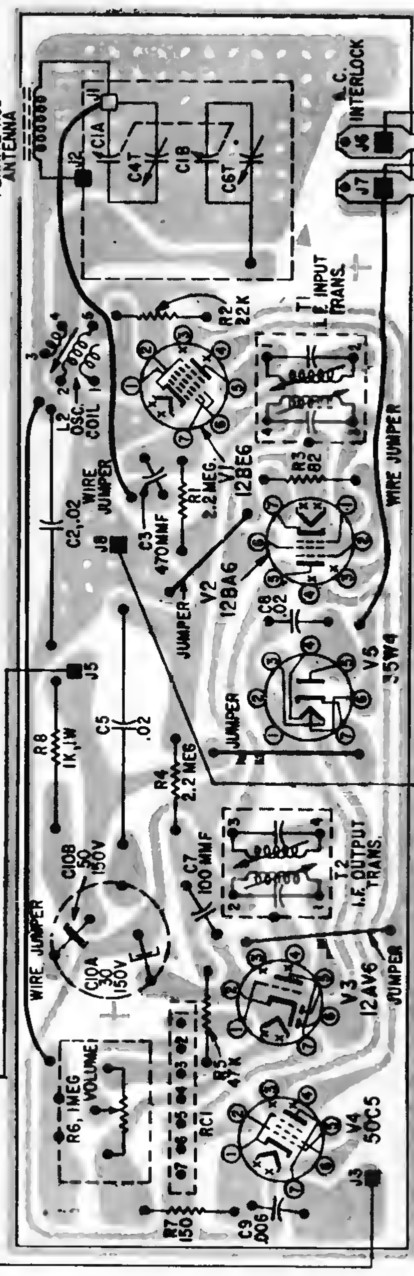
Silvertone® CLOCK-RADIO

CHASSIS No. 528.53760

Models 2035, 2036, 2037, 2038

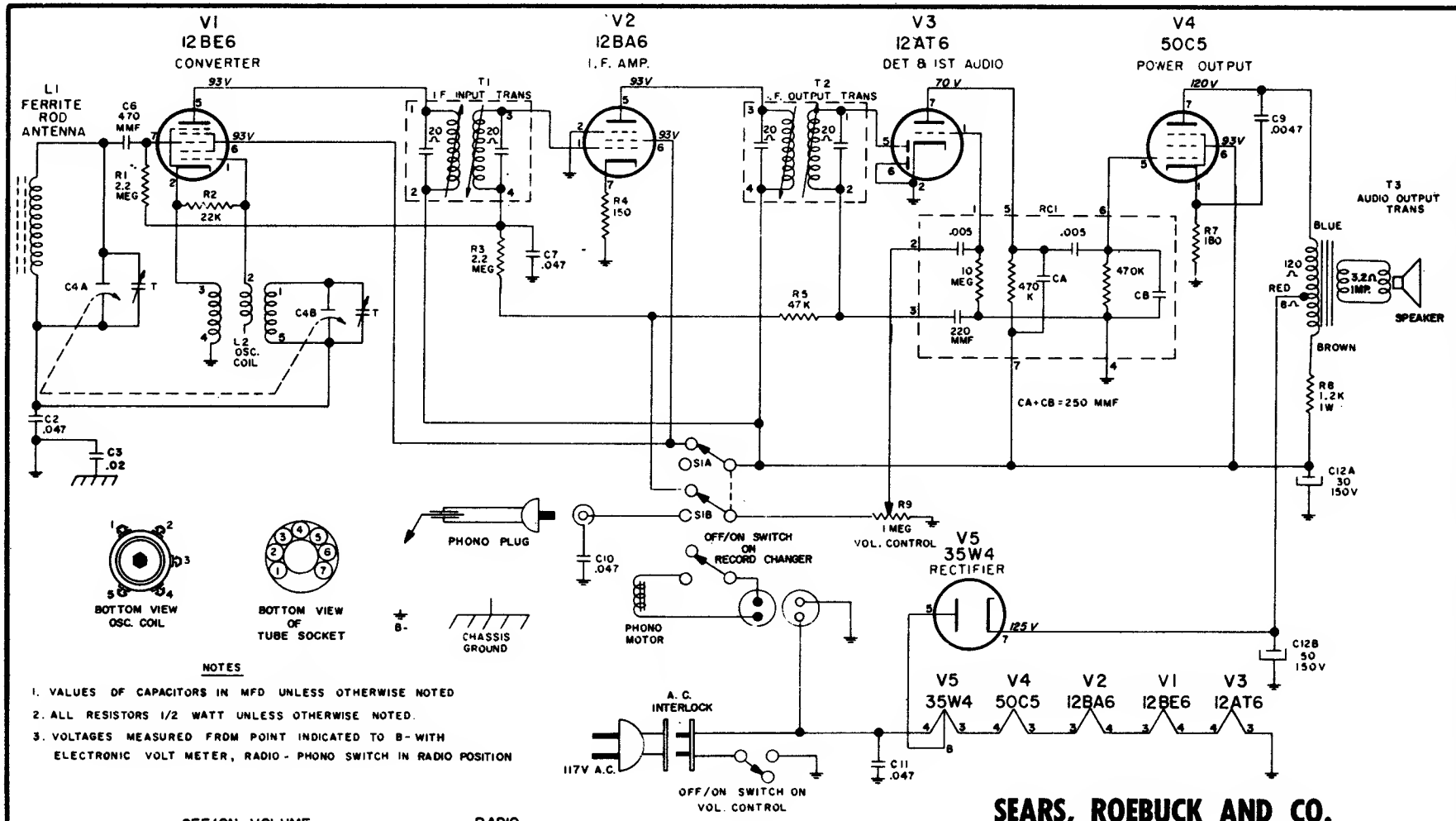


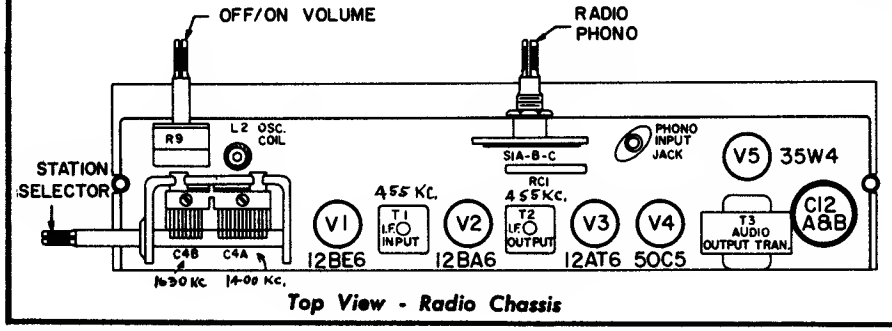
1. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
2. VALUES OF CAPACITORS IN MFD, UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINT INDICATED TO CHASSIS GROUND WITH "VTVM" NO SIGNAL INPUT.
4. J1, J2 ETC. INDICATES TERMINAL CONNECTIONS ON CIRCUIT BOARD.



NOTE: WIRING DIAGRAM SHOWN FROM CIRCUIT SIDE.

Circuit Board Wiring Diagram, 84-12074-0





Top View - Radio Chassis

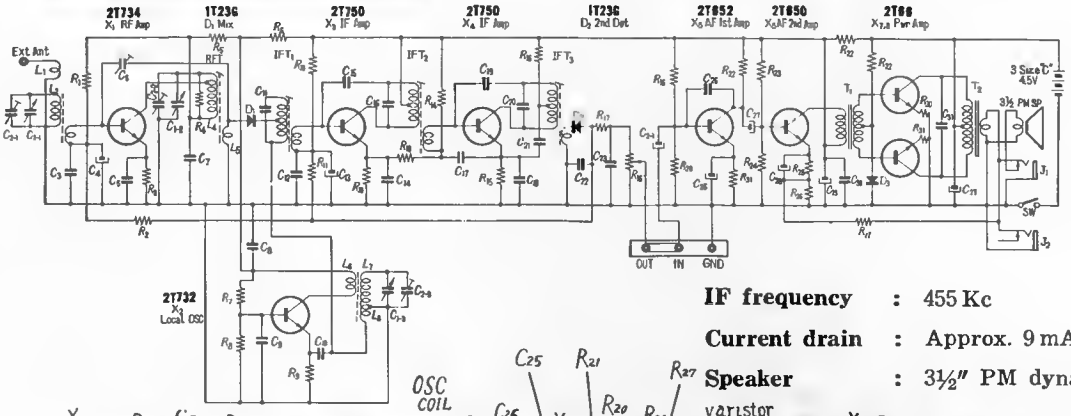
SEARS, ROEBUCK AND CO.

RADIO CHASSIS NO. 528.53071

USED IN MODELS:
8038, 9040*, 9040A*

* Models 9040 & 9040A are exactly the same.

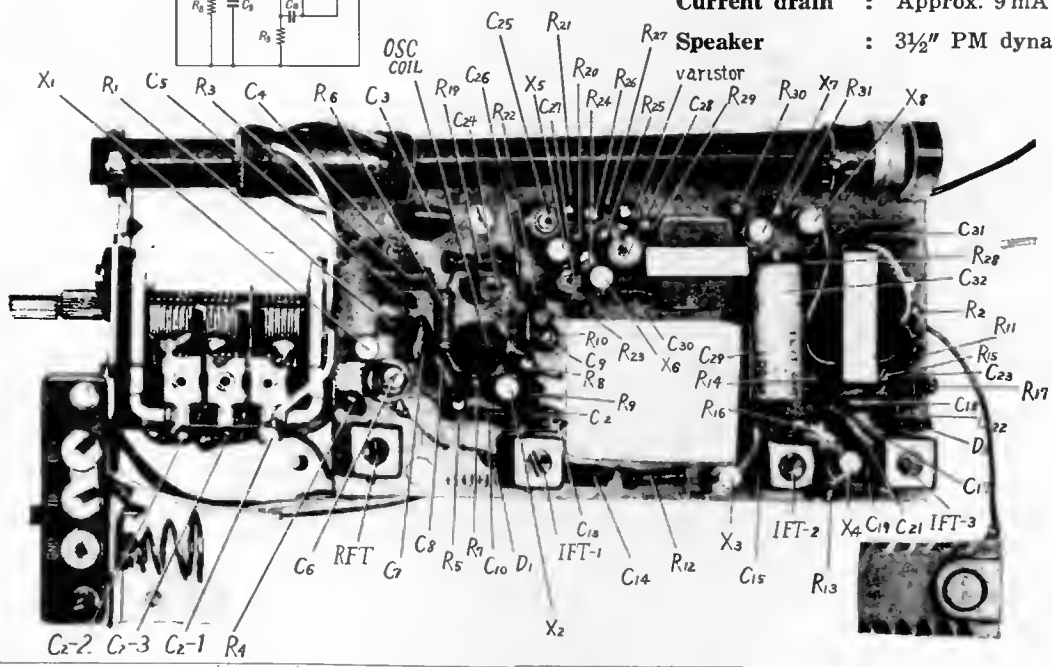
SONY TR-84



IF frequency : 455 Kc

Current drain : Approx. 9 mA at 0 signal

Speaker : 3½" PM dynamic 8 Ω.

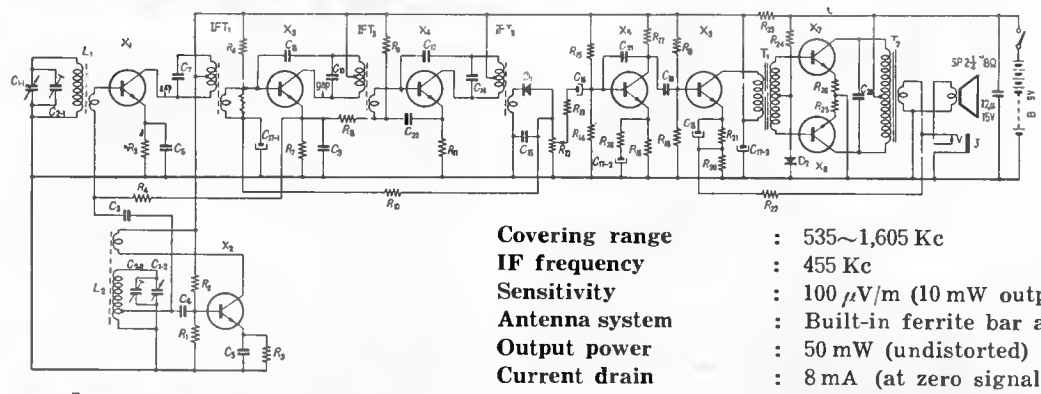


Symbol	Description	Symbol	Description	Symbol	Description	Symbol	Description
$C_{1-1,2,3}$	3 ganged C max. 200, 165 PF	C_{23}	0.02 μF 〃 (〃)	R_{14}	15 KΩ 〃 〃	X_6	AF_2 2T650 (2SD65)
$C_{2-1,2,3}$	〃 trimmer	C_{24}	10 μF 3 V (Electritic)	R_{15}	470 Ω 〃 〃	X_7	PA 2T69 or 2T31 (2SD69 or 2SB31)
C_3	0.05 μF MXL (Maylor)	C_{25}	30 μF 3 V (〃)	R_{16}	470 Ω 〃 〃	X_8	PA 2T69 or 2T31 (2SD69 or 2SB31)
C_4	10 μF 3 V (Electrolytic)	C_{26}	0.05 μF MXL (Maylor)	R_{17}	3.3 KΩ 〃 〃	D_1	Mix. 1T23G
C_5	0.005 μF MXL (Maylor)	C_{27}	10 μF 3 V (Electritic)	R_{18}	5 KΩ Volume control	D_2	Det. 1T23G
C_6	2~20 PF Cylindrical trimmer	C_{28}	30 μF 6 V (〃)	R_{19}	15 KΩ RL ½W	D_3	Varistor 1T51
C_7	0.05 μF MXL (Maylor)	C_{29}	100 μF 6 V (〃)	R_{20}	3.3 KΩ 〃 〃	$L_{1,2,3}$	Ferrite bar antenna 10φ×160 mm LA-040-1F
C_8	0.05 μF 〃 (〃)	C_{30}	0.05 μF MXL (Maylor)	R_{21}	470 Ω 〃 〃	$L_{4,5}$	RF Transformer (LH-003)
C_9	0.02 μF 〃 (〃)	C_{31}	0.1 μF PS191 (Maylor)	R_{22}	1 KΩ 〃 〃	$L_{6,7,8}$	Oscillator coil (LQ-025 Q)
C_{10}	0.002 μF 〃 (〃)	C_{32}	100 μF 6 V (Electrolytic	R_{23}	10 KΩ 〃 〃	IFT_1	LI-023AP
C_{11} ①	180 PF	R_1	150 KΩ RL ⅛W	R_{24}	3.3 KΩ 〃 〃	IFT_2	LI-008BP
C_{12}	0.02 μF MXL (Maylor)	R_2	8.7 KΩ 〃 〃	R_{25}	330 Ω 〃 〃	IFT_3	LI-008CP
C_{13}	10 μF 3 V (Electrolytic	R_3	560 Ω 〃 〃	R_{26}	5 Ω 〃 〃	T_1	1.5 KΩ : 2 KΩ (TI-007)
C_{14}	0.05 μF MXL (Maylor)	R_4	150 KΩ 〃 〃	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	3½" 8 Ω DS-008-1
C_{16} ①	180 PF	R_6	220 Ω 〃 〃	R_{29}	2.2 KΩ RL ⅛W		
C_{17}	0.02 μF MXL (Maylor)	R_7	56 KΩ 〃 〃	R_{30}	5 Ω 〃 〃		
C_{18}	0.02 μF 〃 (〃)	R_8	12 KΩ 〃 〃	R_{31}	5 Ω 〃 〃		
C_{19}	2 PF (Styrol)	R_9	1 KΩ 〃 〃	X_1	RF 2T734 (2SC73)		
C_{20} ①	180 PF	R_{10}	56 KΩ 〃 〃	X_2	Osc. 2T732 (2SC73)		
C_{21}	0.05 μF MXL (Maylor)	R_{11}	5.6 KΩ 〃 〃	X_3	IF_1 2T750 (2SC75)		
C_{22}	0.02 μF 〃 (〃)	R_{12}	470 Ω 〃 〃	X_4	IF_2 2T750 (2SC75)		
		R_{13}	2.2 KΩ 〃 〃	X_5	AF_1 2T652 (2SD65)		

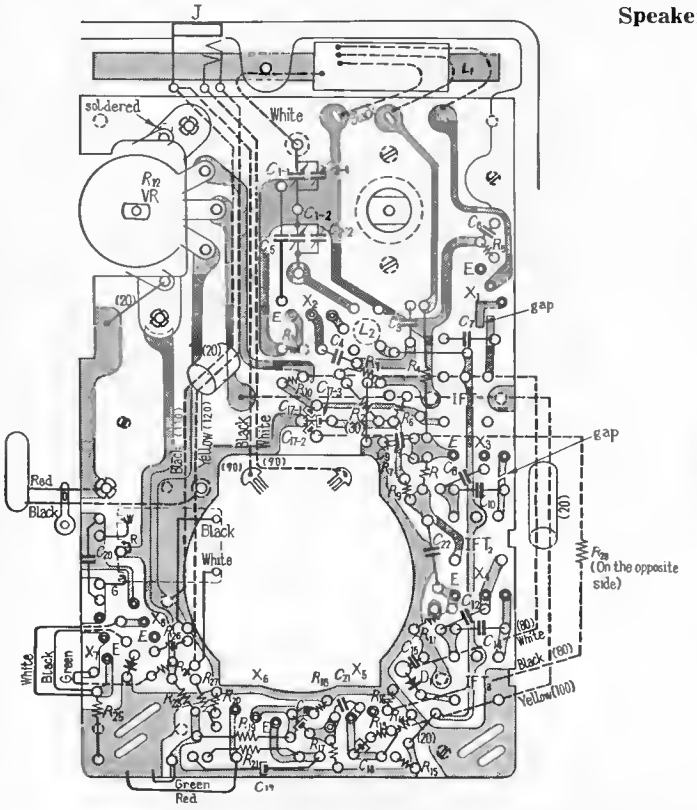
① Built in IFT

② To be adjusted

SONY TR-86



Covering range	:	535~1,605 Kc
IF frequency	:	455 Kc
Sensitivity	:	100 μV/m (10 mW output)
Antenna system	:	Built-in ferrite bar antenna
Output power	:	50 mW (undistorted)
Current drain	:	8 mA (at zero signal)
Speaker	:	2¼" PM dynamic speaker 8Ω



Circuit board of TR-86 (Printed side)

Parts list for TR-86

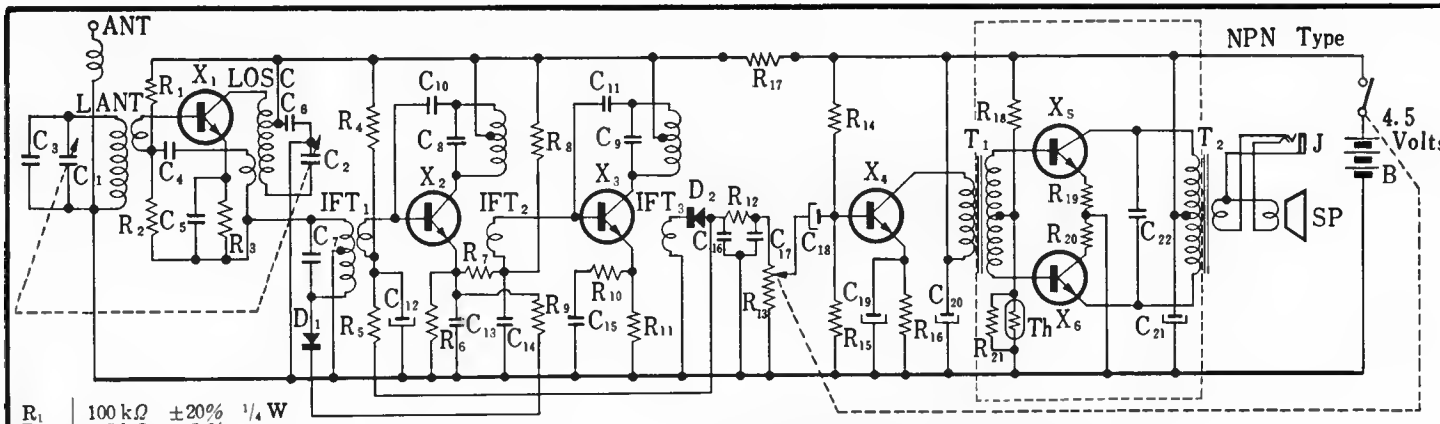
Symbol	Description	Symbol	Description
L_1	Antenna coil LA-033-LE	R_{26}	22 Ω 〃 〃
		R_{27} ①	33 KΩ 〃 〃
L_2	Oscillator coil LO-002-Q	R_{28}	270 Ω 〃 20%
		$C_{1-1,\ 1-2}$	Variable condenser
IFT_1	LI-008-AP	$C_{2-1,\ 2-2}$	CV-007-02
IFT_2	LI-008-BP	C_3	0.005 μF
IFT_3	LI-008-CP	C_4	0.01 μF
T_1	TI-002-03	C_5	0.005 μF
T_2	TX-002-03	C_6	0.01 μF
SP	2¼" 8 Ω DS 004-1	C_7	180 PF
		C_8	2 PF
J	Earphone jack	C_9 ③	30 μF 3 V
R_1	10 KΩ ¼ W 20%	C_{10}	180 μF
R_2	56 KΩ 〃 〃	C_{12}	2 PF
R_3	2.2 KΩ 〃 〃	C_{14}	180 PF
R_4	2.2 KΩ 〃 〃	C_{15}	0.02μF
R_5 ①	820 Ω 〃 10%	C_{16} ③	5 μF 6 V
R_6	82 KΩ 〃 20%	C_{17} ③	20 μF 10 V 3 in block
R_7	470 Ω 〃 〃		
R_8	820 Ω 〃 〃	C_{18} ③	5 μF 6 V
R_9	18 KΩ 〃 〃	C_{19} ③	30 μF 3 V
R_{10}	7.5 KΩ 〃 〃	C_{20}	0.05 μF
R_{11}	470 Ω 〃 〃	C_{21}	0.001 μF
R_{12} ②	5 KΩ (RV-234)	C_{22}	0.01 μF
R_{13}	1.5 KΩ ¼W 20%	X_1	Mixer 2T7 (2SC76)
R_{14}	10 KΩ ¼W 20%	X_2	Oscillator 2T7 (2SC73)
R_{15}	56 KΩ 〃 〃		
R_{16}	820 Ω 〃 〃	X_3	IF 2T7 (2SC76)
R_{17}	2.2 KΩ 〃 〃	X_4	IF 2T7 (2SC76)
R_{18}	10 KΩ 〃 〃		
R_{19}	56 KΩ 〃 〃	X_5	Audio 2T6 (2SD66)
R_{20}	5 Ω 〃 10%	X_6	Audio 2T6 (2SD66)
R_{21}	680 Ω 〃 20%		
R_{22}	220 Ω 〃 〃	X_7, X_8	Power stage 2T6 (2SD65)
R_{23}	220 Ω 〃 〃		
R_{24}	5.6 kΩ 〃 〃	D_1	Deterctor 1T23
R_{25}	22 Ω 〃 10%	D_2	Varistor 1T52

① To be adjusted. ② With switch.
③ Electrolytic.

Audio Transformer

Input transformer TI-002
6 KΩ : 3 KΩ
DC resistance 500 Ω : 280 Ω
Output transformer TX-002
1.4 KΩ : 8 Ω
DC resistance 100 Ω : 0.5 Ω

SONY TR-608



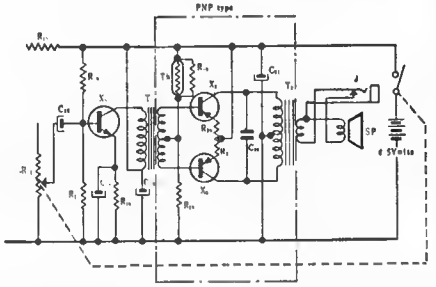
R_1	100 kΩ	±20%	1/4 W
R_2	15 kΩ	± 5 %	〃
R_3	1 kΩ	〃	〃
R_4	56 kΩ	±20%	〃
R_5	5.6 kΩ	±10%	〃
R_6	470 Ω	± 5 %	〃
R_7	3.3 kΩ	〃	〃
R_8	33 kΩ	〃	〃
R_9	1.5 kΩ	〃	〃
R_{10}	220 Ω	〃	〃
R_{11}	470 Ω	〃	〃
R_{12}	1 kΩ	〃	〃
R_{13}	5 kΩ	Volume control with Switch	
R_{14}	10 kΩ	± 5 %	1/4 W
R_{15}	3.3 kΩ	〃	〃
R_{16}	330 Ω	〃	〃
R_{17}	60 Ω	〃	〃
R_{18}	3.3 kΩ	〃	〃
R_{19}	5 Ω	〃	〃
R_{20}	5 Ω	〃	〃
R_{21}	220 Ω	〃	〃

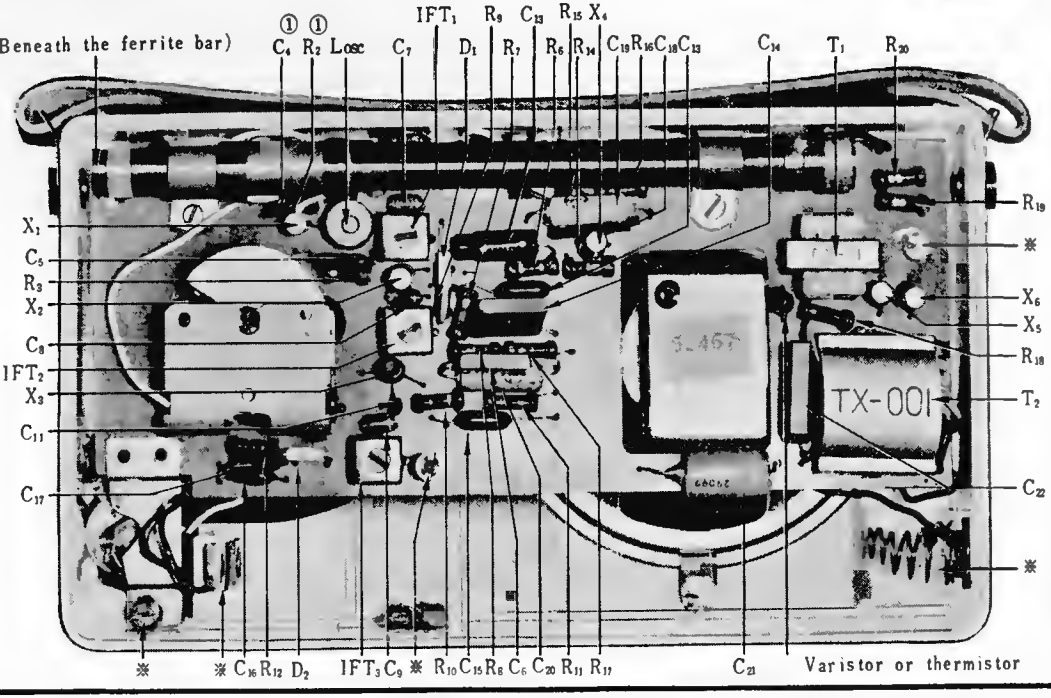
C_1 C_2	Tuning condenser
C_3	3 PF
C_4	0.01 μF
C_5	0.005 μF
C_6	0.05 μF
C_7	200 PF
C_8	200 PF
C_9	200 PF
C_{10}	1 PF
C_{11}	2 PF
C_{12}	30 μF 6V
C_{13}	0.01 μF
C_{14}	0.05 μF
C_{15}	0.01 μF
C_{16}	0.01 μF
C_{17}	0.01 μF
C_{18}	30 μF 6 V
C_{19}	30 μF 6 V
C_{20}	30 μF 6 V
C_{21}	100 μF 6 V
C_{22}	0.1 μF

X_1	Transistor 2T73 (2SD73)
X_2	〃 2T76 (2SC76)
X_3	〃 2T76 (2SC76)
X_4	〃 2T6 (2SD65)
X_5	〃 2T85
X_6	〃 2T85
D_1	Diode 1T23 (1S75)
D_2	〃 1T22 (1S75)
Th	Thermistor S-250
L ANT	Antenna Coil
L OSC	Oscillator Coil
IFT_1	IF transformer
IFT_2	〃
IFT_3	〃
T_1	Interstage transformer
T_2	Output transformer
J	Earphone Jack
SP	3 1/2" P.M. dynamic 8 Ω
B	3 size "C" fishlight batteries

Covering frequency : 535~1605 kc
IF frequency : 455 kc
Sensitivity : 200 μV/m with built-in ferrite bar antenna
40 μV/m with external aerial
Battery : 3 size "C" flashlight batteries (4.5 Volts)
Current drain : 7.5 mA ±20% at zero signal

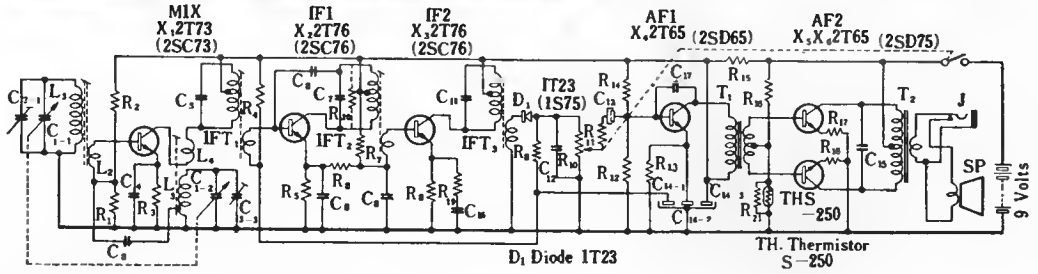
TR-608 PNP 2T32 X_1X_2





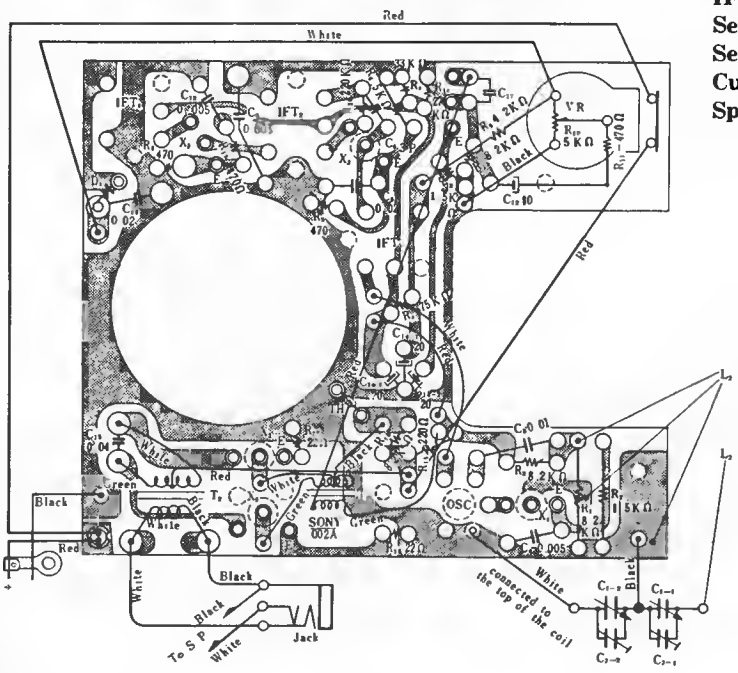
TR-608 Mounted circuit board (NPN)

SONY TR-610



L_1L_2	Antenna Coil	R_6	470 Ω	±20%	1/4 W	C_2	0.01 μF
L_3L_4	Oscillator Coil	R_9	8.2 kΩ	±10%	〃	C_4	0.005 μF
IFT_1	I.F. transformer	R_{10}	5 kΩ VR with switch			C_5	200 pF (Built in IFT)
IFT_2	〃	R_{11}	470 Ω	±20%	1/4 W	C_6	2 pF
IFT_3	〃	R_{12}	8.2 kΩ	±10%	〃	C_7	200 pF (Built in IFT)
T_1	Interstage transformer	R_{13}	1.5 kΩ	±20%	〃	C_8	0.02 μF
T_2	Output transformer	R_{14}	27 kΩ	〃	〃	C_9	0.005 μF
J	Earphone Jack	R_{15}	220 Ω	〃	〃	C_{11}	200 pF (Built in IFT)
SP	2¼″ PM Speaker 8Ω	R_{16}	7.5 kΩ	±10%	〃	C_{12}	0.02 μF
R_1	8.2 kΩ ±5% 1/4 W	R_{17}	22 Ω	±20%	〃	C_{13}	10 μF 3 V
R_2	110 kΩ ±20% 〃	R_{18}	22 Ω	〃	〃	C_{14-1}	20 μF 10 V } Block
R_3	1.5 kΩ ±5% 〃	R_{19}	150 Ω	〃	〃	C_{14-2}	20 μF 10 V } Block
R_4	130 kΩ ±20% 〃	R_{20}	220 kΩ	〃	〃	C_{14-3}	20 μF 10 V } Block
R_5	470 Ω 〃 〃	R_{21}	220 Ω	〃	〃	C_{15}	0.04 μF
R_6	1.5 kΩ 〃 〃	C_1	PVC-2 M. Tuning condenser			C_{16}	0.005 μF
R_7	33 kΩ ±10% 〃	C_2	Trimmer condenser			C_{17}	100 pF

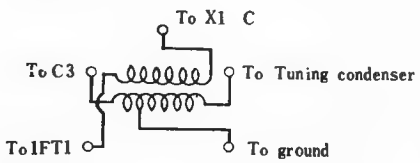
TR-610 Circuit board printed side



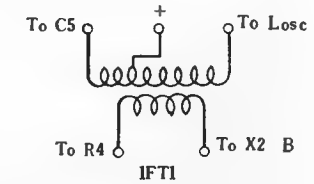
IF frequency : 455 kc
Sensitivity : 400 μV/m at 10 mW autput
Selectivity : 18 db at 10 kc off resonance
Current drain : Approx. 5 mA at zero signal
Speaker : 2¼″ PM dynamic 8 Ω

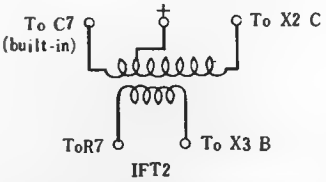
Coils

(a) Oscillator coil (bottom view)



(b) IFT (bottom view)

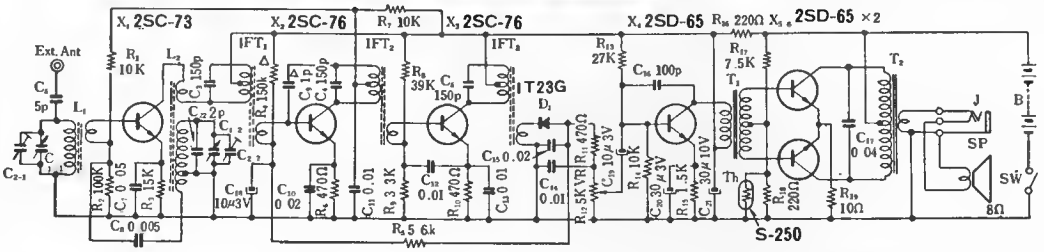


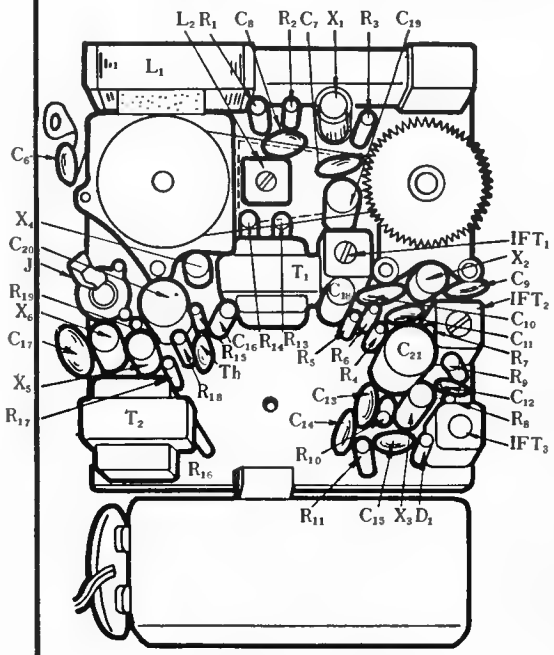


How to remove Cabinet

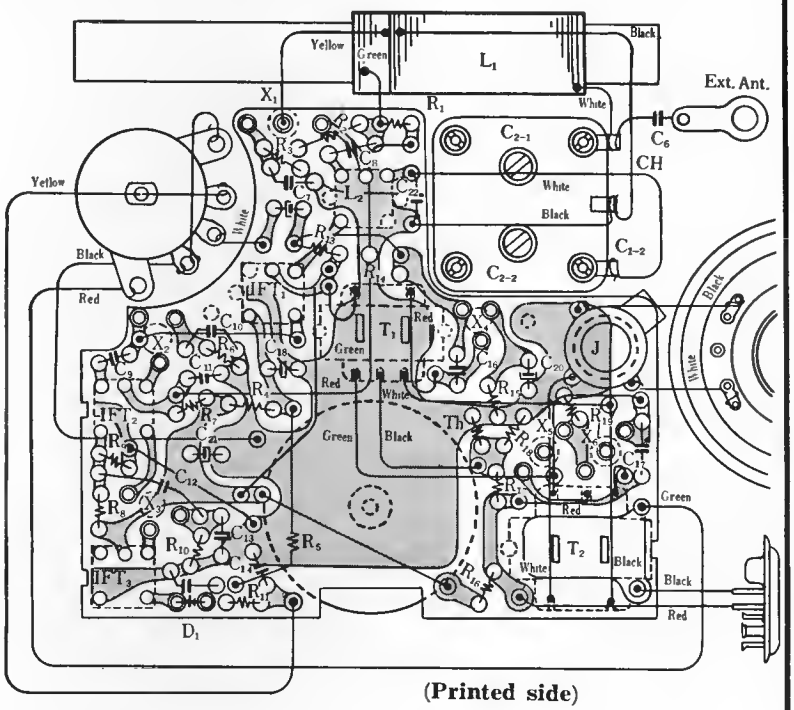
(a) Remove 2 small Philips screws on both side of the Cabinet.
(b) Open the Back cover and remove a screw on the back of the speaker. The circuit board can be easily taken out.

SONY TR-620





Mounting of TR-620



(Printed side)

Adjustment

1) Lower limit: 520 kc Adjust L_2
   Upper limit: 1680 kc " C_{2-2}
2) Tracking adjustment
   Checking point
   620 kc Adjust L_1
   1400 kc " C_{2-1}

Covering range: 535~1605 kc

IF frequency: 455 kc

Current drain: 6 mA at 0 signal

Speaker: 2¼" PM dynamic (8 Ω)

Voltage & current distribution

	Collector current	Emitter voltage
X_1	190~250 μA	2.85~3.75 V
X_2	310~390 μA	0.145~0.18 V
X_3	550~680 μA	0.26~0.32 V
X_4	1.1~1.4 mA	1.65~2.1 V
X_5, X_6	0.8~1.5 mA for 2	0.008~0.015 V

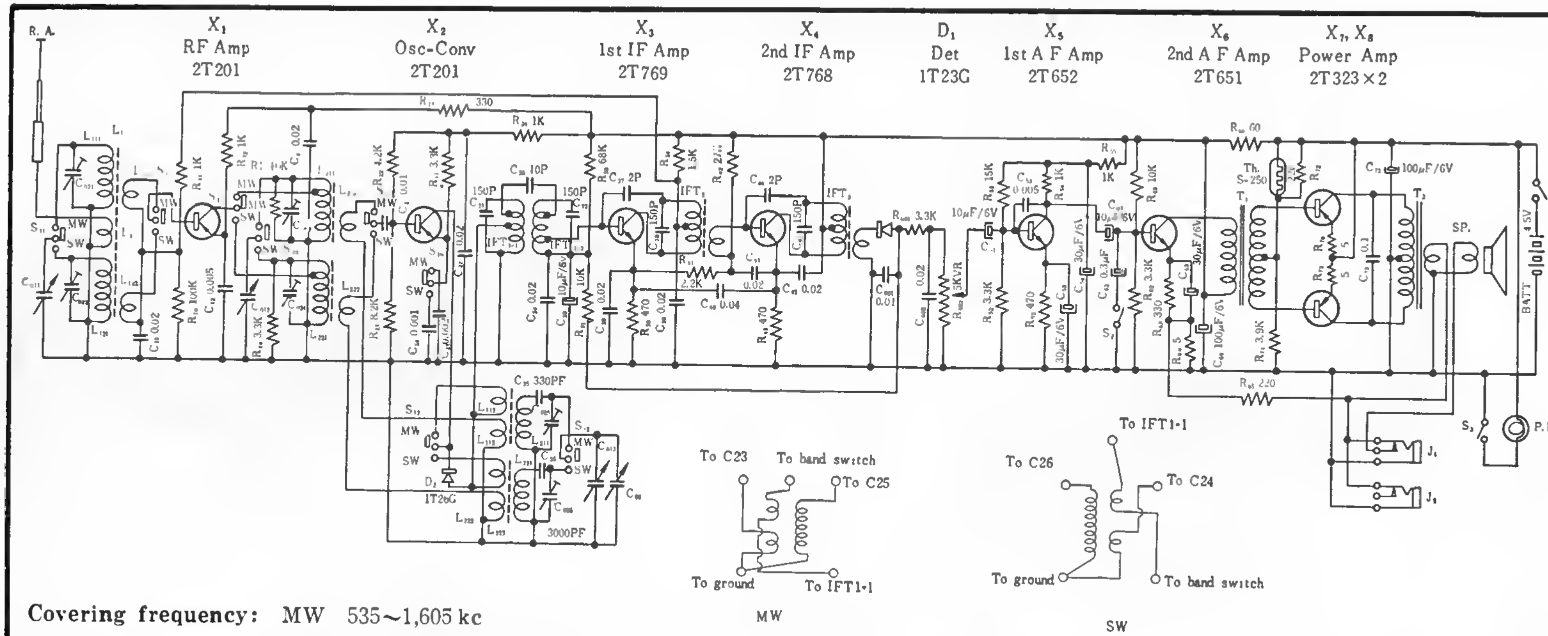
(Current drain at 0 signal: Approx. 6 mA)

How to remove the cabinet

1) Loosen and remove Philips screw on the back cover.
2) Loosen and remove Philips screw on the right below the tuning condenser.
3) Loosen and remove Philips screw on the left below the volume control.
4) Dismount external aerial jack.

SONY

TR-815B and TR-815Y

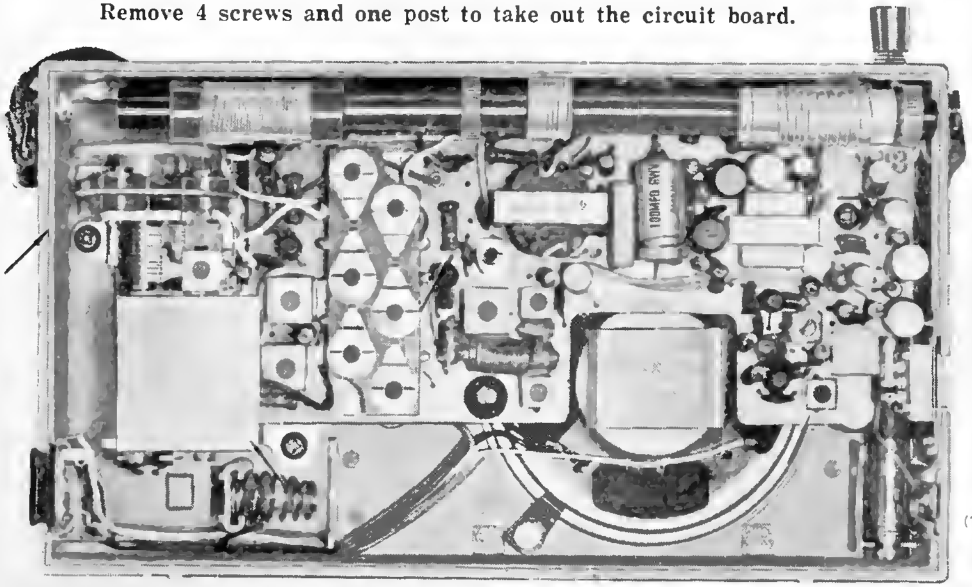


Covering frequency: MW 535~1,605 kc
SW 3.9~12 Mc for TR-815B, 6~18 Mc for TR-815Y

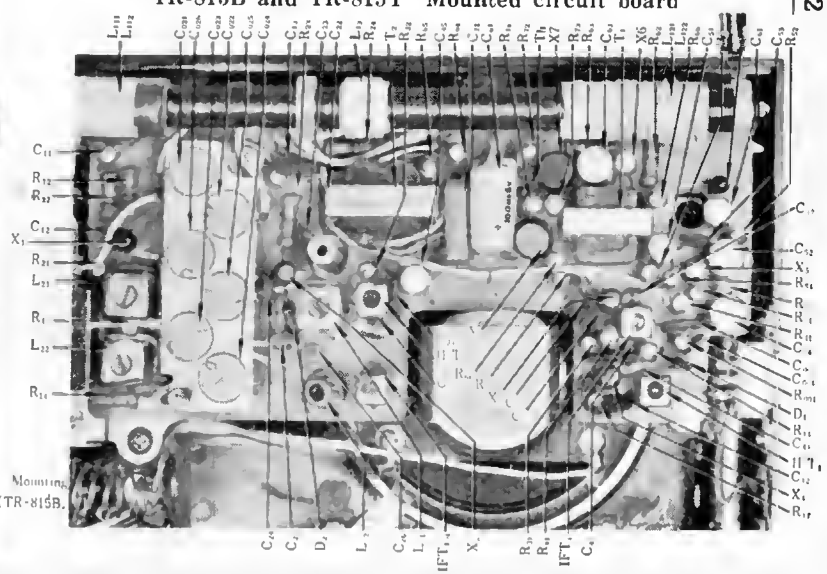
IF frequency : 455 kc

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.

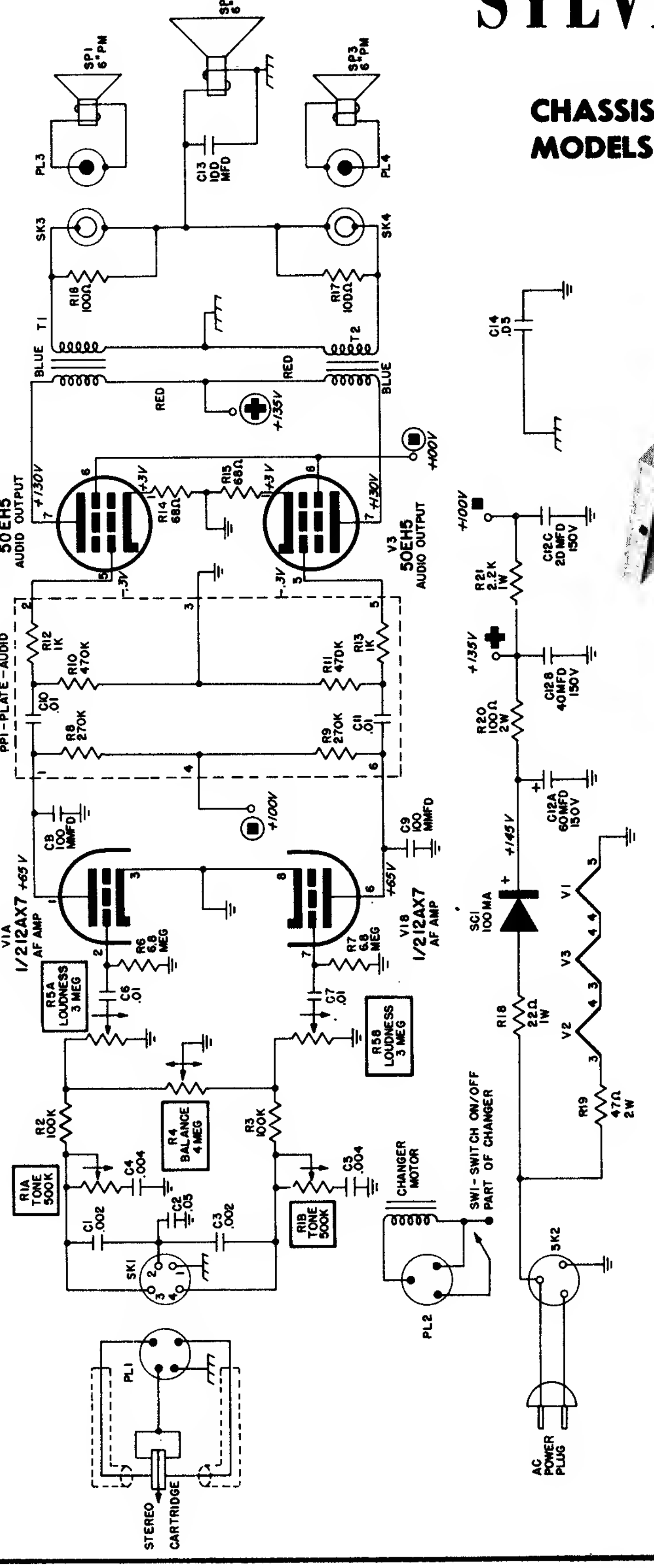


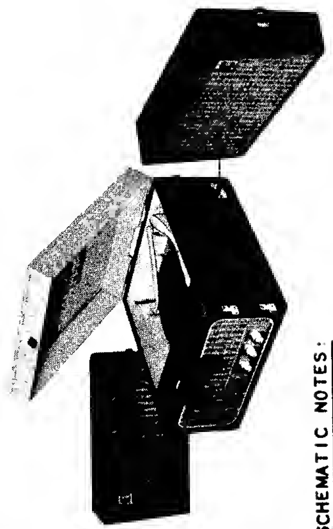
TR-815B and TR-815Y Mounted circuit board



SYLVANIA

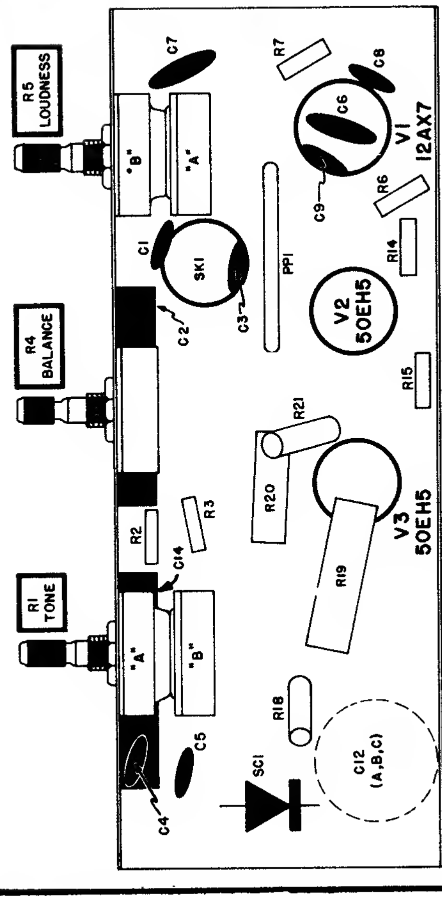
CHASSIS: 664-1
MODELS: 45P18



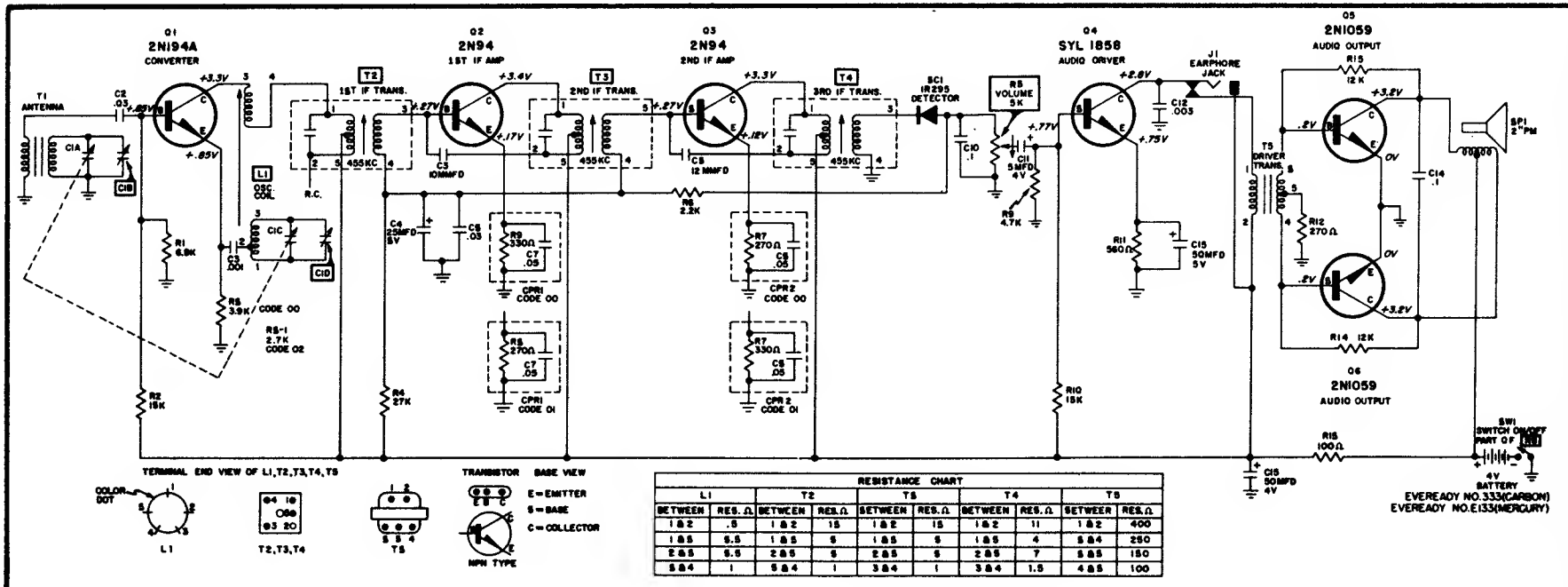


SCHEMATIC NOTES:

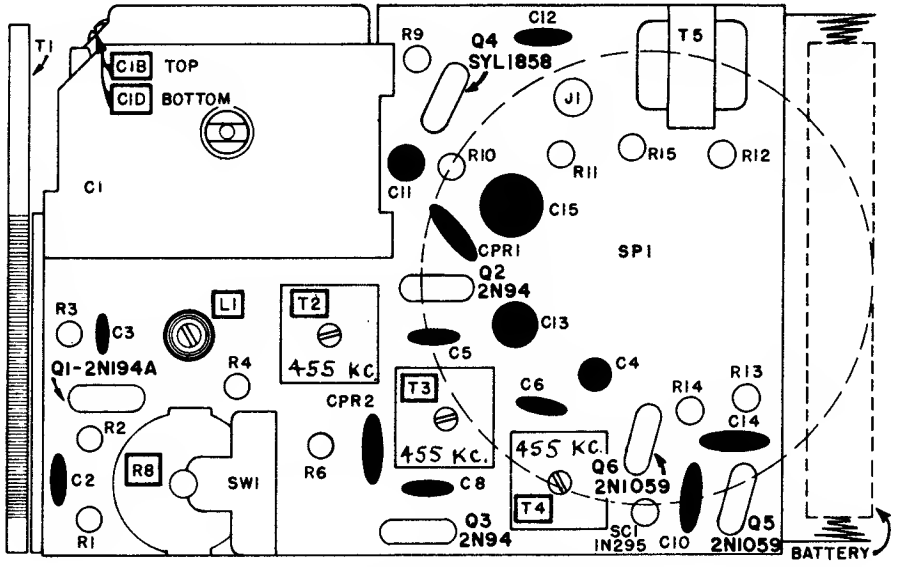
1. VOLTAGES SHOWN ARE AVERAGE READINGS MEASURED TO NEGATIVE "B" WITH NO SIGNAL INPUT. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCES.
2. AC POWER SOURCE - 117V 60~ "VARIAC REGULATED".
3. VOLTAGE SOURCES ARE INDICATED BY SYMBOLS WITHOUT CIRCLES ✚: ENCIRCLED SYMBOLS ⊕ INDICATE VOLTAGE TIE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



BOTTOM PARTS LAYOUT



RESISTANCE CHART									
L1		T2		T3		T4		T5	
BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω
1 & 2	.5	1 & 2	15	1 & 2	15	1 & 2	11	1 & 2	400
1 & 5	5.5	1 & 5	5	1 & 5	5	1 & 5	4	5 & 4	250
2 & 5	5.5	2 & 5	5	2 & 5	5	2 & 5	7	5 & 5	150
5 & 4	1	5 & 4	1	3 & 4	1	3 & 4	1.5	4 & 5	100



TOP PARTS LAYOUT

SCHEMATIC NOTES

1. VOLTAGES MEASURED TO CHASSIS GROUND, WITH RECEIVER NOT TUNED TO ANY SPECIFIC STATION.
2. BATTERY VOLTAGE WITH RECEIVER OPERATING 4 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. ⏚ DESIGNATES CHASSIS GROUND.

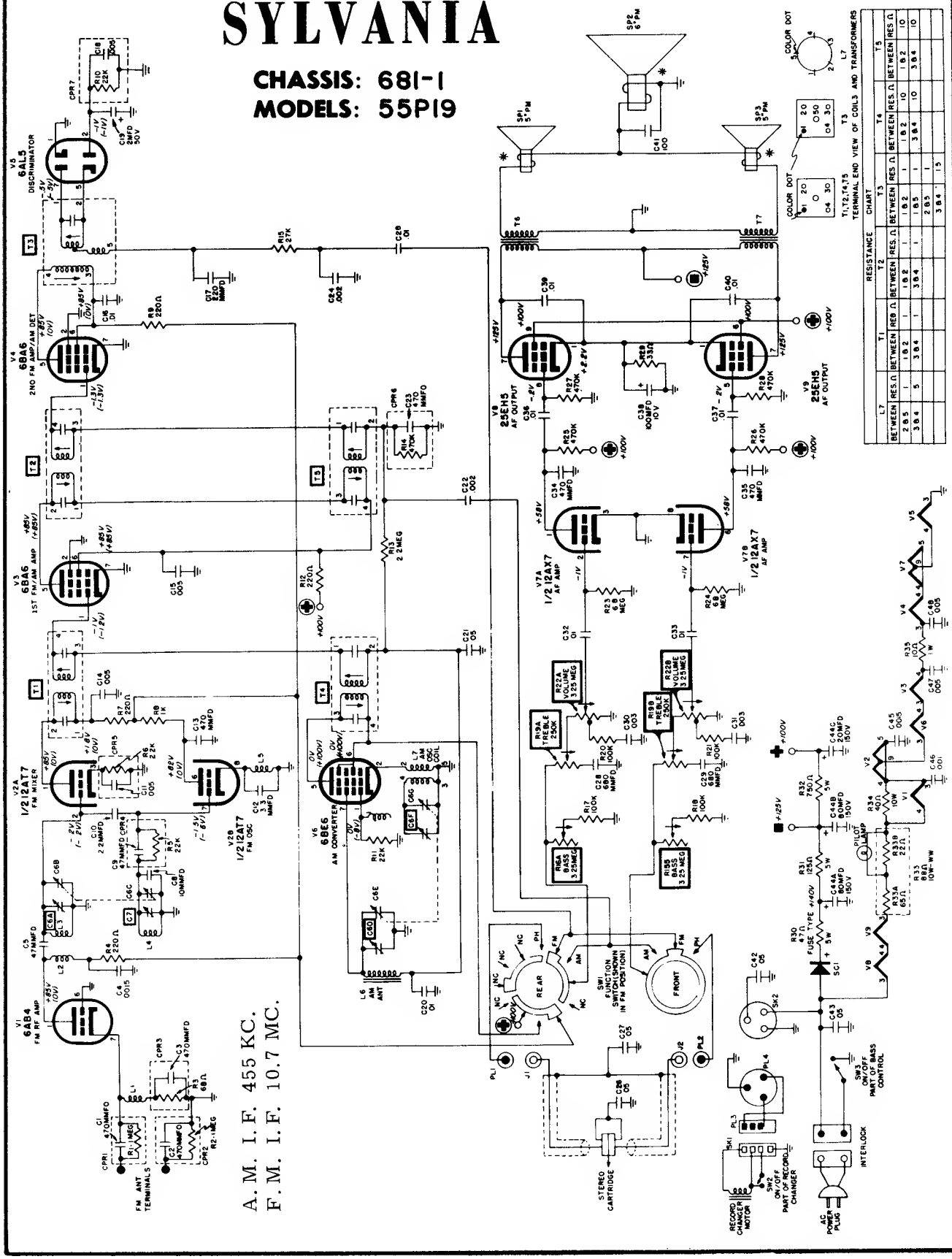
SYLVANIA

CHASSIS: 666-1,-2

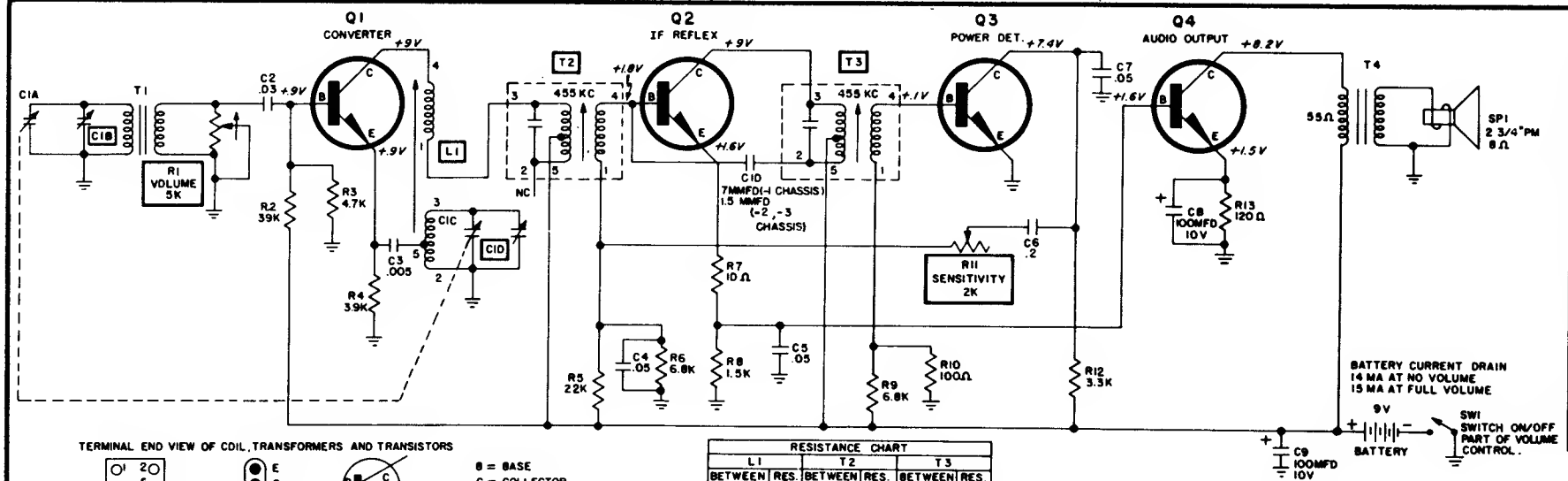
MODELS: 6P08, 6P09 SERIES

SYLVANIA

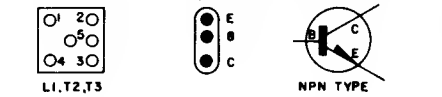
CHASSIS: 681-1
MODELS: 55P19



SEE CHART BELOW FOR TRANSISTOR COMPLEMENT



TERMINAL END VIEW OF COIL, TRANSFORMERS AND TRANSISTORS



B = BASE
C = COLLECTOR
E = EMITTER

RESISTANCE CHART					
L1		T2		T3	
BETWEEN	RES.	BETWEEN	RES.	BETWEEN	RES.
1&4	1.5Ω	1&4	1.5Ω	1&4	1.5Ω
2&3	6.5Ω	2&3	6.5Ω	2&3	6.5Ω
2&5	.5Ω	2&5	2.5Ω	2&5	2.5Ω
3&5	0Ω	3&5	4Ω	3&5	4Ω

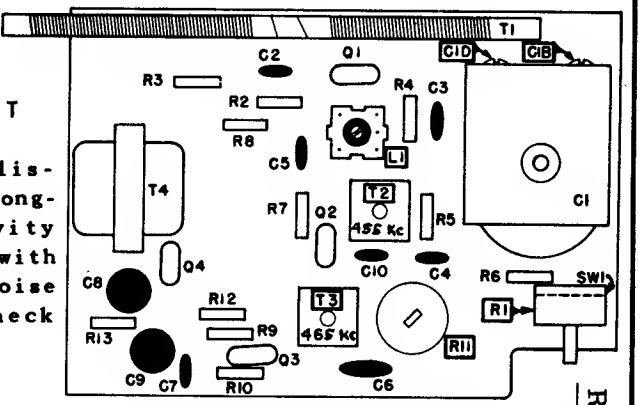
CHASSIS REMOVAL

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.



TOP PARTS LAYOUT

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	SYL2133	SYL2132	SYL2131	SYL2136

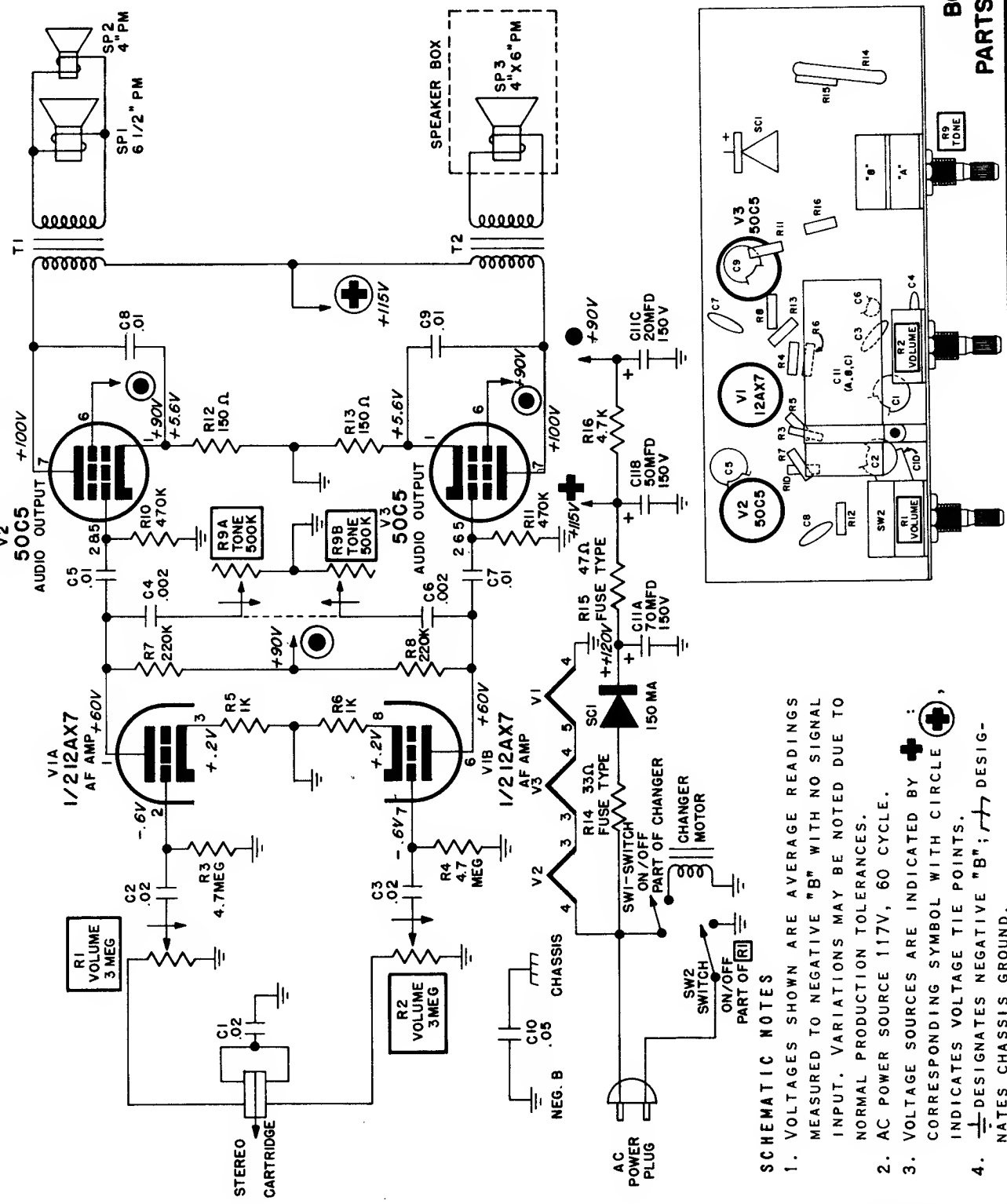
SYLVANIA

CHASSIS: 682-1,-2,-3

MODELS: 4P19WD (-1 CHASSIS)
4P19W (-2 CHASSIS)
4P19WC (-3 CHASSIS)

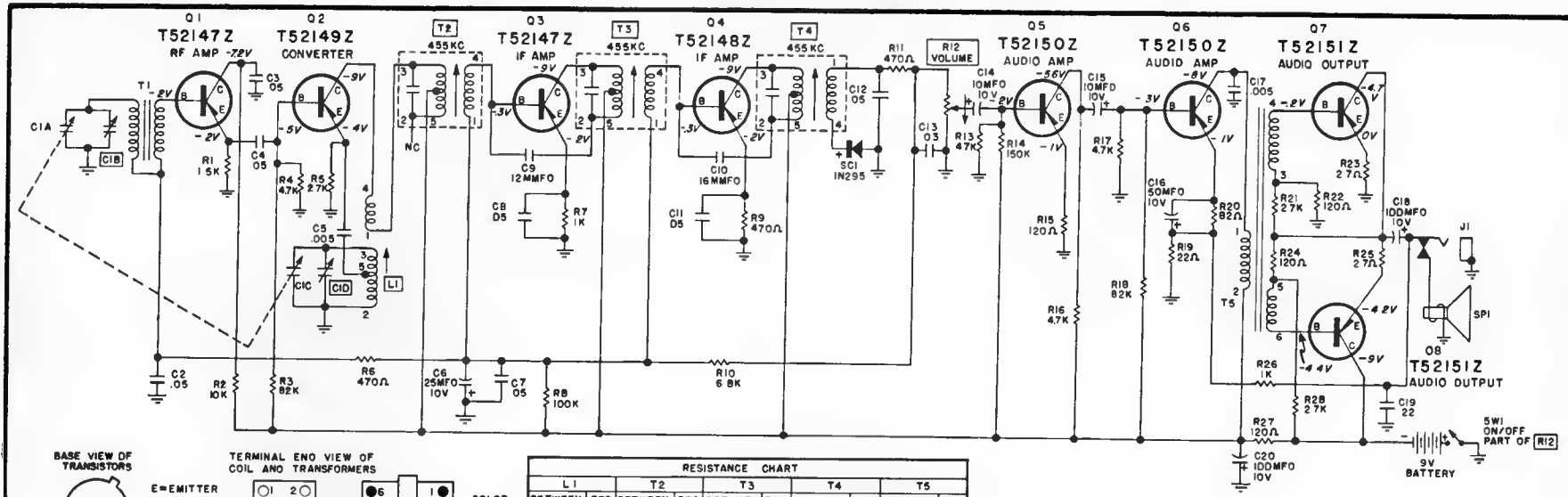
SYLVANIA

CHASSIS: 691-1
MODELS: 45C20



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 ⊕; CORRESPONDING SYMBOL WITH CIRCLE ⊕, INDICATES VOLTAGE TIE POINTS.
4. ⏚ DESIGNATES NEGATIVE "B"; ⏚ DESIGNATES CHASSIS GROUND.



BASE VIEW OF TRANSISTORS

E=EMITTER
B=BASE
C=COLLECTOR

TERMINAL END VIEW OF COIL AND TRANSFORMERS

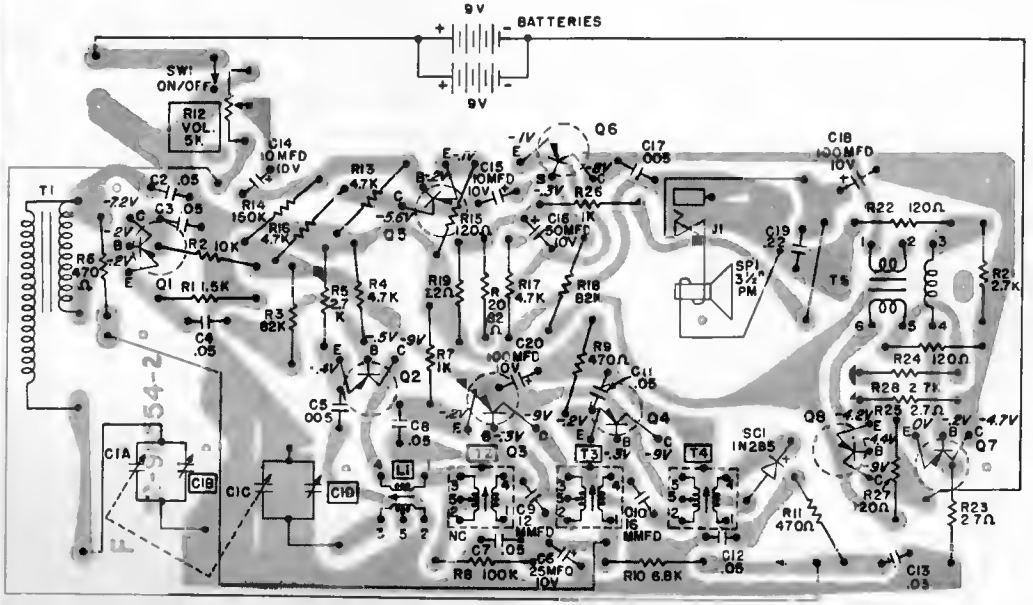
L1, T2, T3, T4

T6

COLOR DOT

RESISTANCE CHART

L1		T2		T3		T4		T5	
BETWEEN	RES	BETWEEN	RES	BETWEEN	RES	BETWEEN	RES	BETWEEN	RES
1 & 4	1Ω	1 & 4	1Ω	1 & 4	1Ω	1 & 4	2.5Ω	1 & 2	450Ω
2 & 3	8Ω	2 & 3	25Ω	2 & 3	25Ω	2 & 3	20Ω	3 & 4	45Ω
2 & 5	5Ω	2 & 5	10Ω	2 & 5	10Ω	2 & 5	8Ω	5 & 6	45Ω
3 & 5	7.5Ω	3 & 5	15Ω	3 & 5	15Ω	3 & 5	12Ω		



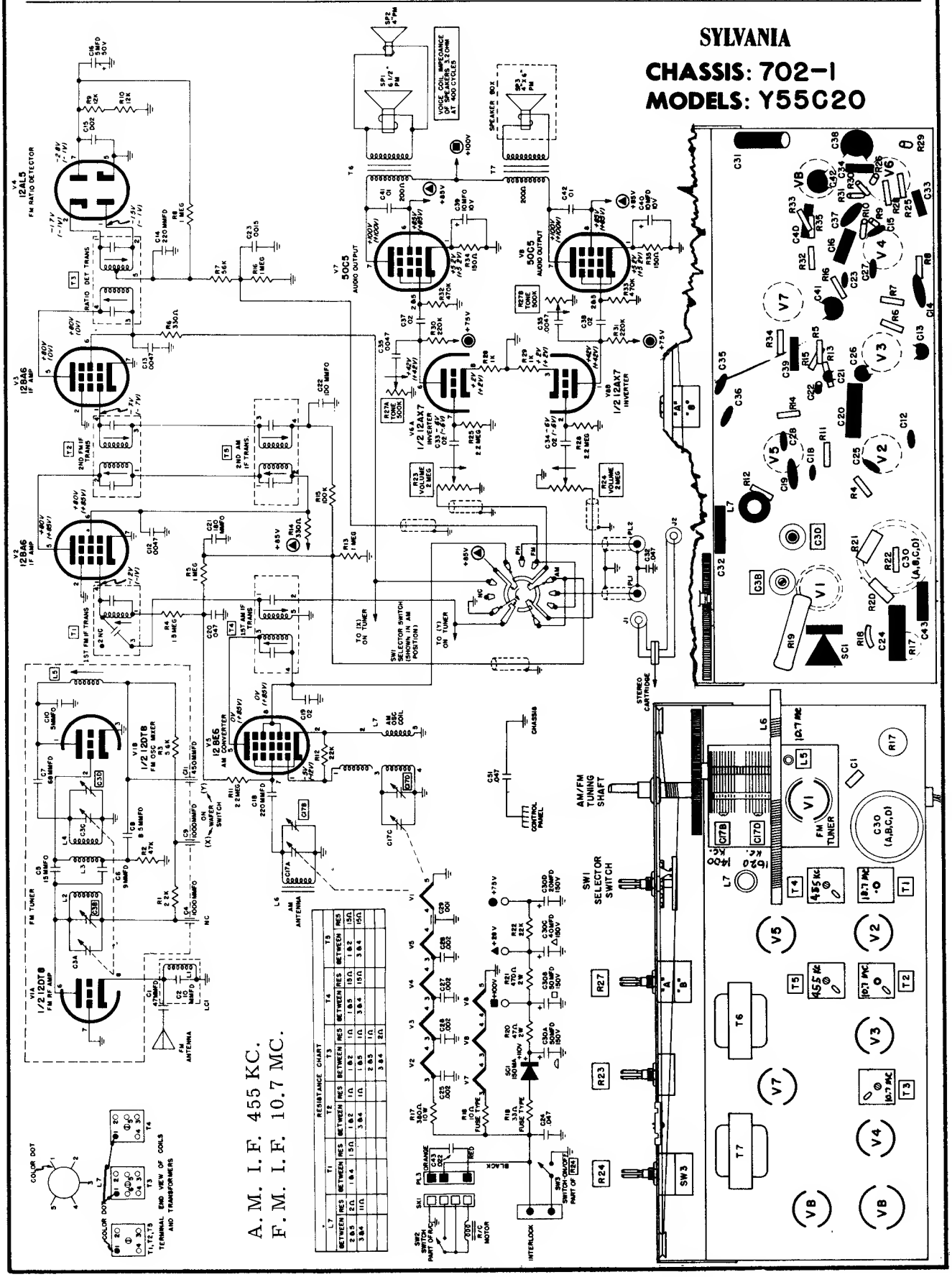
SCHEMATIC NOTES

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. ⏚ DESIGNATES CHASSIS GROUND.

SYLVANIA

CHASSIS: 700-2

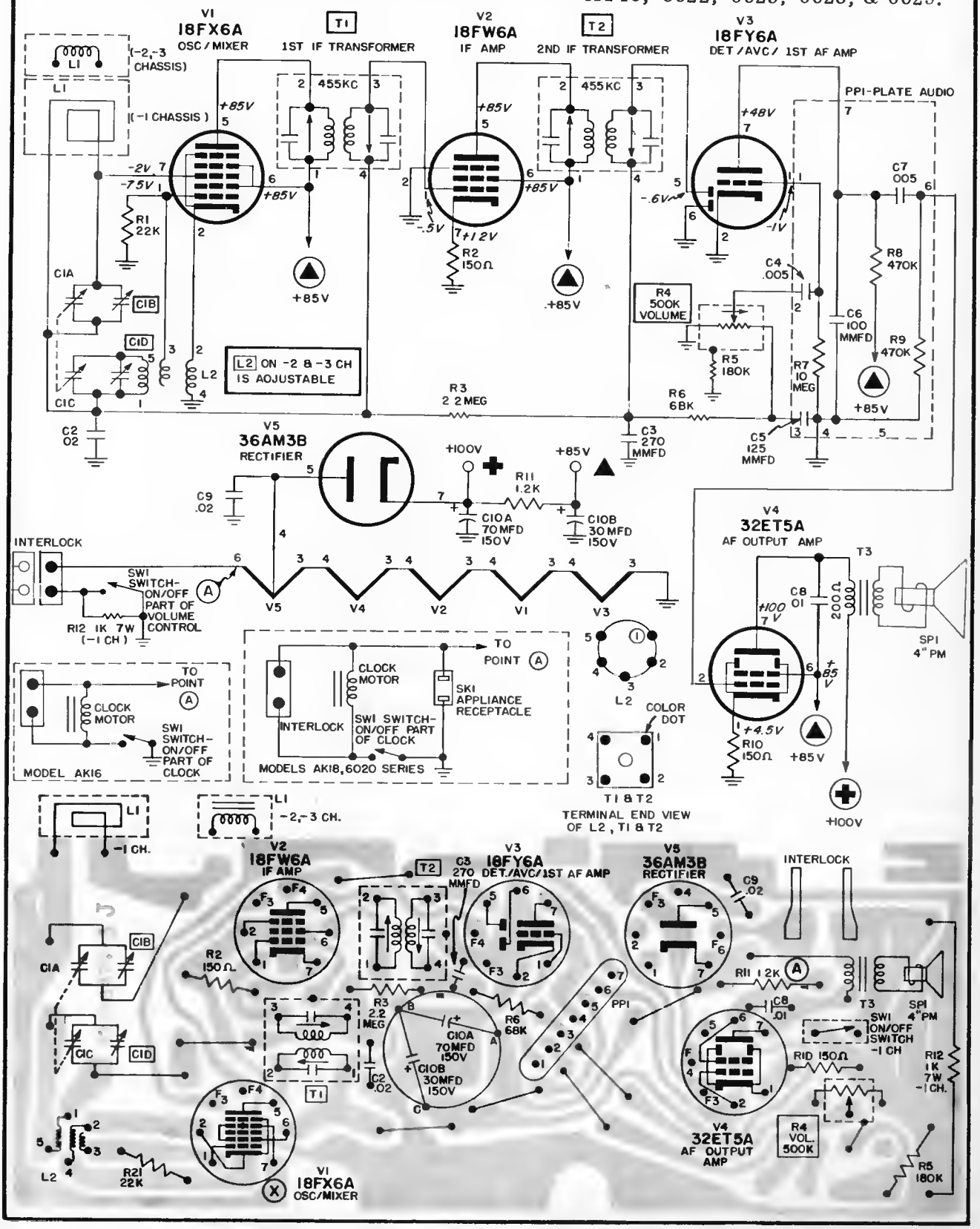
MODELS: TH16 SERIES


SYLVANIA
CHASSIS: 702-1
MODELS: Y55C20
A.M. I.F. 455 KC.
F.M. I.F. 10.7 MC.

SYLVANIA

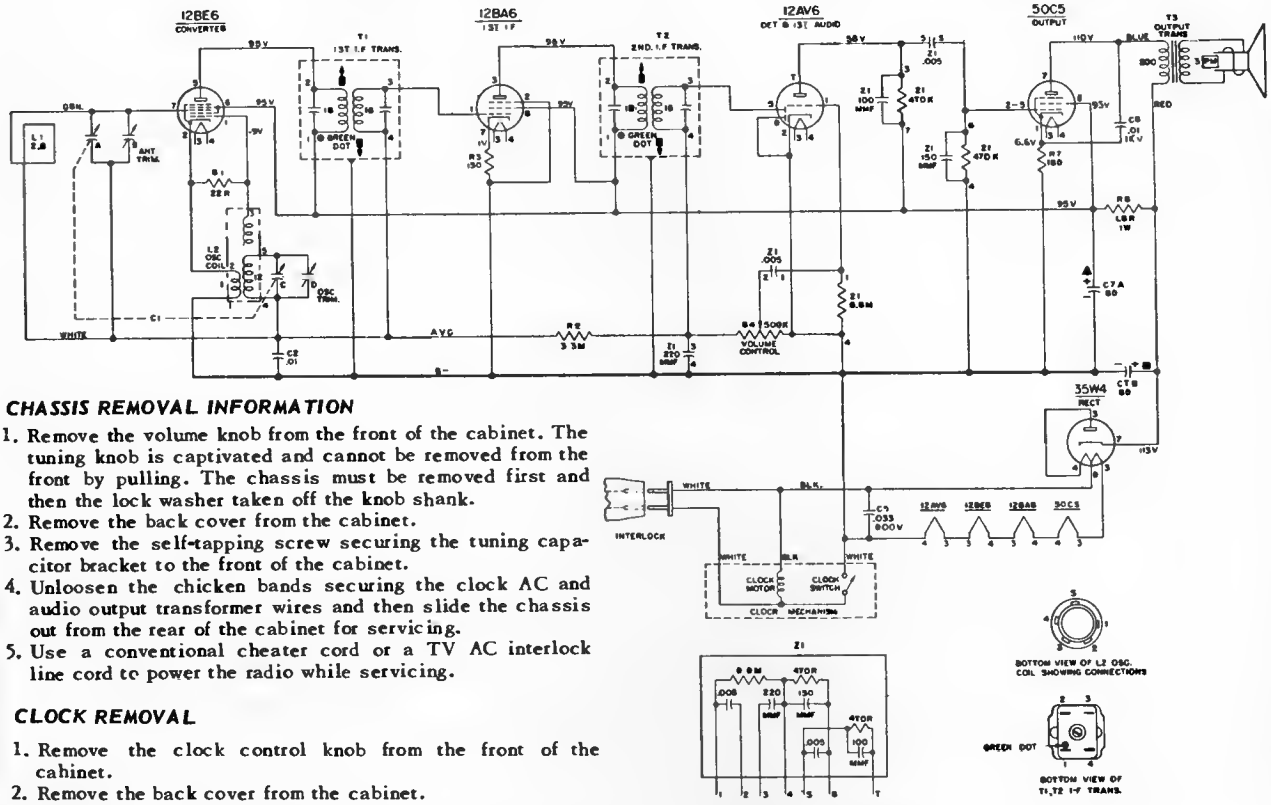
CHASSIS: 711-1, -2, -3

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.



NOTES:

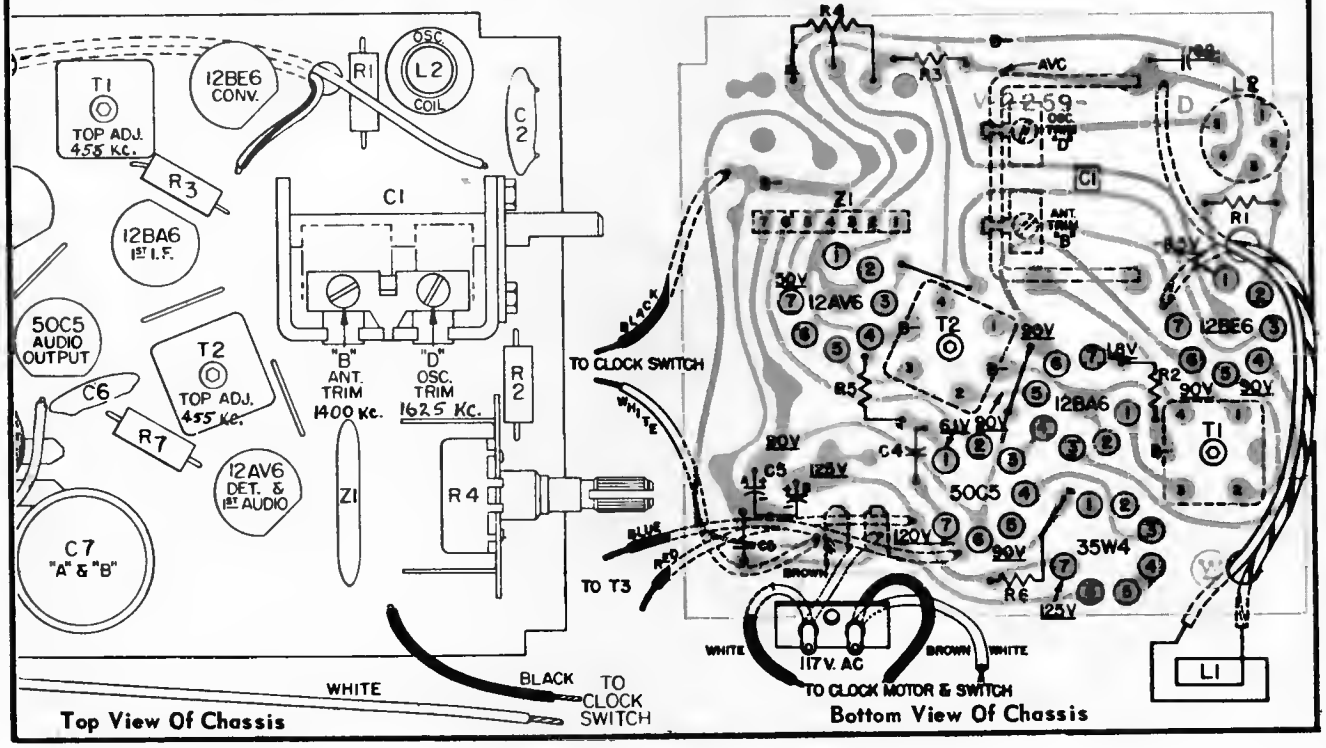
1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A V.T.V.M. AND NO SIGNAL INPUT. LINE VOLTAGE SET AT 117 V. A.C. READINGS SHOULD BE AS SHOWN ±20 PER CENT.
2. ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.

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.

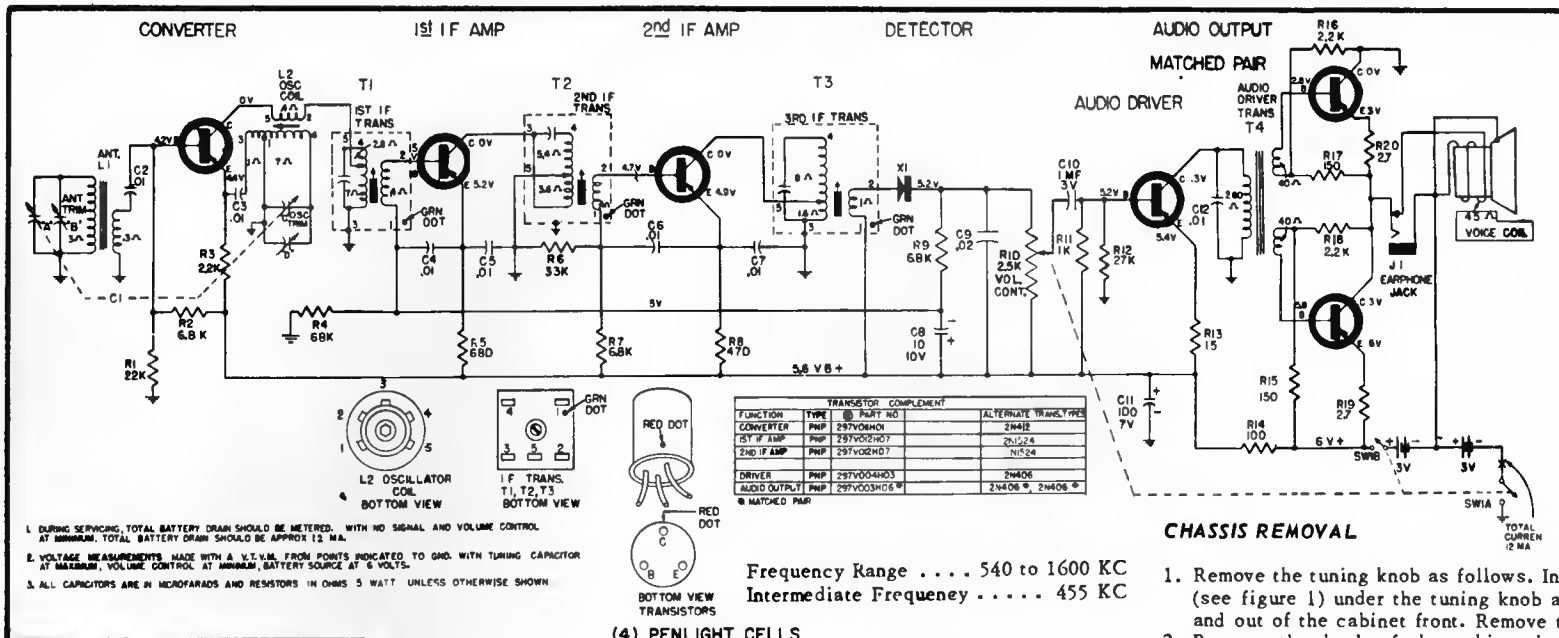
CLOCK REMOVAL

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.



WESTINGHOUSE

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



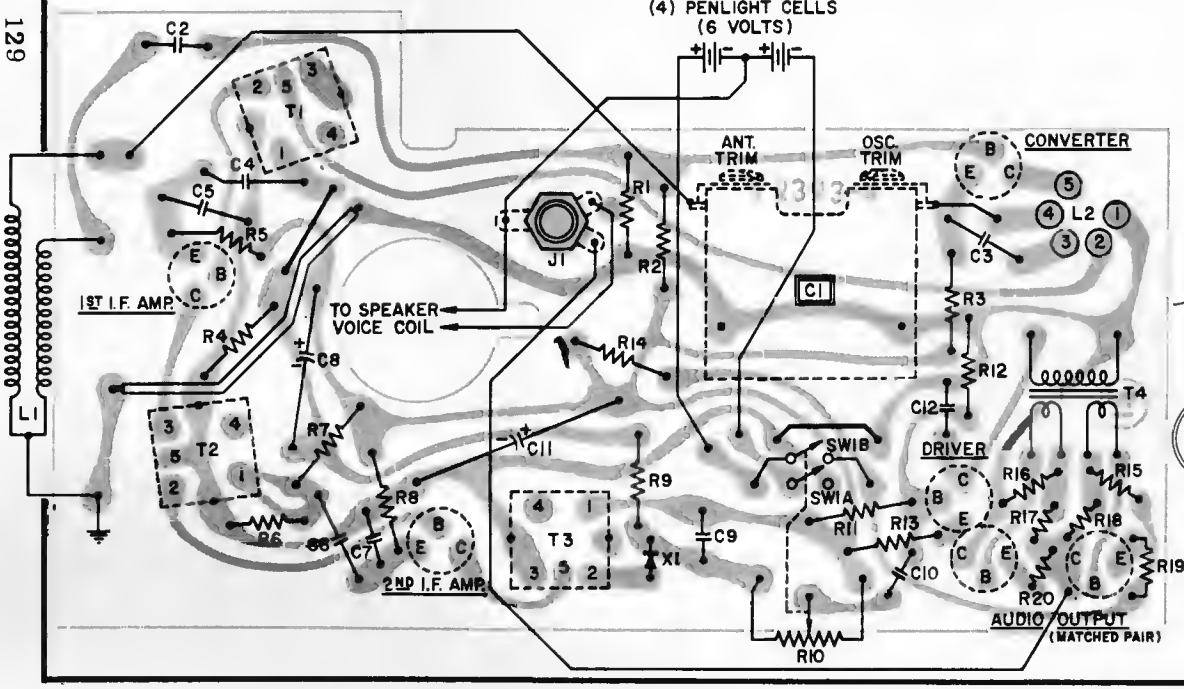
TRANSISTOR COMPLEMENT

FUNCTION	TYPE	PART NO	ALTERNATE TRANSLATES
CONVERTER	PNP	297V006H01	2N412
IST IF AMP	PNP	297V012H07	2N1524
2ND IF AMP	PNP	297V012H07	2N1524
DRIVER	PNP	297V004H03	2N406
AUDIO OUTPUT	PNP	297V003H06*	2N406*, 2N406*

* MATCHED PAIR

1. DURING SERVICING, TOTAL BATTERY DRAIN SHOULD BE METERED. WITH NO SIGNAL AND VOLUME CONTROL AT MINIMUM, TOTAL BATTERY DRAIN SHOULD BE APPROX 12 MA.
2. VOLTAGE MEASUREMENTS MADE WITH A V.T.V.M. FROM POINTS INDICATED TO GND. WITH TUNING CAPACITOR AT MAXIMUM, VOLUME CONTROL AT MINIMUM, BATTERY SOURCE AT 6 VOLTS.
3. ALL CAPACITORS ARE IN MICROFARADS AND RESISTORS IN OHMS 5 WATT UNLESS OTHERWISE SHOWN.

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



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.

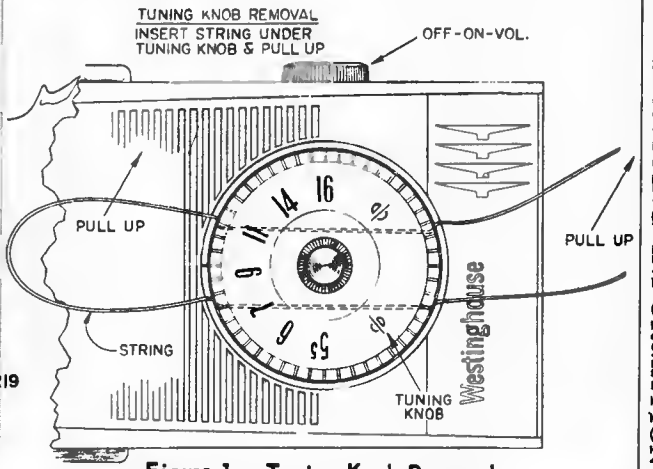
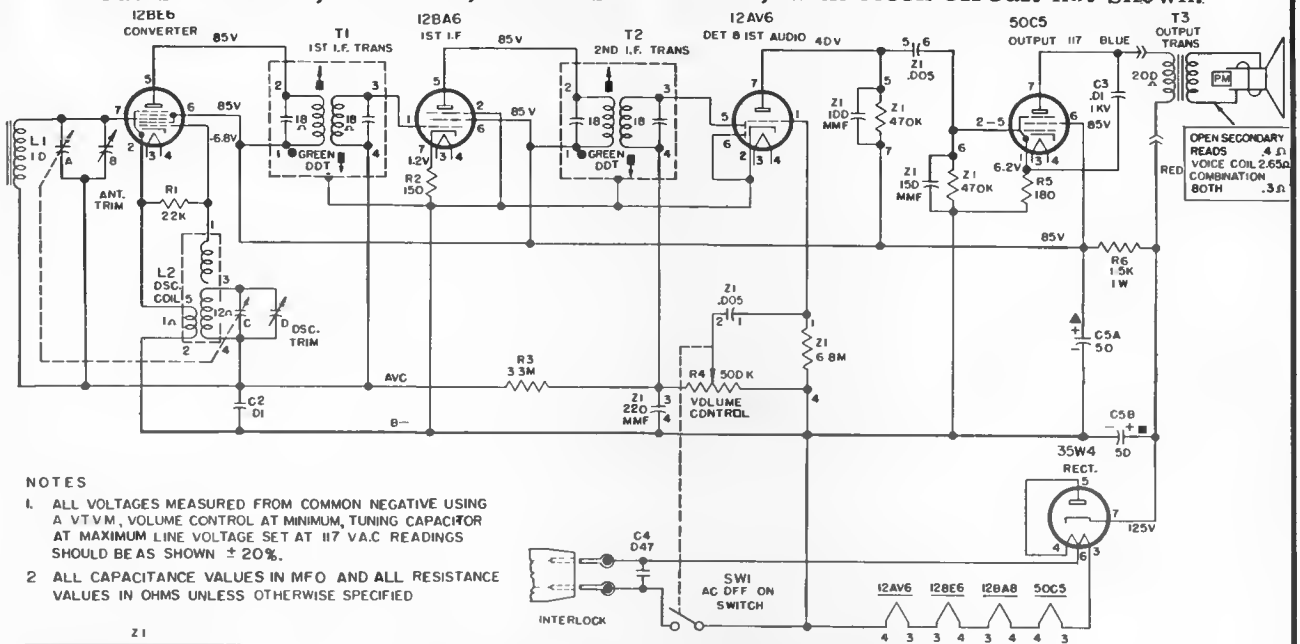


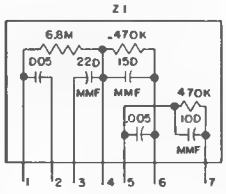
Figure 1 – Tuning Knob Removal

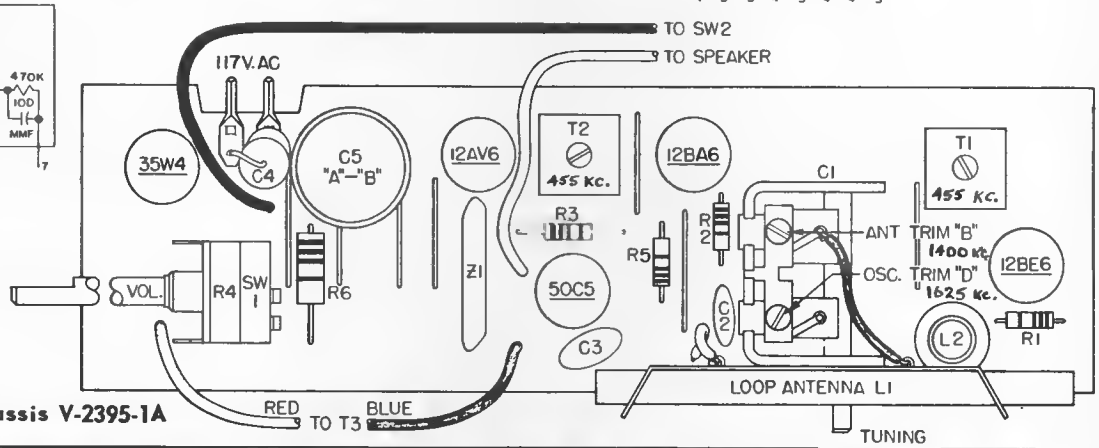
WESTINGHOUSE Models H-746T5A, H-747T5A, Chassis V-2395-1A, and Models H-808L5, H-809L5, Chassis V-2395-7, with clock circuit not shown.



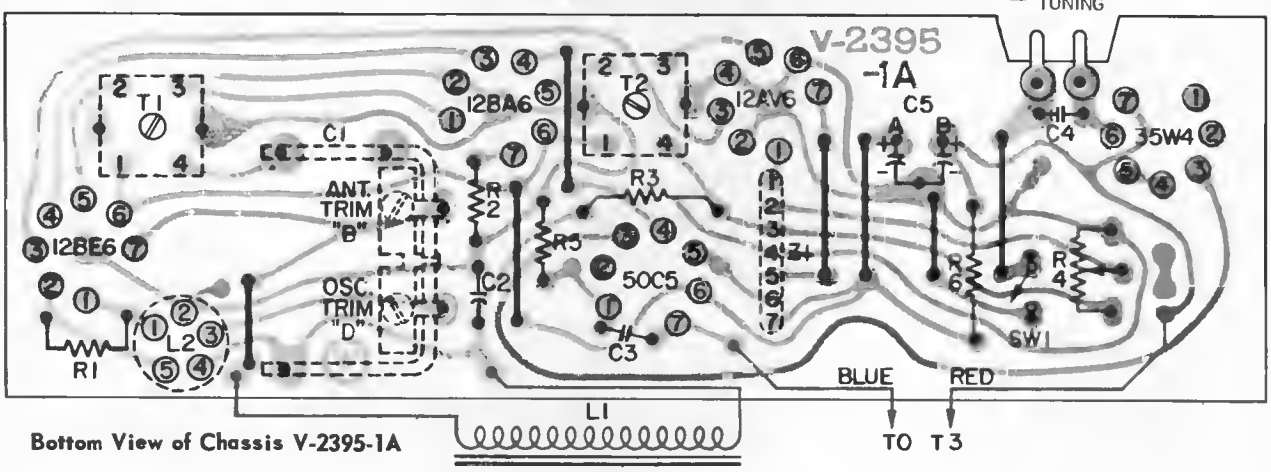
NOTES

1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A VTVM, VOLUME CONTROL AT MINIMUM, TUNING CAPACITOR AT MAXIMUM LINE VOLTAGE SET AT 117 VAC READINGS SHOULD BE AS SHOWN ± 20%.
2. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED





Top View of Chassis V-2395-1A

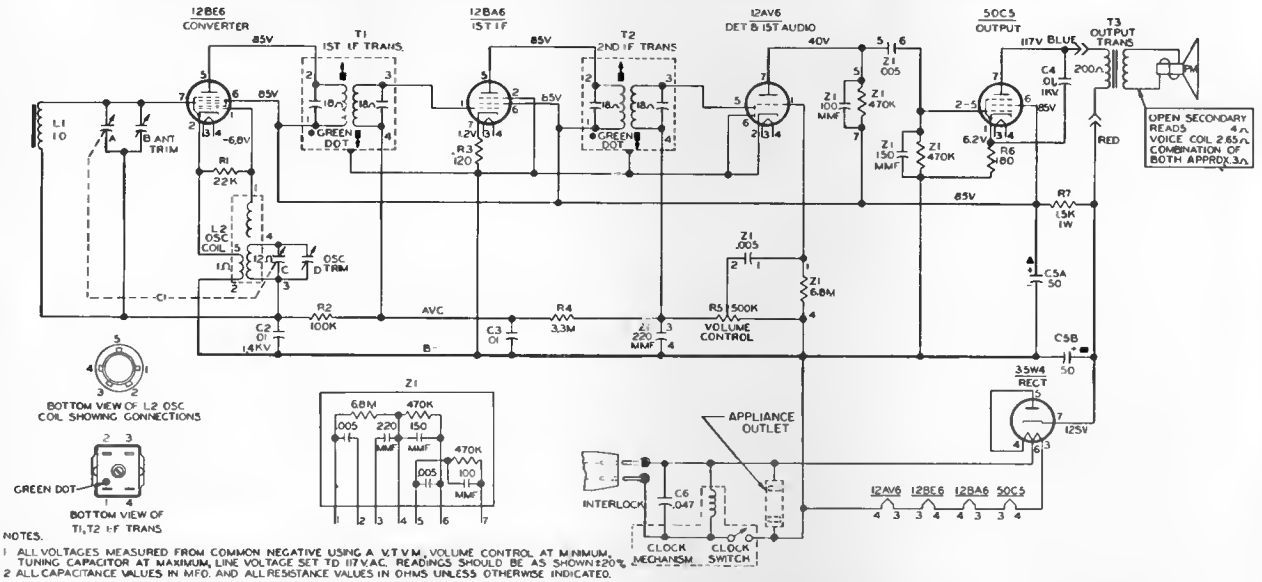


Bottom View of Chassis V-2395-1A

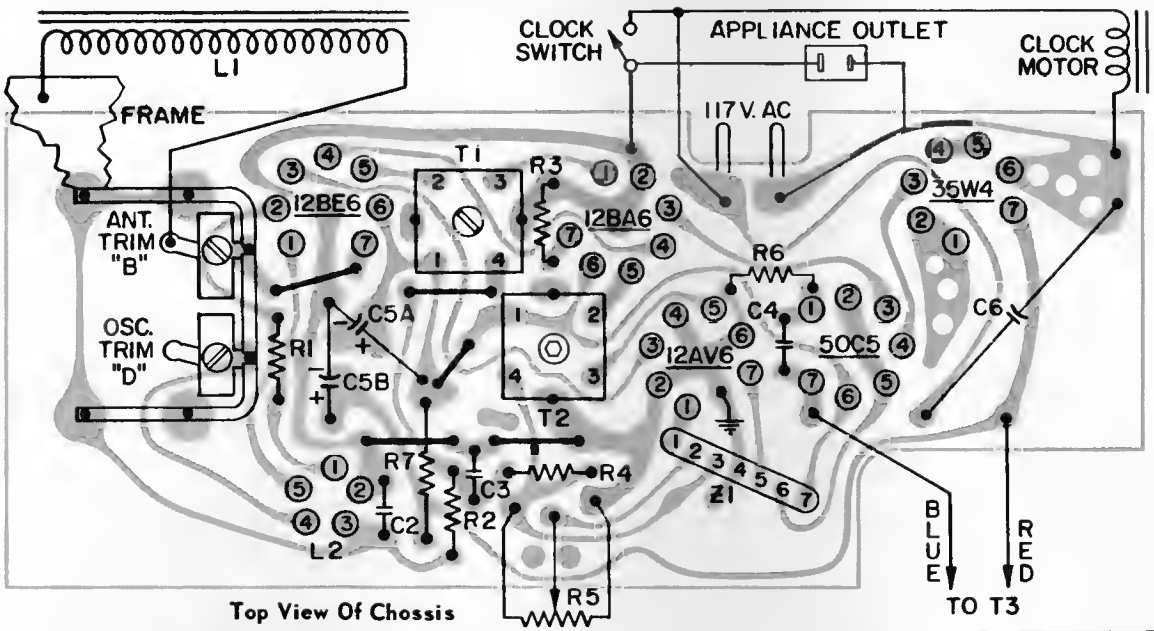
PRINTED BOARD REMOVAL

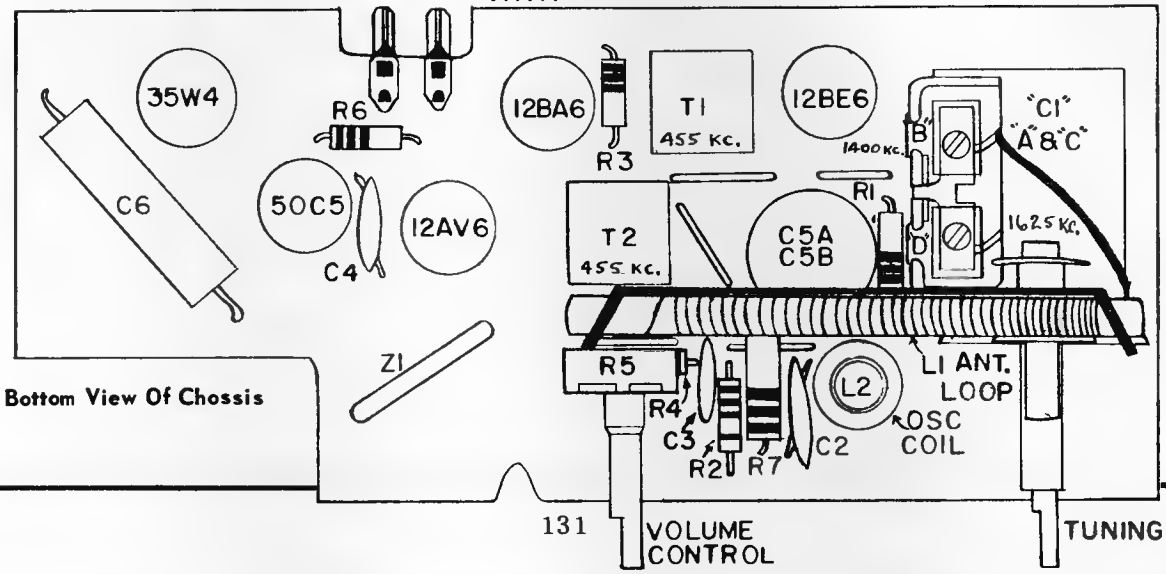
1. Disengage volume control knob (located on side of cabinet) from volume control shaft.
2. Remove two screws from rear of cabinet.
3. Loosen screw on bottom of cabinet slightly; then push forward on this screw to disengage AC line cord interlock.
4. Remove screw from bottom of cabinet. Front panel and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

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

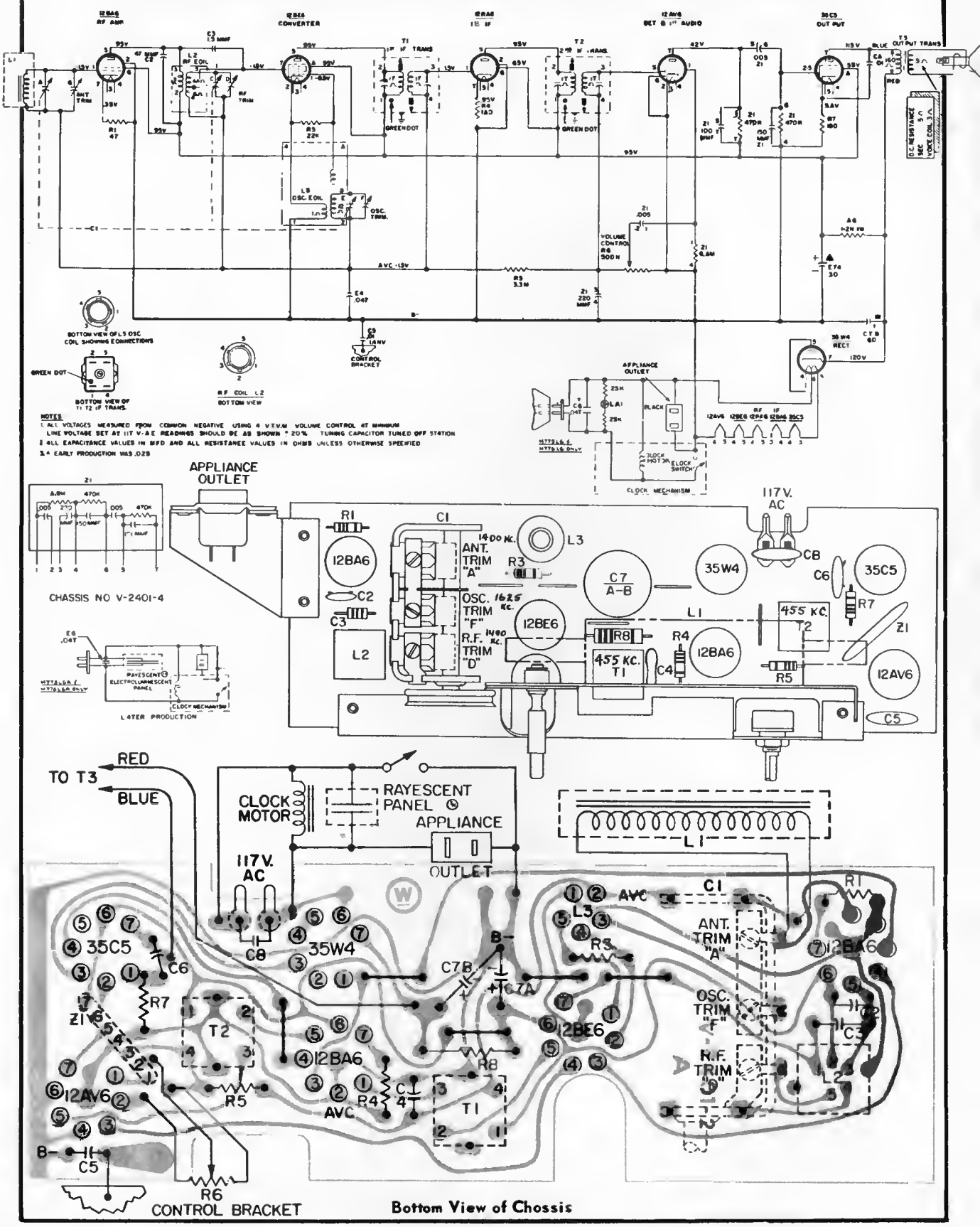


NOTES.
1 ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A V.T.V.M., VOLUME CONTROL AT MINIMUM, TUNING CAPACITOR AT MAXIMUM, LINE VOLTAGE SET TO 117 V.AC. READINGS SHOULD BE AS SHOWN ±20%.
2 ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE INDICATED.





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

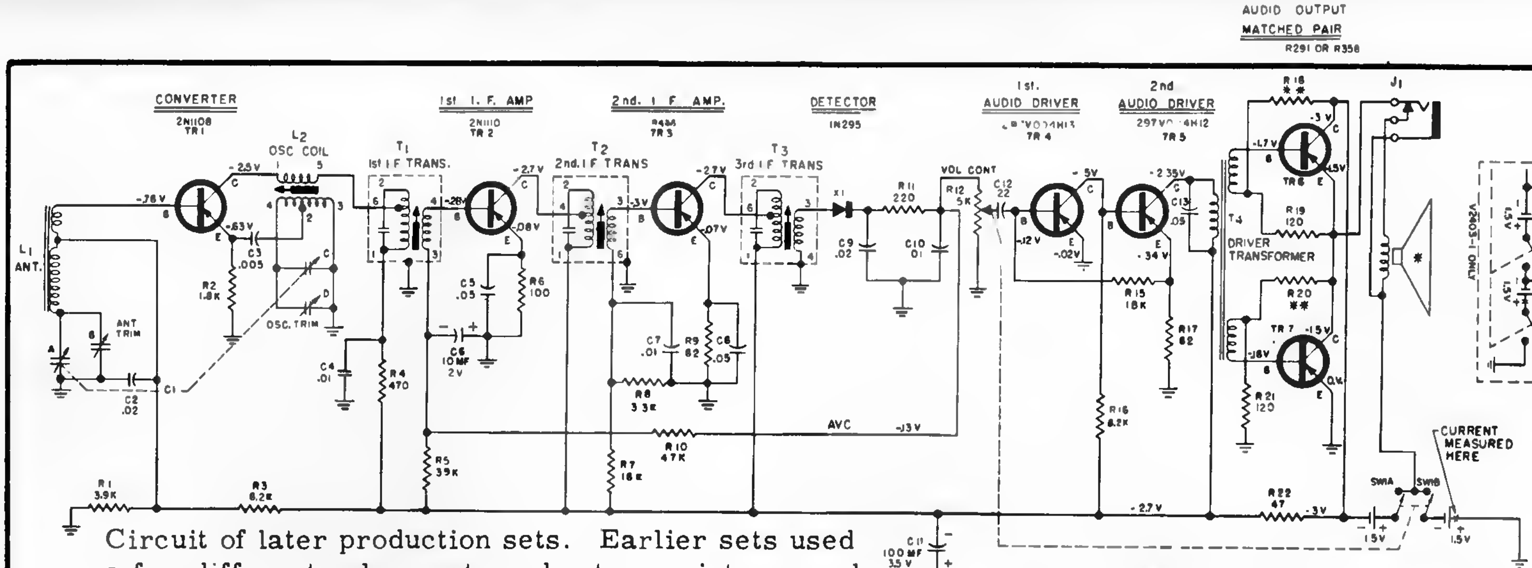


Bottom View of Chassis

Westinghouse

H-732P7 H-732P7GP
H-733P7 H-733P7GP
H-798P7A H-799P7A
H-798P7GPA H-799P7GPA
CHASSIS V-2403-1

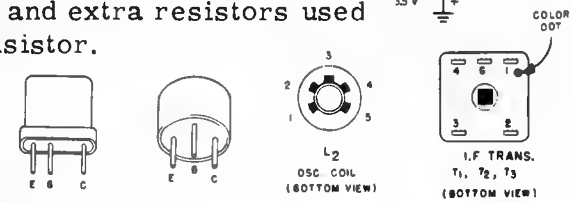
H-798P7 H-799P7
H-798P7GP H-799P7GP
CHASSIS V-2403-4



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

TRANSISTOR COMPLEMENT				
FUNCTION	TYPE	W PART NO	ALTERNATES	W PART NO
CONVERTER	2N1108	297V020H01		
1st I F AMP	2N1110	297V021H01		
2nd I F AMP	R488	297V021H04		
1st AUDIO DRIVER	R608A	297V004H13		
2nd AUDIO DRIVER	R608B	297V004H12		
AUDIO OUTPUT	R291 OR R358	297V029H03 *		

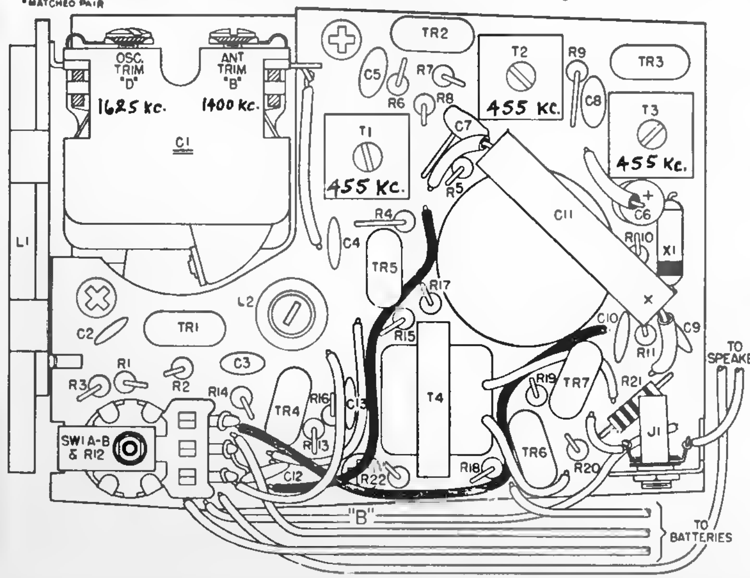
*MATCHED PAIR



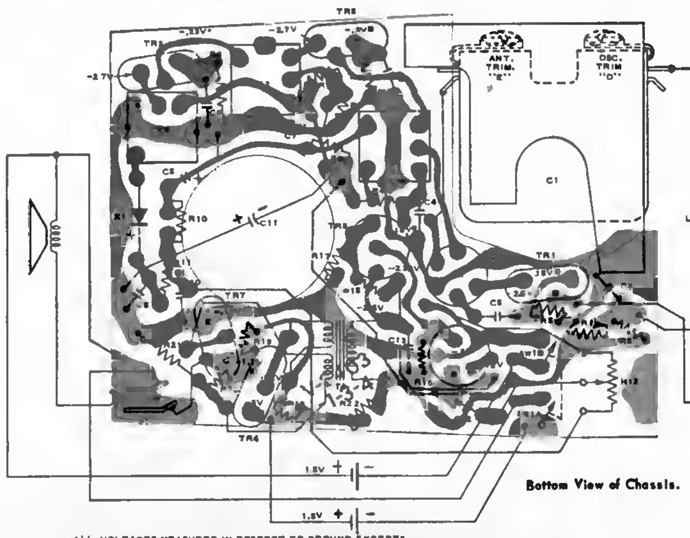
NOTES

1. DURING SERVICING, BATTERY DRAIN SHOULD BE METERED, 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 1/4 W. VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE MEASUREMENTS MADE WITH A V.T.V.M. FROM POINTS INDICATED TO GND WITH TUNING CAPACITOR AT MAX., VOLUME CONTROL AT MIN. (NO SIGNAL INPUT) BATTERY SOURCE AT 3 VOLTS.

* SPEAKER 15Ω LATER CHANGED TO 7.5Ω
** R18 AND R20 SHOULD BE CHANGED FROM 820 OHMS TO 750 OHMS WHEN OUTPUT PAIR OF TRANSISTORS ARE REPLACED



Top View Later Production

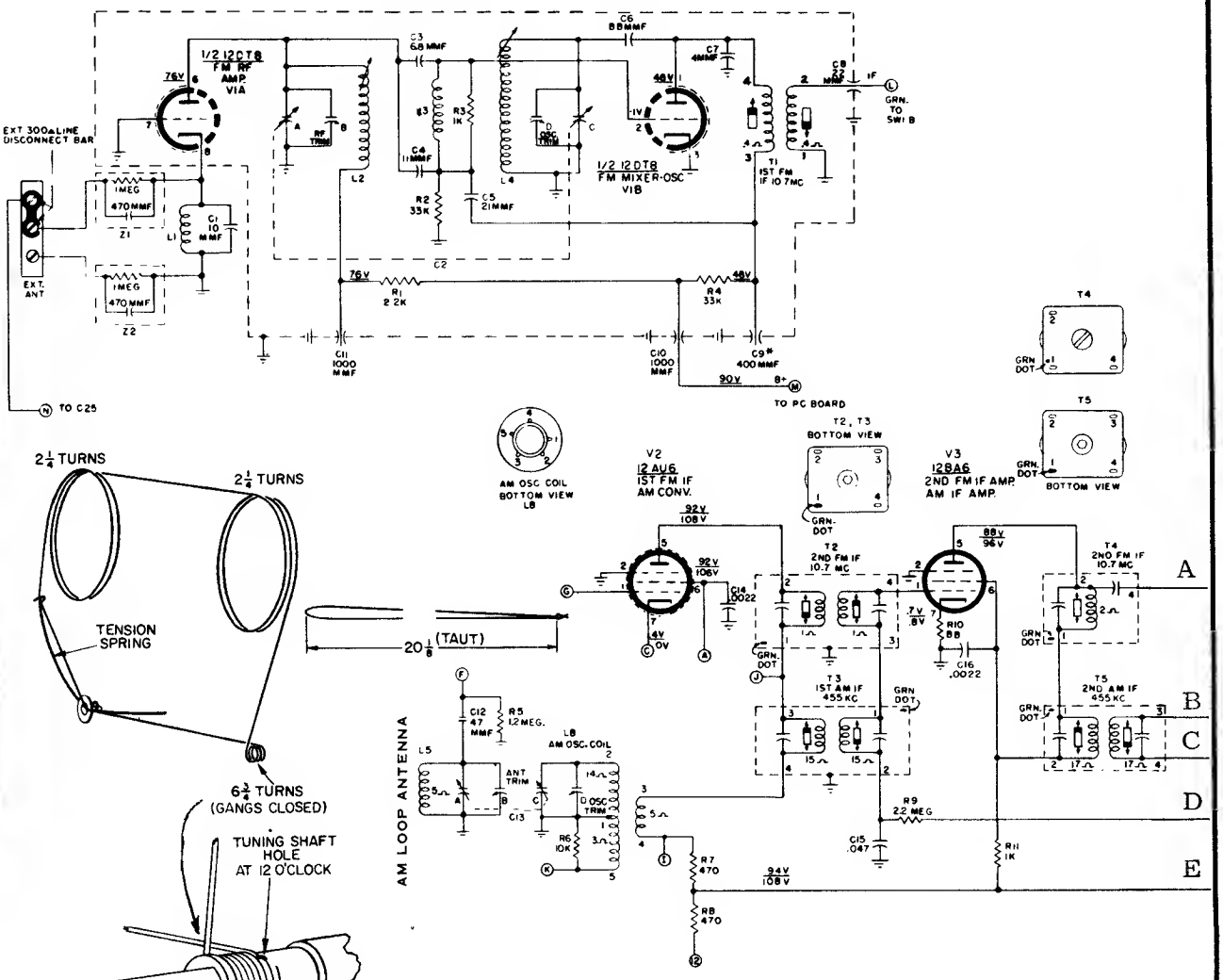


Bottom View of Chassis.

ALL VOLTAGES MEASURED IN RESPECT TO GROUND EXCEPT*
*INDICATES FORWARD BIAS, MEASURED ON BASE IN RESPECT TO EMITTER.
.2 VOLT VARIATION MAY INDICATE A DEFECTIVE STAGE.

Westinghouse

Models H-761N7, H-762N7, Chassis V-2407-1, Models H-764N7, H-765N7, H-777N7, H-778N7, H-779N7, H-780N7, Chassis V-2407-2, are very similar to sets covered on this page and continued on the next page, adjacent at right.



Dial Stringing diagram.

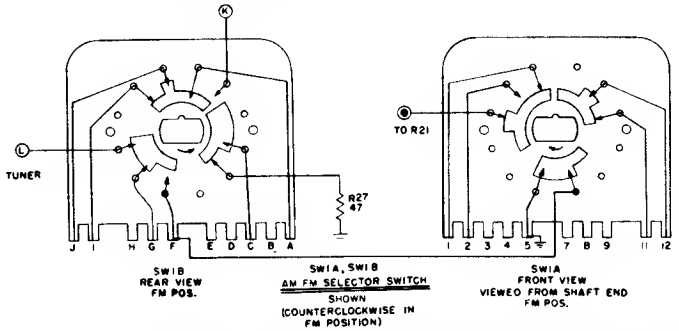
NOTES:

1. VOLTAGES TAKEN WITH A VTVM FROM POINTS INDICATED TO B- TUNING CAPACITOR AT MAXIMUM, VOLUME CONTROL AT MINIMUM, LINE VOLTAGE AT 117 V.A.C.
2. ALL CAPACITANCE ARE IN MFD & ALL RESISTANCE IN OHMS 1/2 WATT UNLESS STATED OTHERWISE
3. VOLTAGES UNDERLINED ARE TAKEN IN FM POSITION.
4. THESE TWO RESISTORS ARE NOT PART OF CIRCUIT BUT ARE TO BE ADDED FOR ALIGNMENT OF DISCRIMINATOR.

* EARLY PRODUCTION WAS 350MMF

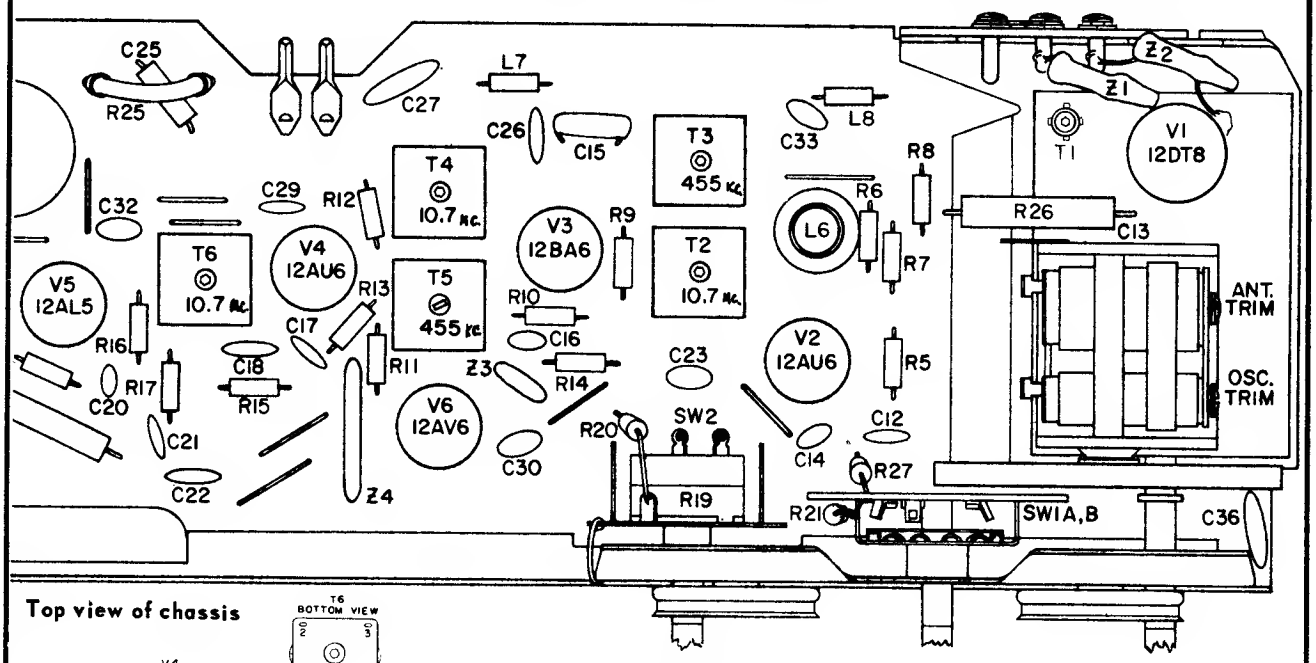
CHASSIS REMOVAL

1. Remove the two 3½" long screws located at either end of the cabinet rear.
2. Remove the two short screws located on the cabinet bottom.
3. Separate the cabinet front from the cabinet back to expose the radio chassis. (The two 3½" screws can be used to do this by pushing on both at same time).
4. Use a conventional TV AC interlock line cord to power the radio while servicing. It is recommended that the chassis be isolated from the power line by means of an isolation transformer.

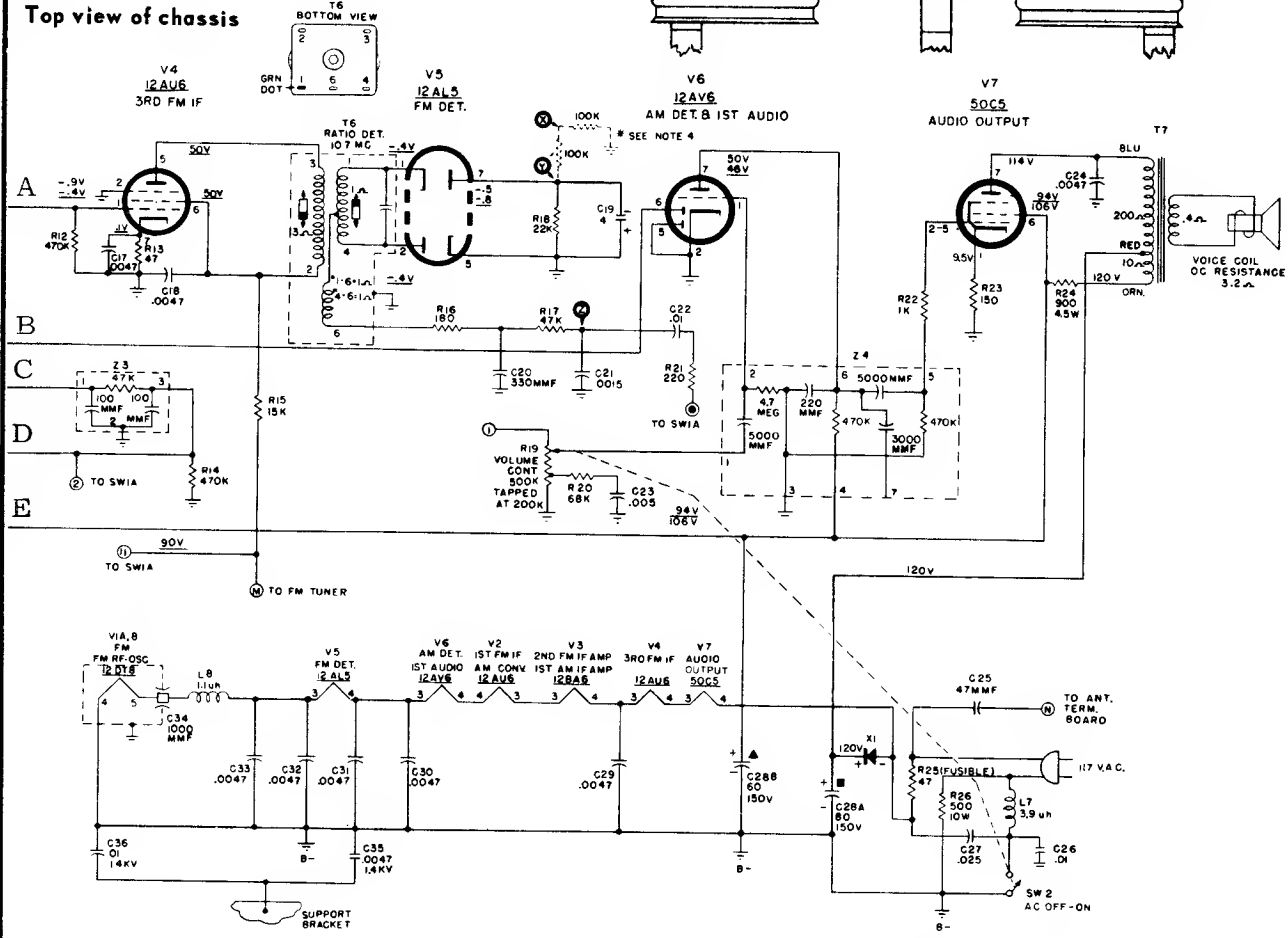


Connect to balance of diagram on next page.

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

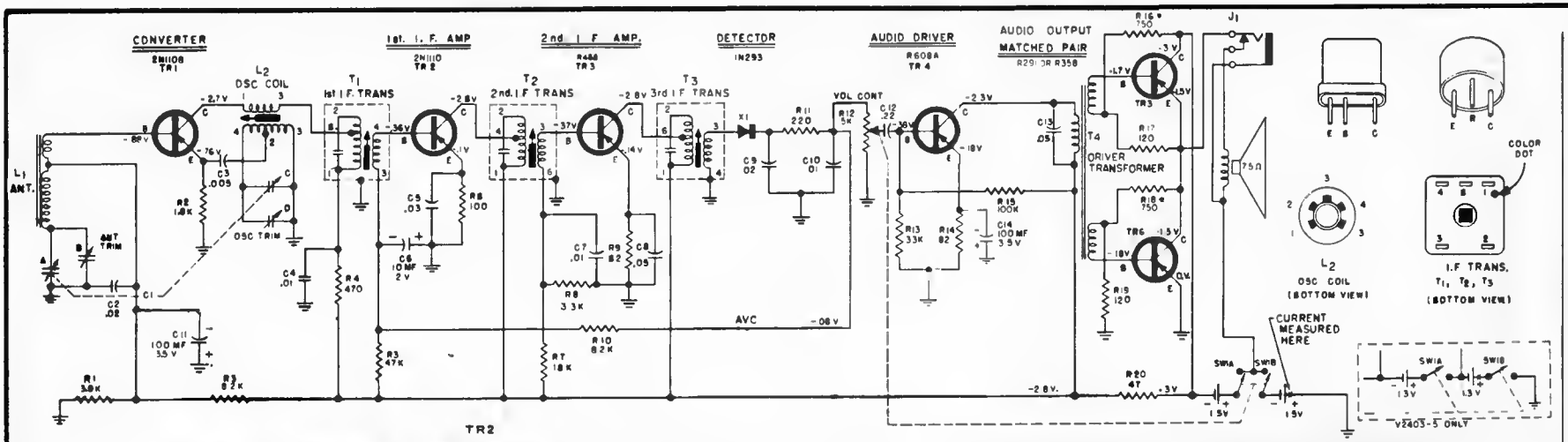


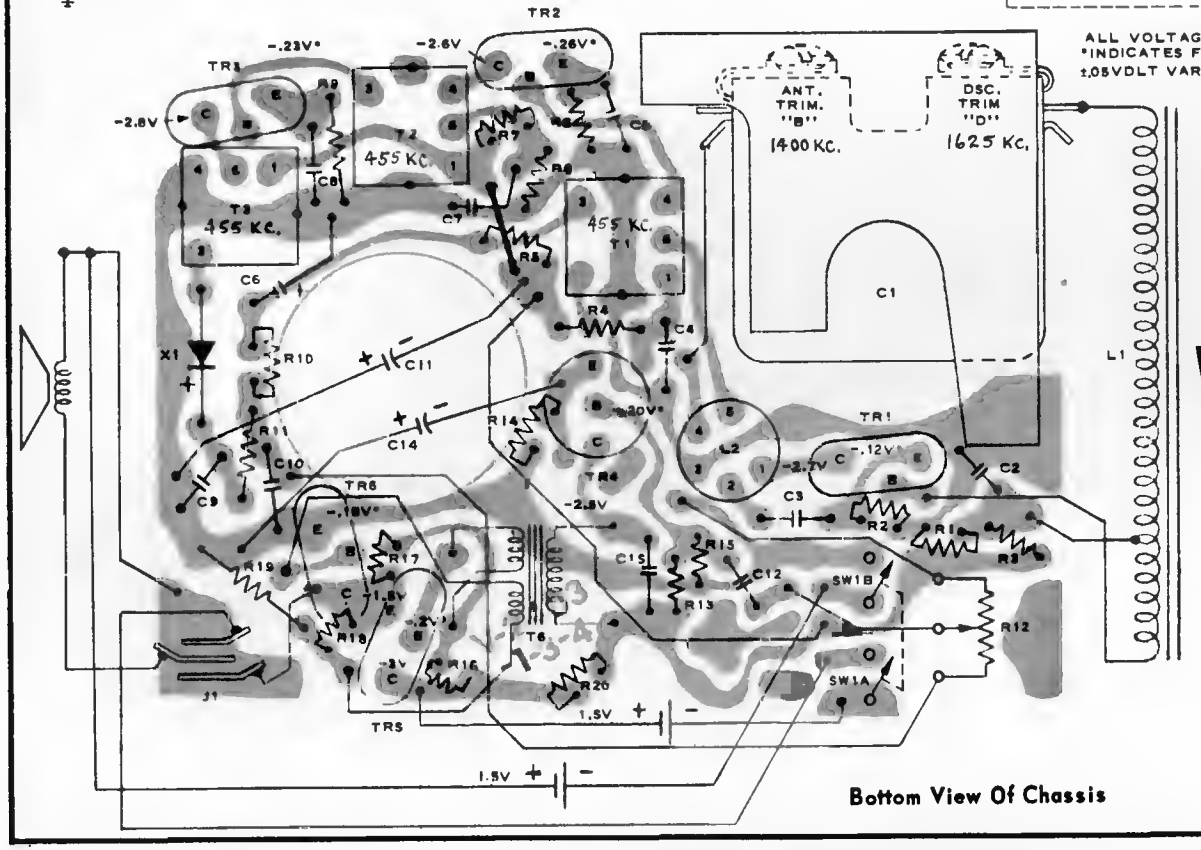
Top view of chassis



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.)





Bottom View Of Chassis

ALL VOLTAGES MEASURED IN RESPECT TO GROUND EXCEPT* *INDICATES FORWARD BIAS, MEASURED ON BASE IN RESPECT TO EMITTER. ±.05VDLT VARIATION MAY INDICATE A DEFECTIVE STAGE.

NOTES:

1. DURING SERVICING, BATTERY DRAIN SHOULD BE METERED, WITH NO SIGNAL AND VOL. CONT. AT MINIMUM, CURRENT DRAIN AT POINT SHOWN SHOULD BE 13 MA. APPROX.
2. ALL CAPACITANCE VALUES IN MFD., ALL RESISTANCE ½W. VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE MEASUREMENTS MADE WITH A V.T.V.M. FROM POINTS INDICATED TO GND. WITH TUNING CAPACITOR AT MAX., VOLUME CONTROL AT MIN. (NO SIGNAL INPUT) BATTERY SOURCE AT 3 VOLTS.

* EARLY PRODUCTION WAS 680Ω WHEN REPLACING OUTPUT TRANSISTORS, R18 AND R19 SHOULD BE CHANGED TO 750Ω

Westinghouse

MODELS

H-795P6 **H-795P6GP**
H-795P6A **H-795P6GPA**

(charcoal gray)

H-796P6 **H-796P6GP**
H-796P6A **H-796P6GPA**

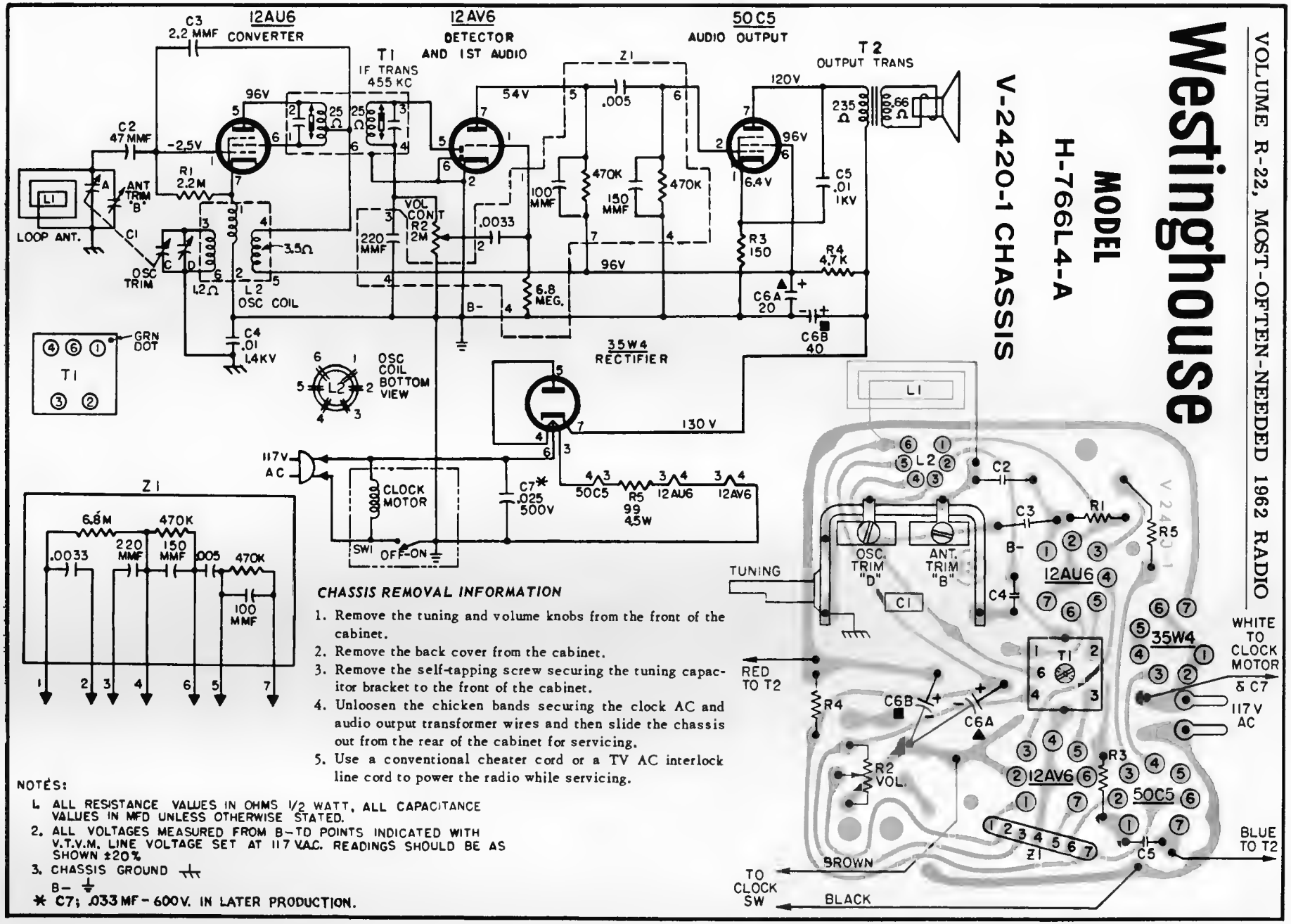
(aztec red)

CHASSIS V-2403-3,-5

Westinghouse

MODEL H-766L4-A

V-2420-1 CHASSIS



CHASSIS REMOVAL INFORMATION

1. Remove the tuning and volume knobs from the front of the cabinet.
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.

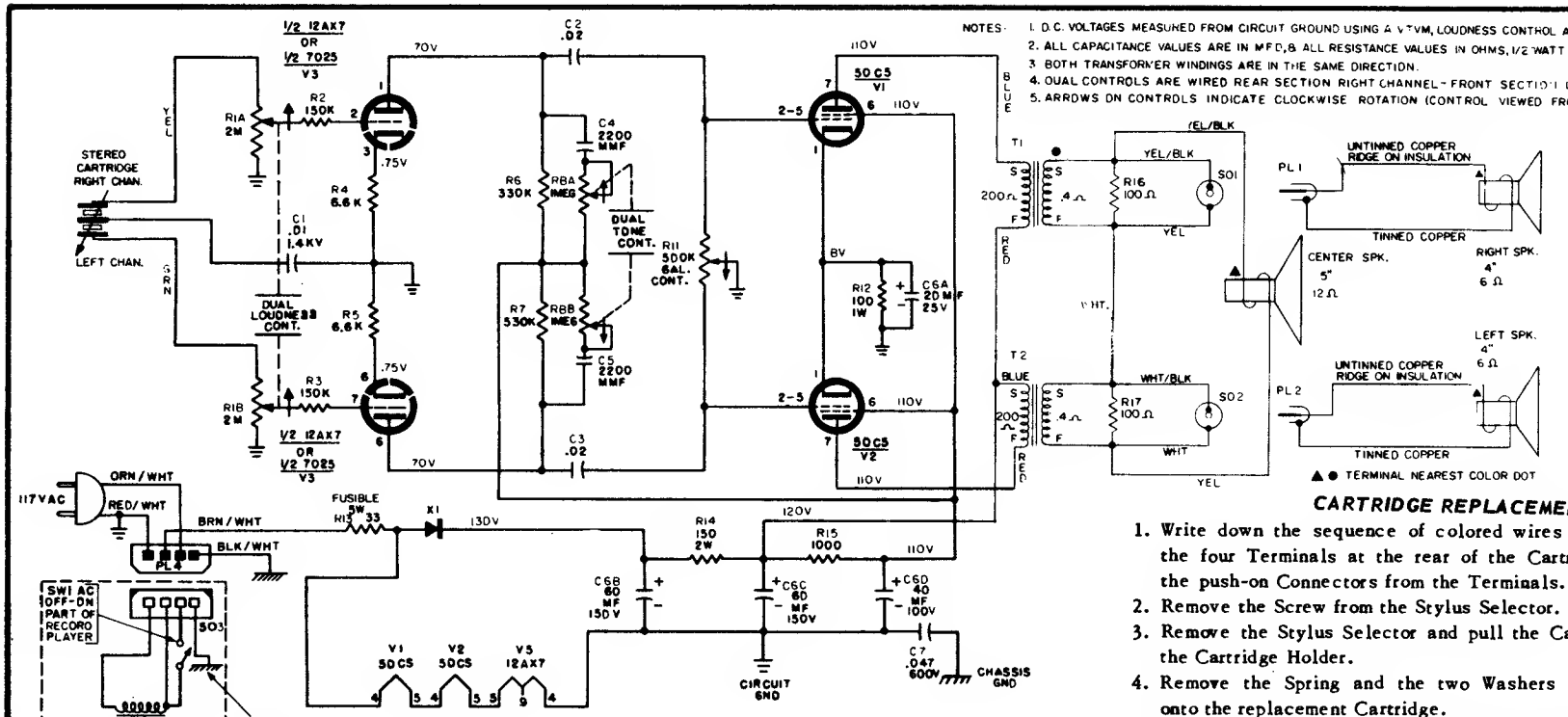
NOTES:

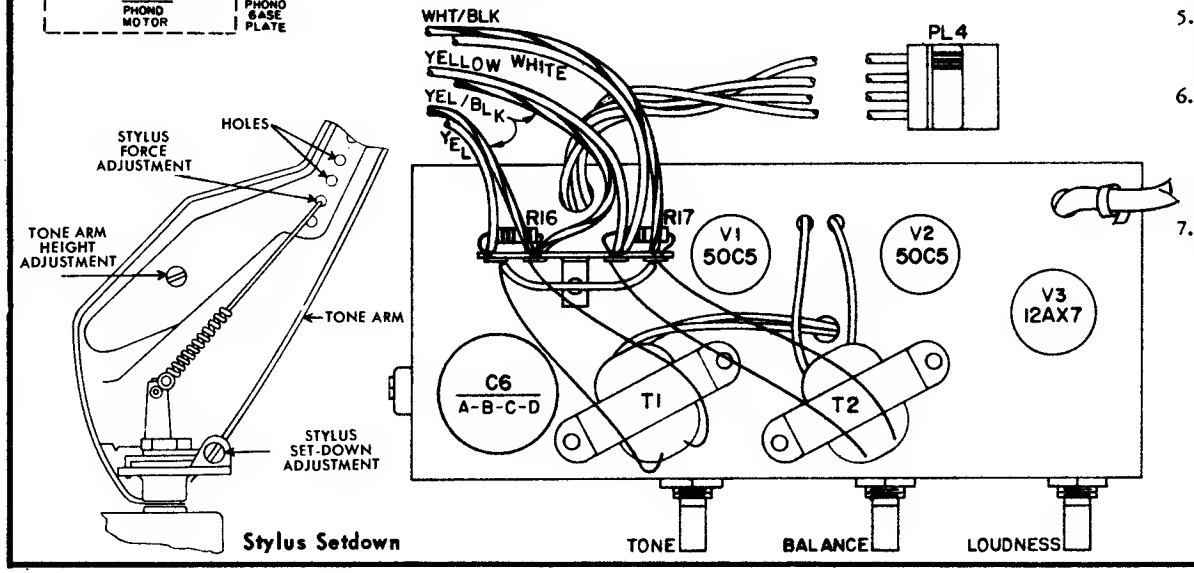
1. ALL RESISTANCE VALUES IN OHMS 1/2 WATT, ALL CAPACITANCE VALUES IN MFD UNLESS OTHERWISE STATED.
2. ALL VOLTAGES MEASURED FROM B-TO POINTS INDICATED WITH V.T.V.M. LINE VOLTAGE SET AT 117 VAC. READINGS SHOULD BE AS SHOWN ±20%
3. CHASSIS GROUND ⏚
   B- ⏚

* C7; .033 MF - 600V. IN LATER PRODUCTION.

Tube pin numbering is for bottom of socket.

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

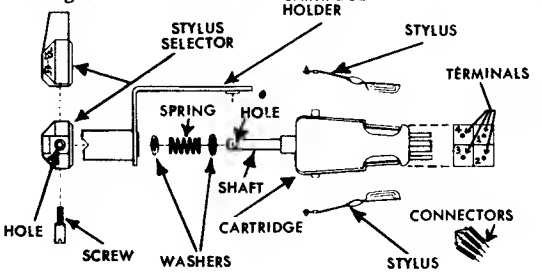




Stylus Setdown

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.

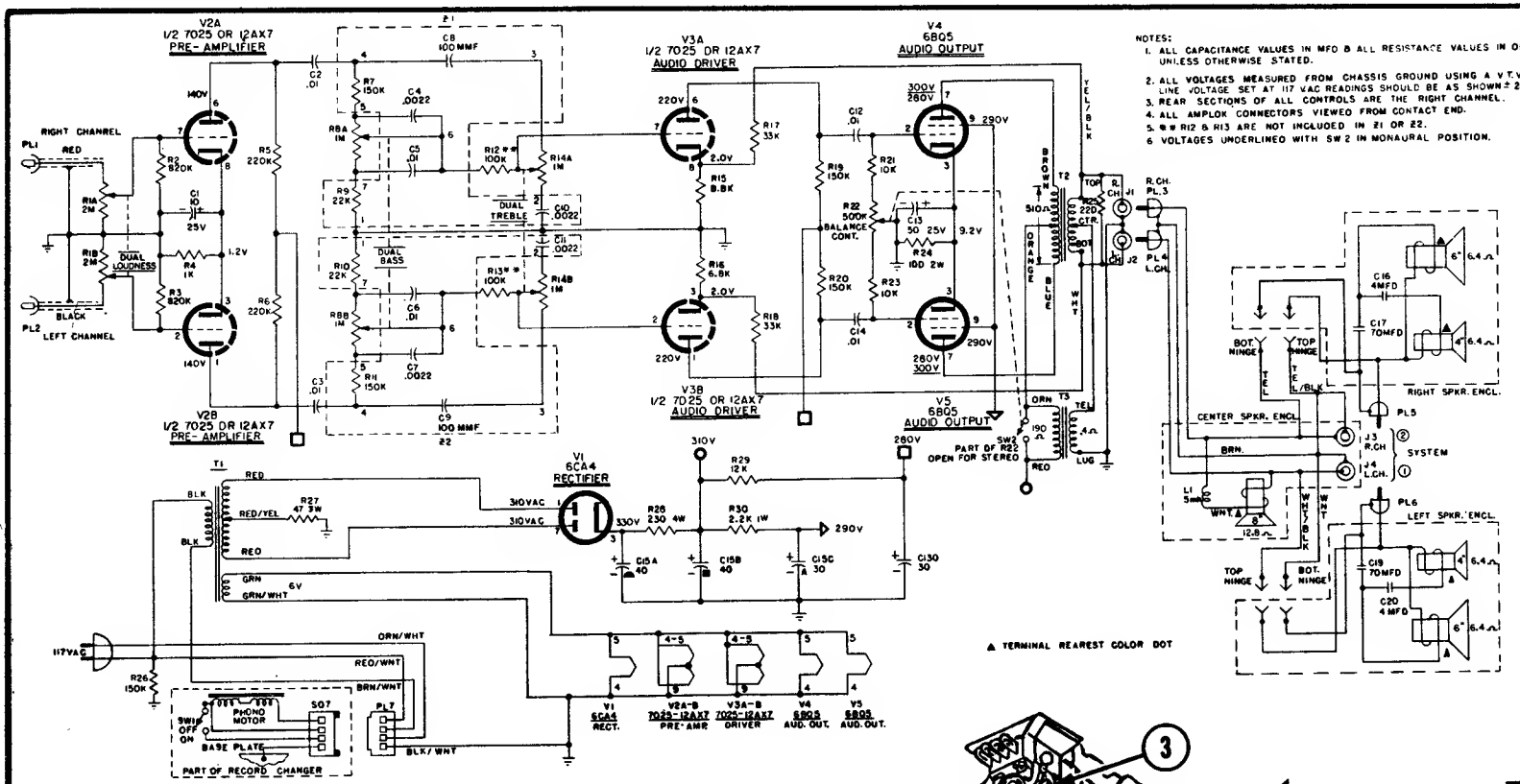


Westinghouse

MODEL H-69ACS1

CHASSIS V-2507-7

PORTABLE - STEREO PHONO



NOTES:
1. ALL 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, LINE VOLTAGE SET AT 117 VAC READINGS SHOULD BE AS SHOWN ± 20%.
3. REAR SECTIONS OF ALL CONTROLS ARE THE RIGHT CHANNEL.
4. ALL AMPLOK CONNECTORS VIEWED FROM CONTACT END.
5. ** R12 & R13 ARE NOT INCLUDED IN Z1 OR Z2.
6. VOLTAGES UNDERLINED WITH SW 2 IN MONAURAL POSITION.

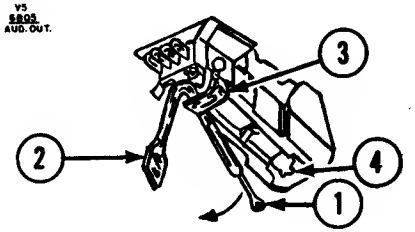


Figure 1
Stylus removal and replacement.

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.

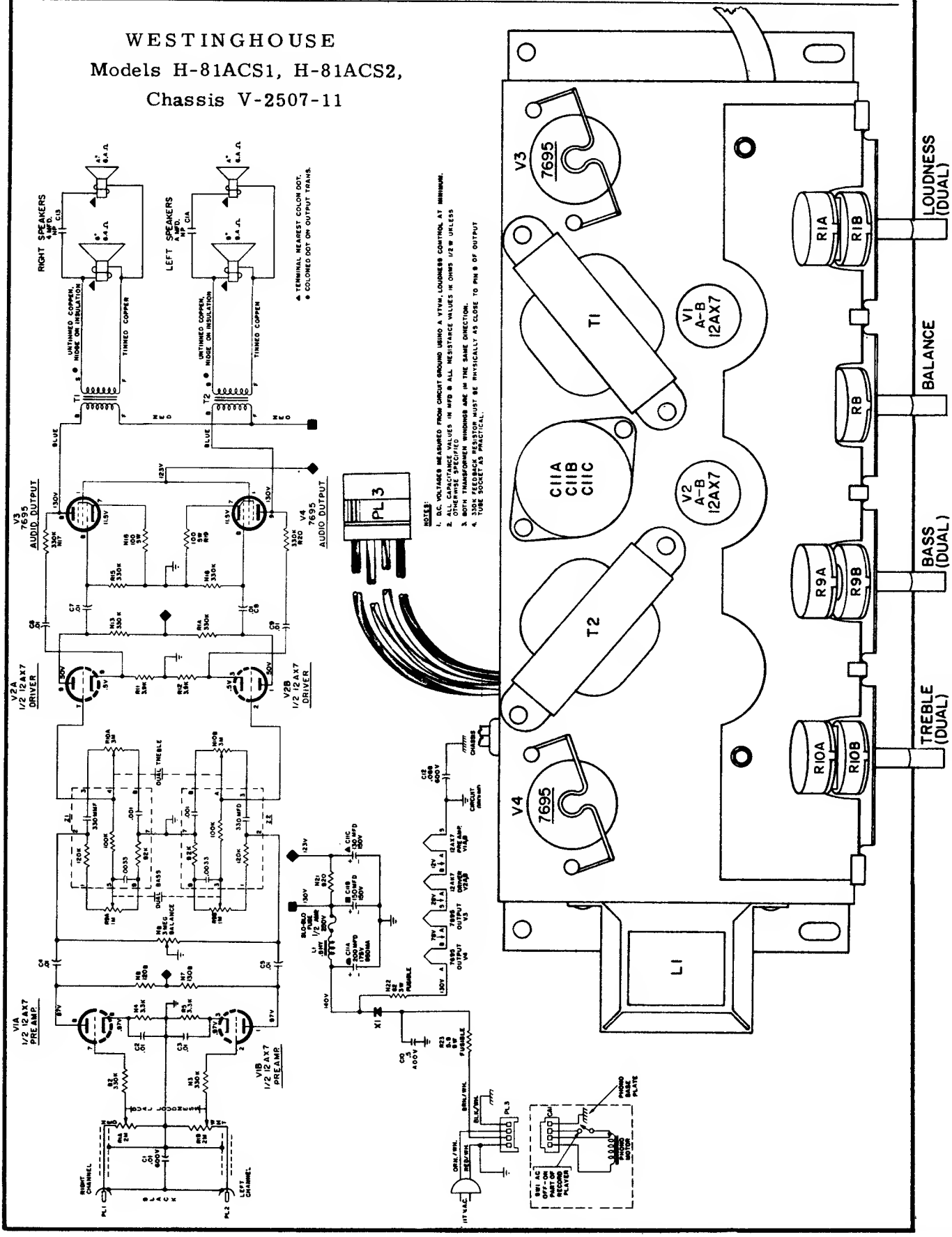
POWER CORD POLARITY

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.

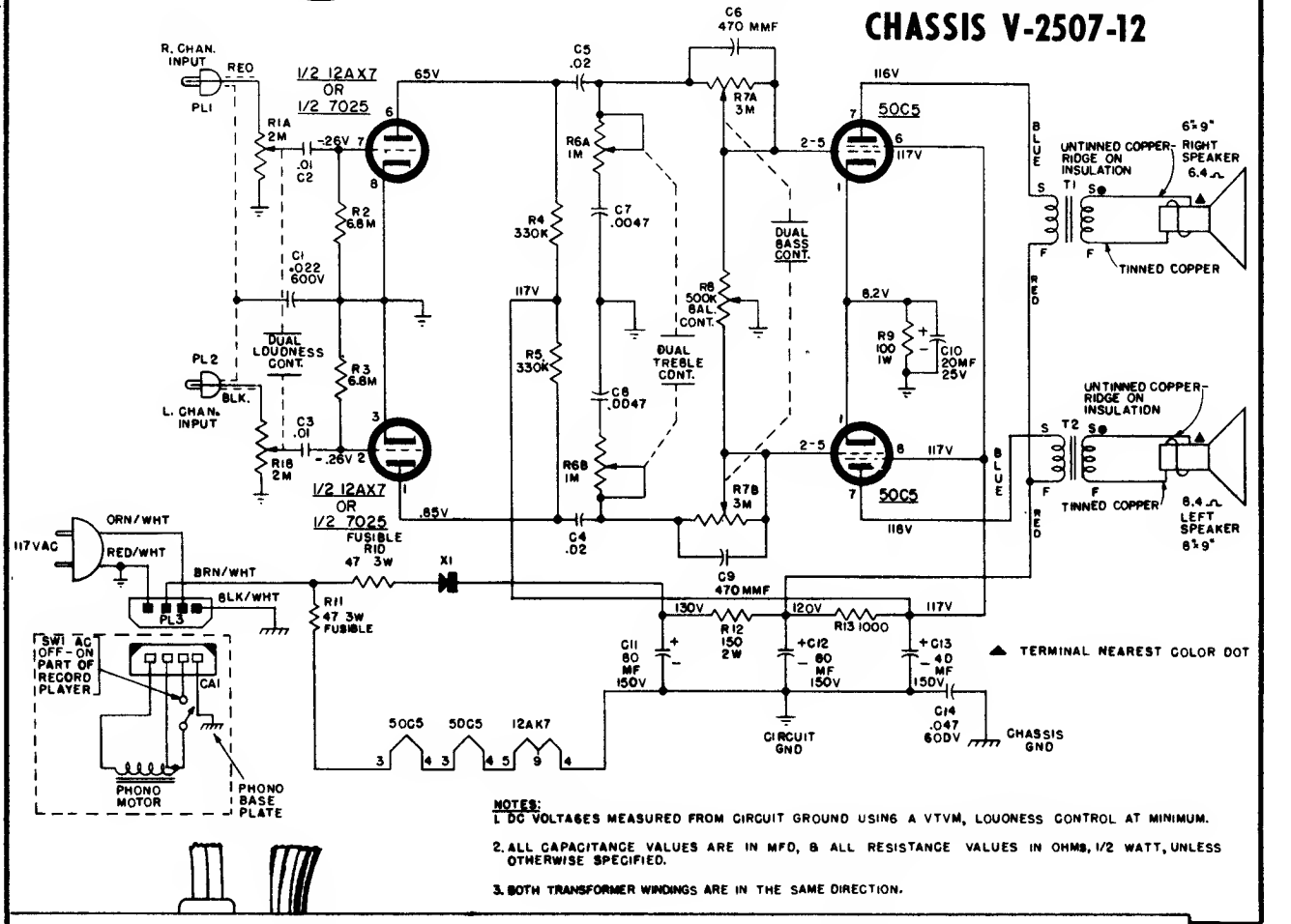
WESTINGHOUSE
Models H-81ACS1, H-81ACS2,
Chassis V-2507-11



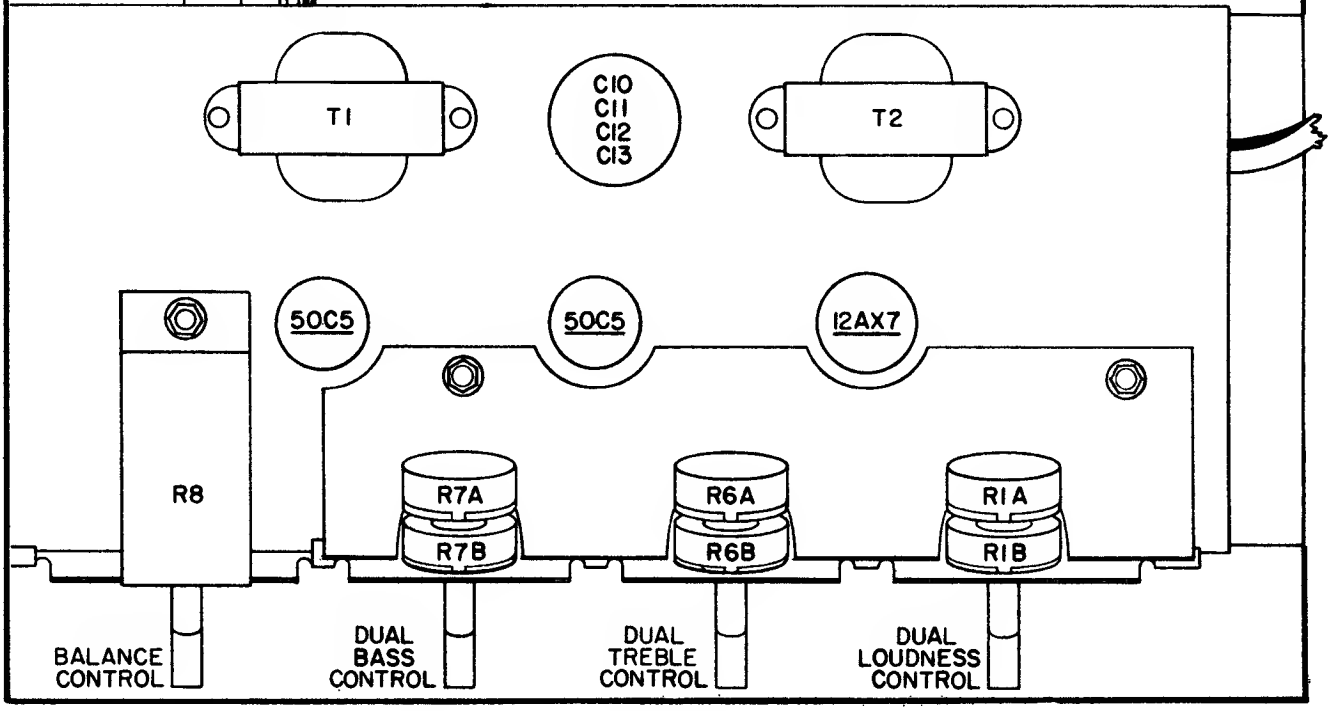
Westinghouse

MODELS H-79ACS1, H-79ACS2

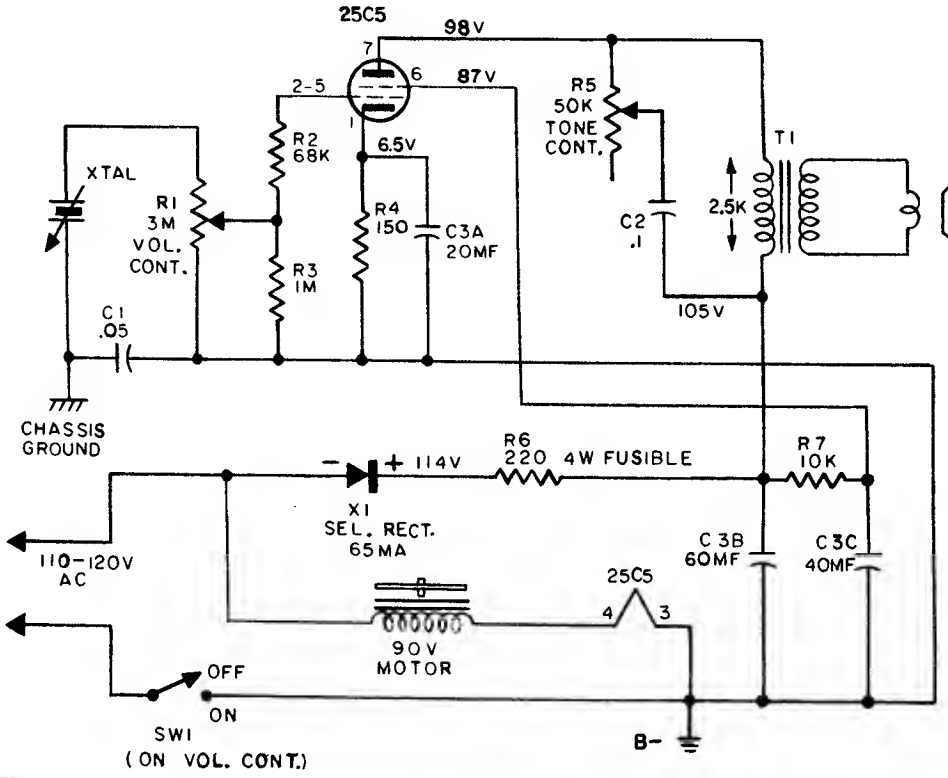
CHASSIS V-2507-12

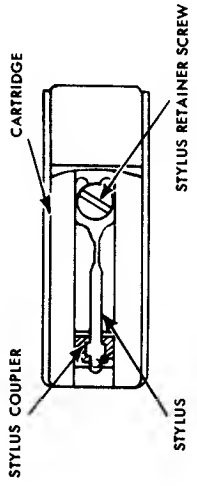


NOTES:
1. DC VOLTAGES MEASURED FROM CIRCUIT GROUND USING A VTVM, LOUDNESS CONTROL AT MINIMUM.
2. ALL CAPACITANCE VALUES ARE IN MFD, & ALL RESISTANCE VALUES IN OHMS, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
3. BOTH TRANSFORMER WINDINGS ARE IN THE SAME DIRECTION.



WESTINGHOUSE Models H-72MP1 and H-72MP2



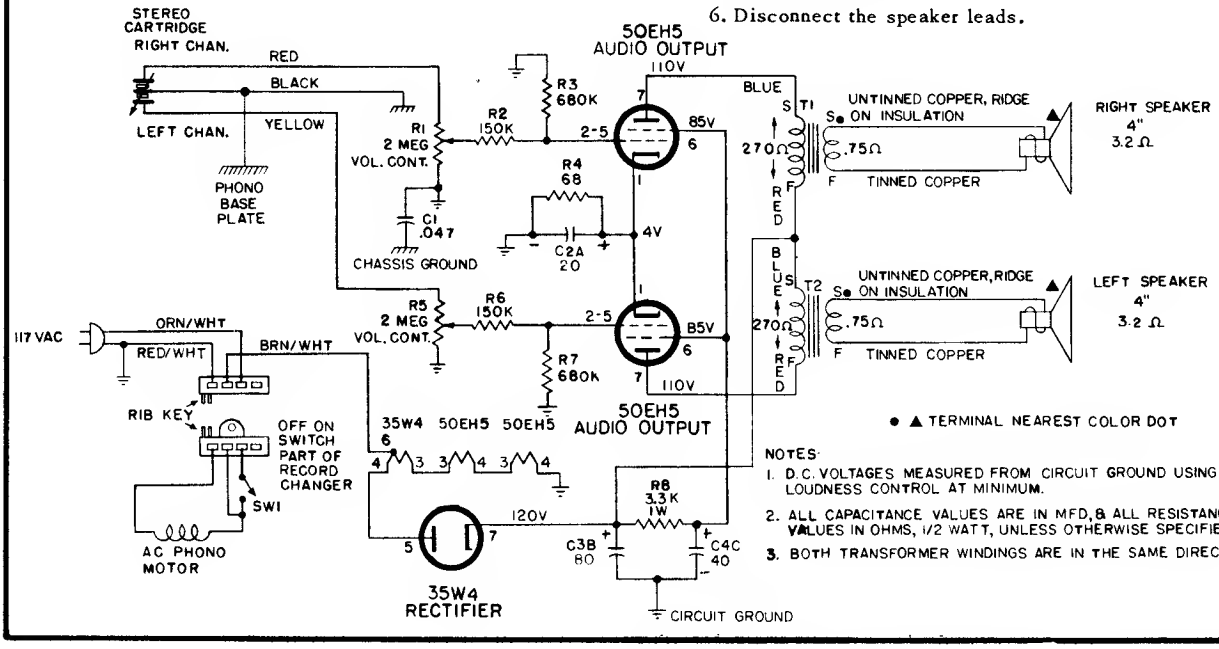


Stylus replacement.

WESTINGHOUSE
Models H-76ACS1, H-76ACS2
Chassis V-2508-11

CHASSIS REMOVAL

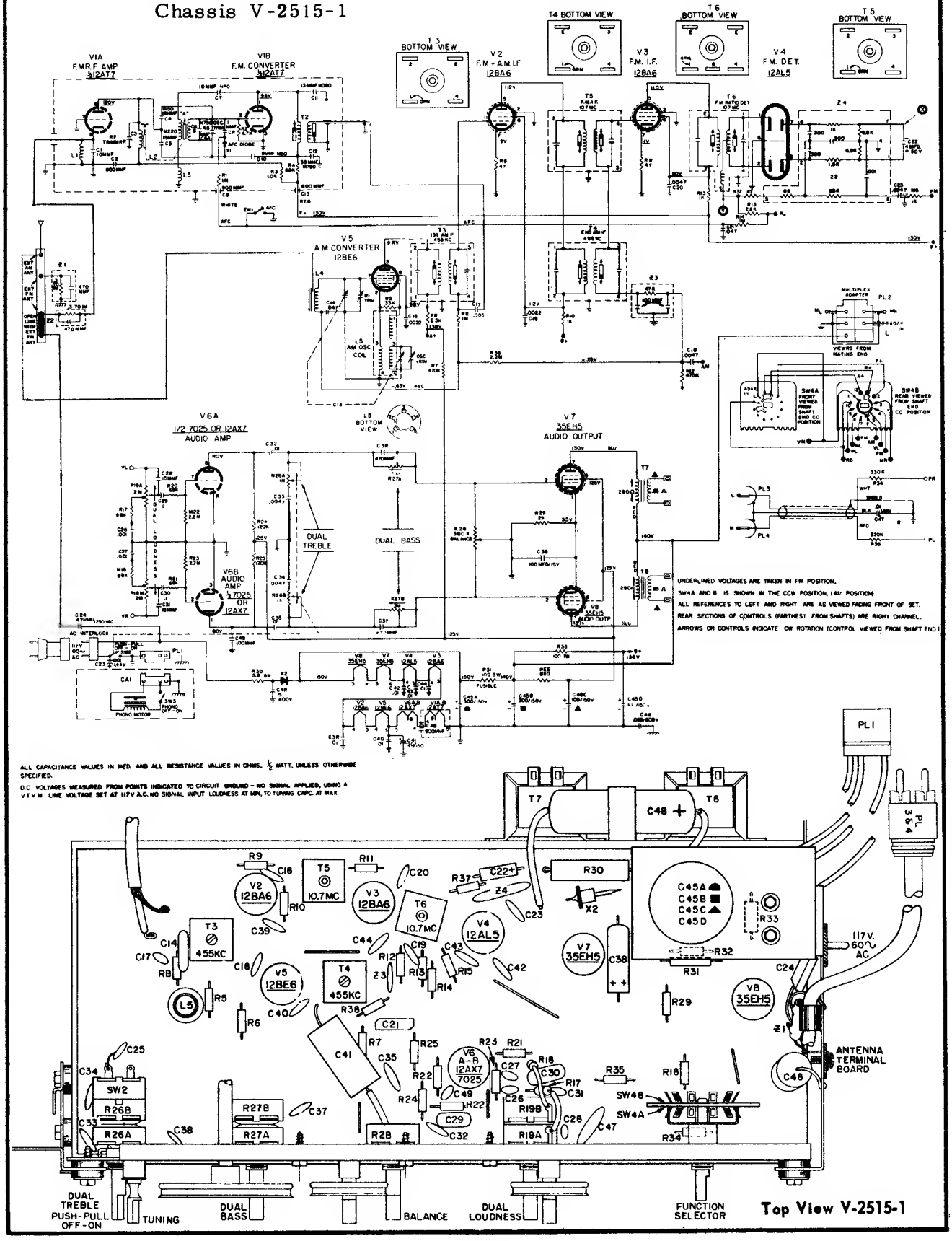
1. Remove the perforated tube-service cover which is attached by 2 phillips screws.
2. Remove the 4 phillips screws holding the motor board. Lift the motor board.
3. Disengage the amp-lok from the changer and unsolder the leads to the changer terminal board.
4. Remove Volume control knobs.
5. Remove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



NOTES:

1. D.C. VOLTAGES MEASURED FROM CIRCUIT GROUND USING A V T V M, 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

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



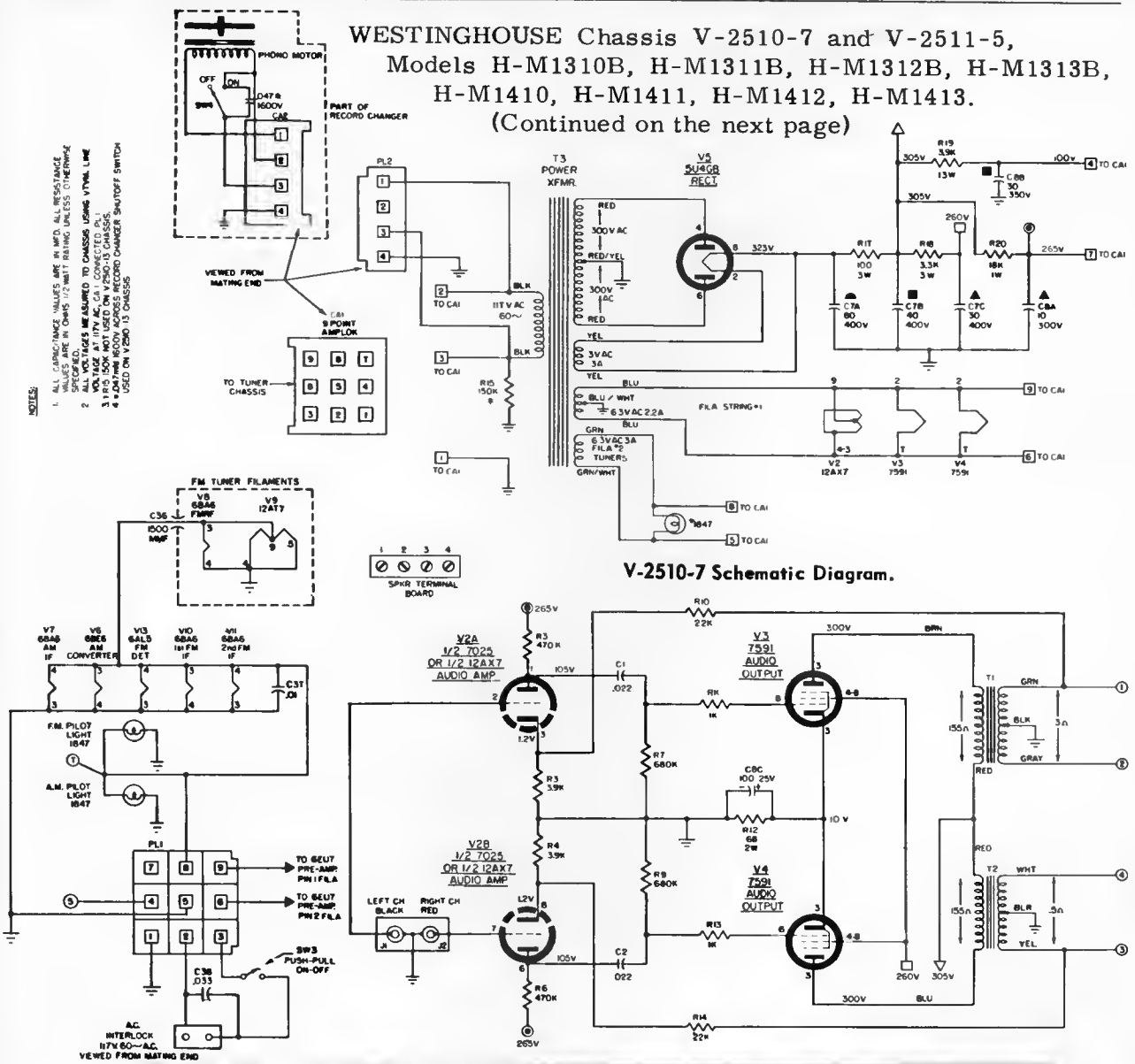
UNDERLINED VOLTAGES ARE TAKEN IN FM POSITION.
SW4A AND B IS SHOWN IN THE CCW POSITION, 1AY POSITION
ALL REFERENCES TO LEFT AND RIGHT ARE AS VIEWED FACING FRONT OF SET.
REAR SECTIONS OF CONTROLS (FARTHEST FROM SHAFTS) ARE RIGHT CHANNEL.
ARROWS ON CONTROLS INDICATE CW ROTATION (CONTROL VIEWED FROM SHAFT END)

ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS, ½ WATT, UNLESS OTHERWISE SPECIFIED.

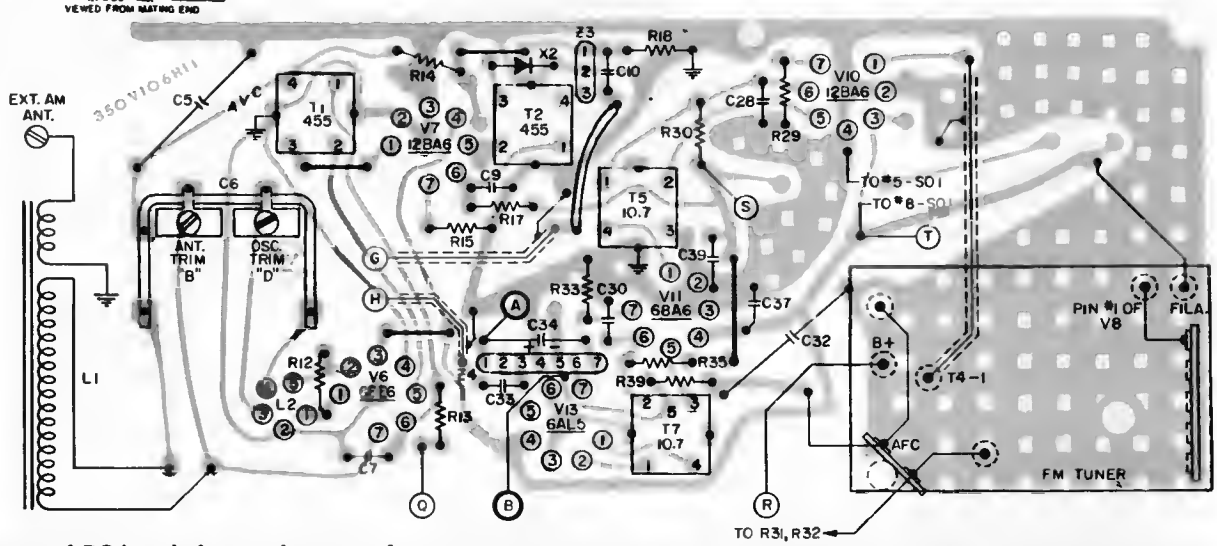
D.C. VOLTAGES MEASURED FROM POINTS INDICATED TO CIRCUIT GROUND – NO SIGNAL APPLIED, USING A VTVM. LINE VOLTAGE SET AT 117V A.C. NO SIGNAL INPUT. LOUDNESS AT MIN, TO TUNING CAPC. AT MAX

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)



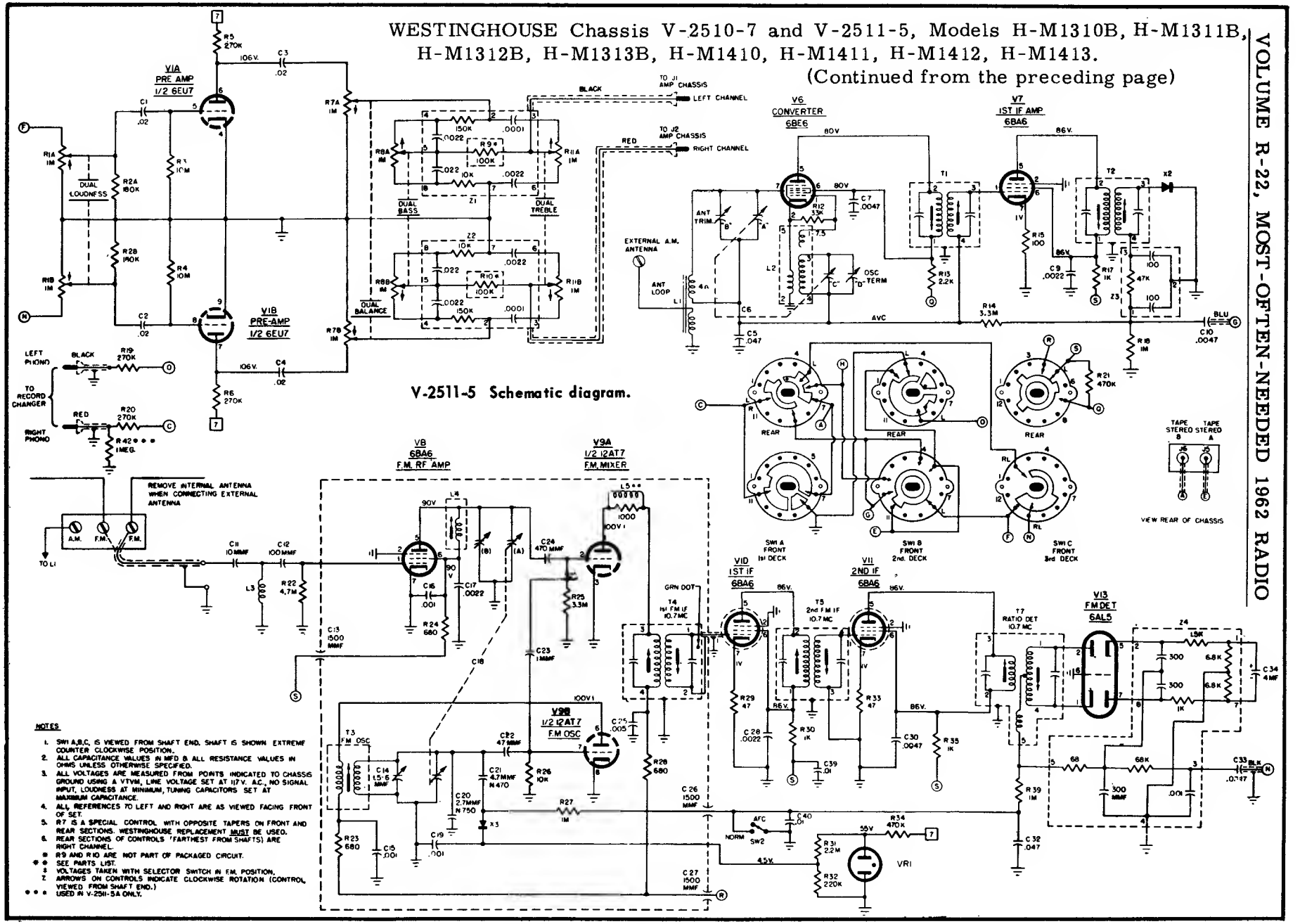
V-2510-7 Schematic Diagram.



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)



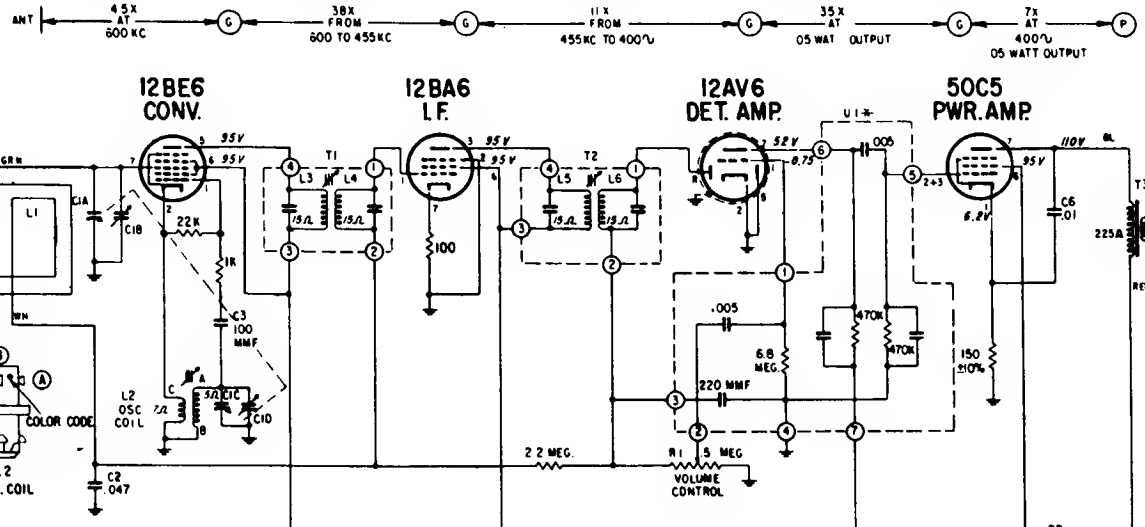
V-2511-5 Schematic diagram.

NOTES

1. SW1 A,B,C, IS VIEWED FROM SHAFT END. SHAFT IS SHOWN EXTREME COUNTER CLOCKWISE POSITION.
2. ALL CAPACITANCE VALUES IN MFD & ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. ALL VOLTAGES ARE MEASURED FROM POINTS INDICATED TO CHASSIS GROUND USING A VTVM, LINE VOLTAGE SET AT 117 V. A.C., NO SIGNAL INPUT, LOUDNESS AT MINIMUM, TUNING CAPACITORS SET AT MAXIMUM CAPACITANCE.
4. ALL REFERENCES TO LEFT AND RIGHT ARE AS VIEWED FACING FRONT OF SET.
5. R7 IS A SPECIAL CONTROL WITH OPPOSITE TAPERS ON FRONT AND REAR SECTIONS. WESTINGHOUSE REPLACEMENT MUST BE USED.
6. REAR SECTIONS OF CONTROLS FARTHEST FROM SHAFTS) ARE RIGHT CHANNEL.

* R9 AND R10 ARE NOT PART OF PACKAGED CIRCUIT.
** SEE PARTS LIST.
‡ VOLTAGES TAKEN WITH SELECTOR SWITCH IN F.M. POSITION.
↻ ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END.)
*** USED IN V-2511-5A ONLY.

ZENITH RADIO MODELS H509C,P AND W CHASSIS 5F02



NOTES:

ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED WITH AN A.C., D.C. OR VACUUM TUBE VOLTMETER.

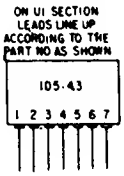
USE ONLY ZENITH NON-INDUCTIVE ELECTROLYTIC CONDENSERS FOR REPLACEMENT.

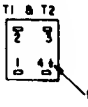
IF ANY OTHER TYPE OF ELECTROLYTIC IS USED IT WILL BE NECESSARY TO ADD C7 SHOWN IN DOTTED LINES.

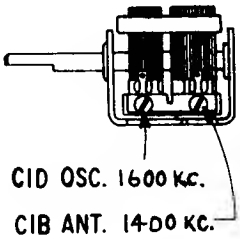
I.F. TRANSFORMER NUMBERING STARTS WITH #1 TERMINAL AS FIRST TERMINAL CLOCKWISE FROM MARKER CODE TERMINAL AS VIEWED FROM BOTTOM OF CHASSIS.

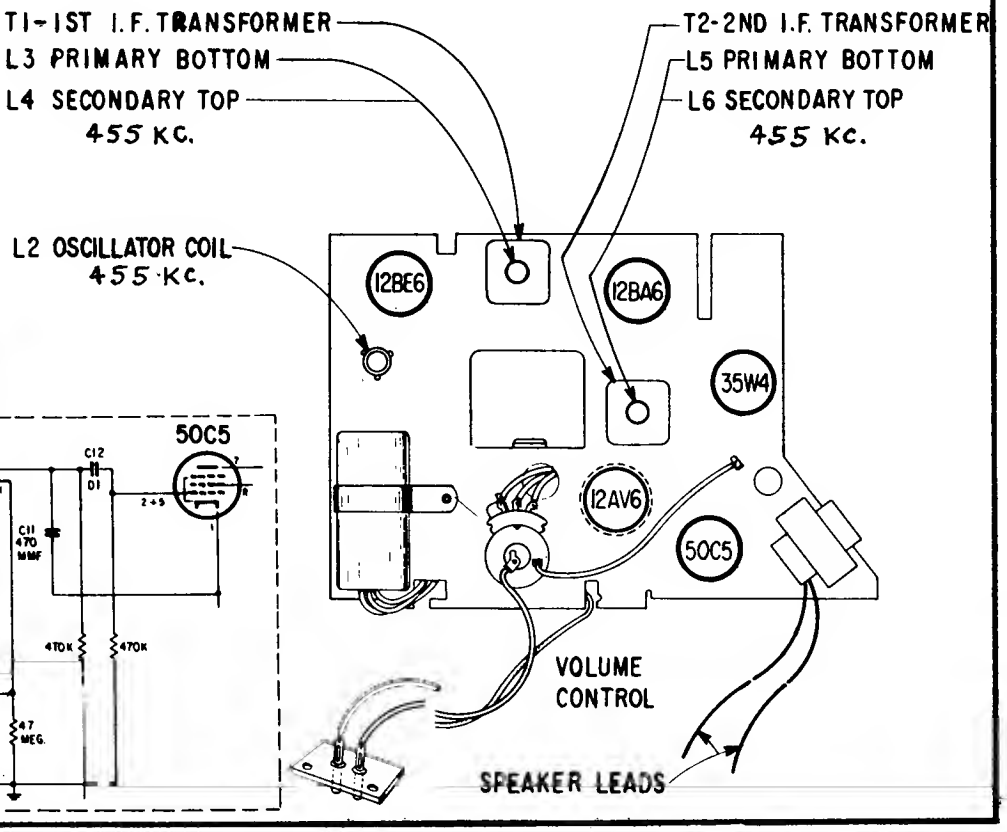
I.F. FREQUENCY 455 KC
TUNING RANGE 535-1620 KC

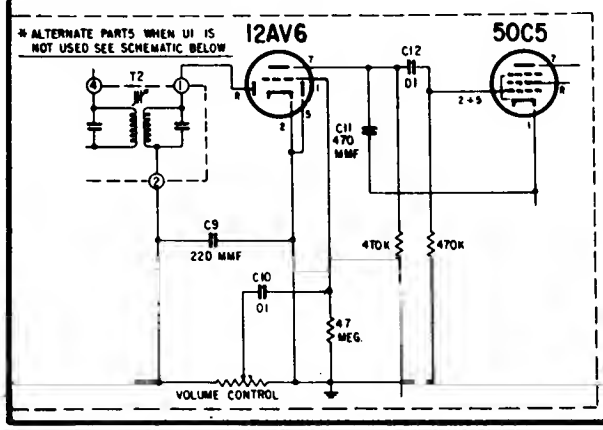
ALL RESISTORS ±20% TOLERANCE, 1/2 WATT, CARBON UNLESS OTHERWISE SPECIFIED.



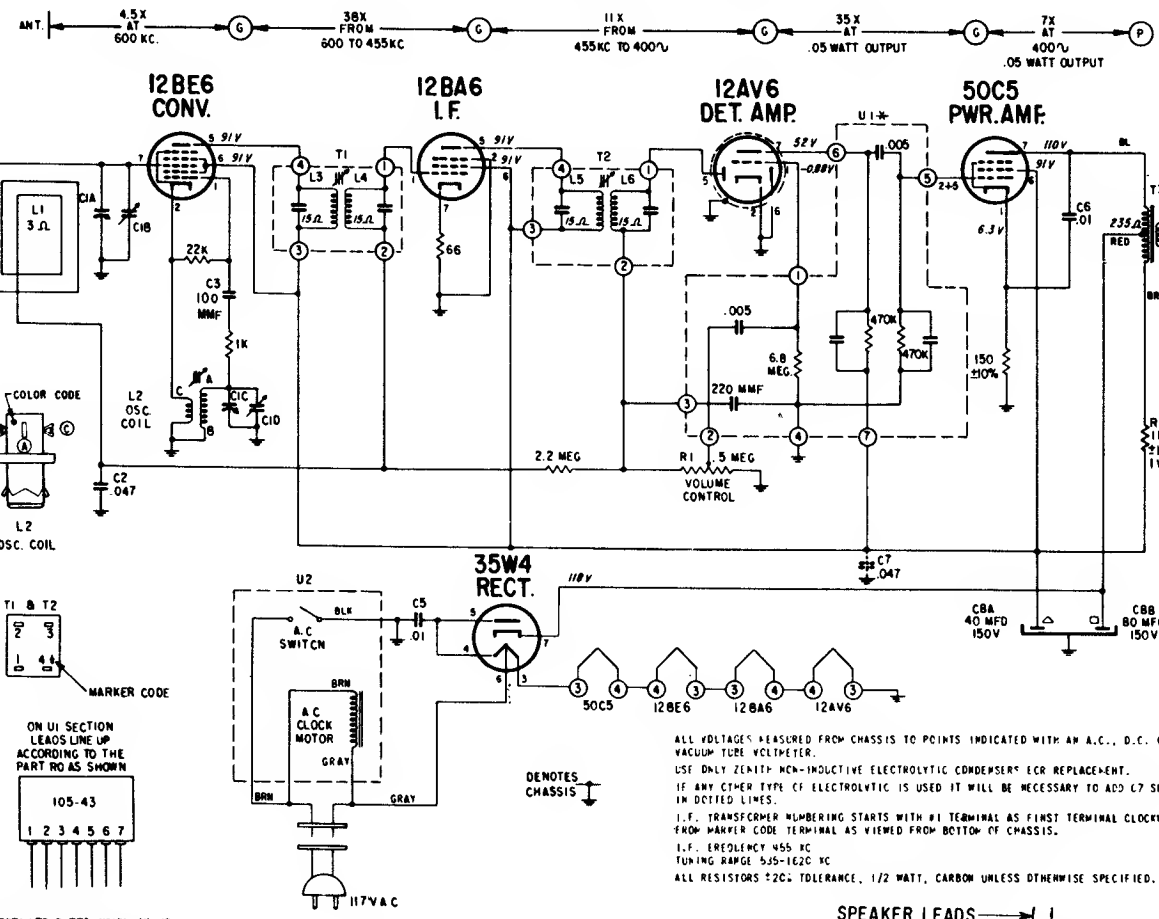


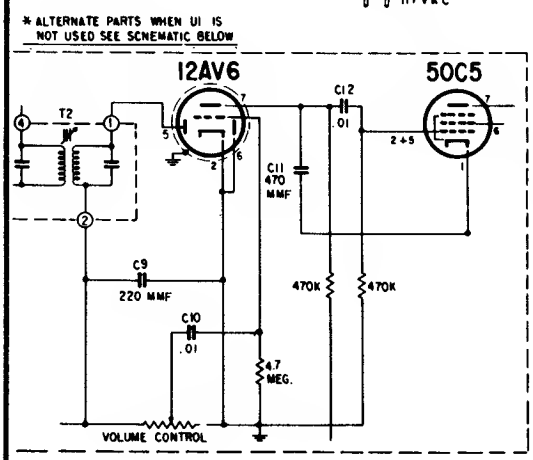


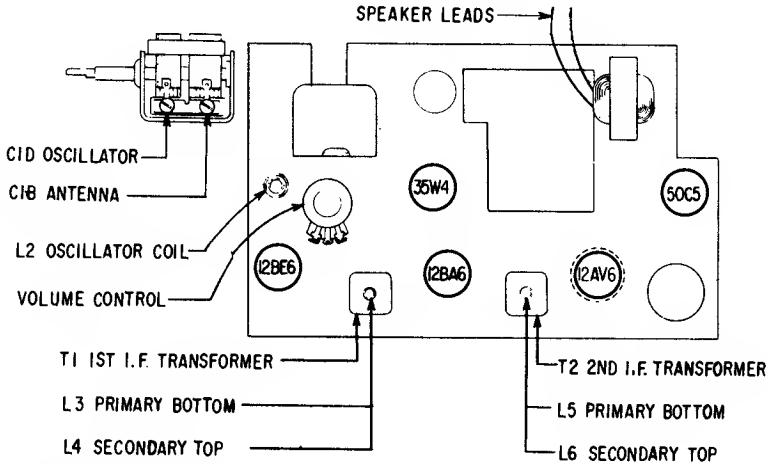




ZENITH Radio Model H519, Chassis 5H07





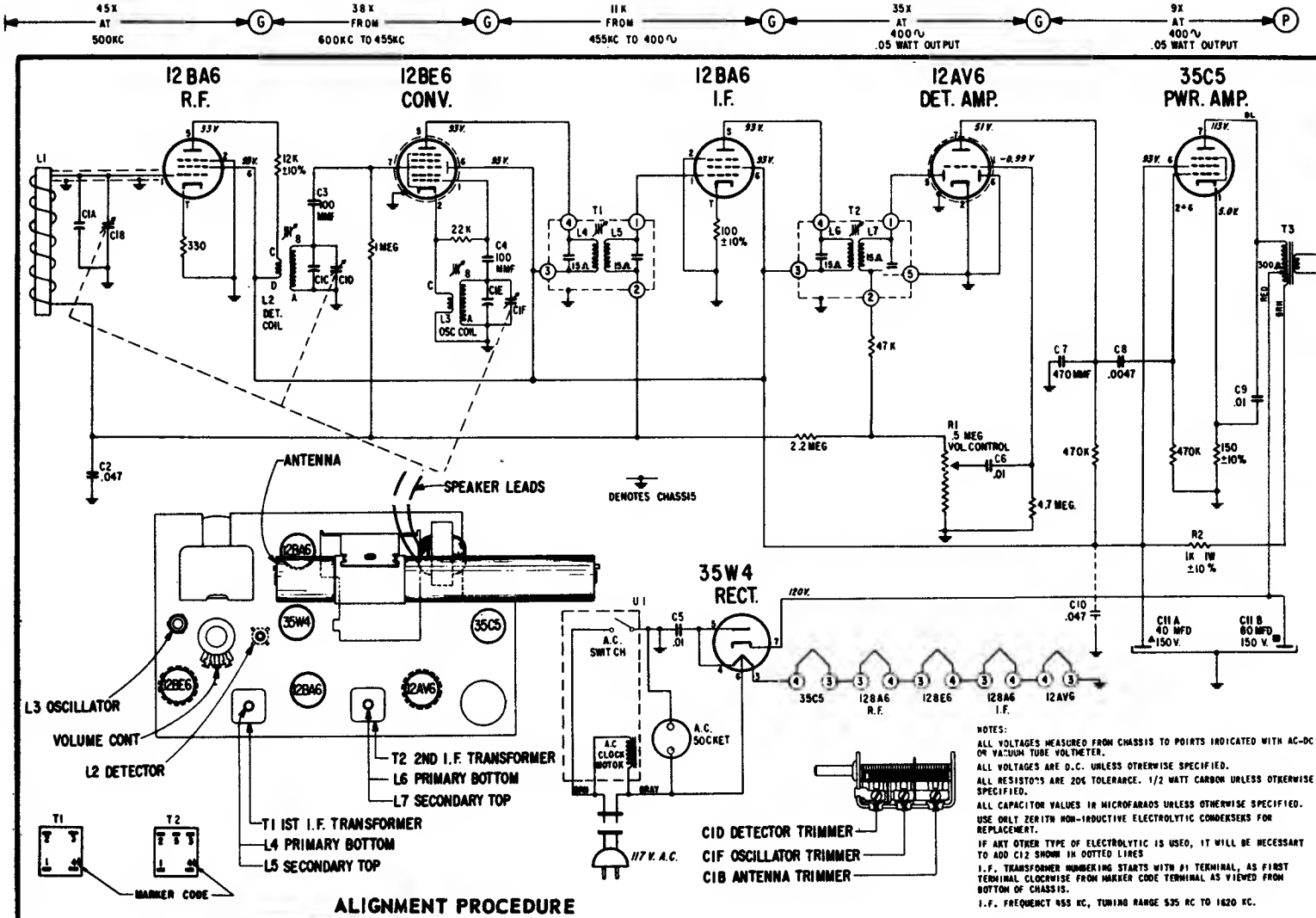


ALIGNMENT PROCEDURE

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 Wavemagnet	——	1600 Kc.	1600 Kc.	C1D	Set Oscillator to Dial Scale.
3		——	1400 Kc.	1400 Kc.	C1B	Align Antenna Stage.

ZENITH MODEL H624

Chassis 6H03



NOTES:

ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED WITH AC-DC OR VACUUM TUBE VOLTMETER.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.

ALL RESISTORS ARE 20% TOLERANCE. 1/2 WATT CARBON UNLESS OTHERWISE SPECIFIED.

ALL CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

USE ONLY ZENITH NON-INDUCTIVE ELECTROLYTIC CONDENSERS FOR REPLACEMENT.

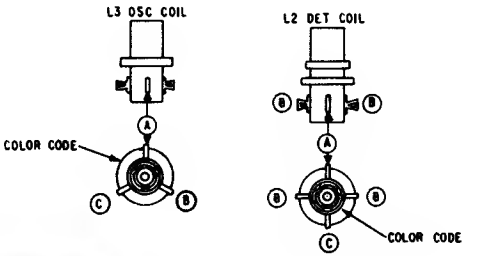
IF ANY OTHER TYPE OF ELECTROLYTIC IS USED, IT WILL BE NECESSARY TO ADD C12 SHOWN IN DOTTED LINES

I.F. TRANSFORMER NUMBERING STARTS WITH #1 TERMINAL, AS FIRST TERMINAL CLOCKWISE FROM MARKER CODE TERMINAL AS VIEWED FROM BOTTOM OF CHASSIS.

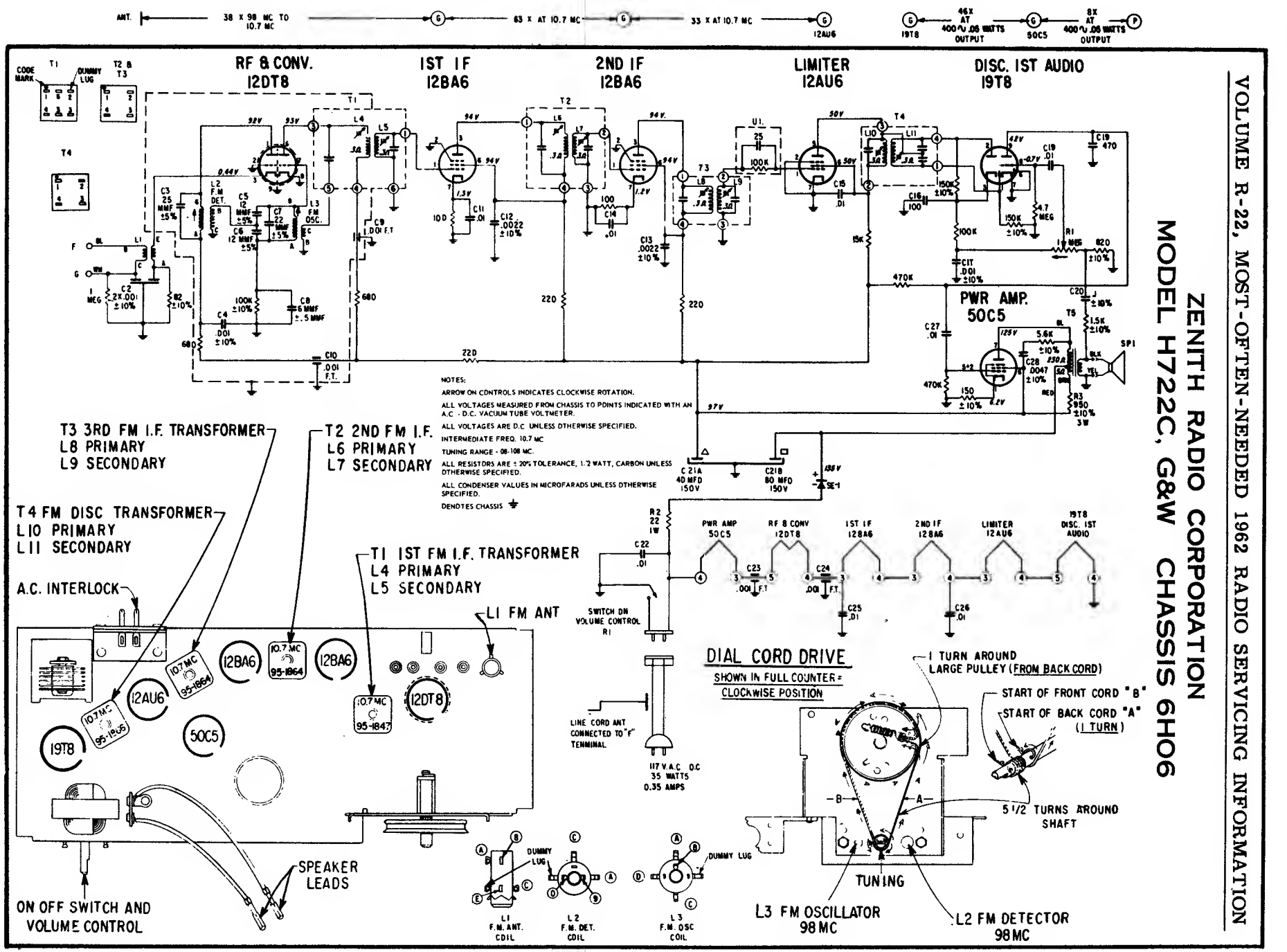
I.F. FREQUENCY 455 KC, TUNING RANGE 535 KC TO 1620 KC.

ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenns	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 Wavemagnet	——	1600 Kc.	1600 Kc.	C1F	Set Oscillstor to Disl Scale.
3		——	1400 Kc.	1400 Kc.	C1D, C1B	Align Detector and Antenna Stsge.

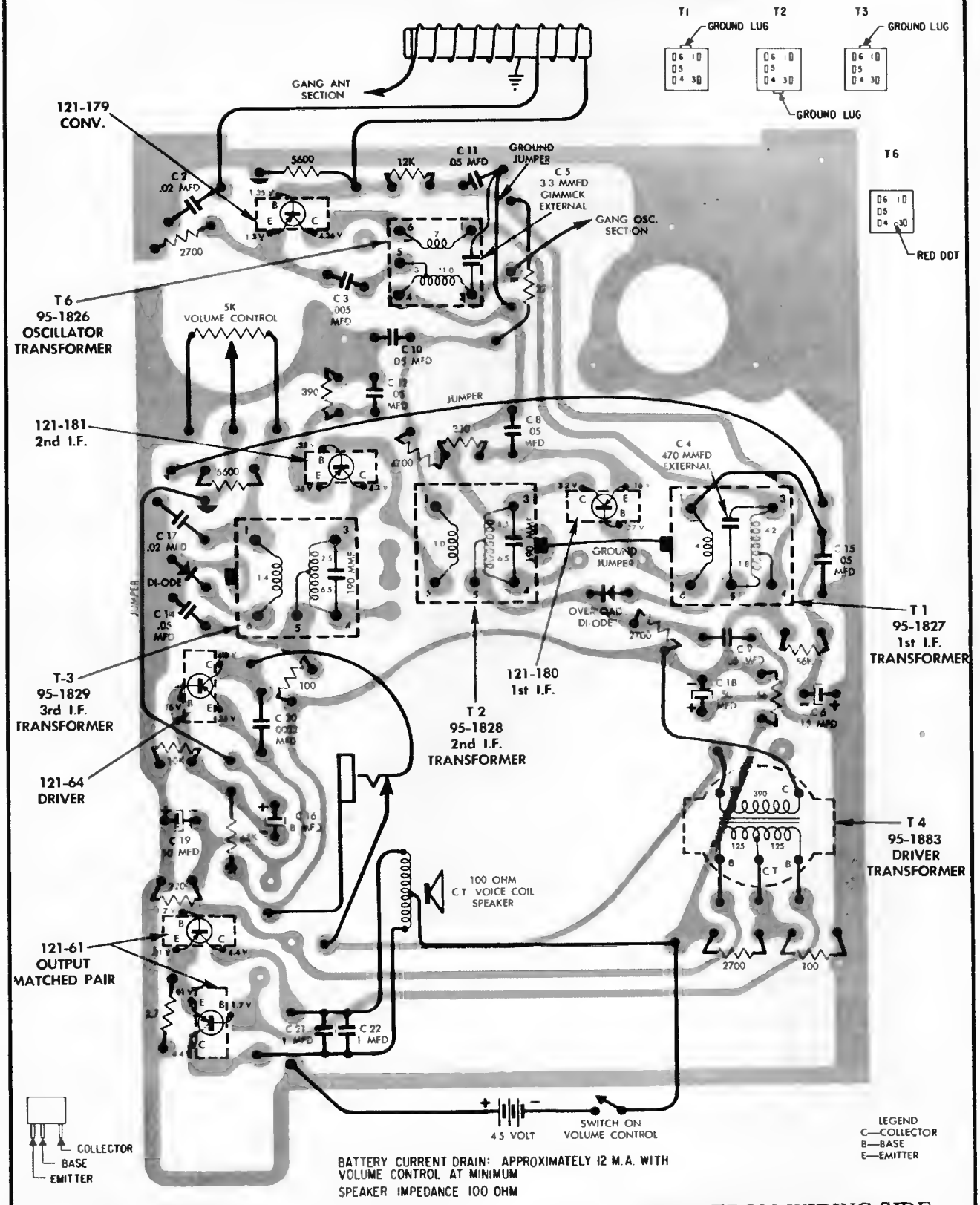


ZENITH RADIO CORPORATION
MODEL H722C, G&W CHASSIS 6H06

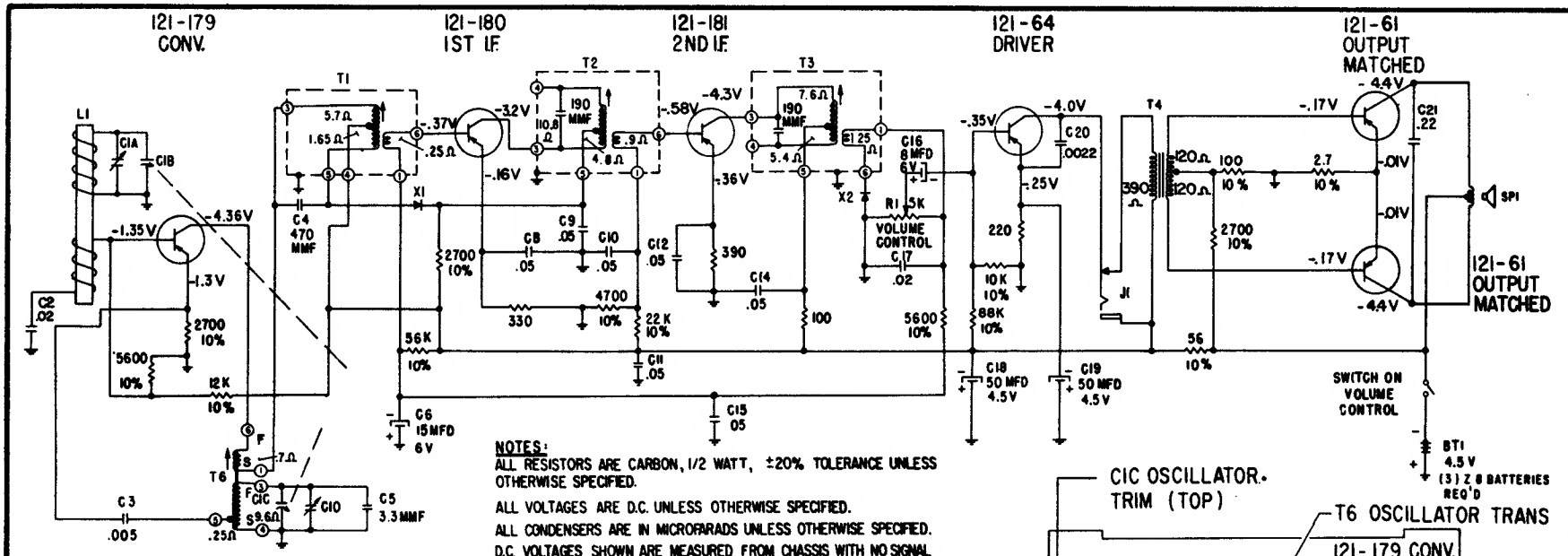


ZENITH RADIO Model Royal 150, Chassis 6GT42Z2

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

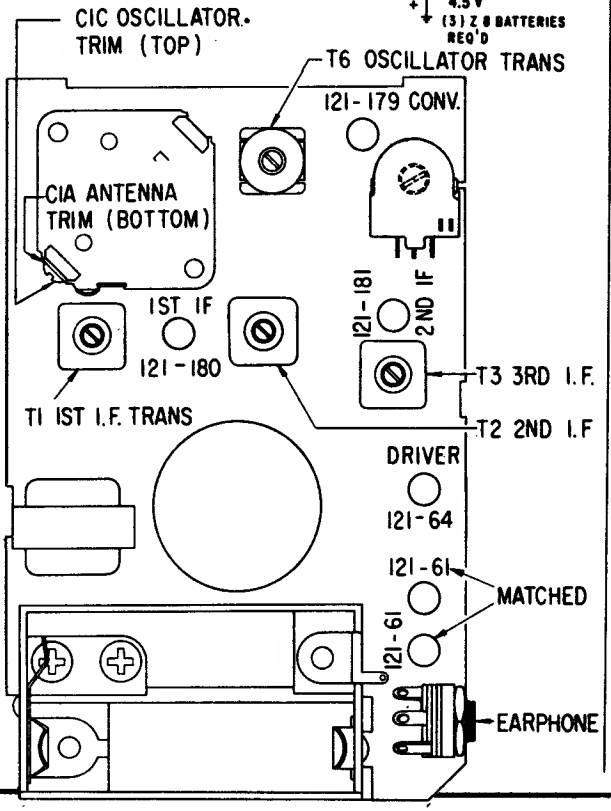


CHASSIS, WIRING AND COMPONENTS — VIEWED FROM WIRING SIDE



ALIGNMENT PROCEDURE

Operation	Input Signal Frequency	Connect Inner Conductor From Oscillator To	Connect Outer Shield Conductor From Oscillator To	Set Dial At	Trimmers	Purpose
1	455 KC	ONE TURN LOOSELY COUPLED TO WAVEMAGNET	Chassis	600 KC	Adj. T1, T2, T3 for maximum output.	For. I. F. Alignment
2	1620 KC		—	Gang wide open.	C1C	Set Oscillator to dial scale.
3	600 KC		—	Near 600 KC	Adjust slug in T6	While rocking gang adjust T6 for maximum output regardless of dial accuracy.
4	REPEAT STEPS 2 & 3		—	—	—	—
5	1260 KC		—	1260 KC	C1A	Align loop ant.

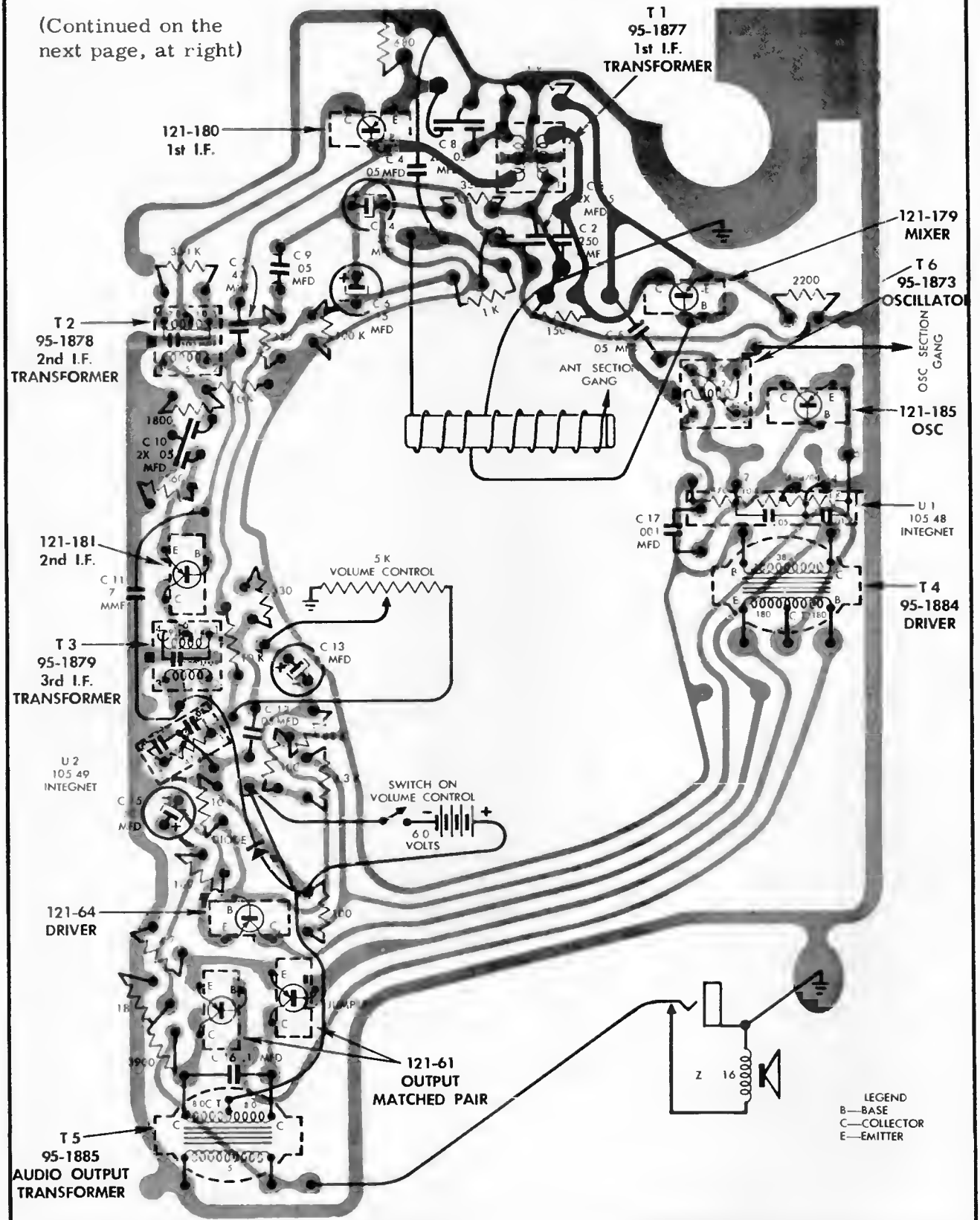


CHASSIS INFORMATION CHART

Chassis	Transistor Layout Label Color	Part No.	Conv.	1st I.F.	2nd I.F.	Crystal Diode Detector	Driver	Output-Output	Supplier
6GT42Z2	Black 102-8668	Zenith E1A Type	121-179 2N1527 PNP	121-180 2N1525 PNP	121-181 2N1525 PNP	103-19 1N87G	121-64 R497 PNP	121-61 2N407 Matched Pair PNP PNP	RCA

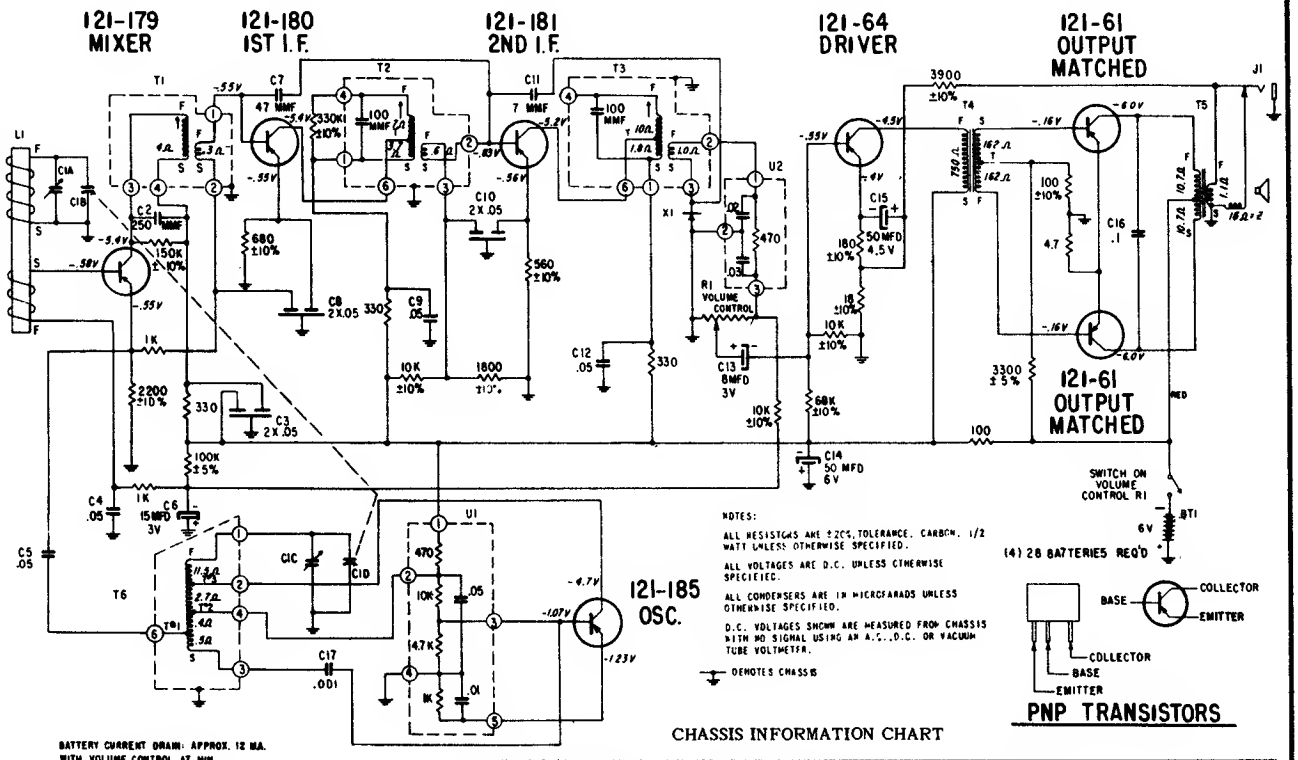
ZENITH RADIO Model Royal 400, Chassis 7GT40Z2, Continued

(Continued on the next page, at right)



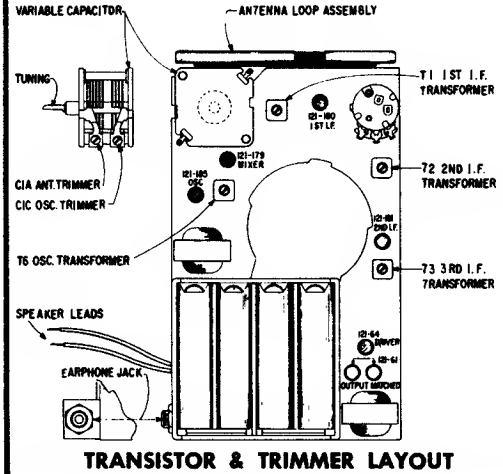
CHASSIS, WIRING AND COMPONENTS — VIEWED FROM WIRING SIDE

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-Output	Supplier R.C.A.
7GT40Z2	Black	Black 102-8126	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.



TRANSISTOR & TRIMMER LAYOUT

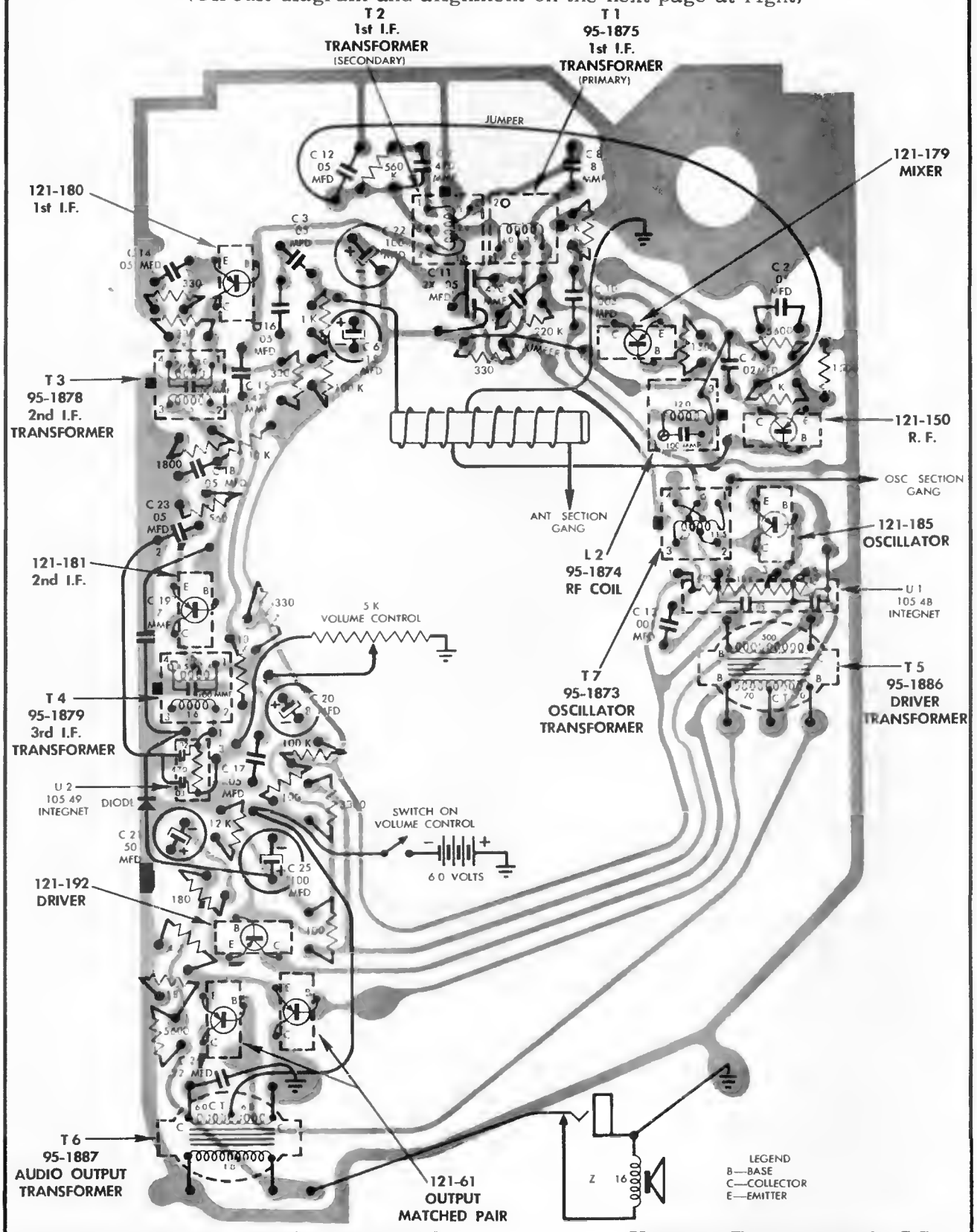
This transistor portable chassis is a conventional superheterodyne receiver using an individual mixer and oscillator to produce the 455Kc intermediate frequency. The first and second intermediate frequency amplifiers are conventional. A (103-19) is used as the diode detector and AVC voltage source. This 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

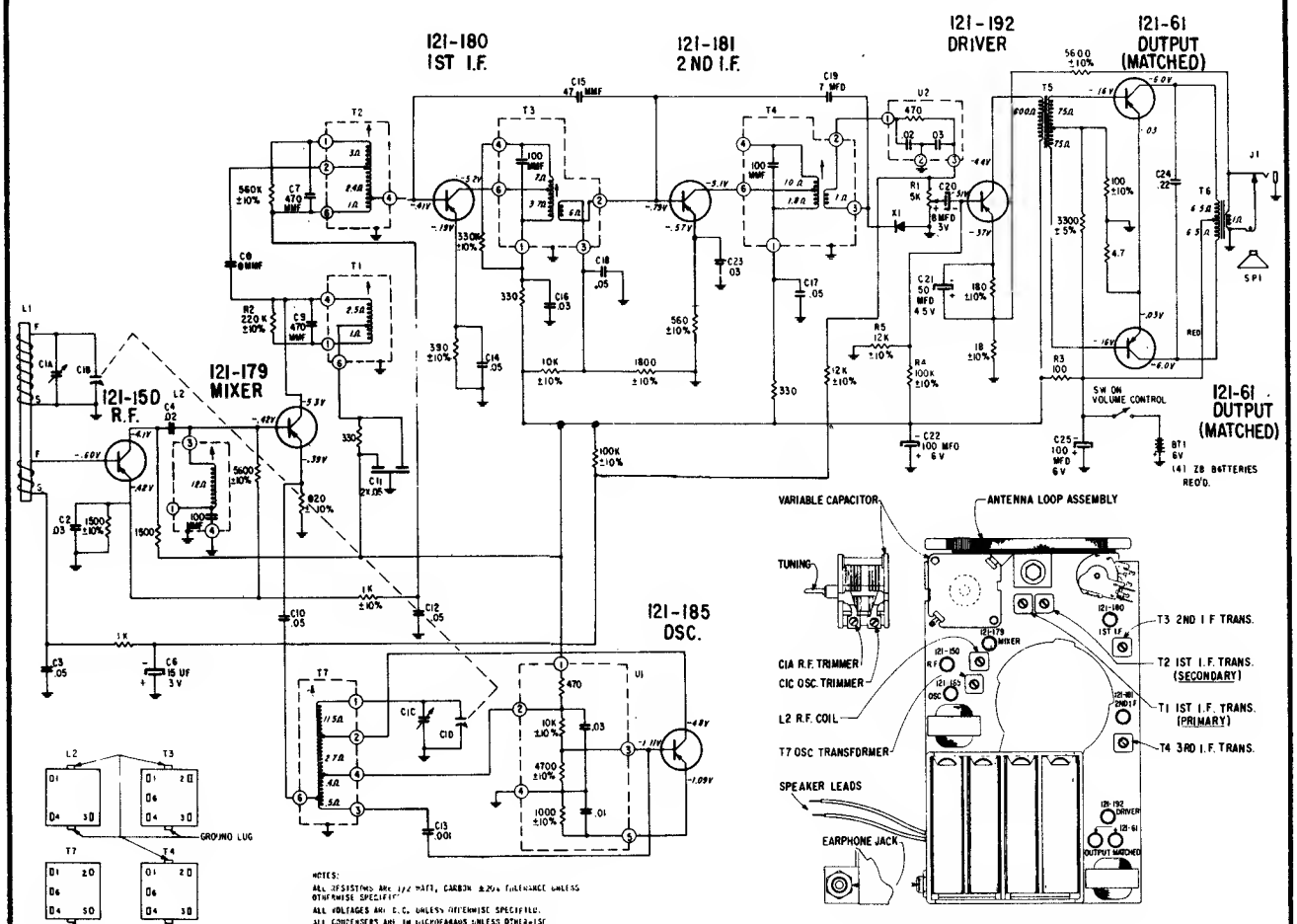
ZENITH RADIO Model Royal 500H, Chassis 8HT40Z2

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



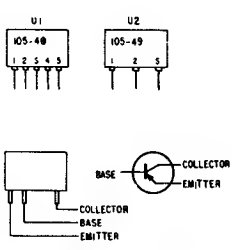
CHASSIS, WIRING AND COMPONENTS — VIEWED FROM WIRING SIDE

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



TRANSISTOR & TRIMMER LAYOUT

NOTES:
ALL RESISTORS ARE 1/2 WATT, CARBON ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL CONDENSERS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
D.C. VOLTAGES SHOWN ARE MEASURED FROM CHASSIS WITH NO SIGNAL USING AN A.C.-D.C. OR VACUUM TUBE VOLTMETER.
DENOTES CHASSIS
BATTERY CURRENT DRAIN APPROX. 15 MA WITH VOLUME CONTROL AT MINIMUM
SPEAKER IMPEDANCE 16 OHMS



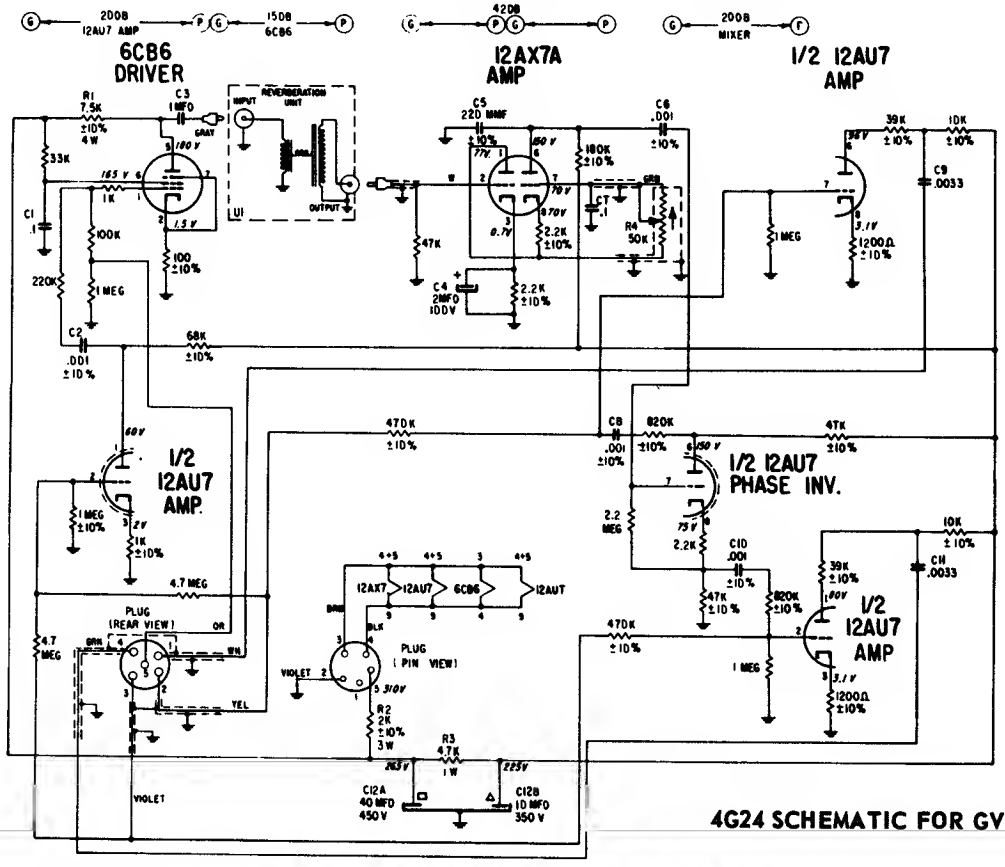
ALIGNMENT PROCEDURE

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	CIC	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	CIA	Align Loop Antenna

CHASSIS INFORMATION CHART

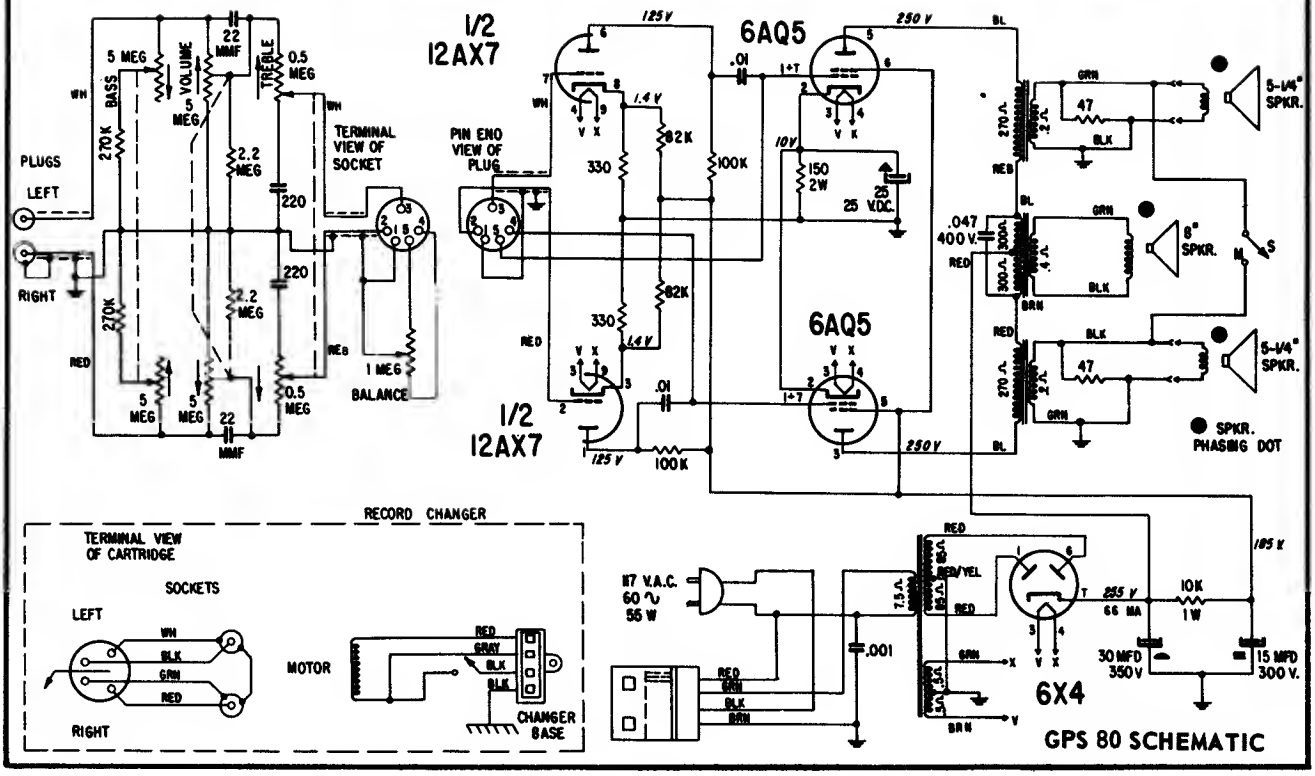
Chassis	Transistor Layout Label Color	Part No.	R.F.	Mixer	Osc.	1st I.F.	2nd I.F.	Xtal diode detector	Driver	Output	Supplier R C A
8HT40Z2	Black 102-8202	Zenith E.I.A. Type	121-150 2N1631 PNP	121-179 2N152T PNP	121-185 2N1525 PNP	121-180 2N1525 PNP	121-181 2N1525 PNP	X03-19 8N87G	121-192 2N407 PNP	121-61 2N407 PNP	

ZENITH RADIO Chassis 4G24 used in Model GV21



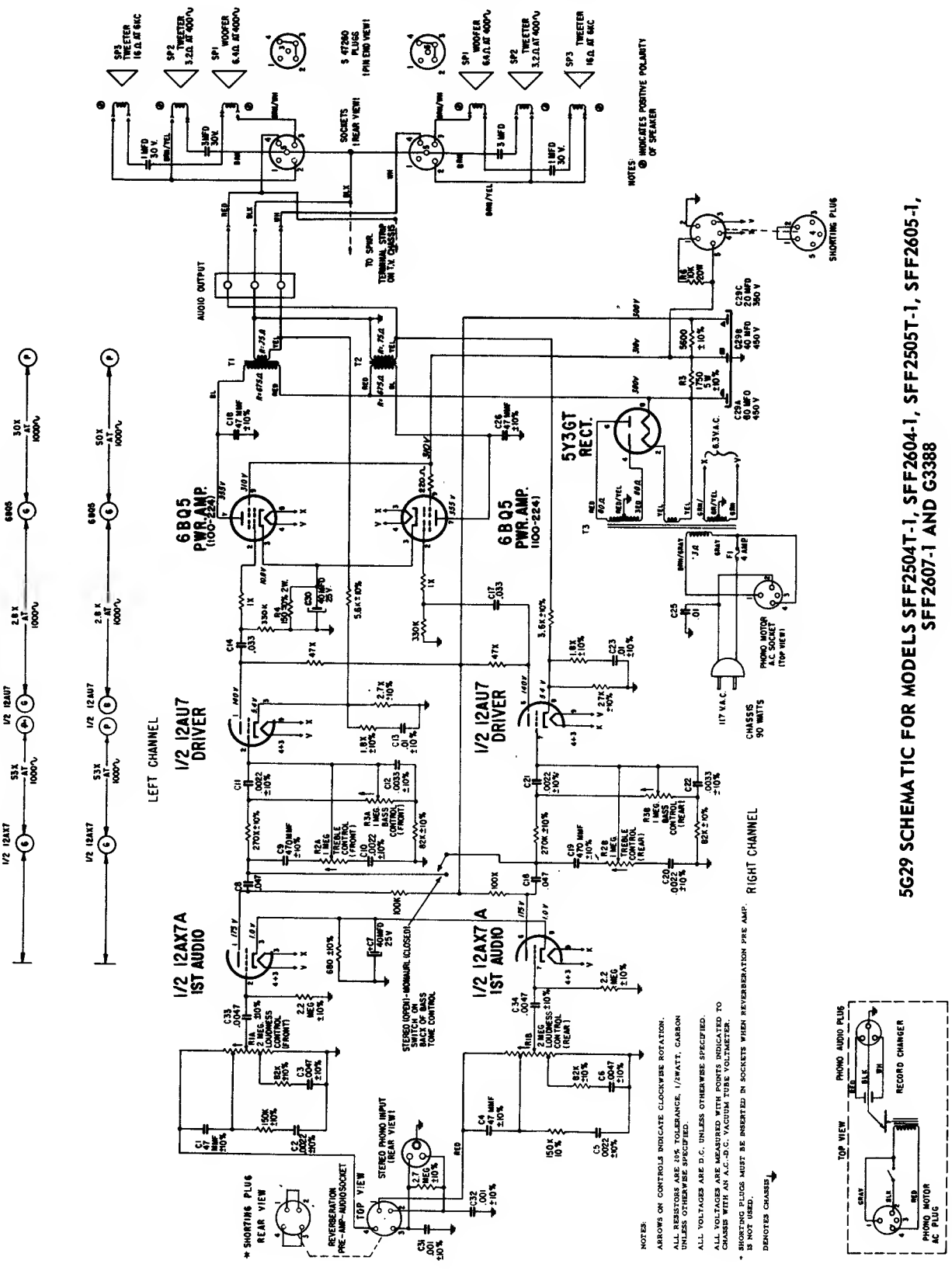
4G24 SCHEMATIC FOR GV21

ZENITH RADIO Chassis GPS 80



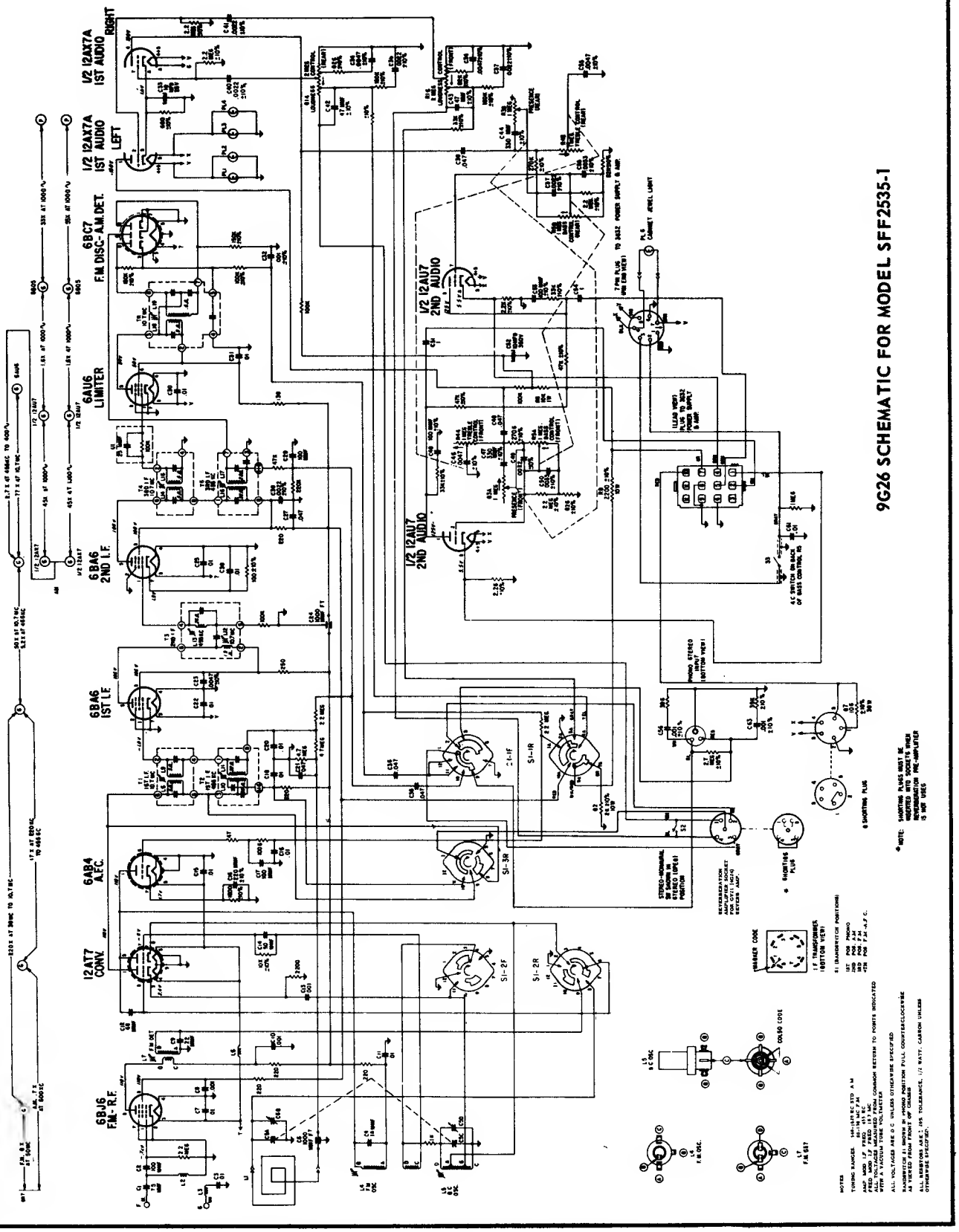
GPS 80 SCHEMATIC

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



5G29 SCHEMATIC FOR MODELS SFF2504T-1, SFF2604-1, SFF2505T-1, SFF2605-1, SFF2607-1 AND G3388

ZENITH RADIO Chassis 9G26 used in Model SFF2535-1



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